

Notes on the

Natural History of Juneau, Alaska

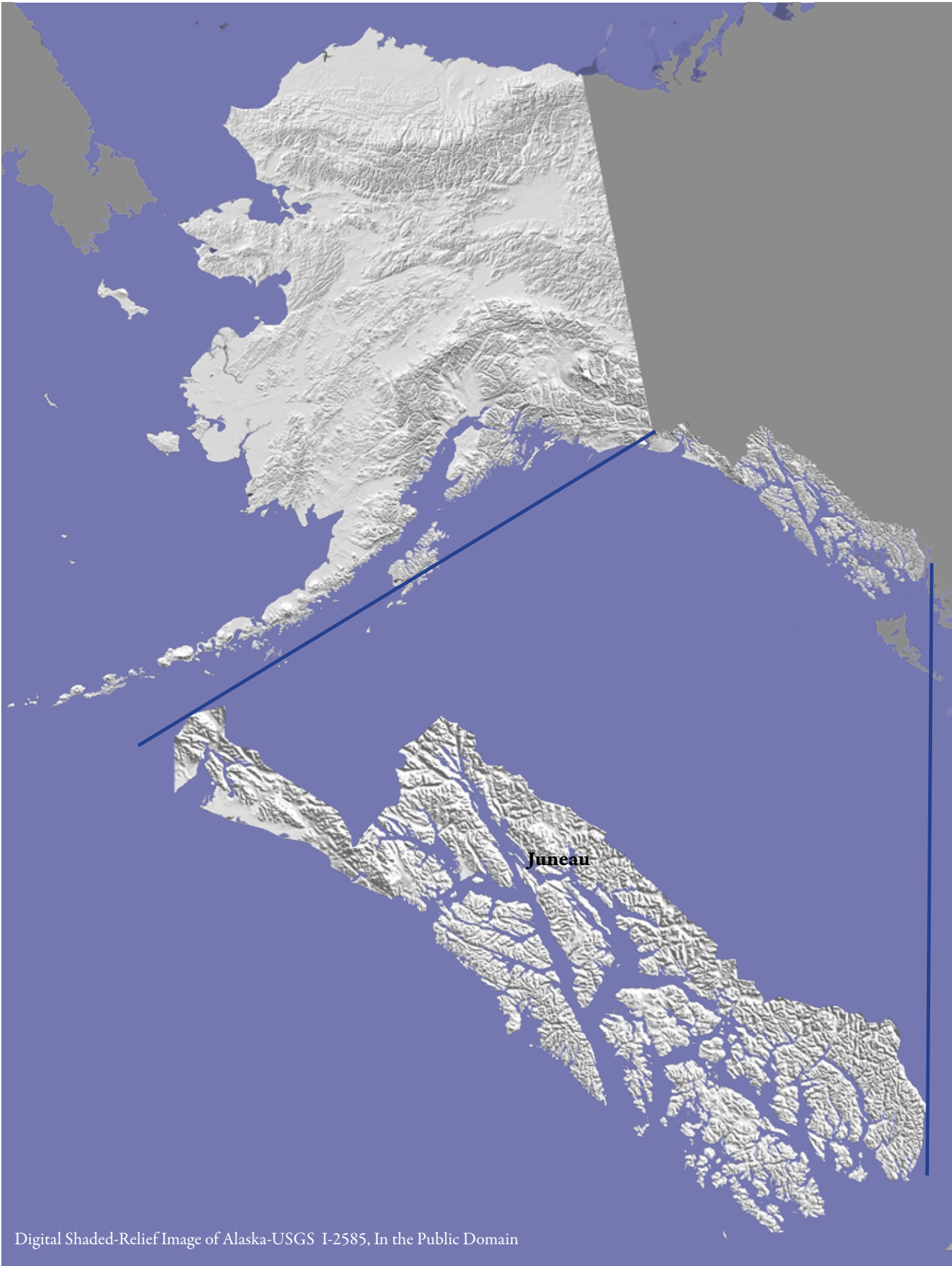
Observations of an Eclectic Naturalist

Volume 2

Animals

L. Scott Ranger

Working version of Oct. 23, 2020



Digital Shaded-Relief Image of Alaska-USGS I-2585, In the Public Domain

Notes on the

Natural History of Juneau, Alaska

Observations of an Eclectic Naturalist

Volume 2: Animals

L. Scott Ranger

www.scottranger.com, scott@scottranger.com

Production Notes

This is very much a work under construction.

My notes are composed in Adobe *InDesign* which allows incredible precision of all the elements of page layout. My choice of typefaces is very specific. Each must include a complete set of glyphs and extended characters. For my etymologies the font must include an easily recognized Greek and the occasional Cyrillic and Hebrew. All must be legible and easily read at 10 points.

Adobe Garamond Premier Pro is my specifically chosen text typeface. I find this Robert Slimbach 1989 revision of a typeface created by Claude Garamond (c. 1480–1561) to be at once fresh and classic. Long recognized as one of the more legible typefaces, I find it very easy on the eye at the 10 point size used here. I simply adore the open bowls of the lower case letters and find the very small counters of my preferred two-storied “a” and the “e” against its very open bowl elegant. Garamond’s ascenders and descenders are especially long and help define the lower case letters with instant recognition. The glyphs (particularly double f, ff) are simply gorgeous. The upper case letters are unique and identifiable at a glance by the typeface connoisseur with their serifs both obvious yet elegant. The open letters are exceptionally open yet very controlled and deliberate. The double V that forms the W with its bold left and fine right angles is at once comforting and challenging as it almost seems too heavy to the left, yet it “makes sense”. Q may be the finest letter as its descender usually underlines the next letter in the word. The angled right leg of the R beginning to the right of an almost uncompleted bowl with a most delicate of lines that teases they eye is a close second. Having a last name beginning with R of course has no bearing on my feelings for it! The italic forms are nothing short of inspired in their exquisite elegance. It has a complete set of diacritical marks that I’ve taken full advantage in names from foreign languages like Tlingít.

Candara Bold is for titles and headings. A font created by Gary Munch specifically for Microsoft, I find it wonderfully complements the finishing touches of Garamond yet is a sans serif typeface that is incredibly legible and easy on the eye. The very open bowls and stroke cutoffs and varying width of line strongly resemble Garamond while being distinct. It’s first feeling is a freshness yet it hearkens back to other times and is not bound to strict geometries of circles and lines.

Arial is for etymologies for two overwhelming reasons: readability at 8 points with its high x-height is second to none; and, it has a complete character set for many languages, especially the Greek used here. It is a typeface that one doesn’t realize they’re looking at and fades into the background. With foreign letters, this is very helpful. A boring font leads to better understanding of complicated graphics.

Vital Note on Page flow: As a collection of on-going field notes, this is a never-ending document. I’m primarily concerned that my notes and photographs remain together during composition, so they are anchored to each other. This means that they flow where they might when new material is added before it and for this reason may not remain together across page breaks. If, and when, this is completed for publication, these odd breaks will be taken care of. In its current condition, they are a necessary evil. It is a “working” version.



Mendenhall Glacier aerial above Mount Wrather



Thunder Mountain fog

Contents

Animals	1
Kingdom Animalia Linnæus 1758 Animals	2
Phylum Cnidaria Hatschek 1888 anemones, corals and jellyfish, <i>taakw aanási</i>	2
Class Anthozoa Ehrenberg 1831	2
Order Actiniaria anemones, <i>tayataayí</i>	2
Family Actiniidae Rafinesque 1815	2
Class Scyphozoa Götte 1887	4
Order Semaestomeae L. Agassiz 1862	4
Family Ulmaridae Haeckel 1880	4
Phylum Arthropoda Latreille 1829 arthropods	5
Subphylum Crustacea Brünnich 1772 crustaceans	5
Class Maxillopoda Dahl 1956 barnacles and copepods	5
Subclass Thecostraca Gruvel 1905 barnacles, s'ook	5
Order Sessilia Lamarck 1818 acorn barnacles	5
Family Chthamalidae Darwin 1854	5
Family Coronulidae Leach 1817	6
Class Malacostraca Latreille 1802, crabs, lobsters, shrimp, krill, woodlice, scuds	7
Order Decapoda Latreille 1802, decapods	7
Family Cancridae Latreille 1802, crabs	7
Lithodidae Samouelle, 1819, stone and king crabs	8
Subphylum Chelicerata Heymons 1901, horseshoe crabs, scorpions, spiders and mites	9
Class Arachnida Cuvier 1812, spiders and mites	9
Order Trombidiformes	9
Family Eriophyidae Nalepa 1898 gall mites	9
Class Insecta Linnæus 1758 insects	10
Order Coleoptera Linnæus 1758 beetles, <i>shaxdákw</i>	10
Family Carabidae Latreille, 1802 ground beetles	10
Family Chrysomelidae Latreille 1802 leaf beetles	11
Staphylinidae Lameere, 1900, rove beetles	12
Order Diptera Linnæus 1758, Flies	13
Family Cecidomyiidae, gall midges	13
Family Culicidae Meigen, 1830, mosquito	15
Unidentified Flies	16
Order Hemiptera Linnæus, 1758, true bugs	17
Family Aphididae, aphids	17
Order Hymenoptera Linnæus, 1758, sawflies, wasps, bees and ants	18
Family Ichneumonidae, ichneumon wasps	18
Family Tenthredinidae, sawflies	19
Family Vespidae, yellow jackets	21
Unidentified Bees	22
Order Lepidoptera Linnæus, 1758, moths and butterflies, moth: <i>atxa át</i>	22
Family Geometridae Leach, 1815, geometer moths	22
Family Nymphalidae Rafinesque, 1815 butterflies	23
Family Erebidae Leach [1815] tussock moths and many others	25
Family Noctuidae Latreille, 1809, owlet moths, cutworms or armyworms	26
Family Pieridae Swainson, 1820	26
Family Sphingidae Latreille, 1802 hawk moths, sphinx moths, hornworms	27

Family Tortricidae Latreille, 1803, leaf rollers	28
Phylum Mollusca Linnæus, 1758 molluscs	28
Class Bivalvia Linnæus, 1758	28
Order Mytiloida Rafinesque 1815	28
Family Mytilidae Rafinesque 1815	28
Order Veneroida Veneroida H. & A. Adams 1856	29
Family Veneridae Rafinesque, 1815	29
Order Stylommatophora A. Schmidt, 1855	29
Family Ariolimacidae Pilsbry & Vanatta, 1898	29
Family Arionidae Gray, 1840, roundback slugs	30
Phylum Echinodermata Klein, 1734 echinoderms	30
Class Asteroidea De Blainville, 1830, sea stars, starfish	30
Order Forcipulatida Perrier, 1884, sea stars, <i>s'áx</i>	30
Family Asteriidae Gray, 1840	30
Order Velatida Perrier, 1884 sea stars	32
Family Solasteridae Viguiet, 1878	32
Order Echinoida Claus, 1876 sea urchins & sand dollars	33
Family Strongylocentrotidae Gregory, 1900	33
Phylum Chordata Bateson 1885	35
Class Amphibia Gray 1825 amphibians	35
Order Anura Duméril, 1806 frogs and toads, <i>xíxch'</i>	35
Family Bufonidae Gray, 1825 toads	35
Superclass Osteichthyes Huxley, 1880 bony fish	36
Class Actinopterygii Klein, 1885 ray-finned fish	36
Order Scorpaeniformes Greenwood et al., 1966, “mail-checked” fishes	36
Family Anoplopomatidae Ayres, 1859, sablefish	36
Order Pleuronectiformes Bleeker, 1859 flatfishes, flounders	37
Family Pleuronectidae G. Cuvier, 1816	37
Order Scorpaeniformes Greenwood et al., 1966 scorpionfishes and flatheads	37
Family Cottidae Bonaparte, 1832 sculpins, <i>wéix</i>	37
Order Salmoniformes Bleeker, 1859 salmon, trout, char, freshwater whitefish, grayling	38
Family Salmonidae G. Cuvier, 1816	38
Class Aves Linnæus 1758, birds	46
Order Anseriformes Wagler 1831 waterfowl and screamers	47
Family Anatidae Vigors, 1825 Ducks, Geese, and Swans	47
Order Galliformes Temminck 1820 fowl	62
Family Phasianidae Vigors, 1825 Partridges, Grouse, Turkeys, and Old World Quail	62
Order Gaviiformes Wetmore & W.D. Miller, 1926	63
Family Gaviidae J.A. Allen 1897 Loons, kageet	63
Order Podicipediformes (Fürbringer 1888) Sharpe 1891	64
Family Podicipedidae Bonaparte 1831 Grebes	64
Order Procellariiformes (Fürbringer, 1888)	65
Family Procellariidae Leach 1820 Shearwaters and Petrels	65
Order Pelecaniformes Sharpe 1891	65
Family Phalacrocoracidae Reichenbach 1850 Cormorants, <i>yook</i>	65
Order Ardeiformes Wagler 1830	66
Family Ardeidae Leach 1820 Bitterns, Herons, and Allies	66
Order Falconiformes Sharpe 1874	67
Family Accipitridae Vieillot 1816 Hawks (<i>shaayáal</i>), Kites, Eagles, and Allies	67
Order Ralliformes Reichenbach 1854	73

Family Rallidae Vigors 1825 Rails, Gallinules, and Coots	73
Order Charadriiformes Huxley 1867	73
Family Charadriidae Vigors, 1825 Lapwings and Plovers	73
Family Haematopodidae Bonaparte 1838 Oystercatchers	73
Family Scolopacidae Vigors 1825 Sandpipers, Phalaropes, and Allies, <i>x'al'daayééji</i>	74
Family Laridae Vigors 1825 Gulls, Terns, and Skimmers, <i>kéidladi</i>	80
Family Alcidae Vigors 1825 Auks, Murres, and Puffins	84
Order Columbiformes Latham 1790	87
Family Columbidae Illiger 1811 Pigeons and Doves	87
Order Apodiformes Peters 1940	87
Family Trochilidae Vigors 1825 Hummingbirds	87
Order Coraciiformes Forbes 1884	87
Family Alcedinidae Bonaparte 1831 Kingfishers	87
Order Piciformes Meyer & Wolf 1810 , woodpeckers, <i>Kóon Hít</i>	88
Family Picidae Vigors 1825 Woodpeckers and Allies, gandaadagóogu	88
Order Passeriformes Linnæus 1758	89
Family Tyrannidae Vigors 1825 Tyrant Flycatchers	89
Family Corvidae Vigors 1825 Jays and Crows	90
Alaudidae Vigors, 1825, Larks	94
Family Hirundinidae Vigors 1825 Swallows	94
Family Paridae Vigors 1825 Chickadees and Titmice	95
Family Sittidae Lesson 1828 Nuthatches	96
Family Certhiidae Leach, 1820, tree creeper	96
Family Troglodytidae Swainson 1832 Wrens	97
Family Cinclidae Sundevall 1836 Dippers	97
Family Regulidae Kinglets	100
Family Turdidae Rafinesque 1815 Thrushes	101
Family Sturnidae Rafinesque 1815 Starlings	103
Family Motacillidae Horsfield 1821 Wagtails and Pipits	104
Family Bombycillidae Swainson 1831 Waxwings	104
Family Parulidae Wetmore et al. 1947 Wood Warblers	104
Family Emberizidae Vigors 1831 Emberizids	109
Family Fringillidae Vigors 1825 Fringilline and Cardueline Finches and Allies	113
Class Mammalia Linnæus 1758 mammals	115
Order Artiodactyla Owen 1848 Even-toed or cloven hoof ungulates	116
Family Bovidae Gray 1821 antelopes, bovids, cattle, goats, sheep	116
Family Cervidae (Goldfuss 1820) Gray 1821 caribou, cervids, deer, moose, wapiti	118
Order Carnivora Bowdich 1821 carnivores	118
Suborder Caniformia Kretzoi, 1943, dogs	118
Family Canidae G. Fischer de Waldheim, 1817 dogs	119
Family Mustelidae G. Fischer de Waldheim, 1817 mustelids	119
Pinnipedia Illiger, 1811, pinnipeds	126
Superfamily Otarioidea (Gray, 1825) Lucas, 1899	126
Family Otariidae Gray, 1825 eared seals, sea lions	126
Open Water Sea Lions	127
Sea Lions at haulouts	128
Social Behavior at Haulouts	133
Inter-species Socializing	134
Branded Steller sea lions	135
Entangled Steller sea lion	135

Eastern vs. Western Population Dynamics	137
Superfamily Phocoidea (Gray, 1821) Smirnov, 1908	138
Family Phocidae Gray, 1821 earless seals, true seals	138
Family Ursidae G. Fischer de Waldheim, 1817 bears	144
American Black Bear in Alaska	146
Mendenhall Glacier's Celebrity Black Bears	147
Bear #1, Naa Tláa	147
Bear #25, Nicky	149
Bear #153	160
Chevron	165
Pearl	166
Pencil-thin Moustache	167
Blondie	168
What Do Bears Eat?	169
Bear Poop	171
Garbage Problems	172
Order Cetacea Brisson, 1762 whales, dolphins, porpoises	175
Suborder Mysticeti Cope, 1891 baleen whales	175
Family Balaenopteridae Gray, 1864 rorquals	175
Humpback Whales of Juneau	176
Taxonomy	177
Current Status of Humpback Whales	178
Economic Status	178
International Status	178
United States Status	178
Marine Mammal Protection Act of 1972	178
Endangered Species Act of 1973	179
My first year with humpback whales	181
Humpback Whale Behavior	185
Cruising and Spouting	186
Logging	187
Diving	190
Side Fluke	192
Backstroke	193
Barrel Roll	194
Pectoral slaps	195
Spyhop	196
Headstand	197
Tail Slapping	198
Ventral side tail slaps	198
Dorsal side tail slaps	199
Sideways tail slaps	200
Why tail slap?	201
Peduncle Throw	202
Chin Slapping	204
Breaching	206
Back Breach	206
Pirouette Breach	207
Belly Breach	208
Why do whales breach?	208

Feeding Behaviors	210
Lunge feeding	210
Bubble net feeding	211
Single Whale Bubble Net Feeding	213
Identifying Individual Humpback Whales	215
Individually Unique Characters	215
Humpback Whale Fluke Morphology	215
Fluke Shape	216
Central Notch	216
Trailers or Tips	216
Trailing Edge	217
Dominant Color	217
Scarring	217
Humpback Whale Fluke Identification	217
Juneau Humpbacks I've identified	219
181	219
204, Stamp	220
229	221
237, Dike	222
252	223
266	224
292 SE ?	225
453, Notcho Libre	226
545, Rubberlips	227
547, Cimmerian	228
569, Rake	229
580, Divisidero	230
875	231
924, Crater	232
954, Jesus Fish	233
996, Cornucopia	234
1124	235
1234, Van Bubbles	236
1391	237
1434, Spot	238
1435, Colon	239
1441	240
1443, Dot Spot	241
1447, Juneauite	242
1447 Calf 2013, Notcho	243
1465	244
1478, Scuff	245
1538, Flame	246
1538 Calf 2013, Spark	247
1640, Betsy	248
1703, Bullethole	249
1707	250
1879, Sasha	251
Suborder Odontoceti Flower, 1869 toothed whales	253
Family Delphinidae Gray, 1821 dolphins, orca, pilot whales	253

Orca of the Juneau Area	254
Taxonomy: orca morphotypes	255
Current Status of Orca	256
International Status	257
United States Status	257
Juneau Area Morphotypes	258
My first wild orca experience!	259
Orca Behavior	261
Cruising	261
Breathing & Blowholes	263
Spyhop	264
Tail Slapping	265
Breaching	266
Copulation	267
Identifying Individual Orca	269
Juneau Orca Males I've Seen	269
Juneau Orca Females I've Seen	272
A time to live and a time to die.	275
On the joys of observing orca	277
Family Phocoenidae Gray, 1825 porpoises	278
Order Lagomorpha Brandt 1855, rabbits, hares and pikas	280
Family Leporidae Fischer de Waldheim 1817, rabbits and hares	280
Order Rodentia Bowdich, 1821 rodents	281
Family Castoridae Hemprich, 1820 beaver	282
Family Erethizontidae Bonaparte, 1845 porcupine	283
Family Sciuridae Fischer de Waldheim, 1817 squirrels	288
Chart of on-the-water locations	292
Index	294



Animals

Kingdom Animalia Linnæus 1758 **Animals**

Latin *animale*, living being; being which breathes. Neuter of *animalis*, animate, living; of the air. Derived from *anima*, breath, soul; a current of air.

Here largely used in the traditional sense of “animal, vegetable, mineral” where most people immediately recognize the organism as an “animal”. They are highly complex multicellular *eukaryotes*, having cells that contain membrane bound organelles, especially the nucleus where genetic material is stored. Their cells are bound by a plasma membrane and not a semi-rigid wall. Their embryos pass through a unique blastula stage, a hollow sphere of cells. Animals are generally mobile, at least at some stage of their growth, and *heterotrophic*, requiring outside nutrition.

Nomenclator Zoologicus is a major source for taxonomic information. [<http://www.ubio.org/NomenclatorZoologicus>]

O,Clair, R.M & C.E. O'Clair. 1998. *Southeast Alaska's rocky shores: animals*. Plant Press, Auke Bay, AK is my primary source for intertidal life.

Phylum Cnidaria Hatschek 1888 **anemones, corals and jellyfish, taakw aanási**

Class Anthozoa Ehrenberg 1831

Order Actiniaria **anemones, tayataayí**

Family Actiniidae Rafinesque 1815

Anthopleura Duchassaing de Fonbressin & Michelotti, 1860

Latin ann-THAW-plure-uh, American ann-tho-PLURE-uh

Latin *anthos*, a flower + Greek πλευρά *pleura*, rib; side; by extension, lung, as in the lining of a lung; presumably from its appearance resembling a flower yet pulsating with water like a lung

Anthopleura artemisia (Pickering in Dana, 1848), burrowing anemone, burrowing green anemone, buried anemone, moonglow anemone, tayataayí

are-teh-MEE-zhee-uh

Greek Ἄρτεμις *Artemis*, the Hellenic goddess of the hunt, wild animals, wilderness, childbirth, virginity and young girls, bringing and relieving disease in women; she often was depicted as a huntress carrying a bow and arrows. Connection to this animal undetermined.



Each brilliant chartreuse tentacle is quite stout at the base and rapidly thins to a simple wisp of an end and has a series of concentric bands of lighter chartreuse or yellow up the tentacles. The oral disc is especially large, about two-thirds the diameter of the outermost stalk (not including the spread tentacles) and uniform in the same color of the tentacles. It is also very flat and often collects sand and other detritus making me wonder how the animal keeps that out of its gut. I find it only in areas of sand next to the rocks in the intertidal zone, as can be seen in this photograph. All of the individuals I see are as bright a green as this species yet nearly all the photographs I consult have it far darker or even a pale translucent that resembles nothing like what I see here other than the banding of the tentacles. Perhaps those were from an area that receives even less direct light than Juneau—a hard thing to comprehend!

Other than the bands on the tentacles, this species strongly resembles *Anthopleura xanthogrammica*, where the epithet means “yellow-banded” even though this species’ tentacles are never banded.

These very bright chartreuse green anemones are common in the shallow rocky beaches at Outer Point and False Outer Point on Douglas Island. They are usually solitary, at least a meter or so apart from other individuals. Even on a very dull foggy or low overcast day they brighten my countenance with their brilliance.

The green color intensifies in bright light and is the result of photosynthetic zoochorellae (green algae) or zooxanthellae (dinoflagellates) that

live in a mutualistic relationship with the anemone. I have not seen this phenomenon and must return on cloudy and sunny days to observe it. I took this photograph on October 3, 2010 after a period of very dark gray skies when I would expect to see the photosynthetic components dull in color. [http://www.wallawalla.edu/academics/departments/biology/rosario/inverts/Cnidaria/Class-Anthozoa/Subclass_Zoantharia/Order_Actiniaria/Anthopleura_artemisia.html]

During a -4.1 tide on April 9, 2016 I observe thousands of these burrowed in the sand between the rocks and many of them squirt an arc of water that reaches nearly three feet! I've no explanation for this behavior, as it seems counter intuitive: being out of the water seems that they would need to conserve water, not forcibly extrude it!

Urticina Ehrenberg, 1834

ur-tih-sigh-nuh

Latin *urtica*, nettle; derived from *uro*, to burn + *-ina* Latin, like; hence "like a nettle"

Urticina crassicornis Mueller, 1776, Christmas anemone, mottled anemone, painted anemone, northern red anemone

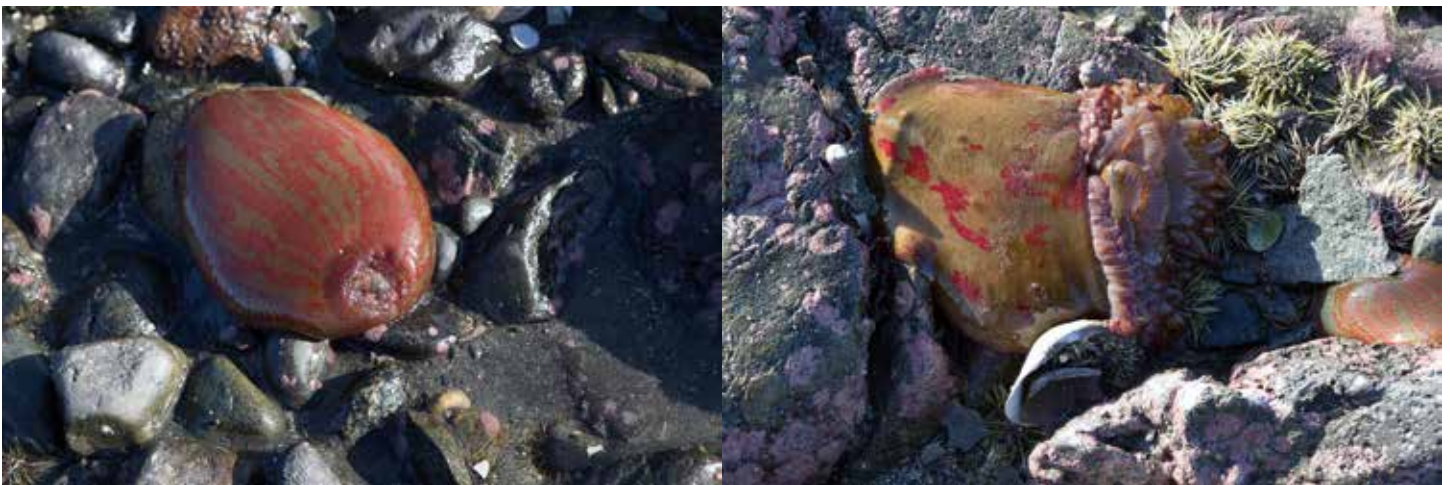
cra-sih-kor-nis

Latin *crassus* thick + Greek *koronis*, curved object; for the tentacles



Juneau gets up to a half dozen days a year with a minus tide of more than 4 feet and lots of folks get out to explore a world otherwise hidden from us. This is apparently one of the most common anemone in SEAK waters, but it took a -4.1 tide for me to discover it! They are considered a subtidal creature, living below the tideline. It takes a big minus tide to expose them. These top two anemone are still completely submerged.

Wandering around Point Louisa on April 9, 2016 was my introduction to these large and floppy anemone, and were almost everywhere. Their diameter can be as large as about 20 cm and grow to a height of 30 cm! Unlike many anemones, the tubercles are not striped and don't accumulate sand. I'm guessing that's due to the depth of water they normally are found in where sand just doesn't move around as much as in the beach zone. Apparently *U. coriacea* does accumulate sand, but I've not encountered that one yet and will have to test my guess when I do.





This anemone requires the buoyancy of water to hold the column upright! When the water flows out, the creatures just flop down. When submerged they fan out their fairly short tubercles, but pull them in when the water is gone. This must be a protective move.

Their large size allows them the opportunity to eat some large prey that includes “crabs, urchins, mussels, gastropods, chitons, barnacles, and fish. ... May feed on stranded jellyfish. The candy-striped shrimp *Lebbeus grandimanus* is a commensal, immune to the sting.”

Cowles, D., ed. 2002 - present. *Invertebrates of the Salish Sea*. Walla Walla University https://inverts.wallawalla.edu/Cnidaria/Class-Anthozoa/Subclass_Zoantharia/Order_Actiniaria/Urticina_crassicornis.html

Their color ranges from mostly red striping with olive mottling to mostly olive with red blotches to nearly uniform yellow-brown as my photographs show. This leads many of us to suspect the brown ones are another species, but they are not.

The bottom right anemone has extended its stomach out of the column. They often completely cover the tubercles when they do this and it escapes me why they might do this at low tide when they are not feeding.

Class Scyphozoa Götte 1887

Order Semaestomeae L. Agassiz 1862

Family Ulmaridae Haeckel 1880

Phacellophora Brandt, 1835

Latin fah-sell-AWE-for-uh, American fay-cello-FOR-uh

Etymology undetermined, possibly from *cellophora*, with tentacles around the disc, something common to virtually all jellyfish

Phacellophora camtschatica Brant 1835, fried-egg jellyfish, egg-yolk jellyfish

kahm-cha-tih-kah

of or pertaining to Kamchatk.



Identification tentative and done through the illustrations found in the *Marine Species Identification Portal* [http://species-identification.org/species.php?species_group=zsao&id=2437] and the photographs at *Key to Invertebrates Found At or Near The Rosario Beach Marine Laboratory*

[http://www.wallawalla.edu/academics/departments/biology/rosario/inverts/Cnidaria/Class-Scyphozoa/Order-Semaeostomeae/Family-Ulmaridae/Phacellophora_camtschatica.html].

Coming off a Whales and Trails water portion on September 25, 2010, I spotted this jellyfish in the waters of Statter Harbor and pointed it out to my folks as we walked up the docks calling it an “inside out jellyfish”. I’ve been trying to remember where I heard that name and when and where I’ve seen this jelly before but can’t come up with anything. It must have been during my time at Humboldt State in Arcata, California. This individual is upside down with the gut the most prominent visible part. I pay particular attention to the eight lobes of the bell, each of which has a single row of 16 tentacles. My photographs can’t resolve close enough to do an accurate count on the tentacles, but each single row does seem to be near that number. The tentacles here are retracted and less than 1.5 cm long but can extend to 6 meters

Phylum Arthropoda Latreille 1829 **arthropods**

Greek ἄρθρον *arthron*, joint + ποδός *podós* foot

Subphylum Crustacea Brünnich 1772 **crustaceans**

Class Maxillopoda Dahl 1956 **barnacles and copepods**

This classification is likely polyphyletic and subject to rearrangement as its members are diverse and share no unifying characters.

Subclass Thecostraca Gruvel 1905 **barnacles, s’ook**

Order Sessilia Lamarck 1818 **acorn barnacles**

Family Chthamalidae Darwin 1854

Chthamalus Ranzani, 1817

K’ THA-mah-lus Etymology undetermined, but the Greek θάλαμος *thamos*, means chamber

Chthamalus dalli Pilsbry 1916, small acorn barnacle, s’ook

Honorific for William Healey Dall (1845–1927), an American naturalist, a malacologist (student of algae), and one of the earliest scientific explorers of interior Alaska



Barnacles appear everywhere on every coastline here. These creatures take any fixed object as a home, and it doesn’t seem to take long for them to do so! Every post, pier and boat surface that stays in the water at Statter Harbor are covered with barnacles, some so thick it’s hard to see the structure. In some places they have to compete with blue mussels, but that mostly appears to be in deeper water. Along shorelines, there is a narrow band where the two intermingle, but the barnacles take the higher tidal zone. As filter feeders, they must be submerged to feed, so they have to choose a place that is underwater for at least several hours a day. In the splash zone they must be able to withstand the severe crushing of waves and be exposed for hours and subject to predation by surfbirds and glaucous-winged gulls. The organic glue they use to affix themselves is amazingly effective at tightly cementing them to the surface. In a meticulous research project, Dickinson and his colleagues from Duke University’s Marine Laboratory in Durham, North Carolina found that the glue of *Amphibalanus amphitrite* works remarkably similar to the clotting action of red blood cells:

The biochemical mechanisms of cement polymerization remain largely unknown. We hypothesized that this process is biochemically similar to blood clotting, a critical physiological response that is also based on aggregation and cross-linking of proteins. Like key elements of vertebrate

and invertebrate blood clotting, barnacle cement polymerization was shown to involve proteolytic activation of enzymes and structural precursors, transglutaminase cross-linking and assembly of fibrous proteins. Proteolytic activation of structural proteins maximizes the potential for bonding interactions with other proteins and with the surface. Transglutaminase cross-linking reinforces cement integrity. Remarkably, epitopes and sequences homologous to bovine trypsin and human transglutaminase were identified in barnacle cement with tandem mass spectrometry and/or western blotting. Akin to blood clotting, the peptides generated during proteolytic activation functioned as signal molecules, linking a molecular level event (protein aggregation) to a behavioral response (barnacle larval settlement).

Dickinson, G.H. et al. 2009. *Barnacle cement: a polymerization model based on evolutionary concepts*. The Journal of Experimental Biology 212: 3499-351.

What I can say from my experience is that try as hard as I might, I've never kicked a live barnacle off a rock! When my son-in-law worked on the U.S. Coast Guard buoy tender Sycamore, they had to use hydraulic shovels, like those used to cut pavement, to scrape the barnacles off the bottom of the buoys.

Family Coronulidae Leach 1817

Coronula Lamarck, 1802

Latin core-oh-new-lah, American core-OWN-you-lah
 considered an "ornament" on the whales!

Scientific Latin *coronula*, ornament on mitre; rim, border on base of basin; apparently con-



There are two species commonly seen on humpback whales that can be identified with a close up examination of photographs. The whales move entirely too quickly to be able to determine in real time unless the whale is extremely close—like 10 meters away

Coronula reginae Darwin 1854, Pacific whale barnacle, *s'ook*

reh-gin-aye Latin *regina*, queen; hence crown

C. reginae has twelve united shell plates of nearly equal size that alternate in a flower-like pattern with one series widest near the top opening and the other widest near the base. This makes it appear to have many small plates and creates a circular in outline. The overall shape is conical and the opening area small when closed.

Coronula diadema (Linnæus, 1767), humpback barnacle, *s'ook*

Latin dee-A-dem uh, American die-uh-DEM-uh Greek “διάδημα” *diádēma*, band; hence crown

C. diadema has a similar pattern but the plates widest near the base are 2+ times wider than the intervening plates making the barnacle look decidedly hexagonal. The sides are nearly vertical, much like a crown and probably explains the uses of “diadem” for the epithet. The opening area is broad, even when closed.

Almost every adult and subadult whale I see has abundant barnacles on its epidermis. First year babies arrive clean, free of barnacles. From what I see, barnacles seem confined to the rim of the lower jaw and descending down the center of the ventral side of the throat away from the pleats; on the ends of the pectoral fins; and, the trailing edges of the flukes. The vertically lunging whale has a particularly large load of barnacles almost encrusting the distal end of the lower jaw. Why don't they seem to attach to the dorsal (upper) surface? Most every gray whale I've seen has abundant barnacles on the dorsal side of the upper jaw. There are abundant whales with circular scars on the ventral (under) side of their flukes from locations where barnacles have attached such as whale number 2070 who has been nicknamed “Barnacles” for this reason. The white fluke shot of an unidentified whale and the breaching subadult show some of the barnacles open with tentacles out.

I have a persistent question about how barnacles actually attach to the whale. The cyprid larval stage is short-lived and it seems its whole function is to find a place to live. Attaching to a whale might provide an advantage to feeding as the whale swims through thousands of miles of ocean feeding on krill that are usually associated with huge plankton blooms, the food of the barnacle. So where do the whales pick up the cyprids and just exactly how to find the whale and attach to its skin? In a very rare experiment with *Coronulus diademata*, Nogata and Matsumura noticed “The cyprids did not settle in normal seawater, but did settle in polystyrene Petri dishes when incubated in seawater with a small piece of skin tissue from the host whale. This strongly suggests the involvement of a chemical cue from the host whale tissue to induce larval settlement.” If so, the cyprids swim to the whale and with their many antennules move about to find an appropriate spot where they then dig into the epidermis head first and attach both physically and chemically. It seems to me that for this amazing feat to occur, the whale must have to swim through a literal dense soup of uncountable larvae for the odds of such a tiny creature to accomplish this task. Anderson notes that cyprids have the ability to assess the suitability of the surface for implanting using texture, chemistry, the color of the skin using and the presence of other similar or identical species in a “complex larval behavior” (p. 219).

From all this, it appears that the whale barnacles have found just a place to call home, but on a host that is an efficient finder of suitable foods. What's in it for the whale? There is no research that I can find that attempts to answer this question, but many speculations are about. When adult male whales enter into sparring contests, or mature females are protecting subadult females, it seems a heavy crust of barnacles about the jaw line and below could do some serious scraping during lunging and bumping, thus providing an advantage to the whales with the largest barnacle coat. It also seems reasonable that this same load would be a very serious impedance to laminar water flow while swimming by dramatically increasing the drag. Among whales, humpbacks are relatively slow swimmers where this might not be of great significance. But in their complex social feeding and mating behavior, the literally “fly” through the water using their massive pectoral fins (their genus name, *Megaptera*, means “big wings”).

Anderson, D.T. 1994. *Barnacles: structure, function, development and evolution*. Chapman and Hall, London.

Nogata, Y & K. Matsumura. 2006 *Larval development and settlement of a whale barnacle*. *Biology Letters*, March 22; 2 (1): 92–93.

Class Malacostraca Latreille 1802, **crabs, lobsters, shrimp, krill, woodlice, scuds**

Order Decapoda Latreille 1802, **decapods**

Greek δέκα *deca*-, ten + πούς / ποδός, *-pod*, foot

Family Cancridae Latreille 1802, **crabs**

Metacarcinus A. Milne-Edwards, 1862

Latin meh-tah-CAR-sin-us, American, meh-tah-car-sign-us

Greek μετά *meta*, changed + Greek Καρκίνος *Karkinos*, crab; originally placed in

Cancer (Latin for crab), it was “changed” to this new genus, the Greek name for crab

Metacarcinus magister (Dana 1852), Dungeness crab, *s'áaw*

MA-jis-ter

Latin *magister*, master or teacher



A common crab in nearly all the waters here, and an important commercial species. Lacking the ability to swim on the bottom of our waters, I'm limited to seeing crabs in pots or restaurants and the very rare one washed up on the beach or caught in a tidepool.

"Dungies", as they are usually called, are easily identified by their broadly oval creamy tan to brown carapace that lacks spines. Their legs are short in proportion to the body unlike king and snow crab. I find nearly all of the crab pots in areas like Eagle Beach where the water is shallow (less than 100 feet) and has a gently sloping sandy to sandy-muddy bottom. I don't find crab pot buoys in the steep underwater canyons. The account in the Alaska Wildlife Notebook series notes "Dungeness crabs foraging behavior coincides with their habitat. These crabs scavenge along the sea floor for organisms that live partly or completely buried in the sand. They are carnivores, and their diet can include shrimp, mussels, small crabs, clams, and worms".

During the summer of 2009 my son-in-law had two crab pots off Boy Scout Beach in waters that are usually near the mixing point of the glacial silt laden Eagle River and the salt water of the Lynn Canal. About every two weeks we'd go out to pull up the pots and every time we had Dungeness. "Keepers" are males with a bottom carapace 6.5 inches or more wide. The common "rule" of fisherman is to use a dollar bill to measure the carapace. The problem is that a dollar bill is 6.125 inches wide so a crab matching that would be illegal. The number of crabs that can be taken varies with the location and the time, so a close review of the current regulations is required to comply with the law.

As far as for eating, this is my favorite crab as the meat has a distinct nuttiness to it giving in more flavor than the kings or snow crab. What one has to do to enjoy this exceptional flavor comes with a great deal of work as the meat is small and in tucked into tiny places. It generally takes us a couple of hours to pick the meat out of a dozen crabs. It is well worth the effort!

Lithodidae Samouelle, 1819, **stone and king crabs**

Lithodes Latreille, 1806

Greek λιθος *lithos*, stone + suffix *-odes*, like

Lithodes aequispinus J. E. Benedict, 1895, golden king crab, golden stone crab

Latin *aequus*, equal, even + Latin *spinus*, thorn; hence spines



The water surface is distorting the view, by the carapace and legs are discernible here. The carapace is about 2 dm across, making it too small for

harvest (it's not in season anyway!). The Juneau area's crabs are on a slow recovery after over fishing and the last two years there has been a short opening for personal consumption only in our waters.

Subphylum Chelicerata Heymons 1901, **horseshoe crabs, scorpions, spiders and mites**

Class Arachnida Cuvier 1812, **spiders and mites**

Greek ἀράχνη *aráchnē*, spider

Order Trombidiformes

Family Eriophyidae Nalepa 1898 **gall mites**

Acalitus Keifer, 1965

a-cah-LIE-tus

etymology undetermined

Acalitus brevitarsus (Fockeu, 1890), alder leaf gall mite

breh-vih-tar-sus

articulations in the true foot

Latin *brevis*, short, small + Ancient Greek τάρσος *tarsós*, flat surface used for drying. In entomology, any of a series of



Bright yellow-green to yellow pustules on the outer edge of alder leaves start showing up in July and are obvious, even to the casual observer. When examined, they are raised areas on the leaf that can be seen and felt. Looking on the underside, a mass of white hairlike fibers, the *erineum*, are under each pustule. The hairs are plant tissue caused to grow the gall by enzymes released by the mite. With a 10 × hand lens, the hairs appear glass-like. I have never seen the mite that causes the gall.

Apparently primarily European, the GBIF map (2020) has only one occurrence in Alaska, on Kodiak Island. The other North American are on the shore of Lake Michigan and Lake Ontario. iNaturalist has 12 records in Alaska, only one in SEAK in Sitka. This leads me to think more work needs to be done as every scientific note I've found is from Europe.

Aculops Keifer 1966

a (as in cat)-cue-lops

Latin *acus*, needle + Middle English *lopp*, cut off; derivation unknown

Aculops tetanothrix (Nalepa, 1889), willow pouch gall, gall mite of willow, willow gall mite

Latin *tetanus*, from Ancient Greek τέτανος, *tétanos*, from τείνω, *teínō*, "I stretch" + Greek τρίχα *thrix*, *trikhos*, hair



Most references I've found simply refer to these as "Eriophyid galls". It took lots of effort to find the genus of mite galls and I'm certain of that level of identification. This gall is common on arctic willows, particularly in Russia. The photographs I've found of the species do not quite match what I see here so the species name is tentative. What fascinates me is that the vast majority of references refer to what I'm seeing, the gall, with precious few giving any information about the actual mite that lives in the gall and causes it to form. Short of sampling some leaves and examining them under a microscope, I'm simply left with yet another puzzle my eye has spotted that my brain can't solve.

At least two species of willow in the outwash plain of the Mendenhall Glacier get this gall, Barclay's (*Salix barclayi*) and Sitka willow (*Salix sitchensis*). They appear in late July but more commonly in August as 3-4 mm long pouches of bright red atop a 0.5 mm white stalk on the upper surface of the willow leaf. In the "sprummer" (spring and summer were the same) of 2013 they appeared on June 27! I've cut into many of them but have never found anything inside with my naked eye or 20 × hand lens. The longer leaves of Sitka willow seem to attract more of the mites as they have more galls per leaf than Barclay's. On the back loop manway from the beach on the Moraine Ecology Trail, there are dozens of chest-high willows with these galls each summer. While there are dozens (if not more) willows on this rather short (about ¼ mile) trail, only a few have these galls. Like the leaf bean gall, the mites seem to be attracted to the same plants and parasitize them to the near exclusion of nearby plants.

Subphylum Hexapoda Latreille 1825 **hexapods**

Class Insecta Linnæus 1758 **insects**

With some 100,000 species described and probably at least that many undescribed just in North America, when you couple that daunting number with my sheer ignorance on the group, the only words to pay attention to on these notes is BEWARE! There are surely very serious mistakes in my attempt to identify these creatures. I have had precious little academic study in insects (and all those were wood destroyers) and must be considered an abject amateur with no authority. What I do have is a good eye and persistence in study.

Order Coleoptera Linnæus 1758 **beetles, shaḡdákḡw**

Family Carabidae Latreille, 1802 **ground beetles**

Scaphinotus Dejean, 1826

Latin ska (as in cat)-FIH-no-tuss, American ska (as in cat)-fih-NO-tuss

Greek σκάφη, *skaphe*, boat + Latin *notus*, known

Scaphinotus angusticollis (Mannerheim 1824), narrow-collared snail-eating beetle

Latin ann-gus-TIH-cull-liss, American ann-gus-tih-CALL-is

New Latin *angustus*, narrow + *collum*, neck, stem; literally "narrow neck"



While examining the dust lichen (the out-of-focus spheres in this photograph) a most spectacular beetle comes wandering about. It's getting late, 7:10 p.m. on August 10, 2012, and I can't get it to slow enough to get a crisp photograph at my 1/50 second exposure. The shiny burgundy elytra (wing cover) is like a jewel, and here, rimmed with dozens of tiny "diamonds". The jet black thorax is heart-shaped and the same length as the cylindrical head bearing two orange eyes. The whole thing is about 1 cm long, not counting the almost equal length antennae. Neat bug! I post this image on BugGuide [<http://bugguide.net/node/view/718630>] and within two hours I get an identification as I had no idea what kind of beetle it is.

Family Chrysomelidae Latreille 1802 **leaf beetles**

Chrysomela Linnæus, 1758

Latin cry-SAW-meh-lah, American, cry-so-MEL-uh

Greek χρυσόμηλον *chrusomelon*, "gold-black"

Chrysomela scripta Fabricius, 1801 , cottonwood leaf beetle (?)

SCRIP-tuh

Medieval Latin *scripta*, to write; in reference to the cream to yellow variable lines that appear like writing on the carapace



While crossing what ecologist Mary Willson has dubbed the Dipper Bridge (upper Steep Creek bridge by the CCC visitor center) on August 7, 2011, I spot some black cottonwood (*Populus trichocarpa*) leaves that are being skeletonized. I immediately suspect some sort of insect and when I look closely they really resemble the larval stage of lady bug beetles. I just got a copy of *Insects and Diseases of Alaskan Forests* and use it to identify what I'm seeing as leaf beetles with a photograph that matches my observation perfectly. Unfortunately, the book doesn't describe the three genera and 5+ species of beetles that do this, so I head to the great Google and look them all up. I have trouble naming this to species, but they are most certainly in the genus *Chrysomela*. The very obvious body segments with four white "knobs" near the head are pretty cool and the six legs that can just barely be seen in the upper third of the body. Bob Armstrong tells me the four knobs are actually glands that release poison!

Every time I cross the Dipper Bridge after seeing these larvae, I look closely at the leaves to see what they are doing. They reduce greatly in number into early September but on September 24, 2011 I find a full adult on the leaves. While I have no knowledge that this is the adult of these larvae, the logic of watching these leaves for almost two months several times a week leads me to conclude that the photograph on the right is the adult leaf beetle. What troubles me about my identification is the rather stout form and lack of long antennae. It may be a very young one. The images I find of *Chrysomela scripta*, which may be the closest match, are nowhere near as dark as this individual is, but the larvae are a very close match. The limits of my entomological experience are reached!

There are at least two species called “cottonwood leaf beetle” and this one is certainly not *C. populi* that also feeds on willows and cottonwoods but has larvae that are the exact opposite in color and adults with bright red carapaces.

Staphylinidae Lameere, 1900, **rove beetles**

Pelecomalium Casey, 1886 (orthographic variant *Peelecomalius*)

peh-leh-co-MAY-lee-um Etymology undetermined

Pelecomalium testaceum (Mannerheim 1843), skunk cabbage beetle

test-A-see-um Latin *testāceum*, covered with a shell



Since I’ve not carefully observed these beetles in the past, on May 6, 2012 I stop at a patch right at the end-of-the-road I find one plant just loaded with the beetles. As soon as I pull the spathe aside, most of them drop to the base of the spathe. I’m not sure if they did that because they lost their foot hold on the vertical surface or did it to get out of my way in a defensive move to find a hiding place. I really think its the latter and they just let go of the surface by pulling in their tiny hooks at the end of their legs. I’m relying entirely on the FNA report for my identification as I’ve no other idea about what the beetle may be.

I find little information beyond the FNA reference which is quoted in many other sources and misspells the genus as *Peelecomalius*. A Google search has my 2009 blog notes as the second entry! They use the FNA misspelling as well. While BugGuide.net has some photographs, they don’t have it identified other than as an “ocellate rove beetle” in tribe Anthophagini and possibly in the genus *Pelecomalium*, a new direction to search. My nomenclature sources do not include it but I find it in a reference from a Kenai National Wildlife Refuge entomology collection [<http://arctos.database.museum/guid/KNWR:Ento:4207>]. With such a widespread plant and presumably common beetle, why is there such a dearth of information?

Another very curious thing, almost every time I pull apart a mature flower of Nootka lupine (*Lupinus nootkatensis*), I find what appears to be the exact same beetle in the keel of the flower! Lupines are thought to be largely bumble bee pollinated, and I see lots of them around the plants, but this beetle is so nearly ubiquitous in the flowers I’m questioning the prime pollinator idea.



Order Diptera Linnæus 1758, Flies

Family Cecidomyiidae, gall midges

Ozirhincus Rondani, 1840

oz-ih-RING-kus Etymology undetermined. Possibly from the Hebrew *uzi*, usually spelled Uzzi or Uzi, the name of several minor characters in Biblical history where the name means “strong, my strength”. Through Greek and subsequent Latin it became Ozi. When combined with *ρυνχός* *rynchos* nose or snout it may mean “large snout”. Some midges have long probosci, tubular mouthparts.

Ozirhincus millefolii (Wachtl, 1884), yarrow flower gall

mill-eh-FOE-lee-eye from the epithet of its common host, *Achillea millefolium*



Taxonomy: First named as *Clinorrhyncha millefolii* Wachtl, 1884. The orthographic variants *Clinorrhyncha*, *Chinorrhyncha*, *Oxyrhynchus*, *Oziorhincus*, *Oziorhincus* are commonly—but incorrectly—used.

Gagné, R.J. 2010. *Update for a catalog of the Cecidomyiidae (Diptera) of the world*. Digital version 1. Systematic Entomology Laboratory, Agricultural Research Service, U.S. Department of Agriculture. U. S. National Museum Washington, DC.

Notes: While on a church hike on the Airport Dike Trail (EVAR or Emergency Vehicle Access Road) on a warm, sunny September 15, 2013 I spot some strange white growths on many of the dried inflorescences of *Achillea millefolium*, common yarrow, and have to investigate. It appears that the developing cypselas (achene-like fruit) was injected with an egg by this midge, resulting in a green, fleshy growth covered with fine, soft, white silky hairs on the outside. Most of the body of the gall has ridges, many of which are slightly twisted. The texture is stiff on the outside but rather fleshy inside. Once my fingernail penetrated the outside, it plunged into the interior easily. The pale green color of the outside continues through the inside tissue. Inside several I found a single bright yellow to golden egg (not shown here). This photograph is representative of those inflorescences so afflicted, with about a third of the stalks having galls and about a third of the fruits in each inflorescence having at least a single gall. The brilliant sun certainly helped me spot this totally new phenomenon for me. I've known this plant for decades and found it almost everywhere I've been that's not xeric and have never seen this sort of gall. I now see it every summer, an example of one of those things one learns to see and then sees all the time!

Since then, I find it every year on the last third mile of the Nugget Falls Trail. In 2020, about a third of the plants had galls on them.

My research has found no image of the adult midge that ultimately grows from the golden egg and remarkably little about most members of the Cecidomyiidae. I've found no reference to the genus *Clinorhyncha* other than it was moved into *Oziorhincus* which contains four species. BugGuide.net has three photos of the midge which has an elongated elliptical abdomen; a rounded thorax about 1/10 the size of the abdomen; a prominent thin neck; an oval head; and, very long (2 × the abdomen) four-section legs.

Rabdophaga Westwood 1847

rab-DAW-fah-guh
midge

Ancient Greek ῥάβδος *rhabdos*, rod, wand + φαγος -phagos, to eat; apparently referring to the mouthparts of the adult

Rabdophaga strobiloides (Osten Sacken, 1862), willow-rose gall midge

strow-bill-OY-dees

Ancient Greek στρόβιλος *stróbilos*, cone + Ancient Greek εἶδος, *eidos*, form, likeness; hence "looks like a cone"



Taxonomy: What began as a family home school project developed into a serious examination of willow rose gall insects by the Boswer family

of Alaska. What most references name *Rabdophaga rosaria* (H. Loew 1850) turns out to be something quite unexpected and unrelated to prior thinking with regard to genetics. My use of the former name was from the work of Collet (2002), a co-author of the Bowser work.

Initially as a homeschool science project, the first four authors collected willow rosette galls from *Salix sitchensis* Sanson ex Bong. and *Salix barclayi* Andersson to determine whether or not these willows were galled by distinct species of *Rabdophaga*. ... We found Alaskan members of the *R. cf. strobiloides* group induced galls on five species of willows in subgenus *Vetrix*, clade C2 of Lauron-Moreau et al. (2015). Our finding that members of this group galled *S. barclayi* and *S. commutata* corroborates the rearing experiment of Collet (2010), who found that midges reared from *S. barclayi* formed rosette galls on *S. commutata*.

Sato, S, K.M., Harris, D.M., Collet, W. Kim & J. Yukowa. 2020. *Genetic variation in intraspecific populations of Rabdophaga rosaria (Diptera: Cecidomyiidae) indicating possible diversification scenarios into sibling species along with host range expansion on willows (Salicaceae: Salix)*. Zoological Journal of the Linnean Society.

Their research was confirmed in 2020:

“We analysed the COI gene of mitochondrial DNA extracted from larvae of *Rabdophaga* (Diptera: Cecidomyiidae) that induce rosette galls on *Salix* in the Holarctic Region. Genetic data show that they belong to species groups of *Rabdophaga rosaria* and *Rabdophaga strobiloides*.

Bowser, M. et al. 2018. *DNA barcoding Alaskan willow rosette gall makers (Diptera: Cecidomyiidae: Rabdophaga)*. Alaska Entomological Society Newsletter 11:1.

My observations of thousands of galls look just like all the other willow roses here, yet when I look at all the photos of galls of *Rabdophaga strobiloides*, they bear little resemblance. One looks like a rose, the other looks like a cone! I'm not sure what's going on. It may be a case of choosing the wrong gene to do markers with, but that is way beyond my experience.

Notes: Willow roses are abundant wherever Barclay's willow (*Salix barclayi*) is found. Each year as I walk the Moraine Ecology Trail I search for the day that I spot the first gall, and yet they seem to appear each year fully formed before I notice them. I always spot them in July as large (1 cm +) reddish swellings of the terminal buds, then expand into their characteristic rose shape by late July or early August, yet I know they appear earlier than I seen them.

The female midge—just 4-5 mm long—lays her single egg in the terminal bud in spring (when?). Some reports indicate there can be many larvae in the roses, but of the several hundred I've cut open, I've found only one in each. The midge probably injects an enzyme along with the egg that, with the physical disturbance, causes the dozen plus leaves in the bud to stop their elongation. The leaves continue to develop resulting in their crowding with fleshy tissue in the shape of a rose.

I always find the golden larvae where the white tissue turns to green inside the gall, but often find discoloration in the outer whorls of the gall leaves that appear to be from the tunnelling of insects, but they seem unconnected to the golden larvae I see. My references illustrate the larvae at the base of the rose, but my observations have always been near the top of the white tissue of the rose. Are they the feeding tunnels of this insect or of other opportunistic species? I can't tell from my dissections. I find the larvae well into September. The larvae apparently pupate and overwinter in the rose which dries and withers and in spring the adult emerges. I find willow roses only on *Salix barclayi*. The white portions of the gall have a pleasant, almost sweet taste with the texture of a not quite ripe pear.

For many years it seemed like all of a sudden the galls appeared out of nowhere. I knew that not to be the case, so began looking at the buds earlier and earlier in the year for signs of gall growth. In 2011 I found a single early gall, but it wasn't until 2019 that my eyes and brain got conditioned to looking for them and found them almost everywhere I looked. This is a good example of how one cannot see what one doesn't know.

While common every year, it seems they have a three year cycle of abundance for willow rose production as something near half of the mature Barclay willow have roses on them in big years and less than a quarter in low years.

Family Culicidae Meigen, 1830, mosquito

Culiseta Felt 1904

Latin coo-LIH-seh-tuh, American coo-lih-SEH-tuh

Latin *culex*, midge or gnat

Culiseta alaskaensis Ludlow, 1906, snow mosquito, *táax'aa*

Of or pertaining to Alaska

Juneau is blessed with a small number of species and small populations of mosquitoes. This is the only species I've been able to identify as it is large (~1 cm long), slow moving and slow to bite so as to be easy to observe. I carry a bottle of lemon eucalyptus insect repellent on most of my hikes and offer it to my guests as they usually always become alarmed by the large size of these bugs. I don't often apply it to myself and have never used a single 4 ounce bottle in a single season! When it does bite me, the resulting welt is small (< 5mm) and short-lived (<3 days) and not

particularly itchy. I encounter this mosquito just about every time I walk the Moraine Ecology Trail, yet not every time on the East Glacier Trail, in July and August.

Unidentified Flies



Unidentified Fly on *Dryopteris expansa*, August 15, 2012



Unidentified fly on *Geum calthifolium* July 22, 2005



Unidentified flies on leaf of *Pinguicula vulgaris* June 19, 2010



Unidentified flies on *Oplopanax horridus* June 6, 2010; and *Solidago canadensis* August 1, 2010



Unidentified—but perhaps *Rabdophaga strobiloides*—on *Salix barclayi* May 19, 2011



Unidentified swarming flies, probably Mayflies, on Steep Creek, September 11, 2011

Order Hemiptera Linnæus, 1758, **true bugs**

Family Aphididae, aphids

Cinara Curtis, 1835, giant conifer aphids

Latin kin-ARE-uh, American sin-are-uh

Latin *cinara*, artichoke or similar plant; reference to this species unknown

Cinara spp. unidentified, aphid on spruce (?)



I spotted this fat and juicy aphid on a young Sitka spruce (*Picea sitchensis*) in the open outwash plain on the bus approach to the Moraine Ecology Trail. The bug is clearly an aphid, but when I go to “Insects and Diseases of Alaskan Forests” find that it is not the Spruce aphid (*Elatobium abientinum*) that can cause severe defoliation like I’ve seen on Point Louisa.

Off to other sources where I’m in unfamiliar territory. I find an amazing resource on aphids from a biostatistics group in London, InfluentialPoints.com. They indicate there are about 500 genera of aphids worldwide! In the genus *Cinara* they include three species that attack spruce, but none match my aphid. I’m pretty sure I’ve got the aphid in the right genus here as the general morphology matches well, particularly with the legs, especially the terminal segment that looks a bit like a “foot”. The big difference is in the waxy coating of the thorax and especially abdomen. My aphid has a very light, but extensive, coating of what I’d describe more as powder than a wax or meal. The *wax-bordered spruce aphid* looks just like its name indicates, and while the right and legs, the wax is nothing like mine. The *mealy spruce aphid* has globules of wax along its side and stripes along the back. The *green-striped spruce aphid* is a dead ringer for mine except that it has absolutely now wax or power and has green stripes!

I do find a species specific to Alaska, *Cinara alaskana*, but the only images available are of microscopic views of juveniles with no way to compare my aphid. There are also *C. sitchensis*, *C. piceae*, and *C. piceicola* that are specific to spruce, but the descriptions I find are sketchy and references are to European and Asian populations, not Alaska. I’ll have to be content with generic ID only.

Order Hymenoptera Linnæus, 1758, sawflies, wasps, bees and ants

Family Ichneumonidae, ichneumon wasps

ick-nee-ooo-mahn

Greek ιχνεύμων *ichneumon*, hunt for, track; used by Aristotle for a wasp that hunts spiders

With at least 3,000 species in North America, identification of these wasps is often just to family where they are generically called “ichneumon wasps”. They are fairly easily identified by their small (<1 cm) size, thin body, and especially the females as their ovipositor can exceed the length of their body. This vast majority of group cannot sting, lacking venom, and simply uses the ovipositor for laying eggs. If one looks very closely, they have antennae with 16 or more segments, more than their relatives.

Scambus Hartig 1838

SCAM-bus

Greek σκαμβος *skambos*, bow-legged

Scambus vesicarius (Ratzeburg, 1844), sawfly

veh-sih-care-ee-us

Derived from the Classical Latin *vesica*, bladder, balloon



While wandering about the Steep Creek platforms on a sunny September 10, 2011 looking for galls on willows, I'm examining the petiole swellings on feltleaf willow. I happen to spot an insect that looks to me like an ichneumon on a vertical stem. It was just about perfect on position for me to prop my elbows on the railing and get some shots with my 100 mm macro lens. I took a dozen or so to yield a couple of useful images.

Mostly black, the red on the legs of this wasp is obvious, as well as the white base of her abdomen, each section with a central black dot. The sections of the black abdomen are marked by pale blue edges. The three section legs arch well out from the body and must be the reason for the Greek genus name. The antennae seem composed of a series of tiny spheres that move ahead of the wasp as it walks. How can they determine if a larvae is in the stem? Is it the sound or vibration of the moving maggot? Can they sense the smell of the larvae and its frass?

The female wasp walked up and down on the stem and periodically inserts her ovipositor into the green portions of the stem and sometimes the galled petioles. She arches her abdomen high and points the ovipositor forward and pushes it in by pushing down with her abdomen. What is it and what's going on with the eggs? It takes just one day of posting these pictures on bugguide.net to get an answer:

Scambus vesicarius (Ratzeburg) is a Holarctic species that oviposits in the galls of *Pontania*, *Nematus*, and *Euura* on *Salix*. According to Walley (in Townes & Townes (1960), the females of *Scambus vesicarius* range from 2.75 to 6.5 mm in body length. I measure the length of this wasp to be 1.4 times the diameter of the twig that it is on. If we knew the diameter of the twig, we would have a good idea of the size of the wasp. Bob Carlson

My research confirms this species is a common predator of two common willow gallers here: "Idiobiont ectoparasitoid, predominantly parasitoid of sawflies prepupae in galls of *Pontania* and *Euura*, but only a few records on *Phyllocolpa*".

Kasparyan, D. R. & J.-P. Kopelk. 2009. *Taxonomic Review and Key to European Ichneumon Flies (Hymenoptera, Ichneumonidae), Parasitoids of Gall-forming Sawflies of the Genera Pontania Costa, Phyllocolpa Benson, and Euura Newman (Hymenoptera, Tenthredinidae) on Willows: Part I.* Entomological Review 89 (8): 933-957

So this wasp might be ovipositing eggs into either species here, but since she is doing this mostly in the stem, it is probably aiming at the larvae of the willow stem gall sawfly, *Euura atra*.

This serendipitous find was the hit of my day and I had to show my pictures to any of our guides who were back at the office when I returned, even though it took several days of research to identify the insect.

On June 17, 2012 at the cliff face of the East Glacier Trail I find exploring the buds of *Parnassia kotzebuei*, Kotzebue's grass-of-Parnassus, is a critter that I don't recognize other than some sort of fly. I take some photographs of it with my 100 mm macro but am obviously paying more attention to getting the photograph than observing the insect. My very shallow depth of field, relative low light and lack of tripod make the photography challenging.

It's only when I start writing these notes that I carefully observe my photograph and recognize it as the same sawfly I spotted last September at the Steep Creek platform at the middle parking lot. There it was using its long ovipositor to lay eggs in the willow. Today the sawfly is simply exploring the unopened flower in what I interpret as an attempt at getting some nectar for food. This doesn't seem to be the best object for laying eggs as this flower is pretty ephemeral and may not be around long enough for the eggs to hatch and larvae develop and pupate into adults.

Family Tenthredinidae, sawflies

Euura Newman 1837

you-ur-uh

Euura etymology undetermined

Euura atra (Jurine 1807), willow stem gall sawfly

AYE-trah

Latin *ater*, black, dark, gloomy



The fall of 2011 is willow gall time and I'm finding thousands of galls all over the willows of the Mendenhall Glacier Recreation Area. With just a little bit of observation, one can find swellings on many willow twigs that are less than pencil thick in diameter. Nearly all are on Alaska or Scouler's willow for this stem gall, and virtually every stem has two or more swellings. The sawfly larvae in the twigs that I've split open and examined have eaten out a hollow area of several inches making the stem hollow like a straw. There are areas of frass, but most of the channel is open and with white wood tissue that seems unaffected by the action of the larvae.

Pontania Costa, 1859, sawflies

pawn-TAN-ee-uh

New Latin, probably referring to Giovanni Pontano (1429-1503), 15th century humanist

Pontania proxima (Lepeletier 1823), willow redgall sawfly, willow leaf bean gall

prox-ih-muh

Latin *proximus*, nearest; referring to where an appendage joins the body



Leaf galls on Barclay's willow start to become obvious in July as yellowish swellings on the upper side of the leaves. As the galls enlarge, they become bright red on the upper side and yellow on the underside and really do look like a bean embedded in the willow leaf. Apparently the female sawfly only deposits one egg per leaf, so when there are multiple galls they represent multiple females who have laid eggs. Some willows seem to be targeted by the sawfly as they can have most of the leaves with galls yet nearby willows have few, if any, galls. I like to think of this as the same phenomenon of fishermen: when one finds a spot, dozens of others join in the same spot hoping for fish!

I've gotten into the habit of cutting open the galls "to see if anyone is home" and nearly always find the larvae as a maggot inside the gall. When young (in late July and August), the larvae are about 5-7 mm long, creamy white with a black head. Six legs in pairs are just behind the head. As the larvae matures it turns dark gray and grows to nearly 10 mm long and 1 mm in diameter. It eats the inside of the gall and fills a good bit of the space with its waste, called frass. At this time the larvae turns a maroon-red color, which I assume is a staining from the frass. When the larvae is mature, it eats a hole just large enough to crawl through and finds its way to the organic layer on the ground, probably by falling. Here it will pupate for the winter and emerge as an adult in the spring. I have only found the leaf bean galls on *Salix barclayi* and both are abundant on the glacial outwash plain of the Mendenhall Glacier. As the season enters September, the larvae enlarge, become grayer. Many holes become

apparent in the galls where the larvae have eaten through to fall to the ground and pupate to overwinter.

Pontania species undetermined, willow petiole gall, willow bud gall



Many casual observers of the willows in the glacial outwash plain notice the swollen petioles of the feltleaf and Sitka willows in the fall. They start out as yellow or greenish-yellow swellings right above the point of attachment to the stem but can turn a plum red color with age. It seems to me that in direct light I find the red ones more in the open than the yellow ones. On September 11, 2011 I was walking on the bus parking lot entrance to the Moraine Ecology Trail looking for willow stem galls. I found a particularly fat specimen and pulled it off the tree. I found that when I could see the side of the leaf sheath closest to the branch, that the bud within was also swollen! So this is both a petiole and a bud gall. When I cut open the swollen bud, I found a maggot that looks—to my untrained eye—very similar to the *Pontania proxima* maggot of the willow leaf bean gall. I'm calling this a *Pontania* for that reason and my observation of the ichneumon wasp *Scambus vesicarius* ovipositing on willow stems seems consistent with them parasitizing this creature.

Family Vespidae, yellow jackets

Dolichovespula Rohwer 1916

doe-lick-oh-ves-pew-luh

Greek δολικός *dolikhos*, long + Classical Latin *vespa*, wasp

Dolichovespula arenaria (Fabricius, 1775), aerial yellowjacket, paper wasp (very generic)

air-eh-nair-ee-uh

Latin *arenaria*, sand-pit; reason for this descriptive name undetermined



With my nearly four decades experience in the southeastern United States, I'm very familiar—occasionally painfully—familiar with yellowjackets as they are abundant. In southeast Alaska I wasn't expecting to find any. Coming upon this paper wasp nest on the Perseverance Trail was a surprise, and seeing yellowjackets crawling about its outside compounded it. The yellowjackets I knew were subterranean, so I thought these might be parasitizing the nest of some other wasp. Not so! It turns out the most common yellowjacket in the Juneau area is this aerial species and this is indeed its nest hanging from a stout branch of Sitka alder (*Alnus alnobetula* subsp. *sinuata*). They look—from this safe distance!—very much like my familiar species (*Vespula maculifrons*, Eastern yellowjacket) with their striking black and yellow alternating pattern.

Unidentified Bees



Unidentified bee on *Sanguisorba canadensis* June 3 13, 2010



Unidentified bee on *Petasites frigidus* May 25, 2010

Order *Lepidoptera* Linnæus, 1758, **moths and butterflies**, moth: *αττα* *át*

Family Geometridae Leach, 1815, geometer moths

gee-oh-meh-trih-dee Ancient Greek γη *geo* or γαία, *gaia*, the earth + Ancient Greek μέτρον *metron*, measure for the “inch worm” measuring of their caterpillars (*τ'úk'x*).

Rheumaptera Hübner, 1822

American rue-MAP-ter-ah, Latin ree-MAH-ter-uh Ancient Greek ῥεῦμα *rheûma*, that which flows, hence mucous discharge + Ancient Greek πτερά, *pterá*, wing

Rheumaptera hastata (Linnæus, 1758) group, spear-marked black moth

hah-stah-tah Latin *hastatus*, armed with a spear



Taxonomy: There are two very similar species best separated by genitalic examination (which I have not done), this and *Rbeumaptera subhastata* (Nolcken, 1870), the white-banded black moth which iNaturalist has no records of in Alaska. The two are probably best considered a “complex” that can’t be resolved further without genitalic examination. That being said, the food sources seem different with *R. hastata* preferring birch (*Betula*) and bog myrtle (*Myrica gale*) and *R. subhastata* alders (*Alnus*). With no birch nearby and bog myrtle being uncommon and only in the subalpine, that may be evidence for my identification. We have alder everywhere! The white seems bolder on *R. subhastata*.

Notes: This moth landed on the vest of one of my hikers at A.J. Falls on July 5, 2012 and is my only sighting.

Family Nymphalidae Rafinesque, 1815 butterflies

Butterflies are not common in the Juneau area (at least by what I see), and when I spot one I usually stop and enjoy the view. While I’m nearly obsessive about the names of most things, it seems I’m pretty content just to look at a butterfly and say “isn’t it pretty!”

Aglais Dalman, 1816, brushfooted butterflies

ah-glay Greek, ἀγλαός *aglaós*, fulgens, shining, radiant, red, in reference to the wing colour of the butterflies (AGASSIZ, 1840)

Taxonomy: Considered by some to be a subgenus of *Nymphalis*

Aglais milberti (Godart, 1819), Milbert’s tortoiseshell, fire-rim tortoiseshell

mill-bur-tee honorific for a friend of Jean Baptiste Godart who named this butterfly



Synonyms: *Vanessa milberti* Godart
 Nymphalis milberti (Godart, 1819)

Notes: I found this lovely butterfly sitting atop a horned dandelion (*Taraxacum ceratophorum*) at the cove beach on the Outer Point Trail May 12, 2020 and had no idea what it was. It is an easy identification with the V-shaped wings, heavy body, short antennae and bold colors. Several references call it quick, just as I found it to be with only two quick grab shots with my camera, and this is a severe crop. It certainly didn’t sit still for me.

Record maps show it as clearly a boreal species, mostly of western North America, always in forested areas. Caterpillar (*tl'úk'x̣*) hosts are nettles (*Urtica*, of which we have *Urtica dioica*, stinging nettle which I've found nearby on the Rainforest Trail. Adults seem to choose any flower with nectar, which this dandelion offers in plenty.

Polygonia Hübner, 1819, anglewing butterflies

poly-go-nee-uh Greek πολύς *polys*, many + γωνία *gōnia*, angle; for all the angles on the wings

Polygonia faunus (W.H. Edwards, 1862), green comma

fah-nus Latin *Faunus*, god of the countryside



So why the name “green comma”? I find no green of any sort on this very cooperative butterfly so it's head to the references to find out. The underside of the wings strongly resembles a decaying leaf and in an outer band of pale are some arcs of green that can look like the punctuation mark. This butterfly never held its wings folded up so I did not see this pattern.

Not knowing butterflies very well, this reminded me of the Gulf fritillary I see along the Florida gulf coast, but the spots are darker and the wings far more ragged and the body much stockier so I had to look it up. Easy identification, even for one who doesn't know butterflies! Host plants are willow and alder which we have in abundance here. The sightings maps in iNaturalist and Butterflies and Moths of North America website confirm this as a boreal species.

This butterfly seemed to enjoy the “warm” (about 55°F) sunny day, keeping its wings open the entire time I enjoyed watching it, something extraordinarily rare for the 2020 summer with only two sunny days and the third wettest summer ever. It flittered ahead of me on the Nugget Falls Trail and landed in the grasses alongside for about ten minutes before flittering away.

Vanessa Fabricius, 1807, brush-footed butterflies

vah-NESS-uh Probably taken from the name of a friend of Fabricius who named the genus

Vanessa atalanta (Linnæus, 1758), red admiral

a-tah-lan-tah Ancient Greek Ἀταλάντη *Atalántē*, balance, but probably for daughter of king Schoeneus and Clymene, famous for her masculine speed and strength as this butterfly is a strong flyer

“red admiral” is apparently a corruption of the 18th century name “red admirable”



While folks are watching salmon in Steep Creek on a sunny, warm August 26, 2015, I spot this rather pretty thing sitting on the leaf of a felt leaf willow (*Salix alaxensis*) and snapped a few shots with my “whale lens”.

Three things about this butterfly catch my eye: first, the mottled colors of brown, than and white, but with that vibrant stripe of orange on the larger forewing; second, the rather moth-like thick and woolly body; and, third, the magnificent antennae that look like a string of tiny beads topped off with a matchstick. With these, I’m able to quickly identify the butterfly. I got the genus right, but not the species where folks from iNaturalist with much more experience than I identified it correctly.

My ignorance is legion with these lovely fliers, but I’m struck by the specific epithet since the only thistles found in our area are very rare introduced weeds. What composite do the larvae eat here? Or, do only the adults appear here with the larval stage eating thistle elsewhere?

Family Erebidae Leach [1815] **tussock moths and many others**

Lophocampa Harris, 1841, tussock moths

low-foe-cam-pah

Greek λόφος *lophos* crest + Latin *Campānia*, a region of Italy in which bronze was produced for the color of the moth

Lophocampa maculata Harris, 1841, spotted tussock moth

ma-kew-lay-tuh

Latin *maculō* for spotted or stained



On a glorious sunny August 15, 2015, my wife and I head out to “the end of the road”, but keep walking on the gated off gravel road that actually ends at the shoreline of Berner’s Bay. As the Sitka alder (*Alnus alnobetula* subsp. *sinuata*) close in on us, we come upon dozens, if not hundreds of these very obvious caterpillars (*l’uk’x*). I immediately call them “woolly bears” as they strongly resemble what I’ve seen uncountable times before. They however a a different character, the long white tufts coming out of the black ends of the caterpillar (*l’uk’x*). This makes me wonder if they are something different, and, submitting the left photograph to BugGuide, I nearly get a reply with the proper identification. This is the first I’ve seen of this caterpillar (*l’uk’x*) in Juneau and it makes me wonder why I’ve not seen it before. Are they subject to population bursts that makes them abundant this year and far less so in my previous years? Or have I simply just missed them. In the years since my guess of “population bursts” seems to pan out as they are extremely abundant in some years and nearly absent in others. Since spotting them the first time, I have seen them every year since. This is a good lesson to be learned: once spotted and identified, you’ll see lots more of them!

Most of the references I check list poplar as a common host (among “deciduous trees” in general) but today they are strictly in the alders. The white hairs give the moth its common name, tussock, for the longer tufts that arise from the black.

I’ve never seen the adult moth.

Family Noctuidae Latreille, 1809, owlet moths, cutworms or armyworms

knok-too-hi-dee From the type genus, *Noctua* + Ancient Greek -ιδης *-idēs*, a patronymic suffix used as a standard ending for insect family names

The second largest family in Lepidoptera with some 1,089 genera and 11,772 species, it is in constant reorganization based upon genetics. Most members have many synonyms that will not be listed here.

Melanchra Hübner, 1820

meh-LAN-krah etymology probably related to Ancient Greek stem of μέλας *mélas*, black for the dark coloration

There are only eight species as McCabe circumscribed this genus but I can find no reference to identify the caterpillars (*tl'úk'x̄*).

Melanchra pulverulenta (Smith, 1888), dark moth

pull-vur-you-len-tah Latin *pulvis*, dust + *-ulentus*, full of, abounding in; hence covered with powder



My first identification was based upon my submission of this photo to BugGuide.net with their curators creating the common name “Unalaska paintbrush caterpillar (*tl'úk'x̄*)” for what was thought to be in the genus *Trichordestra*. Caterpillar (*tl'úk'x̄*) stages are not well-represented in any reference I consult, with the exception of *Trichordestra legitima* (Grote, 1864) that this one bears a very strong resemblance, however I’m some 1,000 miles from the nearest confirmed record of the mostly Eastern North America species.

For this identification, I submitted the image to iNaturalist where Matt Goff of Sitka (gwark on iNat) where he noted “I’ve found a few caterpillars (*tl'úk'x̄*) like these and was able to keep them until they emerged as adults” allowing him to identify the moth.

This is from the dunes of Eagle Beach State Recreation Area.

Family Pieridae Swainson, 1820

pie-ehr-ih-dee Latin *peris*, muse + Ancient Greek -ιδης *-idēs*, a patronymic suffix used as a standard ending for insect family names

Pieris Schrank, 1801, whites, garden whites

pawn-tee-uh

Pieris marginalis Scudder, 1861, margined white

mar-gin-al-is Latin *marginalis*, marginal, for the pale lines on the margins of the wings



For a naturalist who doesn't know butterflies, this is by far the most common one I see in Juneau. Perhaps it is just the obvious white color that makes it easy to spot, but it is also common in gardens and yards and seems to like the open and sunny (when there is sun!) places.

Note the white tip at the extreme end of the antenna; the dark, purplish lines that define the sections of the wings, and the finely feathered ends of the wings. The lines are broader and tan-green on the underside.

References note the host are members of the Brassicaceae, and the two left photos show one on Eschscholtz's hairy rockcress (*Arabis eschscholtziana*).

Family Sphingidae Latreille, 1802 **hawk moths, sphinx moths, hornworms**

Hyles Hübner, 1819

high-lees Etymology undetermined

Hyles gallii (Rottemburg, 1775), bedstraw hawk-moth or Gallium sphinx

gall -ee-eye Etymology undetermined, but possibly from *galli*, for cock



The eight year old boys on a Shepherd of the Valley hike on the Airport Dike Trail (Emergency Vehicle Access Route) on a very sunny and warm September 15, 2013 found this amazing caterpillar (*t'l'úk'x*). They toyed with it in the dirt, but I picked it up to examine it more closely in hand. Most obvious is the single red horn protruding from the antepenultimate body segment. I asked them which end the head was on and they all got it right, but simply from the direction the caterpillar was moving on my hand. BugGuide [<http://bugguide.net/node/view/31976>] makes the note that it feeds of various members of the Onagraceae, notably the common fireweed (*Chamerion latifolium*) in addition to bedstraws (*Gallium*).

Each segment of the caterpillar (*t'l'úk'x*) has two distinct sections. Anterior is a smooth carapace with prominent circular tan spots on the flanks. They are surrounded by a dark brown to black region that lightens as it moves across the dorsal side. Posterior the same carapace has five narrow, rounded ridges that continue across the entire "U" shape. The tan "tail" looks remarkably like the head and has three darker short protuberances. The head and the immediate next segment are a similar tan.

The adult, which I've never seen, is a large (5.5 to 8 centimeters) multi-toned tan moth.

Family Tortricidae Latreille, 1803, leaf rollers

Epinotia Hübner [1825]

eh-pih-NO-tee-uh etymology undetermined

Taxonomy: This is a very large genus with about 166 species, and as currently circumscribed is most likely polyphyletic. In addition there are probably many cryptic species yet to be named. This means identification isn't easy and placing the proper name difficult.

Epinotia solandriana (Linnæus 1758), birch leafroller moth

so-lan-dree-ann-ah honorific for Daniel Solander (1733-1782), Swedish naturalist and student of Carl Linnæus



This identification is based primarily upon the Forest Service guide observations from which this description comes.

Birch leaf rollers have one generation per year in Alaska, and overwinter in the egg stage. Larvae hatch in mid-May to early June and begin feeding in buds and later in leaf rolls. Last instars vacate leaf rolls and pupate in fragile cocoons between the humus layer and the mineral soil. The adults emerge from late July through August. After mating, eggs are laid singly on previous year's twigs, usually on the roughened bud stalks

Holsten, E., P. Hennon, L. Trummer & M. Schultz. 2001. Insects and Diseases of Alaskan Forests. U.S. Forest Service R-10-TP-87

Holsten, E., P. Hennon, L. Trummer, J. Kruse, M. Schultz & J. Lundquist. 2008. *Insects and Diseases of Alaskan Forests*. U.S. Forest Service R-10-TP-140

While native birch (*Betula*) are only rarely found in Juneau and then in the subalpine, we have abundant alder (*Alnus*) and willow (*Salix*), both listed as hosts for this caterpillar (*tl'úk'x̂*). Almost as soon as the Sitka alder (*Alnus alnobetula* ssp. *sinuata*) leaves are fully formed I find lots of rolled-up leaves. They are especially conspicuous on the Trail of Time at the upper bridge as the leaves are at eye level and easily examined. This is where the left photos were taken. The rolling is impressive, like that of a tightly-rolled cigarette and it takes some effort to unroll the leaf without damage. Abundant frass (insect poop) is nearly always in with the caterpillar (*tl'úk'x̂*). The third photo is a roller on Sitka willow (*Salix sitchensis*) on the Moraine Ecology Trail.

It's easy to see that these are the same species of caterpillar (*tl'úk'x̂*), even if the species identification may be suspect.

Phylum Mollusca Linnæus, 1758 **molluscs**

Class Bivalvia Linnæus, 1758

Order Mytiloida Rafinesque 1815

Family Mytilidae Rafinesque 1815

Mytilus Linnæus 1758

MY-til-us Ancient Greek Μύτιλος *Mytilus*, Illyrian king of the Dardanian Kingdom c. 270 – 231 BC; presumably because these are the "food of kings"

Mytilus trossulus Gould, 1850, Pacific blue mussel, northern bay mussel, edible mussel, foolish mussel, *yaak*



Taxonomy: Many guides identify the only mussel of the Pacific coast as *Mytilus edulis* Linnæus 1758. This apparently is the result of considering all the world's blue mussel as this single species. There are now five species of *Mytilus* on the Pacific coast, three in Alaska. *M. edulis* is found along the Pacific, but as an alien, probably from release from commercial aquaculture.

Notes: Wherever one walks on the beach here there will be at least empty shells of the blue mussel. If there are rocks around at just below the high tide line, there will be live mussels. They are ubiquitous. Shells can be found in the woods hundred of yards from the sea in areas well used by people as well as nearly pristine areas. Both people and other animals take these mollusks into the woods to eat. Scoters eat huge amounts of these mollusks: "blue mussels constitute nearly 30 percent of their marine diet—the stomach of one scoter was crammed with 1,100 small blue mussels. Immense rafts congregate in regions supporting extensive mussel beds. Hundreds of thousands winter in the coastal waters off British Columbia alone, and 200,000 scoters could consume about 43 tons of mussel meat daily." [<http://www.virtualbirder.com/vbirder/ibis/SUSC/SUSC401.html>]. Paralytic shellfish poisoning (PSP) is common here so few people harvest them for food.

Saxitoxin (STX) is a neurotoxin naturally produced by certain species of marine dinoflagellates (*Alexandrium* sp., *Gymnodinium* sp., *Pyrodinium* sp.) and cyanobacteria (*Anabaena* sp., some *Aphanizomenon* spp., *Cylindrospermopsis* sp., *Lyngbya* sp., *Planktothrix* sp.). Ingestion of saxitoxin (usually through shellfish contaminated by toxic algal blooms) is responsible for the human illness known as paralytic shellfish poisoning (PSP). In fact, the term saxitoxin originates from the species name of the butter clam (*Saxidomus giganteus*) in which it was first recognized. Saxitoxin, one of the most potent natural toxins known, acts on the voltage-gated sodium channels of nerve cells, preventing normal cellular function and leading to paralysis. [<http://en.wikipedia.org/wiki/Saxitoxin>].

Order Veneroida Veneroida H. & A. Adams 1856

Family Veneridae Rafinesque, 1815

Saxidomus Conrad 1837, butter clam

Latin sax-ih-doe-mus, American sax-ih-do-mus

Latin *saxum*, stone

Saxidomus gigantea Deshayes, 1839, butter clam, Washington clam, money shell, *xéet*'

jie-gan-tee-uh

Greek γίγας gigas, giant

This is the clam in the photograph with the blue mussels, but I don't find it very often. Most clams I'm familiar with like mud, and along our shorelines here that is a rare thing. Is this population a bit more adapted to the rocky shoreline? "It is the commonly harvested clam for food such as chowders in the Pacific Northwest. Aleutian Islands and SE Bering Sea, Alaska to San Francisco Bay, CA (rarely seen S of Humboldt Bay)" [http://www.wallawalla.edu/academics/departments/biology/rosario/inverts/Mollusca/Bivalvia/Veneroida/Veneridae/Saxidomus_gigantea.html]

Order Stylommatophora A. Schmidt, 1855

Family Ariolimacidae Pilsbry & Vanatta, 1898

Ariolimax Mörch 1859

American air-ee-o-LIE-max

Latin are-ee-O-lih-max

Latin *ari*, perhaps "noble" + Ancient Greek λείμαξ *eimax* to Latin *limax*, slug

Ariolimax columbianus Gould 1851, Pacific banana slug



It took more than a decade to find this slug that is considered fairly common. I find this smallish individual (the pocket knife is 5.5 cm long so the slug is about 8 cm) on the Bessie Creek Trail on June 9, 2020. They can reach 26 cm! Being familiar with the yellow banana slug (*Ariolimax californicus*) of the redwoods of California, it was instantly clear that this is a relative. The olive green color with the dark spots are striking and different from any other slug I've encountered. This fellow is incredibly slimy to the touch.

