

OREGON PLANTS, OREGON PLACES
**Botanizing The Southern Oregon Coast
(Coos Bay To Port Orford)**

By BRUCE RITTENHOUSE

The scenery along Highway 101 between Coos Bay and Port Orford, Oregon does not reflect an area that has a high diversity of plant species. When one gets off the main routes, however, and explores the vegetation, many plant communities can be found, ranging from coastal beaches and sand dunes (coastal strand), prairies, fresh- and salt-water wetlands, and mixed coniferous forests, resulting in a high diversity of plant species. The south coast is at the confluence of two floristic zones, the Pacific Northwest Floristic Province to the north and the California Floristic Province to the south. Along the coast these two floristic zones meet at Coos Bay (Howell 1957, Barbour and Major 1988). Coos Bay is also the boundary between the subarctic and Mediterranean beach floras (Wiedemann 1984). As a result many coastal species reach their southern or northern limits. For example, southern species reaching their northern limits include dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*), beach sagewort (*Artemisia pycnocephala*), and California beach-aster *Lessingia filaginifolia* var. *californica*; while northern species such as sea purslane (*Honkenya peploides*), large-headed sedge (*Carex macrocephala*), sweet gale (*Myrica gale*) and many others reach their southern limits here.



Figure 1 — Silvery phacelia (*Phacelia argentea*)

Species endemism (taxa restricted to a specific area), although not high, is also evident along the southern Oregon and northern California coast between Capa Arago and Cape Falcon (at Crescent City). Species such as wolf's evening-primrose (*Oenothera wolfii*), silvery phacelia (*Phacelia argentea*) (Figure 1), large flowered goldfields (*Lasthenia macrantha* ssp. *prisca*) occur only within this stretch of coastline (approximately 150 miles). Many of these species are restricted to specific habitats, such as sand dunes and exposed coastal headlands. A few other common species are also considered maritime beach endemics which occur only along the beaches and dunes of the Pacific Coast of North America (Wiedemann 1984). These include:

yellow sand verbena (*Abronia latifolia*), beach bursage (*Franseria chamissonis*), glehnia (*Glehnia littoralis* ssp. *leiocarpa*), beach evening-primrose (*Camissonia cheiranthifolia*), seashore bluegrass (*Poa macrantha*), beach knotweed (*Polygonum paronychia*), and dune tansy (*Tanacetum camphoratum*).

Unlike other parts of Oregon which are better known wildflower areas, such as Steens Mountain, the Willowa Mountains, and the nearby Siskiyou, the southern Oregon coast's botanical treasures remain largely hidden. This article is intended to provide the reader with an introduction to the unique plant communities and plant species which occur along this stretch of coast and to point out sites where one can enjoy the area's botanical resources.

Climate

The climate of the area is greatly influenced by the Pacific Ocean. Summers are mild (average daily temperature is 59°F), but hot days are rare. Rainfall is extremely light during the summer and in most years several weeks may pass between rainfall events. Fog is common during the summer months along the immediate coast and major river drainages. Fog typically will move inland about mid-afternoon and persist until the next morning. Strong northwest winds are also common in summer.

Winters are cool (average temperature is 40°F), but relatively mild. Approximately 80% of the yearly precipitation (between 55 and 75 inches), in the form of rain (rarely snow), occurs during the months of November to April. Winter rainfall may be steady over a period of several days, and occasionally rainfall intensities may exceed 4 inches over a 24 hour period. Fog is less common in the winter. Winds are typically out of the southwest, with intense winter storms where winds may exceed 80 miles per hour.

Geologic History and Soils

Much of the area is underlined by old marine terraces, with the most recent being the Whiskey Run Terrace (Baldwin 1964). These terraces range from nearly level to gently sloping areas composed of sandy sediments deposited during the early Pleistocene (less than one million years). They were formed as a result of leveling by wave erosion and long-term regional uplift (Baldwin 1964). The Whiskey Run terrace (Figure 2) is particularly well exposed between Bandon and Cape Blanco where in places it is 4-6 miles wide.