Family Arionidae Gray, 1840, roundback slugs

air-ee-on-ih-dee

From the type genus, *Arion*, from the Ancient Greek Ἄριων *Arion*, moon-creature on high

Unidentified slugs on the Trail of Time. These are much paler and almost beautiful when compared to the invasive garden slugs that are such a problem here in Juneau.

Phylum Echinodermata Klein, 1734 *echinoderms*

Class Asteroidea De Blainville, 1830, sea stars, starfish

Order Forcipulatida Perrier, 1884, sea stars, σ'άχ

Family Asteroiidae Gray, 1840

Pycnopus Stimpson, 1862

pick-no-POE-dee-uh

Greek πυκνός *puknos*, compact; clasped + Greek πούς *pous*, foot, for the many tube feet

Pycnopus helianthoides Brandt, 1835, sunflower seastar

Latin hee-lee-AN-thoy-dees, American hee-lee-an-THOY-dees. *Helianthus*, the genus of sunflower + Greek ὀίδες *-oides*, resembles, looks like



On a science adventure is with folks from the Disney *Wonder* on July 12, 2012, we pull a crab pot from 50 feet deep along the southern shore of Coghlan Island in our continuing monitoring for the European green crab. Today's pull is exceptionally exciting as this creature almost completely fills the crab pot. As soon as I see it I know what it is, but I've never seen this animal before. As I reach in the pot to pull it out I'm amazed at the texture: the thing is very soft, mushy and almost like wet velvet! I'm so used to ochre stars that are hard and stiff, this one is the exact opposite.

The common name fits when I flip the star over and expose its bright orange network of tubes! These allow the star to move along the lower intertidal zone "at the astonishing speed of one meter per minute using 15,000 tube feet" [http://www.nmfs.noaa.gov/speciesid/fish_page/fish6a.html]. "The sunflower star's skeleton has a few disconnected pieces... [allowing]...the mouth to open wide and its body to enlarge and take in big prey. A sunflower star can swallow an entire sea urchin, digest it internally and then expel the urchin's test—its external shell" [<http://www.montereybayaquarium.org/animals/AnimalDetails.aspx?legacyid=497>].

The morning of April 9, 2016 has a predicted tide of -4.1 feet, so I'm out early on the tombolo of Point Louisa. The water level is so low I think the actual tide is lower than predicted. With such low water levels, there are sea creatures everywhere, including several sunflower seastars. Considering how many we find in the crab pots, I was expecting them to be the most common species, but both mottled sea stars and northern sunstars greatly outnumbered them. Their mobility is obviously greatly limited without water!

Gastineau Guiding's citizen science project has provided some amazing information on th

Evasterias Verrill, 1914

ev-ass-tare-ee-ass. ev Old Turkic for dwelling place + Ancient Greek ἀστέρη *astér*, star

Evasterias troschellii (Stimpson, 1862), mottled star, slender-rayed star, false ochre sea star, Troschell's true star, *s'áx* tro-shell-ee-eye. Honorific for German zoologist Franz Hermann Troschel (1810–1882)



When I first pulled a crab pot in Auke Bay and found a “normal” sea star, I called it an “ochre star” based upon my experience with sea stars along the coasts of California and Oregon. It is then no surprise that I find that I learn “this is the most abundant large, intertidal star in the Juneau area” and that it strongly resembles the ochre sea star from further south “but this species has longer rays in proportion to its central disk and the rays narrow before they meet the central disk, and the aboral ossicles are not arranged in a clustering network”. [Rosario Beach Marine Laboratory http://www.wallawalla.edu/academics/departments/biology/rosario/inverts/Echinodermata/Class%20Asteroidea/Evasterias_troschelii.html]

The morning of April 9, 2016 has a predicted tide of -4.1 feet, so I’m out early on the tombolo of Point Louisa. The water level is so low I think the actual tide is lower than predicted. With such low water levels, there are sea creatures everywhere, including what might be the entire color spectrum of this star. These photographs illustrate the long and narrow proportion of the five arms and their color.

Such a wide color variation brings up the obvious question, why? I find an article on *Pisaster ochraceus* that finds essentially no genetic variation up and down the range of the Pacific coast, but does find a correlation of color with food source. Those stars that eat mostly mussels (*Mytilus californianus*) were yellow to brown and those that eat mostly acorn barnacles (*Balanus spp.*) were purple. They conclude “We propose that, although the color polymorphism may have an underlying genetic component, the regional-scale variation in color frequency is ecologically controlled.”

Can this be extended to *Evasterias*? It seems likely to me that it can as we have large amounts of both mussel (*Mytilus trossulus*) and acorn barnacles (*Chthamalus dalli*) here. *Evasterias* is apparently much more of an omnivore than *Pisaster* and eats tunicates in addition to a very wide variety of molluscs. O’Clair and O’Clair observed them eating twenty different species here in Juneau! Point Louisa is rich in a variety of molluscs. Does this varied food source display itself in the color range of the sea star? It seems likely.

Harley, D.D.G., M.S. Pankey, J.P. Wares, R.K. Grosberg & M.J. Wonham. 2006. *Color polymorphism and genetic structure in the sea star Pisaster ochraceus*. The Biological Bulletin vol. 211 no. 3; p. 248-262.

Order *Velatida* Perrier, 1884 *sea stars*

Family *Solasteridae* Viguier, 1878

soul-aster from the type genus, *Solaster*

Solaster Forbes, 1839, sun stars

Latin *sol*, the sun + Ancient Greek ἀστήρ *astér*, star, hence sunstar

Solaster endeca (Linnæus, 1771), northern sunstar, purple sunstar or smooth sunstar

en-deh-cuh Greek *endeka έντεκα*, eleven, in reference to the number of arms



I first learned this star by pulling one up in a crab pot as they normally inhabit the deep intertidal zone down to 475 meters, and are usually submerged. With seven to 13 arms (usually nine to 11) and their bright color, these are easily identified to genus, and this species is the most common in the Juneau area (O'Clair p. 191). When handled, they are remarkably smooth and covered with mucus, which surprised me as the paxillae (upper surface spines) are obvious and with the five-armed stars most of us are familiar with are rough. A character to look for to distinguish this from the morning sunstar (*Solaster dawsoni*) is the paxillae are not differentiated into a marginal series along the arms.

The morning of April 9, 2016 has a predicted tide of -4.1 feet, so I'm out early on the tombolo of Point Louisa. The water level is so low I think the actual tide is lower than predicted. With such low water levels, there are sea creatures everywhere, including what might be the entire color spectrum of this star. While the mottled star may be the most common, today these sunstars greatly outnumber them.

They are easily removed from the rocks as the tube feet are much smaller than the mottled star and don't grab on as tightly. A number of sunstar are turned inside out into a ball with their tube feet and mouth exposed (bottom right photograph), a behavior that I find very curious. My thought is that the upper side is the most protected from predators and exposure, so why would they reverse that?

Class Echinoidea Leske, 1778 **heart urchins**

Order Echinoida Claus, 1876 **sea urchins & sand dollars**

Family Strongylocentrotidae Gregory, 1900

Strongylocentrotus Brandt 1835

stron-gee-low-cen-trus (hard 'g')

Greek στρογγυλός *strongylos*, round + Greek κέντρον *kentron*, a point or spike

Strongylocentrotus droebachiensis (O. F. Müller, 1776), green sea urchin, *nées', y'waash*

droh-bah-key-en-sis

From the Norwegian town *Drøbak* + Latin adjectival suffix *-iennis*, pertaining to, originating in where it was first described



Almost the first organism found in the crab pots are green sea urchin. For a time we had a pot located off Indian Island, where we often found the pot completely full of them, often over 300 individuals! This was my first indication of the abundance of this species that led me to no surprised reaction on April 9, 2016 when I wandered Point Louisa at a -4.1 tide and found areas between the rocks completely covered with them!

Strongylocentrotus purpuratus (Stimpson, 1857), purple sea urchin, *nées', y'waash*

Latin pur-PUR-ah-tus, American pur-pur-ah-tus

Latin *purpura*, purple



This individual is alive, but just barely, when I pick it up to examine. Many of the spines fall off even though I'm very careful. They've lost all their brilliant purple color so the only reason I name it purple sea urchin is the strong purple color of the shell areas around the spine attachment point. The more common red sea urchin (*S. franciscanus*) always has areas of clear red this creature lacks. This species apparently thrives in areas

of strong wave action, something not all that common here.

Phylum Chordata Bateson 1885

Class Amphibia Gray 1825 **amphibians**

Order Anura Duméril, 1806 **frogs and toads, xíxch'**

Family Bufonidae Gray, 1825 **toads**

Anaxyrus Tschudi, 1845 true toads

ann-ax-ih-russ Ancient Greek "ἄναξ, *anax*, "A king or chief" + Latin *rus*, countryside

Anaxyrus boreas boreas (Baird and Girard, 1852), boreal toad, Western toad

bore-ee-us Ancient Greek Βορέας *Boreas*, god of the cold north wind and bringer of winter





Taxonomy: Two subspecies of *A. boreas* are currently recognized, *A.b. boreas*, the boreal toad; and *A.b. halophilus*, the California toad. “Western toad” encompasses both subspecies but is used interchangeably with boreal. This is the only toad in Alaska.

Synonym: *Bufo boreas* Baird & Girard, 1852

Notes: The top left warty fellow was sunning himself in the lower meadow on the Bessie Creek Trail on June 9, 2020. To this date in my Juneau adventures this is the only “frog” I’ve encountered. I hear reports of them being far more common 20 or 30 years ago. The spring of 2020 had reports of “hundreds” or “thousands” of pollywogs (*dúsh*) in the Fish Creek ponds on Douglas Island. On July 28 we headed out and found “thousands” may not have been a large enough number! The Alaska Department of Fish and Game’s note that they are “explosive breeders” is surely in evidence. Just one day short of a month later we find lots of tiny, but fully formed, toads hopping in the trail. When in the grass and other vegetation they are pretty invisible until they move. Only a few are in the water but swim well. It seems most of these small juveniles will remain close to the water for some time, probably to prevent dessication. With our wet habitats almost everywhere, the need for the larger toads to stay close to water is probably far less than other places in their range.

Superclass Osteichthyes Huxley, 1880 **bony fish**

Class Actinopterygii Klein, 1885 **ray-finned fish**

ack-tih-no-tear-ih-gee-eye Greek ἀκτίς *aktis*, ray, thunderbolt, beam + Greek πτερύγιον *pterygion*, diminutive of πτέρυξ *pteryx*, wing, fin; hence “spiny finned one”

The largest class of fish with 15 orders, including the order Perciformes with 40% of all fishes.

Order Scorpaeniformes Greenwood et al., 1966, “**mail-cheeked**” fishes

score-pee-nih-for-meess Ancient Greek σκορπαινα *skorpaina*, scorpene, a diminutive of the Ancient Greek σκορπίος *skorpíos*, scorpion + Latin forma, shape. However, the name ‘could be Latin in origin *scrofa*, sow, probably because of its plumpness

One of the five largest order of fish. With its taxonomy unsettled, it may have as few as 24 or as many as 35 families.

Family Anoplopomatidae Ayres, 1859, sablefish

A family of two monotypic genera.

Anoplopoma Ayres, 1859, sablefish

ano-PLO-poe-mah Greek ἀνα *ana*, up + Greek ὄπλον *oplon*, shield + Greek πῶμα *poma*, -atos, cover

Anoplopoma fimbria (Pallas, 1814), sablefish, black cod, butterfish

fim-bree-ah Latin *fimbria*, fringe



We purchased two large (15 pound) black cod from the F/V Silver Tip at Auke Bay on October 14, 2020. Having eaten this fish a few times, when we saw the sign on Glacier Highway I immediately pulled in to buy some. These fish were caught at 600 fathoms (3,600 feet) in the Gulf of Alaska off Icy Strait. I call them the “cheesecake of the ocean” as the meat is about the richest I’ve eaten and the name “butterfish” is appropriate. The name sable come from Late Latin *sabulum*, meaning black. In the United States the fish can only be sold commercially as “sablefish” with “black cod” being a colloquial name that, unfortunately, is used for other fish species.

Order Pleuronectiformes Bleeker, 1859 *flatfishes, flounders*

Family Pleuronectidae G. Cuvier, 1816

Hippoglossus Cuvier 1817

hip-po-gloss-us Greek ἵπποπό *hippo*, horse + γλῶσσα *glossa*, tongue; presumably from the shape of the tongue

Hippoglossus stenolepis Schmidt, 1904, Pacific halibut, *cháatl*

Latin steh-NAW-leh-pis, American sten-all-eh-pis Ancient Greek στενοσίς *stenosis*, narrowing + Greek λέπις *lepis*, scale or flake

On July Annette, Bess Patrick and I went with Erich White on his boat over to St. James Bay on the Chilkat Peninsula fishing for halibut. Dropping lines with 5 pound lead balls over 500 feet takes a while, and then one just jigs with the line, or today, lets the rocking action of the boat do it for you. We didn’t get a thing, not even a nibble. But many times in July and August when coming in from a whale watch, people were at the cleaning station in Statter Harbor filleting their halibut, some reached the hundred pound mark or more, but most were 3 to 4 feet long and much lighter. I ate halibut many times in many ways, with my favorite being the halibut baked with cheese at Gastineau Guiding’s farewell party at Bob and Dawn’s place. The halibut chips at the Sandbar come in a pretty close second (I just wish they’d give the place a thorough cleaning) as well as Bess’ halibut lasagne.

Order Scorpaeniformes Greenwood et al., 1966 *scorpionfishes and flatheads*

Family Cottidae Bonaparte, 1832 *sculpins, wéix*

Leptocottus Girard 1854

lep-toe-cot-tus Greek λεπτός *leptós*, slender, thin or light + Greek Κοττός *kottos*, a fish, presumably for its caudal end

Leptocottus armatus Girard 1854, Pacific staghorn sculpin, double-ugly

ar-mah-tus Latin *armatus*, armed, for the sharp preopercular spines



Commonly captured in Gastineau Guiding's European green crab monitoring crab pots, this is one amazing fish. Ranging from 20 to 45 cm in length, the body is a dark olive green but may exhibit some striping of yellow and cream to white on the pectoral fins. The head dominates the body and the mouth covers the entire width of the head and can open to mammoth proportions. The eyes are large in proportion to the body and located near the crest of the head but stick out in a bulbous fashion reminiscent of many recent car headlight lenses! What is most remarkable about this fish are the several spines along the trailing edge of the very bony gill plates (preopercular bone) that give the fish its specific epithet. With a fabric mesh net, it is difficult to extricate the fish from the pot as the spines grab and wrap the mesh around them. In a metal mesh pot, they come out very easily. When I reach in to remove them, I place my thumb and middle finger into the gills from the rear so as to avoid the spines (yet they get me at least a third of the time!). As I chase them around the pot with my hand, I'm always amazed at their "drumming", the creation of a vibration including a sound that I can feel and just barely hear. Some sculpin are known to "grunt", but this sound is much more like what I feel and see with the bluestripe grunts I catch in the Gulf of Mexico off Florida's west coast.

Mostly head, I'm often asked if they are edible, to which Captain Annette Smith says, "yes". I've not eaten one as there is just not much there to eat, even on the larger fish.

This fish really lives up to its scientific name as the head is extremely slimy and the gill plates full of spines!

Order Salmoniformes Bleeker, 1859 **salmon, trout, char, freshwater whitefish, grayling**

The order has but one family.

Family Salmonidae G. Cuvier, 1816

Taxonomy: The family currently contains 11 genera, one extinct. This encompasses the whitefish, graylings, lenoks, huchen, charr, trout and salmon. The common names of this family create confusion as some trout are salmon and some charr are trout!

Linnæus named eight species of salmon in his *Systema Nature* in 1758, all in the genus *Salmo* that he also created for them and trout. German naturalist Johann Julius Walbaum (1724 - 1799) revised the genus in 1792 in *Jacobi Theodori Kleinii ichthyologia enodata sive index rerum ad historiam piscium naturalem synonymis recentissimorum systematicorum explicatus* (Index of fish or of things, to the history of James Theodore Klein, made clear to the natural modern systematic explanation) naming 16 species, including all of our Alaskan salmon. He retained them in *Salmo*.

American naturalist George Suckley (1830–1869) in 1853 was appointed naturalist and surgeon for the Pacific Railroad Survey of the 47th and 49th parallels between St. Paul, Minnesota and Puget Sound, Washington accompanying General Isaac I. Stevens. He remained to explore the Washington and Oregon Territories. C.B.R. Kennerly, another railroad surgeon, collected salmon during the Northwest Boundary Survey of 1857-1861. With Kennerly's collections and his own notes, Suckley revised the Pacific Northwest salmon creating a new genus for them, *Oncorhynchus*. Pacific trout, including steelhead, he left in *Salmo*.¹

After a comprehensive morphologic and genetic study of Pacific trout,² all Pacific salmon and trout were combined into the single genus *Oncorhynchus* with 12 to 18 species in 1989.³ Atlantic and European fish remain in the genus *Salmo* with 45 species. *Salvelinus* includes charr, several of which are called trout, and has 56 species with many in North America. Many members of the salmon family can be highly variable which gave rise to a large number of now obsolete or invalid names and synonymy is difficult.

The evolutionary history of Pacific salmon and trout have been studied for decades but there is little agreement about the particulars other than its separation from *Salmo* in the early Miocene with speciation beginning shortly afterwards.

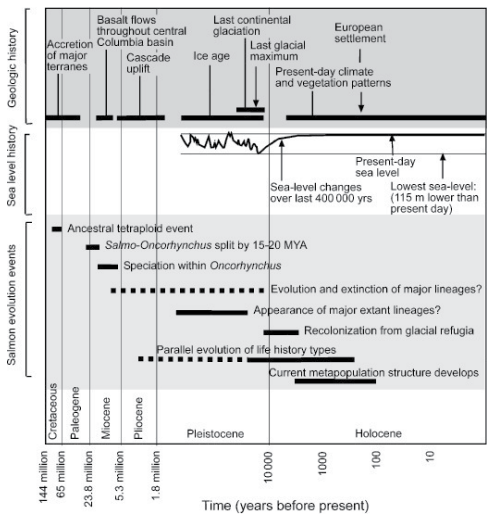


Figure 1. Phylogeny of Pacific salmon proposed by Stearley (1992) showing timing of geologic constraints.

- Suckley, G. 1861. *Manuscript of a report by Suckley on the Salmonidae collected on the Northwest Boundary Survey of 1857*. Smithsonian Institution Archives, Washington D.C.
- Smith, G.R., R.F. Stearley. 1989. *The classification and scientific names of rainbow and cutthroat trouts*. Fisheries (American Fisheries Society) 14 (1): 4–10. doi:10.1577/1548-8446(1989)014<0004:tcasno>2.0.co;2.
- Behnke, R.J. & J.R. Tomelleri. 2002. *Genus Oncorhynchus trout and salmon of North America*. The Free Press. 10–21. ISBN 0-7432-2220-2.
- Waples, R.S., G.R. & T. Beechie. 2008. *Evolutionary history of Pacific salmon in dynamic environments*. Evolutionary Applications 1(2), 189–206.
- Montgomery, D.R. 2000. *Coevolution of the Pacific salmon and Pacific Rim topography*. Geology 28(12), 1107–1110.

Oncorhynchus Suckley 1861, Pacific salmon, Pacific trout

on-co-RING-cus Greek *ὄγκος onkos*, hook + *πυγῶς rynchos* nose or snout

Oncorhynchus clarkii clarkii (J. Richardson, 1836), cutthroat trout, sea run cutthroat, *x'éitaa*

klar-kee-eye Honorific for William Clark (1770–1838), coleader of the Lewis and Clark Expedition, 1803 to 1806 across the newly acquired Louisiana Purchase from St. Louis, Missouri to Fort Clatsop, Oregon

“Cutthroat” refers to a common red coloration at the base of the lower jaw



Taxonomy: Cutthroat trout are native to western North America and have evolved from ancestral stock into 10 to 14 subspecies based upon geographic isolation, each being native to a particular drainage basin that is directly related to the tectonic uplift of the western edge of the North American continent since the Miocene. Being on the saltwater edge, our are the typical anadromous sea run cutthroat.

Notes: Frequently seen in Steep Creek along with the sockeye salmon, it takes careful observation to be able to separate this from Dolly Varden, especially when they're only 12 to 14 inches long. They lack the white margins of the pectoral and pelvic gills. The cutthroat has more spots and they're mostly near the rear of the fish and are larger right at the narrow section of the body just before the tail. They usually have some dark vertical oval patches along the lateral line. The dorsal fin is a bit rounder. They are by far the most skittish fish in Steep Creek and lurk in the cover of the bank only darting out when they think one of the salmon might spawn. They seemed particularly abundant in 2013 at the tail end of the sockeye salmon run in late August and early September. In the very poor salmon run of 2020 they were occasional and the first fish I saw

at Salmon Stop.

Oncorhynchus kisutch (Walbaum, 1792), coho salmon, silver salmon, *l'ook*

KIH-such

Russian Кижуч *Kizhutch* , Russian name for the fish



Out in the open salt water of the inland passage coho begin to arrive in August and by mid-month can be caught by trolling at about 35 feet just about anywhere as the 15 pound fish in the photograph from August 25, 2013 illustrates. Coho are a fall run in the Juneau area and often show up off the docks at Statter Harbor in early September like the photograph of the large school taken on September 1, 2011. They work their way up the Mendenhall River with a significant run up Montana Creek. I've fly fished there, but have never landed a fish. A small number, some 250 to 350, continue up the river and through Mendenhall Lake to Steep Creek when the sockeye run is complete. They gather in the beaver ponds before heading upstream and in late September and early October can often be seen jumping out of the water. Getting a photograph of this is extremely difficult, but I managed this shot on October 7, 2010. When they show up at the middle parking lot salmon viewing platform they are well on their way to the completion their semelparous (death after reproduction) life cycle and die. I've fished the run up Peterson Creek at the Amalga salt chuck but never landed a fish there either.



Douglas Island Pink and Chum (DIPAC) began releasing Taku River coho stock at Sheep Creek in the Gastineau Channel with the fishery opening in 2018. The native run up Steep Creek has been declining like the sockeye and in 2020 was extremely low. We only saw fish one day out of all the days we watched, but October 3, 2020 was a decent day with 8 fish at Dipper Bridge and another 4 at Meadow Bridge. With the poor salmon run, it was good to see the ripped off tail that a bear got, but troublesome for the eggs that need to be laid for future runs.

Oncorhynchus tshawytscha (Walbaum in Artedi, 1792), chinook salmon, king salmon, *t'á*

chah-WIH-chuh Russian Чавыча *Tshawytscha*, Russian name for the fish

When the DIPAC run came in, people were catching these right off the bank on the Gastineau Channel just a few yards north of the hatchery. The May King Salmon Roundup produced a small winner at only 38 pounds. I never even fished for one with my stamp!

Oncorhynchus keta (Walbaum in Artedi, 1792), chum salmon, dog salmon, keta, *téel'*

KEY-tah Eastern Siberian Evenki name for the fish, Kera *keta*. The type specimen is from the Kamchatka River in Siberia
 "Chum" derives from the Chinook (a pidgin trade language of the Pacific Northwest) *tzum*, spotted or marked



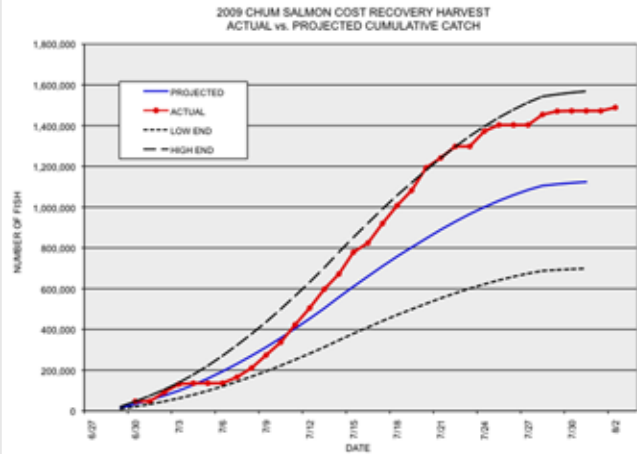
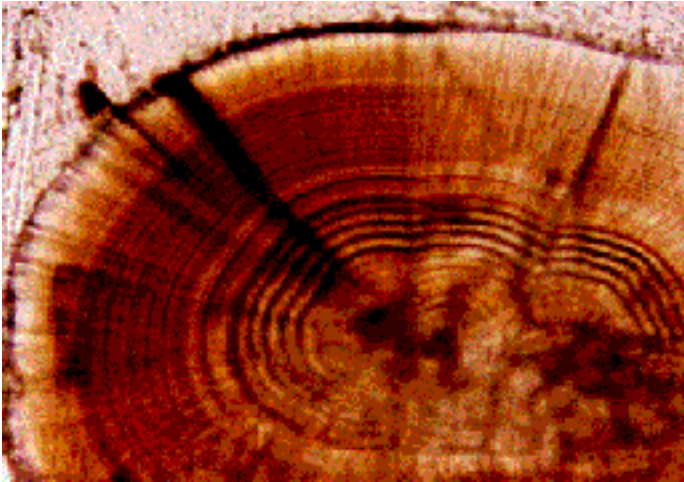
Note that this report only includes my experience from 2009 and will be substantially edited

Chum spend 3 to 5 years in the ocean before heading to their place of birth where they spawn and die. Once they hit fresh water, the blue-green silver turns a tiger stripe of red-purple and green, making them, in my view, the ugliest of all the salmon. The "dog teeth" of the males become grotesque and their heads could be used as a model for a gargoyle. In August the banks of the Gastineau Channel are littered with the carcasses and skeletal remains of the chum salmon.

During their run, every stream entering the channel is lined with Bald Eagles, Raven and our entire assortment of gull species. Salmon and Sheep Creek are sure spots for large numbers of everything. Since Salmon Creek is the major source of water for Juneau, the number of salmon are limited by a weir at the Glacier Highway bridge. This leads to an incredible gathering of fish just the other side as they attempt to enter the river. They get beat up pretty badly and eaten.

Their numbers are nothing short of incredible. Meagan and I stopped at Douglas Island Pink and Chum's (DIPAC) Macaulay Salmon Hatchery

in July just to look at the salmon ladder but the swarming masses in the Gastineau Channel were more amazing. It was impossible to see the surface of the water! If they weren't so slippery, I bet I could walk on the water there are so many of them.



DIPAC released 108,989,466 chum from the Macaulay Salmon Hatchery this year: 35,547,045 in the Gastineau Channel and 43,970,489 in Amalga Bay [http://dipac.net/2009_hatchery_releases.htm]. These numbers are simply huge and chum salmon are everywhere. Some of the boats DIPAC contracts with set up a gillnet right across the Gastineau Channel when the chum are running! I saw from the Alpine Loop Trail one do this completely blocking the channel from Juneau Island to the spit at Snowslide Creek. It sat up shop for over an hour before pulling in the net. Their “cost recovery” contract must allow them lots of freedom to catch fish.

Bess spent a couple of Friday’s snagging chum at Fish Creek on Douglas Island collecting data on stray chum for Alaska Fish and Game. With the huge number released, and the huge numbers that show up at the hatchery, even with fishing many chum wander. Where will the wander, and will they spawn other places? On each of two days snagging, Bess and Scott collected over a hundred chum. The cut the heads off to take to the otolith lab where they’ll be able to identify the origin of the fish as DIPAC uses thermal marking on all their fish. Will the chum displace the native run salmon, or simply coexist with them?

Thermal marking is done by changing the temperature of the water to the otolith with develop distinctive rings.

This is an otolith from a Brood Year 1992 Chum salmon from Macaulay Salmon Hatchery. It is recognized by the pattern of five dark bands close to the center (they resemble a racetrack). This fish is further recognized by an accessory mark of three thin close spaced bands near the edge of the otolith. [http://dipac.net/otolith_photographs.html]

The 2009 chum harvest year was exceptional for DIPAC, 400,000 over forecast for a total of 1,500,000 salmon [http://dipac.net/2009_harvest_season_graphs.htm]. While the actual number harvested was far higher than forecast, the pounds of salmon were right on forecast at 9,500,000 pounds. This obviously means that this year’s fish are smaller than projected. What does this mean? I’m not sure at all. DIPAC’s mission statement:

The goal of Douglas Island Pink and Chum, Inc. is to sustain and enhance valuable salmon resources of the State of Alaska for the economic, social, and cultural benefit of all citizens, and to promote public understanding of Alaska’s salmon resources and salmon fisheries through research, education, and tourism.

Is what they do really “sustaining” the resource? Tough question to ask.

Oncorhynchus gorbuscha (Walbaum, 1792), pink salmon, humpback, humpbacked salmon, humpie, cháás’

gore-boos-kah Russian горбуша *gorbuša*, Russian name of the fish



Note that this report only includes my experience from 2009 and will be substantially edited.

Abundant in Echo Cove in July (photograph from July 26, 2009) and easily caught. Annette and Meagan took a fly fishing class with Brad Elfers at Echo Cove and Bess and Julie fished there several times, so I had to do the same. I caught several and released them, but this male was the biggest and I decided he would be dinner. So about an hour after catching him, he was on the grill at home!

Pink salmon don't smolt and head to the ocean their first spring and spend the next year and a half in the ocean before heading back to their birth waters in July of the second year. With this two-year cycle, two populations of pinks have developed, the odd and even years, and separated by time in the spawning grounds, the two do not interbreed. The eggs hatch from December through January but don't emerge from the gravel until March when they immediately head to the saline waters of the estuaries and fjords where they are at great risk of being eaten. Since each female lays between 1,000 and 2,000 eggs in her redd (from a Scandinavian word for nest) and this being the most common salmon of the North Pacific, the fish relies strictly on great numbers for survival of the species. Bess remains concerned, as the number of pinks caught by commercial fishermen in her section of Stephen's Passage is not as high as it should be, yet NOAA folks claim there is no over fishing of any stock in Alaska.

Ocorhynchus nerka (Walbaum in Artedi, 1792), sockeye salmon, *gaat*

ner-kuh Russain Нерка *Nerka*, Russian name for the fish
 "Sockeye" is an anglicization of the Halkomelem sə́əqəy̓ *suk-kegh*, red fish.





This is the salmon of the summer. When the run started up Steep Creek, I saw them every day. The run seemed to start late. With our very dry summer, the water level in the creeks was very low. At times, it was only about 6 inches deep in front of the first bridge on Steep Creek and it made just a shallow riffle over the gravel. Were the fish waiting for higher water? That's my guess. When they arrived they seemed in smaller number than last year, but there were plenty of them and the bear switched their diets almost immediately as they arrived for feeding.

With brains no larger than a pea or bean, it isn't very likely they have any "higher" thought processing: all is instinct. If we think we have much more, sometimes I think we kid ourselves. Just how does a salmon imprint the chemistry of its birthplace water so as to be able to discern the tiny traces of it out in the open ocean? Just what is going on their brain that tells them "it's time to go home?" Why do some stay in the open ocean for two years, others five and others seven? Why do some head home after only one year in the ocean (we call those "jack" salmon)?

Whatever the answers to these questions are, the salmon do these very things and head home to spawn in the very waters they were born in, then die.

The waters of Steep Creek flow into the Mendenhall Lake and out the Mendenhall River into the Gastineau Channel, and the channel leads through a maze of fjords out into the open Gulf of Alaska. The sockeye have come home, reversing the course they took some five years ago. This year they are late. Our extended dry period has reduced the flow of water in Steep Creek to about half its normal flow and the sockeye seem to have been waiting for the water to rise. One nice rainfall this past week did make the creek rise, and with it the sockeye came in great numbers.

Out in salt water, all five species are bright silver, and this is the prime eating condition for fishing. As soon as they hit fresh water, a huge hormonal change begins and the fish morph into a virtually new creature. The bright silver flanks of the sockeye change into a deep crimson with the section just in front of the tail so bright it seems to need electricity to be so bright. Their heads turn deep green and the males develop a huge overbite with their upper jaw, literally turning into gargoyles of the fish world. These changes occur in as little as 72 hours!

The females seem to come first, and hunt for favored spawning grounds: clear running water with a sand and gravel base. As many come at the same time, there are "girl fights" over the best spots, with the largest and most fit females getting the prime spots. The jacks, being much smaller, get the poorer locations. Once the female has her spot staked and protected, she gets to the business of choosing a male. Many come, most are rejected. What criteria she has for the perfect mate is completely unknown but to her. When she chooses her male, they have a bit of a dance around her spawning spot, and then nearly simultaneously spurt out their eggs and milt. The female quickly buries the freshly fertilized eggs, expertly using her tail to move the sand and gravel. All the while, Dolly Varden Char are lurking, waiting for the moment of expulsion to charge in and devour as many eggs as they can. As this dance has been going on as long as dolly's and salmon have been in these waters, it is a natural process that does not seem to affect the production of salmon. Within about 72 hours, the spawned out salmon die.

The stench is becoming obvious at a distance these days. Dead fish are everywhere. The ones in the water don't emit much odor, it's the fish the bear have caught that smell. With the return of the salmon, the bear have come to enjoy their "second course" of the summer meal. They've been chomping on vegetation, primarily the buds of the black cottonwood (*Populus trichocarpa*) trees, as their "salad course" and now have moved on the "main course" of salmon.

We have a sow with two cubs and several single bears in the Steep Creek spawning grounds. The sow is busy getting her first year youngsters' fat for the winter. Right now she's quite picky as to her salmon and is eating only the brains and belly as her food, leaving the rest for the kids. This means there are many carcasses of only partially consumed salmon littering the grassy banks of the creek. They stink!

The Forest Service has closed the Moraine Ecology Trail to the public and has the Steep Creek viewing area gates closed. This really isn't to keep the bears from the people, but the people from the bears. Really! People do some really stupid things around bears. Our permit with the Forest Service allows us entry into the closed area and we bring our folks back to the visitor center through the viewing area.

I remember bedtime stories my father told my brother and me as kids about "Benny the Beaver" and many included salmon, so I learned the life cycle of salmon at an early age and found it to be very sad. Today I'm no longer sad when I see the dead salmon; instead I marvel at the rhythms and patterns of nature and try to understand them. I tell my folks as we leave Steep Creek that the second half of our adventure—the humpback whales—would not happen without the dead salmon. They form a major part of the food chain for the phytoplankton that feed the krill that feed the herring that feed the humpbacks.

Class Aves Linnæus 1758, **birds**

Latin AH-vehs, American aye-vees Latin avēs, nominative plural of *avis*, bird

Taxonomy: This classification and nomenclature follows the American Birding Association Checklist 7.3, November 2011 with Orders added. Where two common names occur, the first is the authorized and the second a colloquial or former name of the bird that remains in use.

Notes: Before taking a course in Ornithology at Humboldt State, "if it had feathers and flew it's a bird" was the extent of my need to know birds. I lucked into a field lab instructor who was a U.S. Fish and Wildlife researcher on sabbatical who simply loved birds and was so enthusiastic that it wore off on me. We had to keep a field notebook—something I had begun with my first botany class—where we concentrated not only on the name of the birds we saw, but characters that we used to identify them and their behavior. Good training for now a lifetime of field noting. While some become "tickers" that are content to "tick" off the species they see on a list, some of us (while ticking) find the antics of even the most common birds worth observing and enjoying. Chickadees can provide endless enjoyment wherever they may be found. I always stop, at least for a long moment, to enjoy them. I do keep a "life list", actually two: one for continental North America north of Mexico and another for

southern Africa, simply because those are the two areas I've birded.

My first couple years experience in Alaska with birds taught me something I probably knew but the opportunity never presented itself to realize this aspect of knowledge. Long experience provides knowledge one doesn't really "know" until its need presents itself. In the southeastern United States my three decades experience "taught" me when and where I would see birds almost unconsciously so that if someone told me they saw Pine Siskin in July I knew they'd had an exceptional sighting or made an identification mistake. I did the same thing myself in 1979 when I experienced my first Sandhill Crane mass migration flight and identified them as Snow Geese since this was the only thing in thing that I could compare with my experience. It was at least a couple of years before I admitted to my mistake. I've now been in Juneau enough to gain a very small amount of that knowledge that can only be gained by experience and do make mistakes.

Since these notes are based on my experience, they completely omit winter occurrences of all birds since I migrate south.

References:

- Alaska Department of Fish & Game. 2008. *Alaska wildlife notebook series*. Division of Wildlife Conservation, Alaska Department of Fish & Game, Juneau.
- Alsop III, F.J. 2002. *Birds of North America*. DK Publishing, New York, New York.
- American Birding Association. 2011. *American Birding Association Checklist 7.3, 11/2011, 970 species* (taxonomy and names follow this source).
- Armstrong, B. & R. Gordon. 2001. *Birds of Southeast Alaska, an annotated list from Yakutat Bay to South Dixon Entrance*. Alaska Natural History Association, Anchorage.
- Armstrong, R. H. 2008. *Guide to the birds of Alaska, 5th ed*. Alaska Northwest Books, Anchorage
- Armstrong, R.H., R.L. Carstensen, M.F. Willson & M.H. Osborn. 2009. *The Mendenhall wetlands, a globally recognized important bird area*. Nature Alaska Images, Juneau (abbreviated Mendenhall).
- Dunn, J.L. & J. Alderfer. 2006. *National Geographic field guide to the birds of North America, fifth edition*. National Geographic, Washington, D.C.
- Gibson, D. D., S. C. Heintz, & T. G. Tobish, Jr. 2009. *Checklist of Alaska birds*, 15th ed. University of Alaska Museum, Fairbanks.
- Green Mountain Digital. 2012. *Audubon Birds*. <https://itunes.apple.com/us/app/audubon-birds/id333227386?mt=8>
- Jobling, J.A. 2010. *Helm Dictionary of Scientific Bird Names*. Christopher Helm, an imprint of A & C Black Publishers Ltd, London.
- Juneau Audubon Society, 2007. *Birds of Juneau, Alaska checklist*. Juneau Audubon Society, Juneau.
- Juneau Audubon Society. 2002. *Birds of Mendenhall wetlands checklist*. Juneau Audubon Society, Juneau. Abbreviated Mendenhall.
- National Geographic. 2012. *National Geographic Birds for iPhone® and iPod touch®*. <http://www.nationalgeographic.com/mobile/apps/handheld-birds/>
- O'Clair, R.M., R.H. Armstrong & R. Carstensen. 1992. *The nature of Southeast Alaska, a guide to plants, animals and habitats*. Alaska Northwest Books, Anchorage (abbreviated Nature)
- Sibley, D.A. 2003. *The Sibley field guide to birds of western North America*. Alfred A. Knopf, NY.
- _____, 2011. *The Sibley eGuide to the Birds of North America*. mydigitalearth.com
- Terres, J.K. 1980. *The Audubon Society encyclopedia of North American birds*. Alfred. A. Knopf, New York, New York.
- Waite, M. 2012. *iBird Pro Guide to Birds*. The Mitch Waite Group. <http://ibird.com/>

Order Anseriformes Wagler 1831 **waterfowl and screamers**

Family Anatidae Vigors, 1825 **Ducks, Geese, and Swans**

Anser Brisson 1760

ANN-ser Latin *anser*, goose

Anser albifrons (Scopoli, 1769), Greater White-fronted Goose

AL-bih-fronz Latin *albus*, white, pale, fair + Latin *frons*, forehead, brow, face



I occasionally see these birds in late April and May in the freshwater ponds inside the dike along the Airport Dike Trail, but more often out in the salt water ponds. They regularly stop out in the wetlands along the Mendenhall River. Occasionally I'll spot them at Eagle Beach. Their

presence is usually spotty, and only a few to half a dozen birds but occasionally a flock of perhaps a couple of dozen birds. Part of this is surely caused by the heavy construction that has gone on during the summers of 2010 through 2012, dredging out the float plane pond. This goose seems much more skittish than the Vancouver Canada's and won't tolerate this much activity. I most often see them right next to the salt water in the tidal flats which makes me wonder if they prefer this habitat to the more grassy wetlands that the Canada geese frequent. By the middle of May the birds are almost impossible to find as only stragglers on their way to the nesting grounds in the tundra regions north of us. This goose is reliable only for the spring northward migration as they seem to take another route south. They use the Mendenhall Wetlands as a stopover in bad weather or a short feeding stop.

***Chen* Boie, 1822**

Latin ken, American chen Greek χήν *khēn*, goose

***Chen caerulescens* (Linnæus, 1758), Snow Goose**

Latin say-ROO-leh-sens, American say-roo-LEH-sens Latin *caeruleus*, blue, cerulean, dark

In 2009 I have on a single sighting of ten geese in full breeding plumage—gorgeous pure white with jet black wingtips—in the largest freshwater pond along the Airport Dike Trail in keeping with its status in Juneau as “occasional” in spring. This pattern seems no set as this bird is regular in small flocks in the spring. I've yet to see one in the fall yet

***Branta* Scopoli, 1769**

BRAN-tuh Old Norse *Brandgás* burnt (-black) goose to the English word *brent-goose* Latinized to *Branta*

***Branta hutchinsii* (Richardson, 1832), Cackling Goose**

huch-IN-see-eye Honorific for British physician and naturalist Thomas Hutchins (1742?-1790) a surgeon for the Hudson's Bay Company at York Factory, Manitoba



The first cackler's I've seen here were in the shallow waters off Eagle Beach at the picnic area on August 1, 2010. I don't manage to catch a sight of these small ducks on their way through every year, although they are seen here every year. On April 28, 2013 Nick Hajdukovich counted about 200—probably a record number—in the wetlands near the golf course. I went out the next day and managed to find four.

I first learned this as the smallest race of the Canada Goose observing them in the massive migration gathering at Klamath Lakes, Oregon in the late 1960's and early 1970's. Now they are recognized as being a distinct species with a much more northern nesting area while wintering in the Central Valley of California where I've seen them in the Pixley National Wildlife Refuge. The smaller size isn't really a helpful character when observing the bird without its relatives, but the short neck is a good diagnostic tool. All these birds have very short necks, giving them a quite stocky look. Their bills seem smaller in proportion to their head than the Vancouver geese.

Branta canadensis fulva* Delacour, 1951, Vancouver race of the Canada Goose, *t'aawák

ca-nuh-den-sis, full-vuh Of or relating to Canada. Latin *fulvus*, tawny, reddish yellow



On April 26, 2009 I see 51 in a “V” flying north from the beach on the Rainforest Trail for my first sighting of this resident species. They were regular in the freshwater ponds on the Airport Dike Trail through early summer when they left for breeding down on Admiralty Island. The fall return has been very light, with only one or two in the ponds and no flying “v”s. In late summer, as this photograph from August 21, 2010, they are often foraging in the sandy mudflats of Eagle Beach. They often congregate in mid-April along Peterson Creek just upstream from the salt chuck.

Unlike the cacklers, these are a resident goose that does not migrate. Well, not far at least. Our local population has a wandering range that takes them away from Juneau during the nesting period when they reproduce on Admiralty Island. A real curiosity of these geese is that their nests are in trees! This seems a good defense against the large population of brown bear there who would certainly prey on eggs or goslings. They leave the area in May and return in August.

Branta canadensis moffitti (Aldrich, 1946), Moffitt’s Canada Goose, Western Canada Goose

mof-fit-ee honorific for ornithologist James Moffitt (1900–1943)



During migration is the only time I see the “normal” Canada Goose, in this case, Moffitt’s. I see them far more often in the fall as they head toward water, presumably from someplace in the interior of the Yukon or British Columbia to follow the Pacific Coast mountains south for the winter. All of my observations of their V’s have been near our larger rivers like the Mendenhall and Eagle/Herbert, so it makes me think they use them for navigation.

Cygnus Garsault, 1764, swan, gú^hkl’

SIG-nus Greek κύκνος *kuknos*, swan to Latin *cygnus*, swan. Cygnus, the son of Sthenelus king of Liguria, was sorely afflicted by the death of his friend Phaëthon and was metamorphosed into a swan

Cygnus buccinator Richardson, 1832, Trumpeter Swan

Latin buck-KIN-ah-tor, American BOO (or BEW)-sin-aye-tor Latin *buccinator*, trumpeter; proclaimer



When one spots a swan in Juneau, the only thing that can be known for sure—without a close look—is that it is a swan. Both Tundra and Trumpeter Swan can be seen here and without either a practiced eye or a handy field guide with a good look, one better just call it a swan. Sibley’s website includes some excellent head illustrations for separating the two. Even with those, it takes study and careful observation to distinguish the difference. Here are some pointers:

- All black bill (orange interior of the moth shows at times).
- Straight upper bill profile that the head crown matches.
- “V” sharp at forehead-bill meeting above the nostrils.
- Mostly straight bill line from the eye to the mouth where the curve is gentle.

My first Juneau swan was in Moose Lake in the Dredge Lakes area on July 29, 2008 where it was being harassed by a hen Common Merganser who was protecting six chicks.

This bird in the top pair of photographs is a subadult, based on the dingy feathers, particularly on the neck, and the almost mottled bill with black and red where it has both the “grin line” as well as patches that merger to dirty orange over the nostrils. This makes identification even trickier. There are two features visible in both of these photographs that help with my identification. The slope of the bill (especially visible in the closer photograph) is ramp-like smooth and there reasonably clear “V” shape of the forehead.

I spotted it on May 9, 2010 in Twin Lakes while headed north on Egan Drive, so I turned off at Vanderbilt Hill and drove back along Glacier Highway until I got a good spot to get out and take the bird’s picture, but at 200 to 250 meters away.

The lower photographs are from an adult swan in the Rotary Park pond on April 18, 2012 where it cooperated by slowly swimming and feeding in the northern end of the pond, staying close to the islands. In all my views and photographs the eyes seem very distinct, although connected, to the bill. This bird’s bill seems exceptionally long, just under twice the length of the round part of the head. And it is a large swan. I spent about an hour enjoying the bird on a perfectly lovely and warm sunny afternoon.

Aix F. Boie, 1828, Wood Duck, Mandarin Duck

AYE-ks Greek *αιξ* *aix*, unknown diving bird mentioned by Aristotle, presumed to be a duck or small goose

Aix sponsa (Linnæus, 1758), Wood Duck

spawn-suh
(Coues 1882)

Latin *sponsa*, bride; the "Summer Duck" of Catesby (1731); "Prettily applied to this lovely duck, as if the bird were arrayed for bridal"

Until 2016 I'd only seen one Wood duck in the Juneau area and it was flying low over Steep Creek by the dike approach trail in 2009.



2016, a single hen She frequented the Riverside Rotary Park in April of 2016 with the omnipresent Mallard and occasional gull. This female became very tolerant of people and came to the shore to feed on the bread thrown by people. The photo on the top right shows her aggressively threatening the Mallards. Note the teardrop-shaped eye patch and the tuft of feathers at the back of the head. This duck is unmistakable at medium to close range and I've decades of experience with the common woodland bird of the southeastern United States. The Juneau checklist considers them "accidental" and the Alaska checklist "rare" in all seasons. These are exceptional sightings as Juneau defines accidental as "one or two historical sightings".

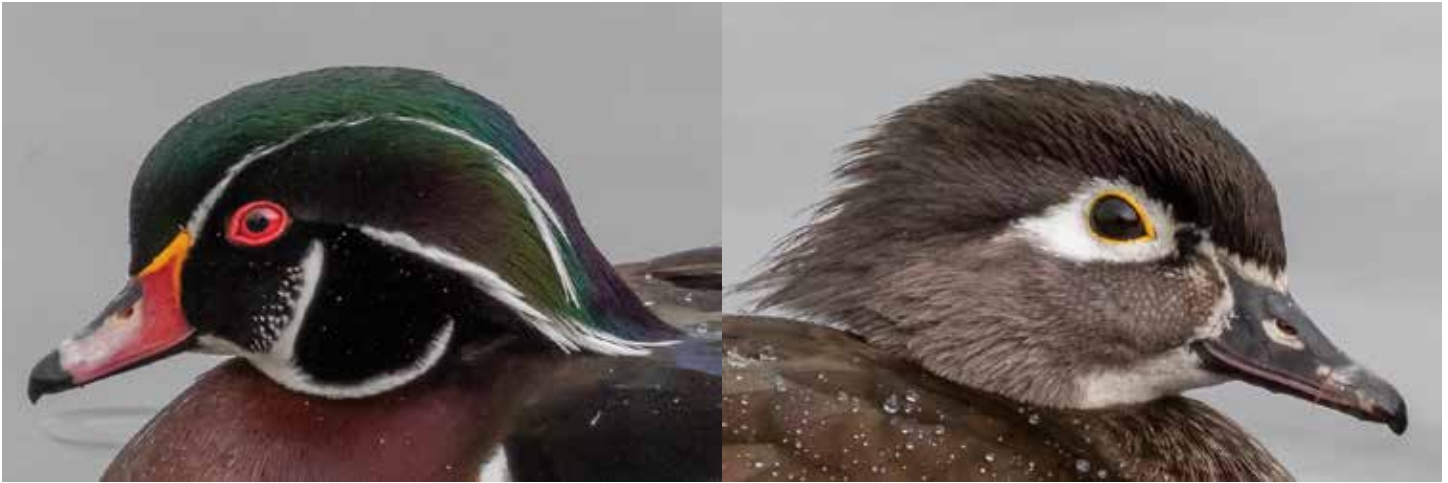


2017, four drakes Nary a hen to be found but these four became best buddies and were nearly always together.



2018, a *drake and a hen* Always paired and this year they spent a lot of time resting in the branches above the water on the pass-through between the islands.





2019, a drake and a hen Always paired like 2018, but they spent less time in close proximity to all the other birds on the pond and were mostly by themselves.

2020, a drake shows up on May 2 and sporadic sightings are reported on eBird to June 8. I did not see this bird.

The idea that this bird is “accidental” and “rare” must now be rejected! If they become regular annual visitors in small numbers they might be called “casual” visitors. It now seems likely with more than five consecutive years of seeing them in the same pond that they should be called “uncommon migrants”.

These sightings just beg the question, “are they the same individuals?” I’ve included face crops to compare to see if they are the same ducks. It’s a hard thing to do, especially with the drakes. The 2018 and 2019 hens share a remarkable similarity of bill patterns, enough to make me highly suspect that they are the same bird. The bill pattern of the 2016 hen is quite different and likely a separate individual. The 2018 and 2019 drakes bills are so similar that I think they are the same bird as well. If so, we have a couple that visited us two years in a row!

Anas Linnæus, 1758, dabbling ducks

Latin AH-nahs, American a (as in cat)-nas Classical Latin *anas*, duck

Anas americana J.F. Gmelin 1789, American Wigeon, baldpate

uh-mare-ih-KAY-nuh Of or relating to the Americas

The origin of the word “wigeon” is lost to obscurity, but its first use in English referring to a duck with a “bald pate” was in 1513.

The old name is very useful for identification as the drakes have a white forehead that continues as a strip across the top of its head making it appear to have a “bald pate” (the crown of the head), but this is usually only clearly visible when the ducks are sitting. Common in spring, absent in summer, occasional in the fall. I’ve most frequently seen them in the Mendenhall Wetlands off Egan Drive but never south of Salmon Creek. This is probably because of the shallow water in the wetlands that fits their dabbling habits. They congregate in large numbers at the Fish Creek Delta on Douglas in spring where their numbers can match that of the mallards (in the several hundreds). When in flight, the white chest, belly and underwing coverts are conspicuous, even with the females (who are otherwise simply a very plain and virtually unmarked duck). The males have a black “ice cream cone” for a butt that contrasts with the white belly, but this takes good light to see.

Anas platyrhynchos Linnæus 1758, Mallard, kindachooneit

pla-tee-RING-kos Greek πλατύς *platus*, flat; spread out ‘flat’; broad + New Latin suffix *-rhynchus*, nose, beak



This is the one duck absolutely everyone knows. At least they know the drake with his deep green head. When it comes to females, it can be a challenge to distinguish mallards from many other dabbling ducks. They are abundant and omnipresent in the Mendenhall Wetlands and the pond at Rotary Park on Riverside Drive (where the portrait photographs were taken on April 18, 2012). Curiously, they are not that common on Twin Lakes which makes me wonder if all the Bald Eagles are a factor. Even though their numbers decline in mid summer, sure to be seen with any good look. Some stay and nest near the ponds at the Mendenhall Glacier Visitor Center most summers and several females raise ducklings. Here a hen has two in Steep Creek in July of 2011. In mid- to late-August their numbers dramatically increase along the tidal mudflats of the Mendenhall Wetlands.

Anas clypeata Linnæus 1758, Northern Shoveler

Latin cly-PEE-ah-tah, American cly-pee-AYE-tah
 shield); referring to the large beak

Ancient Greek κλιπεύς *clipeus*, a large shield, to Latin *clypeatus* shield-bearing (*clypeus*

This is a spring and fall duck in the Channel and in many freshwater ponds, but I saw them once in the beaver lodge pond at the Mendenhall Glacier Visitor Center. The only possible confusion might be with Mallards due to the red, green and white feathers, but any look at the bill will quickly lead to an appreciation of the common name.

Anas acuta Linnæus, 1758, Northern Pintail

uh-CUE-tah Latin *acutus*, sharp, pointed

While listed as “common” in spring and fall in Juneau, my first sighting of this beautiful duck is at Eagle Beach on April 14, 2012 where there are at least a dozen out in the water just beyond the large gathering of mallard. Thinner and more pointed at both ends, they are easily identified.

Anas acuta × *platyrhynchos*, pintail-mallard hybrid

Along with the pintails at Eagle Beach on April 14, 2012, Mark Schwann scans with his spotting scope and comes up with this bird. When I look through, I exclaim “it’s a push-me—pull-me!” The tail end is perfectly pintail and the front almost perfectly mallard. The head is green and neck stout, but the white necklace is incomplete and rises up the back of the neck like a pintail. It’s body shape is almost a perfect 50:50 mix of

the two species.

Anas crecca, Linnæus 1758, Green-winged Teal

CREK-cah

Swedish name for this duck, *kricka*, onomatopoetic, referring to the male's characteristic call

Taxonomy: The circumscription of this teal is complex. The American Ornithological Union and American Birding Association (the authority I follow) consider it in the broad sense with the New and Old World birds in a single species. The International Union for Conservation of Nature (IUCN) and BirdLife International consider them separate.

Anas crecca carolinensis Gmelin, 1789, Green-winged Teal

care-oh-lin-en-sis

of or about the Carolinas (North and South Carolina)



I find the white vertical stripe just ahead of the shoulder against the plain gray flanks and easy character to spot for a quick identification. This small flock of teal at Eagle Beach illustrates that even in poor light and long-distance viewing a positive identification can be made. The cinnamon head and mallard green swoosh are not always visible, but the white stripe is visible in just about any light conditions. Teal are small ducks, so size is another important clue. Abundant in spring and fall in the channel and Mendenhall Wetlands, absent in summer, easily spotted from Egan Drive by their small size.

Anas crecca crecca Linnæus, 1758, Eurasian Green-winged Teal



Eagle Beach, April 14, 2012. A birder with a spotting scope comes up with a single bird with a horizontal rather than vertical stripe. This photograph is an extreme crop, enhanced for distinguishing the vertical and horizontal striping of the two teal. This is a “life bird” for me, but it doesn’t “count” as it is currently not considered a full species by ABA or AOU.

Aythya F. Boie, 1822, diving ducks

eye-THEE-uh or AYE-thee-uh

From the Greek αἰθυῖα *aithuia*, a mythical diving sea bird

Aythya valisineria (A. Wilson, 1814), Canvasback

val-iz-NAIR-ee-uh

Taken from *Vallisneria americana*, wild celery, an aquatic plant favored by the duck

I have only one sighting of this large duck in May on the Airport Dike Trail with six in Otter Pond near the large log and covered bench. This large duck is most handsome and easily spotted, but is not a common bird anywhere in its range and seems to be declining in number.



Aythya collaris (Donovan, 1809), Ring-necked Duck

coal-AIR-is

Latin *collaris*, collar, neckband; chain for neck; of, pertaining to, belonging to neck

On a blustery last day of September 2009 out on Point Louisa, I spotted two long-necked, round-headed ducks in the surf on the Stephens Passage side. With my binoculars, it was an easy identification to this species, one daughter Bess likes to hunt and eat! They are uncommon in spring and fall and rare other times. On a very wet September 7, 2012 I spot a small raft of ten in north Twin Lake. I'm pretty sure of my identification while travelling at 55+ mph on Egan Drive, but I head to Glacier Highway for a closer look and this photograph that confirms I was right.

***Aythya* spp.**, Scaup species

Hotspots: bird survey of the Mendenhall wetlands has a separate category for "Scaup spp." (*spp.* is the abbreviation for species), so I do the same thing. I consider it a wise thing, as distinguishing the greater from the lesser is no easy feat. I use the bump or lack of bump on the back of the head as my main field mark, but this is not always present or visible. At Bob Armstrong's book signing of *The Mendenhall Wetlands* in April of 2009, a young boy of about ten or so offered an extremely confident ability to do this and Bob gently responded, "I need you with me when I see them"! It would be foolish to disagree and most gracious to the young man who illustrated an advanced knowledge of birds simply by knowing there are two scaup. Beware!



Aythya marila (Linnæus, 1761), Greater Scaup

mah-rill-uh

Latin *marila*, charcoal

Greater's can be incredibly abundant in spring, absent in summer and common in the fall. I see them more often in salt water than fresh, and often in the Channel near Lemon Creek. They were absent to my eyes the month of April in 2013 with my first sighting of two pair in Auke Lake on May 6.

Aythya affinis (Eyton, 1838), Lesser Scaup

ah-fih-nis

Classical Latin *affinis*, neighboring, adjacent, next; relation; neighbor; accomplice

Occasional in spring, absent in summer and common in the fall. I usually find these walking the Airport Dike Trail.

Somateria Leach, 1819, Eider

so-mah-tare-ee-uh Greek *σῶμα sōma*, somatos, body + *ερίον erion*, wool; presumably from the very thick down

Somateria mollissima (Linnæus, 1758) Common Eider

mol-lis-sih-mah Latin *mollissimus*, very soft; from the down

My single sighting of this duck is something of a fluke. While heading out on a whale watching trip with Captain Gary and Manager of the Day Gabe Dunham along for a rare day out of the office, not far around the corner of Sand Point off Shelter Island up Saginaw Channel Gabe and I spot a very chunky and large duck sitting in the water. Gary never sees it, but as we make a broad turn just inside of the duck, it simply stays put and rides the waves. Eiders have a very distinctive head profile and for this reason—along with their large size—they are hard to mistake if one knows what an Eider is. As we pass the duck, at about 25 knots, I turn and ask Gabe “Did we just see an Eider?” to which she answers “yes”. I’m glad I had a companion as this is a very uncommon bird in Juneau waters. Ebird has only five sightings of the bird in the Juneau area, one from Outer Point, one from the Mendenhall Wetlands and three from Echo Cove. This paucity of observations makes me suspicious, yet it is difficult to mistake an Eider for any other duck. The only question becomes, “which species?”

Histrionicus Lesson 1828, Harlequin Duck

hiss-tree-on-ih-cuss Classical Latin *histrion*, actor; performer in pantomime, for the wildly colored face as in an actor’s mask

A monotypic genus.

Histrionicus histrionicus (Linnæus, 1758), Harlequin Duck, s’ús’



Their common name derives from the zany and wildly red and black dressed character common in Italian *Commedia dell’arte*, Arlecchino. The drake’s coloration mimics that of the harlequin.

My first life sighting of this duck is at Amalga Harbor on April 12, 2009 where this photograph was taken of a drake and hen. I saw two more on April 26 at Rainforest Trail beach that year. While not common, these ducks are regularly seen in spring but are mostly absent in summer. Only occasionally do I see any in the ponds at the Mendenhall Glacier Visitor Center, and usually in the pond by the road. In late August of 2009 I spotted a female with six chicks in the beaver pond on the Moraine Ecology Trail, all with the prominent white spot behind their eye. I now count on seeing them several times a week during April, with fewer and fewer as summer approaches. There are several places around that I now make sure I take a look at or visit in spring hoping to get a view. Gold Creek between Egan and the end of the cemented channel at low tide when the rocks are visible is a good spot. Lena Cove when there is a stiff north wind and waves form can be a good spot. Amalga Harbor boat launch is always a good spot to check out. Only occasionally do I find any in Twin Lakes out in the Gastineau Channel.

Melanitta Boie 1822, Scoters

meh-lah-nih-tuh Late Greek *μέλας melas*, black + *νήττα netta*, black

Melanitta perspicillata (Linnæus, 1758), Surf Scoter, poor man’s puffin, lak’eech’wú

pur-spih-sill-ah-tah Old Latin for spectacled, conspicuous or spectacular



Almost a resident, this is a bird that can almost be a guaranteed sighting on the channel or in Stephens Passage, often in flocks of a dozen to many dozens much of the year. In spring there can be rafts of hundreds of mixed scoters in the Gastineau Channel as they feed in preparation for their breeding journey to the interior when they pretty much disappear in late May. During July they return and there are often rafts of several hundred of the birds in the Gastineau Channel along Thane Road, especially the shallows just south of the sewage treatment plant. In the fall, their numbers can reach thousands in the waters of Favorite Channel, especially near Eagle Beach. When in breeding plumage they are nearly unmistakable (and being the dominant of our three species the first to think of), but the orange and white can dull enough in the late summer and fall to make them look almost dark enough to be Black Scoters when flying, especially on dark, overcast days. It pays to pay attention.

Melanitta fusca (Linnæus, 1758), White-winged Scoter, lak'eech'wú

FUSS-cuh Latin *fuscus*, dark, swarthy, dusky

A migratory bird here, seen in numbers only in spring and fall. When flying over the water, the white wings flash brilliantly, and with the chunky body, make identification easy. First seen on May 9, 2009 on the Airport Dike Trail, then regularly on boat trips until middle June when they disappear. Our birds apparently head inland into British Columbia and the Yukon Territory for nesting. When in a mixed gathering of scoters in the Gastineau Channel, their white wing patches are the best identification clue, but when next to Surf Scoters their larger size is easily discerned.

Melanitta nigra (Linnæus, 1758), Black Scoter, lak'eech'wú

nigh-gruh Latin *niger*, black, dark; unlucky, hence with the genus name it is black black black!

An uncommon bird in Southeast Alaska, yet they can be seen regularly here in Juneau out on the water in spring and rarely in summer. It takes a good view to identify this species as at a distance it looks just like the common surf scoter. A view of the entirely black head is necessary for sure identification. I have not seen any during the fall migrations. To spot this bird takes effort, meaning one needs to slowly scan an entire flotilla of scoters looking for the smallish birds and then for heads with no markings.

Clangula Leach, 1819

Latin CLAN-goo-lah, American clang-gew-lah Diminutive from Latin *clangere*, to resound

Clangula hyemalis (Linnæus, 1758), Long-tailed Duck, Oldsquaw, *yaa.aanuné*

hi-mal-is Latin *hiemalis*, of winter, moving south in the winter; "snowbird"



On May 1, 2012 I spotted two odd-looking ducks near north Shelter Island and two more at south Shelter. They were too far away and moving too fast to get a good view, other than they were chunky with brown tops and lots of white showing. On May 2 in the morning I spot a couple dozen of the birds, and while we get a bit closer, I still can't really figure out what they are other than they remind me a great deal of Common Eider. Back on the water of south Shelter in the afternoon with a load of Dzantik'i Heeni Middle School kids out for a Sea Week adventure, I get my camera out and snap some shots of the birds as they fly away from the boat as we cruise along. It is only the examination of my photographs that allows me to identify the ducks. In early May of 2013, during some very winter-like weather, I see several small groups on a circumnavigation of Shelter Island and some rafts of a dozen plus near Point Bridget. I see small groups in the area of south Shelter Island on most of my water trips in May. In earlier years I have no record of this duck. Was I just missing it? It's a duck I've known since college days, but perhaps it just slipped "under my radar".

Chunky; all dark and pointed wings; two white stripes down the top side from the shoulder to tail; black back. Their heads differ, as the three birds in my two photographs illustrate. Some are white-capped with a white neck, some brown. The white-capped have a greenish-tan cheek patch that grades to a black to chestnut neck. The forehead is nearly vertical. The white-capped bills are black at the base with a pinkish ring about ¾ the way out to a lighter black at the front of the bill. There is a distinct white eye ring. The chest is black, the belly and rump white. Others are a blah mix of colors but all have at least some semblance of a teardrop shape cheek-eye patch and all black bill, but some show a very slight blue color at the base of the bill. I learn that this duck undergoes a complex three molt process that produces a wide variety of plumage!

***Bucephala* Baird 1858, Goldeneye**

boo (or bew)-sef-uh-lah Ancient Greek βόδι *bōdi*, ox + κεφάλι *kephalē*, head; hence ox-head

Bucephala albeola* (Linnæus, 1758), Bufflehead, *hintakx'wás'gi

Latin al-BEE-oh-lah, American al-bee-OH-lah Latin *albus*, white, pale, fair

The etymology of the common name is somewhat obscure. Fergus (2004, *Wildlife of Virginia and Maryland and Washington*) says "its name derives from 'buffalo-head,' for the male's peculiar puffy head shape." Helm (2010) indicates it derives from "'Buffel's Head Duck' of Catesby (1731); 'these feathers make the head appear bigger than it is, which seems to have given it the name of buffel's head, that animal's head appearing very big by its being covered with very thick long hair.'" It is not clear that Catesby was referring to buffalo.



While this is a common duck in the lower 48, it doesn't seem to be here as I've only seen them a few times each year. My first on April 14, 2009 at Amalga Harbor where three bobbed and dove around the small boats coming in and out of this protected body of water. On May 9 I saw one—yes, only one—in a pond on the Airport Dike Trail. They pretty much disappear in June but return in late September.

Bucephala clangula (Linnæus, 1758), Common Goldeneye

Latin CLAN-goo-lah, American clang-gew-lah

Diminutive from Latin *clangere*, to resound

On April 11, 2011 from the high wall at Statter Harbor I could compare both goldeneyes as a single drake Common was swimming with two drake and three hen Barrow's. This species has a roundish or oval white patch in the lores and extensive white above the flanks on the secondaries with narrow black barring (almost crescents) that can be completely covered with the white feathers at times. This gives the bird a very white look from the water surface to the back.

Bucephala islandica (J.F. Gmelin, 1789), Barrow's Goldeneye, *hinyik gáaxu*

eye-lan-dih-cah

Of or pertaining to islands.



My first observation is on May 7, 2009 in the Gastineau Channel while hiking the Bishop Point Trail with only a few more until mid-May, usually in fresh water ponds, then they disappeared. Two drakes and three hens swimming in Statter Harbor on April 11, 2011 along with a single drake Common provided a clear difference with these drakes having an extended crescent of white in the lores and white barring on black secondaries above the white flanks. The cold spring of 2013 seems to have encouraged the birds to hang around Juneau and delighted me in just about every water I spied from April through much of May. The hens have a yellow-orange bill. This hen on the rock is from June 12, 2011 at the reflection pond on the Herbert Glacier Trail and the drake and hen are in Mendenhall Lake on May 8, 2013.

Lophodytes Reichenbach 1852, Hooded Merganser

Latin law-PHO-dih-tees, American law-pho-DIE-tees

Greek λοφος *lophos*, crest + δύτες *dutēs*, diver (*duō*, to plunge)

A ditypic species, the only other is *Lophodytes floridanus*, only known from Late Pleistocene fossils in Florida.

Lophodytes cucullatus (Linnæus, 1758), Hooded Merganser

Latin coo-COO-luh-tus, American coo-coo-lay-tus

Late Latin *cucullatus*, hooded



A drake and hen pair frequented Twin Lakes in mid-April 2011, often swimming and diving with scaup. The pond by Glacier Gardens at

Mendenhall Loop Road and Mall Boulevard occasionally sports a pair in April. Every time I pass this pond I take a good look.

Mergus Linnæus 1758, Merganser

MUR-gus Latin *mergere*, to submerge; dip, plunge, immerse and applied by the Romans to a waterfowl as *mergus*

Mergus merganser Linnæus, 1758, Common Merganser, *kaax*

mue-gan-zur *Mergus* + Latin *anser*, goose, hence “diving goose”



Moose Lake in the Dredge Lakes area had a female with six chicks in 2008 (photograph). A pair of mergansers had 15 chicks someplace near the Glacier in 2009 and all 15 survived! During August and September I observed mom and the chicks regularly in the beaver pond on the Moraine Ecology Trail as well as the beaver lodge pond on the Mendenhall Glacier Spur Road just before the visitor center. During September, the number of birds diminished with each sighting as the young ones—presumably—headed off for a life of their own. In 2010 one female raised 15 chicks in the same area. I saw her frequently in the beaver pond on the Moraine Ecology Trail and less frequently in the pond by the road. Several times they flew past the beach on the Moraine Ecology Trail as we enjoyed the glacier view. Once the chicks were “emancipated”, the female stayed around and I often found her swimming underwater along Steep Creek right at the fish weir (photograph). The female on the rock is in the flooded dead tree forest pond along Glacier Spur Road.

Mergus serrator Linnæus, 1758, Red-breasted Merganser, *kaax*

sare-rah-tore Latin *serratus*, coin with notched edges; serrated, toothed like a saw; for the serrated edges of the bill

An uncommon bird of the Juneau area, I’ve only seen one female near Amalga Harbor in salt water in May of 2009 and a drake and hen pair in Mendenhall Lake on April 30, 2012 out from Photo Point. These two are floating and diving in the fairly shallow water which makes me wonder if there are some sand lance or salmon smolt in the water that they are feeding on. They’re too far away to see if their hunting is successful and identify the catch.

Order Galliformes Temminck 1820 fowl

Family Phasianidae Vigors, 1825 **Partridges, Grouse, Turkeys, and Old World Quail**

Lagopus Brisson 1760, Ptarmigan

la-go-puss Ancient Greek λαγως *lagos*, hare, + πους *pous*, foot; for the very feathered feet reminiscent of a snowshoe hare

Lagopus lagopus (Linnæus, 1758), Willow Ptarmigan, *x'eis'awáa*



The state bird of Alaska is hard to find here, and the only two I saw were on the Mount Roberts Alpine Loop Trail and Perseverance Trail in June and the *only* reason I can identify them is that were still about a third white. When in summer plumage, distinguishing the ptarmigan from grouse requires a very close look with a good mind remembering the differences, or a field guide in hand. The bill size is one thing to look for, larger on the ptarmigan than grouse.

Lagopus leucura (Richardson, 1831) White-tailed Ptarmigan

Latin LEW-coo-rah, American lew-CURE-uh

Greek λευκος *leukos*, white + ουρά *oura* tail

Dendragapus Elliot, 1864

den-DRA-gah-pus

Greek δένδρον *dendron*, tree + αγαπάω *agapaō* to be fond of

Dendragapus fuliginosus (Ridgway, 1873), Sooty Grouse, núkt, nickname “Boomer”

Latin fuh-lih-GIN (hard g)-owe-sus, American foo-lih-gin-OWE-sus

Latin *fuliginosus*, derived from *fuligo*, soot; lamp-black





This large grouse is very common in the forests and alpine areas surrounding Juneau. Most any spring walk in the woods will include the “boom-ing” of the male sooty’s searching for a mate. I actually “count” on hearing them on every Guide’s Choice hike in May and June. If one attempts to actually spot one, that is another matter entirely. It seems their “booms” are ventriloquial and when following they magically move to a totally different place! When spotted in the woods, they blend in so well as to be nearly invisible as the first photo from the Auk Nu Trail on September 20, 2010 illustrates.

My first encounter with this bird here (they were common in the redwoods when I was in college at Humboldt State) was on the West Glacier Trail was on May 3, 2009 when I heard several but never saw any. My first observation was June 11 on the Mount Roberts Alpine Loop Trail were a female with at least two chicks is underneath the last mountain hemlock (*Tsuga mertensiana*) on a counterclockwise hike of the loop. On June 12, Annette and I come across four hens with chicks on the Dan Moeller Trail, all rather tame and allowing us to approach within 3 meters, as the photograph with the plank trail shows. On September 21, 2016 as I’m finishing the Alpine Loop Trail, our group is met on the trail, right in front of the nature center, by a very tame sooty, pecking in the gravel of the trail. He cooperated for some 20 minutes, posing for many photos. These encounters then give a clue of where best to actually *see* the bird: above treeline!

Order Gaviiformes Wetmore & W.D. Miller, 1926

Family Gaviidae J.A. Allen 1897 **Loons, kageet**

Gavia J. R. Forster, 1788, Loons

GA (as in cat)-vee-uh Latin term for the Smew, another black and white sea duck

Gavia stellata (Pontoppidan, 1763) Red-throated Loon

Latin STELL-lah-tuh, American stell-AYE-tah Latin *stellatus*, starry, starred, set with stars; referring to the “necklace”

Gavia immer (Brünnich, 1764), Common Loon

ihm-mer From the Latin *cavus*, hollow or cave; deep, having deep channel; referring to its diving ability. German *immer*, always

I observed this duck only twice, once in May and on September 22 and 23 (same birds?) off North Douglas Island where two floated about 20

yards offshore. I'm sure they were common as they were large, and had very dark heads with white breasts, distinguishing them from what seems to be the more common Pacific Loon that I did not see.

Order Podicipediformes (Fürbringer 1888) Sharpe 1891

Family Podicipedidae Bonaparte 1831 **Grebes**

Podiceps Latham 1787, Grebes

poe-dih-seps Latin *podex*, fundament, buttocks; anus + Latin *pes*, foot; referring to the far back placement of the feet on the body

Podiceps auritus, Horned Grebe, cháax

ARE-ih-tus Latin *auritus*, with or having ears



My first Juneau sighting was April 26 at the beach on the Rainforest Trail on Douglas Island. The typical grebe look in the water caught my attention and I always have difficulty remembering how to tell horned from eared. Here it's easy, horned is the only one commonly seen other than the very distinctive Red-necked. It remains the most common of our grebes, but is essentially absent in summer and fairly common the rest of the year. That being said, I've only seen them a handful of times in more than a decade. These photos are from the kayak launch just north of Eagle Beach.

Podiceps grisegena (Boddaert, 1783), Red-necked Grebe

grih-seh-geh-nah Medieval Latin *griseus*, grey + Latin *gena*, cheek



April 20, 2012 on Douglas Island Along the stretch of Douglas Highway where it rises just 3 meters above high tide line at the shore, I spot a single bird some 100 meters out. The neck looks short but is showing some red. White cheek patches are widest at the ear, tapering forward and back. The beak is stout and yellow. This photograph is an extreme crop "enhanced" to show these features. This is a new bird to my Alaska life list!

The next day on a Juneau Audubon Society cruise to Berners Bay Up at the end of Slate Cove is a single bird in breeding plumage. I got some

record shots of the bird taking off where the white leading and trailing wing pattern, red neck, white neck and heavy yellow bill are plainly visible. A bit later two more birds fly by and illustrate their characteristic humpback look when flying.

Order Procellariiformes (Fürbringer, 1888)

Family Procellariidae Leach 1820 Shearwaters and Petrels

Puffinus Brisson 1760 Shearwaters

Latin PUFF-ih-nus, American puff-EYE-nus From the English *puffin*, that used to mean shearwater, an unrelated bird

Puffinus griseus, Sooty Shearwater

Latin GRHI-see-us, American GREE-see-us Latin *griseus*, bluish; gray

Observed only once in the open water off south Shelter Island where the bird paralleled the boat and flew with us at about 26 knots. With their very long and pointed wings and cigar-like body, they look quite different from the myriad of chunky gulls I see out on the water every trip. What I noticed first about this bird was the wing beats, long and forceful with each stroke, quite distinct from the gulls. I then raised my binoculars and followed the bird for about 100 yards before it outpaced the boat and went well ahead of us.

Order Pelecaniformes Sharpe 1891

Family Phalacrocoracidae Reichenbach 1850 Cormorants, boob

Phalacrocorax Brisson 1760, Cormorants

Latin phal-uh-CROW-kor-axe, American phal-uh-crow-CORE-axe Greek φαλακρός *phalakros*, bald + κόραξ *korax*, crow; a crow (from its voracity), raven

Phalacrocorax auritus, Double-crested Cormorant

ARE-ih-tus Latin *auritus*, with or having ears, referring to the “double crest” of breeding plumage feathers near the ears



While not a common bird according to the checklists and Mendenhall, I saw them perhaps a dozen times in the downtown area in the same place as the great blue herons, between Gold Creek and the dock. On September 2, 2013 I was surprised to find this single bird on the barnacle encrusted rock on the north end of Little Island. This extreme crop shows the orange gular patch that distinguishes this species from the far more common Pelagic Cormorant.

Phalacrocorax pelagicus Pallas, 1811, Pelagic Cormorant

peh-la (as it cat)-jih-cuss Greek πέλαγος *pelagos*, deep or open sea



2009. On September 8 this became a life bird sighting at the Faust Rock light, sitting in the green portion of the tower. This is a very small cormorant with a thin neck and small head. Very black, but with a strongly iridescent deep blue color to it. The bill today is completely black, the bird is well out of breeding plumage. As we approach to about 20 yards, the bird drops off the light and flaps hard to get flying and heads away from us. I spotted a second bird on September 11 between Portland and Caughlin Islands as we were headed back into Auke Bay. This bird was flying about two feet above the water in the opposite direction. The very skinny neck and small head are obvious field marks for this species when out of the range of the rare Red-faced Cormorant—as we are here. September 12 yields another bird at the Poundstone Rock light. On September 22 three sit on Faust Rock light and a fourth is flying around looking for a landing spot. This bird is obviously more common in the fall than any other time.

2011. The bird is absent! Where are they? It's not until ##### that I finally spot one. I watch the Couglin can where I'm now used to seeing them proves fruitless the entire season.

Order Ardeiformes Wagler 1830

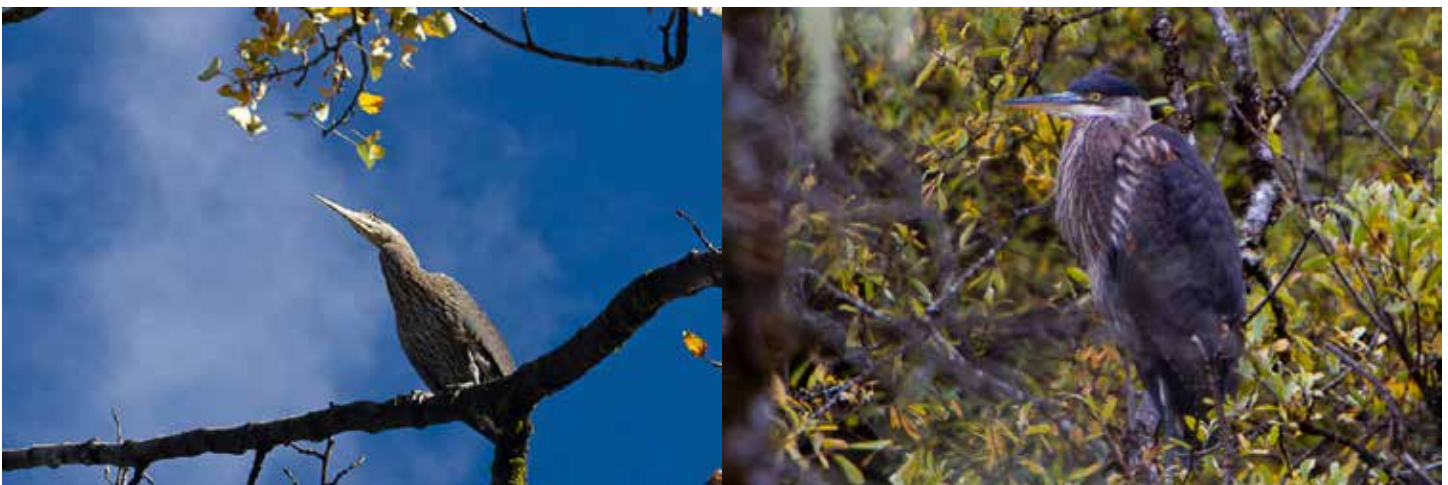
Family Ardeidae Leach 1820 Bitterns, Herons, and Allies

Ardea Linnæus 1758, Herons

ARE-dee-uh Classical Latin *ardea*, heron. In Roman mythology the town of Ardea, capital of the Rutuli, was razed to the ground, and from the ashes rose a lean, pale bird, shaking the cinders from its wings and uttering mournful cries

Ardea herodias Linnæus, 1758, Great Blue Heron, *lax'*

hair-oh-dee-us Greek Ἡρωδίας *Herodias*, a woman of the Heodian family; presumably from its resplendent plumage



Apparently with a rookery and roosting site somewhere near Cope Park, these long-legged, long-necked waters show up regularly in the tide flats between Gold Creek and the dock, most often in the late afternoon or evening. On August 15, 2009 two juveniles in very brown plumage fed at Lemon Creek and another single juvenile at the beaver pond at the Mendenhall Glacier Visitor Center, all three with much white showing in the chin area. On a sunny October 4, 2010, a very tame bird perched directly over the Steep Creek fish and bear viewing walkway for an unusual view of this large bird. On September 9, 2011 a bird sat in the willows of Steep Creek just off the dike approach trail allowing a portrait through the bushes.

Nycticorax Moehring 1758, Night Heron

nick-tih-core-axe Greek νυκτικόραξ *nuktikorax*, bird of evil omen mentioned by Aristotle, Hesychius and other authors, probably a sort of owl, but long associated with the night heron (Greek νυκ *nux*, *nuktos*, night; κόραξ *korax*, raven); Latin *nycticorax*, night raven

Nycticorax nycticorax (Linnæus, 1758), Black-crowned Night-Heron

August 12. On my way home in the late afternoon, crossing Lemon Creek on Egan Drive, the BCNH is sitting on the sand at the west end of the bar just before the bridge on the north side of the river. He sat there in his characteristic hunched-over posture, facing away from me with his black back contrasting well with his light front and the black crown plainly visible. I knew immediately this is an unusual bird. The Mendenhall Wetlands checklist has it as casual or accidental for spring and summer, Bob Armstrong's *Guide to the birds of Alaska* lists it in the accidental section and *The Mendenhall Wetlands* bird lit has it as 1-9 in May and unknown small numbers in summer. I emailed Bob with my sighting and he responded that it has been "5 or 6 years since one has been seen here". I ran into Bob on the Alpine Loop Trail on 09-04 and he told me he found "my bird" in the area between Egan and Glacier Highway and "now there are two of us the birders here think are crazy!" This seems to be an exceptional sighting as I've been asked to provide as many details as I can to two of the "big" birders in southeast Alaska, Gus van Vliet of Auke Bay and Steve Heinl of Ketchikan for a possible occurrence not in North American Birds.

Order Falconiformes Sharpe 1874

Family Accipitridae Vieillot 1816 Hawks (shaayáal), Kites, Eagles, and Allies

Aquila Brisson, 1760, true eagles

ah-quill-ah Latin *aquila*, eagle

Aquila chrysaetos (Linnaeus, 1758), Golden Eagle

Ancient Greek χρῦσός *chrūsós*, gold + ἄετός *æetós*, eagle

I've only seen Golden Eagles twice, both times of Thane Road below Gastineau Peak. Both appeared to be adult birds who were soaring below the tops of the mountains but well above me near the shoreline. Their feathered legs were visible in my binoculars and on banking away from me in their circling, the golden neck was visible.

eBird has 142 sightings of Golden Eagles in Juneau in every month but January. They are rare but regular here and cannot be expected. This is probably due to their preference for open country, not the heavily forested mountains here. Above timberline is open and the birds presumably are flying there from the interior of the continent. We do have an ice field between us and the much more open forest of British Columbia, so most probably turn around and head to more favorable habitat.

Haliaeetus Savigny 1809, Sea Eagle

Latin hah-LEE-ee-tus, American hal-ee-EE-tus Greek ἀλιέτος *haliaietos*, osprey, sea-eagle. New Latin for sea-eagle

Haliaeetus leucocephalus (Linnæus, 1766), Bald Eagle, *ch'áak'*

lew-co-SEH-fuh-lus Greek λευκός *leucos*, white + κεφάλι *kefali*, head



I am recognized among Gastineau guides for the phrase "If you don't see a Bald Eagle in Juneau, you didn't get out of bed". With more than a decade of experience in Juneau, I maintain that statement as being "factual". Just walking outside my house I have a better than 50% chance of

seeing one and if I add in hear one the odds are closer to 75%. Bald Eagles are ubiquitous here, the same way Rock Pigeons are in most cities of the world. They are found singly and in groups. A gathered group of them is called a “convocation” (along with other terms I don’t find as common: aerie, congregation, jubilee, soar, and tower) and just driving on the road system one has a good chance of seeing one of these, even when the salmon are not running.

Many gather in the cottonwood (*Populus trichocarpa*) at the Mendenhall Glacier Visitor Center area (left photo) especially in the fall when there are dead salmon ready for the picking. The western shoreline of Statter Harbor at low tide is a great place to see large numbers of eagles regardless of the time of year (right photo). Salmon Creek is prime eagle viewing during the chum salmon run. If one must be 100% percent certain of seeing one, Capitol Disposal Landfill (better know as “the dump”) is the place. I several to many Bald Eagles on every water trip, especially in Saginaw Channel. They often sit atop the Faust Rock Buoy (marked FR) and the Poundstone Rock Buoy (marked PR).



The eBird bar chart of Bald Eagles is basically a thick line from January to December! The only seasonality appears to be a small rise with the fledging of juveniles during the summer. Curiously, the number of sightings just barely drops in the late fall and early winter when several thousand Bald Eagles show up along the Chilkat River in Haines (about 80 miles northwest) for the last coho salmon run of the season. It seems our birds have plenty of food here.

Juveniles



With the large number of eagles in Juneau, we have ample opportunity to see young eagles. It only take 10 to 14 weeks for an eaglet to reach full adult size and fledge. Juveniles go through up to five distinct annual molts that makes it possible for a trained eye to estimate the age. Each year the molt results in a more organized color arrangement. They all have unfeathered legs and yellow feet unlike juvenile Golden Eagles.

First year birds have a very random mix of light and dark feathers over the entire body but look very dark, a nearly black bill and dark irises.

Second year birds have a breast with lots of white feathers and the bill is mostly black but with yellow gape, the tail is mixed with light tan and dark brown feathers but much lighter than the dark band at the tip.

Third year birds are beginning to have color zones but still look mottled and the bill is usually pure yellow; tail lighter but with the tip band

Four-year old birds have a dark brown body with white head with scattered brown feathers. The tail is mostly light to nearly white with an

indistinct but easily visible tip band.

In a convocation with mixed ages, juveniles often appear larger than the adults. This is due to their ~15% longer flight feathers which presumably helps them get their large bodies out of the nest aloft on fledging. Juveniles are on a search for their own territory and can fly hundreds of miles. Birds fledged in California have been found in Alaska and Florida in Michigan!

Adults



After their fifth molt in their fifth year the birds are full adult with the pure white head and tail and very dark brown body feathers. Their wingspan is 6 to 7.5 feet (182 cm-229 cm). Weight of Alaska birds (up to 18 pounds, 8 kg) can be more than twice that of Florida birds (6-8 pounds, 3-4 kg)!

Sexual Dimorphism



While the sexes are identical in plumage they are not in size. Some sources call it “reverse” sexual dimorphism as the female Bald Eagle is larger than the male. Ho much larger is an unsettled number as I find references for 25%¹ to 33%². Stallmaster³ found their beak depth and hallux

(toe claw) length, show the greatest separation in sexes using study skins. My general sense of the difference for the birds here is less than 25%, which makes it difficult to judge sex with single birds. When sitting as a pair (as in these photos), the size difference is discernible.

The pair on day marker 1 have been named “Gertrude and Heathcliff” by Flip Nicklin who observes them from his balcony regularly.

¹ Watson, J. 1998. *Journey North*, website of the University of Wisconsin. <https://journeynorth.org/spring1998/inexpert/EagleAnswer.html>

² del Hoyo, J., A. Elliott, & J. Sargatal, eds. 1994. *Handbook of the Birds of the World Vol. 2*. Lynx Edicions, Barcelona ISBN 84-87334-15-6

³ Stalmaster, M. 1987. *The Bald Eagle*. Universe Publishing, NY. p. 16

Eating



Most everyone knows Bald Eagles are fish eaters and that they are found in habitats with lots of fish. Steep Creek has two salmon runs a year, July and August for sockeye and late September and October for coho (silver). Eagles take advantage of each with the one on the left looking for a fall coho on October 21, 2018. It didn't find one in the creek but it found a carcass in the grass and scavenged on it. Salmon Creek is a major feeding ground for eagles and gulls when the chum salmon return. The mature eagle on the right is feeding on the carcasses of spawned out chum that have already been picked over by other birds.

Eagles are both predators and scavengers. They are opportunistic and take advantage of anything available, be it a fish, a duck, or a squirrel. Eagles are not picky eaters, they'll eat anybody's leftovers, rotting carcasses, or a fresh catch. While out on the water I usually find them fishing for herring, a fish they can easily grab with their talons and eat in flight. There are usually several eagles about and more often than not there is a bit of an aerial fight for the fish, and more often than not the bird that caught the fish keeps it to eat. They will take salmon, but their large size makes it much more difficult for them. I've watched two eagles dive to the water, talons out and end up in the water, pulled by a salmon that didn't want to get caught. Both times the salmon won as the eagle seemed more concerned about regaining flight.

Bald Eagle Stories

Airport Pests! In May of 2009 on a sunny afternoon walk on the Airport Dike Trail, I counted 37 eagles in what must have been a thermal over the mouth of the Mendenhall River. While on that walk, I kept hearing shotgun blasts. When I returned, I found a man with a USDA logo baseball cap unlocking the gate to go into the runway area of the airport with a shotgun leaning against the fence. I just had to ask him what sort of job he had with a shotgun at the airport. He works for Animal and Plant Health Inspection Service (APHIS) in their Wildlife Damage Management division and was shooting pyrotechnics from his shotgun to scare the eagles away from the north end of the runway as the planes were taking off in that direction. He showed me the box of shells he used and I told him they certainly were loud.

I then just had to ask him about the “salmon story” as if anyone could verify it, he would be the most likely that I've ever encountered to know the “real” story. He knew before I finished the question what I was asking and told me that, while it was before his time, the best he could tell the story is true. There is an account of it called “Salmon Three Salmon” by Mac af Uhr written in Airways Magazine that details the account [http://www.airwaysmag.com/channels.html?article_id=78&channel_id=7]. Eagles and other birds have been a problem for Juneau International Airport for many years.

Sad day for a merganser chick. At the Moraine Ecology Beach on May 19, 2011, our “resident” Common Merganser hen had 14 chicks that hatched and stuck with her well into summer. She ventured out from Steep Creek into the lake and swam in front of us about 10 yards out. A mature Bald Eagle had been sitting atop a Sitka spruce a bit to the west of us and was paying lots of attention to this parade of mergansers. It took off and flew to an iceberg about 50 yards of and sat on its highest prominence and continued to watch. As we waited to see what would happen, the bird took off and did three enlarging circles rising higher, with its eyes focused on the mergansers. All of a sudden it made a dive to the water but the hen spotted it and began flapping her wings frantically as the chicks swam as close to her as they could get. The talons out swoop came up empty and the eagle retreated to the iceberg. Just a few minutes later the entire scene repeated, but this time the parade was heading back toward Steep Creek at a rapid pace. The eagle's swoop snagged the last chick and it carried it to the iceberg and we watched it tear the

little thing apart to eat. The hen and the rest of her chicks made headway to the cover of Steep Creek.

How does one react to this? With my 20 folks it was generally, “wow, that’s nature at work” but there is a certain amount of grizzled resignation about it. In the animal part of nature, it works largely on killing to eat. Watching the kill isn’t easy as most of us tend to feel for the victim, and at least hope the end is swift. It’s one of those things we vividly remember. Unfortunately I didn’t have my camera with me that hike.



Defensive Arctic Terns. Every year Arctic Terns show up to mate and nest along the shoreline of Mendenhall Lake. Since their nest is barely more than a scallop in the sand, there is little to protect the chicks from predators which include ravens, crows, Steller’s Jay, dogs and Bald Eagles. Since I’m at the glacier almost daily, I’ve watched the terns protect their chicks many times. It is difficult to photograph, but these show a tern attacking an eagle in flight. The terns have a very sharp beak and could probably do some harm with it, but I’ve never seen a tern actually touch the eagles. They fly above the eagle then dive bomb it repeatedly. The juvenile eagle with the three right photos finally takes refuge from a 30 minute attack on June 14, 2017 in a cottonwood tree, but the tern continues its swoops toward the eagle.

Circus de Lacepède 1799, Harrier

Latin KER-cuss, American SIR-cuss Greek κύρκος *kirkos* circle, circler, from a mythical hawk, and its circling flight pattern. Old Latin name for a harrier

Circus cyaneus (Linnæus, 1766), Northern Harrier, marsh hawk

sigh-ANN-ee-us Latin *cyaneus*, dark blue; sea blue; dark sky blue; in reference to the head of the male (which to most people is gray)



The name “harrier” might come from the Middle English *hayrer* as a small hunting dog. Since the bird is usually seen hunting, the extension of the name to the bird seems plausible if not probably. The former name “marsh hawk” is particularly appropriate for the Mendenhall wetlands.

This is one of those birds that even the slightest glance provides enough information to identify. A largish bird (substantially larger than the thousands of gulls that frequent the area), it has long wings that it uses to soar low over the wetlands. They are held in a dihedral, a shallow “V” and, somewhat like vultures (absent here), teeter along the axis of the body. They have a long tail in proportion to the body. This is reported to be a common bird in the Mendenhall Wetlands, but with my nearly uncountable drives up and down Egan along them, I very rarely see a bird out there. In 2009 I only had two sightings of this bird, in early May a single large female over Lemon Creek, and on September 19 a single gray male in nearly the same place but flying in the opposite direction. Each spring I seem to spot more of them. These photographs are from April 29,

2013 on a day when three birds are actively hunting over the wetlands north of the Mendenhall River. This is a female, told by the brown mantle and wings. Both sexes have an obvious white rump easily visible when flying.

Accipiter Brisson 1760, Goshawks, Sparrowhawks

Latin ahk-KIH-peh-tur, American ah-SIH-peh-tur
to its ability to grab birds in flight

Latin *accipiter*, hawk; flying gurnard derived from *accipere*, to take, grasp, receive referring

Accipiter striatus Vieillot, 1808, Sharp-shinned Hawk

stry-AYE-tus, stree-aye-tus Latin *striatus*, grooved, streaked, striped

I had a single sighting of this bird in May of 2009 from the Mount Roberts Alpine Loop Trail, the bird was flying toward the Silverbow Basin with its characteristic accipiter flap-flap-glide flight pattern. This set the pattern for my sightings for this resident species that I only spot a few times a year. They pretty much disappear in summer. On April 20, 2013, a large female put on a fabulous show for a group of us on a Juneau Audubon walk at Fish Creek Delta. It did its flap-flap-soar flight a bit above tree-top level flying right by us heading south. The bird was in perfect light and the orange barring on the breast simply glowed. The white rump patch was like a headlight! While hiking to the adit of the Nugget Creek flume in July of 2014 a pair of sharpies cried loudly at us, dropping down into the forest and darting through the trees in a bit circle around us. This certainly made me think they have a nest nearby, but despite all my searching in the dense forest, so such thing was visible.

Falco Linnæus, 1758, Falcon

fall-co, fal (as in cat)-co

Greek φαλκων *phalkōn* to Late Latin *falco*, to Proto-Germanic *falkō*; all referring to a falcon/

Falco columbarius Linnæus, 1758, Merlin

call-um-bair-ee-us

Latin *columbarius*, dove or pigeon-keeper, referring to a common prey of falcons

Merlin comes to us from the early 14th century from the Anglo-French *merilun*, a shortened form of Old French (12th century) *esmerillon* for merlin or small hawk, from Frankish *smiril or some other Germanic source which in turn comes from the Classical Greek word σμύρις, *smuris*, a small falcon.



This resident bird is a difficult find and I only expect a couple a year, usually in April. My most exciting experience with this bird was while standing with my group on the platform beneath the main viewing room of the Mendenhall Glacier Visitor Center on August 23, 2011, a small dark falcon swoops down over the group between Kathy Benner and me. It seemed uniformly a dark ashy gray with only the slightest banding on the tail. The wings are long relative to the body and the tips pointed. The bird never once flapped as it streaked by like an Air Force jet fighter and was out of sight over the willow and alder shrublands almost as soon as we saw the bird. A single adult in full breeding plumage sits atop a spruce at the Mendenhall Glacier Visitor Center allowing a great view through the spotting scopes on April 25, 2013. The photographs are from a bird at mile 38 “out-the-road” in the shore pine muskeg, sitting atop a dead pine, then flying off showing his very pointed wings. This is clearly a female, lacking the dark slate-colored back of the western race. Note the banded tail where the lighter bands are narrower than the darker, the dark underwings in flight, as well as the slight “moustache” below the eye.

Falco peregrinus Tunstall, 1771 Peregrine Falcon

pear-eh-gry-nus

Latin *peregrinus*, foreign, strange, alien; foreigner, stranger, alien; pilgrim; hence wandering, wide-ranging

Order Ralliformes Reichenbach 1854

Family Rallidae Vigors 1825 Rails, Gallinules, and Coots

Porzana Vieillot 1816, Rail, Crake

pore-za (as in cat)-nuh Local Venetian names *Porzana*, *Sforzana* and *Sporzana* for the smaller crakes

Porzana carolina (Linnæus, 1758), Sora

Of or relating to the Carolinas in North America

I had a single quick sighting of a dark, tiny—the size of a pigeon—rail off the Airport Dike Trail just past the big log in June of 2009. The checklists indicate this is the only possible identification unless it was something very unusual, but it looked like a Sora to me.

Order Charadriiformes Huxley 1867

Family Charadriidae Vigors, 1825 Lapwings and Plovers

Charadrius Linnæus 1758, Plovers

chuh-ra (as in cat)-dree-us Greek χάρᾰδριος *charadrios*, a classical name for plover

Charadrius semipalmatus (Bonaparte, 1825), Semipalmated Plover

seh-mee-pall-may-ted semipalmated, referring to the partial webbing between the toes



Having not seen this species in Alaska before, the early summer of 2011 proved this species to be common, if solitary, along the eastern shore of Mendenhall Lake along the Nugget Falls Trail. An unmistakable bird in breeding plumage with the single bold black neck ring, clear white belly and tawny back. The bill is bright orange at the base with a very sharp black tip. Annette and I both saw it on several walks out to Nugget Falls. On the day of this photograph, the bird kept flying about 20 yards in front of us then after we took a few steps flew back toward the lake, calling loudly. This behavior could mean it had a nest nearby, but we never found one.

Charadrius vociferus Linnæus, 1758, Killdeer

vo-SIH-fur-us Latin *vociferari*, to utter a loud cry, shout, yell; referring to it's loud, raucous call that gives the bird its common name

Family Haematopodidae Bonaparte 1838 Oystercatchers

Haematopus Linnæus 1758, Oystercatcher

hee-muh-toe-puss Greek αίμα, *aima*, hence *hema-*, blood + Greek πούς; *-pous* a foot; hence blood-foot for its red feet

Haematopus bachmani Audubon, 1838, Black Oystercatcher, *lugan*

bahk-mahn-ee Honorific for Audubon's friend John Bachman, a Lutheran minister from Charleston, South Carolina, who pronounced his name "BACK-man"
Lugan is Tlingít for "nose on fire"!



A bird of rocky islands in saltwater, I only see this when out on the water on whale watching trips. Captain Collin Pilcher heard one and pointed them out to me on one of my first W&T trips in 2009. It is a rather unique sound that was totally new to me. Sibley describes it as “loud whistled yelps” and this is what I heard several dozen times, alerting me to get the binoculars out to find one. They were always more common north of Shelter Island than south. I probably saw them a dozen times, usually two or three individuals.

Each season since, I look for them on all the rocky points and reefs and still often hear them before spotting the birds. When they fly across the bow, it is great fun to point out the amazing orange bill and feet.

Family Scolopacidae Vigors 1825 **Sandpipers, Phalaropes, and Allies, x'al'daayééji**

Actitis Iliiger 1811

ack-TIE-tis Greek ακτιτής *aktitēs*, coast-dweller

A ditypic genus composed only of this North American bird and the very closely related Common Sandpiper (*Actitis hypoleucos*), of Eurasia.

Actitis macularius (Linnæus, 1766), Spotted Sandpiper

ma (as in cat)-cue-lair-is Latin *macula*, spot, stain; spot, stain, blemish



As a bit of a surprise for me, I see this bird on our Whales & Trails walks on the Moraine Ecology Trail pretty regularly, particularly during mid summer. They fly past us just barely over the water of Mendenhall Lake and we see them on the shore of the beaver pond as well as out on the shoreline north of our W&T beach. I now expect—and do—see them a few times a month. I’ve also seen them at the Amalaga Salt Chuck (this photograph from August 21, 2010 is of a non-breeding—no spots—bird) where Peterson Creek flows through a most interesting salt and fresh water lake created by a rock dam that holds freshwater in during low tide but lets salt water in during high tide thus creating a perfect mix of small crustaceans for this shorebird to hunt. I never cease to be enchanted by the dipping action of the birds when standing on the sands or atop a rock. Note the very short neck, a character that along with its rather solitary nature and dipping behavior is helpful at identifying the bird at a distance.

Tringa Linnæus 1758, Yellowlegs

Identifying a Yellowlegs is easy: large shorebird with long bill and yellow legs that feed for small crustaceans in the sandy mud with a sewing machine motion with their heads rapidly going up and down. Distinguishing the species of these birds is a challenge, particularly when they are not together, allowing a direct comparison. When viewing, careful observation is necessary or you'll just have to settle for "Yellowlegs". Size of the bird and its bill is an unreliable character.

Tringa melanoleuca (J. F. Gmelin, 1789), Greater Yellowlegs

meh-lan-oh-lew-cah

Greek μέλας *melas*, black + λευκος *leukos*, white; hence black-and-white



Common and nesting in the Mendenhall Wetlands, the birds are frequently seen at Otter Pond on the Airport Dike Trail. The most reliable character for me is the length of the bill. Greater Yellowlegs have a bill much longer than their head. Many field guides make a note that the bill is "slightly upcurved" but I find this so subtle as to be useless for me. They also have barring on the flanks below the wings, visible here. In my summer walks up the Auke Nu trail into the Spaulding Meadows, the many nesting birds call loudly in apparent attempts to get those of us on the plank trail to move away. Occasionally an aggressive bird will fly toward us and make what could be described as a weak attack dive. They fly towards us, but at about 10 meters sweep away and head back to the nest. As dogs romp in the muskeg, the bird calls become a cacophony!

Tringa flavipes (JF Gmelin, 1789), Lesser Yellowlegs

fla (as in cat)-vih-pees

Latin *flavus*, yellow, golden, gold colored + *pes*, foot



This is the most regularly seen shorebird on the Airport Dike Trail, and I think I saw at least one on every walk, particularly in the ponds past the big log. The most reliable character for me is the length of the bill. Lesser Yellowlegs have a bill about as long as the head or slightly longer. There is little to no barring on the nearly clear white flanks and belly, visible here.

Arenaria Brisson, 1760, Turnstone

Latin ah-reh-NAH-ree-ah, American air-uh-nair-ee-uh

Latin *arenaria*, sand-pit (shared with the plant genus for sandworts)

Arenaria melanocephala (Vigors, 1829), Black Turnstone



All of my Juneau sightings of this bird are out on the water, as this photograph from September 9, 2010 shows a gathering of these shorebirds on Eagle Reef. Chunky, short-legged with a very dark mantle, head, neck and upper chest with a clear white belly, this bird is unmistakable. I expect to see some at False Outer Point and Otter Point on Douglas Island in the rocks, but I've never seen them there.

Calidris Cuvier 1800

cah-LEE-dris

Greek καλιδρις *kalidris*. A gray water bird mentioned by Aristotle that remains unknown

Taxonomy: The phylogeny of this genus *sensu lato* (in the broad sense) is unresolved and probably polyphyletic. If so there are at least three genera that may be carved out of it, but at least one species is so poorly understood genetically that it throws doubt upon the entire group's division. For the time being, it seems prudent to consider the genus broadly.

Notes: Most birders will admit to at least some hesitation regarding the identification of "peeps" and this genus of shorebirds can be especially troublesome and real knowledge comes only through repeated experience with the actual birds and consultation with various field guides and especially fellow birders. I've been in many an "argument" over the proper identification of a single peep in a group of other peeps. Beware of cockiness!

Calidris canutus (Linnæus, 1758), Red Knot

ca (as in cat)-new-tus

Latin *canutus*, gray

Calidris pusilla (Linnæus, 1766), Semipalmated Sandpiper

Latin poo-SIH-lus, American pew-SILL-us

Latin *pusillus*, tiny, very small

Calidris mauri (Cabanis, 1857), Western Sandpiper

maw-ree

Latin *mauri*, Mauretania, a Roman province on the northwestern coast of Africa



Expecting to see tens of thousands of this bird in 2009, I only see a few to several hundreds, with my first observation on May 11 in on the Airport Dike Trail. My expectations were based upon the reports from the Copper River Delta where perhaps millions of these birds can be seen on a single day, I'm quite disappointed by what I actually saw. On only one walk of the dike trail did I see a "wall" of sandpipers take off and fly as a single group, and these were at least a mile away, out along the actual channel.

In 2012 I see the waves of birds migrating through that I expected. On May 12 on a day not fit for man nor beast to be outside, a Juneau Audubon Society walk chasing the outgoing tide along the Mendenhall River yields an uncountable number of the birds on the mud that only fly up when we walk by, and they only move a short distance away before getting out of the driving rain in the winds. On May 14 I see several dozen waves of birds fly by the boat. I'm always amazed at the coordination they show in these flights. It seems they are flying as fast as a jet—significantly faster than we travel in the boat—yet can maneuver as if they are a single organism and make instant direction changes in the same way schooling fish do in the ocean. What is the trigger for these moves and how do they communicate it to the entire group so they do it as if it were completely choreographed? Is it air pressure from the change in wing beat of their neighbor or just a very close watch? I don't know.

Calidris melanotos (Vieillot, 1819), Pectoral Sandpiper

Latin meh-LA-no-tos, American mel-ah-no-tos

Late Greek μέλας *melas* black + Latin *notos*, spotted, hence black-spotted

A new life bird spotted several times in May of 2009 in the pond just past the big log on the Airport Dike Trail. This bird is easily identified by the very sharp line between the densely streaked breast and the pure white belly. This is a bird I should have seen many years ago, how did it miss it? It hasn't made my checklist since 2009 either, so I must work on my sandpiper observation skills.

On August 31, 2012 while returning from a bike ride to the glacier, I stopped at my daughter's house but as I rode onto East Valley Court, I spotted a dozen sandpiper in the lawn of the house across the street. I slowed to observe them when a neighbor said "I think they're a sandpiper" to which I responded, "yes, Pectoral Sandpipers". The birds moved one house west so I followed them. Their backs betrayed their identity with the very scaly looking coloration on the wings that I first noted, then the creamy eye stripe but the heavily barred upper chest and clear white belly are the dead give-away field marks for this species. The next morning I read on EagleChat (the listserv for SEAK birders) that a group was wandering about the grassy areas on Vintage Boulevard as well.

Calidris ptilocnemis (Coues, 1873), Rock Sandpiper

Latin tih-LAW-neh-mis, American tih-low-nehm-is

Greek φτερό *ptero* or *ptilo*, feather, soft, down + κνέμι *knēmē* leg

I found them several times in May on the Airport Dike Trail when they stop here on their migration to the far west coast of Alaska. They are nearly always with the yellowlegs in the pond just past the big log. This is a chunky very dark gray sandpiper that is pretty easy to spot when in with a flock of other peeps.

Calidris alpina (Linnæus, 1758), Dunlin

al-pie-nah

Latin *alpinus*, of the Alps, hence of alpine regions from its nesting grounds in the far north



Mendenhall and the checklists have this as abundant in spring, but I've only seen them a few at a time on the Airport Dike Trail such as these birds on April 25, 2010. The vast majority of my lifetime sightings of this bird are in winter plumage and it has been since college days at Humboldt State for breeding plumage like these birds. The rusty back and black belly separated by clear white make this small shorebird unmistakable.

Calidris himantopus (Bonaparte, 1826), Stilt Sandpiper

hih-MAN-toe-pus

Prefix obscure, probably "long" or "long-legged" + Greek πούς; *-pus* a foot from a reference by Piny



Records show a pretty reliable occurrence of this bird for a week to two weeks every August in the Juneau area. This photograph of two of the long-legged sandpipers was taken on August 25, 2010. While nesting on the Arctic shores, most of the birds head to the Gulf of Mexico and Atlantic shorelines for winter via the Great Plains. But some wander down the Pacific Flyway each fall on their way south, so ours are definitely outliers of the main population and migratory pattern. This means all Juneau birds are in nonbreeding plumage or are a juvenile (note the very scaly back with prominent white outlines of the scales) like these birds. Is the fact that this is their first migration south that they take a different route? Every bird I see is a juvenile. Note the rather steep angle of the body of the rear bird. With their long legs they have to tip more to plunge their bills when feeding, a good field character along with the rather heavy bill.

Limnodromus Wied 1833, Dowitcher

Latin lim-NAW-dro-mus, American limb-no-dro-mus around a pond".

Greek λίμνη *limne*, a pond + Byzantine Greek δρόμος *dromos*, a race; hence "racing

Limnodromus griseus (J. F. Gmelin, 1789), Short-billed Dowitcher

Latin grih-see-us, American gree-see-us

Latin *griseus*, bluish; gray

Like scaup, Mendenhall has a category for "Dowitcher spp." as these are difficult to distinguish. I'm not used to seeing this bird in breeding plumage and it is helpful here as this species is much darker and black and not at all rufous. I only saw this bird once in the largest pond just east of the bench on the Airport Dike Trail.

Limnodromus scolopaceus (Say, 1823), Long-billed Dowitcher

Latin sko-LAW-pah-sus, American sko-low-PAY-shus

Red-breasted

As with the short-billed, my identification is based mostly on color as this bird was with the short-billed and distinctly rufous in color.

Gallinago Brisson, 1760, Snipe

gal-lin-a (as in pay) -go

Latin *gallina* hen + -ago resembling; Modern Latin *gallinago*, woodcock, snipe

Gallinago delicata (Ord, 1825), Wilson's Snipe

deh-lih-cah-tus

Latin *delicatus*, dainty, nice, delicate

Taxonomy: Elevated to a full species in 2002, it was formerly a subspecies of Common Snipe: *Gallinago gallinago delicata* Ord, 1825

Formerly considered part of *G. gallinago* because of overall morphological similarities (Oberholser 1921), but now separated on the basis of differences in winnowing display sounds associated with differences in the outer tail feathers (Thönen 1969, Tuck 1972, Miller 1996) that are comparable to differences between other closely related species in the genus.

Banks, R.C., et al. 2002. *Forty-third supplement to the American Ornithologists' Union check-list of North American Birds*. The Auk 119(3):897–906.

Notes: If I see a very obvious—but chunky—shorebird inland over open areas I look for short legs hanging behind, a very long bill, and white stripes down the back when the bird banks, I think snipe. Their *kuk-kuk-kuk* or *kuk-a-kuk* call is distinctive from other shorebirds.

While I spot this bird at least once a year, my sightings are scattered throughout my April to October residence here and are clearly opportunistic. The three places I've seen them are in the open muskeg near the end of the Montana Creek road, around the shoreline of Mendenhall Lake, and the interior iris swamp at Eagle Beach State Park picnic area.

Phalaropus Brisson 1760, Phalarope

fah-lah-ROW-pus

Greek φάλαρος *phalaros*, coot + πούς *pous*, foot

Phalaropus lobatus (Linnæus, 1758), Red-necked Phalarope

low-bah-tus

Late Latin *lobus*, lobed; "from the scallops on the toes like the ... coot" (Brisson 1760)



If you spot a largish, horizontal shorebird with a long neck sitting on the water, think phalarope. Wilson's is a casual visitor from the interior of Canada and Red's rarely move far inland from their offshore migration route. I've seen neither in Juneau.

My first sightings each year are in mid-May as these are mostly birds of migration here. I've only seen them in migratory rafts, usually of dozens—if not hundreds—of birds sitting on the water. They normally only take off when the boat approached more closely than they are comfortable with, and then usually fly only 10 or so meters away, low to the water, before dropping onto the water again. Even with as much time as I spend on the water in the spring and fall, I don't see this bird every year. When I do, they abound in impressive numbers. With a nesting population in Glacier Bay, they are occasionally seen in our waters in summer, but I've not seen them but in spring and fall.

Family Laridae Vigors 1825 Gulls, Terns, and Skimmers, *kéidladi*

Chroicocephalus Eyton 1836, Gulls, F

crow-ih-co-seh-fah-lus Greek χροα chroa, color + κεφάλι *kefali*, head; for the black head in breeding plumage

Taxonomy: While erected long ago, these smallish gulls are often included in a wider circumscription of *Larus* and moved back into this genus by the American Ornithological Union in 2008.

Chroicocephalus philadelphia (Ord, 1815), Bonaparte's Gull

fih-lah-DELL-fee-uh Of or pertaining to the city of Philadelphia, Pennsylvania, where the type specimen came from



Taxonomy: Synonym *Larus philadelphia* (Ord, 1815), a name still used as the change has not been fully accepted and many scientific publications still continue to use *Larus*.

Notes: This is a near daily observation in the Gastineau Channel, usually with hundreds of birds. What makes this observation stand out from my many years of seeing this bird in the lower 48 is that in May and June they are in full breeding plumage. The spring of 2016 is very early and upon arrival on April 1 the “bonies” are all in winter plumage. Two weeks later, every one I see is fully black-headed! An amazingly fast molt.

Larus Linnæus 1758, Gulls, *kéidladi*

Latin LAH-roose, American lare-us Latin *larus*, gull; ravenous sea bird; mew

Larus canus Linnæus, 1758, Mew Gull, *kootléit'aa*

CAY-nus Latin *canus*, gray hairs; old age; white, gray; aged; from the color of the mantle



This species replaces the ring-billed here and is just as abundant, with a good chance of seeing one every time I look at salt water. They are easily distinguished from the other gulls by their small but chunky size. When viewing closely, their eyes seem to be larger in proportion to their heads than other gulls. They fly more delicately than the large gulls.

Larus argentatus Pontoppdan, 1763, Herring Gull

Latin are-JEN-tah-tus, American are-jen-TAY-tus

Latin *argentatus*, silvered, adorned with silver



More common here than I was expecting, I see at least a couple of these on nearly every boat trip as their black wing tips distinguish them from the more common glaucous-winged. The bird on the left (August 25, 2010) is in breeding plumage with clear white head, neck and breast with bright yellow bill and deep orange-red gonydeal spot and the base of the lower bill. The bird on the right is a first summer bird with a black-tipped bill and very mottled look to the plumage that tapers from mostly dark on the rear to mostly light at the head, but dark around the eyes. This bird has just fed on a dead herring (visible next to the bird) immediately after a humpback whale bubble net feeding attack. It is apparently satiated as it now ignores the herring.

Larus fuscus Linnæus, 1758, Lesser Black-Backed Gull

FUSS-cuss

Latin *fuscus*, dark, swarthy, dusky



Reports of this bird out on the Peninsula of Mendenhall Lake continue to come in, and try as I might, I can never pull this bird out of the mass of other—and larger—gulls. On the morning of August 27, 2010 there is a report on Eaglechat of a bird along the Airport Dike Trail, so I head out. No sooner than I get out of the car and get my gear ready and head down the trail, I spot the bird! The dark mantle, slender profile and smaller size immediately confirm the identification of this life bird. The bird cooperates and lets me get some photographs of him as it works the mud along the Mendenhall River. Sibley notes that “Nearly all North American records are of the paler-mantles Britain/Iceland population...” so the lack of a “black” back isn’t unusual. In comparison to all the other gulls around, the mantle is decidedly darker.

I get reports—unconfirmed—that the bird was killed at the airport as part of the wildlife management program. This report leads to a very different conclusion:

Juneau observers failed to find a Lesser Black-backed Gull in the Juneau area in 2011. At least one Lesser Black-backed Gull has been found in the Juneau area nearly every year since 1990 when an adult at the Juneau landfill 16–19 September 1990 provided the first unequivocal record of this species in Alaska (JAM specimen; Gibson and Kessel 1992). Another adult was found the following summer, in 1991, and an adult, presumably the same bird, was found nearly annually through fall 2010. That bird was also frequently observed in the gull colony near the foot of the Mendenhall Glacier, where it was paired up with a Herring Gull at a nest with two eggs 12 June 1993 (van Vliet et al. 1993). Considering the bird was at least four years old in 1991, it would have been at least 23 years old in 2010.

The somewhat obvious conclusion is that the bird likely perished naturally of old age.

Larus glaucescens Naumann, 1840, Glaucous-winged Gull

glaw-SEH-sens

Derived from the Latin *glaucus*, bluish gray



On April 29, 2009 ~1,000 are calling, soaring above and standing on the peninsula in Mendenhall Lake. They often can be heard from great distances away and out of sight. This is *the gull* species for this area, with numbers in the hundreds of thousands I'm sure. They are visible every day, even when away from the water as they fly over the Mendenhall Valley all the time, presumably headed for the rock cliffs on the peninsula in the lake where they nest. Out on the water they are nearly omnipresent, save for a week or two in late July and early August when they almost disappear for reasons I've not yet been able to determine. Even when the eulachon and sand lance are running in late April and May north of Juneau and many birds head to Berner's Bay, there are still plenty that stick around. This single bird in full breeding plumage (from July 27, 2007) is at Sheep Creek at the Gastineau Channel and well-illustrates the clear light gray mantle without any black, pink legs, and bright red gonydeal spot.

Hydroprogne Kaup, 1829

Latin high-DRAW-poh-nee, American hi-dro-PRO-nee From Ancient Greek ὑδῶρ *hudōr*, water + Ancient Greek Πρόκνη *Prokne*, sister to Philomela, as well as the wife of Tereus, and mother of Itys who was changed into a swallow; hence taken as the name for a genus of swallow including the Purple Martin, *Progne* F. Boie, 1826. The word literally means "water swallow" as it flies like a swallow over the water.

Taxonomy: Formerly placed in the genus *Sterna*, mtDNA sequences determined this is a monotypic genus well separated from regular terns. The A.O.U. accepted the change in the 2006 with the 47th Supplement.

Bridge, E.S., A.W. Jones, & A.J. Baker. 2005. *A phylogenetic framework for the terns (Sternini) inferred from mtDNA sequences: implications for taxonomy and plumage evolution*. *Molecular Phylogenetics and Evolution* 35: 459–469

Hydroprogne caspia (Pallas, 1770), Caspian Tern

Greek Κάσπιοι *Kaspioi*, the name for ancient peoples by the Caspian Sea where the bird was described by Peter Simon Pallas (1741–1811), German naturalist who explored the Urals, the Caspian Sea, China, and the Altai

Taxonomy: Formerly *Sterna caspia* Pallas 1770

Notes: On May 20, 2011 I'm standing out at the "private" beach on the Moraine Ecology Trail enjoying the view with my guests on a lovely day, I spot five very large terns flying toward us about 20 meters up. Totally unexpected and immediately a bit confused, I put my binoculars to my eyes and exclaim with some amazement, "Caspian Terns!". This is a bird I've long known and see nearly every time I'm to the coast in Georgia and Florida. The bird is considered "rare" in spring, summer and fall in SEAK and "rare" in Juneau in spring and fall. These birds are in full breeding plumage. Apparently a recent arrival (Armstrong & Gordon, 2001), it is a great sighting. On May 12, 2012 I spot four birds in exactly the same place. On a trail meeting with Mary Willson, she tells me nests have been found in Yakutat.

Sterna Linnæus, 1758, Tern

STIR-nuh

Apparently from the Old English *stearn*, a sea bird; perhaps derived from the Swedish *Tärna* or Norwegian *Terne*.

Sterna paradisaea Pontoppidan, 1763, Arctic Tern, *k'eik'w, kichyaat*

pare-uh-DIS-ee-uh

Derived from the Church Latin *paradisus*, Paradise, Garden of Eden; abode of the blessed. Since this bird really doesn't have a home but the sky, its name must derive from the sky as its abode, thus "up in the heavens".



My first observation here was in the sand flats of Mendenhall Lake on May 9, 2009 when I saw 5, then in the afternoon counted 37 at the mouth of the Mendenhall River in the evening. Once they arrive from Patagonia, they are a guaranteed sighting from the Mendenhall Glacier Visitor Center every late spring (April 21 - 26), and it is a fun occasion to await, much like the returning of the swallows to San Juan Capistrano. Their numbers have ranged from a high of 110 in 2010 and a low of 30 in 2007 (Baluss, 2013, personal communication).

When the terns arrive, they seem to not be paired up and the males (? the sexes are similar, at least to me) take up the challenge of wooing a female by catching small fish (capelin, herring, sand lance and eulachon from salt water and salmon smolt from fresh water) and presenting it as a mating offering while sitting on the ground. As this bird spends the vast majority of its life flying—and in daylight—standing on the ground is a very unusual event that seems strictly related to mating and nesting. Most of the time when I watch this out at Photo Point or on the Nugget Falls Trail, the female seems to mostly ignore the male and only rarely—twice I've seen it—accept the "gift". They obviously do, as nests are made and eggs laid. Surveys at the lake count between 6 to 12 hatchlings a year. When the eggs hatch (June 20 - July 20), the adults become very active flyers as they head out to the channel for food. When they fly back, they seem to follow the Mendenhall River and nearly all of them have a small fish hanging from their beak, making them look hook-beaked! The young fledge between July 2 and 20, but try as I might, I've never knowingly seen a new bird flying.

One day in June of 2009, a group of six were harassing a Bald Eagle right over our heads at the W&T beach. Apparently, the eagle had been over to the nesting grounds and attempted or succeeded at catching a young bird. The terns repeatedly dove at the eagle, head first, attempting to poke it with their beaks. It reminded me of my similar experience with them on Seal Island in Maine. This behavior repeats itself every year and on May 8, 2013 several of us Juneauites out at Photo Point yelled "go get him" to a tern aggressively chasing a Common Raven. The photograph of the tern and the Bald Eagle is from July 14, 2011.

Terns frequently sit on the outermost concrete dock at Statter Harbor, sometimes several dozen at a time. I presume they are simply resting. They are common sights in the sky above Auke Bay but I rarely see them over the open water.

I've made a feeble attempt to note the last day I see the birds, but it always sneaks up on me and suddenly they are gone. In 2011 they left the day

before a jökulhlaup (July 21) from the Mendenhall Glacier completely flooded their nesting grounds. Had this happened while the birds were still nesting could have been a disaster for this population. In 2012 another jökulhlaup happened on July 6 but was much lower. However high it might have been, the tern nesting was already gone. It seems that Common Raven had already killed off all the chicks and the nesting season was a total loss. In 2012 the terns returned to Mendenhall Lake on May 2. This late date seems to be explained by the very winter-like weather of April. For their first week here, only the edges of the lake are free of ice, dramatically limiting their smolt catching options. I watched some birds head off down the river, presumably to the wetlands to forage for small fish. Surveys show the birds normally leave for the southern migration between July 21 and August 10

Is it the same terns returning to Mendenhall Lake every year? Do the same terns return to the same location in Patagonia and Antarctica for the austral summer? I've not found any banding or tracking studies from Pacific birds to answer this question. None of the Mendenhall birds have been tagged here as their numbers are considered somewhat precarious. Egevang et al. 2010, found the Atlantic birds to be rather faithful to their northern and southern destinations, while adjusting their migration route to wind and ocean resource availability. It seems reasonable to assume our Pacific birds behave similarly.

Gwen Baluss of the U.S. Forest Service monitors this nesting site and the general dates come from her observations.

Family Alcidae Vigors 1825 **Auks, Murres, and Puffins**

Uria Brisson, 1760, Murre

YUR-ee-uh Greek *oupi* *ouria*, kind of waterfowl mentioned by Athenaeus

Uria aalge (Pontoppidan, 1763), Common Murre

Latin ah-AL-geh, American AL-gay Danish *Aalge*, name for an auk



This is a special bird for our waters, only encountered occasionally, and most often as a swiftly-flying black and white object flying by our whale-watching boat at 25+ knots. My most common observation is a chunky bird with a black top and bright white bottom with narrow wings that beat swiftly as the bird flies no more than 1-3 meters off the surface of the water. Every bird I've seen has been in Saginaw Channel. In 2010 I spotted one bird. 2011 is a banner year for them, having spotted them five times including five birds sitting on the water just 30 yards away from

the boat on August 18 when I took the left photograph. These birds are beginning their molt to winter plumage with speckling beginning to show on the bird on the left and the white neck and cheek with the curved black eye-line developing on the bird on the right. A week later on the 27th, the two birds on the right are almost completely in their nonbreeding plumage of fall.

2015 is the year of rule-breaking. Instead of just occasionally seeing a murre, I see them nearly every day I'm out on the water, and usually groups of them, anywhere from three to three dozen. I chat about it regularly with fellow birders who also find this unusual. Then comes winter and we learn of a massive Common Murre die-off in our SEAK water that even makes CNN headlines: "*Thousands of birds found dead along Alaskan shoreline*" (January 22, 2016):

The vast majority of the bird deaths are due to starvation. Tests on 100 carcasses revealed almost all the murrets were emaciated, and the culprit is likely their lack of a good food supply.

"The fish that they eat tend to have a narrow band of water temperatures they can live in," Irons said. "If the temperature gets too warm or too cold the fish disappear."

And there's plenty of warm water off Alaska's coast right now. Since 2013, an expanse of seawater that's 2 to 7 degrees Fahrenheit above average has stretched from Asia to North America. Scientists have dubbed it "the blob," and they're studying it closely for its effect on wildlife.

Cepphus Pallas, 1769, Guillemot

seh-fuss Greek κεππος *kepphos*, a waterbird; pale waterbird mentioned by Aristotle, Dionysius, Hesychius and others

Cepphus columba Pallas, 1811, Pigeon Guillemot, *k'eik'w*

co-LUM-bah Latin *columba*, pigeon; dove.



Their common name and specific epithet becomes immediately obvious upon first sighting. They are striking birds with the extreme contrast between the deep black body and the bright white wing patches. If lucky, seeing their bright red legs and feet is a special treat. I see them regularly in late spring and early summer out on the salt water but then they disappear. They return in mid-August and often outnumber the usually more common Marbled Murrelets. Their small size, white wings and distinctive posture make identification easy. Spotting the red legs and feet trailing behind in flight isn't easy in the cloudy or foggy weather, but is obvious when one knows where and what to look for. They often frequent the cruise ship docks downtown, even swimming under the pilings, usually diving for the abundant food there.





I haven't figured out what this guillemot captured, but it certainly is intent of keeping it. It looks much like just a piece of seaweed, but it must be some sort of ribbon fish as their diet is fish, crustaceans, and marine invertebrates.

Brachyramphus Brandt 1837, Murrelet

bra (as in cat)-key-ram-pus

Greek βραχυς *brachys*, meaning "short-distance" + Greek ραμφος *ramphus*, bill

Brachyramphus marmoratus (J. F. Gmelin, 1789), Marbled Murrelet, *ch'et, kéel*



mahr-more-ah-tus

Latin *marmoratus*, marbled; overlaid with marble

On boat trips in late spring and summer this bird is nearly a guaranteed sighting. Looking like a nerf football with wings, they fly low (under 10 meters and usually much less) over the water with fast wingbeats. It seems as though they have to fly with a great fury in order to keep from falling into the water! Most views are long distance, typically 50 to 100 meters, but occasionally we can sneak up on one before they're intimidated by the boat. The bird on the right got surprised by us and all I could catch with my camera on June 11, 2011 was the tip of one wing, its speckled rump and feet. It does illustrate that these birds are designed for swimming, both in the water and in the air. Their wings are long and pointed for maneuverability and their feet located far rear for paddling, yet they are fast flyers and usually are flying faster than our boats, even when we're doing 30 knots +. As they come up behind us, it seems they have a need to pass us on the bow as I've never seen them move to the other side of the boat from the rear. They are always fun to watch.

Order Columbiformes Latham 1790

Family Columbidae Illiger 1811 Pigeons and Doves

Columba Linnæus 1758, Pigeon

co-LUM-buh Latin *columba*, pigeon; dove.

Columba livia Gmelin, 1789, Rock Pigeon, *gus'yé kindachooneidí*

lih-VEE-uh Latin *livere*, be livid or discolored; be envious; reason for use undetermined

Taxonomy: When did this bird get the name change from dove and how did I miss this? AOU 44th Supplement in *The Auk* 120(3):923–931, 2003 “Change the English name of *Columba livia* to Rock Pigeon, to conform to the recent name change by the British Ornithologists’ Union (1992)”. Pigeon makes much more sense, particularly since that’s what everyone calls them.

Notes: The only place I regularly see them is downtown, only once at Salmon Creek and only once in the Mendenhall Valley. Is this because the eagles will snatch them as they move away from the urban environment? They occasionally do get as close to the water’s edge as the Coast Guard station building, but have to compete with the myriad of gulls that usually hang out there.

Order Apodiformes Peters 1940

Family Trochilidae Vigors 1825 Hummingbirds

Selasphorus Swainson (1832), Hummingbird

seh-LAS-for-us Greek *σέλας selas*, brightness rooted in flame + Greek suffix *-φόρος -phoros*, to bear; hence carrying flame

Selasphorus rufus (Gmelin, 1788), Rufous Hummingbird, *dagitgiyáa*

ROO-fuss Latin *rufus*, red; red-haired

First 2 on May 3, 2009 on the West Glacier Trail at the covered bench. The same day I see my first early blueberry flower I see my first hummingbird. Coincidence? This set the pattern for every year until 2013.

Upon arrival in Southeast Alaska, the rufous must obtain nectar from flowers adapted for insect pollination, such as blueberries, salmonberries and rusty menziesia, because only near the end of their nesting season is there a significant bloom of flowers adapted for hummingbird pollination. (Nature, p. 30).

It seems here they follow the blueberries north, arriving in synchrony with the flowers so there is no coincidence, just good sense.

April of 2013 was cold (mean temperature of 36°F, 5°F below normal) and snowy (14 days with measurable snow) and few flowers came out. The only blueberry flowers I could find were in very open areas like the Airport Dike Trail. Even into the first week of May, most early blueberry bushes are flowerless! I’ve placed a hummingbird feeder on our front window for three years and this is the first year I’ve seen hummingbirds visit it. There seems to be little food for them in the wild and many of us are wondering how many of the tiny birds won’t survive.

Order Coraciiformes Forbes 1884

Family Alcedinidae Bonaparte 1831 Kingfishers

Megaceryle Kaup 1848, Kingfishers

Latin meh-GA-ker-lee, American meg-gah-SIR-lee Byzantine Greek *μέγας megas*, big + Greek *κηρύλος kerulos* hence *ceryle*; a bird mentioned by Aristotle, Hesychius and other authors, not further identified but probably mythical and associated with the halcyon, a bird often identified as a kingfisher.

Megaceryle alcyon (Linnæus, 1758), Belted Kingfisher, *tlaxaneis’*

AL-see-on Ancient Greek *Ἀλκυόνη Halkyónē*, halcyon; referring to the metamorphosis of the goddess Alcyone, wife of Ceyx, into a bird usually identified as a kingfisher

A regular in the ponds of the Dredge Lakes area and common along the shoreline of Mendenhall Lake and the beaver ponds of Steep Creek. I see them on every river system I hike in mid-summer and along the immediate coastline. My best guess is their primary food here are salmon fry. I see no other small fish in the ponds or streams.

Order Piciformes Meyer & Wolf 1810 , **woodpeckers, Kóon Hít**

Family Picidae Vigors 1825 **Woodpeckers and Allies, gandaadagóogu**

Sphyrapicus Baird 1858, Sapsucker

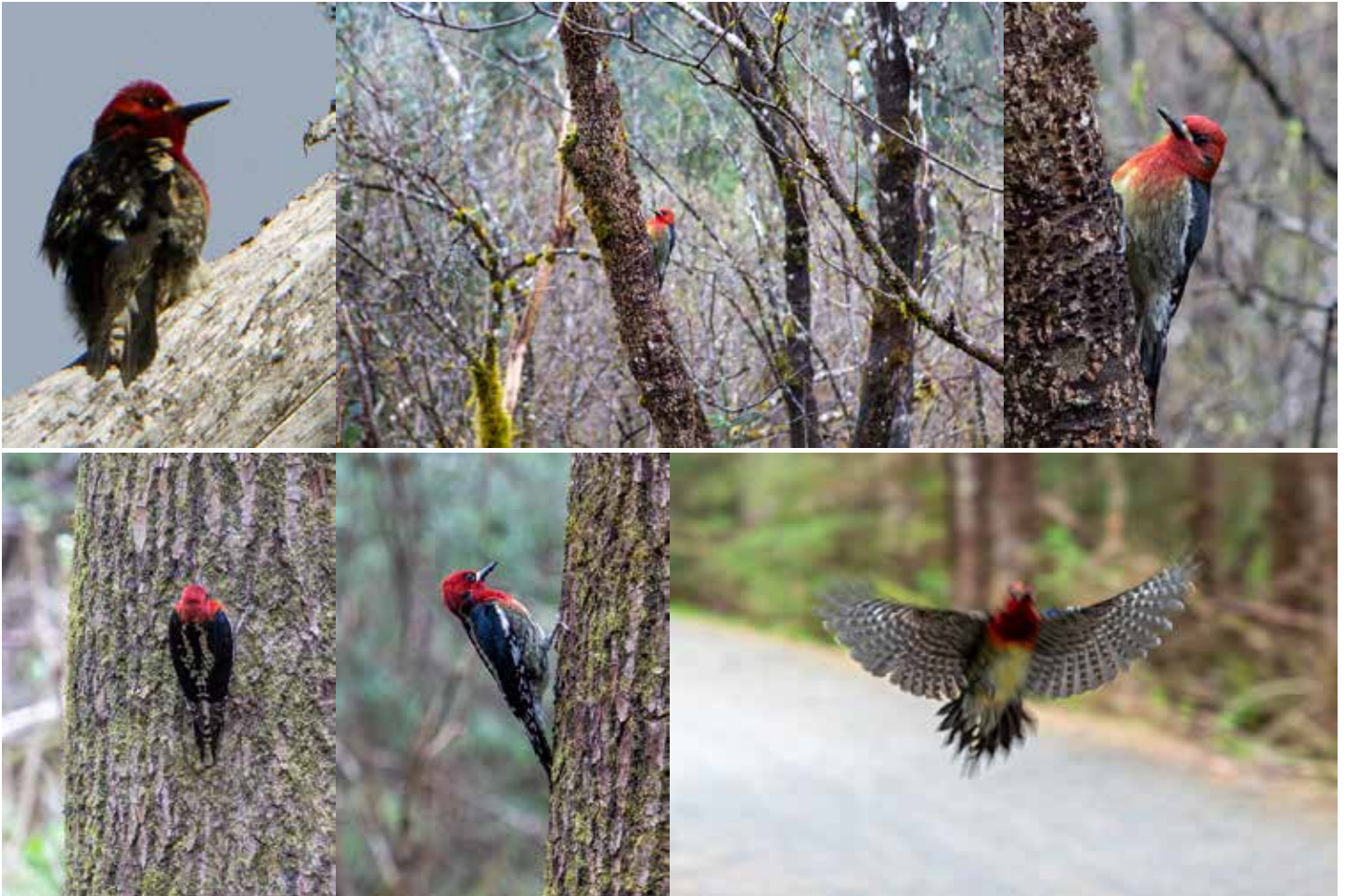
Latin s'phi-RAH-pih-cuss, American sphere-ah-pih-cuss

Greek σφύρα sphura, hammer + Latin *Picus*, woodpecker

Sphyrapicus ruber (Gmelin, 1788), Red-breasted Sapsucker

ROO-bur

Latin *ruber*, red, ruddy, painted red



Here is a bird where the checklist words are a bit misleading. I agree it is a “common” bird, but even in the exact habitat I do not expect to see them every time I’m there. The only place I see this bird with any frequency is on the Rainforest Trail. Only twice have I seen one on the East Glacier Trail and only on September 18, 2009 late in the evening, did I see one fly away from us, white back stripe plainly visible, on the West Glacier Trail. When camped at Eagle Beach State Recreation Area you have probably a 50% chance of seeing one and a better chance of hearing them drumming.

The first photo is along the Rainforest Trail where many hemlocks have sapsucker holes in the bark. The alder tree shots are from the Steep Creek Dike approach trail on April 19, 2016 when I come upon this fellow just 10 feet away from me on a Sitka alder. Note all the holes that he (she, or even other individuals!) have pecked into the tree. The bottom row are from a fellow who nearly attacked me on Kaxdigoowu Héen Dei (Brotherhood Bridge Trail) on May 14, 2020. He landed on a black cottonwood (*Populus trichocarpa*) and worked it for about ten minutes then took off straight for me!

The pencil eraser sized holes are dead giveaways for the presence of sapsuckers and I find them mostly on Sitka alder (*Alnus alnobetula* subsp. *sinuata*). A few cottonwood have them and they seem rare on either Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla*). It makes me wonder what kind of taste they have for the sap and the insects that are attracted to it. It seems to me the cottonwood is the easiest to drill into, but it produces the least amount of sap of these four trees.

Picoides Lacépède, 1799, North American Woodpecker

Latin phi-CO-ih-dees, American pih-COY-dees From genus *Picus*, Latin *picus*, woodpecker + Greek *οἶδες* *-oides*, resembles, looks like

Picoides villosus (Linnæus, 1766), Hairy Woodpecker

vil-low-sus Latin *villosus*, shaggy



Right at the beginning of the Airport Dike Trail on the day I was looking for the Lesser Black-backed Gull (August 27, 2010), I heard a bit of commotion in the willow thicket where the construction had made a mess of the plants. I stop and look carefully and find a dark bird back in the thicket with an obvious white stripe down its back. I began to concentrate on getting a photograph, but the bird wasn't being cooperative and kept going deeper into the thicket and all I got was his stripe with his head cut off! I was able to get a couple of quick views of the thick bill, which coupled with the large size, confirming it as a Hairy Woodpecker, the only one I've seen in Juneau.

Colaptes Swainson 1825, Flicker

co-LAP-tees Greek *κολατες kolaptes*, chiseller

Colaptes auratus (Linnæus, 1758), Northern Flicker

Latin are-AH-tus, American are-AYE-tus Latin *auratus*, gilded, overlaid, adorned with gold

Order Passeriformes Linnæus 1758

Family Tyrannidae Vigors 1825 **Tyrant Flycatchers**

Contopus Cabanis 1855, Peewee

Latin KON-toe-pus, American con-TOE-pus Greek *κοινός kontos*, pole, shaft + *πούς pous*, foot

Contopus cooperi (Swainson, 1832), Olive-sided Flycatcher

Honorific for U.S. zoologist William Cooper (1798–1864).

On August 22, 2011 at the Upper Steep Creek Bridge two very large (for flycatchers, at least) birds are flying about the snags in typical flycatcher fashion, sitting, swooping, sitting and swooping again. These large birds sit quite vertically, have very short tails and are uniformly brown save for a rather white chin and bib. This means they can only be this species, new for me in Alaska.

Empidonax Cabanis 1855, Flycatcher

em-PIH-duh-naks Greek *ἐμπίς empis* gnat, mosquito + *ἄναξ anax* lord (tribal), master; from their ravenous appetite for the insects

Empidonax difficilis S. F. Baird, 1858, Pacific-slope Flycatcher

Latin dih-FIH-sill-is, American dih-fih-sill-is Latin *difficilis*, difficult, troublesome; hard; obstinate, intractable; inflexible

Only in spring do I spot any empidonax—called empids for short—flycatchers, and make this identification largely on the maps in Sibley coupled with the yellow-olive underparts of the mature birds I see. The others on the checklists here are far more gray-backed and white underneath.

Myiarchus Cabanis 1844, Tyrant Flycatchers

my-ee-are-cuss

Greek *μυῖα muia*, fly + Greek *ἄρχος archos*, ruler, chief, leader; from their ravenous appetite for the insects

Myiarchus crinitus (Linnæus, 1758), Great Crested Flycatcher

Latin CRIH-nih-tus, American crih-NYE-tus

Latin *crinitus*, hairy; having long locks, long haired



On my last day in Juneau, October 3, 2009, I head out to do some errands, one of which is to stop at the University of Alaska Southeast student housing area to see if I can find the flycatcher that's been all over Eaglechat since September 30. There are three records for this species in Alaska and they are all on September 29! What a coincidence this is. It is a very rare bird for Alaska, listed as "accidental" on the state checklist.

I drove through this morning, but didn't see anything that resembled what I'd read about where the bird was, so left. At home, I called Beth Peluso, who saw the bird, and she gave me good directions. I simply parked near building A and walked around. I spotted a bird between A and C in a western hemlock (*Tsuga heterophylla*) and put my binoculars to it and sure enough, it's the flycatcher. I spent the next 45 minutes following it as it flew around the four buildings nearby, trying to get a decent photograph and shot 46 but kept only 6! The bird was the perfect flycatcher, perching up high and swooping down low and every once in a while stopping in a bush, usually a red osier dogwood, to peck at one of the ripe, white fruits. While on the Sitka spruce (*Picea sitchensis*) leader (photograph) it made about a half dozen calls, all perfect for this species. All this in an area full of people and activity. One 5-year old boy followed me around for 20 minutes wanting me to play sword with him, but he did look and see the bird, at least for a moment.

Family Corvidae Vigors 1825 Jays and Crows

Cyanocitta Strickland 1845, New World Jay

sigh-ann-oh-sih-tuh

Greek *κυανός kuanos* dark-blue; Latin *cyaneus*, dark blue; sea blue + Obscure Greek *citta*, bird

Cyanocitta stelleri (J. F. Gmelin, 1788), Steller's Jay, *x'éishx'w*

stel-lair-ee

Honorific for German naturalist Georg Steller (1709–1746).

It is so fitting to see Steller's namesake bird near where he made the first scientific journey in Alaska. The observation point on the East Glacier Trail is a good spot to find this guy, and they fly about the Mendenhall Valley regularly, but they are not really very aggressive, at least not as much as at Crater Lake where, along with Clark's nutcracker and gray jaw were called "camp robbers". The birds here seem large to me, perhaps because I have so much experience with the blue jay of the east, a smaller bird. While common, they are not encountered on every hike in the Mendenhall Glacier Recreation Area.

Pica Brisson, 1760, Magpie

pie-kuh

Medieval Latin *pica*, magpie; jay

Pica hudsonia (Sabine, 1823), Black-billed Magpie, *ts'eegeeni*

hud-sewn-ee-uh

Of or pertaining to Hudson Bay



Magpies are a favorite of mine as I'm familiar with the Yellow-billed Magpie of California. All of the common range maps of our Juneau bird show a year-around presence in just about every part of their range, from the Intermountain West to the Rocky Mountains and plains just east all through the Cordilleran Mountains into Alaska. Some maps show a winter range, but every one I've seen has that to the east. Our birds clearly don't read the map very well as they are winter residents to Juneau.

Each April, or more recently March, as we arrive, this is one of the birds I look for. They are gregarious and seem to thrive in neighborhoods, especially in the Mendenhall Valley. eBird records show they leave almost at once from the last week of March through the first week of April. Some birds are seen until the second week of May, but those records are few. Then in the fall, I get excited for their return. I usually hear of them first from my daughter whose back yard the magpies seem to love. On October 15, 2020 while baby sitting the grand kids, 15 magpie landed in the yard to forage for food! This is usually the second week of September and that's about when I first see them. Curiously, as much as they like neighborhoods, every year I get my first fall sighting out-the-road! Eagle Beach seems to be a favorite place for them to hit the ocean on their winter return to Juneau.

Corvus Linnæus 1758, Crow

CORE-vuss Latin *corvus*, crow or raven

Corvus caurinus Baird, 1858, Northwestern Crow, *ts'axweil*

Latin CAR-ih-nus, American car-EYE-nus Late Latin *caurinus*, of, belonging to the northwest wind





Omnipresent in all habitats. I know I would have great difficulty distinguishing this species from the American crow, and fortunately, I'm well north of where the two species overlap. Sibley notes they are "identical to American Crow except in voice" but describes that as "slightly lower, hoarser and more rapid than American Crow" and "not identifiable except by range" so good luck in the interior of British Columbia where both occur! I think the three crows will be merged into a single species at some point.

Many novice birders get confused by crows and ravens and it does take a practiced eye to distinguish between the two when briefly spotted or watched from a distance. Up close like these two, it's very easy. Their bills, while large, do not dominate the face and the feathers at the base of the bill don't form a "moustache". The beak is generally straight. Their neck feathers are smooth and look like the rest of the bird. Size can be confusing, but Ravens are always larger than Crows. In flight the tail of crows is fan-shaped and the primary wing tip feathers are short. They fly with a somewhat butterfly swimming stroke that is more energetic than ravens.

Like their cousin the raven, they will find anything edible that humans have in rapid order and have the ability to open just about any package. If you leave food out in Juneau, animals will get it right away! When the pond at Rotary Park is frozen, crows are nearly always there foraging on the ice for food, probably bread and other things that people have thrown out for them.

Each late May and early June a curious thing happens. Along Egan Drive, especially in the Lemon Creek area, many of this year's crop of new crows meets a violent end and I often see a dozen or more smashed carcasses each traverse of the road. One thing can be said for certain of these birds, their insouciance will not be passed on to another generation! With the large number of crow I see, these losses are clearly sustainable.

Corvus corax Linnæus, 1758, Common Raven, *yéil*

core-axe

Latin *corax*, raven



Each year upon arrival in Juneau, I have to get my mind right about this bird as I'm used to them being very rare in the East. Here they are omnipresent in all habitats and particularly abundant downtown and along the docks there and at Auke Bay. They are less common on the water than crows.

It doesn't take long when one sees so many raven and crow to be able to distinguish them at a glance. Their large bills dominate the face and the feathers at the base of the bill form a "moustache". The beak is usually curved a bit downward. Their neck feathers are rough. Size can be confusing, but Ravens are always larger than Crows. In flight the tail of crows is wedge-shaped and the primary wing tip feathers are long. They fly with strong downward flaps. The juvenile on the right soars, unlike most crows. The last photo shows their size in comparison to a juvenile Bald Eagle.

One of the most fascinating opportunities for studying raven are listening to their calls. In fact, one phrase most naturalists here use is "if you hear a call you don't recognize, it's probably a Raven". They are far more trouble with trash cans than bears as they watch people open and close the bear-proof cans and learn, often remarkably quickly, how to open them.

The top row photos are of adult ravens and I'm not able to tell the sexes apart. The second row are juveniles. Their plumage is a bit duller to the

point of being a very dark gray but they reach the size of their parents in rapid order. In the bus parking lot at the glacier in May and June the juveniles put on quite a show as they beg for food from their parents. While all black, the juveniles retain their bright pink mouths that while chicks in the nest allow the parents a target to feed them. The squawk loudly hoping, it seems, that any bird around will offer them food.

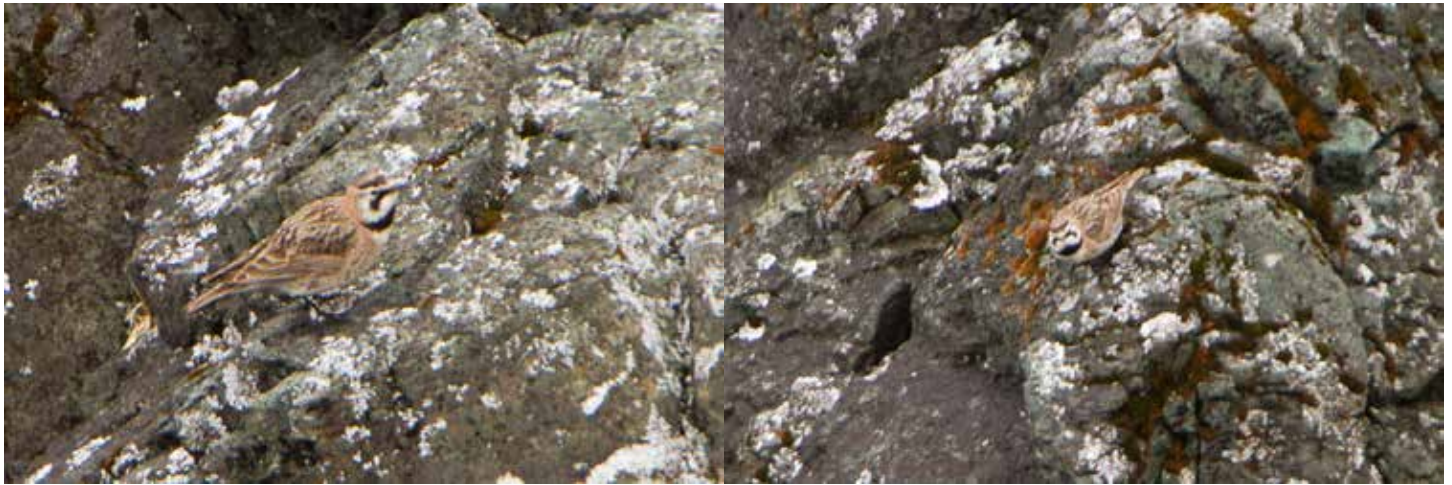
Alaudidae Vigors, 1825, **Larks**

Eremophila F. Boie, 1828, Horned Lark

Greek *erēmophilēs* desert-loving, from *έρημος* *erēmos*, desert + *φιλέω* *phileō*, to love

Eremophila alpestris (Linnæus, 1758), Horned Lark

al-pes-tris Latin *alpestris*, of the high mountains



Just as I'm leaving the point, a bird flies out of the woods and lands on a rock about 5 meters in front of me and I'm stunned to immediately recognize it as a lark! The very unique black chest crescent, swooping black face marks and little horns are totally unique to this bird.

Before I can take off my pack and get out the big camera, the bird drops over the edge and out of sight. With the big gun in hand, I look over the edge and spot it foraging on the lichen-encrusted rocks 4 meters below me. I snap a large number of photographs hoping for at least a record shot where the identity of the bird is certain, this is a pretty severe crop of the best of the lot.

This bird is list as rare in spring in the *Birds of Southeast Alaska* checklist and *Guide to the Birds of Alaska*. The Juneau Audubon checklist considers it occasional ("Very small numbers at least briefly in each year; may be very hard to find.") making this a significant sighting. I tell Doug Jones about this bird on May and he tells me he's only seen the bird here once.

Family Hirundinidae Vigors 1825 **Swallows**

Tachycineta Cabanis [1851], American Swallows

Latin ta-key-KIH-neh-tah, American tack-ee-sin-eh-tuh

Greek *ταχύς* *tachýs*, swift + *κινεῖω* *kínēō* move

Tachycineta bicolor (Vieillot, 1808), Tree Swallow

Two-colored.

I spot them first on April 30, 2009, flying all about Valley Boulevard on a very sunny day and see them until late summer when they disappear.

Tachycineta thalassina (Swainson, 1827), Violet-green Swallow

Latin tha-LASS-sih-nuh, American thala-sin-uh

Latin *thalassinus*, sea-green

The first swallow I see from the house is this one, a favorite bird learned well at Crater Lake. From my bedroom and office window, I can see them at eye level and note the white that extends above the eye to distinguish them from the Tree Swallow that proves to be far more common. The green back isn't as good a field mark as it really depends on the angle of light and the Tree can show a green flash when turning in sunlight.

Riparia Forster 1817

rye-pear-ee-uh

From specific name *Hirundo riparia*; Latin *riparius*, bank-nesting (*ripa*, river-bank)

Riparia riparia (Linnæus, 1758), Bank Swallow

Hirundo Linnæus 1758, Swallow

high-run-do Classical Latin *hirundo*, swallow; martin; small bird

Hirundo rustica Linnæus, 1758, Barn Swallow

Latin *rustica*, of the country(side).



Second in number to the Tree, this swallow nests in the rafters of the pavilions at the Mendenhall Glacier Visitor Center and flies just overhead almost every day from spring through summer, disappearing the first week of September. Sometimes it looks like they are dive bombing the folks walking along at the center! On July 9, 2011 the two fledglings on the right were content to sit on the cap of the fence along the stairs to the Mendenhall Lake beside the pavilion. Perhaps three dozen people walked by as I stopped to admire the fellow, they seemed totally nonplussed by all the commotion. They look plump and well-fed. Perhaps they are contemplating life on their own when they must feed themselves!

Family Paridae Vigors 1825 **Chickadees and Titmice**

Poecile Kaup 1829, Chickadee

PEE-sih-lee Greek ποικίλος *poikilis*, unknown small bird.

Poecile rufescens (J. K. Townsend, 1837), Chestnut-backed Chickadee, *kaatoowú*

Latin ROO-feh-sens, American roo-FEH-sens

Derived from the Latin word *rufus* red; red-haired





Our adorable little tit, these guys were far more uncommon in spring than I was expecting. I hear them regularly, but not in large number and not every day on the trails as I expected. During summer and early fall they became more abundant, and in August are nearly always out in the spruce on the Moraine Ecology and a few on the East Glacier Trails. I find them terribly hard to photograph as they never sit still, always rapidly moving about searching for the little insects that they glean from under the leaves, in the flowers and fruits, particularly of the alders. This fellow was one of several dozen along Steep Creek at the dike approach trail on September 29, 2011.

Family Sittidae Lesson 1828 **Nuthatches**

Sitta Linnæus, 1758, Nuthatch

SIT-tuh Ancient Greek σίττα *sittē*, a bird like a woodpecker mentioned by Aristotle, Callimachus and Hesychius; hence nuthatch

Sitta canadensis Linnæus, 1766, Red-breasted Nuthatch

ca-nuh-DEN-sis Of or pertaining to Canada.

September 15, East Glacier Trail, sitting atop a Sitka spruce (*Picea sitchensis*), I heard it's *yank yank yank* first, turned and spotted it on the tree. Armstrong and the Juneau checklist consider this an uncommon bird in Southeast Alaska for the fall.

Family Certhiidae Leach, 1820, tree creeper

Certhia Linnaeus, 1758

sir-thee-ah Ancient Greek κέρθιος *kérthios*, a small bird, perhaps the Eurasian treecreeper, *Certhia familiaris*

A genus of nine species, four being holarctic and five Himalayan, all occupying conifer habitats.

Certhia americana Bonaparte, 1838, Brown Creeper

uh-mare-ih-KAY-nuh Of or relating to the Americas



That this bird is listed as “uncommon” in the Juneau Audubon checklist is proven by it taking me more than a decade to see one here! These pho-

tos are from the Kaxdigoowu Héén Dei on the east side of the Mendenhall River on October 18, 2020. eBird data for Juneau show them as the expected resident bird, but uncommon throughout the year with a frequency of less than 10% of submitted checklists.

This bird is almost impossible to misidentify with its habit of crawling vertically on tree trunks foraging for insects. It resembles a wren, but the longish tail bends downward and is used as a woodpecker to support the bird on the tree. Their backs are brown, spotted with white and easily blend in with the bark. The chest and belly are white. The long bill is curved downward.

Family Troglodytidae Swainson 1832 **Wrens**

Troglodytes Moehring 1758, Wren

traw-glow-die-tees Greek τρογλοδύτης troglodutes, one who lives in a cave; in seclusion

Troglodytes pacificus Baird, SF, 1864, Pacific Wren, *woolnáx wooshkáx*

puh-SIH-fih-cus Of or pertaining to the Pacific Ocean; here the Pacific coast of North America



Resplit from *Troglodytes troglodytes*, Winter Wren by the American Ornithological Union in 2010. Many are singing on the West Glacier Trail on May 3, but I never see any of them but take care of than on May 7 on the Bishop Point Trail where Dan Hopson and I see at least a dozen. They sing on every East and West Glacier trail hike from May through June.

Family Cinclidae Sundevall 1836 **Dippers**

Cinclus Borkhausen 1797, Dipper

Latin KIN-klus, American sing-clus Greek κινκλος *kinklos*, small, tail-wagging, unidentified waterside bird mentioned by Aristotle, Aristophanes, Aelianus and other authors, Latin *cinclus*, latticework

Cinclus mexicanus Swainson, 1827, American Dipper, water ouzel, *hinyikl'eixi*

mex-ih-cane-us Of or pertaining to Mexico. English zoologist William John Swainson named the bird in 1827 with the type specimen from Temascaltepec de González in Mexico.



Steep Creek is Dipper territory, so much that the first bridge up the dike approach trail is nicknamed “Dipper Bridge”. Mary Willson has studied these birds along Steep Creek for many years and even has a book on them. When I first met her she was introduced to me as “the Dipper Lady!” While they cannot be counted on, they are common enough to expect to see them throughout the spring and summer at both bridges on the Trail of Time and anywhere along the creek, even the section alongside Glacier Spur Road. Their melodic calls are a good clue to look for them in spring and early summer.

Almost any viewing will reward the dipping action where the bird bobs up and down by flexing its “knees”. Why do they do this? There is no definitive answer but a few ideas that at least sound good. The constant bobbing with a backdrop of turbulent water may conceal the bird any predators. It may help the bird spot the insect prey under the water by giving it many views through the flow. It may be a visual clue to other dippers in this noisy environment.

A special reward for patience in viewing is when one gets to see the Dipper actually go underwater to forage. As the upper photographs illustrate, Dippers have four long toes with long claws at the end. These allow the bird to grab the rocks and pebbles and hold on while heading underwater to feed on insect larvae. Since these often attach themselves to the underside of rocks, Dippers have learned to roll the rocks over to expose the side with the larvae.



While exploring Paris Falls off the Treadwell Ditch Trail on Douglas Island on July 8 2018, we got the very special treat of watching a mom feed her very loud and persistent chick. When the chick's mouth is open, the bright yellow-orange is hard to miss. We watched for over an hour as mom foraged and returned with food for her chick.

Young birds leave the nest in about three weeks and appear fully capable of swimming and diving immediately. This chicks wings look to be far to short for it to fly anything but short distances so I suspect the nest isn't far away.



Mom foraged for insect larvae right in the waterfall! Dippers are able to see through their transparent nictitating membrane and close their nostrils when under water. My studies of Steep Creek show we have an abundance of caddisflies, mayflies and stoneflies as well as mosquito which in their larval stage are easy for the bird to catch.

Dippers are considered an "indicator species" in their range as they require clean, clear water with a low silt load. The lower reaches of Steep Creek have filled in substantially in my time in Juneau and that is the part where I've never seen a Dipper. The fact that Steep Creek lives up to its name at the waterfalls keeps the silt away.

Family Regulidae Kinglets

Regulus Bartram 1791, Kinglet

Latin REH-guh-lus, American reh-GEW-lus

Latin *regulus*, petty king, prince; referring to the colored stripe, "crown", of many species in the genus

Regulus satrapa Lichtenstein, 1823, Golden-crowned Kinglet

Latin SA-trah-puh, American sah-trap-uh

Latin *satrapa*, governor; viceroy



Nowhere near as common as the ruby-crowned, I spot them most commonly in summer and in August mixed in with the ruby-crowned as fledglings in outwash area and less commonly on East Glacier Trail. The golden crown is not always visible, but the white eye-stripe is, which along with the usually prominent wingbars distinguishes it from the Ruby-crowned. They are most easily found by their unique calls, a very thin and high-pitched *tsee tsee*, usually two or three times in a row. I rarely hear their mating calls here.

Regulus calendula (Linnæus, 1766), Ruby-crowned Kinglet

Latin cah-LEN-dew-lah, American cah-lend-you-lah

Latin *kalendæ*, then *calendula*, meaning first day of the month; shared with the genus of common garden plants, the name probably refers to "all the time" as in the plant flowering all year and the bird singing all year



Their call is loud and enchanting and especially welcome on a nice spring day, even if their rather dull olive-green color isn't up to the color of their cousin. It is a jumbled mess of notes, all rather high-pitched. It starts out soft and is often difficult to hear, but like a very short (about 5 seconds) *Bolero*, it ends with a raucous and amazingly loud set of two or three part notes. This bird is abundant and at least heard singing every day from April through early June, then only occasionally seen during the summer and when heard only chips.

Nesting at the glacier is highly successful with literally dozens of fledglings seen of most every walk of the Moraine Ecology Trail or East Glacier Trail during summer. In September, some are still flitting about between the spruce and cottonwood in the outwash area. The ruby crown is not often seen as the bird can completely cover the crown with its olive feathers.

I have a personal relationship with these birds as our migratory patterns are similar so I see them all summer and all winter! In winter I only hear

their calls and now upon my return to Juneau one of things I most look forward to is hearing their beautiful warbling mating call.

Family Turdidae Rafinesque 1815 **Thrushes**

Sialia Swainson, 1827, bluebirds

Greek σιαλίς *sialis*, an unidentified bird, so-called from its cry, mentioned by Athenaeus and Hesychius; the “Blew Bird” of Catesby (1731)

Sialia currucoides (Bechstein, 1798), Mountain Bluebird



cur-rew-coy-dees Latin *curruca*, an unidentified small bird mentioned by Juvenal and the specific name of the Lesser Whitethroat of temperate Europe + Greek οἶδες *-oides*, resembles, looks like; from its resemblance to the bird

On a Juneau Audubon Society bird walk at Eagle Beach on April 14, 2012 we are greeted by this very uncommon bird in the Juneau area that cooperates by sitting on a spruce leader on the dike just past the end of the parking lot and allows a reasonably close approach if about 40 yards. This is about a 50% crop of the image from my 7D with 70-200 at 200 with the 2× multiplier at 400 mm for an effective 640 mm with the crop factor. I have to admit, I was thinking Western Bluebird and comment when I get the bird in my binoculars about very little orange, betraying the fact that I don't have all our birds' ranges in my head. I'm then corrected on the species. We are well away from the range of the Western and a bit west of the normal interior migration pattern for this bird. It is listed for SEAK as “rare” in spring and summer and “very rare” in winter and Juneau as “rare” in spring and summer. So this is an excellent find and a great way to start birding.

While dog walking on the Industrial Drive access to the Mendenhall Wetlands on May 3, 2012 I come across another sitting atop the chain link fence. It lets me approach to within 25 meters before it flies off into the scrub, to return to the fence after we pass.

We now have records of it in Juneau every year since 2010 so it is now an expected bird.

Catharus Bonaparte 1850, Thrush

CA-thar-us Greek καθάρως *katharos*, pure, clean; presumably for the nearly white belly of many species

Catharus ustulatus (Nuttall, 1840), Swainson's Thrush

Latin us-TOO-lah-tus, American us-tew-lay-tus Latin *ustulatus*, russet-backed.

This bird is the best sound at Gastineau Guiding's office on the Rock Dump in spring. They sing loud and clear all day, every day! Angelyn Bennion considers them her favorite bird and this song one of her favorite sounds. Since she spent so much time in the office, it seems like these birds were there to give her at least the sound of being out on the trail. They are just as common in the Delta Western boneyard. Curiously, they are far less common on the trail, but often heard on East Glacier. Their call is a distinctive rising spiral of flute-like tones. They seem to like the shrubby cover that all the Sitka alder (*Alnus alnobetula* subsp. *sinuata*) give them in the abandoned areas of the Rock Dump.

Catharus guttatus (Pallas, 1811), Hermit Thrush

guh-taw-tus Latin *guttatus*, derived from *gutta*, drop, spot, speck; for the speckled breast

I saw this bird on every East Glacier Trail hike during breeding season and they produced many little ones this year. Once July and August hit, they seemed to disappear entirely! On September 11 out on the Rainforest Trail a group of ~12 flitted around and poked among the stones on the beach. What were they doing? Obviously feeding on things, but I've never seen this behavior before or seen them on the shoreline.

Turdus Linnæus 1758, Robin

TUR-dus Latin *turdus*, thrush, clearly a name that brings a laugh to English speakers!

Turdus migratorius Linnæus, 1766, American Robin, *shoox'*

my-grah-TORE-ee-us Latin *migrare*, transport; move; change residence; to *migrator*, *migratoris* migrant, wanderer



While year around residents, early spring in Juneau brings more robins. eBird data shows their number dramatically rise the last of March and reach a maximum that holds through June to mid summer but return to spring levels in late August. Their numbers slowly taper downwards through the fall until the winter minimums. I see these birds almost daily in spring, summer and fall in the Mendenhall Valley where they prance about my small front yard. A very few have been about in December and January when I've been here for Christmas.

The photograph on the top right is from a glorious May 29, 2010 high up on Mount Roberts above the Gastineau Channel sitting on the greenstone in its spring finery. The bird in the middle is gathering old man's beard lichen (*Dolichousnea longissima*) for a nest along Steep Creek by the dike approach trail on May 19, 2011. In 2011 they arrive just like the first ship of tourists: first there were none and now they are abundant! They are always around when I leave in October.

Reproduction here is clearly very successful in late spring and early summer there are lots of young robins about. They probably do some double clutching as the egg photo is from July 3, 2015 on the Trail of Time.

Ixoreus Bonaparte 1854, Varied Thrush

iks-OAR-ee-us Greek ἰξος *ixos*, mistletoe + *oreos*, mountain from their habit of eating the berries in the mountains of the west

A monotypic genus.

Ixoreus naevius (J. F. Gmelin, 1789), Varied Thrush

NEE-vee-us Latin *naevius*, spotted, marked



My first hearing of my first season was on May 7, 2009 on the Bishop Point Trail. The “telephone call in the woods” is a common sound, and I note that it is appropriately called “varied” as they have a low, mid and high pitched ring tone. While nesting here, during July the young are almost everywhere on the East Glacier and Moraine Ecology Trail, once the babies fledged, the birds seemed to disappear for the month of August and the first I saw after that was on the East Glacier Trail on September 8. This was in brilliant adult plumage which makes me wonder if it isn’t one of this year’s young in new feathers. Was their disappearance simply due to their silence? Probably.

A curious feather pattern shows up here on some birds yet I’ve never seen it in a field guide or in the literally hundreds of photographs available online to view: white patches at the tips of the outer wing feathers. American Robin have this pattern and one comment on the Juneau eaglechat listserv wondered if it represented a hybrid bird. As no other part of the thrush is robin-like, I’m sure that is not the case. It could be this is a recessive trait that might harken back into the bird’s evolutionary history.

This is an incredibly difficult bird to photograph as it’s a deep woods dweller, here partly obscured by branches between me and the bird on October 4, 2010 along the dike approach trail to the Trail of Time.

Family Sturnidae Rafinesque 1815 **Starlings**

Sturnus Linnæus 1758, Starling

STIR-nus Classical Latin *sturnus*, starling

Sturnus vulgaris Linnæus, 1758, European Starling

vul-gare-is Latin *vulgaris*, usual, common, commonplace

While shuttling a Photo Safari from the Glacier to Auke Bay at Mendenhall Loop Road (Back Loop) and Glacier Spur on September 16, a bird flew from off the road to the right directly in front of the van then turned around and headed back toward the house. It’s bright yellow beak and chunky black body with characteristic starling flight made it an easy ID. While listed as “uncommon” on the checklists, this means it is usually found in suitable habitats which for this bird is urban areas. This is my first sighting of the bird in Juneau and asking around the only one who recalls seeing them is Skip Gray near the KTOO building downtown.

Family Motacillidae Horsfield 1821 **Wagtails and Pipits**

Anthus Bechstein, 1805, Pipit

ANN-thuss Latin *anthus*, small bird that inhabited grasslands mentioned by Pliny, not further identified. Anthus, son of Antinous and Hippodamia, was killed by his father's horses and metamorphosed into a bird which imitated the neighing of horses but fled at their sight

Anthus rubescens (Tunstall, 1771), American Pipit

Latin ROO-beh-sens, American roo-BEH-sens

Derived from the Latin *rubescere*, turn red, redden, become red



A spring and fall bird here, nearly absent in the summer, I saw my first here on May 9, 2009 on the Airport Dike Trail with at least 25 in the rock rip rap along the Mendenhall River right at the north end of the runway. While common in spring and fall and regularly sighted in the summer, this is an easily overlooked bird. I don't see one every year! My first clue to identification is a sparrow-like bird with no obvious markings or color patches, a rather blah bird. A closer look reveals a subtle superciliary line (eyebrow) and a pale throat that can create at least the impression of a gray cheek triangle accented by a dark black eye. The general outline of the bird is that of a trim sparrow with a long tail. If the tail wags, it's a good diagnostic character. The birds are often in groups. On May 9, 2013 a loose flock of 13 played around the shallow water along the Nugget Falls lakeshore trail with many of the birds out on the ice picking around as it they are foraging. What would be out on the ice? I

Family Bombycillidae Swainson 1831 **Waxwings**

Bombycilla Vieillot 1807, Waxwing

Latin bom-BIH-kih-lah, American bom-bih-sill-uh name *Seidenschwanz*, silktail, for the Bohemian Waxwing

Greek βομβυξ *bombux*, *bombukos*, silk + Modern Latin *cilla*, tail; Latinized from the German

Bombycilla cedrorum Vieillot, 1808, Cedar Waxwing

see-droor-um

Latin *cedrorum*, of the cedars

During the month of July these are a nearly every walk sighting at the upper bridge over Steep Creek on the Trail of Time. Less frequent on the Moraine Ecology Trail, they still are out there, and several times they were in the black cottonwood (*Populus trichocarpa*) in the back yard on Valley Boulevard. Did they nest? They were here long enough to have done so, but I never saw any fledglings, all had perfect adult plumage.

Bombycilla garrulus (Linnæus, 1758), Bohemian Waxwing

Latin gahr-roo-lus, American gare-you-lus

Latin *garrulus*, chattering, babbling, noisy

On July 14, 2010 while walking down the stairs at the pavilion at the Mendenhall Glacier Visitor Center I spot two waxwings that have a very different look to them: they seem large and far more plump and more gray than rich tawny in color. As they flit between the willows a white wing spot and trailing inner wing is obvious, a character their cousin Cedar Waxwings lack. When they land in the willow, they have two white spots, one low on the wing behind the red wax and one halfway to the shoulder. I now have a new life bird!

Family Parulidae Wetmore et al. 1947 **Wood Warblers**

Taxonomy: This family underwent a significant overhaul with the *Fifty-second supplement to the American Ornithologist's Union Check-list of North American Birds* published in *The Auk* 128(3):600–613, 2011. The ABA checklist version 7.3 of November 2011 adopted the AOU changes as well. No common names have been changed, but there has been a wholesale revision of the family: 40 species changed scientific

names; 1 new genus added; 6 genera have been lumped with other genera; and, a new linear sequence has been created. Former names are included here.

Parkesia Sangster, 2008, Waterthrush

Latin par-KEH-see-uh, American PARK-see-uh Honoric for U.S. ornithologist Dr. Kenneth Carroll Parkes (1922–2007)

Parkesia noveboracensis (Gmelin, 1789), Northern Waterthrush

Latin *novus*, new + *Eboracum* York, England; hence New York, United States

Taxonomy: formerly *Seiurus noveboracensis*

Notes: On May 3, 2009 I spot a single bird walking along the west shore of Mendenhall Lake just east of the start of the West Glacier Trail. At first I was going to call this a pipit as it was rather yellow-tan, but the horizontal habit and lack of white outer tail feathers ruled that out. When it stopped and started bobbing, I looked much closer and the plain dark back, pale and thin eye stripe with the streaked breast simply shouted Waterthrush although the bird was way out in the open, something I've not observed before.

Oreothlypis Stejneger 1884, New World Warbler

Greek ὄρος *oros*, mountain + θλυπις *thlypis*, an unidentified small bird, perhaps some sort of finch or warbler

Oreothlypis celata (Say, 1823), Orange-crowned Warbler

Latin SEH-lah-tah, American seh-LAH-tah Latin *celatus*, secret, hidden



Synonym: formerly *Dendroica celata*

Notes: While considered “common” spring through fall, I find them an occasional bird of the glacial outwash plain, I see them irregularly near the Mendenhall Glacier Visitor Center when on Whales and Trails walks along the Moraine Ecology Trail. Their numbers seem to vary from year to year and 2013 was a “banner” year for them. I’m thinking this is because the willow are flowering so much later and it is one of the few places where they’re able to find small insects and has concentrated them in the outwash plain where the willow abound. Their call is very reminiscent of the multitude of Oregon Junco here and it takes some aural study to be able to distinguish them, but the warbler has a more melodic tone than a straight chipping trill.