Soils between Bandon and Cape Blanco include unconsolidated sands, Heceta-Waldport sands, and the Bullards-Bandon-



Figure 2 — Whiskey Run Terrace, Cape Arago in distance

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Blacklock soil complex (USDA 1989). Unconsolidated dune sands typically occur on the ocean beaches. These consist of loose sand and shell fragments that have been influenced by wave action, tides, and wind. In a few areas, such as Floras Lake, the substrate consists of small pebbles. These areas all have very little organic matter, except where they have been stabilized with European beachgrass (*Ammophila arenaria*), and tend to be very permeable.

Soils on the old marine terraces behind the sand dunes are composed of a complex of soils called Bullards-Bandon-Blacklock soils. Bullards soils are well drained and occur in areas dissected by streams. Bandon soils are also well drained and occur in broad, gently to moderately sloping areas. The soil of interest is the Blacklock soils. Many of the unusual and rare species, including western lily (*Lilium occidentale*) (Figure 3), occur here. These deep, poorly drained soils occur in depressional areas of marine terraces. They have a highly organic topsoil with a cemented hardpan approximately 18 inches below the surface. Permeability of water through this cement-like soil is very slow. This hardpan perches water and creates many of the wetlands in the area. It is on these soils where cranberry production is the greatest.

Plant Communities

The following is a brief description of the ecology and common plant species of the plant communities which occur in this region.

Salt Marshes — These plant communities are restricted to the upper intertidal zones of coastal bays and estuaries. Locally they can be found in Coos Bay and Bandon estuaries. These plant communities are dominated by halophytes (salt loving species). The dominant conditions are the changing tides which inundate portions (or all) of these plant communities twice during a 24 hour period. Environmental gradients are established in response to slight elevational change which are caused by different frequencies and duration of tidal flooding. The result is a vertical zonation of different species across the salt marsh based on different salinity tolerances (MacDonald 1988).

A few of these species, pickleweed (*Salicornia virginica*) and

saltgrass (*Distichlis spicata*) occur across the entire salt marsh while other species such as bird's-beak (*Cordylanthus maritimus* ssp. *palustris*), sea-lavender (*Limonium californicum*) and tufted hairgrass (*Deschampsia caespitosa*) occur only within narrow elevational bands within the salt marsh.

Salt marsh floras are relatively well known and when compared with other habitats are generally depauperate. Besides the above mentioned species, other common plants in coastal salt marshes are fleshy jaumea (*Jaumea carnosa*), salt marsh dodder (*Cuscuta salina* var. *major*), arrow-grass (*Triglochin maritimum*), sand spurrey (*Spergularia* ssp.) and seaside plantain (*Plantago maritima*).

Coastal salt marshes have been heavily impacted by humans filling in wetlands for urbanization and diking them for agricultural purposes (grazing livestock). While no figures are available for the proportion of salt marshes that have been "reclaimed" in Oregon, only 9% of the salt marshes in Humboldt Bay remain (as of 1973) from historic conditions (MacDonald 1988). It can be assumed that well over 50% of the salt marshes in Oregon have been lost. This, along with the narrow ecological requirements of some species, results in a habitat that has many threatened species.



Figure 3 — Western lily (*Lilium occidentale*)

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Coastal Strand — These are plant communities occurring both on beaches above high tide and on sand dunes behind the foredune. Sand dunes within this section of the Oregon Coast are not as extensive as they are north of Coos Bay in the Oregon Dunes National Recreational Area. Most of the sand dunes in this area occur north and south of Bandon.

Since the establishment and subsequent naturalization of European beachgrass this habitat has decreased as the width and height of the foredune has increased. The physical conditions of these habitats are adverse and have high substrate instability, nutrient-poor soils, a high exposure to salt spray and "sand-blasting" (caused by daily northwesterly winds) which leads to a shifting, sandy substrate.