Geothlypis Cabanis 1847

Greek *geō-* ground + θλυπις *thlypis*, an unknown small bird, perhaps some sort of finch or warbler

Geothlypis tolmiei (J.K. Townsend, 1839), MacGillivray’s Warbler

Honoric for Dr. William Fraser Tolmie (1812–1886); Scottish doctor, explorer, collector and Hudson Bay Company official in western North America (1833–1860).

The common name is an honorific for Scottish Ornithologist William MacGillivray (1796–1852)

A regular summer visitor that is often heard and seldom seen in the woods above Thane Road. It apparently nests in the Sheep Creek valley.

Geothlypis trichas (Linnæus, 1766), Common Yellowthroat

Greek τρίχας *trikhas*, a type of thrush, apparently from a *thrîx*, τρίχος *trikhos*, hair, but could also be from τρίχας *trichas*, divided into threes. Etymology obscure.

I hear this bird's distinctive wicky-wicky-wicky or wickety-wickety-wickety call with some regularity on the outwash plain of the Mendenhall Glacier, but I rarely see the distinctive bird's yellow chest, black eye-stripe and olive back.

Geothlypis petechia (Linnæus, 1766), Yellow Warbler

peh-teh-chee-uh

Italian *petecchia* small red spot on the skin, in this case red feather spots on the breast



Synonym: formerly *Dendroica petechia*

Notes: Perhaps the most widespread of all the warblers in North America, one can find this lovely yellow bird just about anywhere in the Juneau area beginning in late April. The Moraine Ecology Trail seems to be a hotbed of nesting for this gorgeous little warbler, but they are common all about the alder thickets at the Mendenhall Glacier Visitor Center and in the Rock Dump as well. In May their *sweet, sweet, you're so sweet* call is pleasant to hear and easily identified for just about the entire month and the males call for a female to mate with. They do often leave off the last phrase. The fledglings of this warbler stay with mom for a long time, well into July (I took this photograph on the Steep Creek Trail on July 8, 2010), constantly begging for food well beyond the time they should be able to forage for themselves. By mid-August, it takes a lot of work to find one of these birds as the fall migration south has them all exiting the area.

Setophaga Swainson 1827, North American Warbler

Latin seh-TAW-fah-guh, American seh-toe-FAY-ga

Greek σῆς *sēs* moth + φαγος *-phagos*, -eating

Taxonomy: When modern genetics found that redstarts and dendroica warblers were paraphyletic and needed to be merged into a single genus, the arcane world of taxonomic rules required the wholesale name change of all 29 members of the genus *Dendroica*. The genus *Setophaga* Swainson 1827, formerly including only the redstarts, has priority over *Dendroica* G. R. Gray, 1842 since it was published first. The A.O.U. accepted the change with the 52nd supplement in 2011. The change had no effect on common names. Many birders still call the group “dendroica” warblers.

Lovette, I.J. et al. 2010. *A comprehensive multilocus phylogeny for the wood-warblers and a revised classification of the Parulidae (Aves)*. Molecular Phylogenetics and Evolution 57 (2): 753–70

Setophaga coronata (Linnæus, 1766), Yellow-rumped Warbler, butter-butt

Latin co-ROW-nah-tus, American core-oh-NAY-tus

Latin *coronatus*, garlanded, adorned with wreaths

Taxonomy: Two former full species of this warbler were lumped as a single species in 1973 and they freely interbreed in the areas where the populations meet. There is move afoot to separate them again, this time into four separate species! It seems the “myrtle” form is the earliest and the western populations became separated from it during the Pleistocene glaciation. Mexico has two non migratory indigenous forms. Our two are easily separated in the field and many continue to use the former names

Synonym: formerly *Dendroica coronata* (Linnæus, 1766)

Setophaga coronata coronata (Linnæus, 1766), “Myrtle Warbler”, butter-butt



Notes: Easily recognized by the white throat, this is by far the most common warbler I encounter in Juneau. Some will stay for mild winters as there are regular sightings in eBird. Their numbers rise dramatically from late March through April, then dip a bit during July and rise to spring levels in late August and early September as a flush of new birds come through as their numbers definitely rise, then they gradually almost disappear.

They are common, if not downright abundant, on the Moraine Ecology Trail and other similar brushy places such as Gold Creek, Sheep Creek, Perseverance Basin and the shoreline of Douglas Island. They are regular to the shrubby areas of all developed areas and are common on the willow trees in my yard in spring. Yet they are known as mostly a bird of coniferous forests here in the West. Perhaps this is due more to my ability to spot them in deciduous shrubs than in our dense spruce-hemlock forests.

They are a bit omnivorous, eating vast quantities of insects, but also fruits when insect numbers drop. They both forage about in the branches for insects as well as sit on the end branches and flit and fly off like flycatchers, taking off swiftly then swooping to catch their prey, then return to the perch to eat.

Their song is a rather non-melodic and unremarkable trill of *tyew-tyew-tyew-tyew, tew-tew-tew* that can be easily lost in the other noises of the forest so I have to think about listening to them when breeding. It is usually even of flat in pitch and a bit whistle-like, but I have to be very close to hear this. Their call is a fairly simple *check*.

When in breeding plumage (the top two photos), this is one gorgeous bird with the deep black contrasting with the brilliant yellow and white. The chick in the top right doesn't have a “butter butt” but all the juveniles and fall warblers do making them instantly recognizable when flying away.

July brings a large number of fledglings to the outwash plain and lower brushy slopes with their fluffy young feathers looking a bit ragged, yet the “butter butt” is bright and showy. Unlike their Yellow Warbler relatives, the young butter butts seem to congregate together without adults. Could it be that their “butter butts” are just more easily seen and identified? I don't think so, as I still see lots of the little olive birds like kinglets.

Setophaga coronata auduboni (J. K. Townsend, 1837), Audubon's Warbler, butter-butt

awe-due-bon-ee

Honorific for John James Audubon (1785–1851)

Curiously, the common Western form is uncommon here and more often found in late fall, winter and early spring. By summer, sightings become extremely rare. This means we have overlap of ranges but little chance of interbreeding. I see Audubon's every year in small numbers and I've never seen what appears to be a hybrid between the two.

Setophaga townsendi (J. K. Townsend, 1837), Townsend's Warbler

town-SEN-dee

Honorific for US ornithologist, explorer and collector John Kirk Townsend (1809–1851). Note the author and epithet are the same. There is a rule in the International Code of Zoological Nomenclature against naming a species for one's self. While Townsend named this species with an honorific for himself, he took the name given by his travelling companion, botanist and zoologist Thomas Nuttall so the rule was technically "kept".



Synonym: formerly *Dendroica townsendi* (J. K. Townsend, 1837).

Notes: As I prepared for my guiding from my readings before spending so much time in Alaska, I was expecting this to be the most common warbler of the woods, but it is not by a long ways. I was also expecting them to behave more like the Black-throated Green Warbler of the east, since they are their western counterpart, but they are not nearly as loud, showy or obvious

The bird is easily identified by sight with the broad yellow stripes above and below the black eye patch. The deep yellow is obvious even as a bird flits by or gives just fleeting glances in the forest. Yet the dense forest hides them very well and they are far more easily heard than seen. They are ubiquitous on the East Glacier Trail in May and June and can be heard almost the entire hike. By then end of the breeding season it seems they become silent and virtually disappear, yet they are still here, but it takes a good bit of work to spot them.

Hearing the bird is another matter entirely. I have numerous recordings of the bird on several smart phone apps. None of the calls match the birds I hear here! I kept hearing this bird on May 6, 2010 and it really confused me. So I persisted in following the bird and finally saw it and grabbed this photograph and nailed it as the call of our Townsend's. I've found this is the most effective way to learn new bird calls. Their call is loud and penetrating, very much unlike the butter-butts. The song is rollicking and almost an upward spiral somewhat reminiscent of a thrush and is *wheeo-wheeo-wheeo-zee-zee-zit*.

They arrive *en masse* in mid-to late April, leave gradually in September and are mostly gone by early November, yet a few birds can be seen almost every month.

Cardellina Du Bus (1849)

car-del-ih-nuh Diminutive from Italian dialect name *Cardella* for a Goldfinch

Cardellina pusilla (A. Wilson, 1811), Wilson's Warbler

Latin PEW-sill-uh, American pew-SILL-uh Latin *pusillus*, tiny, very small.



Synonym: formerly *Wilsonia pusilla*

Notes: What I thought would be the most common warbler in the area turned out not to be, but it is still a common bird. Nesting here, they can make quite a fuss when one gets into their territory, as I often did in May on the East Glacier Trail, where they were far more frequent than on the Moraine Ecology Trail. They are also common in breeding season on the Mount Roberts Alpine Loop Trail. Easily identified as an adult with the black cap, the dull olive color of the juveniles became an instant recognition while they fledged, and there were many of them!

Their song is sweet, of a tonal quality similar to Yellow Warblers. It is short, usually no more than 5 seconds that slightly accelerates yet drops in pitch at the end. After a pause of several seconds, they begin again. Females join the males in signing, unusual among warblers.

They appear almost suddenly *en masse* in May of each year then their sightings drop in summer only to rise again in fall but then gradually diminish until late fall when I realize I haven't seen or heard them for a while.

Family *Emberizidae* Vigors 1831 **Emberizids**

Spizella Bonaparte 1831, American Sparrow

Latin SPIH-sel-luh, American SPIZ-ella Greek diminutive σπιζα *spiza*, finch

Spizella arborea (A. Wilson, 1810), American Tree Sparrow

are-BORE-ee-uh Latin *arboreus*, tree-, of tree; resembling a tree; from its habit in trees

Passerculus Spix 1824

pass-sir-cul-lus Latin *passerculus*, little sparrow

Passerculus sandwichensis (Gmelin, 1789), Savannah Sparrow

sand-wich-en-sis Derived from the name "Sandwich Bunting" of naturalist Johann Friedrich Gmelin's (1748–1804) description of a bird from Unalaska Island and Sandwich Sound, Alaska (cf. "Named after Sandwich Island, one of the Kurile or Aleutian Archipelago", Coues 1882)

The common name comes from the location where ornithologist Alexander Wilson (1766–1813) encountered the bird in Savannah, Georgia



This is one extremely common bird of the bushes here. Abundant in the alder thickets of the Rock Dump as well as the beach grass on the Rainforest Trail and all over the Airport Dike Trail, one is sure to see this bird in the right habitat. The iris swale at Eagle Beach picnic area is another almost guaranteed place to spot the bird in the beach rye grass. They usually have a tawniness to the cheeks and chin area other blah sparrows lack.

Passerella Swainson 1837

pass-sir-ella Diminutive of Latin *passer*, sparrow (compare with the Late Latin *passarella*, little sparrow).

Passerella iliaca, Fox Sparrow

ill-ee-a (as in cat)-kah Latin *iliacus*, of the flanks



May 1, 2009 is my first encounter with this species here. While shovelling snow at the Nature Center up on Mount Roberts, Crystal Gwinn asks me about this brown and gray bird and what it might be. I toss out some ideas and she says, “it’s right here!” So I move to the deck and sure enough here is the fox sparrow! Virtually still and completely approachable, I pick it up and it makes no attempt to get away from me. Since it is right in the path to the front door, I want to move it away to a protected spot so it won’t get stomped or terribly frightened. It apparently flew into the window and got stunned. I place it on the back side where the trail begins in a protected spot where it remains for about 20 minutes before it disappears, presumably recovered.

Each year, especially in May, I hear the birds singing in the alder thicket below Thane Road as I walk from the Rock Dump to Franklin Dock. I don’t often see the birds, but their lovely liquid call makes the walk a delight, even on a rainy day. Our birds are particularly dark in color. Occasionally I hear them calling in the thicket at the Delta Western yard (boneyard).

Melospiza Baird 1858, North American Song Sparrow

Latin meh-LAW-spih-zuh, American meh-low-SPY-zah Greek μέλος melos, song, tune + Greek σπίζα spiza, finch

Melospiza melodia (A. Wilson, 1810), Song Sparrow

meh-low-dee-uh

Greek μελωδία *melodia*, singing.

Taxonomy: This large range has provided us with many color and size forms of this bird that are all currently considered to be the same species. These forms are generally geographic and are divided into five groups with 25 currently “accepted” names. Our Alaska birds are part of the Northwestern group, characterized by their somewhat large size and dark plumage that apparently comes from their independent origin based on mtDNA allozyme variation. It seems likely that this seriously lumped group of birds will be split into numerous species at some future point. Our birds are of the *rufina* or *montana/merrillii* groups.

Hare, M.P. & G.F. Shields. 1992. *Mitochondrial-DNA variation in the polytypic Alaskan song sparrow*. Auk. 109 (1): 126–132.

Notes: When I get used to a place’s birds, some of them I just expect to see or hear. This is the case of the Song Sparrow in Juneau. It is a year-round resident with numbers that vary little through the months. It’s just a bird that is part of the landscape and that landscape would certainly be at a loss without it. This, in fact, can be said for most of North America as this is a ubiquitous bird. Alaska’s birds are restricted to SEAK, the Southern coastline, and the Aleutian Islands, being absent from the interior and north.

Melospiza melodia rufina (Bonaparte, 1850), sooty song sparrow, *rufina* group

roo-fee-nuh

Latin *rufus* red feminized to *rufina* for red-haired



When we find an especially dark song sparrow we can confidently place it in this group, and it is probably the most common form in Juneau, especially in the more open areas. Note the amount of deep gray on the right side bird. I see and hear them every time I walk the Airport Dike Trail. They can be so dark as to immediately think they are a small Fox Sparrow. Both a scrub and forest bird, they call nearly continuously on Kaxdigooowu Héen Dei (Brotherhood Bridge Trail)

Melospiza melodia montana/merrilli group

Taxonomy: Putting a scientific name on this group is complicated and there isn’t currently an available name for what ornithologists think explains this bird, hence the double name. The two groups *Melospiza melodia montana* Henshaw, 1884 and *Melospiza melodia merrilli* Brewster, 1896 are apparently one. *Montana* is Nevadan and more related to the Eastern *melodia* group while *merrilli* is more western where in coastal British Columbia it is a more red *morphna*.



When we find a much lighter song sparrow, it is *montana/merrilli*. Note on this bird that the ground color of the breast is pale cream. I'm not sure I'd be able to distinguish this from the *melodia* sparrows back in Georgia! This fellow is singing loudly atop a red oiser dogwood at Auke Rec.

Melospiza lincolni (Audubon, 1834), Lincoln's Sparrow

ling-con-ee-eye

Honorific for US naturalist, explorer and collector Thomas Lincoln (1812–1883)

I spotted a sparrow I didn't know on the Airport Dike Trail, either in the beach grass at the river or in the alder thicket on the dike the far end of the trail. I got confused at first with the breast spot thinking these were songs, but the yellow color and small size just didn't seem right. Out comes the field guide and, of course, they are Lincoln's. This bird is featured on several interpretive signs here giving the impression they are common. If so, they are secretive! Compared to our other sparrows they are smallish and tend to hide in the shrubs. If you get a good look at the breast the striping is up on the chest and not on the belly which is clear and pale cream. Like most other sparrows, they have a streak of lighter feathers down from the corner of the mouth, but it is much more the same color as the rest of the head and doesn't show up except with a good look and I find this a good character to name the bird along with the rather yellowish brown of the rest of the bird.

Zonotrichia Swainson [1832], American Sparrow

zo-no-TRIH-key-uh

Greek ζώνη *zōnē*, band, girdle + τρίχα *thrix*, *trikhos*, hair

Zonotrichia leucophrys (J. R. Forster, 1772), White-crowned Sparrow

Latin lew-COFF-rees, American lew-co-frees

Greek λευκος *leukos*, white + ὄφρυς *ophrus*, eyebrow; hence "white-browed"

Common in the brushy area above the covered bench on the West Glacier Trail. On September 24 I spot a juvenile in the back yard with a small flock of juncoes where his bill looked just like theirs! Abundant on the Airport Dike Trail.

Zonotrichia atricapilla (Gmelin, 1789), Golden-crowned Sparrow

a (as in cat)-trih-CA (as in cat)-pill-uh

Latin *atricapillus*, black-haired (*ater*, black + *capillus*, hair of the head)



Some use the adjective "handsome" for this sparrow as the breast is detailed with a very fine barring, but that only shows up with a close look. At a distance the sparrow looks pale below with a typical brown-black with speckled white back. The twin black stripes from the middle of the eye to the golden crown offer a wonderful contrast to the golden forehead. A quick glance from the rear can confuse as the nape crown is white, so when spotting a White-crowned Sparrow from behind, hold off on your identification for a slightly better look.

While a regular spring visitor, these birds are on their way to the tundra up north for breeding and stop here only for feeding along the way. I see them some springs in early April, but it's usually the first or second week of May when they become obvious to my eyes. In May of 2013 this bird seemed particularly abundant, especially in the outwash plain of the Mendenhall Glacier. I took these photographs on the rocks of Photo Point. Their route back south to coastal Washington, Oregon and California takes a very different track as they are very uncommon here in the fall.

Junco Wagler 1831, Junco

Medieval Latin *junco*, reed bunting, derived from Latin *iuncus*, reed. Confusing as these birds are not often found in reedy habitats.

Junco hyemalis (Linnæus, 1758), Dark-eyed Junco

hi-mal-is Latin *hiemalis*, of winter, (*hiems*, *hiemis* winter); moving south in the winter; “snowbird”

These birds are easily identified even with a short glance. Their white outer tail feathers are flashy and contrast not only with their other feathers but against whatever background they happen to be in. They spend a lot of time on the ground looking like, foraging and behaving like a sparrow.

Taxonomy: There are several easily separated and identified Juncos that were previously considered separate species but now have been reduced to subspecies. Two of these occur in the Juneau Area.

Junco hyemalis oregonus (J. K. Townsend, 1837), Oregon Junco

oar-eh-gay-nus Of or pertaining to Oregon



This is the signature bird of the Moraine Ecology Trail, encountered on every trip! I continue to call these “Oregon Junco” as this western race is so distinctive with its “executioner’s cap”, tawny brown back and almost pink sides. These birds are common in every woods here, on every trail and may well be the most common songbird in the area, at least by my reckoning. Their song is a rather metallic trill. They are full year residents.

Junco hyemalis hyemalis (Linnæus, 1758), Slate-colored Junco

hi-mal-is Latin *hiemalis*, of winter, moving south in the winter; “snowbird”



Winter visitors to Juneau, these remain in the area as late as the end of April or perhaps early May and return with the first snow. Their tops are almost a uniform slate-gray and bellies white without a hint of brown or pink. This picture is from my condo complex in the Mendenhall Valley in April of 2012. I notice there is an indistinct yet clearly discernible difference in the gray of the head and of the body. In fact, this photograph shows a line between the two! I interpret this as evidence of hybridization between the Slate-colored and Oregon Junco. Eastern slates are a perfectly uniform gray.

Family Fringillidae Vigors 1825 **Fringilline and Cardueline Finches and Allies**

Loxia Linnæus 1758, Crossbill

LOX-ee-uh Greek λοξος *loxos*, oblique; hence crosswise, referring to the crossed beak.

Loxia curvirostra Linnæus 1758, Red Crossbill

cur-vih-ross-truh Latin *curvus*, curved + *-rostris*, -billed (*rostrum*, beak, bill)

Through most of the range of crossbills, this is the more common of the tree. The only place I've seen this bird—which should be fairly common—is on the Rainforest Trail and beach on Douglas Island and then only green-bodied females with dark wings.

Loxia leucoptera Gmelin, 1789, White-winged Crossbill

lew-COP-tur-uh Greek λευκος *leukos*, white + πτέρον *pteron*, wing



The top left is a life bird I got at the John Muir Cabin on September 30, 2010. A small flock of 8 flitted about the spruce trees with a finch-like song that I did not recognize, and so followed until I could see the birds. The white bands on the wings set this apart from the Red Crossbill, a bird I have not seen since my days at Crater Lake, now decades ago. The birds came to a small spruce just ten yards from the deck of the cabin where I was able to observe their crossed bills easily and see the red on the male and the yellow-green on the females.

Crossbills are resident here and can be very common at times. While camped at the Saturday Creek Cabin at Eagle Beach State Recreation Area September 21, 2019 a mixed flock of male and female spent a lot of time at our wood pile. While walking the Kaxdigoowu Héen Dei (Brotherhood Bridge Trail) nearly daily in May of 2020 the birds were around almost all the time. Curiously, many more females than males.

The characteristic “crossed bill” is visible on the female in the bottom two photos. This unique bill is useful in prying apart the cone scales of spruce and hemlock cones to get to the seeds inside. Logically then, these are birds of coniferous woods, especially the boreal forest. White-winged are the more northern of the three North American species.

Carduelis Brisson 1760, Redpoll & Siskin

car-dew-ell-is Latin from the name *Fringilla carduelis*, the European Goldfinch, meaning goldfinch

Carduelis flammea (Linnæus, 1758), Common Redpoll



I spotted my first redpoll since living in Pennsylvania three decades ago out the bedroom window on April 12, 2009. It is Easter Sunday, and I saw more while walking to church service at 11:00 a.m. These delightful little finches stayed around for the entire month of May, but then disappeared. While the bird book maps show this area as in their year-round range, my Alaska checklists show them absent in summer, which they proved to be. I've always thought of them as being in conifers, but here they don't seem to make any distinction between the evergreens and broad leaved and are found in equal number in each. In 2010, 2011 and 2012 I didn't spot a single one upon my spring return to Alaska, yet there were continued reports of them around. The very late spring of 2012 with its near record late snows has the birds sticking around far longer and regularly in groups of a dozen to several dozen doing their buzzy song in the bare branches of the Sitka alder (*Alnus alnobetula* subsp. *sinuata*).

Carduelis pinus (A. Wilson, 1810), Pine Siskin

Latin PEE-noose, American PIE-nus

Latin *pinus*, pine

My early experience with this bird in Juneau created a strong impression that has been hard to dislodge. For some five years I found them to be very seasonal spring and fall birds, absent in the summer. 2020 changed all that as they seem to be omnipresent in the spruce forest! eBird data shows them to be year-round residents in nearly constant number. Did I just miss them? Was I judging them by my Georgia experience where they are winter birds only? Probably both. Take a lesson, don't let your experience get in the way of observing new things!

They usually are in flocks of some dozen or more birds and often land on the ground to forage for fallen seeds. If you see a flock of small, non-descript streaky birds odds are good they will be siskins. Yet their feet are far more adapted to grabbing onto the smallest of tree branches where they are often upside-down. In our ruderal areas where dandelions thrive siskins will take advantage of the seeds faster than one can blow them away!

Ours seem to be in two color morphs that don't necessarily correspond to juvenile or adult birds. Some show very little yellow and some are almost bright yellow

Class Mammalia Linnæus 1758 mammals

Latin *mamma*, breast, udder

References:

- Alaska Department of Fish & Game. 2008. *Alaska wildlife notebook series*. Division of Wildlife Conservation, Alaska Department of Fish & Game, Juneau.
- American Cetacean Society. 2003 to date. *Fact sheets*. San Pedro, California. [These are individual articles on cetacean species available as PDF files from <http://acsonline.org/education/fact-sheets/>]
- American Society of Mammalogists. 1969 to date. *Mammalian species*. [These are individual articles on the North American species. Numbers 1-823 are available as PDF files from <http://www.science.smith.edu/msi/msiaccounts.html>]
- Baker, R.J. et al. 2003. *Revised checklist of North American mammals north of Mexico*. Occasional Papers, Museum of Texas Tech University, Number 229, December 1, 2003.
- Jefferson, T.A., S. Leatherwood & M.A. Webber. *FAO species identification guide: Marine mammals of the world*. United Nations Environment Programme, Nairobi, Kenya. Food and Agriculture Organization of the United Nations.
- Kays, R.W. & D.E. Wilson. 2002. *Mammals of North America*. Princeton University Press, Princeton, New Jersey.
- O'Clair, R.M., R.H. Armstrong & R. Carstensen. 1992. *The nature of Southeast Alaska, a guide to plants, animals and habitats*. Alaska Northwest Books, Anchorage.
- Wilson, D.E. & S. Ruff. 1999. *The Smithsonian book of North American mammals*. Smithsonian Institution Press, Washington, D.C.
- Wynne, K. 2007. *Guide to marine mammals of Alaska*. Alaska Sea Grant College Program, University of Alaska Fairbanks.

Order Artiodactyla Owen 1848 **Even-toed or cloven hoof ungulates**

Greek ἀρτιος *artios*, whole, intact; thus entire or even numbered + δάχτυλο *dactylo*, finger or toe; thus “even-toed”

Family Bovidae Gray 1821 **antelopes, bovids, cattle, goats, sheep**

Latin *bos* ox; bull; cow

Oreamnos Rafinesque 1817

or-ee-ahm-nos Greek prefix -όρειο *-oreo*, hill, mountain + ἀμνός *amnos*, a lamb

Oreamnos americanus (de Blainville, 1816), mountain goat, *tawéi*, jánwu

uh-mer-ih-KAY-nus of or referring to the Americas



For much of the year these North American endemics are remote and require long-distance viewing. Early in the season (the photograph top left, April 29, 2009) the goats are low, here on the peninsula jutting into Mendenhall Lake. A close look to the left side of Nugget Falls (top right photograph, April 21, 2013) sports a billy. Two weeks later (May 9) this solitary billy shows off his cliff-climbing skills in the dark greenstone just away from Nugget Falls on the glacier side.



Through June and into July they could be seen just about every day up near the top of Mount Juneau and occasionally above the avalanche chute on Mount Roberts as well as on Mount Bullard from the scenic viewpoint on the East Glacier Trail. Always binocular objects, I describe them to my guests as “dirty blobs of snow that move” on the mountains. On August 30, sitting in church during Pastor Tari’s sermon, I spot three of them just below the summit of Thunder Mountain, the first I’d seen since early July. It seems with the most excellent weather of summer, they’ve headed off into the wilderness far from sight on my daily haunts in Juneau.



On May 2, 2011 while on a training session up West Glacier Trail we come upon the remains of a carcass of a goat that met its demise during the winter. The only things left are the inedible: tufts of hair, well-mummified shreds of skin, the larger bones—all marrow free—and most interesting to examine, the toenails! Being goats, they have two toes on each foot, each with a sheathing of keratin, clearly considered inedible. The four we find have amazingly sharp-pointed ends, a character that must help them traverse the very steep slopes they call home. Are the rings clearly visible created annually? If so, this goat was about 15. While that strikes me as perhaps old, it may be part of the reason all we find are the remains as the animal was too old to be able to survive the winter.



This billy above Nugget Falls on April 7, 2018 is either sloughing off a lot of pelage or has suffered a severe attack by a predator!

Family Cervidae (Goldfuss 1820) Gray 1821 **caribou, cervids, deer, moose, wapiti**

From Proto-Indo-European **ker-* horn to **kerwós*, to Greek κεραφός *kerawós*, horned to Latin *cervus*, stag, deer

Odocoileus Rafinesque 1832, North American deer

oh-doe-coy-lee-us

Greek δόντι *donti*, tooth + Latin *coelus*, sky, heaven, heavens; hence empty and hollow referring to the hollow teeth

Odocoileus hemionus sitkensis, Merriam 1898, Sitka black-tailed deer, *guwakaan* young deer, *yagootl*

heh-mee-oh-nus
sit-KEN-sis

Greek ἡμίονος *hemionos*, apparently obliquely referring to the dichotomous forking pattern of the antlers
Of or pertaining to Sitka, Alaska



I spotted three deer in June along the road on Douglas Island just east of False Outer Point, the only deer I saw in 2009. This youngster was browsing the roadside at Brotherhood Bridge on October 8, 2010. While appearing healthy, I'm very concerned about its ability to survive the winter baif its mother is nowhere around. The most curious thing about "deer watching" for me here is the frequency of seeing them out in the low tide zone of salt water. Nowhere else have I experienced deer at the ocean's edge, but nowhere else has the ocean's edge been so generally placid. It seems they are browsing for food, perhaps the plentiful rockweed (*Fucus*) or other seaweeds that the Tlingit's also browsed for. The most common place I see them at salt water is at Waydelich Creek's mouth into Auke Bay. They have a clear forest path from the mountains to the water and a mix of fresh and salt water if they need to dilute all the salt eating seaweed gives them.

Deer population in SEAK his highly weather dependent. With two record snowfall winters in a row in 2004 and 2005, their numbers plummeted. Winters have been mild since then and their numbers are rapidly rising. Harvesting in the Juneau area as been remarkably constant over the last decade with an average of 747 taken per year. Curiously, the highest harvest was the year after the hard winters with 1,251 taken in 2006.

Sitka Black-tailed Deer Hunting in Alaska, <http://www.adfg.alaska.gov/index.cfm?adfg=deerhunting.main>

Order Carnivora Bowdich 1821 **carnivores**

car-nih-vore-uh

Latin *carnivorus*, carnivorous, flesh-eating. From *carō*, flesh, + *vorāre*, to devour

While carnivores are traditionally thought of as "meat eaters"—a term that can refer to any organism that eats meat—perhaps a better descriptive name for this most diverse order of mammals might be "carnivorans". Ranging in size from the least weasel (~25 g) to the southern elephant seal (~5,000 kg) the order includes animals that are terrestrial, aquatic, or both.

The most commonly used classification includes two suborders: Feliformia, the cat-like animals; and Caniformia, the dog-like animals. In the Caniformia, Canidae and Amphicyonidae diverged very early and form parallel clades that in a hierarchical system are equal to all the other families that are in Infraorder Arctoidea. In contains three Superfamilies: Ursoidea, the bears with one extant and one extinct family; Musteloidea with four families; and, Superfamily Pinnipedia with three extant and one extinct family. This illustrates one of the problems of the Linnæan hierarchical system.

Suborder Caniformia Kretzoi, 1943, **dogs**

Current classifications include six families (Canidae, dogs; Ursidae, bears; Ailuridae, red panda; Mephitidae, skunks; Mustelidae, badgers, weasels and otters; and Procyonidae, raccoons and coatis) and one unranked clade of the aquatic branch, the pinnipeds, that are sometimes elevated to their own order Pinnipedia Illiger, 1811

Family Canidae G. Fischer de Waldheim, 1817 **dogs**

Canis Linnæus 1758, dog

Latin KAH-niss, American KAY-niss

Classical Latin *canis*, dog, hound

Canis lupus Linnæus, 1758, gray wolf, *gooch*

LEW-pus

Latin *lupus*, wolf



Taxonomy: Wolf taxonomy is confused. ITIS lists 34 subspecies of *Canis* recognized as valid, but this includes the common dog, dingo and red wolf. Recent molecular work seems to indicate the species named *Canis lupus* needs to be considered in the broad sense. Wilson, D. E., and D. M. Reeder (eds). 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference* (3rd ed). Johns Hopkins University Press, only recognize five species of *Canis* worldwide with two in North America, *C. lupus* and *C. latrans*.

Notes: I awoke at 4:45 a.m. this morning, April 14, 2009, and decide to head up to Skater's Cabin to see if I can spot one of the two wolves that have been prowling the Mendenhall Lake area. At the cabin, not much is out and about but I hear the mew gulls crying up at the ridge by the glacier. I scan the shoreline with my binoculars but spot nothing but the gulls, so I drive to the end of the road. As I slow down to drive around the parking lot, there trots Romeo—the black wolf—up onto the snow where he stands and looks at me long enough for me to get the camera out and get one shot! Handheld at 1/5 second, I'm pleased with how well it came out. He is large, and from my vantage point I think he stands nearly waist tall on me and probably weighs nearly 150 pounds. I use Cleo's 100 pounds and size for comparison and he's quite a bit larger. He takes a good look at me, then turns and trots nonchalantly into the woods.

Romeo is the Mendenhall Valley resident wolf and has been out and about every winter that Bess and Patrick have lived here and was first sighted in 2005. This late winter a second wolf—quite gray I'm told—joined Romeo. One of the wolves got someone's small pet dog according to a Forest Service sign at Skater's Cabin and they warn all dog walkers to be very careful. This is my first wild wolf sighting! How cool.

This wolf's story ends sadly as he was apparently shot and killed illegally in 2010. There is now a plaque to his honor on the Nugget Falls Trail and he is sorely lost by many Juneautes who considered him very much a part of the community. Unlike the other wolves who occasionally show up, Romeo seemed genuinely interested in people and their dogs and even seemed to want to "play" with some of the dogs.

Family Mustelidae G. Fischer de Waldheim, 1817 **mustelids**

Latin *mustela*, weasel

Lontra Gray, 1843, otter

lawn-truh

Italian word for otter derived from the Latin *lutra*, otter

Taxonomy: *Lutra* Brisson, 1762, was the first genus for all otters and even though British zoologist John Edward Gray created *Lontra* for the New World otter in 1843, it was not generally accepted until the publication of genetic research that strongly supported New World otters as separate from Old World otters. They both have a common ancestor around seven million years ago creating distinct lineages.

Koepfli K-P. & R.K.Wayne. 1998. *Phylogenetic relationships of otters (Carnivora: Mustelidae) based on mitochondrial cytochrome b sequences*. J Zool (Lond). 246:401-416.

Marmi, J., J.F. López-Giráldez, and X. Domingo-Roura. 2004. *Phylogeny, evolutionary history and taxonomy of the Mustelidae based on sequences of the cytochrome b gene and a complex repetitive flanking region*. Zoologica Scripta, 33: 481–499.

Lontra canadensis mira (Goldman, 1935), North American river otter, northern river otter, river otter, *kóoshdaa*

can-uh-den-sis; meer-uh Of or pertaining to Canada; Latin *mirus*, wonderful, strange, or remarkable.



Taxonomy: Synonyms include *Lutra canadensis* (Schreber, 1777), *Lutra mira* Goldman, 1935 and *Lontra vancouverensis* (Goldman, 1935).

There are currently seven subspecies of river otter recognized, two of which are in the Pacific Northwest cordilleran mountains and coastal archipelago: ours and *L.c. pacifica* Rhoades, 1898, of Haida Gwaii.

Notes: While surely a “common” animal in the Juneau area, sightings of otter are not, and they are often fleeting. Sometimes I get lucky like on April 30, 2017 for the top left photo where two adults and a juvenile sit on a now gone old dock at Statter Harbor where they remained for the 20 minutes I was there. Most of my fleeting sightings are on the low tide flats near Waydelich Creek and very rarely, swimming in Statter Harbor. The otter on the right is feeding on the carcass of something dead on the shore of Lincoln Island as we watch from the boat about 100 yards offshore on July 20, 2019. Annette spotted the single otter on a tonalite boulder at the Kayak ramp out-the-road on October 13, 2020. This fellow seemed as interested in us as we were of him!

Any account of river otter in our area needs to include the Tlingít stories of the *kóoshdaa káa*. The usual Tlingít English name is “land otter” which immediately distinguishes the two species here but the stories go so much farther. Being such a social animal with usual fleeting sightings, it developed a mythology of wondrous meaning. The *kóoshdaa káa* is part of a world-wide shape-shifter stories. *kóoshdaa* means “land otter” and *káa* is an interesting word meaning “someone → indefinite human” (Tlingít dictionary) which together is taken to mean “land otter man” as the *kóoshdaa káa* can change at will into the form of a human, and in some stories, any other animal. The *kóoshdaa káa* curiously can be at once benevolent, benign or cruel. A common theme has the *kóoshdaa káa* calling out like a baby or a woman to lure the unsuspecting to the river where they will transform them into another *kóoshdaa káa*, sometimes for saving the person from the cold. Most of the stories have them preying on small children. This sort of story seems to have the purpose of keeping them away from the rivers and the ocean shore. They apparently have can whistle with a low-high-low pattern. No story like this can exist without some method of warding off the threat with the common methods being copper, urine, dogs, and in some stories, fire.

Enhydra Fleming, 1828, sea otter

ehn-hi-druh εν en, in + ύδρα *hydra*, water; hence "living in water"

In a monotypic genus, sea otter are in a line of descent removed by some seven million years from river otter but have a common ancestor with European otter, diverging from them about five million years ago (Koepfli, 2008, see *Lontra*). Unique among the mustelids, they are almost entirely aquatic and are fully capable of living their entire life at sea. Since they eat, sleep, mate and give birth in the ocean, they are more successfully aquatic than pinnipeds!

Enhydra lutris kenyonii, Wilson, 1991, northern sea otter, *γάχωχ'*, *γύχχ'*

loo-tris, ken-yawn-ee
ken-yown-ee

Latin *lutris*, otter.
Honorific for Karl W. Kenyon (? - 2007), author of *The Sea Otter in the Eastern Pacific Ocean*



Taxonomy: Three subspecies are currently recognized. The Western Pacific (Kuril and Commander Islands) *E.l. lutris*, Linnæus 1758; the central California coast *E.l. nereis* Merriam, 1904; and ours, the Eastern Pacific from the Aleutian Islands south along the coast to Vancouver Island. Curiously, Kenyon when asked if he was honored to have this subspecies named after him, he was "furious about it because he didn't believe the Alaskan sea otter was a sub species"¹

Status: The sea otter's fate was sealed when Georg Steller brought some 900 pelts back to St. Petersburg from his journey to Kayak Island, Alaska in 1741. None in Russia had ever experienced such a quality pelt. "*Enhydra lutris* ha[s] a hair density between 120 000 and 140 000 hairs/cm²" [18,600 to 21,700 in²], the primary hairs representing less than 1% within the hair coat."² This number is impressive, but far lower than the commonly used 50,000 or even 1,000,000 used by the U.S. Fish and Wildlife Service.³ Demand for pelts provided a lucrative business for Russian Alaska as pelts are far easier to ship across the North Pacific then haul them some 10,000 km [6,200 miles] across Siberia than heavy gold. When New Archangel, now Sitka, became the capital of the Russian American Company, they shipped more than 1,000 pelts a year for over 50 years. A major motivation for the Russians to sell Alaska to the United States came from their dramatic overharvesting of the sea otter. Here in SEAK the otter was effectively eliminated making their presence here untenable.

Sea otter act as a keystone species throughout their range. Foraging voraciously on urchins, they prevent urchins from destroying the giant kelp forests in their range. With the demise of the otter came the upsurge of the urchin which led to a catastrophic decline in giant kelp. While few find urchin an important food source, Dungeness crab numbers rose dramatically as well. An entire ecosystem was radically changed.

For almost exactly a century, sea otters were absent here.

Between 1965 and 1969, the Alaska Department of Fish and Game translocated 403 sea otters from Prince William Sound and Amchitka Island to 6 areas along the outer coast of Southeast Alaska. Consequently, sea otters in SE AK contain a genetically diverse mixture of mitochondrial DNA from their source populations (Bodkin and others, 1999) and are considered to be a separate stock from southcentral and southwestern Alaska stocks based on genotypic differences and geographic distribution (Gorbics and Bodkin, 2001).⁴

The slow, but speeding, resurgence of the sea otter in SEAK gives rise to some very different points of view. Conservationists and much of the general public consider it a triumph. Crab fishermen look at it quite differently. "One study done in Prince William Sound found that a sea otter could eat 14 adult Dungeness crabs per day. The population of sea otters could eat the entire commercial catch of Dungeness crabs in Southeast Alaska in less than two weeks." ... "Scientists agree that in the next few years, the rapidly growing sea otter population will reduce crab numbers to a level that probably existed just before the Russians arrived."⁵ As sea otter regain their former range, they become direct competitors with man for shellfish. At least on bill have been presented to the Alaska legislature to introduce a bounty on sea otter by State Senator Bert Steadman.⁶ Steadman's bill takes advantage of a "loophole" in the Marine Mammal Protection Act of 1971 allowing native take for "subsistence and artisanal purposes". We don't know how long it will take to restore the former balance between sea otter and their environment here in

SEAK. There will certainly be a period of transition when the foraging effects of the otter will be out of balance with their prey. This conflict is sure to intensify in direct proportion to the number of sea otter.

¹ *Soundings*, the newsletter of the American Cetacean Society, Monterey Bay Chapter, June 2007.

² Kuhn, R.A., H. Ansorge, S. Godynicki & W. Meyer. 2010. *Hair density in the Eurasian otter Lutra lutra and the sea otter Enhydra lutris*. *Acta Theriologica*. 55(3), pp 211-222

³ <http://www.fws.gov/alaska/fisheries/mmm/seaotters/history.htm>

⁴ Esslinger, G.G. & J.L. Bodkin. 2009. *Status and Trends of Sea Otter Populations in Southeast Alaska, 1969–2003*, Scientific Investigations Report 2009–5045. U.S. Geologic Survey, Reston, Virginia.

⁵ http://seagrant.uaf.edu/news/99ASJ/04.01.99_OttersRebound.html

⁶ Sea Otter Bill introduced. 2013. <http://bertstedman.com/new/?p=2877>

Notes: I have a long history with sea otter in California. My first Alaska experience at the harbor in Cordova is illuminating. Annette and I on our second day in Alaska, July 19, 2005, walk to the harbor from our daughter's place. Looking out over the placid water, I comment "look at all the logs!" When we get closer, they are all sea otter!

2012 While on a training cruise (with no camera!) on May 1, 2012, Captain Gary Judkins gets a call on the radio from Rum Runner that there is a sea otter at Faust Rock, and we excitedly head north up Saginaw Channel. I spot the otter in the water about 30 meters from the bell buoy. It is a single, large animal. As Captain Gary slows the boat, the otter pops its head up frequently and every time looks directly at us in the boat, showing its white face. Twice it lays on its back and uses its "hands" like its feeding, but it hasn't dived so I'm not sure it has anything to eat or even if it is handling anything. There are five Steller sea lion on the buoy with two more swimming around it and the otter stays well away from them. We observe them for about 15 minutes and they remain apart. This is my first Juneau area sighting, and I wonder where this otter came from: east from Glacier Bay where they have been seen up Excursion Inlet, or up from Ketchikan. Since we only about 45 water miles from Excursion Inlet, it seems likely our animal is from the Glacier Bay population.



2014 My second sighting is August 13, 2014 of a single animal at the southern end of Little Island. Laying on its back, it is unmistakable. This time I'm able to get two photographs before as we have very little time to observe. The whiskers show up in the rather severe crop of one image.



2018 My third sighting is July 26, 2018 in North Pass on the east side in the kelp forest. A single animal is lazing about, mostly on its back. The right photo is a pretty severe crop from the original.



2018 My fourth sighting is a month and a day later, August 27, 2018, also in North Pass in the kelp forest. It really begs the question, is this the same individual? It seems likely, but my photographs aren't clear enough to identify individuals, so it will only be a supposition.



2019-1 proves to be a banner year for sea otter as I spot them on four different days during the season! This really begs the question, is this the same animal? My photographs just might have enough detail to determine that. This fifth sighting on June 26 is in exactly the same place as 2018, the kelp forest of North Pass. The face of this fellow is very dark, not as dark as the rest of his pelage, but still dark. My other shots show a very creamy head and face hair so this looks to be a different individual.



2019-2 Just nine days later in the same spot, the kelp forest of North Pass, is my sixth sighting. The face is very similar to the June 26 animal and I suspect they are the same individual. The first shot shows how one needs to do a very careful search to find these guys. While not especially skittish, we approach them very slowly and at a distance of more than 100 yards making as little sound as possible. This one paid absolutely no attention to us at all.



2019-3 Five days later, Captain Kellie Nightlinger manages to get us closer than I've ever been to an Alaskan sea otter. We are again in the kelp forest of North Pass where we encounter a darker-faced otter that looks suspiciously like the other darker faces. Is he the same guy? One thing is for certain, this is a male as two of the photos clearly show! I must admit at bit of lurid amazement with the bizarre fact that most of the penises of mammals I've seen are bright pink! My next unanswered question, is he eating the bull kelp (*Nereocystis luetkeana*) or just playing with it?



2019-4 Two months later, September 19, 2019 I get my eighth sighting in our Juneau waters, this time in the small pass between Little Island and Ralston Island, a new location for sea otter. This one is much more blonde-faced than the other 2019 otters and I suspect that it is a different individual.

If my sightings are any indication of the status of sea otter in our waters, they may be evidence of their numbers increasing. It has taken a long time for this to happen, some 40 years since their reintroduction to SEAK waters near Sitka. Since all of my sightings are of single individuals, and one definitely a male, I suspect they are all males who are out wandering to see what waters might be good for exploiting. The crabbers I know are not happy about this. The naturalists I know are ecstatic. One reaction is based upon exploitation of a resource, the other of simply enjoying its presence. These may prove difficult to reconcile.

Neovison Baryshnikov & Abramov, 1997, mink

neo-vih-zohn Greek *véōs*, *neos*, new + *vison* probably from the Swedish word for weasel, *vessla*

Neovison vison nesolestes Heller, 1909, American mink, island mink, Alexander Archipelago mink, *nukshiyáan*, *lukshiyáan*

American neh-sahl-ess-tess, Latin neh-S AHL-ess-tess

Etymology undetermined, but it is a homonym with a damselfly genus



On August 12, 2009, I spotted the cat-like creature on the Moraine Ecology Trail at the shore of the beaver pond right above where the sockeye are spawning directly across from the lodge with the video camera. The mink looked across the pond straight at us for a moment, but as soon as our group got to the opening to see the pond, it ran off out of sight into the woods so only those close to me were able to see. The pelt was a very dark brown, looking nearly black but showing some color. This is my first sighting of this animal since Crater Lake days! On September 22, 2010 I spot one right under Dipper Bridge at the bear viewing platform and manage to capture a photograph of its tail, left, and face, right with my iPhone 4. These photographs are highly cropped from the original, but clearly identify the animal. On an early October day in 2011, I happen to come across Bob Armstrong out on the Moraine Ecology Trail and while we're talking just above the beaver lodge with the camera, a mink scurries up the sand slope and runs right behind Bob and disappears into the willow shrubs. Since he was facing me, as soon as I point it out it's gone and Bob misses it. The tail of a mink is all I capture on September 10, 2012. I am seeing these more frequently as my time in Juneau increases, but they prove to be a very difficult target for the camera!

Pinnipedia Illiger, 1811, ***pinnipeds***

Latin *pinna* in secondary sense as fin + *pes*, genitive *pedis*, foot; thus “having feet as fins”

Current classifications consider this group an unranked clade within the Caniformia. Totally unique with their extreme adaptation to their semi-aquatic environment, evidence indicates a monophyletic ancestry that arose some 50 million years ago in the Eocene. Their common ancestor was long thought to be from either the bears or the mustelids. The discovery in 2007 of the fossil *Puijila darwini* in early Miocene deposits in Nunavut, Canada, provides a clear line to the mustelids.

The clade is currently divided into two superfamilies Otarioidea, the eared seals and Phocoidea, the “earless” seals.

Superfamily Otarioidea (Gray, 1825) Lucas, 1899

Family Otariidae Gray, 1825 **eared seals, sea lions**

oh-TAIR-ee-ih-dee Greek ὠτάριον *otarion*, little ear

This family is noted for having external ear flaps (pinnae) and having a well-developed pelvis with rear legs that are used for walking on land in addition to their use as flippers. Their primary locomotion in the water is with their large front flippers. Genetic evidence shows the family divided into three clades: northern sea lions; northern fur seal and its extinct relatives; and, the Southern Hemisphere species.

Berta, A. & M. Churchill. 2012. *Pinniped Taxonomy: evidence for species and subspecies*. Mammal Review 42 (3): 207–234.

Eumetopias Gill 1866

Greek εὐ- *eu*, typical, well, normal + μέτωπον *metopon*, broad forehead

Eumetopias jubatus (Schreber, 1776), Steller sea lion, Сивуч (sea wolf), *taan*

Latin *jubatus*, having a mane

Honorific for Georg Steller (1709–1746), German Naturalist on Bering’s expedition to Alaska in 1741, the first to scientifically describe this animal.

“Sea lion” was applied from 1690’s to various species of large eared seals and is easily understood as this is a predatory animal where the male develops a “mane” that was seen as resembling the familiar lion to Western eyes. The Russian Сивуч “sea wolf” probably comes from their familiarity with the predatory wolf and made the metaphoric connection to the sea animal just as the English speakers who were familiar with lions did. I’ve asked many Tlingit speakers if the name “taan” has any meaning beyond the name, and none have any such knowledge. Clearly “lion” wouldn’t apply as pre-contact Tlingit would have never seen a lion. “Sea wolf” is possible as they would be familiar, like the Russians, with that animal.





Taxonomy: German naturalist Johann Christian Daniel von Schreber (1739-1810) gave the name *Phoca jubata* in 1776 only later in the same year to give it the current name. Did he recognize a mistake he made calling it a seal—totally unrelated—and then correct his mistake the same year? I've not been able to find out. He wrote a multi-volume treatise on mammals of the world, *Die Säugethiere in Abbildungen nach der Natur mit Beschreibungen*, using the binomial nomenclature system recently invented by Linnæus. This demonstrating his extensive knowledge, it seems like an amateur mistake.

Notes: The vast majority of Steller sea lion I see are juveniles that I am unable to determine their sex. Early and late in the season adult male and female show up and are easily identified by their size and different morphology. Males are substantially larger than females, with a much stouter neck and as they mature a set of imbricated (shingled) very stiff hairs develop from just behind the ears to the upper back that looks enough like a mane to give them both their specific epithet as well as their English common name. The top left photograph illustrates to nearly equally sized bulls, but the one on the right has a more developed mane. They are still wet so appear quite dark. The photograph to the right shows a bull on the right and a mature cow with pup on the left. The well-developed pelvis and “legs” are easily seen in both upper photographs.

The tongue-sticker appears to be a mature cow and the swimming lion a juvenile. Their external ears are plainly visible.

It is a very rare day on the water when I don't see at least one sea lion, and usually a dozen or more. I see them in three distinct habitats.

Open Water Sea Lions



How much time does a Steller sea lion spend in the water? I am unable to answer what seems to be a rather simple question from either my observations or my research. I don't know! It seems likely that most of their time is spent in the water, largely as they are aquatic animals and their food is found in the open ocean. The fact that these animals mate, bear young and rest on land show they have yet to fully make the evolutionary move to a truly aquatic life and are thus fairly recent in their move to the ocean from land. Sea otter are nearly exclusively aquatic, spending almost no time on land. They need to rest, but their bodies are not built for buoyant floating like sea otters and I've *never* seen a Steller sea lion still on or in the water.

Eating



Being carnivores, sea lions spend the majority of their time in the water foraging for food. Most any fish will do, with capelin, sandlance, pollock, herring, cod, salmon, flatfishes, sculpins common as part of their diet in southeast Alaska. They also eat squid, octopus and occasionally seal pups. When I see open water sea lions, there are usually a dozen or more and this leads me to think that they use some form of social foraging to improve their odds of finding and catching fish. Having never been in the water with the sea lions, I simply assume they swallow the small fish whole. I do occasionally see them eat the much larger salmon. Here, they come to the surface and toss the body of the salmon a bit out of their mouth to gain a better purchase and use their large teeth to cut the fish into smaller pieces. As the left photograph from August 14, 2010 shows, gulls don't waste any time coming around to catch any of the cast off pieces that they can.

Thermal Regulation



In a study on feeding¹, the typical stomach temperature of a Steller sea lion was 37°C, the same as we humans. Being homeothermic, their morphology creates a physical barrier to heat loss and their physiology creates a metabolism that serves to keep them warm. But more is required.

The water temperature a foot or so below the surface around Juneau ranges from 4 to 13°C. Whenever submerged, sea lions must deal with a 33 to 24 degree temperature differential. Their blubber layer and pelage are their first defence, but behavior comes to play when they are cold and can't get on land or a buoy to warm up. In these photographs from May and June of 2013 I captured lions holding their pectoral flipper out of the water for several minutes each. This is surely a way to expose a part of their body that quickly absorbs heat that can then be pumped through the rest of the body by the heart using little energy, at least when compared to more aerobic activity.

The need for behavioral thermal regulation can be seen as “estimates of blubber and total body lipids ranged from 5% to 17% of total body mass”² making Steller sea lions rather lean when compared to other cold water mammals. “Blubber comprised 30%-40% of total body mass for harbor seals.”²

¹ *Steller Sea Lions Say Ahhh for Science* <http://seagrant.uaf.edu/news/02ASJ/06.21.02sealions-say-ahh.htm>

² Pitcher, K.W. & D.G. Calkins. 2000. *Steller sea lion body condition indices*. *Marine Mammal Science* 16(2):427-436.

Sea Lions at haulouts

The most obvious reason sea lions go on land is for rest. Sea lions spend a large portion of their life swimming in the water and every moment

they are swimming requires energy. Hauling out gives them a chance to reduce their energy expenditure and recuperate from all the wandering for forage while swimming. I have found no studies on the time they spend in water versus on land, but based upon my observations a large majority of their time is spent in the water. It would follow that some periods of rest are required.

There are other benefits to spending some time out of the water. During the late summer to early fall month-long molting period they are often seen on land as it seems drying out their pelage hastens the molting process. Drying out probably helps reduce the number of parasites on their skin. When the ambient temperature of the air and land is greater than the water, they can reduce metabolism by using the warmer environment for thermal regulation. Every haulout I've seen has plenty of social action going as there are always multiple animals—often many hundreds—where social interaction takes place much of the time. They are protected from predators here, primarily the orca. On one whale watch, I witnessed an orca rise out of the water with a large piece of sea lion blubber in its mouth.

Being semi-aquatic animals, mating and birthing do not take place in the water but on land at very specific locations that are distinguished with the name rookeries instead of haulouts. All of the southeast Alaska rookeries are on the outer coast on rocky islands.

Buoys

Three buoys in Juneau waters can nearly be counted on for having sea lions on them. The obvious reason they climb on them is for rest. Sea lions spend a large portion of their life swimming in the water and every moment they are swimming requires energy. Energy spent requires energy replenished. These buoys offer a flat surface for resting and absorbing solar energy.

Faust Rock Buoy



Faust Rock buoy (LLNR 23950) is a red and green lighted bell buoy marked “FR” located due east of the tip of Mansfield Peninsula of Admiralty Island at 58.418278, -134.927688 at the meeting of Saginaw Channel with the Lynn Canal. It marks the location of a rock that lies only 2.3 fathoms (13.8 feet) below the water surface at mean low tide. The view of it to the west includes the lighthouse complex of Point Retreat and the view east the upper channel of the Eagle Glacier. As of this writing in 2014 I've only been to the buoy once without a sea lion resting on it. When a bald eagle (*Haliaeetus leucocephalus*) sits on the solar collector, it makes a fitting decoration to the buoy for a view of the Eagle Glacier.

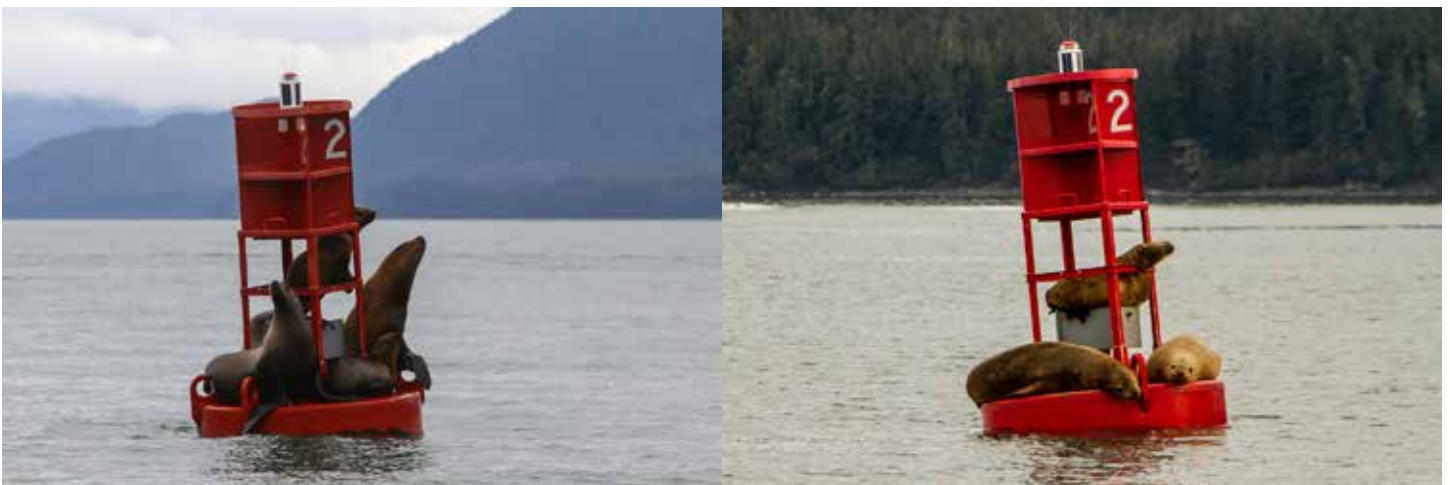


Poundstone Rock Buoy



Poundstone Rock buoy (LLNR 23845) is a red and green lighted bell buoy marked "PR" located near the northern end of Favorite Channel at 58.528838,-134.933743 almost exactly due west of Eagle River and Herbert Glacier. It marks the location of a rock that lies only 2 fathoms (12 feet) below the water surface at mean low tide. These photographs illustrate the view to its north northeast is the Sentinel Island Lighthouse, to the east the Herbert Glacier and to the west the Chilkat Mountains across the Lynn Canal.

Gibby Rock Buoy



Gibby Rock Buoy (LLNR 23800) is an all red, short, lighted buoy marked "2" located where Fritz Cove opens up into the northern end of Stephens Passage at 38.898556, -77.037852. In February of 2000, the original metal structure built upon the rock collapsed and was replaced with a temporary floating red lighted buoy located 80 yards north of the old buoy and rock. In April of 2010 the temporary buoy was damaged and removed. It was replaced by the current buoy, also considered temporary. The new buoy went up just before the whale watching season began, but by the time boats headed that way, it was already occupied by sea lions most of the time. By the summer of 2014 it became a "standard" stop to see the sea lions on trips that didn't go as far north as Faust of Poundstone. I've never seen anything but juveniles on this buoy, most of them rather small, probably in the 100 to 200 pound range. It was removed in 2016.

How do they get up there?

The most common question asked about the buoys is just how the sea lions get up on the platform. The only difficulty they have is when it is fully occupied and they must jostle with the current occupants. Propelling themselves upward with their strong rear flippers is the easy part. Muscling into scarce place is the hard part. In these two photographs from June 12, 2012 show a determined large juvenile doing his best to intimidate a slightly smaller juvenile while the others appear to play no attention to the fuss. I see this behavior as an extremely important part of the social development of the sea lions as it is a game of "king of the hill" where the larger, stronger, most aggressive, and persistent will force their way onto the platform. This is a precursor to the behavior that will be necessary for the bulls to gather and maintain a harem and for the females to protect their pups on the rookeries.



The summer of 2012 featured a particularly young juvenile that ventured high into the superstructure of the Faust Rock buoy. Surely it is this youngster's small size that allows him the flexibility and agility to climb up here. The front flippers must be the primary means of propulsion with the rear used just for bracing. I wish I saw the youngster climbing! Often the position of sea lions looks anything but comfortable, but this one seems highly relaxed in what can't be the most enjoyable of lounging racks!

Haulouts

Benjamin Island

Early in the season (April through June), Steller sea lion frequent a haulout on the western shore of Benjamin Island (see map right from <http://alaskafisheries.noaa.gov/protectedresources/stellers/habitat.htm>). This is a "Designated Steller Sea Lion Critical Habitat" with special regulations found in 58 FR 45269, August 27, 1993.

They congregate in large numbers, sometimes in the low hundreds. The relative abundance of gently sloping rock here allows many places for these large animals to get out of the cold water and warm themselves and rest.

The amount of waste they produce is simply amazing and is probably the reason why they abandon this haulout after a month's use—it simply gets too filthy even for these guys! There can be quite a stench as we slowly cruise by observing, and when the rocks are empty there is an obvious coating of white guano over nearly the entirety of the exposed rock surface.

Is it coincidence that just about the time they foul their house it is also time for pupping out on the open ocean shoreline and many leave for the rocky islands where the older males set up and control their harems and cows watch over the newly born pups?



In this photograph from June 14, 2009, there are 96 individuals.



On June 25, 2010 I count 134 individuals. There are three large adults, one with a pup laying its head that I interpret as being a cow with last years pup.



In this composite panorama from June 23, 2014, there are 94 individuals. This is the latest date I've seen sea lions at Benjamin Island. Note the tremendous range of sizes of the animals here this day. There are many pups from last season and one very large bull and everything in between.

Little Island

Little Island is a treeless rise of gabbro with a blocky, flat-topped summit of about 50 feet above sea level with a red and white daymarker and flashing white light on its southern edge. It is the northernmost island of the Stephens Passage archipelago, just north of Ralston Island with Favorite Channel to the East and the Lynn Canal to the west. This means that very deep water (233 fathoms) is close to the west and much shallower (124 fathoms) to the east. I'm supposing that this change in the undersurface topography causes tidal flow patterns that create a varied set of environments for their prey fish thus providing plenty of food for the large number of animals.

The periphery of the island is of coarse gravel to volleyball-sized boulders that is inundated by the twice-daily high tide. These exposed beaches provide a late season haulout, usually beginning in mid-August. My earliest sighting was on August 5, 2014. They probably continue to use the haulout after the whale watch season ends the last week of September when my trips there end leading to my latest sighting of September 24, 2013. An obvious advantage of this site when compared to Benjamin Island is the twice daily cleaning action of the tides. This is at the same time a disadvantage as the high tides severely limit the available emerged land for hauling out. Since the waters are warmer this time of year, and there is more available space, the congregation of animals here can exceed 500 individuals. Little Island has not been designated a critical habitat for the sea lions.



On September 6 2009 I headed out on Allen Marine's St. Philip for a whale watch. At Little Island we found such a large population of sea lions that I could not count them from the boat. So I took a series of photographs of the island, stitched them together in Photoshop and counted 303 of the creatures by moving slowly through the photograph, where they didn't keep moving! This is now my standard strategy to count sea lions.

When we first arrived, there was a group of harbor seals at the point, but they scattered with the approach of our boat. The roaring and barking of the animals was loud enough to cover the sound the idling engines of the ship. Note the largest animals, presumably male, are on the interior of the island. This is probably a mixture of the sexes, but I don't know how to tell young seal lions sex. Since the pupping season is over

and the outer rocky islands abandoned until next year, I'm presuming these are mixed groups. The various sizes of the lions is apparent in the photograph.



On September 24, 2013 this very long panorama shows 573 individuals of every age from this year's pups to old adults.



On August 5, 2014 this panorama shows 242 individuals.

Social Behavior at Haulouts



Aggression: On my suggestion on an Entrée Alaska trip on September 12, 2009, Captain Collin Pilcher sailed within 50 yards of Little Island on a rainy day. The sound was loud and when the breeze blew toward us from the lions, the odor was a bit pungent. Two large males up on the flats were facing each other and bellowing loudly. We never saw them make any form of physical contact and all the other lions stayed well away of these two. It appears the lion on the right is larger so the one on the left is a younger male out showing off his power to the established leader. Note how neither is making eye contact with the other. Two much younger lions seem to be watching and mimicking the behavior. The photograph on the right from September 15, 2012 shows two older juveniles (teenagers?) barking and mouthing each other. This proves to be the typical pattern of behavior for the adult animals: lots of loud bluster and posturing of both the neck and open mouth but essentially no body contact except from the breast line and below. This probably serves as training for the real aggression that adult males must use to maintain their harem at the rookeries.



Sleeping: The majority of the animals on the beach at Little Island are simply snoozing. They congregate so close together that they are in almost full body contact with animals on either side, even when there is unoccupied beach space. Most have parts of their body resting on other animals. I'm guessing that physical contact might have two functions here: thermal regulation (it's warmer touching others) as well as some social function where touching each other has a role on group cohesiveness. Sea lions are *very* social animals.



Scratching and Molting: I've never observed social scratching, just individuals scratching what itches. When Steller sea lions molt they often loosing large patches of pelage at a time. I presume this itches, as watching them scratch is pretty much the second most common thing they do after snoozing! For breeding adults, the molt takes place well after they've left the rookeries and so is a common sight at Little Island in September. Non-breeding adults and juveniles begin molting earlier, sometimes as soon as early July. In these two photographs, the bulls (not the same individual) shows no apparent sign of molting, but are certainly scratching away at something causing an itch. The center large non-breeding animal in the right photograph shows extensive molting on its hindquarters on August 22, 2014.

In the wild, juveniles (ages 1-2 years) were the first to moult followed by adult females, bulls and pups. The mean date when juveniles started their moult was 21 Jun which was significantly different from the mean start date of 07 Aug for adult females, and differed from the mean start date for pups of 01 Sep (one month later). Mean completion dates were also about one month apart (19 Sept for juveniles, 26 Oct for adult females and 17 Nov for pups). Duration of the moult was about 45 days for each age group (pups and adult females).

Daniel, R.G. 2003. *The timing of moulting in wild and captive Steller sea lions (Eumetopias jubatus)*. Master's degree thesis for the University of British Columbia.

Inter-species Socializing



On September 6, 2009 we get to enjoy a humpback whale calf and a young sea lion play in Favorite Channel as this photograph shows. They dove together, rolled together and seemed to enjoy each other's company. Does this behavior start with the sea lion (I think so) or the whale? Collin tells me he's seen the whales flip the sea lions out of the water with their flukes! And the lion swims right back to do it again. How can this be interpreted as anything but fun? These two young animals were together for the entire 30 minutes regulations allowed us to be with them. When the whale rolls it is very obvious when the pectoral fins rise up more than a meter out of the water and splash down only for the next one to come up and do the same. The sea lion would swim next to the whale when it did this as well as circle the beast. I really like this shot with the sea lion going head first down right in front of the whale (its tubercles are visible as well as its eye).

Far more common are Steller sea lions being in near proximity to the humpbacks, as the right photograph from June 6, 2014 illustrates. This behavior is more difficult to interpret, but is probably related to the whales feeding on herring. Bubble net feeding had not yet begun, but whales do forage for schooling herring on their own, and it seems likely that when a school of herring is startled by a whale, they'll swim off in all directions which should make it easier for a sea lion to capture some.

Branded Steller sea lions



Both the Alaska Department of Fish and Game and NOAA have branded sea lions. Current branding is done primarily by ADF&G. Pups are electronically branded at their rookery and some animals are branded when they are older and wander. Brands are done in the center of the left flank and include a single letter representing the rookery and up to three digits. As the animal grows, the brand grows and is often easily visible. If they are not branded as pups and the rookery isn't known, the digits are preceded by an equal sign (=). A complete catalog of brands and wanderings is maintained. I provide my photographic sightings of Steller sea lion to Lauri Jemision and Kelli Hastings of ADF&G. In turn they provide me with updated information on the sightings of the individual. As of this writing (November 2014), I have photographs of 21 branded Steller sea lions.

W58 on the left is a female branded as a pup on July 2, 2002 on White Sisters Island. She had a pup at her natal rookery when she was five. She's seen most often at Benjamin Island but has been spotted at Gran Point near Haines, White Sisters, except for a brief sighting when she was two on Sail Island in Frederick Sound. I took this photograph on June 21, 2014 at the Faust Rock buoy. I have nine photographs of her over three years.

=413 was not branded at his rookery but as a juvenile of undetermined age at Benjamin Island on October 30, 2003. This photograph is from Little Island on August 19, 2009, my only encounter with him.

Entangled Steller sea lion

Entanglement in marine debris is a contributing factor to Steller sea lion injury and mortality. During our vital rates field research, we photograph-document sea lions that are entangled and those with visible evidence of ingesting fishing gear. In a study covering 2000 – 2007, packing bands (commonly used for holding cardboard bait boxes closed) were the most common neck entangling material, followed by rubber bands, net, rope and monofilament line. Salmon fishery flashers were the most common ingested gear observed, followed by longline gear, hook and line, spinners/spoons and bait hooks.

What can we do to reduce entanglements? "Lose the loop!" Simple procedures such as cutting or reducing entangling loops of synthetic material and eliminating the use of packing bands on boxes can prevent entanglements.

<http://www.adfg.alaska.gov/index.cfm?adfg=marinemammalprogram.stellerentanglements>

The neck entanglement case of H80





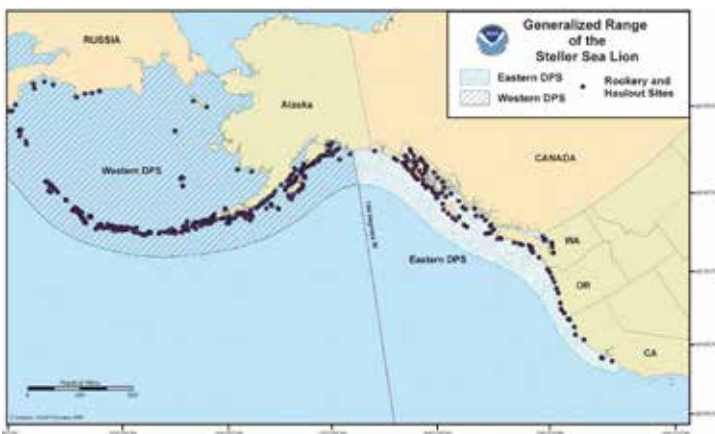
H80 was branded as a pup on July 1, 2001 on the Hazy Island rookery. At some point in his life, he became entangled in some sort of strap, probably a packing band, that wrapped around his neck. As he grew, the strap began to dig into his skin and opened a wound that is clearly visible in my photographs. In 2013 Lauri Jemison and a crew of researchers were able to sedate him and attempted to remove the entanglement. As my sequence of six years of photographs shows, the scar remains visible with raw skin and perhaps musculature as well each year. The wound appears to be greatly healed in the August 7, 2014 photograph when he was 13 years old

Entanglements: flashers



The four individuals are the unfortunate victims of flashers. When commercial troller rig their lines, they include flashers to get the attention of the king salmon. Attached to the base of the flasher is a large treble hook with herring attached as bait. Since Steller sea lion seem to prefer salmon to all other fish as food—pretty much just like all Juneauites!—they spot the flashers and hooked salmon and go after it. If they get a good purchase on the salmon, they run the great risk of getting the hook as well. When I spotted the poor animal bottom left on Little Island on August 24, 2012, I immediately called the NOAA Marine Mammal Stranding Network hotline (877-925-7333) and reported it with complete coordinates. I thought the animal was dead, but later that day when researchers arrived, they could not find the animal. It looked very gaunt to me and if it was alive, was in very poor health. Removing flashers is extremely difficult and Kelli tells me if a sea lion sheds it, the flesh around the would dies, the hole enlarges, or it simply rips through the skin. It surely interferes with the animals ability to eat

Eastern vs. Western Population Dynamics



The Alaska range of the Steller sea lion is divided into two Distinct Population Segments (DPS) at 144° West longitude, Cape Suckling. The eastern population is healthy and growing in population while the western population has dropped more than 75%! The western is classified as endangered and the eastern population was delisted entirely on June 4, 1997. Both populations are subject to the Marine Mammal Protection Act of October 21, 1972.

<http://www.nmfs.noaa.gov/pr/species/mammals/>

So why is the eastern population growing and the western declining (the map is from NOAA)? The answer has yet to be determined but the hypotheses include ideas that fit into one of two models. The “bottom up” force which results in their environment not being able to sustain their numbers for various reasons from over fishing to climate change. The “top down” force which directly reduces the number of lions by human-caused killing, increased predation and pollution.

That the Bering Sea has a 250 year history of over fishing/hunting is a given. The number of animals killed is astonishing. Georg Steller described in scientific detail the cold water sirenian that now bears his name —Steller’s sea cow—in 1741. By 1768 the slow moving animal was extinct due to over hunting. Did the removal of the animal that ate huge amounts of the tops of the kelp forest have a lasting effect? The sea otter was hunted to near extinction from 1741 to 1911 and its numbers plummeted from several hundred thousand to perhaps only a thousand. Did the removal of the animal that kept in check the urchin population that eats the base of the kelp forest have a lasting effect?

Superfamily Phocoidea (Gray, 1821) Smirnov, 1908

Family Phocidae Gray, 1821 **earless seals, true seals**

“True” seals lack external ear flaps (pinnae) and have a dramatically reduced pelvis with rear legs reduced to mere flippers (see photograph of harbor seal vertebral column found at Auke Rec beach). They are incapable of walking on land and must drag themselves with their front flippers. Commonly thought of as being mostly smallish animals (as in relation to the Steller sea lion) the southern elephant seal can exceed 5,000 kg!



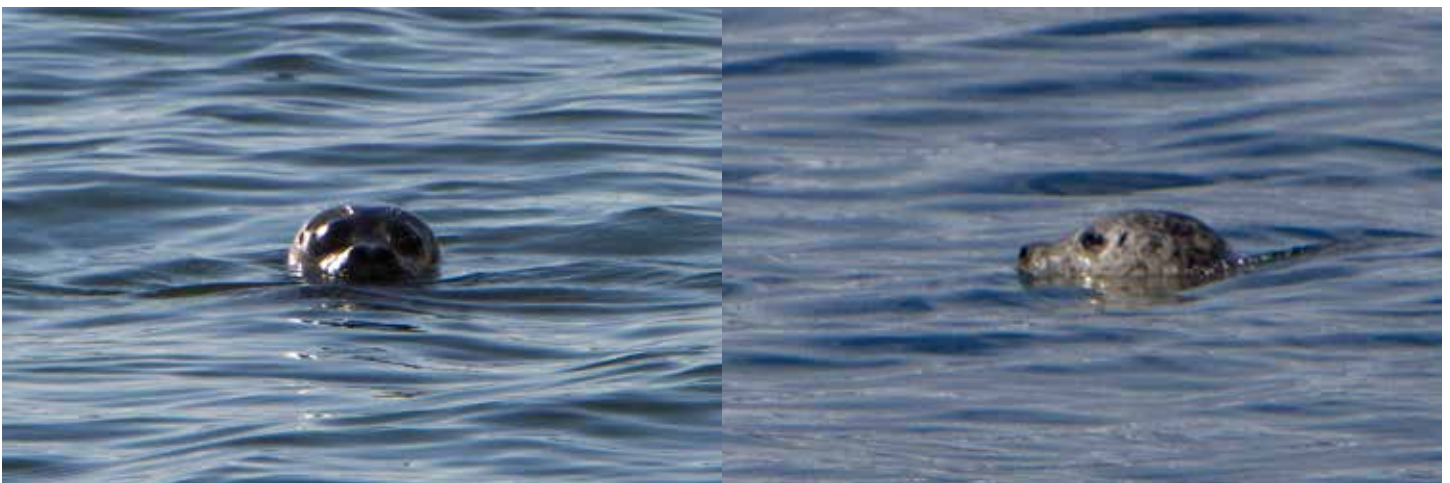
Phoca Linnæus 1758

FOE-kuh from Ancient Greek φώκη *phōkē* to the Latin *phoca*, seal.

Phoca vitulina richardsi (Gray, 1864), harbor seal, *tsàh*, *tsaa*

Latin vih-TOO-lih-nuh, American vih-tew-LIE-na Richards

Latin *vitulina*, veal; presumably from their edible flesh. Honorific for an undetermined





Harbor seals can be identified at a glance when swimming as their heads remain parallel to the surface of the water as they swim and their round heads resemble bowling balls with their large eyes looking like the finger holes. Upon close examination, seals lack external ear flaps— pinnae— (to say they are “earless” refers to the lack of these flaps as they do, indeed, have ears). Their pelage is remarkably varied but all colors, from light dark be it nearly black, gray or tan, are united by the numerous and variously shaped spots.

Seals are more aerodynamic than sea lions in shape and primarily use their rear flippers for swimming. On land, they can’t “walk” as the rear flippers always remain trailing behind. These characters make them more highly adapted for their mostly marine life. However, mating, pupping and nursing occur on land or icebergs.



June 14, 2009 in *Endicott Arm* (see map) is harbor seal day. The females gave birth on ice floes to many pups earlier this month, and the flat icebergs are loaded with seals! Many moms and pups are together and there are lots of other seals just laying on the ice in their typical upward arc position. How this can be comfortable is a question a human would ask, but it is obviously comfortable to them. I presume the reason for this is that it reduces the surface area in contact with ice so as to prevent heat loss while resting. As the Allen Marine boat slowly glides through the water toward the Dawes Glacier, we bump into quite a bit of ice but dodge the floes with seals. I see at least 50, but really don’t make any effort

to count them as they are in view in every direction in the fjord.

The photograph on the left is of two adult seals who simply watched the boat as we glided by. The photograph on the right is of a baby whose mother already dove off the ice into the water and baby was trying to do the same. The babies are about a quarter the size of the adults and already rather mature-looking. It is probably two weeks old and already has plenty experience diving off the ice, swimming in the fjord and climbing back on the ice and learning to eat on its own.

A comprehensive study ¹ found disturbance from all vessels represented a real threat to the energy regime of both mother and pup harbor seals.

The odds of a seal entering the water were higher when vessels were present (>2 times) or within 100 m (3.7 times), and when a pup was present (1.3 times). The baseline, undisturbed, rate of seals entering the water was 0.06 (95% CI: 0.05–0.08) per 10 min.

Since Tracy and Endicott Arm are such an important rookery for harbor seal, NOAA guidelines went into effect in 2015 for ships and craft of all sizes when entering these waters.

All vessels (kayaks to cruise ships) should strive to maintain 500 yds. (~ .25 mi) from seals without compromising safe navigation. Make an approach plan to avoid surprising seals. Be equally cautious to reduce disturbance when departing the fjord as arriving.

Minimize wake, avoid abrupt changes in course or engine pitch, and avoid loud noises (such as collisions with ice) in the vicinity of seals. ²

And a Tourism Best Management Practices policy went into effect in 2019 for all participating companies.

¹ Matthews, E.A. Mathews, L.A. Jemison, G.W. Pendleton, K.M. Blejwas, K.E. Hood & K.L. Raum-Suryan. 2016. *Haul-out patterns and effects of vessel disturbance on harbor seals (Phoca vitulina) on glacial ice in Tracy Arm, Alaska*. NOAA National Marine Fisheries Service, Fishery Bulletin 114(2)

² _____. 2015. Frequent Questions: Alaska Harbor Seal Approach Guidelines in Glacial Fjords. NOAA Fisheries. <https://www.fisheries.noaa.gov/alaska/marine-life-viewing-guidelines/frequent-questions-alaska-harbor-seal-approach-guidelines>

While abundant in the waters here, this is not a guaranteed sighting on a whale watch. I probably only see them on about a third of my days on the water. They have very specific haulouts, none on the mainland, where at low tide we usually make a slow pass to observe them. Eagle and Favorite Reef are available as a haulout only on low tides as both are nearly underwater at normal high tides. This very much limits the number of hours they can rest. For locations, see “Chart of On-the-Water Locations”.



Eagle Reef in Favorite Channel



Favorite Reef in Saginaw Channel



Hump Island

On September 6, 2009 we cruised by *Hump Island* and I counted 74 seal lying on the gravel beach, the most I've seen there since. We stayed about 150 yards offshore and cruised by slowly, probably less than 1 knot. The naturalist aboard asked everyone to be quiet so as not to spook the seals back into the water. The kids didn't really comply, but the knot of seals did remain in place and did not seem to mind our approach. About a dozen of the group look small enough to be this year's pups. This is the largest small pebble beach in our entire area, located on the northeast side of the island just south of the passage between it and Ralston Island. This gives this area protection from the wind and waves, but curiously it is not a favorite haulout as they prefer the rockweed covered low tide reef rock.



Little Island

While an actual Island with dry land at all tides, the seals prefer the rockweed (*Fucus gardneri*) beds to the rocks and pebbly beaches. These are all on the northwest end of the island with the Lynn Canal waters.





Scull Island

This sequence illustrates exactly the behavior we *do not* want to see, especially if we think our presence is the reason for it. Harbor seals have, what seems to me, a curious bipolarity of behavioral response to humans. In their haulouts, they clearly find us threatening. If we do well, we approach just closely and quietly enough for them to raise their heads and look at us. Exactly what approach triggers their flight response isn't easy to tell, but as soon as they head into the water we try to move away very slowly.



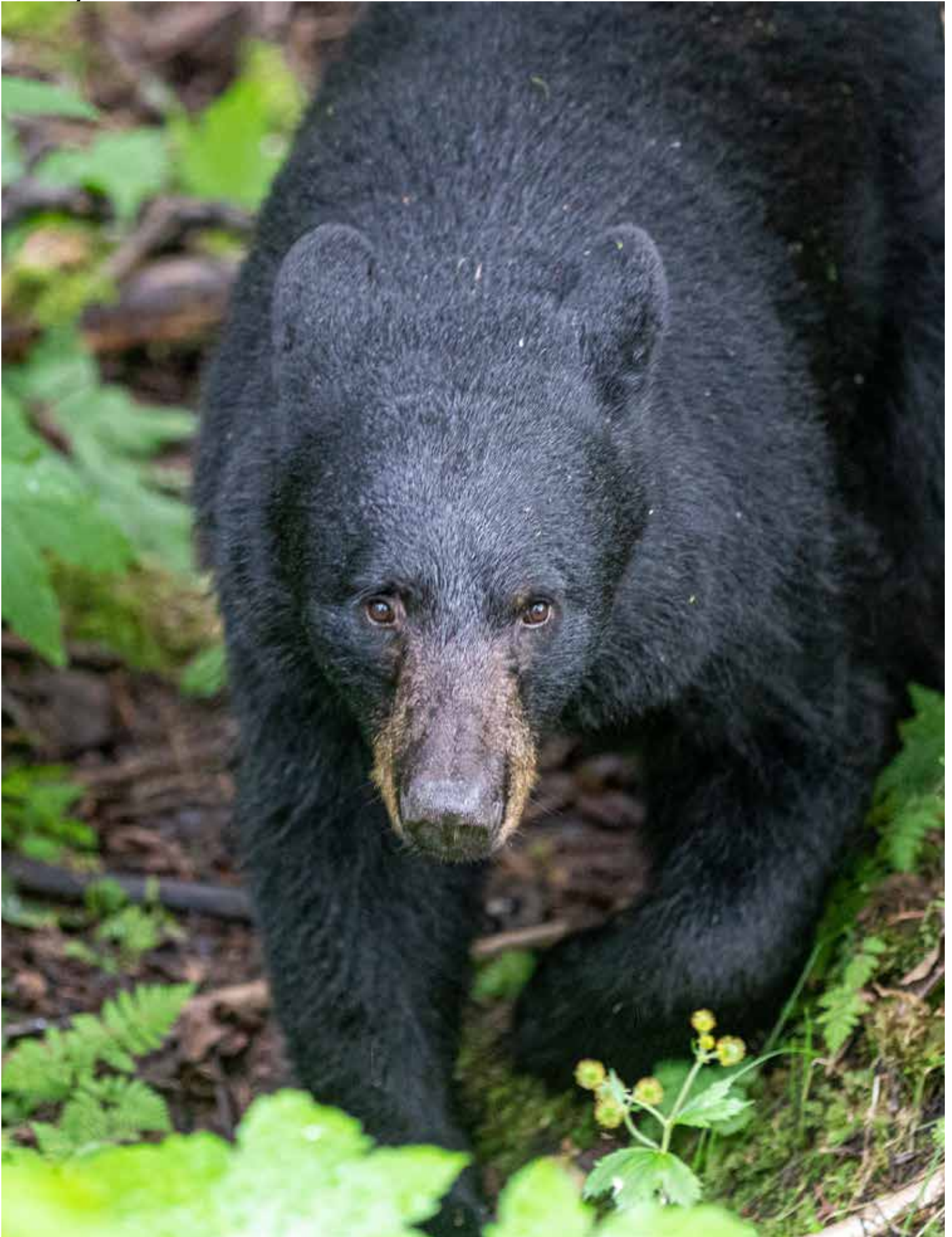
Statter Harbor

On October 14, 2020 we're buying some black cod from the Fishing Boat Silver Tip at the end of the gangway at the harbor office. As folks are having their fish cut to taste, the heads are thrown over and four harbor seals are more than happy to take advantage of this free food. My four year old granddaughter finds this one of the most exciting things she's ever experienced!

Their behavior continues to confuse me. With the name "harbor" seal and the fact they are often found in harbors throughout their world-wide range, this sort of implies a certain habituation to humans and our activity. We often see their heads pop up in the harbor and they don't seem particularly concerned with our presence, either in a boat or on the dock. These four seals swam away immediately after grabbing the fish parts, but I think that was more to protect their booty from the other seals than a response to our presence. It is clear they were waiting for the heads to be thrown in not far from us as just moments after the heads hit the water a seal swiftly swam to claim it.

Occasionally, they will haul out on the outer concrete pier, and even some of the regular boat piers and just lay there, with people nearby, seemingly nonplussed by our presence. What makes them so skittish on their rocky haulouts? I don't know.

Bears of Juneau



Family Ursidae G. Fischer de Waldheim, 1817 bears

This family contains only eight living species: the giant panda of China; *spectacled bear* of the mountains of NW South America; *sloth bear* of the Indian sub-continent; *sun bear* of the tropical forests of SE Asia; *Asian black bear* with an arboreal habit of the Himalayas to far eastern Russia; *American black bear*; *brown bear*; and, *polar bear*.