Vegetation on beaches is generally low in species richness and plant cover. On most beaches typically only 2-3 species (such as *Cakile* ssp., beach bursage, and yellow sand verbena) are present on the ocean side of the foredune. These species are

typically herbaceous perennials (the exception is *Cakile*) which are evergreen, succulent, and prostrate. Many of these species are early colonizers which begin sand stabilization. Seed production is typically low as the majority of these species disperse by rhizomes or stolons. Seed dispersal is primarily by wind and possibly by tides. Yellow sand-verbena fruits have small wings which aid in dispersal along the beach. In some cases (although undocumented) long term dispersal may be caused by seeds being swept into the tide and being deposited on another beach.



Figure 4 — Coastal beach and foredune with European bunchgrass

Historically, (pre-European beachgrass) beaches in this area (and along the entire Pacific Coast) had a low foredune, which rose gradually from the beach. The foredune consisted of rounded mounds caused by the native sand stabilizing plant species. The dominant species included American dune grass (*Leymus mollis* ssp. *mollis*), yellow sand verbena and beach bursage. This resulted in a series of dunes alternating with swales which were oriented perpendicular to the coast (that is, aligned with the prevailing onshore winds). Very few of these low, mounded foredunes remain along this section of coast, with the exception at river mouths, such as New River. With the establishment of European beachgrass these rounded dunes have been replaced by a steep foredune (figure 4) and inland dunes oriented parallel to the coast (Barbour and Johnson 1988). European beachgrass may reduce native species richness by up to one half (Barbour et al. 1976). This has resulted in many of these plant communities being threatened (although most of the plant species are relatively common).

European beachgrass deserves special attention due to its impact on vegetation along the Pacific Coast. It was first introduced to North America in 1869 at San Francisco (Wiedemann 1987). Extensive plantings occurred on the Oregon coast from the 1930s to 1950s. It now occurs from the Queen Charlotte Islands south to southern California. European beachgrass grows best in areas where sand accretion is greatest (windward side of dunes). When established, the plants develop a vigorous rhizome system, both horizontal and vertical (Wiedemann 1987). Under conditions of heavy sand accretion many new shoots arise from the nodes of the vertical rhizomes, thus creating hummocks. Although the plants produce numerous seeds, very few of these survive. It appears that conditions along the Oregon coast, such as strong onshore winds, moderate year round temperatures, ample rain-

fall and an abundant sand supply favor the growth of European beachgrass. Many efforts have been made in recent years to control European beachgrass in certain areas, all with little success. Methods have included herbicides, burning, tilling, salt-water irrigation, and manual removal. It appears the best method may be a combination of two or more of these methods over a long period of time.

As a result of dune stabilization, many of the plant species occurring on the dunes are introduced species. These include; sweet vernalgrass (*Anthoxanthum odoratum*), ripgut brome (*Bromus diandrus*), hairy cat's-ear (*Hypochaeris radicata*), and in this area, gorse (*Ulex europaea*). These, and other exotic species make up a large proportion of the vegetation on most of the sand dunes in the area.

Behind the foredune is the deflation plain, which is formed when sand is eroded away to the water table (Wiedemann 1984). Since the establishment of European beachgrass the deflation plain has steadily increased in width. Species present in these communities include many species of sedges (*Carex* spp.), rushes (*Juncus* spp.) and spike rushes (*Eleocharis* spp.).

North and south of the Coquille River, sand dunes occur in land behind the deflation plain. The conditions in these habitats are more favorable (higher substrate stability, less exposure to salt spray) than on the ocean beaches. In fact many of these inland dunes are stabilized to the extent that the dominant vegetation species is shore pine (*Pinus contorta* ssp. *contorta*). In areas where remnant dunes remain, the native vegetation consists of seashore bluegrass, seaside fescue (*Festuca rubra* ssp. *littoralis*), seaside lupine (*Lupinus littoralis*), beach evening-primrose, and beach morning-glory (*Calystegia soldanella*).



Figure 5 — Coastal prairie at Shore Acres State Park

Coastal Headlands — Coastal headlands (figure 5) are dominated by evergreen shrubs, usually less than 2 meters tall, and wind pruned tress. Species include coyote brush (*Baccharis pilularis*), salal, black crowberry (*Empetrum nigrum*), common juniper (*Juniperus communis*), hazel nut (*Corylus cornuta*), black twinberry (*Lonicera involucreta*), and wax myrtle (*Myrica californica*). Herbaceous species include reed grass (*Calamagrostis nutkaensis*), frosted paintbrush (*Castilleja affinis* var. *littoralis*),

and Bolander's sneezeweed (*Helenium bolanderi*). These plant communities endure very harsh environmental conditions including, strong winds, year round salt spray, and fog. Examples of these coastal headland communities can be seen at Shore Acres State Park, Capa Arago, Cape Blanco and Blacklock Point.

Coniferous Forests — Coniferous forests in this region occur on soils ranging from stabilized sand to soils on old marine terraces. These forests are primarily composed of shore pine, Sitka spruce (*Picea sitchensis*) and Port Orford cedar (*Chamaecyparis lawsoniana*) and more protected areas Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) and western hemlock (*Tsuga heterophylla*). These coastal forests have a dense understory composed of many ericaceous shrubs such as rhododendron (*Rhododendron macrophyllum*), salmonberry (*Rubus spectabilis*), black twinberry, and wax-myrtle. Aerial photographs from the 1940s and 1990s show that these forests have become more abundant on sand dunes. This is probably a result of the establishment of European beachgrass which has caused secondary succession to occur more rapidly by removing the historical disturbance factor (moving sand).

Freshwater Wetlands — These habitats include deflation plain wetlands, sphagnum bogs, and lakes formed by small creeks that have been blocked by moving sand dunes. Sphagnum bogs typically occur in depressions and in coastal headlands with Blacklock soils where water is "perched." Species present in these communities include California pitcher-plant (*Darlingtonia californica*) (figure 6), russet cotton-grass (*Eriophorum chamissonis*), yellow pond-lily (*Nuphar luteum* ssp. *polysepalum*), golden-eyed-grass (*Sisyrinchium californicum*), and bladderwort (*Utricularia vulgaris*).



Figure 6 — California pitcher-plant (*Darlingtonia californica*)

Rare and Unusual Plants

Pink sandverbena — Pink sandverbena (*Abronia umbellata* ssp. *breviflora*) (figure 7) is endemic to the coastal strand and is one of the rarest plants in Oregon. This species historically occurred from British Columbia to central California. However, since the establishment of European beachgrass, it now only occurs along the southern Oregon and northern California coast. Less than 10 occurrences are known in Oregon.

The Oregon Department of Agriculture with help from the Army Corps of Engineers, Bureau of Land Management, and U.S. Forest Service have recently been out planting greenhouse grown seedlings at various locations along the coast. This has resulted in an increase in the number of individuals in certain areas. The largest occurrence of pink sandverbena in Oregon occurs on dredge soils at the Port of Port Orford. In 1996 there were approximately 1,000 individuals (Tom Kaye, pers. comm.), mostly as a result of reintroduction efforts. It is hoped that these and future efforts will help increase the populations of this rare and threatened species.



Figure 7 — Pink sandverbena (*Abronia umbellata* ssp. *breviflora*)

Salt marsh bird's-beak — Salt marsh bird's-beak (*Cordylanthus maritimus* ssp. *palustris*) (figure 8), is a small annual species endemic to coastal salt marshes (restricted to the upper portions) of California and Oregon (Dunn 1987 and Kaye 1991). In Oregon, the majority of the occurrences are in the Coos Bay estuary. This subspecies is listed as threatened by the State of Oregon and was a federal candidate species. The other subspecies, salt marsh bird's-beak (*C. m.* ssp. *maritimus*), which occurs in southern California salt marshes, is listed as an endangered species (USFWS 1984). Threats include loss of habitat from agricultural and urban development, and off-road vehicle use.