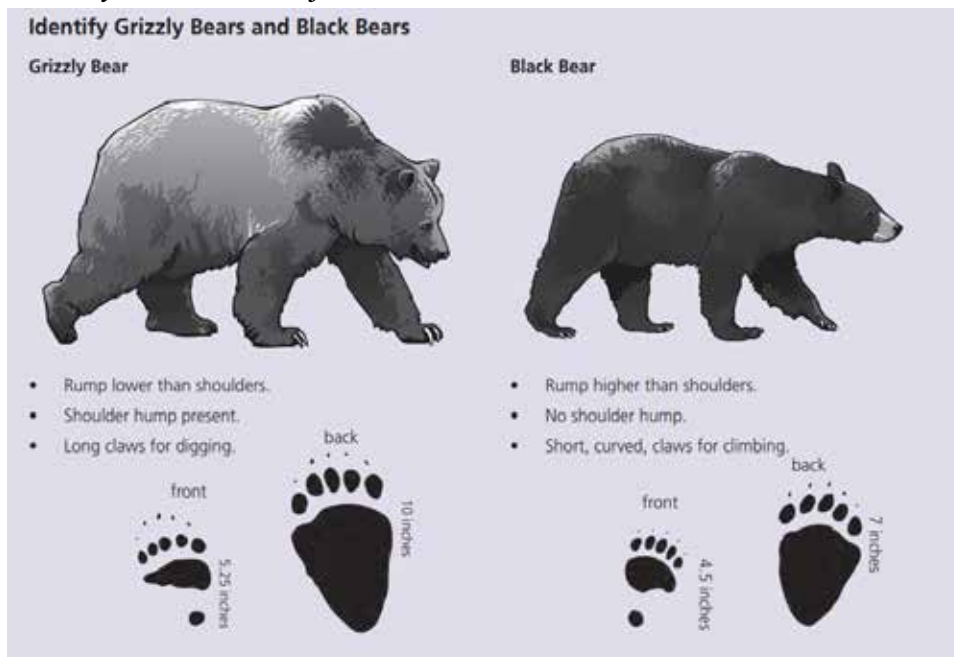
Ursus Linnæus 1758, Bear

UR-suss Proto-Italic *orsos* to Latin *ursus*, bear

This genus includes the widely distributed brown bear, *Ursus arctos*; the polar bear, *Ursus maritimus*; the Asian black bear, *Ursus thibetanus*; and the American black bear, *Ursus americanus*. A physiologic character all have is that the females are “induced ovulators”, a fact that dictates much of their life cycle and behavior. This means they are induced to ovulate by some external stimulus, not spontaneously or cyclically. It is usually the act of coitus. Observations of ursids during mating has led to the hypothesis that females may have control of which male actually fertilizes her eggs (termed “cryptic female choice”) both by her behavior before mate selection and even after insemination!

Bellemain, E., A. Zedrosser, S. Manel, L.P. Waits, P. Taberlet, & J.E. Swenson. 2006. *The dilemma of female mate selection in the brown bear, a species with sexually selected infanticide*. Proceedings of the Royal Society of London B: Biological Sciences. 273 (#1584): 283–291. doi:10.1098/rspb.2005.3331. ISSN 0962-8452.

“How do you tell a black bear from a brown bear?”



This is a common question whenever we see a bear. Black bear are smaller, usually much smaller; black bear are mostly black (but can be brown or cinnamon); black bear have a concave profile from forehead to nose; black bear lack an obvious shoulder hump; and, black bear have short claws that make a curve. Black bear are meant for climbing. This illustration by the National Park Service from Yellowstone National Park illustrates the differences well. I have only seen the American black bear in the Juneau area but have seen the tracks of brown bear along the Eagle River and the Point Bridget Trail.

Ursus americanus Pallas, 1780, American black bear, *s'eeek*

ah-mare-ih-KAY-nus Of or pertaining to the Americas



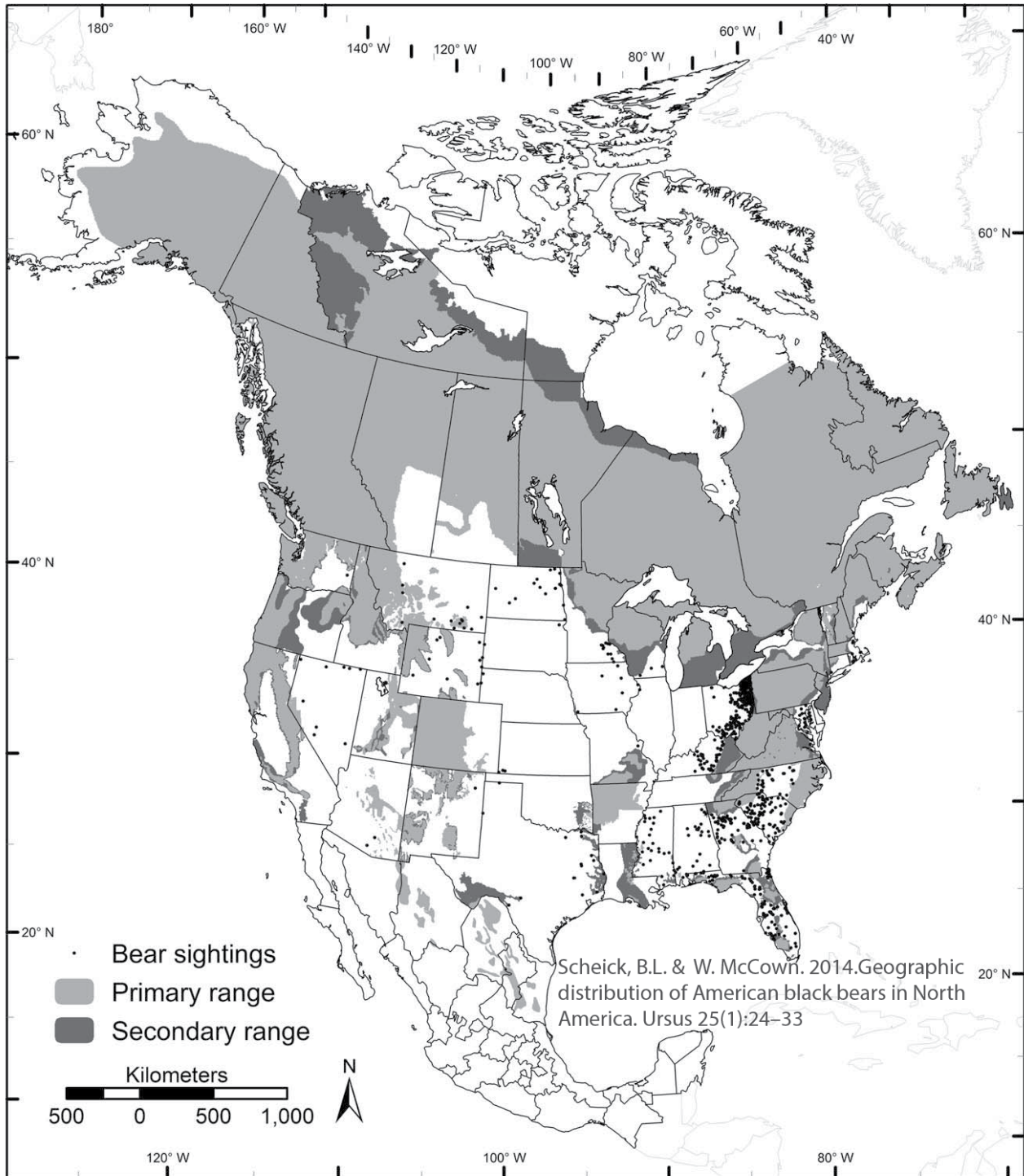


Fig. 2. Estimated primary and secondary range for American black bears in North America, 2009–2012, with sightings reported 2006–2010 outside of range. Only primary range was designated in Mexico. Additional maps representing each country and region are available in Supplemental Material Fig. S1.

Taxonomy: Currently 16 subspecies are circumscribed, five of which occur in Alaska:

Ursus americanus americanus Pallas, 1780, American black bear widespread on the mainland and the bear of Juneau

Ursus americanus carlottae Osgood, 1901, Haida Gwaii black bear, Queen Charlotte black bear

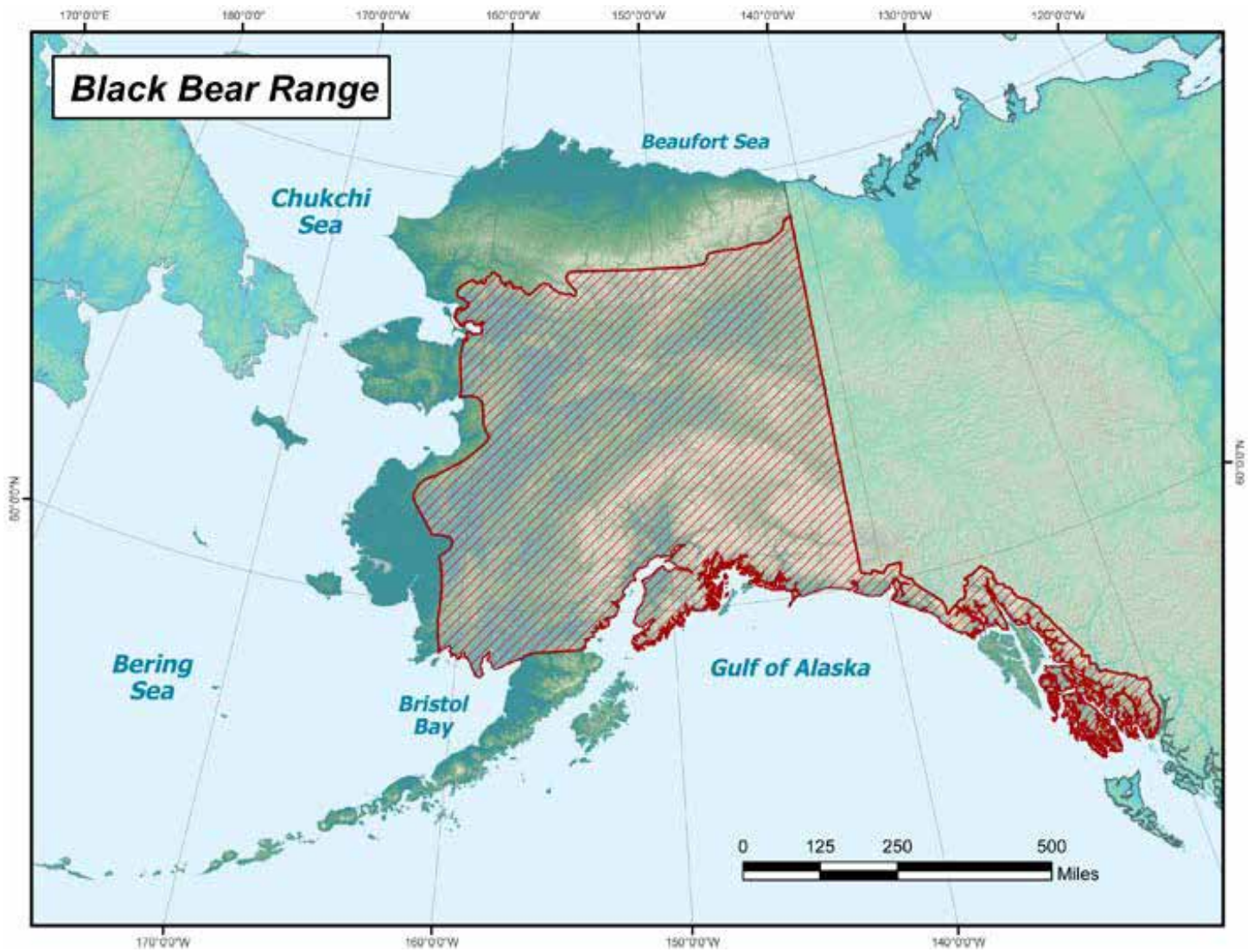
..... Queen Charlotte Island and neighboring Alaska islands

Ursus americanus emmonsii Dall, 1895, Glacier bear with a unique silvery blue to blue-white pelt of southeast Alaska

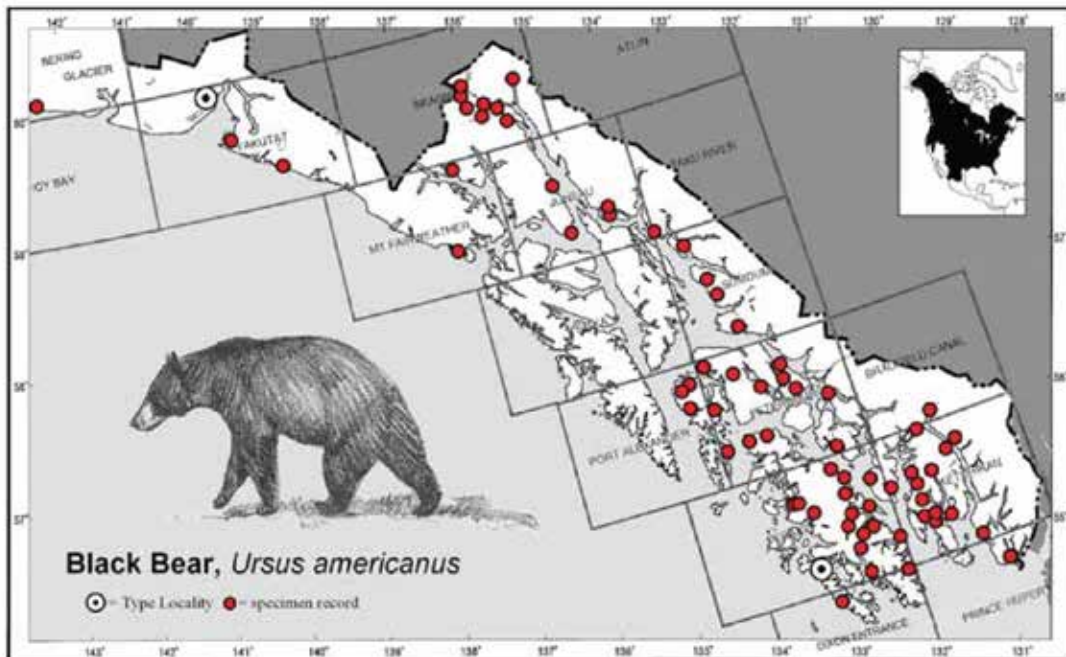
Ursus americanus perniger J. A. Allen, 1910, Kenai black bear of the Kenai Peninsula

Ursus americanus pugnax Swarth, 1911, Dall Island black bear of the Alexander Archipelago islands

American Black Bear in Alaska



Range Map of American Black Bear in Alaska, ADF&G, <https://www.adfg.alaska.gov/index.cfm?adfg=blackbear.rangemap>



MacDonald, S.O. & J.A. Cook 2007. *Mammals and Amphibians of Southeastern Alaska*. Special Publication No. 8, Museum of Southwestern Biology, Albuquerque, NM

Mendenhall Glacier's Celebrity Black Bears

The Mendenhall Glacier Recreation Area is famous for bear and excellent bear viewing. Of the many bears that live or visit this area, a few have reached the status of “celebrity” bears. The opportunity just to see a bear in the wild is exciting, but to almost “live” with them and learn to recognize individual bears and learn their personality, habits and life story is nothing short of life-changing for me. I can say with full honesty that I “know” several of “our” bears, not just know about them. Much of what follows come from my direct experience with each of these “celebrity” bears. This is more than just a pleasure, it is a distinct privilege. When I add in the same sort of privilege with “knowing” a number of humpback whales and orca, this land of Alaska is all the more special.

Bear #1, Naa Tláa



It seems natural to begin my Juneau bear stories with this bear. She was the first bear tagged and so her right ear had a blue tag with a large “1” on it. I only had a few encounters with her, but she is a most memorable bear.

September 21, 2009 is my first encounter with Naa Tláa. A dark brown bear, about 200 pounds, walks across Glacier Spur Road just as I turn the airporter van into the bus parking lot, giving all on Skip Gray’s Photo Safari a good view as I drive slowly. I continue into the lot and park to let them out. I then wait for his group to get ahead as I want to go on the Trail of Time to get a photograph of the fir clubmoss gemmae. After about ten minutes I catch up to them almost immediately as the bear is on the dike access trail about 25 meters in front of the group. Skip keeps them back and quiet and the bear shows no interest in them, and simply digs shallowly along the side of the trail in several places. The bear turns left onto the Trail of Time so Skip takes his group right on their regular route. I follow the bear—it is going where I am—and spot that it has a sky blue tag on the end of the right ear. I stay about 20 meters behind the bear and she doesn’t seem to mind my presence at all and continues to walk on the trail, once again demonstrating that bears do walk on trails. After all, why not? There are no brambles and branches to get snagged in and the edges of the trail often have loose soil that is easy to dig. She certainly takes advantage of that as she digs in at least a dozen places. None of her digs are very deep, just a few centimeters, really just scratching the top surface off and looking for whatever interests her right underneath.



I stop to examine each of its digging areas to determine what food is there (above left). Suspecting ground cone (*Boschniakia rossica*) as the desired food, I only find it in two of the ten places I examine, and this is one of them. I push the disturbed soil around looking for evidence of what the bear ate, but I find nothing! So I’m at a loss to say what these digging bears are eating besides the ground cone. As I learn more about the ground cone, it is what the bears are after as it has a substantial underground stem that runs horizontally just inches below the soil surface.

At marker 10 (no longer there) on the Trail of Time, the bear leaves the trail and heads into the rocks, but stops and does some more digging and eating. A couple comes walking up the trail and I stop them and point out the bear and the three of us watch it for about ten minutes before the couple wants to continue on the trail. I ask them to walk with me, away from the bear while I have my bear spray out,

just in case. The bear is really nonplussed about our presence and simply looks up once or twice from digging and eating. There are mushrooms everywhere, but here in the rocks it is clear the bear has no interest in them as I see it just claw them away as it digs and eats whatever it’s finding.

I finally leave her and head to my clubmoss but run into the Forest Service scientist Doug and tell him about the bear and he tells me she is a 21 year old sow, now long past breeding age. In 2006 she was caught, weighed in at 200 pounds, tagged and had a tooth pulled that gave her an age of 18. I commented on how mellow she was, and Doug says this is how she's always been.



caught a sockeye.

My last encounter with her was September 5, 2011 with her fishing for sockeye salmon (*Oncorhynchus nerka*) in Steep Creek just above the Glacier Spur Road culvert (photo left). I did not know at the time this would be my last and now look at this with melancholy.

She lived about 24 years and was considered by many who know the bears of Mendenhall as the “mother” bear. Her age was estimated by data received from collars and the wear on her teeth. Laurie Craig, who served as the Lead Naturalist for the Mendenhall Glacier Visitor Center 2004 to 2018 tells me this story:

She was first captured August 30, 2006. She was part of a study project with Floyd Dryden students. I attended the capture but not the collaring. That occurred off site. They estimated her age at 20 years old because of her worn teeth. Her actual weight then was 205 pounds. She was not lactating. She was returned the next morning in a bear trap, and released. We saw her act normally the day after tranquilizing as she chased and

She received a lip tattoo in 2006, #200. Her collar fell off in winter in her den, most likely due to body shrinkage from hibernation. It was later recovered. Data had been downloaded by the students via satellite.

Inadvertently, she was recaptured in October 5, 2007. She had no external identification so ADFG didn't know they recaptured her until she was knocked out. ADFG Neil Barten turned up her lip and found the tattoo!



I participated and photographed the onsite processing. At this time, ADFG asked me — as the MGVC representative (John Neary attended but wasn't a VC rep)— about adding an ear tag. I was caught off guard at the responsibility, but I agreed as long as it was tiny. They cut a three digit blue tag to remove all but the first number — #1. With that, she became #1 instead of #200. A tooth was extracted and it was used to age her.

Her name: I consulted with Sealaska about a name. I was introduced to an elder. I explained my knowledge of this elder bear. The man pondered, then quietly spoke “NaaTláa — it means clan mother.” I still have the yellow stickie note he wrote the name on so I could spell it correctly.

[Personal communication]

Photo by Laurie Craig published in the Juneau Empire, 2011-09-02 shows Neil Barton tagging her right ear.

The title *Naa Tláa* includes far more than just “clan mother”. *Naa Tláa* had deep such deep respect of all in her clan she essentially had final say power over the decisions of the *hit saati* (clan leader) and elders. It is an exceptionally appropriate name for this “mother bear”.

Naa Tláa was a medium sized bear, probably weighing in at over 200 pounds and in the fall pushing 250 pounds, but these are just guesses. While her dense underfur was shiny black, her thick, long and coarse guard hair was deep cinnamon, unlike most of the bear in the Juneau area. At 24 years, she had lots of experience with people at the glacier and had the reputation of “not caring” about them.

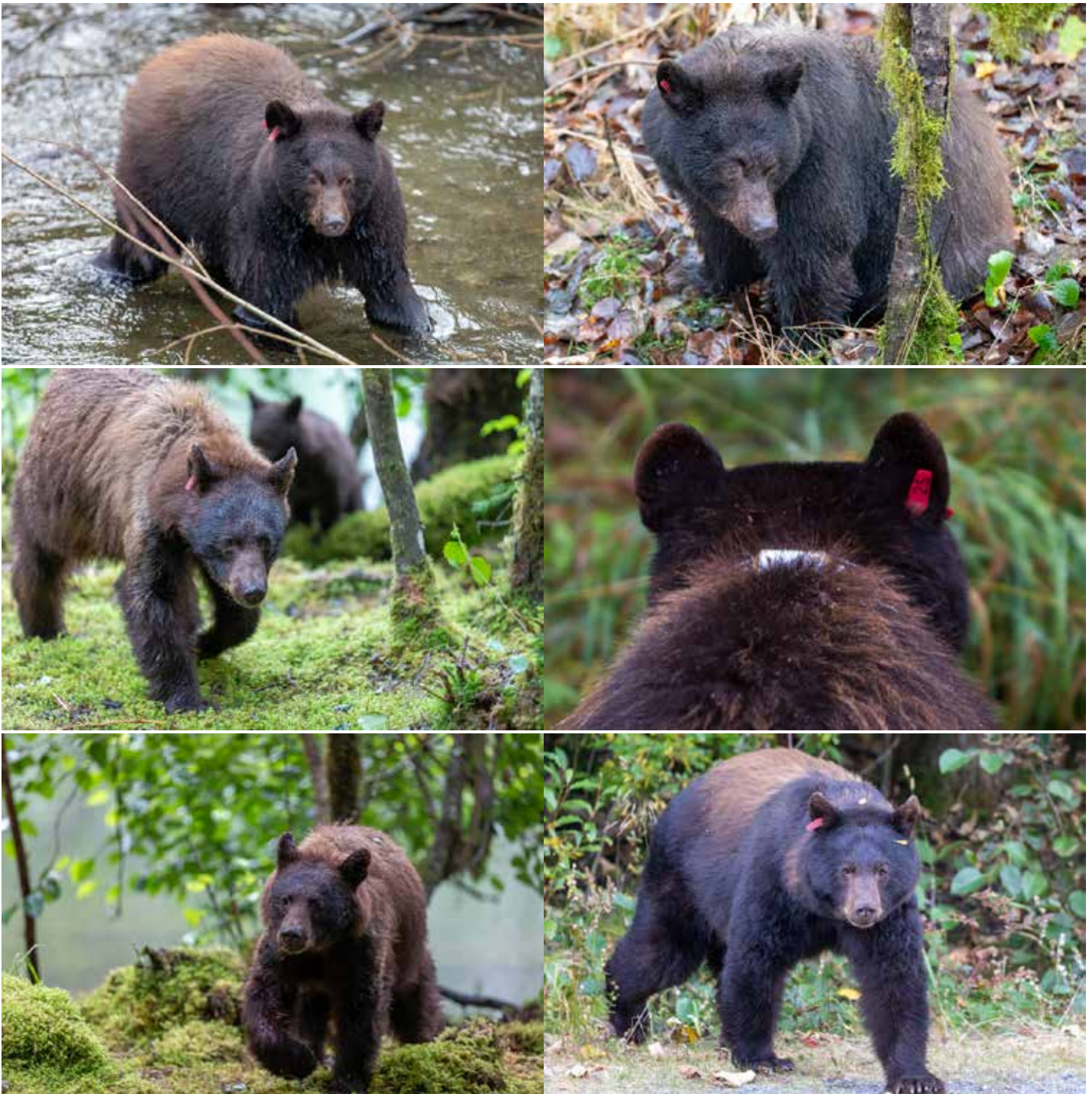
Many suspect that she is mother or grandmother to many of the bear that have called the visitor center area “home”, especially, Nicky, as their pelage, size, general appearance, behavior and territory is remarkably similar. During my experience with her, she had no cubs and Forest Service records show she had no cubs from age 18 until her disappearance at 24.

She had an amazing record of showing up each year at the same time the sockeye salmon arrive. Her home range was relatively small, the east side of Mendenhall Lake and the Nugget Creek watershed, including the meadow of Thunder Mountain.

October 2, 2009 is my favorite encounter with *Naa Tláa*. It's a nice autumn day with just a bit of crispness in the air and time to walk the dogs. I head up to the glacier and take the old power line trail but find the pond at the old turbine too full to walk up the flume, so we head out to the road and cut into the Trail of Time on the access trail. Because the girls (Cleo and Sugar) like walking off leash and the area is pretty devoid of people with the season being over, that's what we do all the way up the power line trail. We get right up to the old CCC log cabin and there is Bear #1, my 21 year old sow walking diagonally across the trail from the right to the left. Sugar is out in front, about 3 meters from me and Cleo is right at my side. Sugar stops dead in her tracks and looks straight at the bear. The bear stops for a moment and gives the three of us nothing more than a lingering glance, then ambles off into the thicket of alders and young spruce immediately disappearing into the forest.

I find it sad that her end was simply noting that she did not return in 2012 or any year since. We hope she passed peacefully.

Bear #25, Nicky



Nicky is the most famous bear of the Mendenhall Glacier, and for good reason that will be evident with her story. She was most likely born in February of 2000, a cub of Bear #1, *Naa Tláa* many—including me—think, but this is speculation. What makes us think this is: 1) the similarity of their size, 2) pelage, 3) temperament, 4) home range and 5) timing of appearance which coincides with the return of the sockeye salmon. It seems that *Naa Tláa* was a very good teaching mother!

Her left ear has a “nick” in it that gives rise to her name, Nicky. If you speak with any of the Forest Service folk at the glacier they refer to her as “25” as there is a long-standing policy of not using names for the wildlife. Retired ranger Laurie Craig gave a wonderful Fireside Chat at the Visitor Center and noted she’s no longer under that policy and referred to her as “Nicky” the entire talk! Her underfur is mostly black but has tinges of cinnamon and her guard hair is very deep cinnamon. Each year when she shows up she looks rather scraggly as she’s in the midst of a molt. The hair often comes off in patches and people mistake it for some sort of wound.

On August 12, 2012 she was tagged by Ryan Scott and others with the Alaska Department of Fish and Game with a double-sided red tag in her right ear with the number 25 in black on both sides, visible in all four photos above. It is always visible from the rear, but it’s amazing how it can

disappear into her pelage from the front and often can't be seen at all. Since ear tags are not permanent, many bears get a tattoo on the inside of the mouth near the lip. She did not receive a lip tattoo.



Here, on October 24, 2017, she's walking by the Pavilion behind the rock fence. Walking toward me, her tag is not visible at all, yet when she's beside me, it is plainly visible. These photos are only 12 seconds apart! It also illustrates that the angle of view can have a major effect on our perception of the color of her pelage.

My Notable Encounters with Nicky

My first encounter with Nicky is August 7, 2009. On this day Nicky has been fishing in Steep Creek at The Meadow and has several salmon up on the bank and she's eating the brains and bellies. Her two cubs are up a spruce tree playing with each other and almost falling from the branches several times. It takes moving around on the platform to see them and, curiously, most folks don't seem interested in looking for them. Have they been spoiled by the single bear close up? The cubs are much cuter. One cub is cinnamon and the other black. The cinnamon is a bit larger and seems the dominant cub, at least by the position it takes on the spruce tree, always above the other. The cubs climb easily, as if they'd been doing it for years, not just the few months they've been alive. The paws of a black bear are made for climbing, with all five "fingers" arranged almost in a straight line so the claws all come out like a comb. Amazingly, very little bark breaks off as they clamber around the branches. Did mom send them up while she was fishing to keep them out of her way? Did they climb because they wanted to? Is there something up there that interests them (I don't see anything besides them—no bird in its right mind would be near them!)? The two definitely do things together, the black following the cinnamon wherever it goes up or down the tree.



Bear up a Tree. August 14, 2009 is a five bear day! It's a typical Alaska rainy day today and I have time to wander around. I head up the road, stopping at the Steep Creek beaver pond on the west side of Glacier Spur Road to watch the sockeye. I continue slowly up to the Salmon Stop at the first parking lot and chat with a Forest Service interpreter while watching the fish. She gets a call on the radio that she's about to have "an interpretive moment" meaning a bear is on the way. While there, I notice a cinnamon bear up in a Sitka spruce (*Picea sitchensis*). It is only later that I figure out that it is Nicky as this is only my second encounter with her. I'm learning that most of "our" bears are black and the odds of a cinnamon one being Nicky are very good.

I wasn't in the habit of carrying a camera on every trip I led and this is the first time I get a photograph of Nicky. It's nothing more than a snapshot with my Canon G10 zoomed all the way out and this is a tight crop from that. Her pelage is long—in keeping with what I now know as being "normal"—but not what I'd call "scraggly". I now know that she has two cubs, one cinnamon and one black, but neither of them are visible anywhere. I don't have enough time to observe and explore so this remains my first "photographic" memory of this most exceptional bear.

Nicky Cubs and a Big Male. August 19, 2009 is another a five bear day! I did not write contemporaneous notes, but did write "5 bear" on my calendar and remember this day vividly. Guide Dave Sherman and I have an East Glacier Trail day and he heads out first, but I catch up to them at Dipper Bridge as he's got a sow with two cubs, one black, one cinnamon. I don't recognize the bear yet, but find out this is Nicky later. Dave and his group are just past the bridge and the bears are just downstream of the bridge. Dave takes his group on while I stop on the bridge to watch the bears with my group. All three are ambling up Steep Creek when Nicky grabs a sockeye salmon with her right paw and transfers it to her mouth, all the time walking with cubs in tow. She walks up onto the ground where the grass has been flattened from previous meals, drops the flapping fish and continues walking.

She turns right and climbs up onto the flat at the large tonalite boulder with a bit of a cave underneath. I take my group up the trail right to the

turn where we can clearly see. We're about 10 meters away and as she shows no interest in us, out of her zone. There she has another fresh fish and with both her claws and teeth, rips meat from it and gives it to the cubs to eat. I never see her eat anything for herself. We watch for about 20 minutes and they devour the fish. She then leans her back against a tree, spreads her back legs apart and lets her front legs fall down at her side. The two cubs then begin to suckle! Her mammaries are plainly visible and obviously engorged with milk.

We watch, absolutely enthralled, for about five minutes, when, all of a sudden, her ears go straight up, her eyes and face point straight across the trail (away from us), her back goes stiff, she shows her teeth with a bit of slobber, and she sends the cubs up a spruce tree. These are the "classic" behaviors for an aggressive bear that I told my folks about during our "bear talk" back in the parking lot. Now they get to see it in person! I look downstream and see a large—perhaps 400 pound, easily twice my size—black male bear tromping up Steep Creek. This is one of the largest black bear I've ever seen. I nearly shout "back to the bridge" and get my group onto it in what seems a safe spot. From the safety of the bridge, we watch it take a swipe at a sockeye in the stream but miss. I start talking to the bear as it approaches the bridge "hey, Mr. Bear, how 'bout going that way!" and point to my right, away from the sow and cubs. The group joins in with me, making sure the bear hears lots of people. Sure enough, the heads into the thicket of alder and spruce there and having never even looked in the direction of the sow and cubs, I doubt he ever knew they were there.



A family of three comes along and joins in with my group at my encouragement, not wanting them to go any further up the trail for a close bear encounter. Several folks come down the trail and I tell them to head back and go out the other way. With the big male gone, we walk back toward the sow, the cubs still up the tree. Just before the boulder, Nicky now lays down on her belly, hands crossed and head laying on them. A bit disconcerting are the ten large claws showing from under her chin (left photograph shows five of them), but she seems quite content for the moment with the big bear gone and the kids up the tree, out of her way, and it seems simply a moment to take some time for herself.

It has been about 45 minutes now, and I've got to get our folks hiking as we've got four miles yet to cover. She closes her eyes and seems to be sound asleep, taking a nap! I get out my bear spray out, take off the safety and keep it pointed at the bear, and walk along the trail, hugging the right side as far away from her as I can be and begin talking quietly to her: "Hey mamma, how are you doing, here I am, you're OK" but when I get about 3 meters from her she raises her head, opens her jaw showing her teeth and gives me a brief but definitive low growl. A bit startled, I backtrack to my group and decide we've got to take a detour. The only route is to cross over the 10 meters of boulders, rocks and alders from right at the end of the bridge to just before the twin boulders the trail splits just up from the bear.

I get everyone through and over the rocks and trees staying about 10 meters from the bear while I stand between them. Once everyone is up on the slope we headed off like a normal trek, the family heading on at my first interpretive stop. About a quarter mile later, we find them heading back down the trail at a near run, telling us "there's another bear!" I continue with my group and at one of my regular stopping spots just before the first cabled rock face crossing, while chatting with the group someone says "there's a bear!" and sure enough, here comes another bear, #5 for the day, ambling down the steps then trail toward us. It's about 135 to 150 pounds and I think a third year bear spending its first solo summer. When he gets below the steps and onto the trail, he seems a rather jolly bear, reminding me so much of Yogi Bear, and seems to saunter, rocking back and forth from left to right, rather than walk. I get my group together on the trail, get out the bear spray yet again. About 5 meters ahead of us, the bear make a right turn for about 5 meters, then a left and continues with his saunter until he's about 5 meters past us, then turns left and gets back on the trail heads down.

Today we've answered one of life's great philosophical questions. Before any of these encounters, I stopped at a pile of fresh scat at the junction of the access trail with the Trail of Time so we all know that bear *do* shit in the woods. Then with this fifth encounter, we have direct evidence to answer one of the most common questions I've gotten about bears while out hiking with guests: do they use the trail? Direct affirmative on that one! Little did I know at the time, but three years later I'd have a very similar experience with her at this very spot.

Another Male Bear Encounter. On an August afternoon in 2013 I was driving for a Photo Safari and had an hour to kill before picking up the group so I walked to Dipper Bridge to watch the sockeye. While standing all alone in the middle of the bridge, I hear a rustling behind me and

look to find Nicky and her two cubs coming down the slope by the big tonalite boulder. Just before Dipper Bridge, she tells the cubs to “stay” and she walks down into Steep Creek, never even acknowledging my presence on the bridge just 3 meters from her. In the creek, she spots a sockeye salmon (*Oncorhynchus nerka*), swipes her hand and grabs it. She turns around and carries it up to the kids who are anxiously awaiting their meal in the middle of the trail. She drops the still flopping sockeye salmon and returns to the creek, once again paying no attention to me. The first salmon was a male, full of good red meat for the kids. She’s now fishing for a female, full of eggs, for her. Being picky, she moves all about the creek, looking carefully at the goods.

I hear a commotion behind me and turn to find the kids both climbing the small spruce tree next to the trail and wonder “Why?” I turn around and see Nicky standing mid-creek, totally still, with both ears standing upright with eyes obviously staring downstream. She begins backing up, one step at a time. At the shore, she continues the backwards walk, never letting her gaze off the creek. I’ve no idea what’s happening! She gets up to the trail, directly at the end of the bridge and drops down in a crouched position, still staring intently downstream.

I look downstream and see a quite large all black bear, probably 400 pounds, splashing upstream looking for salmon and never once looking up. About 20 meters down from Dipper Bridge a willow branch almost crosses the river at about a meter above. The bear walks right into the branch and surprised, shakes his head and looks up. He spots me. Almost instantly he changes his disposition and looks at me with shock and fear with an “Oh shit!” look. A moment later he twirls around and runs away making lots of splashes and disappears.

It is only at this moment when Nicky acknowledges me as, still crouched, she turns her head to me and gives a little bit of a growl, then gets up and goes back to fishing in the creek. The kids climb down the tree and resume their meal. Nicky finds a good female, grabs it with one swipe of her claws, transfers it to her mouth and walks back to the kids, sits down and goes for the belly with all the eggs. Once again, she pays no attention to me at all.

I’m now watching three bears eat two salmon and think to myself, “I’m the patsy!” I am sure that Nicky knew how this male bear would react when it saw a human. The Mendenhall adult bears are overwhelmingly female as they’ve learned how to use humans to their advantage. That’s exactly what happened here. She used me as cover for her and her kids. Now I’d be kidding if I didn’t think she looked at me and said “Thanks!” That would be a tremendous anthropomorphism. It does make for a lifetime’s wonderful memory. No camera though.



Nyssa’s First Bear Encounter. Friday, September 30, 2016, finds Annette, Nyssa (our terrier mix) and I doing the East Glacier Trail counter-clockwise on a sunny day. As we descend to the bench where the cottonwoods are, Nyssa gets anxious and Annette spots bears in the trees. We work our way very slowly and find that it is Nicky and her yearling triplets. Nicky is about 6 meters off the trail digging for ground cone (*Boschniakia rossica*) (photo left) and the cubs are between her and us. We stop to watch, and the most interesting thing about this encounter is that Nyssa quietly works her way between my legs! She’s quiet, very different than her normal “charge!” behavior. Nicky glances up at us and returns to digging. The cubs are more concerned about us as they look over a tonalite boulder at us (photo right) and one of them scampers up a cottonwood and the others attempt to follow them but don’t get very far. They keep turning to glare at us with some alarm in their eyes while mom calmly eats. We slowly and silently walk by on the trail.

On the Stairs. I had two other East Glacier Trail encounters with her, both on the stairs. Leading a group of hikers up the stairs, I see Nicky heading down the stairs! Both times we’re about halfway up and there is nowhere to go. We hug the railing and let Nicky continue down the stairs. This means she’s almost touching us! Both times I get my bear spray out and take the safety off, but neither time did I feel any sense of foreboding with her behavior. It was very much like she considered this “her trail” so we let her. The first time, one of my hikers started to hold his hand out toward Nicky and I pointed the bear spray at him and forcefully but silently said NOOOO! These are the closest I’ve ever been to a bear and while my heart rate increased, I never once felt afraid. She is so accustomed to humans it’s pretty much like she doesn’t care. John Neary, then Director of the Mendenhall Glacier Visitor Center and renowned bear behavior expert, told me I should have blocked the stairs with my body and vocally encouraged her to move off the stairs to demonstrate this is “human” territory. I told him I wasn’t that confident. He acknowledged with a nod.

Nicky the Fisher



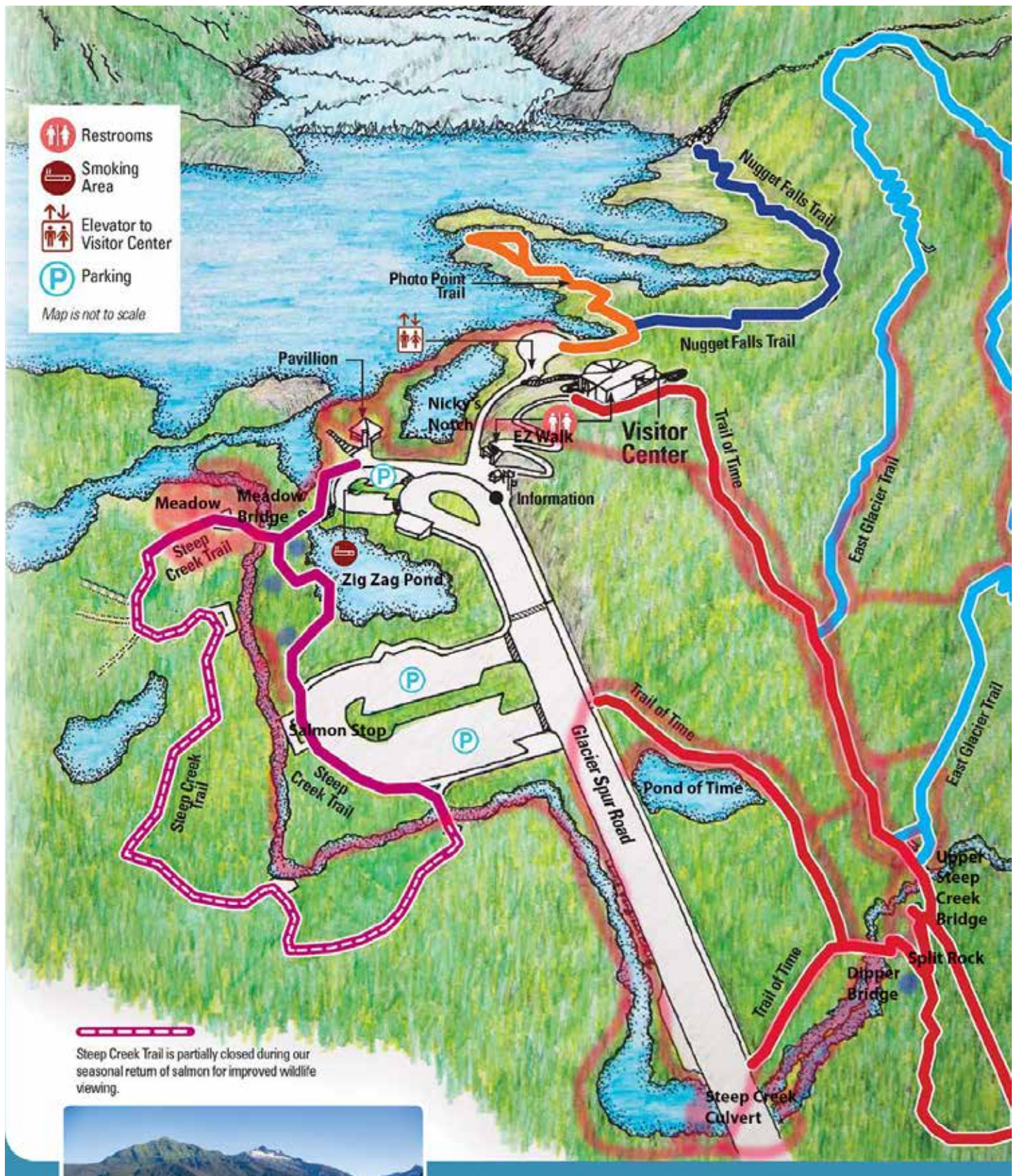
Nicky uses several techniques. On the left on October 27, 2018 she's looking for some large coho salmon while standing in Steep Creek just downstream of the Meadow Bridge. Only two minutes later she's moved upstream of the bridge and uses a small log to search for the salmon.



Here, a half hour later, she's back on the bank of Steep Creek just below the Meadow Bridge and is swiftly successful at catching a very prime coho salmon (*Oncorhynchus kisutch*). The coho run in October is extremely important for Southeast Alaska bears as it offers a last chance at loading up on calories with a large fish and putting on enough pounds to make it through the winter's nap. This is especially important for her as she's got two kids to den with her.



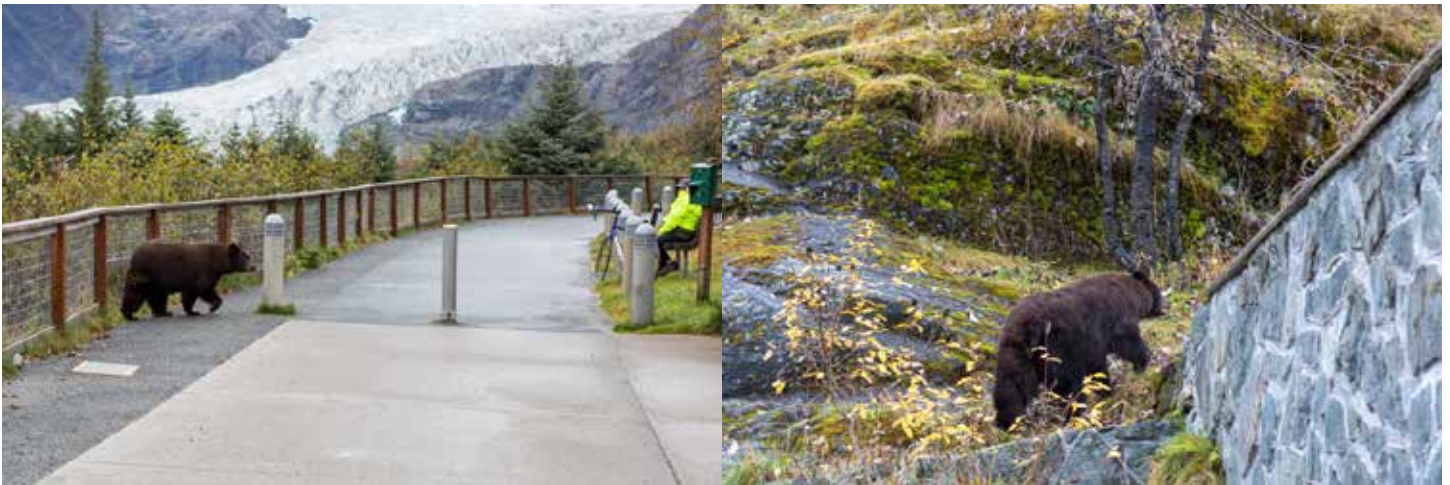
Still flopping wildly, she carries it to the twins and offers it to them. They'd been waiting patiently at one of her napping spots under the porcupine-protected black cottonwood trees. These are cub-of-the-year (COY) and dependent upon mom. The next summer as yearlings, they seemed completely glued to mom and behaved like spoiled teenagers calling loudly for food at a time she should have already emancipated them and let them head off on their own.



This generalized map is based upon my sightings as well as communication with Laurie and Amy. Her paths are marked in fuzzy red and resting places of fuzzy blue. The motivation for her wanderings is food. Salmon in Steep Creek and ground cone (*Boschniakia rossica*) along the trails. She has four favored nap spots that she uses with and without her cubs. When she's not around, where is she? That question was at least partially answered in 2012 when she had a GPS collar attached that remained on her until her spring wake up in 2013. Alaska Department of Fish and Game has detailed where she goes, but those data points are not public to protect her from those who might use this data to find her.



The collar looks, and is, large, but it sure seems like she got used to it very easily and behaved totally normally.



The Forest Service has worked hard to keep the Kiosk/Bathroom and Elevator/Stairs and Photo Point Trail as “bear free zones” Nicky’s path has always crossed the path between the Bathroom and Elevator and when the bear/people control fence was built in 2014 “Nicky’s Notch” (left photo above) was incorporated so she didn’t have to climb over the fence. She wanders up the slope (right photo above), crossing the EZ Path and into the woods.

This puts Nicky into the midst of the visitor throngs and to manage them, Forest Service rangers follow Nicky’s wanderings and when she comes to congested areas, they block the paths to let her (or other bears) cross without being harassed. These photos are one of the rare times when the path is nearly devoid of people. On a normal cruise ship day, there will be several hundred people in the area of the Pavilion and Photo Point. The summer of 2020 looked like this as there were no cruise ships and very limited visitation other than by Juneauites due to the Covid-19 Pandemic and restrictions on travel.

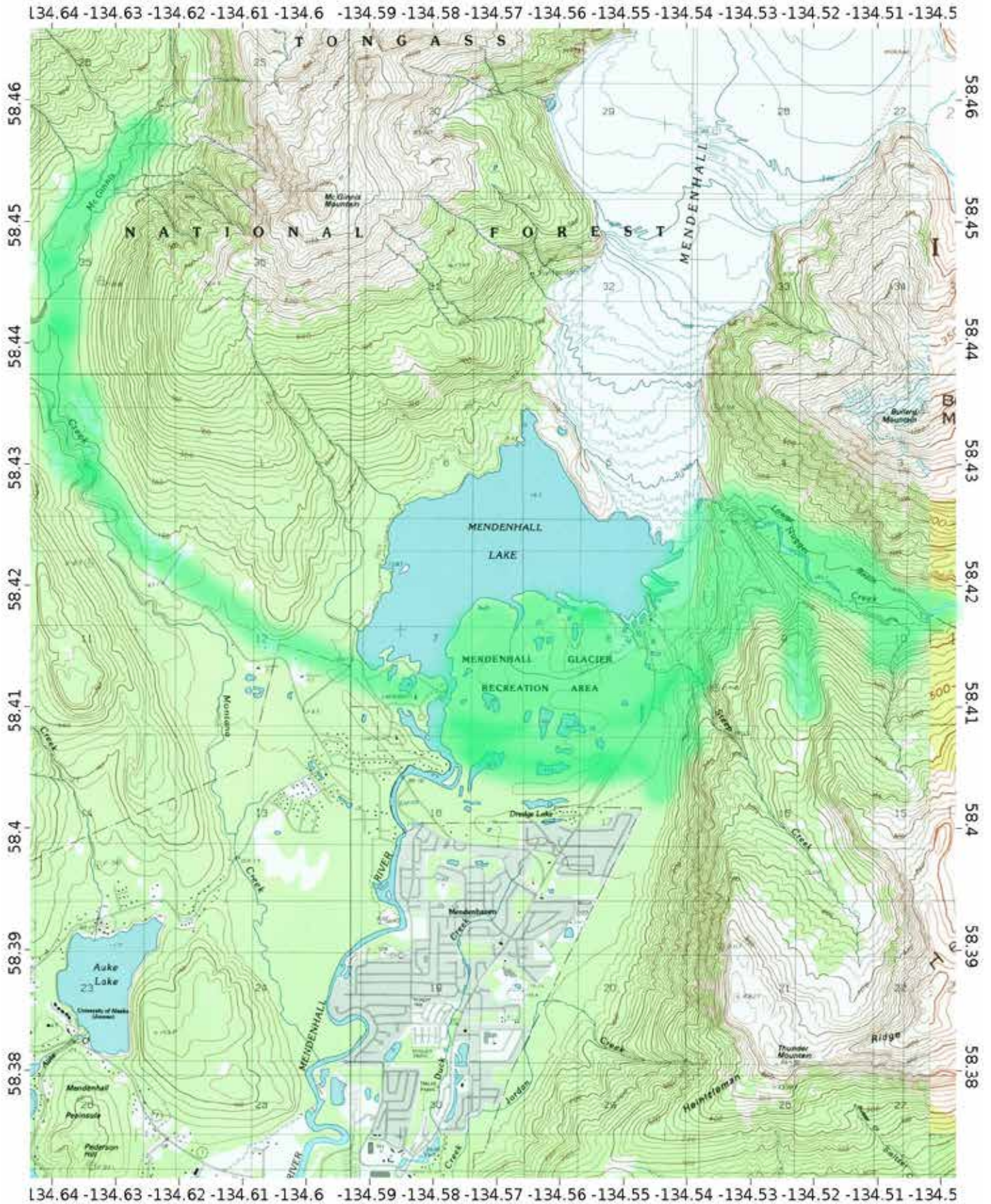


All the bears seem to avoid going through the culvert and cross Glacier Spur Road when heading up or downstream. Many times teams of rangers are there to control traffic and pedestrians as the photo on the left shows. Note Ranger Amy has a face mask on for the Covid pandemic.

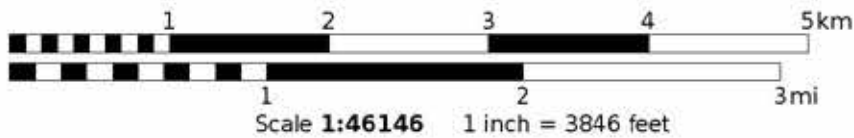
Note on my map that Nicky usually leaves Steep Creek and walks into the woods to cross the road going from forest to forest rather than from creek to creek, which I’ve never seen her do. Given her habituation, I find this a curious behavior for which I have no explanation.

There is a plan to remove the culvert and replace it with a bridge which would allow bears to cross under the road.

The topo map is my generalization of Nicky’s home range as determined by her GPS tracks. Ryan Scott of ADF&G presented a map like this and this is largely from my memory.



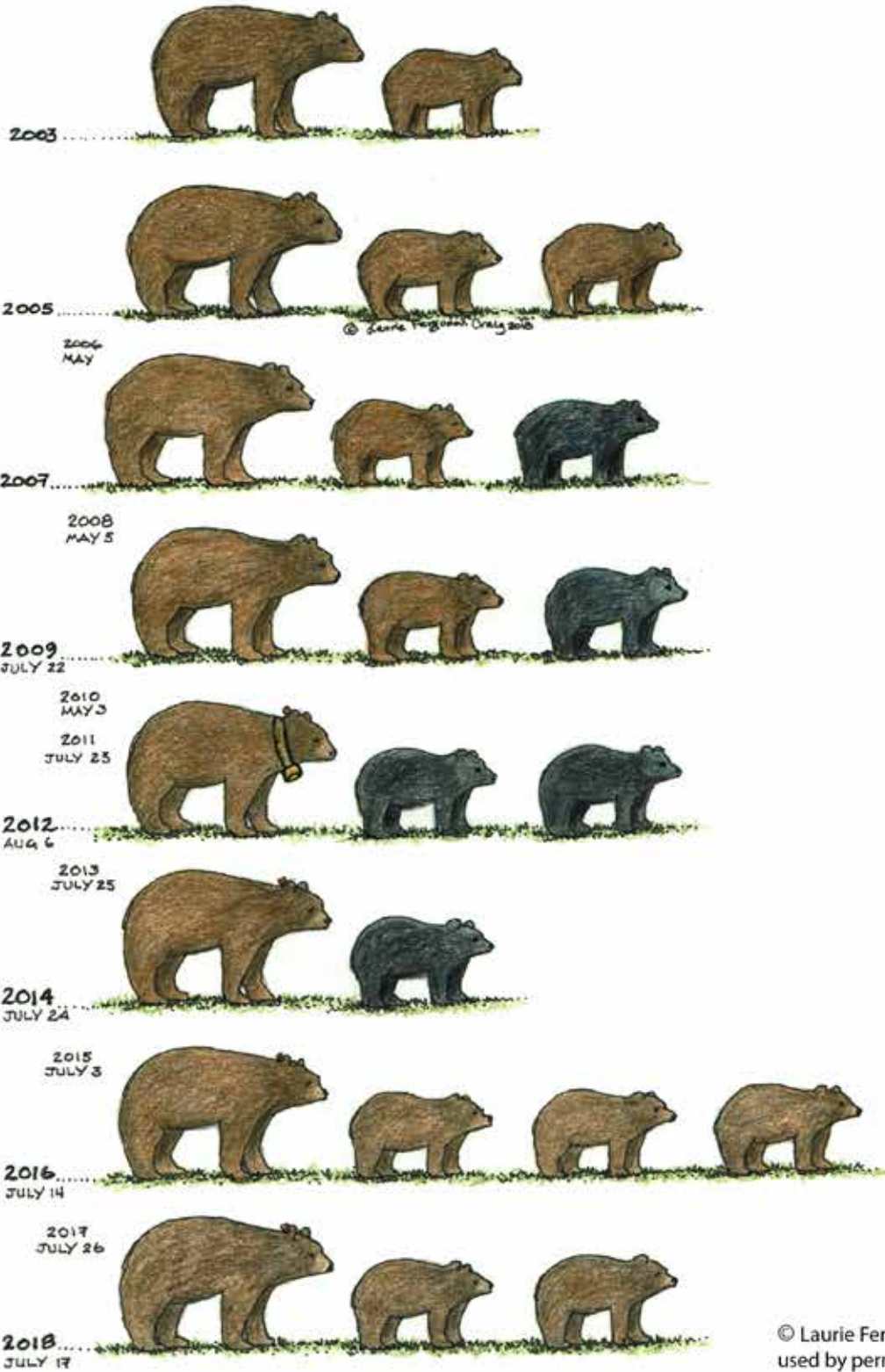
Bear #25 Territory
 WGS84
 USNG Zone 8VNK
 CALTOPO



NICKY BEAR #25

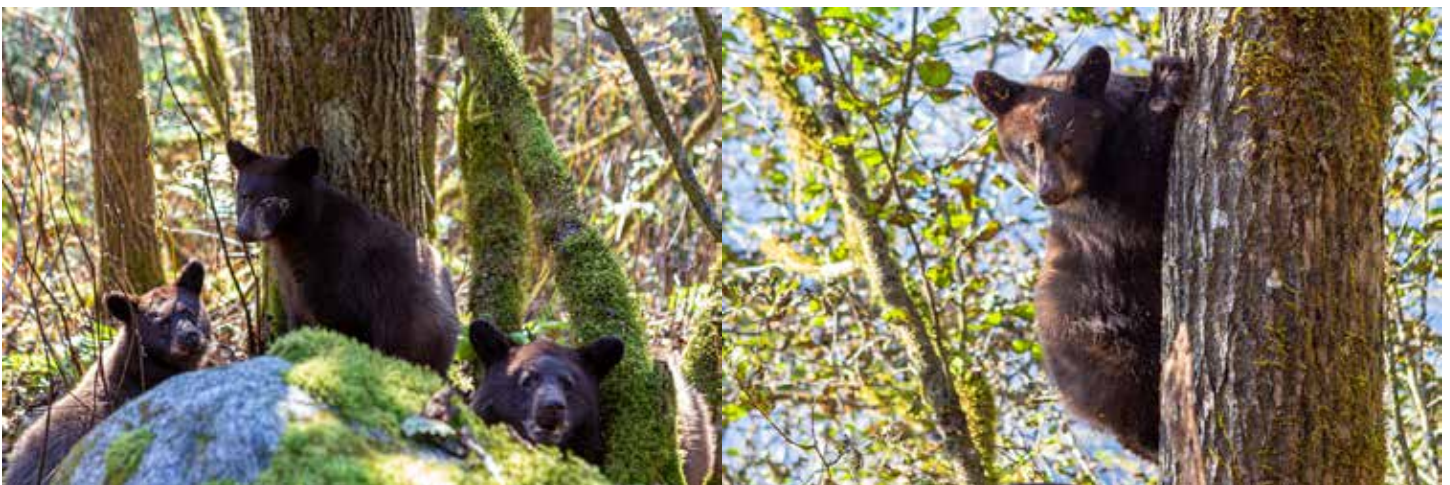
MENDENHALL GLACIER

JUNEAU · ALASKA





2012 twin cubs, both black with largely blonde muzzles. Left Steep Creek Meadow, right, Mendenhall lake shore below the Pavilion. Both places are part of her normal “route” and she did a good job of teaching the kids how to deal with all the people along the lake shore. On this day, I had a group at the beach and had all of us stand at the water’s edge to let the bears have the beach for themselves.



2016 Triplets, all three are cinnamon and very similar to mom. Here they are alarmed by our presence as we walk by them in the cottonwood flats of the East Glacier Trail just a few feet off the trail



2018 twin cubs, who sport a most interesting coat. While “brown” there is a good deal of black, especially at the tips of the hairs, but note the almost blonde underfur. Left and center, in the protected cottonwood den off Steep Creek by the zig zag, right, at the Meadow Bridge. These two were really “momma’s boys” as the stuck very close to mom as cub-of-the-year (COY) and as yearlings. The salmon run of 2019 in Steep Creek was the second of now annual declines. Nicky spent a lot of time in the creek, cubs not far away. By mid summer, when in a normal year mom would “emancipate” the cubs, they seemed “glued” to her. She would go fish and send them up a tree. They were incredibly vocal, as if screaming like fledged raven do, “Feed me! Feed me!” The last time I saw her in autumn, the kids were still with her! I thought sure this would be the last of her childbearing and rearing.



2020 single cub, a gorgeous cinnamon with a largely brown muzzle. This one demonstrates a very strong independent streak as a COY.

Nicky Being Nicky



Napping in a favorite spot at Salmon Stop on 2017-08-05

Napping near Split Rock on the Trail of Time 2018-10-19



Scratching on the Meadow Bridge 2015-10-10

Heading up Steep Creek at the culvert 2020-09-17

It is an incredible privilege, gift and pleasure to be able to coexist with this very special bear. Every time I see her my heart beats a bit faster, not from fear or anxiety but from sheer joy. Habituation is the word most commonly used for animals that get used to being around humans. Nicky takes that definition and goes well beyond it. She is so used to people, and with very few exceptions she has had mostly positive encounters with us, that life with humans is simply the way it is. With the very poor berry and salmon crops of 2020, she has been seen a couple times in the residential areas of the Mendenhall Valley, where she's not ever frequented. We hope this doesn't set a precedent for her nor teach her 2020 cub this is a place to eat. We want Nicky to stay Nicky.

Bear #153



Bear #153 has never been given a name and I've never heard anyone call her by anything but her number. Retired Ranger Laurie Craig presented a Fireside Chat on February 8, 2019 on her and this nice article was published in the Juneau Empire the following Sunday.

Since a young age, this bear has lived with an audience

Sow's adventures include unusual family drama

By Ben Hohenstatt, Sunday, February 10, 2019 7:00am

There's a soap opera star living in Juneau, and she's a 12-year-old black bear.

Bear 153's existence has been thoroughly documented since she was tagged as a cub. Her life, which has included dramatic gender reveals, births, deaths and unusual family drama, was the subject of a Fireside Lecture on Friday night.

"This is all in our backyards, folks," said Laurie Craig, former lead naturalist at Mendenhall Glacier Visitor Center, who gave the talk about Bear 153 at Mendenhall Glacier Visitor Center.

Craig began the free, public lecture by explaining who Bear 153 is and who she isn't.

Bear 153 is not Nicky, the popular bear with cinnamon fur and namesake nick in her ear. Bear 153 is identifiable by a two-piece blue tag on her ear and a white heart-shaped patch on her chest that is visible when she stands up.

"When you see a bear stand, it's not because they're becoming aggressive, but because they're curious and want to see what's going on," Craig said. Bear 153 was tagged as a cub in 2007 when her mother was collared after the family was found going through trash in a neighborhood near the glacier.

"That's not a good way to start a life," Craig said.

Craig said the bears were collared and tagged by the Alaska Department of Fish & Game and bears are tagged so there is a better understanding of urban bear and wild bear interaction, food conditioning and coexisting with bears.

Despite starting off toward developing bad habits, Bear 153 did not become a problem. She spent the summer months around Mendenhall Glacier,

fishing in Steep Creek and climbing trees to eat seed pods.

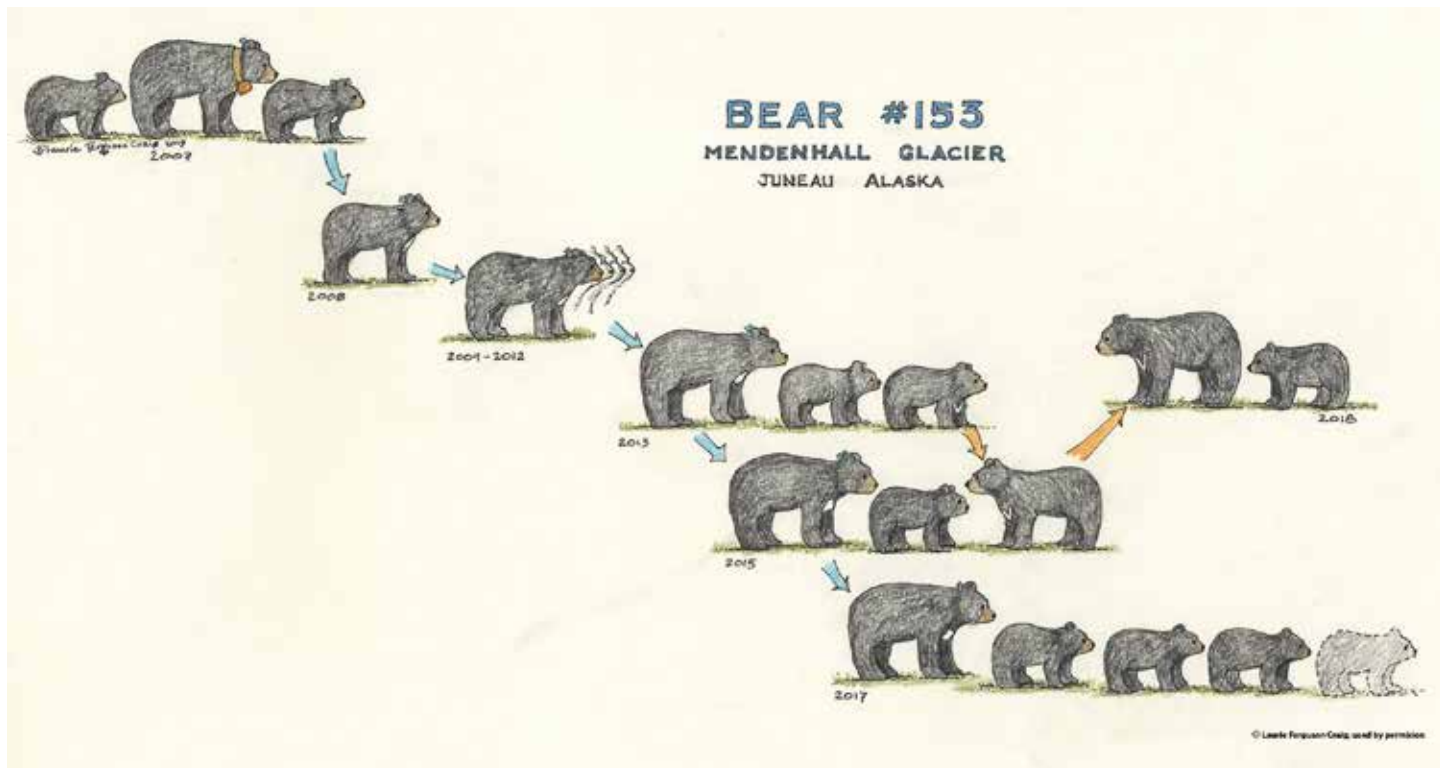
Craig said the area provides an important environment for Juneau's bears.

"This forest has so much for them to eat, they don't need to go through our garbage," Craig said.

At the time of her tagging, Bear 153 was identified as a male, which Craig said made the birth of her first cubs in 2013 a surprise during an already fun time of year.

"Every spring, we're so excited when the bears show up again," Craig said.

Among that first litter was a bear with a distinct white V-shaped mark on her chest that's come to be known as Chevron or Luna. Chevron has since matured and had a cub of her own.



A hand-drawn family tree for Bear 153 details the cubs the sow has had so far. (Courtesy Photo | LaurieCraig)

In 2015, Bear 153 and Chevron did something Craig said she hadn't previously seen in her 14 years at the glacier and has not seen happen again.

"153 allowed her 2013 cub to come back and hang out," Craig said. "So we have a 2-and-a-half-year-old hanging out with the cub of the year. In essence 153 had a nanny. It was teaching [the cub] some bad habits, but they were having a great time together."

She said the nanny-reared cub is going to have an interesting life, and she's excited to see how it plays out.

"Will he be swaggering through as an adult because he was swaggering as a cub?" Craig asked.

Craig said that since Chevron would mind the new cub, Bear 153 spent the summer foraging.

"She spent a lot of time eating that summer because she had the babysitter," Craig said.

In 2017, Bear 153 had a litter of four — three of the cubs survived. They appeared on an internationally televised special that came to Juneau that year.

"This family's become quite the star of BBC's 'Wild Alaska Live,'" Craig said.

Craig said she's hoping Bear 153 is in a den somewhere with the newest branch of her family tree.

"She is an amazing bear and an amazing mother," Craig said. "It is such a privilege because of that little piece of blue plastic in her ear that we've been able to follow her life practically since she was born."



My first encounter with #153 wasn't until 2010 when at three years old, she showed up at the Steep Creek Meadow on August 2. The Alaska Department of Fish and Game built a fish weir about mid-meadow for several years in an attempt to count the number of sockeye salmon that return each year. It is a fence made of a series of parallel slats that slide up and down to allow for the contours of the land. They leave only a small opening large enough for a single salmon to pass and get photographed on their way upstream. Since the photo has an orientation, they can discount the salmon that swim back downstream through the weir.



Bear #153, like all our bears, is an accomplished fisher. During the peak of the run, the bears are rather picky about just what salmon they have their eyes on. They prefer fresh females when they are feeding for themselves as the egg sack, with its some 5,000 eggs and brain contain more calories than the red meat. The right photo shows her eating out the brain. While only the size of a large almond, it seems packed with enough calories to interest the females. This sockeye isn't exactly fresh as the tail is already white (indicating already dead flesh).

I had a very close encounter the next summer with her while on the path from the bus parking lot to Glacier Spur Road. I stopped to enjoy a particularly showy Nootka lupine and hearing a slight rustle, looked up and was face to face with her! I slowly stood up and said in a gentle voice to her "Well hello 153! How are you today?" or something very similar to that. At the same time I took small steps backwards but all the time making eye contact with her. She simply stood there, watching me until I was about 20 feet away, then she crossed the path and entered the woods on the other side and disappeared. I'm sure tempted to think that she was wondering what in the world I was doing and might have been just as curious about me as I was about her.

As Laurie Craig's illustration shows, she became a mom for the first time in 2013 with two cubs. I have no photographs of her from that year, but do have some imprinted memories. At almost exactly the same place as my 2010 encounter, here she is with both cubs. I've got a group of hikers with me and we immediately stop to watch as she and her cubs cross the path. Right in the middle of the path, cubs immediately behind her, she turns and faces our group, gives us a toothy low growl with slobber dripping from her jowls, then stomps both feet on the ground two times. We all stand silent and motionless, amazed at what we're experiencing. I've got my bear spray out with the safety removed, and don't really know what to expect. These behaviors are definitely strongly defensive and a big warning to us. We are well inside her personal zone and she's letting us know. It seemed a long time before she turned and walked into the woods, cubs in tow. It was probably just moments. We witnessed a very protective mother doing the classic bear behavior.

Fast forward to 2015 when she returns with a single cub. I had many encounters with her that summer and what a different behavior she presented. My first encounter with the two of them is at the exact same spot! She seems to like the bus parking lot. I was by myself and come upon

the two digging about. I stop to watch. 153 looks up at me, briefly, then resumes digging. It seems that she's now raised two kids successfully, humans no longer represent a threat to her. This behavior continued with this single cub all summer long. Just like humans, behavior with the first kid is protective, and far more relaxed with the next ones!



Just like Nicky, when crossing Glacier Spur Road, the like to emerge from the forest, cross the road and disappear into the forest on the other side. Here, on July 25, 2015, they are crossing just north of the bus parking lot heading upstream on Steep Creek. Traffic wasn't too heavy this day with only me, the cyclist and the oncoming bus on the road and coming out of the bus lot. Note how closely the cubs pelage matches moms, right down to the exact same muzzle pattern and color.



With two cubs in 2015 and four in 2017, she spends a lot of time in Steep Creek, especially in the Meadow area. Lots of salmon for her and the kids, and she's an expert fisher. Here on July 30, 2017 two of her cubs are enjoying a very fresh sockeye that mom just presented them.



The third cub (#4 was already missing) has its own salmon and is more interested in playing with it that eating. I'm guessing the fact that the fish was still alive and flopping aggressively had something to do with that, but was so intent off the salmon I'm sure it had no idea we were watching.



This 2017 cub of #153 follows her below the Salmon Stop deck and takes a long gaze at all of us looking down at “her” (for me, all cubs are “her” until proven otherwise, with scientific evidence, or anything else to support this silly, but useful, idea). I am struck by the amount of blonde hair on her muzzle as it extends all the way to nearly the top of her eyes from the nose and completes a nearly $\frac{3}{4}$ circle around the eye on the outside. Granted, there is fades dramatically. Her chin is blonde all the way to her neck. Looking at her straight on, there is almost an “X”. Quite a bit of blood from the freshly eaten sockeye salmon stains her mouth.

This is a face I need to keep a watch out for. I don’t know how much it will change with maturity, but since the eye patches are so strong right now, I imagine they will remain so for years. This is an extraordinarily cute bear.



Two other 2017 cubs, one in a spruce tree and one standing in the meadow. This one shows nothing but black hair on its chest.



They all have unique muzzles and with careful observation (and memory) can be told apart.

Chevron



As Laurie's genealogy shows, Chevron was born in 2013 to Bear #153. She gets her name from a chevron-shaped white chest patch which is just barely visible in the right photo taken on August 10, 2018 when she's five years old. Chevron's muzzle is also nearly identical to moms. Here she is fishing in Steep Creek just south of the Meadow Bridge.

I have no notes nor photographs of Chevron before this date, so I obviously did not see or recognize this bear during those four years. That's especially disappointing as I have no recollection of her behavior as an older "step sister" to #153's 2015 cub that Laurie described in her Fireside Chat.



Here her single cub of 2018 is climbing down one of the black cottonwood trees (fenced to protect it from beavers) under the watchful eyes of mom. Mom's chevron chest patch is just barely visible in the left photo. This is along the zig zag portion of the Steep Creek Trail boardwalk.

Pearl



On August 5, 2020, a new bear shows up with a single cub. The resemblance to #153 is striking and on the few occasions that she shows her chest, I spot a “string of pearls” of white spots as a necklace that almost show up on the left photograph. It pretty much convinces me that this is one of #153’s. The nickname “Pearl” immediately comes to mind and that’s what I’ve been calling her. A few others I’ve chatted with like the name and it may stick.



Pearl is searching for sockeye salmon (along with all the rest of us!) in Steep Creek at the Meadow. Finding none, she satisfies herself with grasses and sedges. A very interesting fact is that some sedges, especially Lyngby’s sedge (*Carex lyngbyei*) has more protein per ounce than salmon! But, this species is not in The Meadow but is found in the upper tidal zone along the ocean shore. Perhaps some of the sedges here approximate that, but I don’t know. She’s eating a lot of grass and sedge is all I can attest to.

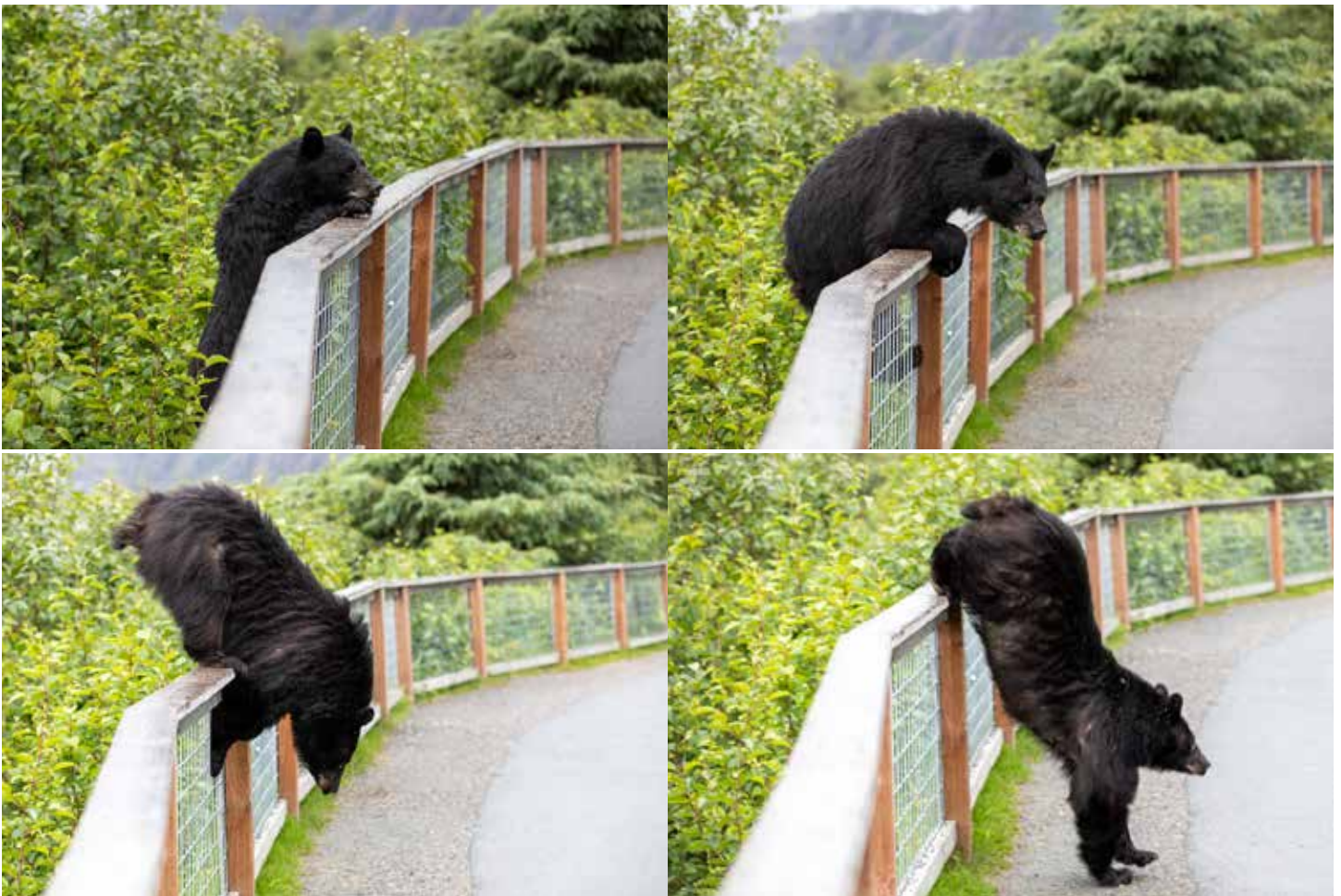


Pearl’s cub has a most interesting face with the two blonde eyespots on the upper inside of each eye. Note that the left one is vertical and the right one at an angle. The blond darkens on the top of the muzzle and blends smoothly into black right at the mid-eye line. “Her” chin has a black line running right down the middle. These should be characters to recognize her in the future.

Pencil-thin Moustache



Annette and I encounter this bear on the main paved walkway to the Mendenhall Glacier Visitor Center on June 24, 2020, and this is the only day we see this bear for the year. I give it the name “Pencil-thin Moustache” mostly because it is clearly a bear recognizable to an individual and I can keep track of it in my Lightroom database with a unique name. It is apt in that the bottom of each Jowl is nearly pure white in a thin line. There seems to be a scar on the lower inside of its right eye. Based largely upon its size and the way it walks, we both think it is a male. The bear is easily larger than me, and I think closer to $1\frac{1}{2}$ of me, so around ± 300 pounds. This is much larger than the females we regularly see.



We don't think this is a bear that “knows” the visitor center area as we watch it climb over the fence just 10 meters north from “Nicky's Notch”! It has no difficulty at all, and it may have looked at the “notch” before we got there and decided it was a bit too small for it. We also wonder if the near lack of people gives the bear confidence as there are only two others with us watching. On a normal Wednesday at about 5:30 pm there would be several hundred people here. Our experience tells us that males avoid crowds.

Note the scruffy winter outer coat of hair that has a wee bit of cinnamon and the undercoat that is just a bit white. It may be wishful thinking, but I can't help but think this just might be one of Nicky's 2018 cubs, even though it is much larger than a three year old would be.

Blondie



On July 9, 2020 Annette and I are out at the Glacier for one of our fairly regular “Beary Citizen Science” walks. We usually walk the Trail of Time and come down the EZ Walk. This day, Annette and Nyssa are a bit in front of me and Nyssa gets “interested” in something off the trail and Annette notices some motion in the willows and says “It’s a bear!” Only about ten feet from them, they turn around and walk back the other direction while I stay with the bear. It stays in the willows as up moves toward me, standing on the trail. I back up slowly, taking these photos. While it appears I am very close to the bear, I’m about 10 meters up from the bear but using a 100-400 mm lens.

I’m calling this bear “Blondie” as the muzzle is very blonde and distinct and a way to keep it identifiable in my database.



She stays just off the trail and comes out on the greenstone ridge than walks onto the EZ Walk paved path. Just before taking the last photo, “she” takes a big pee and since I got a “front row seat” and can see where the pee is exiting, I know “Blondie” is a female. She goes through the large fence opening and heads down to the main walkway. I walk to the fence and cannot see her anywhere, then head down the EZ Walk to the kiosk and toward the elevator and run into a few people and none of them saw the bear! How did she disappear so quickly? I’m sure she crossed into the scrub surrounding the kettle pond, but don’t see her anywhere.

This is our only sighting of this bear for 2020. I’m confident of my ability to identify her as an individual in future sightings.

What Do Bears Eat?

Being opportunistic omnivores (an organism that regularly consumes a variety of material, including plants, animals, algae, and fungi) is one of the reasons the American black bear has such a wide geographic and habitat range. They are able to take advantage of calorie and protein sources wherever they are found. Nearly every study done concludes that bear eat far, for more vegetable matter than meat, up to 85% of their diet!

Brown, G. 1993. *The Great Bear Almanac*. Lyons & Burford. ISBN 978-1-55821-210-7.

Upon waking from their winter nap in late February or March (here in Juneau), food is at a premium with snow normally covering most of the ground and spring buds are still very tight. They'll devour just about anything green and search for carrion left by other animals as well as the red squirrel caches of spruce cone nuts. Females with new cubs are especially at risk as they need many calories just to produce milk, let alone for their own needs. It is the toughest time of the year for bears.



As spring arrives and new shoots become plentiful, life is much easier for the bear. One of their favorite foods are the early shoots of black cottonwood (*Populus trichocarpa*). As the young leaves open, they eat large quantities of them as well. This unidentified young bear is way up in a tree across from Salmon Stop on May 10, 2011 when there is still a great deal of snow on Thunder Mountain in the background. It always amazes me how large a bear can climb on such small branches.



Later in spring one of their favorite foods are the unripe fruits of the cottonwood. Here are two unidentified cubs in a cottonwood along Steep Creek Trail on June 17, 2018. The grape-sized unripe fruit are green solid spheres (without a trace of the "cotton" that forms as they ripen) that grow on a spike that dangles down from the ends of the branches. The bear grab these and shove one in their mouth but hang onto the branch. They're not interested in the woody part, just the round fruits. They close their mouths over the spike and pull the stalk through their diastema, a space between their incisors and molars. This space is just large enough to stop the fruits and allow the branch to be pulled through leaving the spheres in their mouth. They throw the rest to the forest floor where there is often quite a mess of broken branches and fruit spikes.

Since cottonwoods are dioecious (male and female flowers on separate plants), a pattern develops in the trees where there are lots of bears. Some have lots of branches and leaves and some look very much stripped. In a study of 96 female and 49 male cottonwoods, "Tree damage was related to tree girth: medium-size trees were more heavily damaged than small or large trees. ... female trees were more heavily damaged than males."

Willson, M.F. G.W. Pendleton, J.D. Jones, L.F. Craig & A.E. Sherwin. 2012. *Black Bear (Ursus Americanus) Foraging On Black Cottonwood (Populus Trichocarpa) Catkins In Southeast Alaska*. *Northwestern Naturalist* 93:211-219



May and June offer a plentitude of horned dandelion (*Taraxacum ceratophorum*). On Goat Hill on Back Loop Road, the show can be spectacular with this very large species. I drive this route a couple of times a day during the cruise season and have seen bear take advantage of these flowers many times. This unidentified probable four year old chomps at them with cars whizzing constantly by on June 12, 2011



For decades I've heard that bear eat skunk cabbage (*Lysichiton americanus*) but until May 5, 2012 I'd never seen it or even what I recognized as chewed plants. This unidentified young bear is chomping down on the flowers stalks of these fresh skunk cabbage Out-the Road near Mab Island. The leaves are full of calcium oxylate crystals that can penetrate the cells lining the throat and cause them to swell, sometimes enough to close the airway. Flowers have much less, at least enough not to bother the bear. After seeing this bear, I've no noticed many fresh skunk cabbage flower shoots chomped off. It seems to be an important food source in April and early May. Many references have bear eating the roots, and I occasionally find patches of the very common plant dug up, but not in significant quantity.



Ground cone (*Boschniakia rossica*) is a major source of food for the bears at the glacier. Rototilled ground is an every day sight along the Trail of

Time and in these photos, the Photo Point Trail. This plant is ubiquitous here as long as there are Sitka alder (*Alnus alnobetula* subsp. *sinuata*), its host plant. The plant spends most of its life as an underground tuberous stem and the bear seem to relish them. I've sliced off slivers of the inside and sucked on them and find the flavor pungent and spicy and almost tasty. When I chew on it, a very strong bitterness takes over my whole mouth and I usually spit it out. Our bear have no such problem as they eat large quantities of the stuff. In 2020 I was kidding that Bear #25 Nicky needed to print business cards with "Nicky's Rototilling Service" on them and go into the gardening soil prep business!

Berries are universally known as a favorite bear food and amazingly I haven't a single photo of a bear eating them even though I've seen it countless times. In our area the most important summer species are: the several species of blueberry (*Vaccinium* spp.), salmonberry (*Rubus spectabilis*), thimbleberry, (*Rubus parviflorus*) and to a much lesser extend dwarf dogwood (*Cornus* spp.). The drupes (a fleshy fruit around a single seed) of Devil's club (*Oplopanax horridus*) are a major source of food in mid- to late-summer. In early fall the highbush cranberry (*Viburnum edule*) take over from the Devil's club.

Bear Poop

Scat has long been known as perhaps the best way to determine the diet of most animals. There is usually a lot of it to examine here.



Early in the season bear poop is nearly solid plant material, mostly black cottonwood (*Populus trichocarpa*). Very fibrous and black and blocky, it rivals elephant poop for its cellulose content. The cottonwoods provide both nutrition and roughage. This has led many to consider it a way to force the faecal plug that develops during hibernation out along with the laxative effect of skunk cabbage (*Lysichiton americanus*). Researchers at the Wildlife Research Institute in Ely, Minnesota found the plug is caused by all the hair and vegetative material licked off fur while grooming in the den that remained in the lower intestine long enough for much of the water to be reabsorbed, making it hard and dry. They don't eat lots of roughage in the fall to make the plug, but may take advantage of it in the spring to purge it.



Later in the season the salmon come in and their diet changes to a large portion of meat. The poop becomes far looser, sometimes to the point of looking diarrhetic. Yet it still has seeds in it, evidence that they are still mostly vegetarian. Between the sockeye and coho salmon runs, they switch back to nearly all vegetation with Devil's club (*Opopanax horridus*) being a major component (left) along with highbush cranberry (*Viburnum edule*)(right). In September, nearly every plop of poop is full of barely digested drupes of the plant. John Neary of the Forest Service wondered out loud at a NOAA naturalist training if they use Devil's club as a way to control intestinal parasites. In 2020 with a terrible berry crop and extremely low salmon numbers, a new food shows up in their poop, cow parsnip (*Heracleum lanatum*) with the undigested seeds looking a great deal like rolled oats in oatmeal. I don't recall seeing this before



This bear scat from September 21, 2009 is very unusual in my experience here with its obvious mammalian hair content. The hairs are much longer than small mammals like voles and shrews and much more like snowshoe hare. There are no signs of quills, but it certainly is possible the a bear would eat the remains of a porcupine it, or another animal killed and ingest some inner hair. If they can catch a squirrel, it would be a meal full of protein, but I imagine it takes a greatly experience bear to capture a squirrel. Black bear have been known to take the young of deer, moose, but remote cameras show them searching for the carrion left by the more notorious hunters such as wolf and coyote.

Garbage Problems



The city is serious about garbage and bears. Here is their summary of Ordinance 2004-11:

Below is a brief summary of relevant provisions:

- Garbage cans may be put out to the curb for collection no sooner than 4 a.m. on pickup day.
- Other than after 4 a.m. on pickup day, garbage must be kept in a bear resistant container or enclosure.
 - in a strong fully enclosed structure such as a garage
 - in another “bear resistant enclosure,” defined as an enclosure that you can’t get into unless you use hands or tools. If it can be opened by stomping on it, kicking it, running into it with your body, or other similar action, it is not bear resistant.
- Garbage cans must be fitted with lids so as to remain secure if cans are tipped over.
- If your garbage has attracted bears and you fail to take steps to legally store your garbage, you could be cited for maintaining a bear attraction nuisance, a \$50 fine for the first offense.

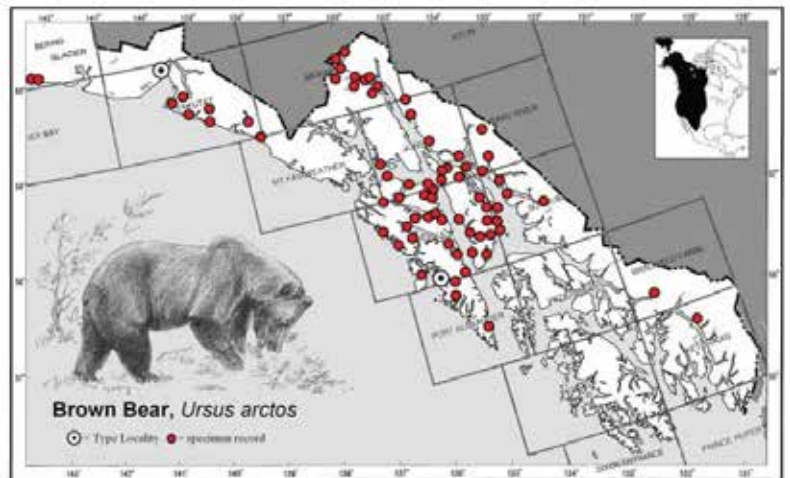
It is my firm belief that living in a city within a wilderness requires its citizens to be citizens to all the creatures of that land. We are the “smart” animal who has the ability to recognize those things that are “attractive” to bears and to mitigate that. Our behavior is more easily changed than the bears. Bear problems rose dramatically in 2020 with both a very poor berry crop and extremely low salmon numbers. Bears, being smart themselves, moved to where food was available. I don’t know any number, but lots of apple trees in Juneau were hit hard by bears. I live in a condominium complex with 4 yard, heavy, metal dumpster with metal lids. Twice a bear was able to push the entire thing over! I installed a heavy duty carabiner to the cables that keep the lids closed, and when used, it has worked to keep the bears from getting at the garbage. Here is a great example of human behavior being the problem, not the bear. How long does it take to re-clasp the wire loops to the carabiner? Mere seconds. Yet some humans find that an annoyance. It is yet another example of Pogo’s wisdom, “We have met the enemy and he is us.”

Ursus arctos horribilis Ord, 1815, grizzly bear, brown bear, *xóots*

ark-tose

Ancient Greek ἄρκτος *arktos*, bear. hoar-ih-bill-is

Latin *horribilis*, terrible, fearful, dreadful.



Range Map of American Black Bear in Alaska, ADF&G, <https://www.adfg.alaska.gov/index.cfm?adfg=brownbear.rangemap>

MacDonald, S.O. & J.A. Cook 2007. *Mammals and Amphibians of Southeastern Alaska*. Special Publication No. 8, Museum of Southwestern Biology, Albuquerque, NM



Taxonomy: All along the southeast Alaska and British Columbia coasts the bear are called “brown” by the locals to distinguish them from their smaller interior relatives that are commonly called “grizzlies”. The “brown bear” in the broad sense— *Ursus arctos* Linnæus, 1758—has a range in North America and Eurasia and is the most widely distributed bear.

There is little agreement on how to divide up the various subspecies that have been carved into as many as 90 or as few as five. Four have been named for Alaska:

- *Ursus arctos horribilis* Ord, 1815, as the dominant bear but one whose coastal members are much larger than the interior
- *Ursus arctos middendorffi* Merriam, 1896, the very large Kodiak bear of Kodiak Island
- *Ursus arctos sitkensis* Merriam, 1896, of Baranof Island that appears more closely related to the polar bear (*Ursus maritimus*) than the brown bear
- *Ursus arctos stikeensis* Merriam, 1914, from the Stikeen River of British Columbia and Alaska

That they are closely related to polar bear is given credence by brown bear-polar bear hybrids being encountered, first in 2006 and again in 2010 where their ranges increasingly overlap due to a warming climate.

Notes: “How do you tell a brown bear from a black bear?” This is a common question whenever we see a bear. Brown bears are larger, usually much larger; brown bears are brown to blonde; brown bears have a flat profile from forehead to nose; brown bears have an obvious shoulder hump; and, brown bears have long claws that make a straight line. Brown bears are meant for digging, not climbing.

I’ve yet to see a brown bear in the immediate Juneau mainland area. I was up on the East Glacier Trail many times in 2009 and saw many black bears, but never the browns as indicated in the photograph of the warning sign. I did see some bear scratching on spruce trees that could have been from either black or brown bear. Fellow guide and part time Forest Service employee Brenda Wright saw them twice! Fellow guide Stacy LaMascus had a very close encounter with a brown at Point Bridget the same year.

My first experience with browns here is at Sweetheart Creek, about 40 miles south where Port Snettisham heads east off Stephen’s Passage and forms Gilbert Bay to the south. Here the brown bears gather for the sockeye run and the easy pickings from both the river and the fishermen. On August 3, 2008 we anchored our boat in the bay and canoed to shore and saw several bears along the shoreline. When we got all of us and our equipment to shore, we trudged on a manway through tall salmonberry and whistled and talked the whole way to let the bears know where we are as we cannot see where they are or determine how close they are to us.

Arriving at Sweetheart Creek, Annette and I begin fishing right where the creek flows out from the chasm into the flats with me fly fishing close to the cliffs and Annette just downstream spin casting in the open. A sow with an 18-month old cub comes wandering up our side of the creek and the two get uncomfortably close, less than 50 meters downstream. At this point they cross the creek (right photograph) and we continue fishing. The cub goes wandering in the Lyngby’s sedge (*Carex lyngbyei*) while mom walks the side of the river, fishing. With her away from us and concentrating on her own fishing, our anxiety level drops significantly. She spots an attractive salmon and without pouncing, sweeps her left arm down into the river and comes up with a 1 meter long sockeye stuck in her claws, and then stands up. The cub spots her with the writhing fish and runs straight towards her. I’m sure it’s thinking “easy eats”. Just as the cub arrives, the sow turns so her right side faces the cub and just as the cub jumps up to grab a bite of the fish, the sow swings her right arm straight for the cub and smacks it on the jaw with a force that causes the cub to fly back and roll three times away from her! She then sits down and leisurely eats the prime parts of the salmon, with junior trying to figure out what just happened. She leaves the rest on shore before fishing some more and junior heads for that.

I tell Annette that “There’s a mother who knows how to mother!” If the cub doesn’t learn to fish—especially since this cub will be abandoned by the mother in late October or early November—it will not survive. This was an incredible “National Geographic moment” for sure!

After hearing about seeding brown bears along the shoreline of Admiralty Island—*xóotsnoowú*, the “fortress of the bear”—and mistaking the “brown bear rock” for a bear many times, it wasn’t until May 16, 2013 for me to see my first. Captain Gary Judkins spotted it first and slowed the boat down to a near stop as we very slowly approached the shoreline, but remaining about 150 yards or so as not to spook the bear. It was feeding on fresh Lyngby sedge growing just above the high tide line. Being mostly interested in feeding, the bear rarely lifted his head up to survey the surroundings and us in the boat out on the water.

Juneau Brown Bear Sightings

- Sow with two cubs on East Glacier Trail, August 5, 2009
- Single brown bear on East Glacier Trail, July 2010
- Two yearling brown bears wandered the shores of Mendenhall River, often near people’s yards in October of 2016.
- For the first time since 1974, a 725 pound brown bear was killed “in defense of life and property” (DLP) off North Douglas Highway on May 25, 2017.
- Hikers encountered what is likely the same brown bear up Salmon Creek twice in four days in May of 2019.

Order Cetacea Brisson, 1762 *whales, dolphins, porpoises*

see-TAY-see-uh, American often see-TAY-shuh Ancient Greek κῆτος *kētos*, whale. Derived from Greek mythology when Perseus defeated the great sea monster Κητώ, *Kētō*, the word coming to mean any large sea creature

There is a bit of messiness when it comes to what one calls “whales”. The broadest classification includes whales, dolphins and porpoises as they are all in the same order and is what I follow here. Since they are generally related, this seems a logical arrangement. Some prefer to segregate out the dolphins, porpoises and whales as three convenient and distinct groupings. While convenient, these are not “natural” in a phylogenetic sense.

Cetaceans are the most highly adapted mammals to the aquatic environment. They retain the mammalian feature of hair but highly modified in many into a probable sensory organ contained in an outward growth called a tubercle. Females produce milk for their young, adapted to their aquatic life to be about 50% milk fat making it immiscible in water. Their fusiform shape allows for efficient movement through water, far more viscous than atmosphere. Their forelimbs are efficient flippers or paddles for acrobatic maneuvering in their submarine habitat. Their hindlimbs have been reduced to vestigial pelvic bones not connected to the vertebral column. Their nasal openings and passages have migrated to the top of the head allowing ease of breathing while remaining submerged. Their earbones are isolated from the skull and have developed into highly sensitive organs attuned to an amazing assortment of sounds. All of these adaptations come from divergence from terrestrial mammals from the early Paleogene period (66–23.03 million years ago) and are closely related to ungulates, mammals with hooves, and perhaps closest to hippopotamus.

Suborder Mysticeti Cope, 1891 *baleen whales*

miss-tih-SEE-tee Etymology uncertain. It could be from ο μυστικητος, apparently a conflation of ο μυσ το κητος from Aristotle's *Historia Animalium*. It is often said to be derived from the ancient Greek μυσταξ *moustak*, moustache + κῆτος *kētos*, whale, referring to the baleen plates

Mysticetes are whales without teeth, replaced by ranks of baleen composed of keratin, the same as fingernails and hair. Baleen is often called “whalebone” but is not actually bone. Teeth occur in all living mysticetes for at least part of their embryonic stage. Fossil mysticetes have teeth. This represents a dramatic change in feeding behavior from direct predation to filter feeding. Living mysticetes gulp-feed in the Balaenopteridae (rorquals), skim-feed in the Balaenidae (right whales and bowhead whale), and bottom plough in the Eschrichtiidae (gray whales). The Neobalaenidae only contains the pygmy right whale. If considered more broadly to include fossils, the name Cetotheriidae is used.

Family Balaenopteridae Gray, 1864 *rorquals*

Old French *balaine*, whale, whalebone; from the Latin *ballaena*, whale; from the Greek φάλαινα *phalaina*, whale.

Rorqual comes directly from the French *rorqual*, which derives from the Norwegian word *røyrkval*, furrow whale, presumably from the baleen rows. [<http://iberianature.com/britainnature/miscellaneous/etymology-of-mammal-names-in-english/>]

The nine living species are found in two genera, *Megaptera*, with only the humpback whale; and *Balaenoptera* with the torpedo shaped minke, sei, fin and blue whales. All have ventral pleats or throat grooves that allow the mouth to open an enormous cavity holding thousands of gallons of water that can be filtered for small sea life such as krill and small schooling fish.

Megaptera Gray (1846)

meg-APP-tur-uh Greek μέγας *megalos*, great, large, mighty + πτέρυγα *pteryga*, wing; literally “big wing” for the very large pectoral fins

In 1846 John Edward Gray (1800-1875), Keeper of Zoology for the British Museum, determined the baleen whales (then considered to be in the all-encompassing genus *Balaena* Linnæus 1753) were different enough to warrant division and he created the new genus *Megaptera*, using the Latin word for “big wings” in reference to the largest pectoral fins of any whale in the sea. Indeed, the whales use these fins as “wings” for some incredibly acrobatic underwater maneuvers when feeding in Alaskan waters. The genus is monotypic, containing only the humpback whale.

Megaptera novaeangliae (Borowski, 1781), humpback whale, γάγυ

Latin noh-vee-ANG-li-ee, American no-vuh-ang-gee-aye New England, from where first scientifically described

Humpback Whales of Juneau





Taxonomy

1756: The first name given to the humpback whales in a scientific setting was by Mathurin Jacques Brisson (1723-1806) from his *Regnum Animale* of 1756 calling it in his in native French *baleine de la Nouvelle Angleterre* with the English meaning “whale of New England”. It is not clear if he observed the animal here, but many of his era had, especially the whalers.

1781: Georg Heinrich Borowski (1746-1801), German naturalist and professor at the University of Viadrina in Frankfurt, converted Brisson’s French into the new form of naming in Latin invented by Carolous Linnæus in 1753 as *Balaena novaeangliae* Borowski 1781.

1804: Bernard Germain de Lacépède (1756-1825), French naturalist who was for a time the curator of reptiles and fishes at the *Jardin des Plantes* where he wrote *Histoire naturelle des poissons*, moved the whale from Balaenidae into the new family Balaenopteridae. This required that its genus be renamed so he created the name *Balaenoptera jubartes* Lacépède, 1804. *Balaenoptera* means “looks like a baleen whale” and *jubartes* is a French word for whale.

1846: John Edward Gray (1800-1875), Keeper of Zoology for the British Museum, determined the genus *Balaena* had whales different enough to warrant division. He created the new genus *Megaptera* and gave it the name *Megaptera longipinna* Gray, 1846. He left the bowhead and right whales in *Balaena*. The epithet means “long-feathers”, a curious misapplication of a Latin word.

1932: Remington Kellogg (1892-1969), naturalist and director of the United States National Museum reverted the name to *Megaptera novaeangliae* (Borowski, 1781) under the principle of priority using the oldest name.

The common name, humpback whale, is a bit misleading as the whale doesn’t have a humped back! When sleeping, their backbone is nearly straight and only the rather small dorsal fin rises above it. When cruising the “hump” is slight at best and certainly not much different than any other whale. It is when the whale dives that it lives up to its name as it arches the back from the dorsal fin to the flukes in a mighty hump as it prepares to propel itself to the depths of the sea.

Current Status of Humpback Whales

Economic Status

The economics of humpback whales has historically been measured by consumption from the value of the products of the carcasses of dead whales. With the ban on whaling of humpback whales and the development of whale watching industry, the value of whales can now be calculated in a very different way. During the Juneau cruising season from the first week of May to the last week of September, nearly a million people visit Juneau. If 5% of them take a whale watching tour and the typical person pays \$150 per trip meaning 50,000 go to see whales, that's a whopping \$7,500,000 addition to the local economy. If there are around 300 whales in Juneau waters that means each whale is worth \$25,000. The whales provide a tremendous advantage as an economic resource as they keep coming back to Juneau each spring for another season of whale watching! It doesn't seem like a huge stretch to conclude that the economic value gained through humpback whale conservation and ecotourism is huge. It is certainly greater than the value of whaling, which, of course, kills the animals. These numbers are largely guesses but they make the point that live, healthy whales are worth serious money.

International Status

Humpback whales are found in most of the world's oceans; they only miss the high arctic. The International Whaling Commission "best estimate" of their worldwide population is 114,480 with data from 1997-2008. The *Report of the Scientific Committee Annual Meeting 2013* [<http://iwc.int/scientific-committee-reports>] includes updates only the Southern Hemisphere and Arabian Sea humpback whale stocks. The most recent estimate, 2007, for the North Pacific Ocean is 22,000 individuals [<http://iwc.int/estimate>]. Pre-whaling estimates are especially difficult to determine, but the North Atlantic is now believed to have a population greater than 100,000 based upon genetic modelling, or about the world's current total population.

Ruegg, K, H.C. Rosenbaum, E.C. Anderson, M. Engel, A. Rothschild, C.S. Baker, S.R. Palumbi. 2012. *Long-term population size of the North Atlantic humpback whale within the context of worldwide population structure*. Conservation Genetics 14 (1): 103.

Humpback whale hunting began in the 17th century with small takes. The invention of the explosive harpoon in the 19th century greatly increased the number harvested, reaching its peak in the early 20th century of some 200,000 animals. This reduced the population of humpbacks by some 90% of previous stocks and the particularly hard-hit North Atlantic population dropped to a mere 700 individuals.

Breiwick J.M., E. Mitchell, & R.R. Reeves. 1983. *Simulated population trajectories for northwest Atlantic humpback whales 1865–1980*. Fifth biennial Conference on Biology of Marine Mammals, Boston Abstract. p14.

In 1946 the International Whaling Commission was created to preserve the whale by creating restrictions and rules on hunting.

The International Whaling Commission is an Inter-Governmental Organisation tasked with the conservation of whales and the management of whaling. It is set up under the International Convention for the Regulation of Whaling signed in 1946. The Commission has a current membership of 89 Governments from countries around the World. [<http://iwc.int/iwcmain>]

In 1986 the IWC completely banned whaling. Since then, Japan, Norway and Iceland—nations that actively whale—have urged ending the ban. Subsistence hunting of humpback whale is currently allowed by indigenous people on Bequia Island in St. Vincent and the Grenadines and Greenland. Greenland's authorization was for three years, ending in 2013. At the time of the ban, the world-wide population of humpbacks plummeted to a mere 5,000 individuals¹. In 1986 Japan agreed to dramatically decrease their take of whales and is currently allowed to take 50 humpback whale a year under an IWC provision for scientific research. Japan has not taken advantage of this provision and no humpbacks have been taken since 1986. [<http://iwc.int/permits>]

¹Baker, C.S., A. Perry, J.L. Bannister, M.T. Weinrich, R.B. Abernethy, J. Calambokidis, J. Lien, R.H. Lambertsen. 1993. *Abundant mitochondrial DNA variation and world-wide population structure in humpback whales*. Proceedings of the National Academy of Sciences 90 (17): 8239–8243.

United States Status

Whaling continues in the United States by nine indigenous peoples in Alaska for about 50 bowhead whale a year. Their catch is regulated by the Alaska Eskimo Whaling Commission [<http://www.bluediamondwebs.biz/Alaska-awwc-com/>] under the auspices of the National Oceanic and Atmospheric Administration. For 2015 a maximum of "75 strikes" are authorized by the IWC, NOAA and AEWK for Alaska Eskimos. No humpback whale are taken.

Marine Mammal Protection Act of 1972

Humpback whales are fully protected in United States waters out 200 nautical miles under the Marine Mammal Protection Act of 1972 that...

...prohibits the **TAKE** of all marine mammal species in U.S. waters. **Take** means "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill," and harassment means "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to migration, breathing, nursing, breeding, feeding, sheltering." **TAKE** includes feeding or attempting to feed a marine mammal in the wild. Some exceptions are made for authorized scientific research and subsistence hunting by Alaska Natives.

The Alaska Regional Office of the National Marine Fisheries Service has created these “Marine Mammal Viewing Guidelines and Regulations”, here edited to include only whales [<http://alaskafisheries.noaa.gov/protectedresources/mmv/guide.htm>]:

Marine Mammal Viewing Guidelines and Regulations

The humpback whale approach regulation has been in effect since July 2001 and requires that you:

- Not approach within 100 yards of a humpback whale.
- Not place your vessel in the path of oncoming humpback whales causing them to surface within 100 yards of your vessel.
- Operate your vessel at a slow, safe speed when near a humpback whale.

VIEWING MARINE MAMMALS - A CODE OF CONDUCT

Federal law prohibits pursuit of marine mammals.

- Remain at least 100 yards from marine mammals.
- Time spent observing individual(s) should be limited to 30 minutes.
- Whales should not be encircled or trapped between boats, or boats and shore.
- If approached by a whale, put the engine in neutral and allow the whale to pass.

Even if approached by a marine mammal:

- Offering food, discarding fish or fish waste, or any other food item is prohibited.
- Do not touch or swim with the animals. They can behave unpredictably and may also transmit disease.

HOW TO OBSERVE MARINE MAMMAL BEHAVIORS AND MINIMIZE YOUR IMPACT

Whales, Dolphins, and Porpoise:

- Changes in swimming . . . such as rapid changes in direction, speed; erratic swimming patterns. Escape tactics such as prolonged diving , underwater exhalation, underwater course changes, or rapid swimming at the surface. Female attempting to shield a calf with her body or by her movements.
- Surface displays. . . like tail slapping or lateral tail swishing at the surface.

HOW TO CONSCIENTIOUSLY VIEW MARINE MAMMALS FROM A BOAT

Whales may surface in unpredictable locations.

- Breaching and flipper-slapping whales may endanger people or vessels.
- Feeding humpback whales often emit sub-surface bubbles before rising to feed at the surface. Stay clear of these light green bubble patches.
- Noise may help whales know your location and avoid whale and vessel collisions. For example, if your engine is not running, occasionally tap the side of the boat with a hard object.

If you need to move around a whale, do it from behind the whale.

- Vessels that wish to position themselves to allow whales to pass the vessel should do so in a manner that stays fully clear of whale's path.

Marine mammals are more likely to be disturbed when more than one boat is near them.

- Avoid approaching marine mammals when another vessel is near.
- Marine mammals should not be encircled or trapped between boats, or boats and shore.
- Always leave marine mammals an escape route.
- When several vessels are in an area, communication between vessel operators may reduce the potential for disturbance.

Limit your time with any individual or group of marine mammals to 30 minutes.

- Your vessel may not be the only vessel in the day that approaches the same animal(s). Please be aware that cumulative impact may occur.

Vessels traveling in a predictable manner appear to be less disturbing to animals.

- Pursuit of marine mammals is prohibited by law.
- Never attempt to herd, chase, or separate groups of marine mammals or females from their young.
- Avoid excessive speed or sudden changes in speed or direction in the vicinity of whales.
- The departure from a viewing area has as much potential to disturb animals as the approach.

“Regulations Governing the Approach to Humpback Whales in Alaska” are published as a “final rule” beginning on page 29502 of the Federal Register, 66(105), Thursday, May 31, 2001. [<http://alaskafisheries.noaa.gov/frules/humpbackapproachfr.pdf>]

Endangered Species Act of 1973

The humpback whale became *endangered* under the Endangered Species Conservation Act (ESCA) in June of 1979. In 1973, the Endangered Species Act (ESA) replaced the ESCA, and continued to list humpback whales as endangered. This is defined as *any species which is in danger of extinction throughout all or a significant portion of its range* (Sec.3.6, Sec.4.a [2]). This act provides additional protection for the humpback whale. On October 11, 2016 our Alaska population of humpbacks were completely delisted. They remain protected under the Marine Mammal Protection Act with revisions made in September of 2016 reflecting the delisting.

When John Moran, Fisheries Research Biologist with NOAA, was asked about the possibility of hunting the whales after delisting during the 2009 NOAA Naturalist Training, his emphatic answer was “No way! Too many people now love them.” If the Endangered Species Act is to mean anything at all, it must be based upon science. Science has methods to deal with uncertainty. When science is used for endangered species, it can work to actually save the species. The delisting of the Bald Eagle on August 8, 2007 was a great victory. It came under protection early enough for the population, with human help, to recover. The same is happening with the North Pacific population of the humpback whale. With protection, that population rose from perhaps as few as 1,000 individuals to a current estimate of 11,398. There are currently no significant human threats to this population (not so for the Western Pacific population). If the law is to mean what it says, when an organism is no longer endangered, its status should change to reflect that, regardless of its “charismatic” character. I’ve watched the Juneau population grow with new babies every year joining the other. I predicted then that this population would be downlisted to “threatened”. But as John Moran said, there will be no additional whaling allowed under other laws and regulations as there is just too much public pressure to allow it. I think the fishermen

who have initiated the delisting process want is relaxed regulations on them when actively fishing when humpbacks are in the vicinity. This appeared to be the unspoken position of the State of Alaska as well.

On August 29, 2013 the National Marine Fisheries Service issued a “90-Day Finding on a Petition To Delist the North Pacific Population of the Humpback Whale; Notice of Status Review”:

We, NMFS, announce a 90-day finding on a petition to identify the North Pacific population of the humpback whale (*Megaptera novaeangliae*) as a Distinct Population Segment (DPS) and delist the DPS under the Endangered Species Act (ESA). The humpback whale was listed as an endangered species in 1970 under the Endangered Species and Conservation Act of 1969, which was later superseded by the Endangered Species Act of 1973, as amended (ESA). We find that the petition viewed in the context of information readily available in our files presents substantial scientific and commercial information indicating that the petitioned action may be warranted.

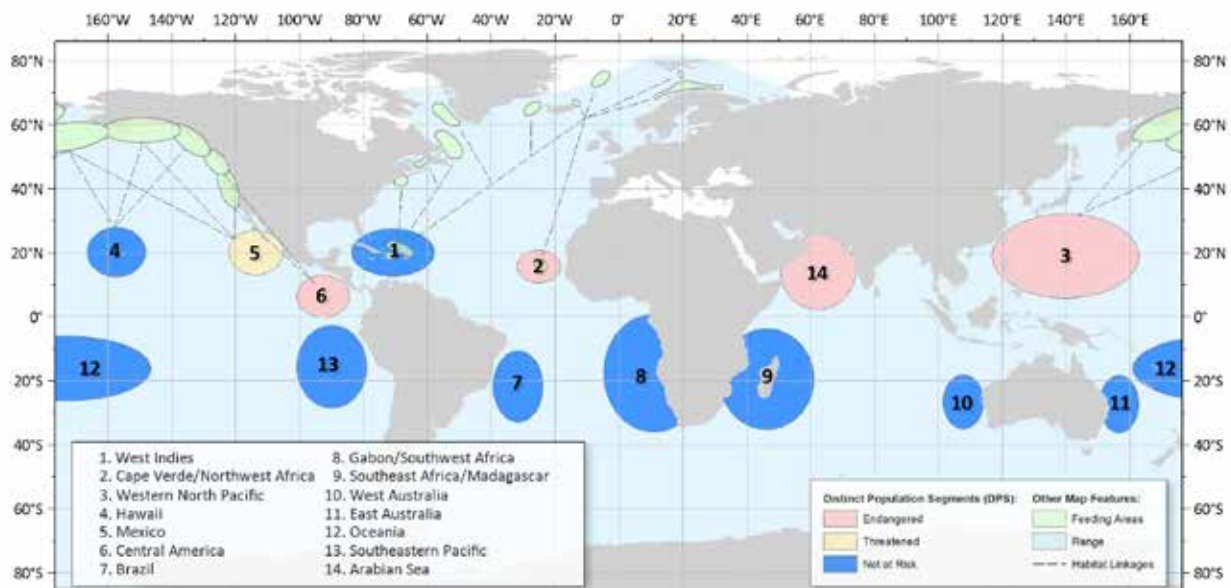
We are hereby initiating a status review of the North Pacific population of the humpback whale to determine whether the petitioned action is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to this population from any interested party.

The National Marine Fisheries Service determined the petition of the Hawaii Fishermen’s Alliance for Conservation and Tradition Petition in 2013 was found to be “without merit”, but the State of Alaska Petition to Designate the Central North Pacific Stock of the Humpback Whale (*Megaptera novaeangliae*) as a Distinct Population Segment (DPS) and Remove the DPS from the List of Endangered and Threatened Species under the ESA of February 2014 was found to be “with merit”.

We, NMFS, have completed a comprehensive status review of the humpback whale (*Megaptera novaeangliae*) under the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq.) and announce a proposal to revise the listing status of the species. We propose to divide the globally listed endangered species into 14 distinct population segments (DPSs), remove the current species-level listing, and in its place list 2 DPSs as endangered and 2 DPSs as threatened. The remaining 10 DPSs are not proposed for listing based on their current statuses. This proposal also constitutes a negative 12-month finding on a petition to delineate and “delist” a DPS of humpback whales spanning the entire North Pacific and a positive 12-month finding on a petition to delineate and “delist” a DPS in the Central North Pacific (Hawaii breeding population).

At this time, we do not propose to designate critical habitat for the two listed DPSs that occur in U.S. waters (Western North Pacific, Central America) because it is not currently determinable. In order to complete the critical habitat designation process, we also solicit information on essential physical and biological features of the habitat of these two DPSs.

The rationale for this change is based on hard science. The fourteen distinct population segments that have been identified are shown on the NMFS map below. DPS 2 (Cape Verde Islands), DPS 3 (Western North Pacific) DPS 6 (Central America) and 14 (Arabian Sea) are downlisted from endangered to threatened. DPS 5 (Mexico) remains as the only population endangered. The remaining 10 are delisted. DPS4, ours, dropped to some 1,000 or fewer individuals in the 1960’s and was in extreme threat of extinction, but has rebounded to some 11,398 today. There are no significant threats to this population currently and the population is growing at more than 5.5 to 6% per year. Without threats and a growing population, this population is no longer in any immediate danger of extinction, nor under any significant threat at all, so delisting is warranted. The final determination was announced on September 8, 2015 with the final rule effective October 11, 2016.



My first year with humpback whales



My first humpback. Despite trips to Cordova in 2005 and Juneau in 2007, well within the range of humpback whales, my first sighting had to wait until August 2, 2008. We are headed south in the Gastineau Channel on our way to Sweetheart Creek for some serious sockeye salmon fishing. Not far north of Point Bishop, daughter Bess spots a blow about 200 yards off our port side. It's raining steadily and I remain inside the covered cab of the boat and snap three photographs through the plastic windows. Now why didn't I step outside for a better photograph of my first humpback? The result is this rather poor photograph. However pathetic, it remains important to me as my first sighting and a portent of things to come. These first reports are from an excited novice guide, experiencing whales up close for the first time just as our guests do every day.

In 2009 I took a job as a naturalist guide with Gastineau Guiding and a major part of this company's program is whale watching with *Alaska's Whales and Rainforest Trails* adventure.

May 7. My first humpback sighting of the year is from the shore just east of Point Salisbury on my hike with guide Dan Hopson. While looking for a spot along the rocky beach to eat lunch, Dan is the first to hear a spout but I think I was the first to spot the whale, about 100 meters off shore, swimming from the west to the east in the direction of Bishop Point where it went out of sight, but turned around and came back westward and headed off into Stephen's Passage.



May 14. My next whale encounter is the greatest whale experience of my life up to this date—but with many more are to come! I'm out on the *Navigator* shadowing guide Richard Stokes on a Whales and Trails trip for my first time on the water with Gastineau Guiding. Because I was not leading, I had the opportunity to take some photographs with my Canon 10D with a 70-200 mm lens with the 2× extender.

As was so often the case for later trips, the first sightings were of dorsal fins and the backs near them of whales cruising just below the surface of the water. I took probably fifty or a hundred shots of the fins, only to delete the vast majority of them when I looked at them on my computer and found them to be so distant and tiny as to be worthless! But a few were worth keeping, like this photograph which shows a cow and calf cruising south along the west side of Shelter Island in Saginaw Channel.

Our humpbacks are arriving almost daily from their winter journey to Hawai'i and many are cows with calves. The cows are large, about 45+ feet long and a similar number of tons. The calves are about a quarter the size of the cow and remain quite close to it when the two are near the sur-

face. As the cow has gone several months without feeding, when she gets to Alaska she has only one thing on her mind: food! This means plenty of diving in order to find and eat 1.5 tons of krill and fish a day!

When I got home I learn the fun of comparing my whale tails to the two catalogs. I process these two fluke shots and compared them to the *Juneau Humpback Whale Catalog*. I was not able to identify “my” whales. Both patterns seem quite distinct and easily compared with the 108 on the website at the time, but none of them matched. I e-mailed the photographs to Suzie Teerlink saying my eyes must not be so good as I can’t ID these flukes. She answered me within a day and said my eyes are just fine as these are “new” whales, not in the catalog. She requested permission to use the photographs, which I gave her. This is a pretty cool way to get started in the whale-watching business, find new whales for Juneau!



Whale UASE_ID_7825_Temp. This whale has one of the most distinctive tail shapes and patterns I’ve ever seen. On June 19, 2015 I spotted this whale in the back side of Douglas area of Stephens Passage. What is the story of this whale? Where was it from 2009 to 2015? Why did it show up here if it frequents other places? Is this just a “pass through” location for it? Answers to these questions are impossible and help add to the mystique of watching and studying these leviathan.



Whale 2264. When I took this photograph on May 14, 2009 it remained unidentified as it wasn’t in either catalog. It entered the catalog the winter of 2009-2010 with a photograph that John Moran of NOAA took with the note *Date First Seen, November, 2009*. My photograph pre-dates this by some seven months! The series of eight photographs I took that day remain evidence of my only encounter with this whale. The same questions I have for my first new whale come to mind with this whale as well. What this means for me as a naturalist observer of these creatures is that I take photographs of every whale tail I can, every time I’m on the water. I compare them to the catalogs in an attempt to identify them, but I’m now accumulating a set of historical records of whale occurrences in Juneau waters. These can be used to provide information on how often whales return to our waters and exactly where they go. It also means that periodically I must remember to go back through my now extensive collection of “unidentified” whale tails and revisit them with the catalogs. Each time I do this, I’m able to add another identified whale to my collection.



May 25. The whales continue to be very active and easy to find nearly every day. But one morning Captain Gary Judkins and I were out on the first trip of the day—before 8 a.m.—and we were looking for whales for 1 hour and 45 minutes before we found a dorsal fin and a few spouts! I was worried that day about our guarantee of \$100 per person if we don't see a whale! That has been the only nervous day of my entire career with Gastineau Guiding.



Pectoral Slapping and Spy Hopping. My nervousness proved to be totally inappropriate. It didn't take long for us to witness some very exciting antics of a juvenile whale. Whale behavior is included in its own section of these notes.





Breaching. It's only my fourth day out on the water and I already get to enjoy the antics of a breaching juvenile, here in the waters off the south end of Shelter Island at the northern end of Stephens Passage.

I was out on the waters around Juneau leading 61 whale watching trips in 2009 and never tired of the experience. It is nothing short of amazing and fantastic to be able to be out on the water watching these leviathan eat and play. The privilege working for Gastineau Guiding to be able to do this 61 times is nothing short of gracious. How many people in the world get to see this sort of thing, let alone 61 times in one six month period? I've one thing left to do to complete my humpback experience: I need to head to Hawai'i and witness them in breeding behavior and see them breach in large number. If I never do, this magnificent experience will suffice for at least a lifetime.

Humpback Whale Behavior

Even the most casual observation of humpback whales leads to questions about their behavior. On nearly every water trip I get asked “why do they do that?” The answer to this seemingly simple question comes with great difficulty and I couch my responses with uncertainty. Most of what I “know” comes from my accumulated observations supplemented with what I read. I try mightily not to anthropomorphize, that is, ascribe human attributes—especially behavior—to other animals, based largely upon my experience with human behavior. These animals are not humans and to ascribe human attributes is at best naïve and at worst a great disservice to a very intelligent animal. I’ve done a great deal of research on humpback whale behavior and have come to the conclusion that most of what we “know” is little more than speculation (forming an idea, conjecture, or theory without firm evidence). The vast majority of references I’ve found simply describe, illustrate and name the behavior. In what follows, I attempt to go a bit beyond that and give some detail of my own observations with specific research I’ve been able to find for that behavior.

The single best reference I use is notable for how well it distinguishes what we know based upon evidence from what we would like to know, and gives great emphasis on the vast amount that we should learn about these magnificent creatures. It doesn’t hurt that most of the photographs were taken by my friend Flip Nicklin.

Darling, J. 2009. *Humpbacks: unveiling the mysteries*. Granville Island Publishing, Ltd., Vancouver, BC.

The Pacific Whale Foundation of Maui, Hawai‘i, gives this caveat as a preface to illustrating humpback behavior:

The following behaviors, most visible from boats and shoreline lookouts, are high energy activities that may serve a number of social functions. They must be interpreted in the full context of the season and location in which they occur to understand their significance and purpose.
<http://www.pacificwhale.org/documentSetting/UserFiles/File/WhalewatchGuide.pdf>

Much of what we “know” about humpback whale behavior comes from research in Hawai‘i. Large numbers of whales congregate there, especially off the island of Māui, from November through March. Mating and calving of both North Pacific and South Pacific populations occurs in Hawai‘ian waters. The tropical water there is clear enough to allow extensive observation and filming of underwater behavior. Yet with decades of observation and filming, the act of copulation has never been observed, let alone filmed. It seems these animals value their privacy!

Our Alaskan waters are so close to opaque from the incredible plankton bloom that observing underwater behavior is virtually impossible. I am limited to what I see near the surface, at the surface and above the surface. This is but a tiny fraction of the behavior these magnificent mammals exhibit; I just can’t see what they do under water. Take all of what follows with the severe caveat (a warning of limitations) that even sources of information that many consider reputable are not based upon “hard” (evidence-based) science. The depth of our ignorance of these animals is immense and much of what we “know” we don’t.

Hawai‘ian behavior is primarily based upon mating and calving. Alaskan behavior is primarily based upon foraging for food. They are very different, and similar actions in either place may mean something entirely different in the other. Be very careful of making any conclusion.

I have found little agreement on the classification and naming of humpback whale behavior. What follows is based upon my own observations with the terms I use along with other descriptive words used by many sources. Pick the one you like!

Cruising and Spouting



By far the most common behavior I see is cruising and spouting. I can truthfully state that I see this every time I'm on the water. When we leave Auke Bay and are searching for whales, spouting is what the captain and naturalist are looking for above the surface of the water. Spouts are nearly always the first thing we see and on all but "split pea soup" fog days are easily seen at distances of about five miles or less. That being said, it takes vigilance and extensive use of one's peripheral vision. It helps to be "out of the gate" after whale watching boats have already left. On a tour in 2009 Captain Gary Judkins and I went an hour and 45 minutes before spotting a whale!

Cruising and spouting is the one behavior I can be virtually certain about what I see: the whale is simply swimming from here to there and breathes with each surfacing. The normal pattern is a rise of the blowhole to just above the surface with a blow followed by submerging. The dorsal fin emerges with the backbone exhibiting a gentle arc, then it submerges. The sequence repeats itself over and over again as long as the whale is travelling. The time between blows is often less than 30 seconds, but can be much longer. There is no mystery here.

The shape and size of the blow can be a great help at identifying the whale species being observed. The spout of a humpback whale is quite distinctive from other whales. It is a nearly vertical column shaped like an ice cream cone, narrow at the base and broad at the top. It can easily reach 3 to 12 meters above the water surface. Surface winds can affect the orientation of the blow and the vertical blow is with calm conditions. I must admit to absolute joy when the spout of a whale wafts through the open windows of the boat. The smell is definitely unpleasant, but at the same time exciting. It makes me wonder what sort of microorganisms live within the lungs of these leviathan and if breathing them in might lead to some pathology!



Humpbacks have two nostrils located on the highest part of the skull as a splendid adaptation to their aquatic environment. They are separated by a septum made of both bone and hyaline (nearly transparent) cartilage. When open, a bowl forms above each that can hold more than a quarter liter of water. Much of the spout is made of this water that is vaporized upon exhaling. As the whale dives, a single external valve closes both nostrils simultaneously so no water enters. These two photographs were taken less than a second apart showing the closing of the valve!

Since the blowhole is above the surface for mere seconds, it requires that some 90% of their lungs be exhaled and then inhaled in a very few seconds. It is estimated that the speed of a humpback's breath is more than 300 kmh [<http://humpbackwhale.homestead.com/Humpback-Whale-Blows.html>], easily enough to vaporize the moisture in their lungs as well as the water in their nostrils.

Logging



Also called sleeping. At times we'll come upon a whale, usually alone, that remains nearly motionless for some five to ten minutes (the longest I've observed before moving off). It seems reasonable to assume that the whale is sleeping. It will often sink slightly under the surface of the water for a few moments to a few minutes then slowly rise until the blowhole is exposed then exhale and inhale. These breaths are much less forceful, based on the size of the spout and the sound of the rushing air, than those when cruising or involved in some active behavior.

Little is known about large whale sleeping and I have found that of studies of captive dolphin and small whales—

While sleeping, the bottlenose dolphin shuts down only half of its brain, along with the opposite eye. The other half of the brain stays awake at a low level of alertness. This attentive side is used to watch for predators, obstacles and other animals. It also signals when to rise to the surface for a fresh breath of air. After approximately two hours, the animal will reverse this process, resting the active side of the brain and awaking the rested half. This pattern is often called cat-napping. [*How do whales and dolphins sleep without drowning?* <http://www.scientificamerican.com/article.cfm?id=how-do-whales-and-dolphin>]

—have been used to make some extravagant conclusions about larger whales and it seems to be commonly accepted that all large whales utilize unihemispheric sleep. Animal Planet gives this as a (unsupported) fun fact about humpback whales:

Humpback whales breathe voluntarily, unlike human beings. Since they have to remember to breathe, researchers believe humpback whales sleep by shutting off half of their brain at a time. [<http://animal.discovery.com/tv-shows/wild-kingdom/about-animals/humpback-humpback-facts.htm>]

The immediate question that enters my mind, do I need to “remember” to breathe when I’m asleep? We do know that humans *do not* have unihemispheric sleep. The logic used by Animal Planet seems easily refuted.

The only scientific observations on large whales that I’ve found comes from a single gray whale calf that was rehabilitated at SeaWorld in San Diego in 1998. The researcher’s conclusion is tentative:

These findings suggested that, similar to other studied cetaceans (mostly Odontoceti), Mysticeti whales: (1) can sleep both at the surface and at depth; (2) likely have unihemispheric, slow-wave sleep and; (3) might have a small amount of paradoxical sleep, which occurs without pronounced muscle hypotonia and intensive jerks and twitches.

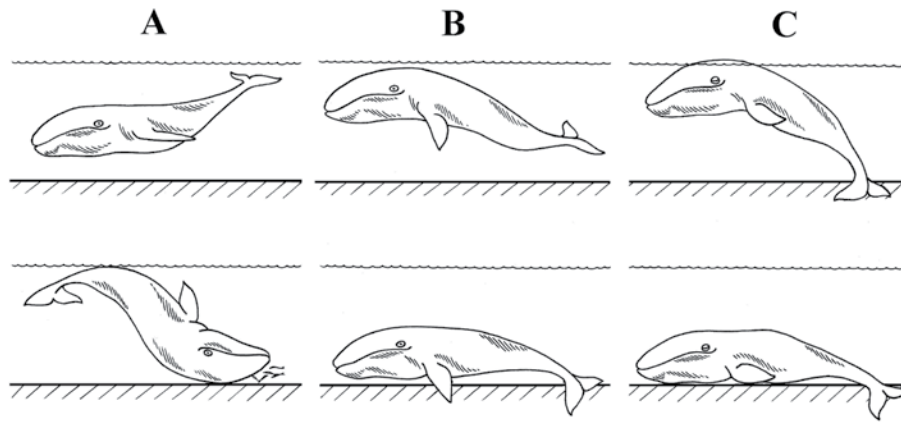


Figure 1. Main swimming styles and behavioral stages observed in JJ. (A)—swimming and feeding (stage 1, active wakefulness); (B)—quiescence at the surface and at the bottom (stage 2, transitional); (C)—rest at the surface and on the bottom (stage 3).

Lyamin, O.I., L.M. Mukhametov, J.M. Siegel, P.R. Manger, & O.V. Shpak. 2001. *Resting behavior in a rehabilitating gray whale calf.* *Aquatic Mammals* 27.3, 256–266.

Their extensive bibliography includes no studies on large whales except for a passing reference to a fin whale.

Unihemispheric slow-wave sleep (USWS) is the ability to shut down half of the brain for sleep while the other half remains alert. It is only known from a small number of aquatic mammals¹ and fewer than a dozen species of bird. *Paradoxical* sleep is usually called rapid eye movement (REM) sleep and is part of the “normal” sleep of humans and most mammals. It gets its name from the curious fact that neuron activity is very similar to waking periods.

We don't know if humpbacks shut down half of their brain. Humpbacks (and all other large whales) have never been in captivity and never had electroencephalograms measured on them. Any assertion that they have USWS is an extrapolation from the few animals that have been found to exhibit this behavior. To extend this to large whales, including our humpbacks, is simply an assumption. Based solely upon my own observations of logging, I'm skeptical of USWS to the point of thinking they are about as asleep—in paradoxical sleep—as most mammals with all but the autonomic nervous system being in control of the rising and sinking and coordinated breathing. This system in higher mammals controls much physiology at the subconscious level including heart rate, digestion, respiratory rate, salivation, perspiration, pupillary dilation, urination, and sexual arousal. Watching a large whale slowly rise and sink in exactly the same spot for five to ten minutes seems to me a behavior that could be controlled by the autonomic nervous system. If I watched a similar behavior in a very slowly swimming whale I'd have to seriously revisit my thinking. *I have not seen this behavior.* This is based upon observation of many whales logging.

A line of thinking that seems to support my observations is with whale strikes. While strikes are nearly always with older whales, if the whale is “half” asleep, shouldn't their “awake” nervous system recognize the approach of a boat? In 2014 two humpbacks were killed by boat strikes in Alaska. One in the Lynn Canal² by an unidentified boat and one near Kodiak Island by an Alaska Marine Highway ferry³. Both suffered massive blunt force trauma indicative of large masses striking them. “Between 1988 and 2012, there were 100 documented large whale ship strikes along the California coast”.³

If they were in unihemispheric sleep, they should have been “awake” enough to sense the presence of these large boats and move away. Since they did not, this seems, and least coincidentally, as support for a state of unconsciousness. As a human of 65 years maturity, I do acknowledge that reduced brain efficiency could account for missing the sound of a large boat. That being said, I doubt that the ferry Kennicott could be missed by any animal in the vicinity. It is a large boat with large engines that make a loud noise.

On a very sunny August 7, 2015, we are watching a group of whales between Hand Trollers Cove and North Pass. Whale 1538, Flame, heads a bit south and stops to take a nap with only her dorsal fin showing. Whale 1434, Spot (who just happens to be Flame's child) heads her way and swims right next to her and stops. All of a sudden Flame throws her peduncle three times (I got no photographs of this interaction). It is hard to not think that Flame was irritated by being awaked by Spot! She must have been “sound” asleep in order to be so startled.

From all this, I find it an *unfounded assumption* that humpbacks must be at least partially conscious to rise to breath. How could I prove this? Difficult at best.

¹ The only animals ever to be measured with USWS are the Amazon river dolphin (*Inia geoffrensis*), Beluga whale (*Delphinapterus leucus*), Bottlenose dolphin (*Tursiops truncatus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Pilot whale (*Globicephala scammoni*) and Porpoise (*Phocoena phocoena*).

Rattenborg, N.C., C.J. Amlaner & S.L. Lima. 2000. Behavioral, neurophysiological and evolutionary perspectives on unihemispheric sleep. *Neuroscience and Biobehavioral Reviews* 24 (8): 817–842. doi:10.1016/S0149-7634(00)00039-7.

Rattenborg, N.C. 2006. Do birds sleep in flight? *Naturwissenschaften* 93 (9): 413–425. doi:10.1007/s00114-006-0120-3.

² Kelly, D. 2014. *Alaska whale, a grandmother of 3, was killed by ship strike, scientists suspect*. Alaska Dispatch News. <http://www.adn.com/article/20140712/alaska-whale-grandmother-3-was-killed-ship-strike-scientists-suspect>

³ _____. 2014. *July Humpback Death Likely from Kennicott Collision*. KMXT News Blog, Public Radio News for Kodiak, September 10, 2014. <https://kmtxnews2012.wordpress.com/2014/09/10/july-humpback-death-likely-from-kennicott-collision/>

⁴ _____. 2015. *Reducing Ship Strike Risk to Whales*. National Ocean Service, National Oceanic and Atmospheric Administration. <http://sanctuaries.noaa.gov/protect/shipstrike/welcome.html>

Diving



This approaching diving sequence of, whale 1447, Juneauite, from July 26, 2010 is typical of most dives in Juneau waters.



This unidentified black tail dove away from us at a slight angle in Favorite Channel on May 19, 2012.

Diving is second only to cruising and spouting as the most common behavior I see in Juneau waters. Virtually every guest wants to see a dive since it means the flukes rise out of the water and they “get some tail” in Alaska as the joke goes. The near ubiquity of Pacific Life Insurance Company’s advertising using their iconic humpback whale has created an unrealistic expectation for humpback whale behavior. Diving is very close to an everyday observation and it is a rare day that I don’t see at least one whale dive. Some days they are a long way off, but most days we get multiple dives by multiple whales with lots of opportunity for fluke shots.

While cruising with a blowhole-dorsal fin-blowhole-dorsal fin pattern, there is a slight hesitation slowing or even stopping of forward motion. This is what I tell my guests to watch for to prepare for a fluke shot photograph. The hesitation is followed by an aching of the back centered at the dorsal fin. Presumably the head has moved downward at a steep angle, but I’ve never been able to see this. While remaining essentially in the same place in the water, the back rolls forward like a slinky, from one step to another, until the flukes reach the surface. The flukes arise in the same arc as the back usually parallel to the surface of the water, but sideways or off-center dives are common. As the flukes sweep in this arc into the air, water streams off them in a shower back into the ocean. The body of the whale is now presumably in a near vertical position in the water and the tail is lifted straight out for the dive. At about the halfway point of fluke submersion, most dives include a little back flip of the tail to the dorsal (backbone) side before slipping under the water. The last photograph in both sequences shows this little back flip.



Variations on this theme include “skim dives” (left photograph) where the flukes just barely lift out of the water and skim the surface and whale 1538, Flame, “high tail dives” (right photograph) where the peduncle and flukes are lifted high out of the water. Because the angle of descent is shallow, nowhere near the vertical of a high tail dive, I presume skim dives are shallow. When treated to lots of diving whales, I enjoy making a game of “scoring” the dives on a scale of 1 to 10. Skim dives get a 1 and high tail dives get a 10 if the ventral (belly) side is facing me.



Note on each side of both these pair of flukes there is something red at the final trailing edge. I’ve looked very closely at my photographs to determine what it is (photograph right). Nearly every whale has an assortment of barnacles on the tail, and several have this orangish, blood-red “growth”. These are the feeding legs or cirri of the barnacle.

Side Fluke



Also called half fluke or lateral fluke display, I see this more commonly with juveniles than adults. The left photograph is of an unidentified first-year juvenile taken June 12, 2012 and represents the normal pattern early in the season. The right photograph is of an unidentified full adult taken on September 21, 2012 illustrating the opposite pattern by adults. The simplest explanation for this behavior is that the whale is swimming on its side very close to the surface so part of the fluke extends above the water. Most of the time this sideways swimming only lasts a short time, just a few minutes. I cannot correlate it to any pre- or post-diving behavior and it simply seems to be something the whales occasionally do.

Australian Geographic in an article on their humpbacks make the comment that “resting humpbacks may gently slice the surface with their flukes” [1998. *Behavior Patterns*. October-December, Issue 52, p96.]. This may be true in the fall for our adult whales, but my observations of the very active juveniles in the spring and early summer doing this lead me to a very different conclusion. I think the juveniles are simply exploring the motions their bodies can make and swimming on their side is just one of them. I don't have anywhere near enough observations of adults doing this to come to any serious thought explaining this behavior. It is just something the whales do!

Backstroke



Also called inverted posture or belly up. Here whales 1879, Sasha (left) and 2070, Barnacles (right), are doing some impressive backstroking. As with the side fluke, it is most easily explained as swimming upside down. Full adult humpbacks give an impressive show when swimming on their backs close to the surface lifting their 15-foot long pectoral fins out of the water. Swimming this way is always short-lived, usually less than five minutes and often no more than a minute. I interpret this brief behavior as evidence that it is not the preferred method of swimming. The question of why the whale would do this is entirely open and every reference I have found uses sheer speculation to explain it. I prefer just to describe it and enjoy the action when I see it.



Here, 1538, Flame's 2013 calf is doing the backstroke on July 2. Comparing how this juvenile does with the adults is dramatic. The pectoral fins just barely rise out of the water and almost never straight up. The left photograph shows the left fluke so the baby is actually swimming on her side. The right photograph shows part of the side. The simplest explanation of this behavior is that the youngster simply hasn't developed the skill to do the backstroke yet and is exploring what its body can do.

Barrel Roll



Also called just a roll. Seeing a humpback do a full roll in the water is a rare event and I've only seen it twice. These photographs of an unidentified whale from July 2, 2010, show the pectoral at the body and indicate the amount of effort involved in rolling this 40+ ton animal, even in the water! Judging by the size of the pectoral fin, this is a juvenile. Sometimes the whale simply rolls and the pectoral fins quietly slip into the water. Other times they make a large and noisy splash. I have found no explanation for this behavior and will not even hazard a guess. It is very fun to watch and I'd like to see it more often!

Pectoral slaps



Also called flippering or flipper slap. This sequence is of whale 2070, Barnacles on the back side of Douglas Island in Stephens Passage on September 18, 2010.

More often than barrel rolling, our humpbacks do straight pectoral slaps. They swim on their backs, just under the surface with none of the belly above the water, then lift a pectoral out of the water and with a strong enough motion to bend the flexible fin, slap it onto the surface of the water. It results in a large splash and a loud noise. They usually do it more than once, but only rarely will they do more than five or six without rolling over and doing a shallow dive and cruising to another location where they will often repeat the process. Darling notes that in Hawai'ian waters it can occur 20+ times in a row. I've never seen anywhere near that number of repeats in Juneau waters. When not barrel rolling, they slap the pectoral in the same place each time, raising it up and slapping it down. They will often hold the pectoral fin high out of the water for many moments, waving it about, before slapping it to the surface. Occasionally the fluke is lowered so slowly that it simply slides into the water and doesn't make a splash. Some call this a *pectoral wave*. I do often comment to the folks on the boat when the whales do this that they are "waving" at us.

The fact that the slap results in a visual splash plus a loud noise has led to much speculation on this behavior means. Some think it might have something to do with herding their prey of small schooling fish, perhaps encouraging them to swarm in a larger school that would be easier to gulp. Watching the fish finder for "herring balls" is the only method I have for "seeing" underwater and I've never noticed an increase in the size of "herring balls" with pectoral slapping. Some think it may be a method of inviting other whales to join in some joint or cooperative behavior. I see this with solitary whales where this might make some sense, but I also see it in groups of whales that are already together. Here, the slapping might be a signal for the other whales to move away in a marking of some territory. I remain very skeptical about this interpretation as I've never seen other whales move away or leave the slapping whale.

This seems to be a very common behavior in Hawai'i associated with pre-mating activity as nearly every whale watching company web site includes photographs of it. Perhaps the whales do it here, less frequently, to keep in practice? Like the Humpback Whale Research Foundation of Bermuda [<http://www.whalesbermuda.com>], "it seems as if the whales are communicating to other nearby whales when they do this". To say more is reaching beyond the evidence.

Spyhop



Also called a head rise. What happens in a spyhop is the whale rises vertically out of the water to an elevation where they eyes, and often the point of attachment of the pectoral fins, are above the surface. What distinguishes this behavior from an upward lunge is that the whale remains in this position of some time, often up to a minute, almost like a human treading water. The whale maintains its same orientation while above the water without turning or rotating.

The physiology of humpback vision may help illuminate what this behavior means.



- Humpback whale eyes are located just above where the jaw drops downward and just ahead of the pectoral fins. This placement provides them with a wide peripheral vision but poor forward binocular vision. This is evidence that when they rise in a spyhop they have a commanding near 360° field of view.
- The lens of cetaceans is almost spherical, which allows for the most efficient gathering of dim light. At the surface, even on overcast days, the light cannot be considered “dim” by any standard. It is also designed for an environment with a refractive index of 1.35 and a cornea with a refractive index of 1.37. Since air has a refractive index of 1.0, this means the whale should be myopic, or nearsighted, where distant objects appear blurred and nearby objects are in focus.

Miller, S. 2006. *A whale of an eye*. Veterinary School, University of Wisconsin <http://www.vetmed.wisc.edu/pbs/dubielzig/pages/coplow/PowerPoints/A%20whale%20of%20an%20eye.pdf>

The very name of this behavior implies an interpretation of the behavior. Some think the whale surfaces and holds its position with its amazing sense of buoyancy rather than by using its flukes, but I’m at a loss to think of how someone would determine this in our opaque Alaskan waters. It may be observed in Hawaiian waters and inferred the same method is used here. The holding of the position gives many the impression that the whale is observing its above-water environment. Gary Crockett of Humpback Whales Australia says “humpback whales spy hop to get a better view of where they are or to look at the people on a whale watching vessel. They really do like to look at us as much as we like to look at them”. I am at a total loss at understanding how he comes to this conclusion other than sheer speculation.

Headstand



Also called tail extension. The opposite of a spyhop, here the whale is nearly vertical in the water with head down and tail out of the water. It seems many only consider it a headstand when a large portion of the peduncle is held out of the water so the genital area is exposed. The tail is often held straight up high out of the water for some moments or is slowly moved about without rising or sinking. With the opacity of our water, I cannot see if the pectoral fins are used to maintain this position. A quick search of headstand photographs produces images such as mine with only one underwater where the pectoral fins are held out away from the body at a slight backward angle.

I've only seen one adult whale do a headstand in our waters, and the top right photograph taken July 13, 2011 in the waters of northern Stephens Passage at south Shelter Island. The unidentified whale held this position for nearly two minutes before sliding back into the water and moving off. The lower photographs are of an unidentified juvenile from September 9, 2009 as part of a sequence of nine photographs I took over a period of one minute. No tail slapping was involved with this headstand. The top right photograph is from September 6, 2009 in Favorite Channel near the southeast corner of Shelter Island. This juvenile is engaged in some very special behavior. The flippers to the right are from a juvenile Steller sea lion. The two are involved with what I can only call "play", a very anthropomorphic term. The sea lion swims to the area of the flukes of the whale, the whale flips its flukes up and throws the sea lion in the air. The whale then does the handstand. The sea lion comes back and the whale throws it in the air a second time! I'm so stunned by what I'm seeing I take very few photographs and so don't have the throws documented.

This begs the question of "why do they headstand?" Since their eyes are below the surface, ruling out observing the above surface environment can be completely ruled out. Does the vertical position give them a panoramic view of the sub-surface environment? Probably, but since I cannot see but a few yards in the plankton-rich water, I assume the whale has a similar limitation to its sight. This seems to rule out the idea the whales are looking about their aquatic realm.

Once again, with juveniles, my fallback position is they are exploring their bodies and learning what they can do with them. Since adults already know how to do this, it would be sheer speculation for me to hazard any guess as to why they do headstands.

Most headstands I've seen are by juveniles, and the vast majority of them are part of a short interlude in a series of tail slaps. This single adult did no tail slaps and only this single, rather short, headstand.

Tail Slapping

Also called tail lobbs, lob tail and fluke slap. Humpback whales lift their tail out of the water, often to near or just past the dorsal fin so that the entire peduncle is exposed. I've seen them do this with an angle of perfectly vertical to about 20°, but mostly at an in between angle. While remaining nearly fixed in this position, they thrust the peduncle so that the flukes hit the water flush on and create a large splash with an accompanying loud noise.

Ventral side tail slaps



Whale 1538, Flame, already famous for high tail dives that expose her beautiful white flukes, does a set of aggressive tail slaps on August 25, 2010 near Eagle Reef in Favorite Channel. She places herself into a shallow dive position with the lower part of her peduncle and tail out of the water and water streaming off her flukes just like she's going to dive. Except she throws her flukes dorsally so the remaining water is thrust forward instead of washing off the back. She then very quickly reverses the motion and using the pivot point of fluke attachment to the vertebral column, slaps the water with great force with the ventral side of her tail. This is the most common form of tail slapping I've seen.

Dorsal side tail slaps



Whale 276 whale does some very acrobatic dorsal tail slaps in the Lynn Canal opposite Ralston Island on September 8, 2015. She (sex based solely on the very large size—about 50 feet long, evidences by the very long peduncle) thrusts her peduncle high out of the water to almost the dorsal fin and waves her flukes ventrally then suddenly reverses direction and thrusts them powerfully to the water on the dorsal side. With this form of tail slapping, whale is almost upside down on ending.

While there are many (at least 30?) whales in the area, this whale is more than a mile from her nearest neighbor. We get to watch it do just about every acrobatic move a humpback can do for 30 minutes. She does eleven sets of tail slaps for us while there, and did many more visible from a distance on our approach and departure.

Sideways tail slaps



An unidentified juvenile does a sideways tail slap in Saginaw Channel on June 7, 2012. Here the body of the whale angled to the water so that neither the dorsal or ventral side is flush with the surface and the tail strikes the water at an angle. It is very tempting for me to interpret this as the actions of an not-quite-so-coordinated juvenile that is learning how to use it's body. June kids are just over six months old and really don't know how to do much more than swim forwards. So sideways tail slaps are only done by juveniles?

I'm proven very wrong on May 31, 2014 when adult whale Opp-20140531-001 does sideways tail slaps in Halibut Cove. Adults also do sideways tail slaps





Why tail slap?

Tail slapping is nearly always done repeatedly, sometimes dozens of times in a row. This certainly creates a lot of noise and splashing.

Noise almost certainly has something to do with it, as the sound can be heard through the air for well over 200 yards. Since sound waves travel more easily and quickly in the denser water, the noise surely travels a good distance away from the whale. How far? I've found only unsubstantiated numbers that strike me as being too conservative. So at the present, I don't know how far the sound waves travel.

So why do humpback whales tail slap? Here are some of the ideas that I've encountered and my thoughts on them.

Communication: The noise could mean some sort of communication such as an invitation to join or a warning to stay away. Since the sound of the slap apparently doesn't travel far (less than calling or breaching for sure), the sound could be an invitation or warning to animals that are in the vicinity. The majority of my tail slapping experiences have been with solitary whales, or whales at a distance far enough away that the sound probably won't travel. Why would the whale try to communicate when others are far away?

Foraging: The noise could be to stun small schooling fish or make them school tighter so as to be easier to eat. This is probably not the case with calves as they still nursing, at least until the end of July or into August when I see them foraging for krill on their own. There is at least one fascinating study of this behavior in the North Atlantic Ocean.

The spread of an apparently normal surface feeding behaviour (bubble feeding), which is preceded by a tail slap, or lobtail (called lobtail feeding), was observed in individually identified humpback whales, *Megaptera novaeangliae*, feeding on sand lance, *Ammodytes americanus*, in New England waters during 1980–1989. The proportion of feeding events classified as lobtail feeding was consistent for each individual throughout the entire period that each whale was observed. Ninety-five of the 250 whales observed surface feeding used lobtail feeding. The percentage of animals lobtail feeding increased regularly from 0.0% in 1980 to 50.6% in 1989. Over 50% of whales first seen as calves and later documented surface feeding, displayed lobtail feeding, although few of their mothers ever employed this behaviour. Among animals that were first photographed before 1982 only 12.5% were ever seen lobtail feeding. In contrast, 56.2% of animals first photographed after 1982 used the behaviour. No animal was seen to use lobtail feeding before it was 2 years old, although individuals are weaned and separated from their mothers at 1 year. Rudimentary lobtail feeding was witnessed several times among young post-weaning animals. No difference was seen in the frequency of lobtail feeding between sexes. It is hypothesized that this behaviour was initiated as whales switched from feeding on herring to sand lance, and has spread through cultural transmission.

Weinrich, M.T., M.R. Schilling & C.R. Belt. 1992. *Evidence for acquisition of a novel feeding behaviour: lobtail feeding in humpback whales, Megaptera novaeangliae*, Animal Behaviour 44 (6): 1059–1072, doi:10.1016/S0003-3472(05)80318-5.

Could this be extended to the behavior we see in Southeast Alaska? If so, I have not seen (or recognized) it.

Parasite removal: The impact could be to dislodge either barnacles or sea lice (I've seen both on baby whales when they arrive here in May).

Testing these ideas would be difficult and they remain speculation at this point. It is always easy to simply say “they are having fun!” Totally non-scientific and completely anthropomorphic, it remains the most satisfying reason for most people.

Peduncle Throw

Also called rear body throw, tail throw.



The first sequence of three is of an unidentified juvenile in Favorite Channel near Eagle Reef on May 8, 2012 and the second is an unidentified adult in North Pass on July 31, 2013.

The Hawai'ian Islands Humpback Whale National Marine Sanctuary: "A whale throws its tail out of the water and in the process, slaps its peduncle (name for the body part connecting the tail) on the surface". It differs from a tail slap in that much more of the body is involved with much more energy expended. It is often interpreted as being "aggressive" or "defensive", but this simply may be a projection of human attitude based upon the extreme forcefulness. The juvenile was alone and the adult near perhaps a dozen more whales. The juvenile's is a "classic" flat slap, while the adult's is an oblique or sideways slap. Logic suggests a flat slap produces more sound so is an oblique slap "less aggressive?" Nothing in the behavior of these two whales leads me to find either word especially helpful in interpreting the behavior. The only definitive conclusion is that a great deal of physical effort on the part of the whale is required to do a peduncle throw. Since Juneau waters are for eating, often cooperatively, and Hawai'ian waters are for mating, perhaps the same behavior means something different here.

Apparently, peduncle throws are unique to humpback whales, but I find a single unsubstantiated report. Finding research on these whale behaviors is very difficult and most references are from whale watching people like me.

With ever more observations, my views are changing some, or at least I'm more open to the idea that this behavior is a sign of irritation, agitation or aggression. Three specific instances seem to show this.

On a very sunny August 7, 2015, we are watching a group of whales between Hand Trollers Cove and North Pass. Whale 1538, Flame, heads a bit south and stops to take a nap with only her dorsal fin showing. Whale 1434, Spot (who just happens to be Flame's child) heads her way and swims right next to her and stops. All of a sudden Flame throws her peduncle three times (I got no photographs of this interaction). It is hard to not think that Flame was irritated by being awaked by Spot!

Just a week later, fellow guide Jordy Williams posts a video on Facebook of an encounter he had in North Pass. A whale about 50 yard away is doing some serious repeated tail slapping that uses part of the peduncle (so it's not a true peduncle throw). Suddenly a second whale arrives and joins in with what could be called "synchronized tail slapping". The two come right up to the boat and pass by its bow only about 10 feet away! I made a comment to the post that, while being one very careful to ascribe meaning to whale behavior, this struck me as a sign of aggression toward the boat. Yes, they were sitting there and the whales came to them, but I'm become more inclined to think this is a sign of agitation.



On September 9, 2015 we came upon an unidentified logging whale that seemed completely asleep. It made no motion at all with the dorsal fin held above the water for several minutes. The blowhole rises very slowly and spouts, then slowly sinks back into the water. This repeats itself five times while we watch from about 110 yards. The dorsal fin starts moving forward, the blowhole rises and spouts, the suddenly the peduncle is thrust out of the water and thrown rather violently on an angle in our direction. When submerged, the whale disappears from our sight.

My interpretation of this is sheer speculation based on observation, not science. It seems the whale was deeply asleep, wakes up, notices our boat nearby, is startled, and does the peduncle throw to show its irritation with us.

Chin Slapping

This is sometimes called a head lunge. Some may consider this a form of breaching, but I make the distinction that if less than half of the body rises out of the water and the motion is forward with a thrusting down of the head while the tail remains in the same plane as the rise out of the water and the back is arched upward, this is a chin slap. I think this name best describes this behavior. Chin slapping is perhaps the rarest behavior I see as I've only recorded it on eight days with four individual whales.



Here whale 2070, Barnacles, does a classic chin slap on a rainy June 20, 2014 in North Pass. I photographed her doing a chin slap on May 6, 2014 as well. She is often a very active and acrobatic whale, often doing the backstroke and barrel rolls with her pectoral fins held high out of the water. On this very rainy day she was the only whale in North Pass and was very active with two very strong chin slaps and a series of high back breaches as she worked her way to the south end of the pass.





This juvenile (I'm not able to match it up with a mother) was extremely exuberant on August 8, 2015 in North Pass. As we rounded the shoals at the north end of Shelter Island, I could see a small whale breaching near the south end of the pass and began counting. Here it illustrates my definition of a chin slap perfectly. While a powerful slap, when the size of the splash is compared with Barnacles, the more than double size of the adult produces a much bigger one.

So why do they chin slap? These photographs simply illustrate the behavior, one a full-grown female and one an eight month old juvenile. In neither of these cases can I determine any evidence to support any interpretation. Barnacles was by herself, so it seems there is no communication intent with any other humpback, unless the sound travels a long distance under water and she's calling to other whales. Since humpbacks are generally solitary, this seems unlikely. We are the only boat with her this day, and well outside the 100 yard limit and are probably not bothering her in any way. The juvenile is having an extremely active physical day (doing 53 breaches along with barrel rolls, pectoral slaps and this chin slapping). North Pass is populated with eight whales, one other a juvenile, but this one stayed by itself. This exuberance makes it difficult not to interpret this behavior as youthful vigor.

This same day, whale 1534, Spot, moved off to the east side of the pass and was logging (taking a nap) for about 15 minutes. Another whale swims near him to his left and he immediately does two very powerful slaps. Immediately I interpret those as an aggressive move directed at the other whale. I think Spot was saying, "Didn't you know I was sleeping? Why are you bothering me? Get away and leave me alone!" This is very anthropomorphic, but seems to account for Spot's sudden behavior. Below whale 276 does a very high chin slap on September 8, 2015.



Breaching

The Hawai'ian Islands Humpback Whale National Marine Sanctuary describes breaching as “An acrobatic display where the humpback uses its tail to launch itself out of the water and then lands back on the surface with a splash”. I consider it a breach when I see a whale launch at least 50% of its body out of the water in an upward motion that concludes with an explosive splash ahead of the launch site. I have never seen the entire body of a whale out of the water, and the only times I see the flukes out are at the splash or just afterwards.

Breaching is uncommon in Juneau waters and scattered through the time the whales are here. My photographic record of days with breaching whales (a rather small sample of 18 days from 2009 to 2015) has May with 2, June with 5, July with 6, August with 3 and September with 2. In 2013 I did not record a single breach! Breaching by adults (11 days) narrowly eclipses that by juveniles (9 days). Breaching by juveniles is more common in early summer and by adults in late summer and fall. From my own record, it should be obvious that breaching is not expected to be seen on very many whale watch trips.

I do not have a good written note record of breaching and there are days when I've seen breaching but not able to get a photograph. I believe adding these days will change the record and pattern I've developed with photography.

What follows are descriptions of the variations on breaching. Interpreting any meaning follows.

Back Breach



This is the classic back breach by an unidentified adult in Stephens Passage just north of Scull Island on September 18, 2012. This 40 foot plus whale forcefully propels itself out over the water at about a 45° angle so the whale is out of the water well past the dorsal fin. Its belly is to the sky and back to the water. The pectoral fins are held slightly out and back from the sides and roughly parallel to the water surface. The whale falls to the water and makes a very large splash. This is what most think of when talking about whales breaching.

A “classic” back breach happens when the horizontal plane (from pec to pec and across the flukes) of the whale is aligned with the surface of the water and the whale lands perfectly flat on its back with its belly up.

Pirouette Breach



Twisting back breach—a pirouette—by a juvenile, I think 1703, Bullethole 2015 Calf, in North Pass on August 8, 2015.

With this variation of a breach, the whale makes an obvious rotation along the axis of its body, just as an ice skater does a pirouette. Often the twist will reach, or slightly exceed 180° . Very curiously, all of my observations of the pirouette breach has the whale rotating to its right. Are humpback whales right-handed?

The angle of launch is nearly always vertical front to back but with a bit of a lean side to side of the whale. The pectoral fins usually begin held out from the belly roughly perpendicular to the axis of the whale. As the whale rises, the pectorals move with the one opposite the angle of lean being held out sideways and the one in the direction of the lean being moved forward into the lean. From this angle, they look something like airplane propellers.

Belly Breach



Whale 1879, Sasha, belly breaching off Lena Point in Favorite Channel on September 2, 2010.

The primary distinction between a belly breach and a forward lunge is the amount of the body out of the water and is really rather arbitrary. On the day this sequence occurred, Sasha did 42 breaches in a row and alternated between back and belly. Since she raised her body out of the water to well behind her pectorals, along with the back breaches, and that the splashes were spectacular, I call these belly breaches.



Whale 1879, Sasha, back breaching off Lena Point in Favorite Channel on September 2, 2010.

From this single observation, it appears that it is far easier for humpbacks to propel themselves out of the water backwards than forwards.

Why do whales breach?

With breaching being so fascinating, people always want to know why whales do it. Here is what Suzie Teerlink says:

These behaviors are often sporadic and difficult to interpret. While the purpose of these behaviors is largely unknown, some speculate they could be used for: social interactions, communication, looking above the surface of the water, sloughing barnacles and dead skin fragments or as play behaviors.

Taking each of these on their own, here are my thoughts, based on my observations of the whales doing these acrobatic maneuvers, with what I don't consider realistic first and those I find more plausible last.

- *Looking above the water:* this seems unlikely since they are upside down and only out of the water for two or three seconds which means their vision is extremely limited and their spherical lenses function far more efficiently in water than in air. How functional could this brief vision be?
- *Sloughing barnacles:* with my experience walking on barnacles on the beach and kicking and prying at them, I don't see how even the force of a 45 ton whale could dislodge a barnacle from its skin as their glue is extraordinarily sticky. Most Juneau whales have dozens to many hundreds of barnacles. A photographic study in Ecuadoran waters demonstrated that some do come off with intense activity [Félix, F. et al. 2004. *Epizoic barnacles removed from the skin of a humpback whale after a period of intense surface activity*. Marine Mammal Science, 22(4): 979–984].
- *Sloughing skin.* There are many reports of skin sloughing off, so this is a definite possibility:

A Humpback whale sheds its skin every 36 hours. When swimming in the wake of a whale the sloughed skin often appears like "snowfall" in the water. [<http://www.worldoceans.com/Whales/whl-main.htm>]

- The author of this, Steve Alexander, is a Ph.D. oceanographer, so this statement must be taken with some authority (even if I find no scientific reference and ll;
- p[6 hours seems extremely fast to me). It does not mention breaching and implies this happens while swimming. If the whale breaches to slough, this it seems to indicate there is a conscious effort that would be provoked by some discomfort to the animal, like itching. With a 1 cm thick skin with few nerve endings and ~15 cm of blubber to the closest organ and nerve array, I don't think they feel their skin, at least in the way we humans do. My thinking is that the sloughing occurs to them the same way dandruff does to us: we don't feel anything. If so, this is no reason to breach.
- *Social interactions.* This is such a broad statement as to be either so irrefutable or self-apparent as to be a useless statement. Anything can be labelled as a "social interaction". I saw nothing that would lead me to think this was a behavior designed to interact with any other whale. Every breach I saw was of a single whale, usually not within a mile or so of any other whale. The only social interactions I saw were of "escort" whales and bubble feeding. The whales were simply in the same area at the same time in my view.
- *Communication.* That the landing from a breach makes a loud noise is irrefutable. Even from a mile away we hear the splash. I'm sure whales a long distance away can hear it as well through the far denser water that carries sound waves more efficiently than air. Just what would the splash communicate? A whale mature enough to do a breach and thus an α male or female? Since most of the breaches I saw were of calves and juveniles, it seems an inverse relationship. Is it as simple as "I can do this!" or "I am here!"? This seems a rather extreme behavior for such a simple proclamation that could be more easily done with the audible sounds that humpbacks are famous for.
- *Play behavior.* After pretty much discounting all of the previous, this leaves me with this hypothesis. I find it both an enticing and difficult conclusion. I've plenty of personal experience with that animals like to play such as dogs and cats. Since humpbacks seem to be a very intelligent animal, why wouldn't this be an appropriate conclusion? Anthropomorphism is my worry. Because we humans play, do we conclude they play? The idea that one can propel their entire body out of the water and splash down seems, on the face of it, to have no specific purpose. If it doesn't—and I've outlined why I think each of the other hypotheses aren't likely—it leaves play (or something I've not thought of). We just don't know for sure, but playing seems the favorite interpretation of our guests—and me too! It is just so highly appealing that all intelligent animals should play, but that is the main reason I feel reluctant to accept it. More research is needed!

Using the principle that animals expend energy only when necessary, perhaps breaching energy could help understand this behavior. Breaching requires a great deal of energy in a spurt of activity. Whitehead¹ calculated this for humpback and sperm whales at 617 kcal, which propels 80% of the whale to 22 kmh out of the water at a 35° angle. While a single breach is only a tiny fraction—0.075%—of a whale's daily energy expenditure, a series of breaches can add up quickly.

The vast majority of breaches I've witnessed here have been singular to sequence of just several. These then do not require a significant expenditure of energy, and do not help us interpret the behavior other than to include the possibility that the whale does it for reasons of its own and is not concerned with how much effort it takes.

¹ Whitehead, H. 1985. *Humpback whale breaching*. Investigations on Cetacea. Berne, Switzerland. 17: 117-155.

Feeding Behaviors

Lunge feeding



Whale 1920, Nibbler lunge feeds in Stephens Passage on May 24, 2011



Bubble net feeding



This almost a southeast Alaska exclusive, “It has been observed and documented in the literature in populations in Alaska, the Northeast Coast of North America, and the west coast of South America” [http://www.alaskawhalefoundation.org/education/bubble_net/bubble_net_feeding.html]. It is here in Alaska where the behavior is commonplace in July and August. I’ve read several reports that this is a two week phenomenon. I saw it nearly every trip out on the water from July 2 until the end of August, so I can state with some authority that it is a mid-summer activity, at least here in Stephen’s Passage.

The first article describing bubble net feeding was by Charles Jurasz in 1979 [http://www.juneauempire.com/stories/071306/loc_20060713008.shtml] yet people have been watching whales here for over two centuries. How could this behavior have been missed? The Tlingit have a word for the big bubbles from a whale, kúkdlaa, so they at least knew about them. Jurasz began whale watching in Juneau in the mid-1960’s, [<http://www.fakr.noaa.gov/newsreleases/2007/humpback.htm>] so he must have seen this. Did it take repeated observations to figure out what the whales were doing? Guide Kenneth Moriarity is said to have been out on a Photo Safari on his first year with Gastineau Guiding and all of a sudden a group of whales erupt from the sea and he had no idea what he was seeing! It is an amazing behavior, and without an under-

water view or someone explaining what is happening, it is nearly inexplicable from the surface. It probably wasn't missed, simply misunderstood. This *always* makes me think just how much of what I'm seeing I'm misunderstanding!

What follows is a description of what I've seen with my own eyes. We come upon a group of whales, as few as six and as many as a couple dozen. The whales swim near the surface, dorsal fins porpoising up and down. In calm water the captain puts out the hydrophone to listen for any calls. Without any call, the whales begin to dive with the typical high arch followed by the flukes. Often whales will dive in groups giving us a view of what many on board called synchronized swimming.

The whales remain under water for a time, usually more than five minutes, often 15. After a while of watching a whale free surface, the hydrophone will pick up a single call that sounds something like a series of whooooooop - whooooooop - whooooooop—where the ending ooop rises sharply—that gets louder and more intense as it progresses. The last call has a very distinct and sharp “p” ending. Within a few seconds the surface of the water explodes with the group of whales rising vertically with their mouths agape and buccal cavity distended by thousands of gallons of water. They don't splash back into the water but simply glide back down into a horizontal position. Very often pectoral fins are visible (3rd photograph left), particularly the white underside.

In the moment before eruption, the water (if calm) roils with some bubbles reaching the surface and is a good clue that they'll be rising there. The large assortment of gulls is also a good clue where to look as they can see the bubbles from above. Our vantage point on the Voyager and Navigator boats is so low to the water that bubbles are not easily seen. When the gulls see the bubbles, they fly *en masse* to that spot. Many times they miss however, leading Captain Collin Pilcher to regularly say “never believe a gull!” As the whales emerge, herring and other small schooling fish often leap from the water and are clearly visible, even from 100 meters or more.

The whales then swim around again, porpoising until they dive and do another bubble net set. Early in the season the sets were 15 to 30 minutes apart, at the peak I saw some sets repeat in as little as five minutes!

Were I not aware of this behavior (daughter Bess got some photographs of it last summer and told Annette and me about what happens) and now trained and well-read, how would I interpret it? The key observation are the herring which is a major piece of evidence that this is a feeding behavior. With the buccal cavity engorged with water, this clearly is in the physiological norm for this animal in feeding. That the animals do it in a group implies some sort of group behavior and thus inter group communication. The particular call we hear only when the whales are bubble feeding (now called a feeding call) is further evidence of a social feeding pattern. With the poor view of bubbles, it would simply be a guess that they use them in some herding strategy.

With some underwater and aerial (2nd photograph right by J. Olson of the National Marine Fisheries Service) photography, we have some more information to describe this process. A single whale (only one call is made) communicates with the other whales and somehow gives them information on what to do and when to do it. A single whale dives well below the school or group of schools of herring and begins swimming in an ever decreasing and rising spiral while emitting basketball sized bubbles from its blowhole. Other whales remain around the column of rising bubbles while the calls are made. It seems the herring recognize the whales as a threat and attempt to swim away. The bubbles form both a physical and acoustic wall that drive the herring into more dense schools. Do they know they can swim through the wall since it really isn't a barrier at all? I don't know. The whales on the outside must serve as some sort of warning that if they swim through they'll be eaten by the visible threat.

When the herring are in a tight ball in the column, a last blast of bubbles is released directly underneath the school that drives them toward the surface. With the final “whooooooop” the whales all quickly dive, make a U-turn and propel themselves vertically toward the surface. They unhinge their lower jaw and open the mouth into a giant gape, the buccal folds expanding with the entering water (visible in all my photographs). As the whales enter the school of fish their buccal cavities are filled with thousands of fish. At the surface, with a mouth full of fish, they close their mouths, slip back underwater, and force the water out through their baleen plates and swallow their large meal.

There at least two difficulties that hinder underwater research in southeast Alaska: the cold temperature of the water and the high turbidity caused by the huge plankton bloom reducing visibility to often just a few feet. Photographs taken here are very easily located when compared with those taken in the very clear waters of Hawai'i. On several whale watch trips we'd find a NOAA research boat out observing, photographing and getting far closer to the whales than any of the commercial boats.

Single Whale Bubble Net Feeding



On Thursday, May 21, 2015 we come upon a single whale along The Breadline just north of Tee Harbor and find it lunge feeding. What is most curious is the way the whale turns on its side and thrusts its peduncle and flukes toward the shoreline then makes a sudden lunge. Making this even more interesting is that just a few days before, Douglas Island Pink and Chum (DIPAC) released about 40 million chum salmon fry at Amalga Harbor, about four miles north. It seems likely the whale was taking advantage of these unwary little fish! The shoreline is nearly vertical at the Breadline, dropping to 25 fathoms (150 feet) just 50 yards offshore. The whale is clearly using the wall as part of his strategy in getting the salmon into enough of a ball for it to lunge feed.

On Friday I return with another group and find the same whale, this time feeding very differently.



The whale makes a shallow dives in an arc, here to the right. Shortly after bubble appear on the surface and make about three quarters of a complete circle. The whale's pectoral fin rises out of the water and it slaps it down hard in the area where there are no bubbles. A moment or two later, the whale lunges upward in the classic bubble net feeding form, swallowing his own ball of fish. We watch the whale do this about a half

dozen times, sometimes making the bubble net to the left. Each time, whatever section of the circle without bubbles was slapped two or three times with a pectoral fin before the upward lunge. This is the only time I've seen a single whale bubble net feeding.



This whale never showed the underside of its flukes so the only visual information I have to make an identification are these two photographs. The dorsal fin isn't very distinctive and the upper side of the flukes are jet black, the right ventral seems to have some diffuse white near the trailing edge and the left trailing edge is remarkably smooth. I've heard from guide Theresa Soley that she's seen single bubble netting at Point Adolphus (Chichagof Island, directly south of Gustavus), so this may be one of those whales. I do not recognize any part of this whale and think it is not a part of our regular Juneau whale group. I have not recognized the whale since and none have been hanging around The Breadline.

It seems that not just whales find this a great place to fish as the cliff got its name from the "bread" or money made by fishing along its walls.

Identifying Individual Humpback Whales

Juneau Douglas High School biology teacher Charles Jurasz and his family spent a great deal of time on the waters of the Juneau area in the 1960's and noticed that they could identify individual whales by their tails. They began taking photographs of the tails in 1966 but it took some convincing of the established science community that this indeed could be done. His photograph of NMMLID 229 from 1972 was used to identify the same whale in the waters both of Maui and Alaska in 2006 making it the current record holder for the longest re-sighting time. [<http://alaskafisheries.noaa.gov/newsreleases/2007/humpback.htm>]

Individually Unique Characters

Every humpback has many unique characters that can be used to make an individual identification.