Salt marsh bird's-beak has a very unique ecology. It is a hemiparasite, that is, the plants derive some of their resources directly from photosynthesis and also from other plants (most likely pickleweed) through underground root connections (Chuang and Heckard 1971). This connection with other plants is critical in seedling survival (Dunn 1987). Seed germination occurs in late-February and March and appears to be stimulated by lowered soil salinity from winter rains (1981). Seed dispersal is primarily local as the plants have no mechanism for forcibly dehiscing seeds, although seeds may be dispersed long distances through tides and birds. This subspecies appears to be self-pollinating as no insects have ever been observed on plants in spite of high pollinator activity within the salt marsh plant community (Kaye 1991, and field observations). The pollen to ovule ratio also indicates an in-breeding system (Cruden 1977, Kaye 1991). Dissected flowers show that the anthers have the ability to disperse pollen directly on to the stigmatic surface.



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Figure 8 — Salt marsh bird's-beak
(*Cordylanthes maritimus* ssp. *palustris*)

Large-flowered goldfields (*Lasthenia macrantha* ssp. *prisca*) — This subspecies occurs on coastal bluffs and is restricted to Curry County, from Cape Blanco to north of Brookings (Ornduff 1971). It is a candidate species in the State of Oregon and was recently removed from the federal candidate list. Large-flowered goldfields has very showy yellow flowers about 2 cm. across, occurring singularly on stems. Leaves are narrow and linear. When the plants are not flowering they are very difficult to identify. This subspecies is known from less than 10 locations, although threats appear to be minimal at this time. Very little information about breeding system, pollination, life span, seed dispersal/germination, etc. is known about this species.

Seaside gilia — Seaside gilia (*Gilia millefoliata*) is a classic example of a species that has been overlooked as a rare species. In 1992 I collected a specimen from Floras Lake. Munz (1959) identifies the habitat and range as coastal strands from San Francisco Bay to southern Oregon. No mention was made of its rarity and it appeared to be one of many California species which occur along the southern Oregon coast. In 1995 I received a call from Peter Morrell, a doctoral student from Claremont, CA. who is doing work on genetic relationships of the *Gilia laciniata* group, who asked me if I had ever seen this species. Apparently this species was known only from 11 disjunct sites (the Floras Lake site was unknown). This species has never been included on any rare plant lists in California and Oregon. Since this discovery, it has been added to rare plant lists in both states.

Gilia millefoliata is a small glandular annual with tiny purplish flowers, each corolla lobe having a pair of bright purple spots. Plants flower from May to July, depending on spring precipitation. Habitat includes semi-stabilized sand dunes within 300 meters behind the beach (Morrell pers. comm.). At Floras Lake the plants occur in small open sandy areas surrounded by stabilized dunes consisting of red fescue. Seaside gilia appears to be an obligate self-pollinator. Morrell (unpubl. data) has shown that these widely disjunct populations are genetically similar, perhaps indicating that this is a relatively young species.

Disjunct Species — This area of the coast has many species which appear to be out of their normal range and/or habitats.

Examples include sticky tofieldia (*Tofieldia glutinosa* var. *glutinosa*), Macloskey's violet (*Viola macloskeyi* ssp. *pallens*), bog violet (*V. lanceolata* ssp. *lanceolata*), and buckbean (*Menyanthes trifoliata*). All of these species either occur in coastal sphagnum bogs or other wetland habitats.