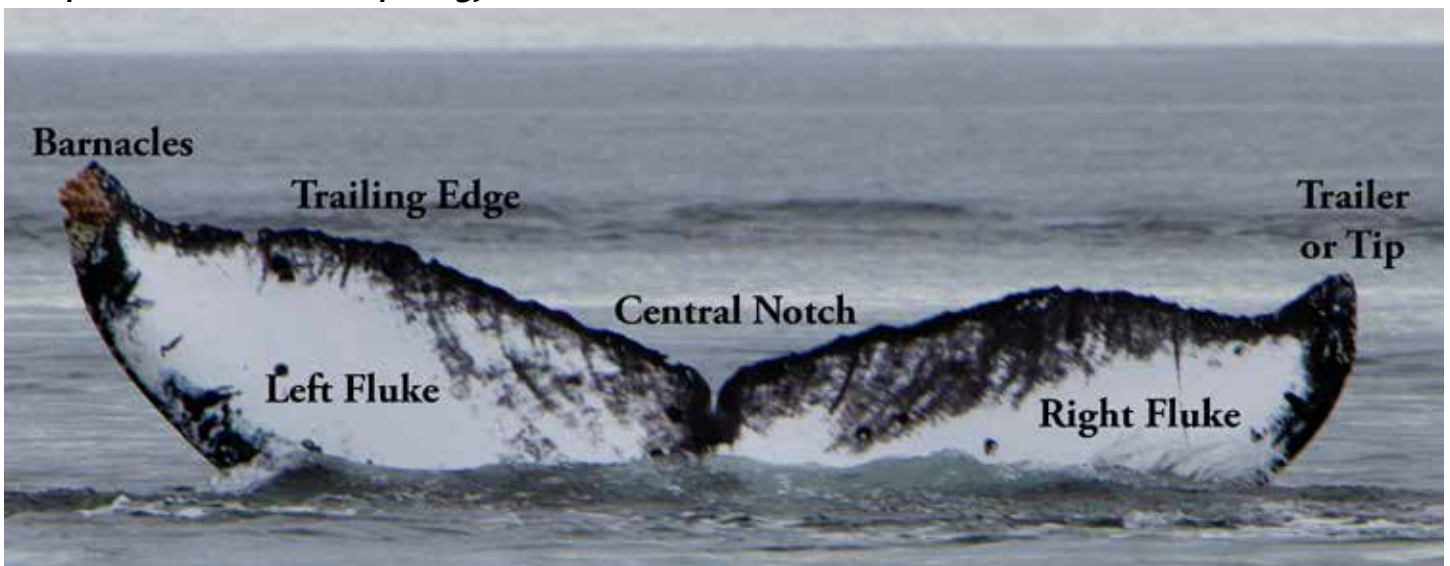
Dorsal fins are visible every day that whales are in Juneau waters. Most first-time whale spotters rejoice in this simple sight and take many photographs. I did the same thing! Once one has a couple thousand dorsal fin shots, is there a reason to add another to the collection? For me, yes, only if I've been able to identify the whale and now want to learn another character for that whale. There is an amazing variety of shapes and coloration of dorsal fins and I can recognize a very few whales with just a glimpse.

Pectoral fins, while not often seen, are most likely recognizable to an individual with practice. I am not one with enough practice and experience to make even a most tentative identification this way. It strikes me one needs to be in the water with the whales to observe their flukes and with the very cold and mostly opaque southeastern Alaska waters, this is not a real option.

Flukes are totally unique among all individual whales. Since humpback whales are great divers and usually lift their flukes high out of the water, and since the shape, edges, trailers and color are so varied, flukes have become the primary tool to identify individual whales.

Tail photography is a sure way to document the location and identity of humpback whales over time. It has the great advantage of being completely harmless to the animal. It is also great fun! *A photograph is far more powerful a tool than a visual observation.* Unless there is some character that is so unique and visually obvious, it is usually difficult to identify whales on site without a great deal of experience with the whales. A photograph provides an unmoving view of the tail that can be compared to the catalogs of whales.

Humpback Whale Fluke Morphology



Fluke Shape



Is the tail narrow and thin?

Or is the tail broad and thick?

Central Notch



Is the central notch very thin or narrow?

Or is it broad and open?

Trailers or Tips



Are the trailing edges sharp and well defined?

Or are they rounded and not obviously pointed?

Trailing Edge



Is the trailing edge smooth?



Or is the trailing edge highly serrated (jagged or saw-like edge)?

Dominant Color



Is the ventral side mostly white?



Or is it mostly black?

Scarring



White tails scar black, here with a unique pattern most recognize as AK.



Black tails scar white, here with a set of nearly perfect circles.

Humpback Whale Fluke Identification

There are two catalogs that cover the waters of southeastern Alaska with photographs of the ventral (bottom or belly) side of the flukes:

Juneau Humpback Whale Flukes [<http://www.juneauflukes.org/juneau-catalog.html>] maintained by the Suzie Teerlink with the University of Alaska Fairbanks School of Fisheries and Ocean Sciences covers the whales that frequent the Juneau area.

Humpback Whales of Southeastern Alaska [<http://www.alaskahumpbacks.org/>] maintained by Jan Straley of the University of Alaska Southeast Sitka campus, covers all the whales of southeast Alaska.

When I spot a whale that I don't immediately recognize, I use a suite of characters to help me make an individual identification. This set of photographs illustrates what I look for when trying to identify a whale. Of course recognition means remembering all of the unique characters and that is a real challenge for those whales without some very obvious character. I often have to head to the catalog to find a whale I've already encountered.

Juneau Humpbacks I've identified

181



Juneau humpback 181 goes nameless. First seen in 2009, that's when I first encountered this whale on June 27 in Saginaw Channel on the west side of Shelter Island. In Juneau Flukes this whale has the "privilege" of being the last whale in the organization of mostly white to mostly black. This is indeed a very black tail. Identification characters are limited to the pattern of the serrations on the trailing edges, particularly comparing the relatively smooth left fluke with the more prominently serrated right fluke.



The large shot is the final in this diving sequence. Note the rather strongly scalloped peduncle that really gives this whale a "Nessie" look as the hump forms for diving.



The only other time I've seen this whale was on July 19, 2012 in North Pass.



I've only recognized Stamp this one time on July 20, 2012 where Saginaw Channel meets the north end of Stephens Passage at the Sand Spit of Shelter Island. The prominent scallop—that looks like the profile of a spoon—near the midpoint of the left fluke makes this almost entirely black whale easy to recognize. The central notch is deeper than most. The circular scar near the middle of the right fluke is not on the catalog photograph and illustrates that new scars can be added to the tail. The white on the trailing edge is an artifact of sunlight reflection on this wonderful day.



The tail shot is a crop of this scenic view of the Coast Range and the Sand Spit. I don't know who the other whale is but it has a mottling on the proximal side of the small dorsal fin that could be diagnostic.



This whale's tail is deceptively diabolical for identifying! When I learn a new whale, I tend to focus in on a single character because it is easier to remember. This whale has a W-shaped central notch. Compare it with whale 252 and they are *very* similar. They are so similar that I've had to carefully go through all my photographs and rename many of them as I've got some 229's in 252 and 252's in 229! So, what do I now need to look more carefully at? First is the general color of the ventral side. 229 is almost entirely black while 252 has lots of barnacle scars. That's an easy thing to remember.



The next thing to examine is near the trailing edge of the left fluke where there is a shallow U-shaped notch next to a "tooth" next to a broad V-shaped notch. This is visible in both of these rather far shots and is distinctive enough for identification with only the trailing edge visible as in the left photograph.

While first recorded in 2008, I have no record of sightings until 2014 when it seemed to be out every time I was on the water from late June through early August. Always with a group of whales, that almost every time were bubble netting.



I've only recognized Dike this one time on July 24, 2012 in Handrollers Cove off the northwest end of Shelter Island. The very small patches of white at the far end of the flukes near the trailing edge look like someone lightly sprayed paint on this otherwise solid black tail. The central notch is a broad "U" and the right fluke is strongly serrated with two prominent ridges next to a prominent broad scallop near the middle of the fluke.

The NOAA tail site notes this whale is "Regularly seen in Glacier Bay National Park. Known male. Nicknamed 'Dike' by Chuck Jurasz" and was first seen in August of 2004.





Note the almost W-shaped central notch and compare it to 229 and they are *very* similar. Don't use this single character to identify! Two other characters do make 252 easily identified: note the very prominent deep U-shaped notch near the left fluke tip; and, note that white barnacle scars are almost perfectly scattered throughout the entire ventral side of the flukes. There is a line of solid white scars near the leading edge near the tip of the right fluke with a circle scar just above to their left. Below the U notch is a line of three solid white scars near the leading edge with the left one elongated.

First seen in June, 2004, it is "often part of bubble net feeding groups". I've no records of it before 2014, but then encountered the whale just about every time I was out on the water.



On July 29, 2014 a group of about 15 whales were repeatedly bubble netting near the Sand Spit of south Shelter Islands (note it and the windmill in the lower left photograph). This whale's tail showed up many times as they did sets, as with the juvenile in the bottom left photograph. All of a sudden, it did a very fast and low breach, headed almost directly at us, not far away from us. My photographs not sharp as the action was very fast and the lighting very poor. No matter, a breach is always exciting!



It seems that 2014 was a big year for new sightings for me as no other year has as many since my first year of 2009. This whale showed up on August 15 and I have no other records for it. It was a very yucky Friday with poor visibility so this is a very severe crop of a long shot (lower right) east of Aaron Island not far off the mainland.



Sea lions are playful in the foreground with the mainland just north of Tee Harbor in the background. As weather goes, this is a pretty typical day in the SEAK temperate rainforest.



This identification is tentative from the SEAK catalog (hence the SE after the number) as this tail is not in Juneau Flukes. Note that the notch is U-shaped at the bottom but flares to the side into a broad opening at the trailing edge. There is a small white line just inside of the trailing edge just out from the notch on the right along with a similar line near the leading edge about halfway out and a white dot just a bit inside of that a bit further out. There is a smudged line of three dots near the center on the left.

I've only spotted nameless 292 this one time on August 11, 2012 in North Pass with the Faust Rock bell buoy visible in the background. Not finding the whale in the old NOAA tail catalog, I wandered through the much larger Humpback Whales of Southeast Alaska catalog and found what is very close to it there among the "0% White Flukes, Wide Notch" on page one. The smooth and broad but shallow scallop on the right fluke along with the very neat and lightly flared "U" notch. There are some hints of white that show up: a single short line parallel to the trailing edge on the right fluke close to the notch and two spots near the leading edge, the inner one being a bold line and the outer one a slight teardrop.



This is the uncropped view of the photograph above.



First seen in September, 2007, this whale is unmistakable. It took me until August 6, 2010 for my first sighting and my second and last was on September 15, 2011 (lower right photograph). The central notch is very complicated and appears to almost have a lopsided pentagon sticking out tail-like at an angle from the left between a wide notch on the left and a narrow one on the right. Which one is the actual central notch? The shape of the flukes is like a lanceolate leaf and a bit narrower than most. The white is particularly bright with strong contrast with the black and tucked tightly against the trailing edge of both flukes. Note a leading edge of white on the right fluke. The horizontal diving shot shows just enough of the odd central notch to make a positive identification on the lower right photograph.



“Notcho” surely refers to the central notch but what about “libre”? The word from Latin to both French and Spanish means “the state of being free”. Does it refer to the “free form” shape of the central notch? That’s my best guess. Or does it refer to the awful 2006 comedy “Nacho Libre”?

545, Rubberlips



Rubberlips is such a comical name, every time I say it I wonder just how the Alaska Whale Foundation gave her that name. Other names include “Friendly Fred” and “Lumpy” but I only hear “Rubberlips” out on the water. It is just too fun to say!

This whale is instantly recognizable in our waters. I’ve never seen another whale with anything like the profile of the trailing edge of its flukes. The central notch is extremely broad, about 10% of the entire breadth of the flukes, and a bit “lumpy”. The general shape of the flukes are broad, but what shows up the best, even at great distance, are the prominent scallops near the ends with the corresponding rise that equals the trailers. This shot overemphasizes the white patches as they are often not as prominent.



This diving sequence illustrates that the angle of view affects our perception of color on the flukes. It is only when the tail is vertical and parallel to our viewpoint that the white shows well. Sequence taken September 15, 2011 in Favorite Channel near the rocky mainland.

Rubberlips’ profile is so marked that it is instantly recognizable at a distance even when just a single fluke is visible.

Rubberlips is an every year whale, and a very regular participant in bubble netting, and I think she is one of the leaders.

547, Cimmerian



Nicknamed by Alaska Whale Foundation and a member of the core bubble netting group, Cimmerian was first seen in August of 2007. There are two possibilities for the meaning of this whale's name. Less likely to me is the fact that Cimmerians in history were an Indo-European people living near the Caucasus around 1300 BCE. More likely is what Captain Collin Pilcher told me, Cimmerians are the people from the homeland of the fictional Conan the Barbarian created by writer Robert E. Howard in 1932. Note the shallow scallops with just a hint of white.



I'd seen Cimmerian only three times until 2014. The first was June 27, 2009 in the photograph with the boat in Saginaw Channel. Next was June 7, 2012 for the large fluke shot in Halibut Cove in Favorite Channel. My last was August 30, 2012 near Eagle Reef in Favorite Channel with the snow-capped Coast Range in the background and another whale diving on a sunny day with abundant gulls. In 2014 he became almost common from June 16 through mid July (this writing) in bubble netting groups, especially around South Shelter Island and Young Bay.



Rake is something of a “famous” whale in SEAK yet I’ve only seen him thrice. The first time was June 27, 2009 near Eagle Reef. July 23, 2012 when the photograph above was taken. The third was July 16, 2014 with the photograph below. Rake clearly got his name from the scars on his right fluke that represent an attack by something with very sharp and widely spaced teeth. There is only one species in the range of humpbacks that can do this, so it is pretty clear that these are evidence of an attack on this whale by *Orcinus orca*. I must admit to an almost incredulous feeling, just how could an orca even think of attacking a full grown humpback? If there is ever an example of little versus big, this would be it.



I can't help but wonder why I haven't seen him more. The left flukes are so distinctive with all the circular barnacle scars and the “raking” of the teeth on the right are so distinctive, they should be recognized on sight every time the whale is seen. I take this as evidence this whale has a range that includes lots of other places than Juneau. Not every whale returns to the exact same place every year like I tend to do.



580 burst upon the Juneau scene the summer of 2012 and has been a major player ever since. I first spotted the whale on July 7, 2012 near Eagle Reef in Favorite channel where the whale debuted its high-tail dive habit. The broad, black tail sports something of a division sign on the right fluke that is usually obvious. Scallops on the trailing edge near the tips are often the only obvious features at a distance on a rainy day while a closer view shows the edge full of small, open and rounded scallops with two large but shallow on the left fluke and one deep but small “U” on the right fluke. The central notch is a small, diverging “U”. The tips, while not pointed, are elongated and prominent in nearly any view.



The whale is a major player in bubble netting and many of my photographs include other whales as the group dives in their search for schools of herring. Being a high-tail diver, it often visually dominates the other whales in the group and I accuse it of being a “camera hog”! It can be found in all of our waters. In early July of 2014 it was with a group of 7 to 11 whales actively bubble netting in Young Bay where the large photograph was taken on July 11, 2014. In 2012 it was here all of July and August; in 2013 it was only here in June; in 2014 June and July (as of this writing in mid-July).



This whale was not in Juneau Flukes until the 2015 catalog, but was identified using the SEAK catalog. This very broad tail with that curious dingy coloring to much of its white shows up on July 2, 2014 in Handrollers Cove along with 996, Cornucopia and 1441 to do several bubble net sets while we watched. This is my only record of this whale (unlike the other two) and I suspect that it came in from the Lynn Canal to join the bubble net group, then headed back out to wherever it calls its summer home. Since it is well within what I consider “Juneau Waters” and socially feeding with “Juneau Whales”, I include it here. I often see whales I don’t know out in the Lynn Canal and consider them someone else’s, probably Hoonah or Glacier Bay.



The right photograph has the whale showing up again in 2015 with a bubble netting group off Portland Island



There are a few whales out here that are utterly unmistakable, and Crater is one of them. First seen in 2006, she's been seen in our Juneau waters for more than two decades with this amazing scar. The scar is so obvious I doubt many even look at the diffused white patches and the spots on her flukes.



So just what is this scar? It is very difficult for me to determine from my photographs. It appears that the lesion does not extend very deep into the viscera of Crater's peduncle. From a distance it has the appearance of a "crater" and this is probably what gives the whale its name. But a close up view shows the reddish material is not "meat" or muscle and that it is a raised up patch of scar tissue just like the white scar tissue surrounding it. Was it stained by being cut deeply when the damage occurred? I have no idea. Crater has a fairly unique dorsal fin. A largish mound above the vertebral column ends with a small, pointed fin with white highlighting the rear curved surface.

954, *Jesus Fish*



I call this “Jesus Fish” because the black pattern on the right white fluke bears a strong resemblance to the “fish” symbol of the early Christian church. At a distance, the tail appears strongly white and black, but getting closer in reveals that much of the black has white markings of just about every geometric pattern conceivable. I assume that the broad areas of white are congenital and most of the rest represents scarring. Note the very broad central notch, so broad it almost doesn’t have one.



These photographs are from Lynn Sisters along the Chilkat Peninsula of the Lynn Canal on September 15, 2011. Out here is where I see whales that don’t seem to be part of the regular Juneau crowd. But today we have 954, first seen in Juneau in 2006 and 1441. There are others in a group of six whales that did not show their tails to identify. This is my only sighting of 954’s very unique tail.



996 is easily identified with its very deep black ground color and quite bright white markings. This strong visual contrast shows up in just about any weather, even when visibility and contrast is nearly nonexistent (note the right photograph below). The pattern of white on the left fluke always remind me of a cornucopia, a horn of plenty. Here, the narrow part of the horn sneaks its way almost to the tip of the fluke and spills out all of its goods toward the center. With this strong visual clue, I've never paid much attention to the shape of its trailing edge serrations or the central notch. It is a super easy whale to learn.



Until 2014, I was suspecting that this whale was an every-other-year Juneau visitor as I've records for it in 2009, 2011, and 2013. In 2014 it came for the entire month of July, joining in many bubble net sets, then disappeared. Most of my records show it a July whale with some in late June and early August.



Big, black and broad tail with brilliant white tips make this an easy spot, but the clincher is the long— $2/3$ the width of the fluke—straight line white scar on the right fluke. The central notch is a deep and very narrow U. Serrations on the left fluke are fine and coarse on the right. The trailers are prominent.

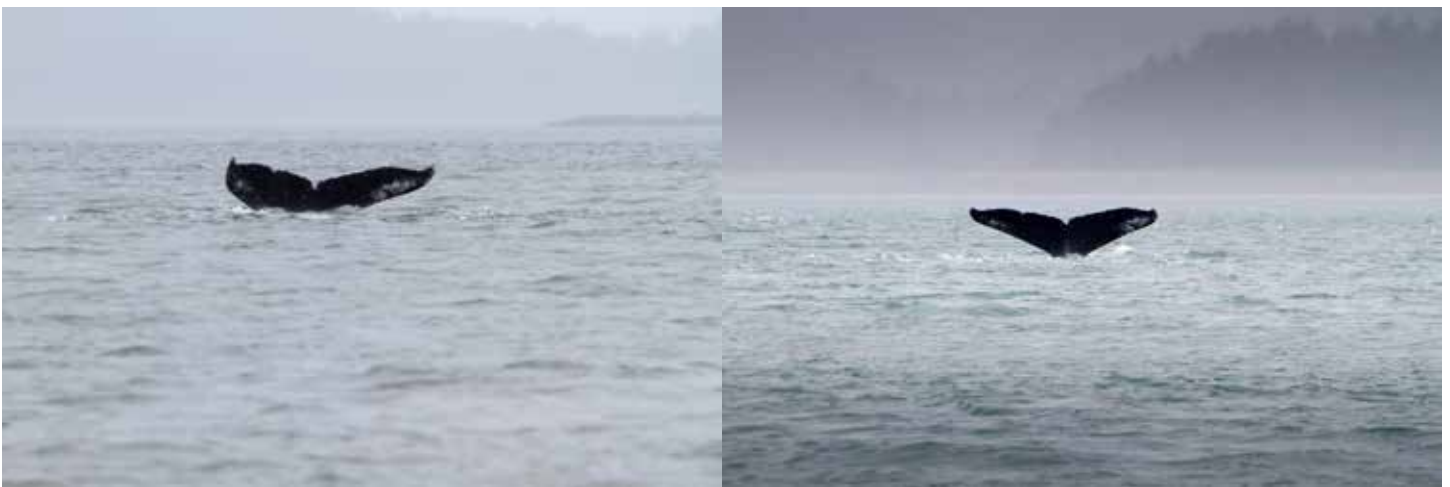


First seen in Juneau waters in 2006, I've only seen this whale once on September 15, 2011 out at Lynn Sisters on the Chilkat Peninsula in the Lynn Canal. This is a place where I have lots of unidentified whale shots, but this one is very easy to identify. On this day, the group included 453, Notcho Libre; 545, Rubberlips; 954, Jesus Fish; 1443, Dot Spot; and two unidentified whales I call Black 01 and Milky Way.

1234, Van Bubbles



1234 is unique with its sequential number, but also with its white markings closest to the leading edge of the flukes, opposite of just about every other whale I see. The white is bolder on the right fluke than the left and there are a few circular barnacle scars on the black ground color. This bold pattern makes for quick identification even on yucky days. Note the deep U-shaped central notch, but that it flares out right at the trailing edge. There is a prominent somewhat broad U-shaped notch about midway on the left fluke. Serrations on the left fluke are sharper and more prominent than the right fluke.



First seen in 2009, this whale often joins in bubble net groups. I've seen it every year since 2011 and in 2014 it was a major player in the July bubble netting. The earliest I've seen it is June 7 and the latest I've ever seen it is July 30 so it clearly comes to Juneau for the herring!



Big, broad, black, but with a very lopsided and asymmetrical central notch, this is an easy whale to learn. Further, the trailers are long and pointed and visible in any light. There are some other marks to observe: the left fluke has two white scars just inside the trailing edge with the left one a thin arc and the right one a set of squiggly lines; and, almost midway out the right fluke is a vertical short white line that tapers to a thin line on the proximal side. When I took this photograph on June 12, 2013, the whale had quite a compliment of barnacles on each trailer.



These distance shots illustrate just how much the wide, lopsided central notch shows up. First seen in 2009, I've noted the whale in 2012, 2013 and 2014, nearly always a part of a bubble netting group. It seems to arrive in mid-June and be gone by the end of July, another whale tuned into the herring feeding here.

1434, Spot



It doesn't take much imagination to see how Spot got his name. He does have another one, but I've never heard anyone call him "Curious George" since Spot is so totally "him".

First seen here in 2006, Spot can be counted on for a good show in mid- to late summer, and has been seen here as late as December. Boat Captain Jeff Worthen sees Spot regularly in the winter in Maui and has watched him pursue females during the mating games that take place there. I've photographed spot since 2010, somehow missing him in 2009. Here he dives with an unidentified juvenile in the waters of North Pass on July 31, 2013 on one of the glorious days from that incredible summer.



With experience, other views give just enough information to be able identify Spot.

Spot usually shows up the last week of June or the first week of July and sticks around until at least the time I've gone in October. His mother is 1538, Flame, and since he's an adult of at least 15, she must be at least 30 years old and probably older.

1435, Colon



“Colon” is my name for this whale with the “colon” made of black dots on the ground of white on its right fluke. The white on this whale is bold and bright next to the deep black center. The trailers are pointed at the end of obvious scallops on the trailing edge, with the right scallop more pronounced than the left. There is an obvious broad U-shaped notch 1/3 the way out from the central notch on the left fluke.



First seen in 2007, I first saw it in 2010 and for three years always in late August mostly after the bubble netting. It was with 1538, Flame and 2066 on August 25, 2010 when 1538 went on a tail slapping craze. On July 25, 2011 it was part of a six whale bubble net group off South Shelter Island. Then in 2014 it showed up just south of North Pass for one day at the end of May with 1447, Juneauite, not to be seen again.



The four different sized black dots on the left fluke remind me of a solar system. They are only visible close-up or with an extreme crop (as this image has suffered). Most of the time just the larger and top dots are visible (as in the photographs below). The white on 1441 is brilliant, but there is sometimes a slight cast of orange in the white of the right fluke. The central notch is a very broad and shallow U with a smaller very broad U immediately to its right. The trailers are particularly sharp and elongated.



First seen in 2006, my first sighting wasn't until 2011 when I saw it only once in a bubble netting group off South Shelter along with 580, Divisidero; 996, Cornucopia; and 1476. Skip to 2012 when I see it diving without bubble netting in North Pass along with 204, Stamp; 1234, Van Bubbles; and, 1391, Darwin. Skip to 2014 when it was very active with the incredible July bubble netting group that worked Saginaw Channel, South Shelter and the southern end of Favorite Channel. This group did days of multiple short sets and included 229; 580, Divisidero; 996, Cornucopia; 1391 and 1703, Bullethole. My first sighting was July 2 and last the 26th.

1443, Dot Spot



First seen for Juneau in 2008, I didn't "spot" this whale until September 15, 2011 near Lynn Sisters in the Lynn Canal along with a group of bubble net feeders that I did not recognize. With a mostly white tail, it is easily found. The clear black separation of the flukes is obvious, along with the white-dotted black spot a third of the way in on the right fluke. I began calling this whale Dot-Spot and the name entered the catalog! A black slash coming in from the leading edge a third of the way out from the center is also prominent.



The double dive is with 954, Jesus Fish, in the Lynn Canal. I'm reluctant to claim whales in the Lynn Canal as "Juneau whales", but 1443 shows up in July 2014 as part of a group of "regular" Juneau bubble netters, especially in Young Bay and South Shelter, as the only white tail.



I've known Juneauite since August of 2010. She was first seen in 2006, but Jay Beedle notes that she's been around since 2005. He also calls her "Poisson", the French word for fish, but I've never heard anyone use that name.

All black tails can be very difficult to identify. I use three clues that usually show up quickly to identify her: her central notch is a narrow "U" with the right side a bit taller than the left; her tail is very broad; and, there is a pretty prominent point midway out on the right fluke.



These shots illustrate how the right mid-fluke point can be used as sure identification for Juneauite, even with an angled or dorsal (top) view.

For 2013 she was the first whale of the year that I was able to identify as coming back to Alaska with a new calf. Jay Beedle notes that she had a calf in 2007. If she went six years between calves, that seems like a long time. Perhaps the small whale behind her in the far right photograph from August 7, 2011 is her calf? Pure speculation on my part.

In 2013 I first spotted her on June 10 and she stuck around until the end of September.



The first calf I was able to positively identify in 2013 is this one of Juneauite. It took a while to get any photographs of the calf and its flukes have been particularly well hidden. The white markings along the dorsal fin appear to be whale lice, but it is too far away to be sure. This dorsal is distinctive enough to recognize with the little bit of notch on the trailing edge that makes Captain Jeff Worthen call it “Notcho”. I took this photograph on a very wet August 30, 2013.



The young one shows its tubercles. While the word simply means “bumps”, those located on the rostrum are really an expanded hair follicle. Inside is a single hair called a vibrissa (after all these are mammals, and mammals have hair). These probably serve as a sensory organ, perhaps to measure waves of water pressure from animals around them. Humans are almost unique amongst mammals in that we lack these sensory hairs. The word vibrissa comes from the Latin for “nostril hair”. Think about a cat’s whiskers and how they use them and we might have a clue about the humpback’s use of them.



This broad, black tail has “misty” white patches near the trailers that are unusually clean and vibrant which makes them visible at long distances and poor lighting. The leading edge of both flukes, but especially the right, is almost a clear white that wraps a bit down to the ventral side. The serrations are sharp and irregular. The central notch is a deep U, narrow at the bottom but flaring out a bit to the left side. The trailers are long but almost blunt at the tips.



First seen in 2006, I first noted it in 2006 and have missed it only in 2010 and 2013. The first sighting included 569, 587, 996 and an unidentified juvenile that did two breaches for us. I only saw it once in 2011 with an unidentified juvenile. In 2014 I saw it twice, both times in a bubble netting group during that years massive July herring kill.

1478, Scuff



Scuff clearly got her (a known female) name from the “scuffed-up” looking flukes. She apparently was born with an almost entirely black fluke (there is just a bit of white on the leading edge of both flukes) and the only white coloring on the ventral surface are from various encounters she has had with sharp objects. I look for the long diagonal on the right fluke. The central notch is a deep U that strongly flared at the trailing edge. The serrations are sharp and nearly even.



First seen in 2006, my first sighting was with her and a juvenile (hers?) cruising down Saginaw Channel on June 26, 2011. On August 6 she was with 2006, another known female, with a juvenile. So who’s was it? She was high tail diving with UAF-20130812-962 and 1434, Spot, in North Pass on August 29, 2013. I missed her completely in 2014.

1538, Flame



With her big, white tail, Flame is a favorite. Easily recognized by the smudge of gray and black along the trailing edge of her right fluke (that gives her the less-used name “Smudge”). I look for the black block that narrows from the peduncle (end of the backbone at the tail), the small black dot on the left fluke and the black line on the right fluke.

First seen in 2007, she’s seen every year in the waters surrounding Shelter Island where I’ve seen her everywhere. I’ve never seen her in a bubble netting group nor have I seen her breach. She does dive very gracefully.



On August 25, 2010 she does three tail slaps near Cohen Reef showing the unique form while flipping up her tail, ready to slap it on the water. Flame is doing it from the ventral (front) side as most adults do. Most of our adult humpbacks have rather squared-off or blocky dorsal fins. Flame has a sharply pointed one, like a mini-racing fin. Flame comes in second in the number of photographs I have of identified whales.

Flame is known to be the mother of 1434, Spot. Since spot is a full adult of at least 15 years age, that means Flame must be at least 30 and probably significantly older than that.



I thought this was the first “baby tail” I shot on July 2, 2013 until Suzie Teerlink emailed me with 1879, Sasha’s baby that she re-sighted on July 22, 2013. This is the my third definite identification of a cow and calf for 2013. When a cow and calf pair arrive here in April and May, the little ones only seem to know how to swim straight. After all, they just swam 3000 miles from Hawai’i! When the pair gets here, mom is only interested in feeding. This means junior spends a great deal of time at the surface and, I’m sure, figuring out just what all those extra body parts (the pectoral fins) are good for. Diving isn’t something they seem to know how to do instinctively and spend at least a couple of months learning how to do it as well as mom. Here, 1538’s baby does a nice dive in exactly the right position for me to catch its ventral side for an identification shot that should stand for some time.



The calf decides to do some pretty serious tail slaps, all throwing its dorsal (back) side to the surface of the water for maximum splash. I’m presuming it is doing this in an attempt to strengthen the muscles that operate the flukes from the weak side. When the flukes hit the water, the peduncle (base of the spine at the tail) is rather tightly bent. While doing its slaps, I note in this photograph a very circular hole in the right fluke that appears to go all the way through. My first inclination is to think that this is the result of an encounter with an orca where one of the ice cream cone shaped and sized teeth made a good crunch on the fluke. I emailed this photograph to Suzie Teerlink who responded that she’s not sure what causes these holes and that it could be orca, but it is probably some other natural phenomenon that causes them.

1640, Betsy



Betsy's tail is over 90% white, but about a third of that has the orange cast. There are a few scars here and there, with the most obvious being a narrow triangle of black piercing the white from the proximal side very near the center. The peduncle ends as a very black triangle in the flukes. The trailers are narrow and smooth with scallops on each side before. The serrations are both sharp and blunt.



First seen in Juneau in 2014, I managed to get these shots then on May 11 for my only sighting. This whale entered the SEAK catalog on August 11, 2004 so it's been around at least a decade and perhaps therein lies the origin of the name "Betsy".

1703, Bullethole



So, just how did “Bullethole” get its name? There does appear to be a hole some 2 cm in diameter in the left fluke just below the squared-off second serration left of the central notch. It is visible only when the background is very light and even then not really visible in real time out on the water. I’ve only found it examining my photographs. An alternative explanation lies with the central notch as it is so perfectly U-shaped it could be a gun sight. It is not as deep as many others, but it is easily seen in all light. Note the nearly perfect semicircle notch just to the left of the bullet hole. Serrations are prominent and sharp halfway out and show up well. The slightly curved white scar on the right fluke shows up too. This trailing edge is unique enough to identify from either side as the photographs below show: left ventral view and right dorsal view.



First seen in Juneau in 2006, Bullethole is a whale I almost expect to see when I head out on the water. In 2014 I photographed 1703 on 20 days! Bullethole usually shows up in May and doesn’t leave until October after the whale watching season is over, making it a whale that Juneau can truly claim as “our own”. Somehow I missed it in 2009 but have seen it many times every year since and it ranks number three in the number of photographs I have of individual whales.



This black and white tail is distinctive with its beehive-shaped white areas, but most obvious is the bold black streak penetrating the white of the left fluke. It comes in from the center as a nearly level line with the horizon. The serrations on the trailing edge look like they're leaning toward outside of the right fluke. The scallop near the trailers is very small but prominent.



First seen in Juneau in 2009, I've only seen it twice, both in 2014, both times between Faust Rock Buoy and Handtrollers Cove. It was with familiar whales 547, Cimmerian; 580, Divisidero; 1234, Van Bubbles; 1391; 1441; 1465; and, 2171 at Faust Rock on June 16. They were not bubble netting, but this was the first day of bubble netting in 2014.



Sasha is my favorite whale. She's this for several reasons. First, she is the first whale I learned to recognize each time I see her. That, though, is very easy with the prominent letters "AK" proudly sported on her left fluke so many can use this same claim. This character gives her the alternate names of "AK" and "Alaska", but none of us use those names and she's known by all as "Sasha".



Then comes my experience of September 2, 2010 (see my page on breaching) when I watch Sasha breach 42 times in a row! What was most remarkable about that is that she alternated between a back (above) and belly (breaching page) posture. What is going on with this girl? Unknown to me that day, this story isn't complete until May 14, 2011. We're sailing up Saginaw Passage, just north of the Sand Spit, following a cow and calf. They're cruising at about seven knots—rather fast for humpbacks in my experience—northward. I think this is their arrival into Juneau waters for the year. Just about when we reach our 30 minute viewing window, the cow dives in the photograph above. I jump up and down in the boat screaming "Sasha had a baby! Sasha had a baby!" I felt like a grandpa! Suddenly an idea came into my mind about last September. Back then, we did not know she was pregnant. Now we do. I think she was trying to physically rearrange the huge fetus inside that is causing many of her body parts to migrate into odd positions. Based upon my observations of my wife pregnant with our first daughter and her great discomfort with a rapidly growing baby inside, she did all sorts of body movements to get more comfortable. "Move, kid, move!" she seems to be saying with all those athletic moves. This happens with humans, why not with whales? The question I ask, "how can I prove this idea?"



There is more to this story. In July of 2014 I began to notice Sasha doing some different to unusual moves with her peduncle. I didn't get any photographs of this, but here she is in late May. She would swish it from side to side just under the water, then switch to vertical moves but never lifting her tail out of the water. I began to suspect she was pregnant. By August, these moves became more pronounced and I was so convinced she was pregnant, every time I saw her I'd say "Sasha's going to come back with a baby next year." Talk about putting one's reputation on the line, but I was convinced.

Fast forward to the May 11, 2015. I was driving all day and got back to the office about 8:30 pm when I was accosted by guides who had been on the water that day as they told me "Sasha has a baby!" My prediction proved right. I get asked all the time, "how did you know she was pregnant?" I didn't, but just based upon the way she moved her peduncle, very different from her normal—or other whale's normal—I got the idea she was. Now with two such instances "under my belt", I feel more confident in my interpretation of her breaching behavior in 2010. It took me until May 30 to see her calf for myself, and this photograph is from June 12.



Sasha has a past including encounters with crabbing gear. Compare these two photographs from May 25, 2012 and May 22, 2014. Three scars are visible that correlate extremely well with the size of the very commonly used 5/16" leaded line. The deep scar just forward of her dorsal fin makes her instantly recognizable. A smaller similar scar is visible about a third the way back on the ridge of her peduncle. Evidence that the rope was completely wrapped around her is seen with the long arcing scar forward of the dorsal on her right flank. When did this happen? My first photographs of her are from 2010 and the scars are visible then, so they predate then. Based solely upon my views of the scar and my very imperfect knowledge of humpback whale healing, I'd guess they are more than a decade old. There is no record of anyone disentangling her.

Her behavior is as something of a loner. Other whales may be nearby, but usually not in very close proximity. I've never seen her—nor has anyone else I've consulted—take part in bubble netting.

Sasha seems to have a preferred "home range" while in Juneau. While she swims in all of our waters, more often than not I find her in Saginaw Channel between the Sand Spit and the tip of the Barlows.

A final reason she's my favorite whale. On our way back from a little vacation to Sitka in July of 2013 in the FVF Fairweather, she welcomes us with a dive at the Sand Spit.



Suborder Odontoceti Flower, 1869 **toothed whales**

Family Delphinidae Gray, 1821 **dolphins, orca, pilot whales**

“What’s the difference between a dolphin and a porpoise?” This is a common question on Whales and Trails adventures. Dolphins heads have a beak (sometimes quite long or short in orca); large dorsal fins; large in size (in comparison to porpoise); and, cone-shaped teeth. The dolphin family is the most diverse of all cetacean families and includes 19 genera, two of which are represented only by fossils, and 40 species with two from the fossil record.

Orcinus Fitzinger 1860

or-SIGH-nus Latin *orcinus*, “of the kingdom of the dead”, or “belonging to Orcus”, the god of the underworld.

Taxonomy:

A monotypic genus. When named *Delphinus orca* Linnæus 1758 it’s obvious the “whale” was considered a “dolphin” but very distinct from *Delphinus*.

Synonyms:

Orca Gray, 1846. Generic name preoccupied by *Orca* Wagler, 1830 (= *Hyperoodon*) and thus unavailable and invalid

Ophysia Gray, 1868. Type species *Orca capensis* (= *Delphinus orca*)

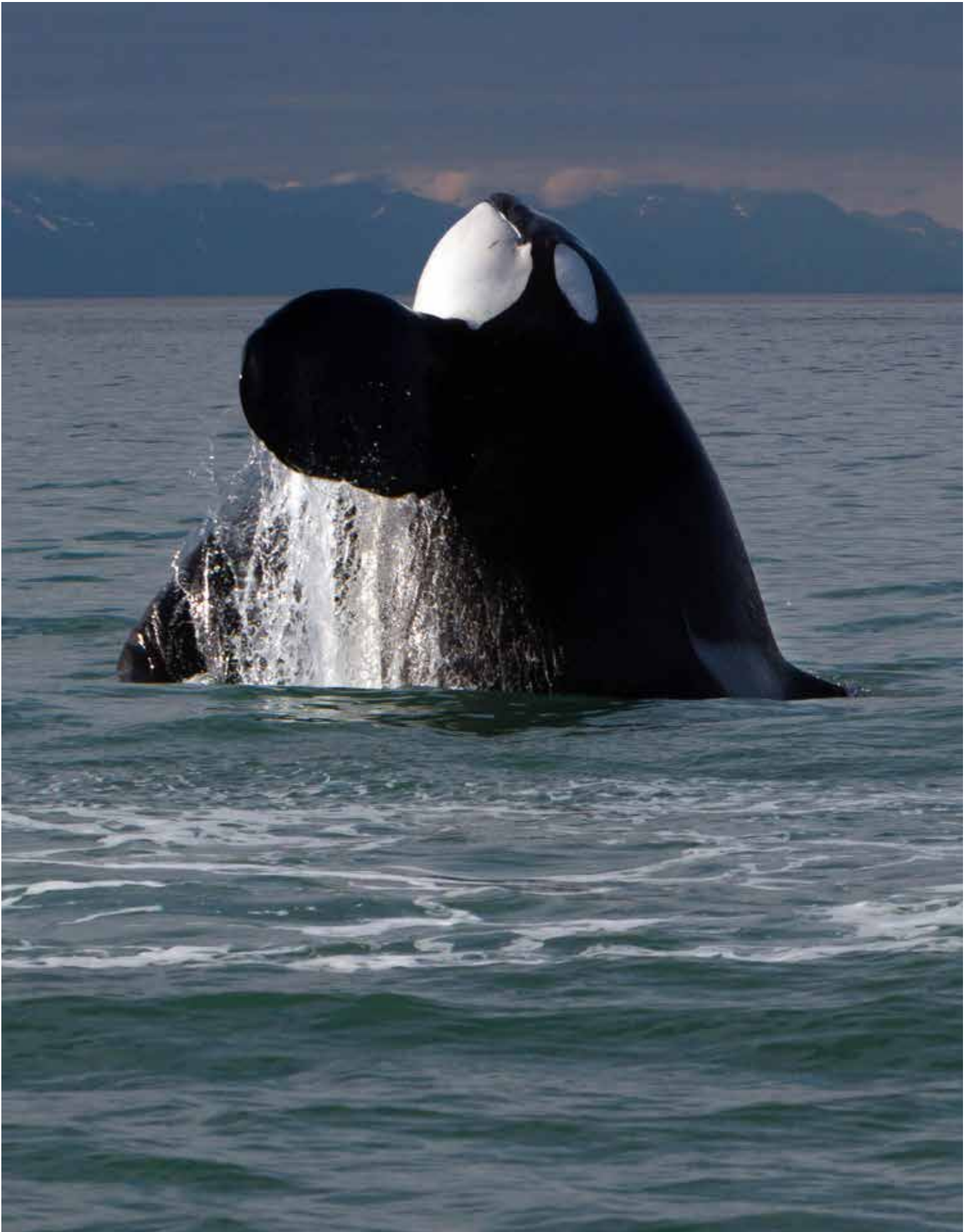
Gladiator Gray, 1870. Type species *Orca stenorhyncha* (= *Delphinus orca*)

Grampus Iredale and Troughton, 1933 (not Gray). Type species *Delphinus grampus* (= *Delphinus orca*)

Orcinus orca (Linnæus, 1758), orca, killer whale, KW’s, B&W’s, little guys, oreos, *kéet*,

OR-kuh Latin *ōrca*, whale

Orca of the Juneau Area



In amazement I learn something researching for these notes what I've held as truth turns out not to be! The name orca is *not* of native origin, at least from the Pacific Northwest. Linnæus originally gave the animal the name *Delphinus orca*, using the ancient Greek word for dolphin for the genus and the Latin word for a ferocious whale for the epithet (which may have been borrowed from the Greek ὄρυξ). While related to dolphins, they are not close enough to bear the name dolphin. *Orcinus* might be derived from Orcus, a god of the underworld and punisher of broken oaths when became "of hell" or "hellish"; or "a combination of two Latin words and means 'like a whale'";¹ but it also may be a variation of the epithet made to fit a generic name. Orca is simply an old Latin word for whale.

I find the common name "killer whale" pejorative at best, offensive at worst and scientifically confused. I use the name orca.

There is only one record of an orca killing humans in the wild and it is by no means certain. The Jackson–Harmsworth Expedition to Baffin Island reported that on May 12, 1894 a midshipman was "dragged from an ice flow by a black whale" and was never seen again.² There are only six reported non-fatal "attacks" of orca with humans in the wild. There have been four fatal "attacks" by captive orca on humans. There is no consensus if they were accidental or purposeful.

With these facts, "killer" seems a fanciful and inaccurate name, at least with regard to humans. They certainly are the apex predator of the ocean and kill prey to survive. From the viewpoint of large fish and marine mammals, "killer" is an appropriate description. "Whale" is an appropriate name only if applied to all cetaceans and only then can be scientifically supported. Most people distinguish the dolphins and porpoises as being different from what they consider "whales". What people conjure in their minds when they hear the word are the large to huge swimming mammals of the ocean, "There go the ships: there is that leviathan, whom thou hast made to play therein." Psalm 104:26, KJV, in the public domain. Leviathan, לִוְיָתָן, is usually translated as "whale" but is perhaps more accurately rendered as "sea monster".

¹ Gotch, A.F. 1979. *Mammals—Their Latin Names Explained*. Blandford Press

² Jackson, F.G., A. Armitage, R. Koettlitz, H. Fisher & W.S. Bruce, 1898. *Three years' exploration in Franz Josef Land*. The Geographical Journal 11 (2): 113–138.

Taxonomy: orca morphotypes

Synonyms:

Delphinus orca Linnæus, 1758. Type locality European seas
Delphinus serra Borowski, 1780. Type locality Spitzbergen
Delphinus Gladiator Bonnaterre, 1789. Type locality Spitzbergen
Delphinus Duhameli Lacepede, 1804. Type is description of animal from France
Delphinus grampus Blainville, 1817. Type locality North Atlantic
Orca Capensis Gray, 1846. Type locality Cape of Good Hope
Delphinus victorini Grill, 1858. Type locality Capetown, South Africa
Orca Seblegelii Lilljeborg, 1866. Type locality Norway
Orca magellanica Burmeister, 1866. Type locality south of Buenos Aires, Argentina
Orca Esehrichtii Reinhardt in Eschrich, 1866. Type locality Faeroe Islands
Orca ater Cope in Scammon, 1869. Type based on description of animals from Oregon to Aleutian Islands
Orca rectipinna Cope in Scammon, 1869. Type based on description of animals from California
Orca stenorhyncha Gray, 1870. Type locality English coast
Orca latirostris Gray, 1870. Type locality coast of Essex, North Sea
Ophysia pacifica Gray, 1870. Type locality North Pacific?
Orca pacifica Gray, 1870. Type locality coast of Chile
Orca africana Gray, 1871. Type locality Cape of Good Hope
Orca tasmanica Gray, 1871. Type locality Tasmania
Orca minor Malm, 1871. Type locality Sweden
Orca antarctica Fischer, 1876. Based on drawing
Orcinus nanus Mikhalev et al., 1981. Antarctic waters
Orcinus glacialis Berzin and Vladimirov, 1983. Type locality Indian Ocean sector of Antarctic.

With a world wide range (except for polar waters), orca have evolved into a number of forms that are visually distinct from one another leading to this list of synonyms. There are eight to ten morphotypes recognized today and given some sort of name. Three antarctic forms were recognized in 2003.¹ A comprehensive genetic study in 2010 recommends three be elevated to species (but does not do so) and consider the remaining five to be subspecies. Full species status would go to our North Pacific Transient, and two of the southern types, the Antarctic B and Antarctic C. Correlating these with the synonyms above is fraught with peril. It's clear that quite a number of folks were seeing the very different morphotypes long ago and felt them worthy of their own name. While geography can help, it is not the only character.

Our mitogenome data also indicate that the North Pacific Transients should be considered an independent species. Not only are they ecologically and morphologically distinct from other high-latitude killer whales, but genetically they are the most divergent type, diverging from all other killer whale types ;700,000 yr ago.¹

Their recognized morphotypes and location are represented with this map: ¹

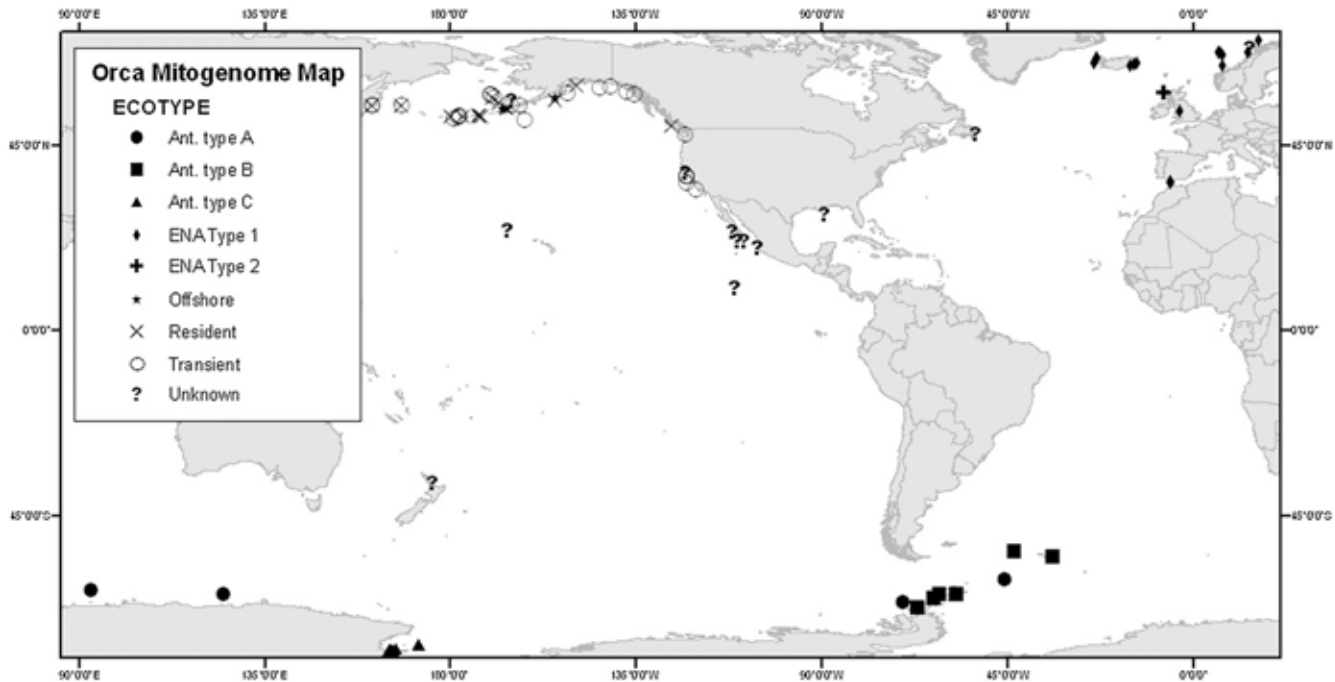


Figure 1. Sample collection locations with indication of type when known.

Current orca morphotype taxonomy

Antarctic type A (<i>Orcinus nanus</i>)	Eastern North Atlantic type 1
Antarctic type B (<i>Orcinus glacialis</i>)	Eastern North Atlantic type 2
* large type B (pack ice killer whale)	Offshore
* small type B (Gerlache killer whale)	Resident (North Pacific)
Antarctic type C (Ross Sea killer whale)	Transient (Bigg's)
* Antarctic type D (subantarctic killer whale)	

* Antarctic type B are sometimes split into the pack ice killer whale (large type B) and Gerlache killer whale (small type B) and subantarctic killer whale as Type D for a total of ten morphotypes. The pack ice type is now famous for their unique method of hunting seals by creating waves to wash over and roll the pack ice. ³Gerlache killer whale are named for their occurrence in the Gerlache Strait off the western Antarctic Peninsula. They are a smaller type B with a large eyepatch that is slightly slanted downward; travel in large groups in the open water away from pack ice; eat mostly penguins, usually just the breast meat. ⁴Subantarctic have a tiny eye patch and very bulbous forehead. Their phylogenetic tree strongly supports eight morphotypes.

Antarctic B was given the full species name *Orcinus nanus* Mikhalev et al., 1981 but is a *nomen nudum* (lacking a description) and thus illegitimate under the International Code of Zoological Nomenclature. Antarctic C was described as *Orcinus glacialis* Berzin and Vladimirov 1983. Neither name has enjoyed much traction and the vast majority currently continue to use *O. orca sensu lato*. We all seem to be awaiting a comprehensive study of all ecotypes before accepting a new scientific name for any of the morphotypes. Morin, *et al.* came very close, but we're still not quite there.

¹ Pitman, R.L. & P. Ensor. 2003. *Three forms of killer whales (Orcinus orca) in Antarctic waters*. Journal of Cetacean Resource Management 5(2):131–139.

² Morin P.A., F.I. Archer, A.D. Foote, J. Vilstrup, E.E. Allen, Wade, P., J. Durban, K. Parsons, R. Pitman, L. Li, P. Bouffard, S.C. Abel Nielsen, M. Rasmussen, E. Willerslev, M.T.P. Gilbert & T. Harkins. 2010. *Complete mitochondrial genome phylogeographic analysis of killer whales (Orcinus orca) indicates multiple species*. Genome Research 20: 908-916 doi:10.1101/gr.102954.109.

³ Pitman, R.L. & J.W. Durban. 2011. *Cooperative hunting behavior, prey selectivity and preyhandling by pack ice killer whales (Orcinus orca), type B, in Antarctic Peninsula waters*. Marine Mammal Science, 28(1): 16–36.

⁴ <http://www.whaleresearch.com/#!about-orcasc1qa8>

Current Status of Orca

The best estimate for the world-wide population of orca is about 50,000 with the note that “It is likely that the total abundance is higher, because

estimates are not available for many high-latitude areas of the northern hemisphere and for large areas of the South Pacific, South Atlantic, and Indian Ocean”. For our area there are about 216 residents and 314 transients.¹

There are no records of humans hunting orca for food. Humans have a long history of capturing live orca for human pleasure. There are records of 1,477 taken in Japanese waters between 1948 and 1972, mostly for captive use.¹ The history of taking for marine parks is checkered with horror and crowd-pleasing cheers. The first captured orca, Wanda, came from Newport Beach, California. She was caught by a crew from Marineland of the Pacific and transported to the park where she repeatedly crashed into the walls and after two days in captivity, died.

Upon being placed into the 100 by 50 by 19 foot oval fish tank at approximately 10:00 PM, the whale initially struck her snout a glancing blow on one of the walls. She then commenced to swim slowly around the confines of the tank, her behavior being similar to that of newly-introduced smaller delphinids. The following morning, the whale was observed holding a newly-killed ocean sunfish in her mouth. This fish was not consumed, however, and during the remainder of the day many attempts were made to induce feeding. Marineland divers attached lines to bonita, and “worried” the killer whale with these as she slowly encircled the enclosure. The animal made several attempts to bite the food and it was at this time that the worn condition of her teeth was first observed. At 8:30 AM on 20 November, the whale became violent and after encircling the tank at great speed and striking her body on several occasions, she finally swam into a flume way, convulsed and expired.²

The history of captive orca hardly improves. The Southern Resident population lost 48 of its members to captivity leaving on 80 in the wild.³ Wild capture for commercial use reached a nadir with the capture of seven individuals from the L-25 pod in August 1970 at Penn Cove, Puget Sound. Mortality was extreme with five dying. Public opinion changed drastically with the uncovering of the purposeful sinking of the dead animals. This single incident had much to do with the U.S. passing the Marine Mammal Protection Act of 1972.⁴

¹ _____. The IUCN Red List of Threatened Species(tm) 2014.3. <http://www.iucnredlist.org/details/15421/0>

² Estes, J.A. 2007. *Whales, whaling, and ocean ecosystems*. University of California Press, Berkeley. ISBN 0-520-24884-8.

³ _____. “Newport Specimen” November, 1961 <http://www.marinelandofthepacific.org/animalcollection/killerwhales.html>

⁴ Heimlich, S. & J. Boran, J. 2001. *Killer Whales*. Voyageur Press, Stillwater, Minnesota.

⁵ Price, E.P. 2008. *Since first orca capture, views have changed*. Published Wednesday, January 16, 2008 at 12:00 AM by The Seattle Times Company.

International Status

With the taxonomic status of *Orcinus orca sensu lato* being uncertain but with the near certainty that at least some of the morphotypes will be given subspecific or even species status, the International Union for Conservation of Nature (IUCN) changed their official rating from “Insufficiently Known” (Groombridge 1994) to “Data Deficient ver 3.1, 2008”. They recognize that some of the morphotypes face such threats that a “combination of potential declines driven by depletion of prey resources and the effects of pollutants is believed sufficient that a 30% global reduction over three generations (77 years; Taylor et al. 2007) cannot be ruled out for some ‘groups’ that may be designated as species”. [\[http://www.iucnredlist.org/details/15421/0\]](http://www.iucnredlist.org/details/15421/0)

United States Status

All marine mammals are protected under the Marine Mammal Protection Act of 1972 (see notes under humpback whales). This covers all of the orca within the 200 mile U.S. Exclusive Economic Zone (EEZ).

Additional protections has been give to two populations. The southern resident population of Puget Sound with 80 to 90 individuals was “endangered” under the Endangered Species Act of 1973 in November 2005 with a “critical habitat” declared in November 2006. After a “five year review”, boats were limited to a 200 yard approach (76 FR 20870).

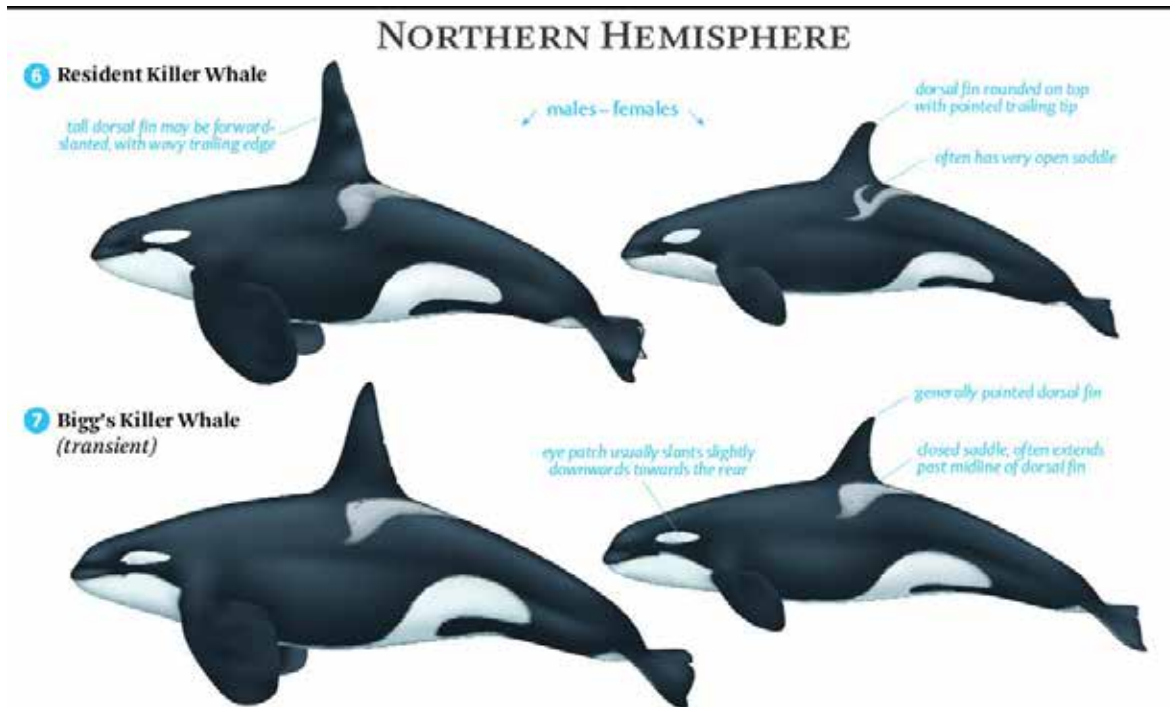
The AT1 Transients in the Prince William Sound area are considered “depleted” under the Marine Mammal Protection Act of 1972 as a result of the Exxon Valdez oil spill.

_____. *Killer whale* (*Orcinus orca*). NOAA Fisheries. <http://www.nmfs.noaa.gov/pr/species/mammals/whales/killer-whale.html>.

Juneau Area Morphotypes

Our Juneau waters are home to two fairly easy to distinguish morphotypes, the North Pacific Transient (Bigg's) and North Pacific Resident. This was not known until the aftermath of the Exxon Valdez disaster of March 24, 1989. Some Prince William Sound orca were dramatically affected while others were not. It turns out that the resident pods eat mostly fish, an organism only lightly affected by the spill, where the transients eat mostly meat of sea lions, seal and the like that were greatly affected. Transient pods tend to travel in small groups of a dozen or less where resident pods can be as many as two dozen animals, probably all forming a complex family groups that is matrilineal. Transient pods lost a large number of the most reproductive females and this population was headed toward extinction. They have significantly recovered as I saw many females and calves. (I learned this from Bonita Nelson, a NOAA research biologist at Auke Bay Laboratory at the Naturalist Training day). Determination to type can be fairly certain if observation of *at least three of these characters* are present in the animals being observed.

<i>North Pacific Transient (Bigg's)</i>	<i>North Pacific Resident.</i>
few in number (fewer than 5) *not reliable by itself!!*	larger in number (more than 5) *not reliable by itself!!*
female dorsal fin sharply pointed to rear	female dorsal fin rounded
female saddle patch solid gray or white	female saddle patch often open and usually gray
saddle patch often extends forward if dorsal fin midline	saddle patch usually behind midline of dorsal fin
eye patch rising behind they eye	eye patch horizontal or falling behind the eye
male dorsal fin angled on both sides	male dorsal fin nearly vertical on front side
male dorsal fin straight	male dorsal fin with wavy front edge
meat eater (sea lion, dolphin, etc.)	fish eater (salmon and others)



Cropped to our local forms from: Pitman, R.L. undated. *Orcinus orca a diversified portfolio: Killer whales: ecotypes and forms*. National Oceanic and Atmospheric Administration swfsc.noaa.gov/prd-killerwhale

All morphotypes are sexually dimorphic. Males are larger (to 9.5 m) with a tall (to nearly 2 m) dorsal fin that is narrowly triangular and vertical. Females are smaller (to 8 m) with a shorter (to just under 1 m) dorsal fin that is falcate, or back-swept and curved toward the rear. Juveniles of both sexes have falcate dorsal fins and sex determination from boats is nearly impossible. Very young orca have a distinct orangish tinge to all the white areas that seems to last about a year and may be related to nursing milk from its mother.

Orca sightings on our whale watching trips are unpredictable. If I kept better notes I could say exactly how many times I saw them, but it seems like I see them on about 10% of my on the water trips. More often than not, as we head out of Statter Harbor the captain already knows about them, either by just having seen them or by chatter on the marine radio. The boat captains have developed a code language for many things out on the water so the passengers don't know exactly what's going to happen to prevent any disappointment. Orcas are usually called "kw's" or "black and whites". So as we head out I listen to the talk and get an idea of what we might see on that trip.

My first wild orca experience!

My first live orca experience was at Miami Seaquarium in Miami, Florida, in 1986. My entire family was splashed by the orca in the aquarium (we had seats very close to the front!) which thrilled us all to “the max”. Fast forward to 2009, 23 years later, and I see my first orca in the wild. A short essay at the end of these notes on orca gives my thoughts on captive versus wild orca.

On June 14 I’m privileged to go on the “farewell cruise” for the U.S. Coast Guard folks who were about to leave Juneau. The entire Juneau Sector and their family were invited and my “Coastie” son-in-law had me along with my daughter. The cruise is on Allen Marine’s catamaran St. Philip to Tracy Arm. Unfortunately for us, Tracy Arm was clogged with ice so the captain headed up Endicott Arm all the way to Dawes Glacier. On the way back to Juneau, just out of Holcomb Bay into Stephens Passage we came by a pod of 12 orca. The captain stopped the boat and four the orca swam about us just as close as just a dozen meters.

Individual orca are identifiable, but it takes very careful observation and is extremely difficult “in real time”. I made these identifications in January of 2015 when editing these notes. When I saw them I had no idea they could be identified to individual or that there were eight to ten different forms of orca around the world. It turns out this is the AF22 matriline, named after AF22, Echo, who was born in 1948 and died in 2007. Note how just in this small sample the reliability of the saddle patch is not so good, at least for those with solid saddle. The best that can be said is an open saddle patch is a sure mark for residents. Closed saddles *must* be accompanied by other characters in order to make a sure identification.



AF4 Inian (1961). The highlight is the mom and calf. The upswept eye patch, open gray saddle and large number indicate these are residents. But not the mom’s dorsal fin isn’t exactly “rounded” and in the right photograph looks pointed. There is a bit of an under curve near the apex, but it is so subtle as to escape notice while observing. The calf is small, only about 6 feet long compared to mom’s 20. Note the orangish tinge to its eye patch and chin. It had no trouble keeping up with mom as they swam about our boat and then off into the wilds of Stephen’s Passage.



AF47 Lituya (1996). This is a mature female, easily told by the raked dorsal fin with at least some scallop on the distal side. I’ve been trying to figure out just how it might have gotten the notch, was it in a fight with a male when she had a young calf (like the third photograph)? Since orca remain in family unit pods, this seems unlikely unless this pod came in contact with another, foreign, pod. The captain of the St. Philip came out to the back deck to watch and said he was reasonably certain—because of this notch—that this is a transient pod. If so, it could be result of an attack by sharks or a shark defending itself when the orca attacked it to eat.

AF26 Tidal (1989) (left) and *AF65 Espuibel* (1997) (right). The differences are obvious in the shape of the top of the dorsal fin. Tidal is nearly vertical while here is a subtle rake to Espuibel's. Note that both have eye patches that rise to the rear but both have solid saddle patches that extend at least to the midline of the dorsal fin illustrating that these characters are not firmly fixed.



It was here that I learned to tell the males from the females. Inian and Lituya have short, stocky dorsal fins that have a decided rake to the rear. Tidal and Espuibel have very tall and narrow dorsal fin that are nearly perfect triangles (but can have a bit of a rake as in Espuibel). At this point I have no idea of the different morphotypes or the ability to identify them as individuals. These things just never entered my mind as I was so excited for a brand new wildlife experience. My interest and knowledge has grown tremendously as I now make an attempt at identifying orca at least to transient or resident if not to individual.

The catamaran now powers up, the whales head off as Espuibel does below, and we head back up Stephen's Passage to Juneau.



Orca Behavior

Cruising



By far the most common behavior I see is orca simply swimming. Many times all I see are the dorsal fins and a teasing of the saddle patch as in these photographs. When out here in the big waters of the Lynn Canal they can be very hard to spot at a distance. Even when we have radio reports of their presence, it usually takes stopping and searching the surface with binoculars to spot them, and are successful about half the time. Out here, it seems the orca are *en route* to someplace as they're nearly always moving, often at 10 knots, rarely stopping or even slowing. I've never felt that they were paying any attention at all to our boats out here. This seems equally true for both residents and transients.



Other times the orca “porpoise” as they swim, raising their head nearly out of the water exposing their eyes and the arching their back as they drop back under water as the large unidentified female resident (note her open saddle) does here in front of the Shelter Island lighthouse in Favorite Channel on May 6, 2010. In these more inland waters, it appears the orca might be searching or foraging for food as their speed and direction usually varies. Perhaps this is why here is the only place I've ever felt they were paying attention to us at all.



These four transients approached our boat in a straight and steady track on a very sunny May 25, 2011. The lead orca dives shallowly under water just 3 meters off our starboard side and swims with us at about 5 knots for a few minutes, even turning on its left side as if it is looking at us. Then off they go, speeding up substantially on their way to some unknown southern destination.



While cruising, they can come remarkably close to us as this female on the left is doing on August 8, 2012. Note she has a downward slanting eye patch with a very round dorsal fin thus making a resident or transient identification impossible! She is almost equidistant between us and our sister boat, the Navigator.

This large male transient, T103 The Big Guy, on the right is approaching us with his α female and a juvenile. They stay off to his right and go behind us, but he stays his course and dives right under us as we sit still. He surfaces on our port side about 50 meters north and continues on his way. Our presence seems to make absolutely no difference to him and he seems to know we are on the surface with lots of room underneath. This seems at least circumstantial evidence that this orca has previous experience with boats and knows they don't extend far under water. While unidentified as he never showed his saddle patch or a lateral view, his tall dorsal fin has an obvious tip curve to his left.

Breathing & Blowholes



It's a trick question: "how many nostrils does an orca have?" Like all mammals they have two. What they do have is a single external orifice that serves the twin nostrils. It is valved, like all marine mammals, and is completely closed when the animal is under water.

How long can an orca remain under water? There is little scientific evidence for this and there are answers from 10 to 20 minutes. The actual time is probably within this range but is unknown. I've never timed the underwater periods of orca I've seen and just as an "off the cuff" guess would say that the average time underwater is in the neighborhood of four to five minutes. Their lungs take up a large portion of their visceral cavity so they can remain under water for a significant time.

Transient killer whales have been recorded diving for up to 11.2 minutes. Transient whales in the eastern North Pacific often stay submerged for more than 5 minutes and occasionally for more than 15 minutes in a single dive. Transient killer whales have been recorded diving for up to 11.2 minutes. Transient whales in the eastern North Pacific often stay submerged for more than 5 minutes and occasionally for more than 15 minutes in a single dive.

SeaWorld Parks & Entertainment, <http://seaworld.org/animal-info/animal-infobooks/killer-whale/adaptations/>



The pattern of the spout isn't particularly distinctive amongst cetaceans other than in calm weather it is perfectly vertical as these two photographs illustrate. As with all cetaceans, they don't exhale water. The spout is made of a small amount of water captured in the blowhole depression as the orca rises above the surface and air that is nearly saturated with water vapor that is expelled with great force. As the air expands and cools, the water vapor condenses and makes "fog". When I've been close enough to smell, there is only a faint fishy odor that is not in the least objectionable, distinctly different from humpback whale breath!

The question of whether cetacean breathing is voluntary or autonomic remains unanswered. It is clear that these animals can voluntarily control breathing, just as we humans can when conscious, it is unclear if they must think to breath when sleeping. From captive animal studies it seems clear that orca use hemispheric sleep (one half of the brain sleeps while the other remains awake). Which side of the brain controlling breathing has not yet been determined yet many references indicate this fact is well known and documented.

Spyhop



Also called a head rise. What happens in a spyhop is the orca rises out of the water to an elevation where their eyes, and often the point of attachment of the pectoral fins, are above the surface. What distinguishes this behavior from an upward lunge is that the orca remains in this position of some time, often up to a minute, almost like a human treading water. The orca maintains its same orientation while above the water without turning or rotating. As this collection of photographs illustrates, they come up almost equally leaning backwards and forwards.

As with whales, it is unclear why orca spyhop. The easy conclusion is that they are looking around, and there is evidence to support the idea. Unlike their large cousins, much is known about the vision of orca. Captive orca are able to discriminate between items both in and out of the water with a 92% success with two objects and 82% with three. What they are “looking at” (shape, size, color) is not known. Their spherical lenses and eye muscles are very strong allowing them to bend to accommodate the change in refractivity in and out of the water.

<http://seaworld.org/animal-info/animal-infobooks/killer-whale/senses/>

Tail Slapping



A large resident (note the open saddle patch on the forward orca that identifies these as residents) female lifts here tail and does more of a tail lift splash than a downward slap to the water surface. Taken September 13, 2014.



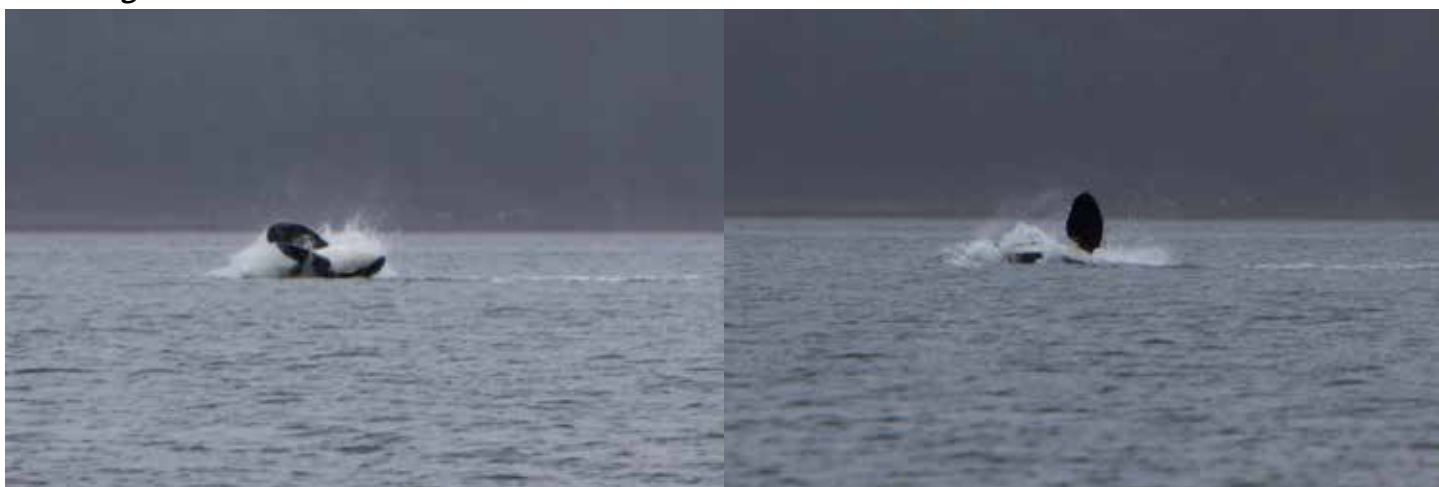
A probable transient (based upon the sharp dorsal fin) does a traditional tail slap. Taken May 29, 2011.



The pure white ventral side of the flukes are clearly visible with these photographs. There is a wand of bull kelp caught on the slapping tail visible in the right photograph. Taken July 1, 2012.

This is also called lobtailing. Just as with humpback whales, we really have no scientific explanation for tail slapping. I've only seen it six times. The two consistent observations I've made is that the pod is always cruising when the slap was made and the tail is lifted up and then held up almost stationary before being slapped to the water. If this is for some sort of communication to the rest of the pod, what is it? Since they are all together it couldn't be a signal for food. Is it danger? Are they concerned with the presence of our boat? Since their other behavior seems not to change with our presence, this seems unlikely. At the present time we just have to say we don't know why they do it.

Breaching



I have only seen orca breach twice and so have limited experience to judge this behavior. The first here is the very large T103 The Big Guy, a transient male who does a single back breach as he and his two female companions are chasing a Dall's porpoise.



The second experience is a spine tingling late afternoon on a mostly cloudy July 17, 2010. We're headed out of Auke Bay and heading toward Lena Point when we come upon a solitary dorsal fin. It's T103 The Big Guy. We pull up alongside of it and cruise for about 200 yards when it dives out of site. Captain Rich cuts the engines and we sit, waiting for what we hope is another view. To our surprise, his dorsal comes up out of the water south of us and he's headed straight for us. About 30 meters from the boat he dives under and apparently goes under the boat. We sit awaiting again. Expecting him to come up off the bow, I move there and a beam of light streams on us and almost at exactly the same time he erupts out of the water, belly facing the sun, with both huge paddles coming out of the water. He arches on his right side and splashes into the water with nearly all of his ventral white patch exposed and is back under water. These four frames were exposed in less than one second, so it happened very fast. He comes up about 150 meters ahead of us and we move slowly to catch up. He makes one arching porpoise that exposes most of his saddle. It is unique in that it extends almost to the forward end of the dorsal fin, yet I've not been able to identify him. Exciting and intriguing at the same time, did our presence have anything to do with his decision to breach? If so, how would we determine that.

Copulation

It is a simply glorious day with full sun and crystal blue skies on May 29, 2011. We've headed up Favorite Channel to Bridget Cove just south of Mab Island. A pod of five resident orca active. The pod is composed of the α -male, two almost exactly the same size adult females, and two juveniles, one of which is much younger than the other. We park the boat and let the orca do what they do. And do they!



Here the adult females and juveniles are cruising south in a very tight group, adults in the lead. The male is out in front by about 10 meters. Spouts show up very well in the bright sunlight and one of the juveniles decides to make a bit of a spyhop, coming out of the water at an angle of about 20°, showing its slightly upturned eye patch. None of the females has an open saddle patch but they all have the rounded dorsal fin characteristic of residents.



The male disappears and the pod of four continues their southward cruise. Up from the water comes the male, head first rather than dorsal fin first and approaches the pod and swims up to the rear of the broader-finned adult female. He makes a shallow dive right rolling in front of her genital slit. She lifts her tail out of the water while he rolls on his side to the left until he's upside down. His bright pink penis extends out of his genital slit.



Even though we are just 25 meters away from the action, it is difficult to determine if the male was successful or even if the female was receptive. Since I've not seen this before (or since), interpreting what I'm seeing is difficult. It seems that since she's raising her tail out of the water and holding it there while making a slight roll to her left that she is indeed receptive. This is a day I wish I had an underwater camera to thrust down and record what's happening. Since all of us on the boat today want to see more orca, we're hoping the dalliance was successful and the female impregnated.

On this day we happen to have a family with two young "tweeners" that makes interpreting what we're seeing, well, complicated!

Little seems to be known about wild orca reproduction. Talking with fellow guides and captains, only those with long experience on the water here—a tiny handful—have witnessed this behavior. Of course that makes it even more special for me.

Orca reproduction is apparently not seasonal as copulation has been observed all year. Further, newborn orca are encountered throughout the year, female orca must be polyestrus, coming into heat several times a year. Gestation in the wild is unknown, but from captive breeding at Sea World it ranges from 15.7 to 18 months.

Females typically gave birth to their first viable calf at 14.1 years of age (SE=0.050; range 10-21 years) and those that survived produced a total of 4.7 calves at mean intervals of 4.9 years (SE=0.18; range 2-11 years) over a reproductive lifespan typically lasting about 24 years. Older females exhibited reproductive senescence, with about 50% being post-reproductive by 38 years of age, and none reproducing after 46 years of age.

Olesiuk, P.F., G.M. Ellis & J.K.B. Ford. 2005. *Life history and population dynamics of northern resident killer whales (Orcinus orca) in British Columbia*. Research Document 2005/045. Fisheries and Oceans Canada Pacific Biological Station, 3190 Hammond Bay Road, Nanaimo, B.C. V9T 6N7.



Identifying Individual Orca

No two orca look alike. This allows individual identification. The differences in the characters to look for are often very subtle and require great care to compare and about as often as not I'm not able to identify they orca. I look first at the shape of the dorsal fin to determine if it is a male or female, then a resident or transient. Then I look at the saddle patch. These photographs are severely cropped from much larger images for the sole purpose of identifying the individuals. It takes time, and I've spent more than an hour trying to identify a single photograph!

Dahlheim, M.E. 1997. *A photographic catalog of killer whales, Orcinus orca, from the central Gulf of Alaska to the southeastern Bering Sea*. NOAA Technical Report NMFS 131.

Ellis, G.M., J.R. Towers & J.K.B. Ford. 2008. *Transient killer whales of British Columbia and southeast Alaska*. Fisheries and Oceans Canada, Pacific Biological Station, Nanaimo.

Ellis, G.M., J.K.B. Ford & J.R. Towers. 2007. *Northern resident killer whales in British Columbia*. Fisheries and Oceans Canada, Pacific Biological Station, Nanaimo.

_____. 2011. *A catalog of killer whales of southern Alaska*. North Gulf Oceanic Society, Homer, Alaska.

Towers J.R., G.M. Ellis & J.K.B. Ford. 2012. *Photograph-identification catalogue of Bigg's (transient) killer whales from coastal waters of British Columbia, Northern Washington, and southeastern Alaska*. Canadian Data Report of Fisheries and Aquatic Sciences 1241. Fisheries and Oceans Canada Science Branch, Pacific Region Pacific Biological Station Cetacean Research Program, Nanaimo, BC.

Orca pods and individuals are numbered by different folks in slightly different ways. Alaska transients are AT followed by a number. British Columbia use a single T followed by a number. They often append the number with a letter when whales are very closely related, as in brother or sister. Alaska residents are named with an initial A then the letter for the specific pod followed by a number. British Columbia use a single letter indicating the matriline or pod. Since orca form very tight knit family groups, if one animal in a pod can be easily identified, determining the others is greatly simplified. The year in parenthesis is their year of birth.

Juneau Orca Males I've Seen



AB24 Gilmore (19870)

AF19 Sergius (1980)

AF26 Tidal (1989)

AF42 Nipper (1993)



AF65 Epuibel (1997)

AG25 Berg (1994)

AT134

AT136



G45



T054 (1972)



T072 (1974)
Unidentified males



T074 (1979)



T103 The Big Guy



2009-07-17



2011-08-16



2011-08-23



2012-06-22



2012-07-01



2012-09-19



2013-06-06



2013-06-06



2014-07-01



2014-09-13

Juneau Orca Females I've Seen



AF4 Inian (1961)



AF8 Steller (1970)



AF11 Gambier (1968)



AF23 Squaretop (1981)



AF28 Nunatak (1988)



AF40 Elfin (1992)



AF47 Lituya (1996)



AF57 Wavelet (1999)



AF67 Nevsky (2001)



AF77 Rienga (2003)



AF81 Bieli (2005)



AF85 Sunny (2006)



AF87 Avaaz (2009)



AG5 Lavinia (1969)



AG42 Chukle (2005)



AG44 Capacious (2008)



AT78



AT116



AT129 Calkins (2002)



AT145 (2006)



AT166



T034A



T035A



T038A

Unidentified females



2009-06-16



2009-08-07



2011-08-23



2012-07-21

A time to live and a time to die.

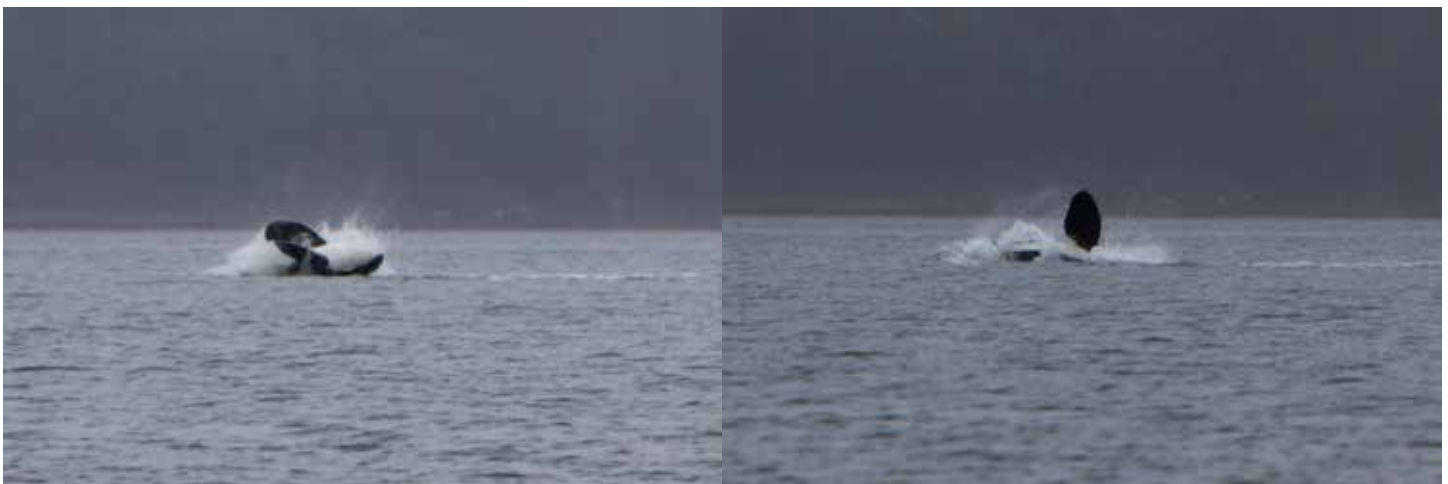
No one knows what's going to happen each day as they wake up. I surely have no idea of what I will or won't see as I gather my guests and head out into the waters of Juneau. I do know that we guarantee a whale sighting. I do know that I have seen at least one humpback whale on every trip I've guided. I do expect to see whales. In July and August I expect to see bubble net feeding. I know that I see orca far less frequently and that most of the time I don't see much more than their dorsal fins. This makes their sightings far more exciting than most others. The rarer something is the more special it is seeing it. I've learned to take each day as it comes and enjoy the experience even if it's only a humpback or two spouting and cruising with a dorsal fin or two out of the water. My job is to make this day the best day ever for my guests. I can truthfully say that I greatly enjoy watching a logging whale. This is what's in my mind each morning as I head to "work" (if this job could be called "work"!).

July 6, 2010 is just a yucky day, even by SEAK standards. Visibility isn't far as the fog and rain are going up and down. We're headed north as Captain Nat Kugler has some big guys (code for humpbacks) up Saginaw Channel. As we reach the Shelter Island sand spit he spots some "KW's" (code for orca) heading south and whispers that to me. He makes a broad turn to the southwest and we come upon a pod of three. A very large male, a very large female and a much smaller female. They are headed south "with a purpose" we don't know and we follow them at about 10 knots. As we approach the waters just off Symonds Point, they become curiously surface active in a manner I'd not seen before.



The male is a monster, very close to nine meters, with a tall, narrow and back slanting dorsal fin. His white saddle patch is very large, very bright and nearly reaches the front of the dorsal fin. His white eye patch drops below his eye line. Even with all of these unique characters, I'm only able to positively identify him in 2015, but I call him T103 The Big Guy. The large female has a very swept back dorsal that ends in a sharp point and the smaller female (in the right photograph above with Shelter Island in the background) is very similar just smaller. Her eye patch is relatively short but definitely drops below the eye line. Everything says transient or Bigg's.

All three begin to swim in large, perhaps 200 meter diameter, circles with the two females going clockwise and the male counter-clockwise. They make at least three laps but add interest by doing some pretty amazing things. What is going on here? I'm asked that by a guest and have no answer. I ask Captain Nat, and he's clueless as well.

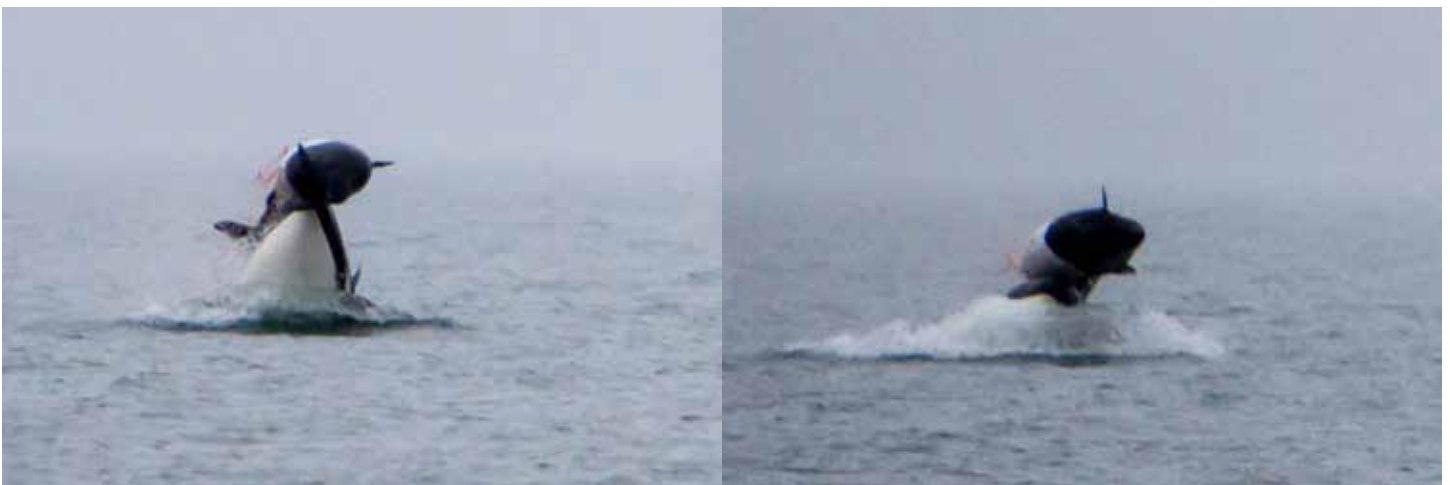


The male does some "breaches". This is new behavior for me to see. It's very much like a humpback by landing on his back, but always a bit off to one side. His huge "paddles" (the pectoral fins) are held out from the belly as he propels out of the water and arches backward. As he hits the water the separate with the left paddle slapping the surface. He dives out of view and remains under water, out of sight for some time.



The α female (the larger one) porpoises in and out of the water as she makes her circle. In the left photograph she's almost fully out of the water headed away from us. The big male is coming toward her. What is going on here? I've never experienced anything like this and have no way to explain what's going on. Captain Nat has been in these waters much longer than I and he tells me he's in the same boat, literally! We're just astonished to watch this spectacle. It's only when I examine my photographs that I can find we had a bit of evidence of what was happening. The α female's tail and the male's dorsal fin are just about to submerge, and headed their way, to the right is a Dall's porpoise.

All the animals are now under water. The mists are still hanging. We're in the boat watching and waiting and not knowing what we'll see, if anything. There is an amazing stillness and no one dares say a thing.



Suddenly the surface erupts in incredible violence as the α female rises vertically with the Dall's porpoise held tightly in her jaws blood squirting out. I'm shooting with my Canon 7D on continuous with my 20-200 mm f/2.8 lens and 2 \times converter for 400 mm effective focal length. All of this is taking place about a half kilometer away so we're seeing this at a distance. All of us, Nat, me and the 15 guests on board, are utterly silent and virtually still. We're watching, but we don't know what we're seeing. It's happening in real time, yet it seems as though it's slowed down. Reality hits when all the animals are back under water and we're left thinking, "what just happened?" I say out loud, "did we really see that?" I drop the camera down from my eye and begin to roll through the exposures I've made. When I come across the image, my jaw drops along with the camera. "I got it!" I say to the folks. It confirms we really did see what we saw.

Several weeks later, Jay Beedle asked me if I got any photographs of that encounter. I asked him "what encounter?" "The kill" he responds. Jay was watching us from his home near the sand spit of Shelter Island and saw it from much further away. I sent him copies of my photographs. They aren't very good as our boat was so far from the animals, but they do document that transients are meat eaters.

What do I think of that day? This is a very hard question to answer. It was a time to die. When asked (which has been far more often than I would have thought), I usually respond "It was a bad day for that Dall's porpoise!" Predator-prey relationships are violent. If successful from the predator's point of view, the prey dies and is food. From the prey's point of view, it's fright or flight. This Dall's porpoise, even though the fastest of its clan, wasn't up to the speed of the orca. It gave up its life as food for three orca. It was a day to live from the orca's point of view.

Watching something die is not pleasant for most of us, and something close to abhorrent for me. Most humans are omnivores that consume a large amount of meat from animals. Someone must kill it. I eat meat. I enjoy eating meat. I've never killed anything but fish that I've eaten. I've always been impressed with hunters who eat what they've killed as they seem inherently more honest than those of us who consume meat that

some unknown has killed in an unknown place. Most of us prefer to distance us from any “unpleasantness”. While one of the most incredible moments of my life, it will be forever in my mind with a myriad of mixed emotions. Do I want to see it again? Of course! Have I? No, but I’ve come close.

In July of 2012 I’m out on the water with Captain Gary Judkins. We’re headed back to Auke Bay down Favorite Channel. Suddenly a female orca that we’d not seen before came up a third of her body length out of the water about 10 meters from the boat, mouth agape showing her white, cone-shaped teeth. In her mouth is a large—the size of two hams—chunk of bloody blubber from a sea lion the pod had just killed. There was an area of discolored surface water that we interpreted as blood from the kill. My camera wasn’t up to catch any of this.

The world we live in is full of eat, or be eaten. This simple truth can be difficult to understand and even more difficult to watch.

On the joys of observing orca

I’m going to be accused by some of being elitist. There is great truth in this as there is a small group of folks who have been treated to the experience of watching wild orca and I am one of them. So be it. Now that I’ve accumulated substantial experience with these animals in the wild, I find the human captivity of orca to be repugnant. I look back to 1986 now with some horror. Not for me or my family, but for the orca. We had a most incredible experience. We were led to believe that the orca were having one as well. They cavorted to the whims and direction of their handlers. They jumped, dived and splashed as directed. We were duped. We were the patsy’s. And we paid for it. Who benefitted? We deluded ourselves that we derived great benefit by seeing these magnificent creatures doing what by all accounts seemed to be enjoyable by them. After all, who doesn’t have fun swimming, diving and cannon balling into a swimming pool! Of course the orca were enjoying themselves.

I now know that these are highly intelligent animals. I know they live in very close relationship with their immediate (transient) and extended (resident) families. They talk to each other in family specific dialects. When individuals are separated from their family they have special distress calls. They swim the ocean at will. Captivity removes all of these. Wanda seems to have killed herself, perhaps in an attempt to escape. Tillicum has killed three humans, for reasons we really don’t know. What we do know is the behavior of captive orca is dramatically different than wild orca. The 1993 movie *Free Willy* resonated with most humans who saw it. The actor, Keiko, was actually released into the wild. The sad truth is that Keiko didn’t fare well in the wild. His long exposure to warm and chlorinated water apparently reduced his capacity to fight off pneumonia as he died of it on December 12, 2003 at the age of 26—what should have been the prime of his life—in Taknes Bay, Norway. He was buried in secrecy in Halså, but Norwegian children built a wooden cairn to mark his grave. What life would he have had living always free?



Family Phocoenidae Gray, 1825 porpoises

“What’s the difference between a porpoise and a dolphin?” This is a common question on Whales and Trails adventures. Porpoises heads have no beak; smallish dorsal fins; smallish in size (in comparison to dolphins); and, spade-shaped teeth. The family includes seven genera, four of which are extinct and 13 species, seven known only by fossils.

Phocoena Cuvier 1816

foe-SEE-nuh Greek φώκαινα *phōkaina*, big seal, as described by Aristotle; this from φώκη *phōkē*, seal, later porpoise

Taxonomy: Linnaeus first named this *Delphinus p.* in 1758 but later in the same year he moved it into a new genus just for it, *Phocoena*. It wasn’t fully described until Jean Léopold Nicolas Frédéric Cuvier published it in 1816. It includes four well-defined species including the critically imperiled vaquita of the Gulf of California.

Phocoena phocoena vomerina Gill, 1865, harbor porpoise, *cheech*

Latin vo-MARE-ih-nuh, American vo-mur-EYE-nuh Latin *vomer*, plowshare, referring to a bone in the nasal septum that divides the nostrils



Taxonomy: As the worldwide population of harbor porpoise was studied, two subspecies were created, *P. p. phocoena* in the North Atlantic and our eastern North Pacific named by Gill in 1865. A third Pacific population is distinct but remains unnamed. *P. p. relicta* Abel, 1905 was named for the Black Sea population that is genetically identical to Aegean Sea animals and may not be distinct. Mitochondrial evidence indicates the Atlantic and Pacific populations have been separated for about one to five million years.

Wang, J.Y., D.E. Gaskin & B.N. White. 1996. *Mitochondrial DNA analysis of harbour porpoise, Phocoena phocoena, subpopulations in North American waters*. Canadian Journal of Fisheries and Aquatic Sciences 53:1632-1645.
Birkun Jr., A.A. & Frantzis, A. 2008. *Phocoena phocoena ssp. relicta*. The IUCN Red List of Threatened Species. Version 2014.3. <www.iucnredlist.org>. Downloaded on 28 January 2015.

There are five North American records of white harbor porpoise some thought hybrids with Dall’s porpoise, but are apparently an anomalous color morph of the species. “In total, 34 records were found from the world seas: the Black Sea, North Sea, Baltic Sea, North Atlantic Ocean and North Eastern Pacific Ocean. According to these records, three patterns of pigmentation were suggested.”

Keener, W., I. Szczepaniak, A. Ü, M. Webber & J. Stern. 2008. *First records of anomalously white harbor porpoises (Phocoena phocoena) from the Pacific Ocean*. Journal of Marine Animals and Their Ecology 4(2).
Tonay, A.M., S. Bilginc, A. Dede, A. Akkaya, T. Yeşilçiçek, Ö. Kösec, Y. Ceylan. 2012. *First records of anomalously white harbour porpoises (Phocoena phocoena) in the Turkish seas with a global review*. Hystrix, Italian Journal of Mammalogy. 23(2): 76–87.

Notes: This is not the animal that generates great excitement, for two reasons: the animal is quite common (world-wide estimate is 500,000 but very poorly supported) and very skittish. While found in the very same places as most of us humans, this porpoise is shy and intolerant of close approach. The most common sightings are of a porpoising animal with the plain black dorsal fin. They are easily identified with their all black back and small, triangular dorsal fin. Only once have I see any of the white underside as two almost breached on our port side off south Shelter Island in July of 2009. On September 6, 2009 while approaching Hump Island, the St. Philip comes upon four porpoise at our bow that remain for about six “porpoising” humps before disappearing for a most unique experience with this shy animal. In 2014 I did not see a single harbor porpoise!

With great intentions after learning about this species from Beth Matthews of UAS, I ended up not taking any notes at all on my sightings in 2009 and things haven’t improved much over time. I probably see harbor porpoise about a dozen times a year. My first sighting was from the Auke Village Recreation Area trail early in May of 2009 when three were “porpoising” about 200 meters offshore.

Beth's research shows that this common animal needs more study, but she knows this from what she's learned so far: 50% of the pups die and they only spend 3 to 6 weeks with their mother after birth in mid-May to June. There has been a decline in the population of Glacier Bay porpoises of 70%, probably due to increased predation by transient orca pods or an increase in the number of shark and Steller sea lion in the bay. The female reaches sexual maturity at 3 to 5 years of age, then has a single calf a year for the next 10 or so years until they reach the end of their normal lifespan at about 15. They eat small schooling fish, squid and octopus. The animals are not social and are very shy.

Phocoenoides Andrews 1911

Green φώκη *phōkē*, seal to Latin *phoca*, seal + Greek οἶδες *-oides*, resembles, looks like

Taxonomy: A monotypic genus. Frederick W. True of the United States National Museum, now part of the Smithsonian Institution, first considered it a *Phocoena* but Ethan Allen Andrews encountered a very unusual porpoise he thought new to science from Japanese whalers in 1910. He determined it was sufficiently distinct in 1911 to create the genus *Phocoenoides*.

Andrews, R.C. 1911. *A new porpoise from Japan*. Bulletin of the American Museum of Natural History, 30:31-52.

Phocoenoides dalli (True, 1885), Dall's porpoise, false killer whale

Honorific for William Healey Dall (1845–1927), an American naturalist, a malacologist (student of algae), and one of the earliest scientific explorers of interior Alaska



Taxonomy: Two morphologically distinct populations exist but without great genetic distance. The western Pacific population was named *P. truei* Andrews 1911, but recent molecular research shows it no more distinct than forms included in the more widely ranging populations of *P. dalli*.

Escorza-Treviño, S, L.A. Pastene & A.E. Dizon. 2004. *Molecular analyses of the truei and dalli morphotypes of dall's porpoise (Phocoenoides dalli)*. Journal of Mammalogy, 85(2):347–355.

Since about 1994, odd porpoises encountered in the coastal waters off British Columbia have puzzled observers. A carcass was recovered in the San Juan Islands of Washington's Puget Sound in 2011. Recent genetic study has provided evidence these animals are hybrids between *Phocoenoides dalli* and *Phocoena phocoena*. In all cases studied, the father was a harbor porpoise and the mother a Dall's porpoise. As they appear

to becoming more frequent, it will require a reassessment of *Phocoenoides* as a valid genus and a likely return of it into *Phocoena*.

Willis, P.M., B.J. Crespi, L.M. Dill, R.W. Baird & M.B. Hanson. 2004. *Natural hybridization between Dall's porpoises (Phocoenoides dalli) and harbour porpoises (Phocoena phocoena)*. Canadian Journal of Zoology 82: 828–834 doi: 10.1139/Z04-059.
First ever hybrid porpoise recovered in San Juan County, May 26, 2011, The Island's Sounder <http://www.islandssounder.com/news/122622944.html>

Notes: This is an exciting animal to see with its distinctive black and white dorsal fin, giving rise to the “false” name. While all the illustrations make them look large, when I see them they don't seem particularly large, slightly shorter than the average human at up to 2.3 meters. Built very stocky, to 200 kg in weight, they are not the image of streamlined dolphins I have in my mind. Their heads are remarkably tiny and seem out of proportion to the rest of their body, another feature that leads to identification at a glance if seen. Usually gregarious, I see groups of three to ten. The most common way I spot them is by their unique “rooster tail”.

I've come across this statement frequently: “The rooster tail creates a hollow airspace in the water which allows the porpoise to continue breathing while swimming”. The variations are extremely minor (“whilst” instead of “while”). It seems one of those “truisms” that sound good and develop a life of their own. None of them are attributed and the skeptic in me questions if this is so. When I watch them re-enter the water after porpoising, I do not see a “bubble” of air go with them that would allow them to breath under water. Out of water, well they're in the air!

While common, I don't see them but perhaps once every 10 or 12 trips out on the water. I've seen them in all waters we frequent. They make quick appearances then just as quickly disappear. For a stocky and small animal, they can really swim fast as they move out of sight in seconds rather than minutes. While harbor porpoise are not social, I've never seen a single Dall's porpoise but always a small group of 3 to 12 of them. Occasionally they will “play” with the waves our boats create. One one trip with Captain Jen, we revved the engines up and made about a dozen big circles and seven “surf” in the waves. Jen called it a “porpoise party”, a wonderful phrase I've adopted. Many accounts indicate this happens with fast boats and their waves. The bottom right photograph from July 28, 2010 shows the fishing vessel Morgan Ann ploughing its way through the waters just offshore of Mansfield Peninsula in Saginaw Channel with two “playing” with the bow wake. The boat is only going about 8 knots, but its bulk is enough to create a fore wave the porpoise can exploit.

Dall's porpoise have two main predators. Humans represent the largest take by far. Japan has hunted the porpoise for more than a century and currently take some 5,000 a year (below their current quota of 14,055). “In just 50 years (1963-2010), more than half a million (594,028) Dall's porpoise have been removed from these populations. Although 2007-2011 has seen progressive quota reductions, catch limits remain at unsustainable levels...”

Less dramatic but with significant effect are those taken as bycatch from fisheries. “In the past bycatch rates have been significant - likely killing tens of thousands of Dall's porpoises in the 1970s and 1980s.” “It was estimated that these fisheries killed 4,000 porpoises per year in the North Pacific until a UN moratorium banned driftnets in 1993.” The good news is bycatch is apparently on a dramatic downward turn, but numbers are incredibly difficult to determine.

Baulch, S. & C. Perry. 2011. *Review of data available on the Dall's porpoise (Phocoenoides dalli) in Japanese waters*. International Whaling Commission SC/65a/SM11.

Their main, and perhaps only, marine predator is the orca. The bottom right photograph shows an α -female transient orca rising out of the water with a mature Dall's porpoise in its jaws. I took this photograph on a miserable July 6, 2010. For a full account, see my notes on orca. It is totally unknown how many porpoise are taken by Orca and estimates are close to useless.

Beth Matthews tells us that estrus occurs almost immediately after birth! So they can mate quickly and the females are pregnant for nearly their whole life of about two decades. They have a delayed implantation of 3-4 months after mating and gestation is something under a year but not exactly known.

Order Lagomorpha Brandt 1855, *rabbits, hares and pikas*

Greek λαγός, *lagos*, hare + μορφή, *morphē*, form

A sister clade to rodents, lagomorphs have a second set of smaller upper incisors (sometimes called peg teeth) that grow just inside the outer, much larger. Like rodents, they arose in the Paleocene just after the dinosaurs, but did not radiate and exploit as successfully as there are only two extant families, the Leporidae and the Ochotonidae.

Family Leporidae Fischer de Waldheim 1817, *rabbits and hares*

United by their elongated ears, very long rear legs and rounded tails, leporids include 43 genera, 31 from the fossil record.

Lepus Linnæus 1758

Latin LEH-pus, American LEE-pus

Latin *lepus*, hare

Lepus is a genus of 32 currently recognized species in Africa, Eurasia, North America, and the Japanese archipelago. Hares differ from rabbits by spending all their time above ground, bearing precocious young able to fend for themselves shortly after birth, larger in size with usually much longer ears and are mostly solitary.

Lepus americanus Erxleben 1777, snowshoe hare, varying hare

um-mare-ih-cay-nus
dall-ee

of or pertaining to the Americas;
Honorific for William Healey Dall (1845–1927), an American naturalist, a malacologist (student of algae), and one of the earliest scientific explorers of interior Alaska



Taxonomy: “There is no evidence from the morphometric analyses for classifying populations into the 15 subspecies currently recognized.” If recognized, ours falls under subspecies *dalli* Merriam 1900.

Nagorsen, D.W. 1985. *A morphometric study of geographic variation in the snowshoe hare (Lepus americanus)*. Canadian Journal of Zoology, 63(3): 567-579, 10.1139/z85-083

Notes: 2011 proves to be my year for seeing this—supposedly common—hare around the Glacier for the first time ever. Daughter Bess tells me she sees them all the time, but that’s mostly in winter. On a hike out to Nugget Falls I find a mostly white hare in the lichen-encrusted scrubby flats on the way back on May 13 and manage to capture it with my iPhone 4 camera. This photograph is highly cropped from that image, but shows the molting pattern from white to brown. I spot them on two other trips to Nugget Falls and even Annette gets to see one when she and I hike out there on July 12 when I have the Canon 7D with me and capture the image of the hare in full summer brown. We get a very cooperative hare on the EZ trail down from the Visitor Center on July 15, 2020. I’ve thought that hare are one of the animals that eats mushroom caps, but this one is totally ignoring the *Russula* behind it.

I’m fascinated by the black strip down the back of the hare, a feature I see in only a very few images of the summer pelt of this species. Is this a characteristic of the *dalli* subspecies in Alaska?

Order Rodentia Bowdich, 1821 **rodents**

Latin, *rōdēt*, gnawer; one who gnaws

Nearly everyone can recognize a rodent and I think there are two reasons for this: rodents are the most successful of all the mammals being found on all continents except Antarctica with by far the most diverse forms so all have experience with them; and, they have two continuously growing incisors in both the upper and lower jaws that are conspicuous. They arose in the Paleocene almost immediately after the dinosaurs on the supercontinent Laurasia. Somehow, they made it to other continents already separated by oceans, probably by rafting. Carleton and Musser (2005) in *Mammal Species of the World* include 33 families, 481 genera and 2277 species.

Family Castoridae Hemprich, 1820 beaver

A family of one extant genus with two species but a myriad of fossil animals that arose during the Eocene and reached giant (bear) size in the Pleistocene. While adapted to a semiaquatic life, the wood-chewing teeth developed late in their history.

Castor Linnæus 1758

KAS-tur Greek κάστωρ *kastōr*, beaver

A genus of two species, ours and the European beaver, *C. fiber*. Very unique among rodents, their phylogeny has recently been clarified with their sister group being four species of tree squirrel from Africa!

Around 54 mya (CI: 44–64 mya), a phylogenetic lineage leading to beavers diverged from its common ancestor with Anomaluroomorpha (*Anomalurus* and *Pedetes*). Thus, beavers probably have a very long evolutionary history, which might explain their ecological and morphological peculiarities. ...

Similar to the divergence of the family Castoridae, the divergence time of the two extant beaver species has not yet been estimated with much precision. The origin of the extant beaver genus *Castor* has been suggested to lie in Eurasia at some time between 9.7 and 5.2 mya based on the fossil record and similarities with *Steneofiber*. However, since there is overlap with the earliest appearance of *Castor* in North America (6.6 mya to 7.5 mya), the geographical origin of *Castor* remains uncertain.

Horn, S, W. Durka, R. Wolf, A. Ermala, A. Stubbe, M. Stubbe & M. Hofreiter. 2011, *Mitochondrial Genomes Reveal Slow Rates of Molecular Evolution and the Timing of Speciation in Beavers (Castor), One of the Largest Rodent Species*. PLoS ONE 6(1)

Castor canadensis Kuhl 1820, North American beaver, *s'igeidi*

ca-nuh-DEN-sis Of or pertaining to Canada





Taxonomy: With a range of all the wooded lands of North America, our beaver has been divided up into 24 subspecies. If followed our is subsp. *phaeus* Heller 1909 whose range is poorly mapped but the type specimen was taken from Pleasant Bay on Admiralty Island. Many modern treatments, including Wilson and Reeder, refrain from using subspecific taxa as most of the named subspecies are based in relatively minor morphologic differences listing all the taxa as synonymns.

Notes: Evidence of beaver is ubiquitous in the Mendenhall Glacier Recreation Area. Beaver dams, felled trees, lodges and paths are common. The beaver are particularly active in the Steep Creek viewing area where dams are constantly being constructed by the beaver and demolished by the Forest Service or beaver patrol volunteers. In 2009 I walked the dike approach trail to the Trail of Time the first week of April and just nine days later walking the same trail found an eight-inch diameter black cottonwood (*Populus trichocarpa*) felled. There are fences around most of the larger cottonwoods to prevent them being felled by the “eager beavers”.

To see a beaver is easy when walking or biking the Dredge Lakes in the late afternoon or evening. One’s sheer presence will virtually guarantee the amazingly loud sound that the slap of their tail makes when it hits the water. They occupy all of the lakes here and in the evening it is almost impossible *not* to see at least one. The beaver in the pond on the Moraine Ecology Trail are a bit more cagey and are not easily seen. In 2010 they occupied the lodge with the infrared camera and delighted all those who watched their goings-on from the pavilion. They did not occupy this lodge in 2011. There are many small bank lodges that are a bit harder to find than the big stick lodge. Every once in a great while a beaver can be seen swimming in Mendenhall Lake and once I even saw one sitting on an iceberg! These were all juvenile and must have been just out wandering about seeing what the world was like.

The Forest Service regularly opens parts of the dams of Steep Creek in order to allow the sockeye and coho salmon an unimpeded swim to their spawning grounds. I’ve seen the two dams at the end of Steep Creek approach three feet in height and am sure this presents a significant obstacle for the salmon. In 2010 the dam on Steep Creek next to Glacier Spur Road was completely demolished and has been kept open since.

Family Erethizontidae Bonaparte, 1845 porcupine

New World porcupines are quite distinct from their Old World relatives and share but a very distant common ancestor. Four genera with 17 species are found in South America while North America has only one. Linnæus placed all the world’s porcupines in the genus *Hystrix*. Somewhere around 32 million years ago, the common ancestor to all New World caviomorphs arrived in North America. How has not been established. It may have arrived via Beringia from Asia or by rafting across the Atlantic from Europe. Once here, only *Erethizon* colonized North America and those that exploited South America literally exploded with diversity.

Erethizon F. Cuvier 1823

A monotypic genus with seven subspecies is found throughout the wooded areas of North America

Latin air-IH-thih-zun, American, air-it-THIGH-zun

Latin *erithizo*, to irritate

Erethizon dorsatum (Linnæus, 1758) subspecies *nigrescens* J. A. Allen, 1903, porcupine, *xalak'ách'*

door-saw-tum Latin *dorsum*, back, range, ridge; referring to the mantle of quills along the dorsal surface of the animals. The full species name thus describes an "animal with an irritating back"

nigh-greh-sens Latin *niger*, black + suffix *-scens* to mean blackening

"Porcupine" comes from late Middle English *porcupyne*, variant of *porcapyne* derived from Middle English *porke despyne*, derived from the old French word *porcespin*, spiny pig, ultimately derived from the Latin *porcus*, pig, hog; tame swine + Latin *spina*, spine; thorn; spine, backbone, back; thorn, spine, prickle. This became "quill pig". Universally pronounced porky-pine, it certainly results in a euphonious name that seems entirely appropriate for this pig-like rodent full of quills.



Taxonomy: The orthographic variant *dorsata* comes from Linnæus' *Hystix dorsata* and is currently used by *Wilson & Reeder's Mammal Species of the World* and ITIS. Virtually all other sources use *dorsatum* based upon the fact that *Erethizon* is a Greek participle, not a Latin noun, making *dorsata* invalid.

Seven subspecies have been named, with two in Alaska. Ours, *E. d. nigrescens* occupies the Cordilleran Pacific coast mountains while *E. d. myops* occupies the interior of Western Canada and Alaska north of Prince William Sound.

Notes: This is one of the most common mammals of Juneau and I see them—or evidence of them—frequently wherever there are trees (that means nearly everywhere!). Since their quills are their most "endearing" quality, I begin my notes with them.

On April 22, 2009 while out on the Rainforest Trail, I was deeply involved examining some plant that now I have no recollection of. While crouched on the trail, leashes around my wrist, my grand dog Sugar begins pulling very hard on my right arm. I look up and there's the largest

porcupine I've ever seen right on the trail just a foot in front of Sugar's nose! Since she's had several encounters with this beast resulting in veterinarian visits to remove the quills, I'm so happy she's on a leash and that I'm able to hold her back. Since the quills are such an effective defensive weapon, these animals can afford to be slow. As long as they can keep their back end toward the threat, they are pretty sure to survive and encounter with a predator. Humans—those not in vehicles—are not much of a threat as the animals pay very little attention to us, or even Sugar.



Porcupine quills are amazing structures. They are extremely sharp on the distal end but remarkably so as well on the end attached to the skin. Dark on the distal end, white on the proximal end, these specially adapted hairs are designed to be released easily from the follicle. Looking at these photographs, the mechanism is pretty obvious: the thick quills rapidly reduce in diameter at the skin to a very thin strand that is easily broken and released. The sharp end easily penetrates just about anything short of metal, and once in is difficult to pull out. The black end of the quills are covered with plates shingled downward, away from the point. While not barbs in any way, they have the same effect of holding the quill in place. Easy in, hard out.

The pelage of the porcupine is composed of quills, hair, and underfur. The quills may be up to 75 mm long, 2 mm in diameter and exceed 30,000 in number (Hall, 1946; Spencer, 1950a). There are no quills on the undersurface of the body. Each quill is yellowish white with a tip that varies from brown to black. Po-Chedley and Shadle (1955) described the growth patterns of the quills in considerable detail. The quills grow in groups 2 to 5 mm apart, and occur in transverse rows across the body. The longest quills are on the rump, the shortest on the cheeks. Quills are replaced after being lost or pulled out, with the replacement beginning in 10 to 42 days (Po-Chedley and Shadle, 1955). Initial growth is at the rate of .5 mm per day, and growth may continue for a period of 2 to 8 months (Costello, 1966). Whitney (1931) reported that not all quills are barbed. In winter, underfur may outgrow and conceal the quills. Young animals tend to be darker than adults and their pelage resembles the winter coat of adult animals (Goodwin, 1935). Animals usually molt during summer (Costello, 1966) and the underfur becomes absent or short (Hall, 1946). The color of hair of the eastern subspecies is more variable than that of other races, ranging from coal black to albino (Dodge, 1967). Anderson and Rand (1943) indicated that there is considerable geographic variation in the color of the hair throughout the range of this mammal.

Woods, C.A. 1973. *Erethizon dorsatum*. Mammalian Species No. 29, The American Society of Mammalogists. 1-6, 2 figs.



Nearly every time I encounter a porcupine with a group, at least one person will exclaim "I didn't know they could climb!" We find the at least as often up in the trees as down on the ground and I'm sure if I kept track of my sightings, the majority would be in trees. Along the Steep Creek trail they are nearly always up in the black cottonwood (*Populus trichocarpa*) trees, chomping on what seems to be their favorite food here. In spring, they also devour a large amount of pussy willow buds.



Porcupine have two anatomical features that allow them the freedom of the trees: strongly clawed forelegs and a very stout tail. On the way up, their claws provide their main path to security, but on the way back down it's the tail. As I watch them, I nearly always think of woodpeckers and how they use their tail as the third leg of a tripod. Porcupine do the same thing!



Every time I see porcupine pooh I can't help but sing to myself Neil Diamond's song "Porcupine Pie" substituting "pooh" for "pie"! Porcupine scat is abundant on both the Perseverance and West Glacier trails. Since they eat mostly wood, their pooh is mostly wood, and forms in nearly the same cylindrical shape as the commercially prepared wood pellets and could probably be sold as pellets for stoves! It looks and feels much the same. That porcupines have designated bathrooms with many using the same location for defecating is a truth that becomes obvious in porcupine country. This large Sitka spruce (*Picea sitchensis*) is in the Perseverance basin and has obviously been used for decades.

In all my walks near the glacier, I've never found a tree girdled by porcupines. On the Trail of Time and Under Thunder there are several trees about two-thirds girdled. Do the porcupine know if they eat all the way around the tree it will die? That would certainly be evidence of a higher level of thinking than we credit most rodents with. I'm inclined to think it's simply a coincidence. There are so many available trees here, they probably forget which one they're working on and move to another, thus preventing full girdling. It is very easy to find porcupine trees as the marks of the twin incisors are very apparent with every bite they make.



It's a very different scene up in the flats of Sheep Creek's valley. This "forest" of black cottonwood (*Populus trichocarpa*) and Sitka spruce (*Picea sitchensis*) has been recently (these photographs are from June 19, 2011) decimated by what appears to be an overabundance of porcupine. While the cottonwood are abundant, many of them have rather thick bark. The Sitka spruce have much thinner bark. It seems to come to a choice: work through the tough bark or quickly chew away the easy bark? It seems they've done both. These trees will not survive the girdling and will die. With three feet of cambium gone, there is no way for the trees to reconnect all the vascular channels to the leaves above. The curious thing to ponder, is once the trees are dead, there is nothing there for the porcupine. While these are young trees, they are probably all many years older than the porcupines. This strikes me as a forest out of equilibrium that will soon result in no food for the porcupine.



This porcupine fell and did not survive. It's demise allows me to examine the body. Quills are all over the place! Many of them punctured its body. While good climbers, some porcupine climb further than their skills and fall, as this one did. Very curiously, their quills have antibiotic properties having a coating of free fatty acids that "strongly inhibited the growth of six grampositive bacterial strains". What this means is that when porcupines fall—a very common experience—they don't suffer from being poked by their own quills:

It is suggested that porcupines benefit from the quill fatty acids: evidence from healed fractures of major skeletal components (35.1% incidence in 37 skeletons examined) suggests that porcupines fall relatively frequently from trees. Quill antibiotics may limit self-injury suffered in such falls.

Uldis R., D.C. Locke & N. Vatakis. 1990. *Antibiotic properties of porcupine quills*. Journal of Chemical Ecology. V. 16, Issue 3, pp 725-734.

The incisors of the dead porcupine give me some clues as to how they work at eating hard tree bark and wood. Only the outer yellow-orange surface has enamel, the inner surface is simply dentin. Similar to the other wood-eating rodent, the beaver, this structure provides them with a constant sharp edge to cut with. The softer dentin wears away faster than the enamel, so a thin edge of hard material is always in front. As the wood eating wears away at the dentin, the harder enamel breaks, providing a constant supply of sharp edges capable of cutting even the hardest of woods. Neither porcupine nor beaver are interested in the dead bark, they must cut through it to expose the soft and nutritious cambium layer.

Family Cricetidae J. Fischer, 1817 hamsters, voles, lemmings, New World rats and mice

Taxonomy: The Cricetidae is often split into smaller families, if so, this vole would be in the Muridae. As this family has been traditionally circumscribed it includes members who make it polyphyletic. Cricetidae is monophyletic and thus the preferred grouping.

Myodes Pallas 1811

my-oh-dees Greek μυοδες *myodes*, name for keyhole mouse

Myodes rutilus (Pallas, 1779) northern red-backed vole, *kagáak*

ROO-tih-lus Classical Latin *rutilus*, red, golden red, reddish yellow

Taxonomy: synonym = *Clethrionomys rutilus* (Pallas, 1779). The genus *Myodes* was named by Pallas in 1811 and typified with *Mus rutilus* by Lataste in 1883 since Pallas did not designate a type. *Myodes* is thus the oldest name for this specific vole.

Wilson, D.E. & D.M. Reeder (editors). 2005. Mammal Species of the World. A Taxonomic and Geographic Reference (3rd ed), Johns Hopkins University Press.

Notes: Since I'm at the front of the line of folks on the trails, I get to see things people behind me don't. This little rodent is abundant and I often see it scurrying across the trail in front of me. It is, by all accounts I find, the most common mammal of the rain forest. With the very short views I get of them, they are much chunkier than deer mice or other small mice that I'm used to seeing. Even when running, their backs are far more arched than deer mice and the legs appear much shorter as well. These are probably adaptations to the boreal environment, reducing their surface area for heat loss.

Family Sciuridae Fischer de Waldheim, 1817 squirrels

Marmota Blumenbach 1779 marmots and woodchucks

mar-MOW-tuh Etymology uncertain; c.1600, from French *marmotte*, alpine rodent

Marmots form a monophyletic genus of 14 or 15 large ground squirrels of the Holarctic (temperate and boreal Eurasia and North America) with five or six species. The three or four western species [with the exception of the Alaska or Brooks Range marmot (*M. broweri*)] form a distinct clade and have been named as subgenus *Petromarmota* Steppan, Akhverdyan, Lyapunova, Fraser, Vorontsov, Hoffmann & Braun 1999. There is some question of whether or not *M. vancouverensis* should be included in our *M. caligata*.

The cyt b data strongly support the monophyly of *Marmota* and a western montane clade in the Nearctic. Although some other scenarios cannot be rejected, the results are consistent with an initial diversification in North America, followed by an invasion and subsequent rapid diversification in the Palearctic.

Steppan, S.J., M.R. Akhverdyan, E.A. Lyapunova, D.G. Fraser, N.N. Vorontsov, R.S. Hoffmann & M.J. Braun. 1999. *Molecular Phylogeny of the Marmots (Rodentia: Sciuridae): Tests of Evolutionary and Biogeographic Hypotheses*. Systematic Biology 48(4):715–734

Marmota caligata (Eschscholtz, 1829) subsp. *caligata*, hoary marmot

Latin kah-LIH-guh-tuh, American cal-ih-GAY-tuh
dark feet

Latin *caligatus*, common soldier; private; wearing army boots; booted; in reference to their

The grayish-white mantle of this marmot gives it the name hoary; *har* coming from an Old English for gray, venerable, or old. It came to be applied to fog that freezes as hoarfrost giving a gray-white look appropriate for this creature.



Taxonomy: Three subspecies have been named with *M. c. caligata* occupying all of our area. *M. c. okanagana* occupies the interior mountains and meets *M. c. caligata* in western British Columbia. *M. c. cascadenis* occupies a much smaller range of the Cascade and Coast mountains from the Columbia River to the Gardner Canal. Curiously, from there to Portland Inlet and east to the Kispox River there are no marmots. My iden-

tification of subspecies is strictly from geography.

Notes: The two places where I've seen marmots the most are very different: the Alpine Loop Trail on Mount Roberts and the north shore roadside on Douglas Island. The only two places I've heard their whistle here is in the Silverbow Basin on the Perseverance Trail and on the Alpine Loop Trail. They are probably the most common animal to be encountered on a drive "out the road" to Echo Cove. I've never seen a marmot on the glacial outwash plain, but as soon as the snow melted the scat from the wolves there is full of hoary marmot hair. The wolves could have captured the marmots elsewhere and simply defecated here leaving the evidence of marmots. On the Douglas Road they are really too tame for their own good and some end up as road kill.

It seems this large rodent can tolerate small amounts of corn lily (*Veratrum viride*) with its highly toxic alkaloids. When the young plants are emerging from the ground, at about 1 dm, many of the top 1 to 2 cm of the shoots are bitten off. I've never seen a marmot do this, but along the Alpine Loop Trail they are the most obvious mammal and I'm concluding they're the ones doing the eating. When the bud elongates to its full height, all of the leaves are cut off almost like a tailor with pinking shears. Had I not seen the nipped buds early in the season, it would take some serious detective work to figure out this. Since all the leaf buds are already formed in the emerging sprout, the bite takes some off every one of them.

Tamiasciurus Trouessart 1880, pine squirrel

Greek "Ταμίας" *tamias*, hoarder + Ancient Greek σκίουρος *skíouros*, squirrel, from σκιά *skiá*, shadow + ούρά *ourá*, tail

A strictly North American genus with three species. A single fossil identified to this genus was found in southeastern China. The three extant species are believed to have separated some 12 million years ago in the Late Pleistocene or early Holocene. There is a very narrow area of hybridization between *T. douglassii* (Douglas tree squirrel or chickaree) and *T. hudsonicus* where their ranges overlap. There is sharp difference in genetic distance away from the contact zone.

Arbogast, B.S., R.A. Browne & P.D. Weigl. 2001. *Evolutionary Genetics And Pleistocene Biogeography Of North American Tree Squirrels* (*Tamiasciurus*). *Journal of Mammalogy*, 82(2):302–319.

Chavez, A.S., C.J. Saltzberg & G.J. Kenagy. 2011. *Genetic and phenotypic variation across a hybrid zone between ecologically divergent tree squirrels* (*Tamiasciurus*). *Molecular Ecology* 20, 3350–3366.

Tamiasciurus hudsonicus (Erxleben, 1777) subsp. *picatus* Swarth, 1921, red squirrel, American red squirrel, *kanals'áak*

hud-SAW-nih-cuss; pih-CAY-tus

Of or pertaining to Hudson Bay. Latin *picātus*, pitchy; presumably from the pitch from the cones it eats





Taxonomy: With an almost complete boreal forest range in North America variations in this squirrel have given rise to 25 lower taxa names. Juneau marks the northernmost range of *T.s. picautus*, a cordilleran subspecies. *T.s. petulans* reaches south to the Lynn Canal and Glacier Bay. I use geography as my criteria for identification. Swarth gives these characters is the description of his new subspecies:

As regards to color, *Sciurus h. picatus* is dark as compared to *petulans* ... The differences are most apparent in winter pelage; in the summer coat the two forms are closely similar in general appearance, differing on in certain minor details. ... In *picatus* the reddish color is generally brighter, there is a fairly well-defined hazel dorsal strip and the center of the tail below is reddish. The black lateral stripe on the body is much more prominent. In all pelages *picatus* has the tip of the tail much less extensively black ...

Swarth, H.S. 1921. *The red squirrel of the Sitkan district, Alaska*. Journal of Mammalogy, 2(2).

His description seems to match my observations pretty well In our area we just may have an overlap of the two.

Notes: “What wildlife are we likely to see?” is a common question as we start our hikes. The answer isn’t easy as folks want to see something exotic or unique to Alaska like a bear or mountain goat. About the only mammal I can count on seeing on every hike is the red squirrel. Since they are so common, so active and so vocal, it’s easy to find them. Most of the time it’s not the squirrel, but what the squirrel left behind.



My favorite interpretive moment with them is when I find Sitka spruce (*Picea sitchensis*) cones that have been stripped by the squirrels. I pick one that hasn’t been stripped and encourage others to do the same, then to pull off the scales of the cone to expose the small twin seeds under each. It is not easy to do. Yet when we are at a midden (bottom right photograph) there are thousands of stripped cones, all done perfectly. I then say if you do most anything a thousand times you become an expert at it and tell them our little red squirrels do this a thousand times a day every day all summer! That’s why they’re so good at it. Plus its their food source for winter (they don’t hibernate but are active in a subnivean world) and the middens make for great insulation that many other animals (notably the red-backed vole) take advantage of as well. Underneath 1 to 2 meters of snow, the large piles of shredded cones probably keep the temperature near the freezing mark, if not slightly above from the heat of the animals, making it a rather comfortable place out of the winds and snow.

These guys probably eat some of the fall mushrooms as many of the abundant Russulas have twin teeth marks that are the size of the squirrel Do they taste peppery to them like humans?

As the bumper crop of Sitka spruce (*Picea sitchensis*) cones ripened in the summer of 2014, the forest floor was littered with the branches stripped of ripe cones. There were so many cones that the squirrels seemed to choose only the ones they very much liked and discarded the rest. Many branches were full of unopened or unripe cones that showed no sign of eating. In 2013, a sparse cone year, finding any nearly ripe spruce cone was a minor miracle as all were devoured. It will be interesting to see if our population increases in the next couple of years from the incredible amount of food available for these hearty eaters this year!

Chart of on-the-water locations

This is a cropping of the National Oceanographic and Atmospheric Administration's Chart 17300, *Stephen's Passage to Cross Sound, Including Lynn Canal*, that covers the northern—and most frequently travelled—bodies of water for my marine wildlife observations.

Gastineau Guiding's water tours leave from Auke Bay and most trips travel through Favorite Channel or Saginaw Channel or both when circumnavigating Shelter Island.

Places to take note of that are repeated in my notes:

Bodies of Water: Amalga Harbor, Auke Bay, Barlow Cove, Favorite Channel, Fritz Cove, Halibut Cove, Hand Trollers Cove, Lena Cove, Lynn Canal, Pearl Harbor, Saginaw Channel, Stephen's Passage, Tee Harbor and Young Bay.

Cuts: Indian Island, Barlow Islands, Coghlan, North Pass.

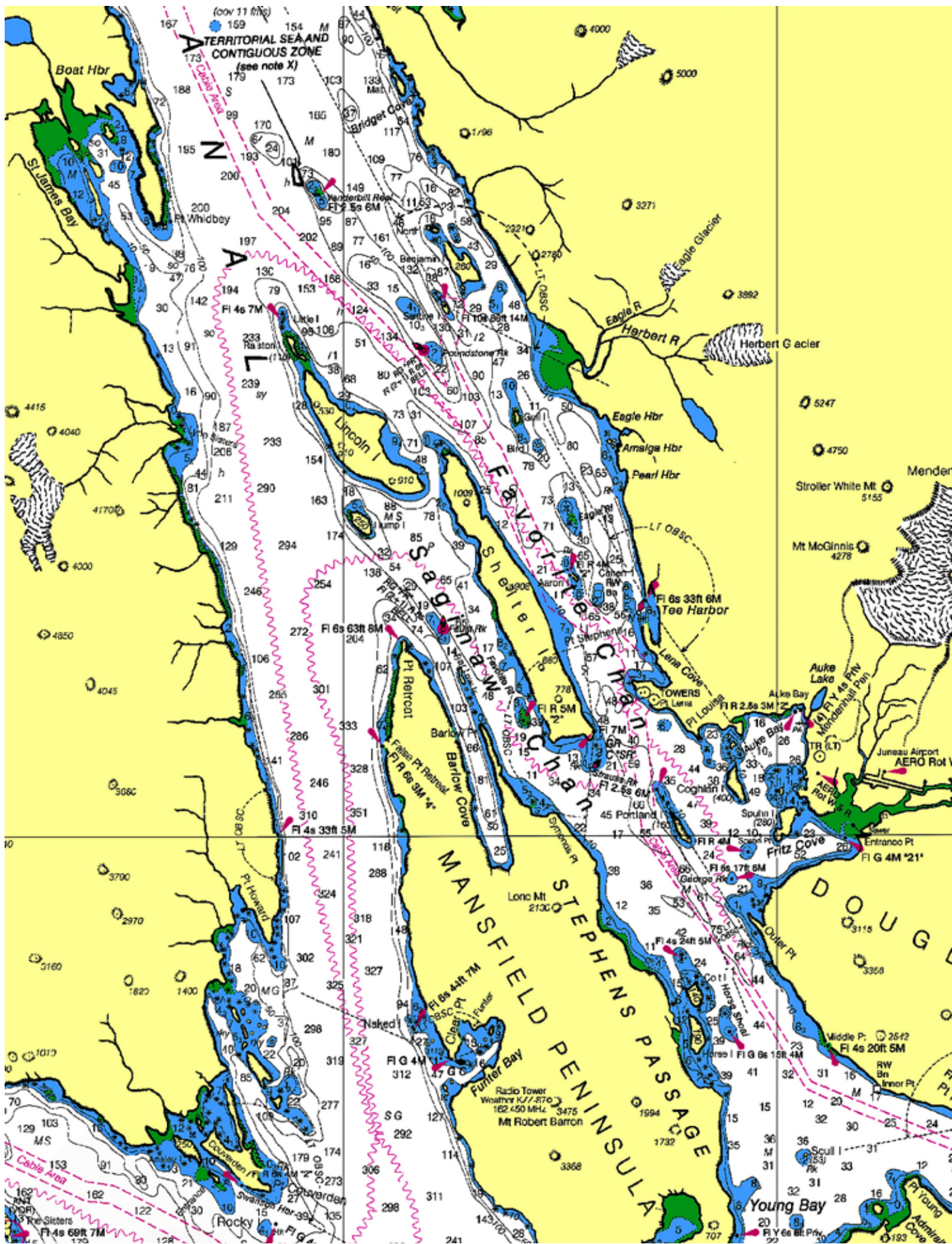
Islands: Aaron, Barlow Islands, Benjamin, Bird, Coghlin, Cohen, Colt, Gull, Horse, Hump, Indian, Lincoln, Little, North, Portland, Ralston, Scull, Sentinel, Shelter and Spuhn.

Reefs & Rocks: Cohen, Eagle, Favorite and Vanderbilt reefs, George & Gibby rocks.

Buoys, & Cans: Coghlin, Strauss Rock and Gibby cans; Faust Rock and Poundstone Rock bell buoys.

Lighthouses: Point Retreat and Sentinel Island

Land Points: Barlow Point, Boy Scout Beach, Eagle Beach, False Outer Point, False Point Retreat, Lena Point, Lynn Sisters, Middle Point, Outer Point, Point Louisa, Point Retreat, Point Young, Sand Spit and Symonds Point.



Index

Symbols

181 219
204, Stamp 220, 240
229 221, 223, 240
237, Dike 222
252 221, 223
266 224
276 199, 205
292 SE ? 225
391, Darwin 240
=413 135
453, Notcho Libre 226, 235
545, Rubberlips 226, 227, 235
547, Cimmerian 228, 250
569, Rake 229
580, Divisidero 230, 240, 250
875 231
924, Crater 232
954, Jesus Fish 233, 235, 241
996, Cornucopia 231, 234, 240
1124 235
1234, Van Bubbles 236, 240, 250
1391 237, 240, 250
1434, Spot 188, 203, 238, 245, 246
1435, Colon 239
1441 231, 233, 240, 250
1443, Dot Spot 235, 241
1447 Calf 2013, Notcho 243
1447, Juneauite 190, 239, 242
1465 244, 250
1478, Scuff 245
1534, Spot 205
1538 Calf 2013, Spark 247
1538, Flame 188, 191, 193, 198, 203, 238,
239, 246
1640, Betsy 248
1703, Bullethole 240, 249
1703, Bullethole 2015 Calf 207
1707 250
1879, Sasha 193, 208, 247, 251
1920, Nibblet 210
2066 239
2070, Barnacles 193, 195, 204
2171 250

A

AB24 Gilmore 269
Acalitus brevitarsus 9
Accipiter striatus 72
Achillea millefolium 13
Actitis macularius 74
Aculops tetanothrix 9
aerial yellowjacket 21
AF4 Inian 259, 272
AF8 Steller 272
AF11 Gambier 272
AF19 Sergius 269

AF23 Squaretop 272
AF26 Tidal 260, 269
AF28 Nunatak 272
AF40 Elfin 272
AF42 Nipper 269
AF47 Lituya 259, 272
AF57 Wavelet 272
AF65 Epuibel 269
AF65 Espuibel 260
AF67 Nevsky 272
AF77 Rienga 272
AF81 Bieli 272
AF85 Sunny 272
AF87 Avaaz 273
AG5 Lavinia 273
AG25 Berg 269
AG42 Chukle 273
AG44 Capacious 273
Aggression, Steller sea lion 133
Aglais milberti 23
Airport Dike Trail 13, 27, 47, 48, 49, 56,
57, 58, 59, 70, 73, 75, 77, 78, 81, 87,
89, 104, 110, 111, 112
Aix sponsa 50
A.J. Falls 23
alder leaf gall mite 9
alder, Sitka 21, 25, 28, 88, 101, 115, 171
Alexander Archipelago mink 125
Alnus alnobetula ssp. sinuata 28
Alnus alnobetula subsp. sinuata 21, 25, 88,
101, 115, 171
Alpine Loop Trail 42, 62, 63, 67, 72, 109,
289
Amalga Harbor 57, 59
American black bear 144
American Dipper 97
American mink 125
American Pipit 104
American red squirrel 289
American Robin 102
American Tree Sparrow 109
American Wigeon 53
Anas acuta 54
Anas acuta × platyrhynchos 54
Anas americana 53
Anas clypeata 54
Anas crecca 55
Anas crecca carolinensis 55
Anas crecca crecca 55
Anas platyrhynchos 53
Anaxyrus boreas boreas 35
anemone, buried 2
anemone, burrowing 2
anemone, burrowing green 2
anemone, Christmas 3
anemone, moon glow 2
anemone, mottled 3
anemone, northern red 3
anemone, painted 3
anglewing butterflies 24

Anoplopoma fimbria 36
Anser albifrons 47
Anthopleura artemisia 2
Anthus rubescens 104
aphid on spruce 17
Aquila chrysaetos 67
Arabis eschscholtziana 27
Arctic Tern 83
Ardea herodias 66
Arenaria melanocephala 75
Ariolimax columbianus 29
AT78 273
AT116 273
AT129 Calkins 273
AT134 269
AT136 269
AT145 273
AT166 273
atxa át 22
Audubon's Warbler 108
Auke Village Recreation Area 278
autonomic nervous system 188
Avaaz, AF87 273
Aythya affinis 56
Aythya collaris 56
Aythya marila 56
Aythya valisineria 55

B

Back Breach 206
Backstroke 193
bald eagle 129
Bald Eagle 67, 83
baldpate 53
banana slug, Pacific 29
Bank Swallow 95
barnacle, humpback 6
barnacle, Pacific whale 6
Barnacles, 2070 193, 195, 204
barnacle, small acorn 5
Barn Swallow 95
Barrel Roll 194
Barrow's Goldeneye 60
bay mussel, northern 28
Bear #1 147, 149
bear, American black 144
bear, brown 173
Bear Chevron 165
bear, Dall black 145
bear, glacier 145
bear, grizzly 173
bear, Haida Gwaii black 145
bear, Kenai black 145
bear, Kodiak 174
Bear Pearl 166
bear, Queen Charlotte black 145
beaver, North American 282
Bedstraw Hawk-Moth 27
beetle, cottonwood leaf 11

- beetle, narrow-collared snail-eating 10
 beetle, skunk cabbage 12
 belly up 193
 Belted Kingfisher 87
 Benjamin Island 131
 Berg, AG25 269
 Bessie Creek Trail 30, 36
 Betsy, 1640 248
 Bieli, AF81 272
 Bishop Point Trail 60, 97, 103
 Black 01 235
 Black-billed Magpie 90
 black cod 36
 black cottonwood 11, 46, 88, 104, 169, 171,
 283, 285, 287
 Black-crowned Night-Heron 67
 Black Oystercatcher 73
 Black Scoter 58
 black-tailed deer, Sitka 118
 Black Turnstone 75
 blueberry 171
 blue mussel, Pacific 28
 Bohemian waxwing 104
 Bombycilla cedrorum 104
 Bombycilla garrulus 104
 Bonaparte's Gull 80
 Boomer 62
 boreal toad 35
 Boschniakia rossica 147, 152, 154, 170
 Boy Scout Beach 8
 Brachyramphus marmoratus 86
 Branded 135
 Branta canadensis 48
 Branta canadensis moffitti 49
 Branta hutchinsii 48
 breach 208–303
 Breaching 184, 206
 Brotherhood Bridge Trail 88, 111, 114
 brown bear 173
 Bubble net feeding 211
 Bucephala albeola 59
 Bucephala clangula 60
 Bucephala islandica 60
 Bufflehead 59
 Bufo boreas 36
 Bullethole, 1703 240, 249
 Bullethole 2015 Calf, 1703 207
 bull kelp 124
 Buoy, Faust Rock 129
 Buoy, Gibby Rock 130
 buoy, Poundstone Rock 130
 Buoy, Poundstone Rock 68, 130
 buried anemone 2
 burrowing anemone 2
 burrowing green anemone 2
 butter-butt 106, 107, 108
 butter clam 29
 butterflyfish 36
 butterfly, green comma 24
 butterfly, margined white 26
 butterfly, Milbert's tortoiseshell 23
 B&W's 253
- ## C
- Cackling Goose 48
 Calidris alpina 77
 Calidris canutus 76
 Calidris himantopus 78
 Calidris mauri 76
 Calidris melanotos 77
 Calidris ptilocnemis 77
 Calidris pusilla 76
 Calkins, AT129 273
 Canada Goose 48
 Canada goose, Moffitt's 49
 Canada Goose, Western 49
 Canis lupus 119
 Canvasback 55
 Capacious, AG44 273
 Cardellina pusilla 109
 Carduelis flammea 114
 Carduelis pinus 115
 Carex lyngbyei 166, 174
 Caspian Tern 82
 Castor canadensis 282
 caterpillar, Unalaska paintbrush 26
 Catharus guttatus 101
 Catharus ustulatus 101
 Cedar Waxwing 104
 Cepphus columba 85
 ch'áak' 67
 cháas' 42
 cháatl 37
 cháax 64
 Chamerion latifolium 27
 Charadrius semipalmatus 73
 Charadrius vociferus 73
 cheech 278
 ch'èet 86
 Chen caerulescens 48
 Chestnut-backed Chickadee 95
 Chevron 165
 Chickadee, Chestnut-backed 95
 chinook salmon 41
 Chin Slapping 204
 Christmas anemone 3
 Chroicocephalus philadelphia 80
 Chrysomela scripta 11
 Chthamalus dalli 5, 32
 Chukle, AG42 273
 chum salmon 41, 70
 Cimmerian, 547 227, 228
 Cinara 17
 Cinclus mexicanus 97
 Circus cyaneus 71
 clam, butter 29
 clam, Washington 29
 Clangula hyemalis 58
 Clethrionomys rutilus 288
- ## D
- cod, black 36
 coho salmon 40, 70, 153
 Colaptes auratus 89
 Colon, 1435 239
 Columba livia 87
 comma, green 24
 Common Eider 57
 Common Goldeneye 60
 Common Loon 63
 Common Merganser 61
 Common Murre 84
 Common Raven 83, 84, 92
 Common Redpoll 114
 common yarrow 13
 Common Yellowthroat 106
 Cormorant, Double-crested 65
 Cormorant, Pelagic 65
 corn lily 289
 Cornucopia, 996 231, 234, 240
 Cornus 171
 Coronula diadema 6
 Coronula reginae 6
 Corvus caurinus 91
 Corvus corax 92
 cottonwood 68
 cottonwood, black 11, 46, 88, 104, 169,
 171, 283, 285, 287
 cottonwood leaf beetle 11
 cow parsnip 171
 crab, Dungeness 7
 crab, golden king 8
 crab, golden stone 8
 cranberry, highbush 171
 Crater, 924 232
 Crossbill, Red 114
 Crossbill, White-winged 114
 Crow, Northwestern 91
 Cruising 186
 Culiseta alaskaensis 15
 Curious George 238
 cutthroat, sea run 39
 cutthroat trout 39
 Cyanocitta stelleri 90
 Cygnus buccinator 49

Devil's club 171
Dike, 237 222
dike approach trail 51, 66, 96, 102, 103,
283
Dike Trail, Airport 47, 48, 49, 56, 57, 58,
59, 70, 73, 75, 77, 78, 81, 89, 104,
110, 112
Dipper, American 97
Dipper Bridge 11, 41, 98, 125, 150, 151,
152
Divisidero, 580 230, 240, 250
dog salmon 41
dogwood, dwarf 171
Dolichousnea longissima 102
Dolichovespula arenaria 21
Dolly Varden 45
Dorsal side tail slaps 199
Dot Spot, 1443 235
Double-crested Cormorant 65
double-ugly 37
Douglas Island 41, 42, 63, 64, 118, 289
Dowitcher, Long-billed 79
Dowitcher, Short-billed 78
Dredge Lakes 87
Dryopteris expansa 16
Duck, Long-tailed 58
Duck, Wood 50
Dungeness crab 7
Dunlin 77
dúsh 36
dwarf dogwood 171

E

Eagle, Bald 67, 83
Eagle Beach 8, 48, 49, 55, 58, 64, 91, 110,
292
Eagle Beach State Recreation Area 26, 88
Eagle Glacier 129
Eagle, Golden 67
Eagle Reef 76, 140, 198, 202, 228, 229, 230
Eagle River 8, 130
East Glacier Trail 16, 19, 88, 90, 96, 100,
101, 103, 108, 109, 117, 150, 152,
158, 174
Eating, Steller sea lion 127
Echo Cove 43
edible mussel 28
Egan Drive 53, 55, 67
egg-yolk jellyfish 4
Eider, Common 57
Elfin, AF40 272
Empidonax difficilis 89
Endangered Species Act of 1973 179
Endicott Arm 139, 259
Enhydra lutris kenyoni 121
Epuibel, AF65 269
Eremophila alpestris 94
Erethizon dorsatum 284
erineum 9

Eschscholtz's hairy rockcress 27
Espuibel, AF65 260
eukaryotes 2
Eumetopias jubatus 126
Eurasian Green-winged Teal 55
European Starling 103
Euura atra 20
Evasterias troschelii 31
EZ Path 155

F

Falcon, Peregrine 72
Falco peregrinus 72
false killer whale 279
false ochre sea star 31
False Outer Point 2, 76, 118
Faust Rock 66, 122, 129, 131, 135, 225,
250, 292
Faust Rock Buoy 68, 129
Favorite Channel 58, 130, 132, 134, 190,
197, 198, 202, 208, 227, 228, 240,
261, 267, 277, 292
Favorite Reef 140
felt leaf willow 25
fire-rim tortoiseshell 23
Fish Creek 36
Flame, 1538 188, 191, 193, 198, 203, 238,
239, 246
Flicker, Northern 89
flippering 195
flipper slap 195
fluke slap 198
Flycatcher, Great Crested 90
Flycatcher, Pacific-slope 89
foolish mussel 28
fortress of the bear 174
Fox Sparrow 110
frass 28
Free Willy 277
fried-egg jellyfish 4
Friendly Fred 227
Fucus gardneri 141

G

G45 270
gaat 43
Gallinago delicata 79
Gallium sphinx 27
gall midge, willow-rose 14
gall mite, alder leaf 9
gall mite of willow 9
gall sawfly, willow stem 20
gall, willow bud 21
gall, willow leaf bean 20
gall, willow petiole 21
gall, willow pouch 9
gall, Willow pouch 10
gall, yarrow flower 13
Gambier, AF11 272

gandaadagóogu 88
Gavia immer 63
Gavia stellata 63
Georg Steller 138
Geothlypis petechia 106
Geothlypis trichas 106
Geum calthifolium 16
Gibby Rock Buoy 130
Gilmore, AB24 269
glacier bear 145
Glacier Spur Road 147, 155
Glaucous-winged Gull 82
Goat Hill 170
Gold Creek 107
Golden-crowned Kinglet 100
Golden-crowned Sparrow 112
Golden Eagle 67
Goldeneye, Barrow's 60
Goldeneye, Common 60
golden king crab 8
golden stone crab 8
gooch 119
Goose, Cackling 48
Goose, Greater White-fronted 47
goose, Moffitt's Canada 49
Goose, Snow 48
Goose, Western Canada 49
grass-of-Parnassus, Kotzebue's 19
gray wolf 119
Great Blue Heron 66
Great Crested Flycatcher 90
Greater Scaup 56
Greater White-fronted Goose 47
Greater Yellowlegs 75
Grebe, Horned 64
Grebe, Red-necked 64
green comma 24
green sea urchin 34
Green-winged Teal 55
grizzly bear 173
ground cone 147, 152, 154
Ground cone 170
Grouse, Sooty 62
Guillemot, Pigeon 85
gúkl 49
Gull, Bonaparte's 80
Gull, Glaucous-winged 82
Gull, Herring 81
Gull, Lesser Black-Backed 81
Gull, Mew 80
gus'yé kindachooneidí 87
guwakaan 118

H

H80 135
Haematopus bachmani 73
Haida Gwaii black bear 145
Hairy Woodpecker 89
half fluke 192

Haliaeetus leucocephalus 67, 129
Halibut Cove 200, 228, 292
halibut, Pacific 37
Handrollers Cove 222, 231, 250
harbor porpoise 278
harbor seal 138
hare, snowshoe 281
hare, varying 281
Harlequin Duck 57
Harrier, Northern 71
Hawk-Moth, Bedstraw 27
Hawk, Sharp-shinned 72
head lunge 204
head rise 196, 264
Headstand 197
hemlock, mountain 63
hemlock, western 90
Heracleum lanatum 171
Herbert Glacier 130
Hermit Thrush 101
Heron, Great Blue 66
Herring Gull 81
heterotrophic 2
highbush cranberry 171
high tail dives 191
hintakx'wás'gi 59
hinyik gáaxu 60
hinyik'leixí 97
Hippoglossus stenolepis 37
Hirundo rustica 95
Histrionicus histrionicus 57
hoary marmot 288
Hooded Merganser 60
horned dandelion 23, 170
Horned Grebe 64
Horned Lark 94
Hummingbird, Rufous 87
humpback 42
humpback barnacle 6
humpbacked salmon 42
humpback whale 175
Humpback Whales of Southeastern Alaska
218
humpie 42
Hump Island 141
Hydroprogne caspia 82
Hyles gallii 27

I

Inian, AF4 259, 272
inside out jellyfish 5
International Whaling Commission 178
inverted posture 193
island mink 125
I walk the Airport Dike Trail. 111
Ixoreus naevius 102

J

jánwu 116

Jay, Steller's 90
jellyfish, egg-yolk 4
jellyfish, fried-egg 4
jellyfish, inside out 5
Jesus Fish, 954 233, 241
jökulhlaup 84
Junco, Dark-eyed 112
Junco hyemalis 112
Junco hyemalis hyemalis 113
Junco hyemalis oregonus 113
Junco, Oregon 113
Junco, Slate-colored 113
Juneau Humpback Whale Catalog 182
Juneauite, 1447 190, 239, 242

K

kaatoowú 95
kaax 61
kagáak 288
kals'áak 289
kanals'áak 289
Kaxdigoowu Héen Dei 88, 97, 111, 114
kéel 86
kéet 253
kéidladi 80
k'eik' 83
Keiko 277
k'eik'w 83, 85
kelp forest 122, 123, 124
Kenai black bear 145
keta 41
kichyaat 83
Killdeer 73
killer whale 253
killer whale, false 279
kindachoonait 53
king crab, golden 8
Kingfisher, Belted 87
Kingleet, Golden-crowned 100
Kingleet, Ruby-crowned 100
king salmon 41
Kodiak bear 174
Kóon Hít 88
kóoshdaa 120
kóoshdaa káa 120
koot'éit'aa 80
Kotzebue's grass-of-Parnassus 19
KW's 253

L

Lagopus lagopus 62
Lagopus leucura 62
lakéech'wú 57, 58
Lark, Horned 94
Larus argentatus 81
Larus canus 80
Larus fuscus 81
Larus glaucescens 82
Larus philadelphia 80

lateral fluke display 192
Lavinia, AG5 273
lax' 66
leaf bean gall, willow 20
leaf beetle, cottonwood 11
leaf gall mite, alder 9
Leptocottus armatus 37
Lepus americanus 281
Lesser Black-Backed Gull 81
Lesser Scaup 56
Lesser Yellowlegs 75
lily, corn 289
Limnodromus griseus 78
Limnodromus scolopaceus 79
Lincoln Island 120
Lincoln's Sparrow 112
Lithodes aequispinus 8
little guys 253
Little Island 122, 125, 132, 133–303
Lituya, AF47 259, 272
lob tail 198
lobtailing 265
Logging 187
Long-billed Dowitcher 79
Long-tailed Duck 58
Lontra canadensis mira 120
look 40
Loon, Common 63
Loon, Red-throated 63
Lophocampa maculata 25
Lophodytes cucullatus 60
Loxia curvirostra 114
Loxia leucoptera 114
lugan 73
lukshiyáan 125
Lumpy 227
lunge, head 204
Lupinus nootkatensis 12
Lyngby's sedge 166, 174
Lynn Sisters 233, 235, 241, 292
Lysichiton americanus 170, 171

M

Magpie, Black-billed 90
Mallard 53
Marbled Murrelet 86
marginated white 26
Marine Mammal Protection Act of 1972
178
Marine Mammal Viewing Guidelines and
Regulations 179
Marmota caligata 288
marmot, hoary 288
Meadow Bridge 41, 153, 165
Megaceryle alcyon 87
Megaptera novaeangliae 175
Melanchra pulverulenta 26
Melanitta fusca 58
Melanitta nigra 58

Melanitta perspicillata 57
Melospiza lincolnii 112
Melospiza melodia 110
Melospiza melodia merrilli 111
Melospiza melodia montana 111
Melospiza melodia montana/merrilli group 111
Melospiza melodia rufina 111
Mendenhall Glacier Visitor Center 54, 57, 66, 68, 83, 95
Mendenhall Lake 46, 82, 83, 87, 105, 116, 119
Mendenhall River 46, 70, 83, 104
Mendenhall Valley 91
Merganser, Common 61
Merganser, Hooded 60
Merganser, Red-breasted 61
Mergus merganser 61
Mergus serrator 61
Metacarcinus magister 7
Mew Gull 80
midge, willow-rose gall 14
Milbert's tortoiseshell 23
Milky Way 235
mink, Alexander Archipelago 125
mink, American 125
mink, island 125
mite, alder leaf gall 9
mite of willow, gall 9
Moffitt's Canada goose 49
Molting, Steller sea lion 134
money shell 29
montana/merrilli group 111
moonglow anemone 2
Moraine Ecology Trail 10, 15, 16, 18, 21, 28, 46, 57, 61, 74, 82, 100, 103, 104, 105, 106, 107, 109, 113, 125, 283
morning sunstar 33
mosquito, snow 15
Moth, Bedstraw Hawk- 27
moth, spear-marked black 22
moth, spotted tussock 25
moth, white-banded black 23
mottled anemone 3
mottled star 31
Mountain Bluebird 101
mountain goat 116
mountain hemlock 63
Mount Bullard 117
Mount Juneau 117
Mount Roberts 62, 63, 72, 109, 110, 117, 289
Murre, Common 84
Murrelet, Marbled 86
mussel, edible 28
mussel, foolish 28
mussel, northern bay 28
mussel, Pacific blue 28
Myiarchus crinitus 90
Myodes rutilus 288

Myrtle Warbler 107
Mytilus trossulus 28, 32
N
Naa Tláa 147, 148, 149
narrow-collared snail-eating beetle 10
néés' 34
Neovison 122
Neovison vison nesolestes 125
Nereocystis luetkeana 124
nettle, stinging 24
Nevsky, AF67 272
Nibblet, 1920 210
Nicky 148
Nicky's Notch 155, 167
Night-Heron, Black-crowned 67
Nipper, AF42 269
Nootka lupine 12
North American beaver 282
North American river otter 120
northern bay mussel 28
Northern Flicker 89
Northern Harrier 71
Northern Pintail 54
northern red anemone 3
northern red-backed vole 288
northern river otter 120
northern sea otter 121
Northern Shoveler 54
northern sunstar 33
Northern Waterthrush 105
North Pacific Resident 258
North Pacific Transient 255
North Pass 122, 123, 188, 202, 203, 204, 205, 207, 219, 225, 238, 239, 240, 245, 292
Northwestern Crow 91
Notcho, 1447 Calf 2013 243
Notcho Libre, 453 226
Nugget Falls 117
Nugget Falls Trail 13, 24, 73, 119
nukshiyáan 125
núkt 62
Nunatak, AF28 272
Nuthatch, Red-breasted 96
Nycticorax nycticorax 67

O
Odocoileus hemionus sitkensis 118
old man's beard 102
Oldsquaw 58
Oncorhynchus clarkii 39
Oncorhynchus gorbuscha 42
Oncorhynchus keta 41
Oncorhynchus kisutch 40, 153
Oncorhynchus nerka 43, 148, 152
Oncorhynchus tshawytscha 41
Oplopanax horridus 17, 171
Oplopanax horridus 171

Opp-20140531-001 200
Orange-crowned Warbler 105
orca 253
Orcinus glacialis 256
Orcinus nanus 256
Orcinus orca 229, 253
Oreamnos americanus 116
Oregon Junco 113
oreos 253
Oreothlypis celata 105
otter, North American river 120
otter, northern river 120
otter, northern sea 121
Outer Point 2, 57
Outer Point Trail 23
Out-the Road 170
outwash plain 289
Oystercatcher, Black 73
Ozirhincus millefolii 13

P
Pacific banana slug 29
Pacific blue mussel 28
Pacific halibut 37
Pacific-slope Flycatcher 89
Pacific staghorn sculpin 37
Pacific whale barnacle 6
Pacific Wren 97
painted anemone 3
paper wasp 21
Paradoxical sleep 188
Paris Falls 99
Parkesia noveboracensis 105
Parnassia kotzebuei 19
Passerculus sandwichensis 109
Passerella iliaca 110
Pavilion 150
Pearl 166
Pectoral Sandpiper 77
Pectoral Slapping 183
Pectoral slaps 195
pectoral wave 195
Peduncle Throw 202
Pelagic Cormorant 65
Pelecymnium testaceum 12
Peregrine Falcon 72
Perseverance Basin 107
Perseverance Trail 21, 62, 286, 289
Petasites frigidus 22
Phacellophora camtschatica 4
Phalacrocorax auritus 65
Phalacrocorax pelagicus 65
Phalarope, Red-necked 79
Phalaropus lobatus 79
Phoca vitulina richardii 138
Phocoena phocoena vomerina 278
Phocoenoides dalli 279
Photo Point 83
Photo Point Trail 171

Pica hudsonia 90
Picea sitchensis 18, 88, 90, 96, 150, 286,
 287, 290, 291
Picoides villosus 89
Pieris marginalis 26
 Pigeon Guillemot 85
 Pigeon, Rock 87
 Pine Siskin 115
Pinguicula vulgaris 16
 pink salmon 42
 pintail-mallard hybrid 54
 Pintail, Northern 54
 Pipit, American 104
 Pirouette Breach 207
Pisaster ochraceus 32
 Plover, Semipalmated 73
Podiceps auritus 64
Podiceps grisegena 64
Poecile rufescens 95
 Point Retreat 129
 Poisson 242
Polygonia faunus 24
Pontania proxima 20
 poor man's puffin 57
Populus trichocarpa 11, 46, 68, 88, 104,
 169, 171, 283, 285, 287
 porcupine 284
 porpoise, Dall's 279
 porpoise, harbor 278
 Portland Island 231
Porzana carolina 73
 Poundstone Rock buoy 130
 Poundstone Rock Buoy 68, 130
 Ptarmigan, White-tailed 62
 Ptarmigan, Willow 62
Puffinus griseus 65
 purple sea urchin 34
 purple sunstar 33
Pycnopodia helianthoides 30

Q

Queen Charlotte black bear 145

R

Rabdophaga rosaria 15
Rabdophaga strobiloides 14, 17
 Rainforest Trail 49, 57, 64, 88, 101, 110,
 284
 Rake, 569 229
 Ralston Island 125
 Raven, Common 83, 84, 92
 rear body throw 202
 red admiral 24
 red anemone, northern 3
 red-backed vole, northern 288
 Red-breasted Merganser 61
 Red-breasted Nuthatch 96
 Red-breasted Sapsucker 88
 Red Crossbill 114

redgall sawfly, willow 20
 Red Knot 76
 Red-necked Grebe 64
 Red-necked Phalarope 79
 Redpoll, Common 114
 red squirrel 289
 red squirrel, American 289
 Red-throated Loon 63
Regulus calendula 100
Regulus satrapa 100
 REM 188
Rheumaptera hastata 22
Rheumaptera subhastata 23
 Rienga, AF77 272
 Ring-necked Duck 56
Riparia riparia 95
 river otter, North American 120
 river otter, northern 120
 Robin, American 102
 rockcress, Eschscholtz's hairy 27
 Rock Pigeon 87
 Rock Sandpiper 77
 rockweed 118, 141
 roll 194
 Rubberlips, 545 226, 227, 235
Rubus parviflorus 171
Rubus spectabilis 171
 Ruby-crowned Kinglet 100
 Rufous Hummingbird 87

S

s'áaw 7
 sablefish 36
 Saginaw Channel 57, 68, 84, 122, 129, 181,
 200, 219, 220, 228, 240, 245, 252,
 275, 280, 292
Salix alaxensis 25
Salix barclayi 10, 17
Salix sitchensis 10, 28
 salmonberry 171
 salmon, chinook 41
 salmon, chum 41, 70
 salmon, coho 40, 70, 153
 Salmon Creek 68
 salmon, dog 41
 salmon, humpbacked 42
 salmon, king 41
 salmon, pink 42
 salmon, silver 40
 salmon, sockeye 43, 70, 148, 152
 Salmon Stop 40, 150, 164, 169
 Sandpiper, Pectoral 77
 Sandpiper, Rock 77
 Sandpiper, Semipalmated 76
 Sandpiper, Spotted 74
 Sandpiper, Stilt 78
 Sandpiper, Western 76
 Sand Spit 220, 223, 251, 252, 292
Sanguisorba canadensis 22
 Sapsucker, Red-breasted 88
 Sasha, 1879 193, 208, 247, 251
 Savannah Sparrow 109
 sawfly 18
 sawfly, willow redgall 20
 sawfly, willow stem gall 20
s'áx 30, 31
Saxidomus gigantea 29
Scambus vesicarius 18
Scaphinotus angusticollis 10
 Scaup, Greater 56
 Scaup, Lesser 56
 Scoter 29
 Scoter, Surf 57
 Scoter, White-winged 58
 Scratching, Steller sea lion 134
 Scuff, 1478 245
 sculpin, Pacific staghorn 37
 seal, harbor 138
 sea lion, Steller's 126
 sea otter, northern 121
 sea run cutthroat 39
 sea star, false ochre 31
 seastar, sunflower 30
 sea urchin, green 34
 sea urchin, purple 34
 sedge, Lyngby's 174
s'èek 144
Seiurus noveboracensis 105
Selasphorus rufus 87
 Semipalmated Plover 73
 Semipalmated Sandpiper 76
 Sentinel Island Lighthouse 130
 Sergius, AF19 269
Setophaga coronata 106, 107
Setophaga coronata auduboni 108
Setophaga townsendi 108
 Sharp-shinned Hawk 72
shaxdákw 10
 Shearwater, Sooty 65
 Sheep Creek 41, 107
 Shelter Island 59
shoox' 102
 Short-billed Dowitcher 78
 Shoveler, Northern 54
Sialia currucoides 101
 Side Fluke 192
 Sideways tail slaps 200
s'igeidí 282
 Silverbow Basin 72, 289
 silver salmon 40
 Siskin, Pine 115
 Sitka alder 21, 25, 28, 88, 101, 115, 171
 Sitka black-tailed deer 118
 Sitka spruce 18, 88, 90, 96, 150, 286, 287,
 290, 291
 Sitka willow 28
Sitta canadensis 96
 skim dives 191
 skunk cabbage 170, 171

- skunk cabbage beetle 12
slap, fluke 198
Slapping, Chin 204
slaps, Pectoral 195
Slate-colored Junco 113
sleeping 187
Sleeping, Steller sea lion 133
sleep, Paradoxical 188
sleep, Unihemispheric slow-wave 188
slender-rayed star 31
slug, Pacific banana 29
slug, Unidentified 30
small acorn barnacle 5
smooth sunstar 33
Smudge 246
snail-eating beetle, narrow-collared 10
Snipe, Wilson's 79
Snow Goose 48
snow mosquito 15
snowshoe hare 281
sockeye salmon 43, 70, 148, 152
Solaster dawsoni 33
Solaster endeca 33
Solidago canadensis 17
Somateria mollissima 57
Song Sparrow 110
song sparrow, sooty 111
s'ook 5, 6
Sooty Grouse 62
Sooty Shearwater 65
sooty song sparrow 111
Sora 73
South Shelter 228, 239, 240, 241
Spark, 1538 Calf 2013 247
Sparrow, American Tree 109
Sparrow, Fox 110
Sparrow, Golden-crowned 112
Sparrow, Lincoln's 112
Sparrow, Savannah 109
Sparrow, Song 110
sparrow, sooty song 111
spear-marked black moth 22
sphinx, Gallium 27
Sphyrapicus ruber 88
Spizella arborea 109
Spot, 1434 188, 203, 238, 246
Spot, 1534 205
Spotted Sandpiper 74
spotted tussock moth 25
Spouting 186
spruce, aphid on 17
spruce, Sitka 18, 90, 96, 286, 287, 290
Spyhop 196
Spy Hopping 183
Squaretop, AF23 272
squirrel, American red 289
squirrel, red 289
staghorn sculpin, Pacific 37
Stamp, 204 220, 240
star, false ochre sea 31
Starling, European 103
star, mottled 31
star, slender-rayed 31
star, Troschell's true 31
Statter Harbor 68, 120
Steep Creek 11, 17, 19, 39, 40, 41, 44, 46, 51, 54, 61, 66, 70, 87, 96, 98, 102, 104, 106, 148, 150, 151, 152, 153, 165, 283, 285
Steep Creek Trail 165, 169
Steller, AF8 272
Steller sea lion 122, 127, 128, 131, 134, 135, 137, 138, 197, 279
Steller Sea Lion 131
Steller's Jay 90
Steller's sea lion 126
Stephen's Passage 259
Stephens Passage 56, 58, 130, 132, 184, 195, 197, 206, 210, 220, 259
Sterna paradisaea 83
Stilt Sandpiper 78
stinging nettle 24
stone crab, golden 8
Strongylocentrotus droebachiensis 34
Strongylocentrotus purpuratus 34
Sturnus vulgaris 103
sunflower seastar 30
Sunny, AF85 272
sunstar, morning 33
sunstar, northern 33
sunstar, purple 33
sunstar, smooth 33
Surf Scoter 57
s'ús' 57
Swainson's Thrush 101
Swallow, Bank 95
Swallow, Barn 95
Swallow, Tree 94
Swallow, Violet-green 94
Swan, Trumpeter 49
Sweetheart Creek 174
Symonds Point 275
- T**
- T034A 273
T035A 273
T038A 273
T054 270
T072 270
T074 270
T103 The Big Guy 262, 266, 270, 275
t'a 41
taakw aanási 2
taan 126
t'aawák 48
táax'aa 15
Tachycineta bicolor 94
Tachycineta thalassina 94
tag 147
Tail Extension 197
tail lobes 198
Tail Slapping 198
tail slaps, Dorsal side 199
tail slaps, Sideways 200
tail slaps, Ventral side 198
tail throw 202
Tamiasciurus hudsonicus picatus 289
Taraxacum ceratophorum 23, 170
tawéi 116
tayataayí 2
Teal, Green-winged 55
téel' 41
Tern, Arctic 83
Tern, Caspian 82
The Big Guy, T103 262, 266, 270, 275
The Meadow 150
Thermal Regulation, Steller sea lion 128
thimbleberry 171
Thrush, Hermit 101
Thrush, Swainson's 101
Thrush, Varied 102
Thunder Mountain 117, 169
Tidal, AF26 260, 269
Tillicum 277
tlaxaneis 87
Tlingít: xóots 173
Tlingít 118, 211
Tlingít: atxa át 22
Tlingít: ch'áak 67
Tlingít: ch'áak' 67
Tlingít: cháatl 37
Tlingít: cheech 278
Tlingít: dagitgiyáa 87
Tlingít: dúsh 36
Tlingít: gaat 43
Tlingít: gooch 119
Tlingít: gus'yé kindachooneidí 87
Tlingít: guwakaan 118
Tlingít: hintakx'wás'gi 59
Tlingít: hinyik gáaxu 60
Tlingít: hinyikl'eixí 97
Tlingít: jánwu 116
Tlingít: kaatoowú 95
Tlingít: kaax 61
Tlingít: kagáak 288
Tlingít: kanals'áak 289
Tlingít: kéel 86
Tlingít: kéet 253
Tlingít: kéidladi 80
Tlingít: k'eik'w 83
Tlingít: kichyaat 83
Tlingít: Kóon Hít 88
Tlingít: kóoshdaa 120
Tlingít: kootl'eit'aa 80
Tlingít: l'ax' 66
Tlingít: look 40
Tlingít: lukan 73
Tlingít: lukshiyáan 125
Tlingít: nées' 34

- Tlingít: nukshiyáan 125
 Tlingít: s'áaw 7
 Tlingít: s'áx 30, 31
 Tlingít: s'eeek 144
 Tlingít: shaxdákw 10
 Tlingít: shoox' 102
 Tlingít: s'igeidí 282
 Tlingít: s'ook 6
 Tlingít: t'á 41
 Tlingít: taakw aanási 2
 Tlingít: taan 126
 Tlingít: t'aawák 48
 Tlingít: táax'aa 15
 Tlingít: tawéi 116
 Tlingít: tayataayi 2
 Tlingít: téel 41
 Tlingít: téel' 41
 Tlingít: tlaxaneis 87
 Tlingít: t'lúk'x 22, 24, 25, 26, 27, 28
 Tlingít: tsaa 138
 Tlingít: tsàh 138
 Tlingít: ts'axweil 91
 Tlingít: ts'eegeení 90
 Tlingít: wéix 37
 Tlingít: woolnák 97
 Tlingít: wooshkák 97
 Tlingít: xalak'ách' 284
 Tlingít: x'al'daayééji 74
 Tlingít: xéet 29
 Tlingít: x'éis'awáa 62
 Tlingít: x'éishx'w 90
 Tlingít: x'éitaa 39
 Tlingít: xíxch' 35
 Tlingít: xóots 173
 Tlingít: x'wáat' 45
 Tlingít: yaa.aanuné 58
 Tlingít: yaak 28
 Tlingít: yáay 175
 Tlingít: yagootl 118
 Tlingít: yáxwch' 121
 Tlingít: yéil 92
 Tlingít: yook 65
 Tlingít: yúxch' 121
 Tlingít: ý'waash 34
 Tlinhít: chéet 86
 Tlinhít: k'èik'w 85
 t'lúk'x 22, 24, 25, 26, 27, 28
 toad, boreal 35
 toad, Western 35
 tortoiseshell, fire-rim 23
 tortoiseshell, Milbert's 23
 Townsend's Warbler 108
 Tracy Arm 259
 Trail of Time 28, 98, 102, 103, 104, 147,
 148, 151, 170, 283, 286
 Treadwell Ditch Trail 99
 Tree Sparrow, American 109
 Tree Swallow 94
 Trichordestra legitima 26
 Tringa flavipes 75
 Tringa melanoleuca 75
 Troglodytes pacificus 97
 Troschell's true star 31
 trout, cutthroat 39
 Trumpeter Swan 49
 tsaa 138
 tsàh 138
 ts'axweil 91
 ts'eegeení 90
 Tsuga heterophylla 88, 90
 Tsuga mertensiana 63
 Turdus migratorius 102
 Turnstone, Black 75
 tussock moth, spotted 25
 Twisting back breach 207
- U**
- UAF-20130812-962 245
 UASE_ID_7825_Temp 182
 Unalaska paintbrush caterpillar 26
 Unidentified slugs 30
 Unihemispheric slow-wave sleep 188
 upper bridge 28
 Upper Steep Creek Bridge 89
 urchin, green sea 34
 urchin, purple sea 34
 Uria aalge 84
 Ursus americanus 144
 Ursus americanus americanus 145
 Ursus americanus carlottae 145
 Ursus americanus emmonsii 145
 Ursus arctos horribilis 173, 174
 Ursus arctos middendorffi 174
 Ursus arctos sitkensis 174
 Ursus arctos stikeensis 174
 Urtica dioica 24
 Urticina crassicornis 3
- V**
- Vaccinium 171
 Van Bubbles, 1234 236, 240, 250
 Vanessa atalanta 24
 Varied Thrush 102
 varying hare 281
 Ventral side tail slaps 198
 Veratrum viride 289
 Viburnum edule 171
 Violet-green Swallow 94
 vole, northern red-backed 288
- W**
- W58 135
 Warbler, Audubon's 108
 Warbler, Myrtle 107
 Warbler, Orange-crowned 105
 Warbler, Townsend's 108
 Warbler, Wilson's 109
 Warbler, Yellow 106
 Warbler, Yellow-rumped 106
 Washington clam 29
 wasp, paper 21
 water ouzel 97
 Waterthrush, Northern 105
 Wavelet, AF57 272
 wave, pectoral 195
 waxwing, Bohemian 104
 Waxwing, Cedar 104
 Waydelich Creek 120
 wéix 37
 Western Canada Goose 49
 western hemlock 88, 90
 Western Sandpiper 76
 Western toad 35
 West Glacier Trail 63, 87, 88, 97, 105, 112,
 117, 286
 Whale 2264 182
 Whale UASE_ID_7825_Temp 182
 white-banded black moth 23
 White-crowned Sparrow 112
 White-tailed Ptarmigan 62
 White-winged Crossbill 114
 White-winged Scoter 58
 Wigeon, American 53
 willow bud gall 21
 willow, felt leaf 25
 willow gall mite 9
 willow leaf bean gall 20
 willow petiole gall 21
 willow pouch gall 9
 Willow pouch gall 10
 Willow Ptarmigan 62
 willow redgall sawfly 20
 willow-rose gall midge 14
 willow, Sitka 28
 willow stem gall sawfly 20
 Wilsonia pusilla 109
 Wilson's Snipe 79
 Wilson's Warbler 109
 wolf, gray 119
 Wood Duck 50
 Woodpecker, Hairy 89
 woolnák 97
 woolnák wooshkák 97
 wooshkák 97
 Wren, Pacific 97
- X**
- xalak'ách' 284
 x'al'daayééji 74
 xéet' 29
 x'éis'awáa 62
 x'éishx'w 90
 x'éitaa 39
 xíxch' 35
 xóots 173
 xÓots 173
 xóotsnoowú 174
 x'wáat' 45

Y

yaa.aanuné 58
yaak 28
yáay 175
yagootl 118
yarrow, common 13
yarrow flower gall 13
yáxwch' 121
yéil 92
yellowjacket, aerial 21
Yellowlegs, Greater 75
Yellowlegs, Lesser 75
Yellow-rumped Warbler 106
Yellowthroat, Common 106
Yellow Warbler 106
Young Bay 228, 230, 241, 292
yúxch 121
yúxch' 121
ý'waash 34

Z

Zonotrichia atricapilla 112
Zonotrichia leucophrys 112