Sticky tofieldia has an interesting story that was summarized by Chambers (1991a). Two subspecies (*brevistyla* and *occidentalis*) are known to occur in Oregon, in the Cascades and in the Siskiyou of southwest Oregon (The Jepson Manual changes the specific epithet from *glutinosa* to *occidentalis*, but for simplicity in this article will be referred to as *glutinosa*). The only way to identify the species to subspecies is to have mature seeds. Based on old herbarium collections from Coos County, Chambers was able to identify the specimens as ssp. *glutinosa*. This subspecies occurs from British Columbia and Alaska, across Canada to the Atlantic Coast (Hitchcock et al 1969, Chambers 1991a). Then why does the species occur in a bog from Coos County? Chambers (1991a) proposes two hypothesis: 1) that this population is a southern range extension from British Columbia and is a relict population from colder climates; or 2) was introduced from the Atlantic Coast in cranberry (*Vaccinium macrocarpon*) starts. As of 1991 no occurrences had been documented since the 1926 collections, but since then I have found this subspecies growing on Nature Conservancy land at Bastendorff Bog near Charleston, New River ACEC, at Blacklock Point. Interestingly, all of these populations occur in native habitats which appear to have no apparent disturbance.

Two violet species pose interesting taxonomic and biogeographical questions. Macloskey's violet was located at New River ACEC in a sphagnum bog. Hitchcock and Cronquist (1973), Munz (1959) and Hickman (1993) all gave the range as above 1,200 meters. Then why was it growing along the coast at sea level? Dr. Chambers tentatively determined specimens v1 collected to be *V. m.* ssp. *pallens*. This still didn't answer the question of why this species was here since Hitchcock et al. (1961) noted that subspecies *pallens* occurs from British Columbia to Washington to the Atlantic Coast. Russell (1955) in his work on acaulescent violets has collections in Oregon only from the Cascades in Deschutes, Douglas, and Lane Counties. It appears that if this plant is actually subspecies *pallens*, some taxonomic and genetic work is needed to solve this mystery.

Bog violet, an eastern North American species, also occurs in this region of the coast. It has been previously collected in cranberry bogs in the Bandon area (Russell 1955) and western Washington (Abrams 1951). Apparently this species was introduced through cranberry starts early in this century, as its reported range is strictly eastern North America (Russell 1955). All my collections (north of Coos Bay and New River ACEC) have been in native plant communities. It appears that this species has since become naturalized in suitable habitats since its introduction.

A small population of buckbean (*M. trifoliata*) occurs in a wetland in the New River ACEC, and is reported from the Blacklock Point area. This population of the species again appears to be a disjunct from the known range and elevation. Hickman (1993) states that the elevation range is between 900-3,200 meters but that it has been reported to occur along

the northern California coast. In Oregon, this species occurs primarily on the west slope of the Cascades (Abrams 1951).

These and other species [*Trientalis arctica*, *Cornus canadensis* (*unalaschkensis*) (Chambers 1991b), and possibly *Viola langsdorffii*] occurring within this section of the coast are at the southern limit of their ranges. They appear to be a group of relict populations from when the climate was colder, or in some cases have been introduced and since become naturalized.

Best Areas and Times for Viewing Wildflowers

Much of the public land along this stretch of coast is administered by either the Oregon State Parks or the Bureau of Land Management, Coos Bay District. State parks in the area include Sunset Bay, Shore Acres and Cape Arago near Charleston, Bullards Beach just north of Bandon, and Floras Lake/Cape Blanco parks north of Port Orford. BLM administered lands occur at the Coos Bay Shorelands (North Spit of Coos Bay) and New River Area of Critical Environmental Concern (ACEC). Be sure to wear the appropriate clothing when visiting these areas and bring clothes for a wide temperature range as conditions may change quickly and will vary depending on proximity to the ocean.

Access to the parks in the Charleston area is through Coos Bay and North Bend (follow the signs from Highway 101). These parks consist of coastal headlands, Sitka spruce and mixed coniferous forest, and a few remnant sphagnum bogs. The parks have trails from Sunset Bay to Cape Arago (approximately 3-4 miles) most of which are right along the coast. Species such as Bolander's sneezeweed, purple iris (*Iris douglasiana*), cat's-ear (*Calochortus tolmiei*), frosted paintbrush, and western lily can be found here. For some species such as Bolander's sneezeweed this is the northern limit of its range.

The best time for wildflowers is June and July. Winter is also a good time to visit as this is one of the best places to see large waves, along with seeing the annual Shore Acres Holiday Lights Show (the botanical garden is illuminated with 125,000 Christmas lights).

Bullards Beach is along highway 101 about 2 miles north of Bandon, just north of the Coquille River bridge. This park provides year-round camping opportunities. The area is primarily composed of stabilized sand dunes from the establishment of European beachgrass, but has coniferous forests dominated by shore pine in the campgrounds. The best time for wildflower viewing at this park is from April to June. One will likely see cream cups (*Platystemon californicum*), California beach-aster (*Lessingia filaginifolia* var. *californica*), and silvery phacelia.

Floras Lake State Park can be accessed by taking the county road to the Cape Blanco Airport, across from Pacific High School. This road dead ends at the airport, but there is a trail head where hikers can walk out to Blacklock Point, overlook the mouth of the Sixes River or walk to Floras Lake. This area is dominated by mixed coniferous forests with shore pine, Sitka spruce and many native shrubs including evergreen huckleberry, black twinberry (*Lonicera involucrata*), rhodo-

dendron, Sitka alder (*Alnus sinuata*), and wax-myrtle. The park also includes a pygmy shore pine forest on Blacklock soils. Here the tallest trees are approximately 10-20 feet tall. The coastal bluffs provide a unique and very harsh habitat for the species present there, including black crowberry and common juniper.

Cape Blanco, the western most point in Oregon, provides the visitor with exposed coastal headlands. Much of the area in the vicinity is closed to the public (although tours of the lighthouse are available) due to safety concerns. Trails east of the lighthouse along the bluffs provide the visitor with good opportunities to view many species of coastal wildflowers, such as angelica (*Angelica* ssp.), frosted paintbrush, and elegant piperia (*Piperia elegans*). Rare species at Cape Blanco include large-flowered goldfields and Bigelov's microseris (*Microseris bigelovii*), although the latter has not been relocated in recent years. Best times to visit Cape Blanco to view wildflowers is from June to August.

Cape Blanco is also known for its high occurrence of rare lichen species. These species occur on the boles and branches of exposed scattered Sitka spruce trees. Some of these species are known from relatively few sites in North America. Species include *Neibla caphalota*, *Sulcaria badia*, *Bryoria pseudocapillaris*, *Anaptychia setifera*, *Buellia oidalea*, *Heterodermia leucomelos*, and *Teloschistes flavicans*.

Access to the BLM-administered lands on the North Spit of Coos Bay is via the Horsefall Beach turnoff from Highway 101 north of North Bend. Follow the Trans-Pacific Parkway to the end of the pavement. If one wants to continue down to the jetty a four-wheel drive vehicle is necessary. An unimproved sand road takes off on the right about one-third mile past the North Spit boat launch. This road goes along the foredune for about 4 miles to the jetty. Extensive deflation plain wetlands are visible from the foredune. One can continue down the bay side of the spit where there are coastal salt marsh plant communities.

New River ACEC can be accessed from Highway 101 at several locations. Overall, this ACEC consists of over 1,000 acres along the coast south of Bandon to Langlois. The best time to visit the New River area is from May to July. The farthest north access is Fourmile Creek. Turn right just past the west coast game park (going southbound) and head west about two miles. BLM manages about 15 acres at this site and one can see a small remnant dune with many native species. Here is also evidence of the impacts that gorse has on native plant communities.

The Storm Ranch part of New River is accessed from highway 101 at Croft Lake Road. Drive west for about 2.5 miles and turn right onto a gravel road when the road makes a sharp turn to the left. Park at the buildings where many short trails begin; one can see several different plant communities ranging from wetlands, sphagnum bogs, coastal meadows, and stabilized sand dunes.

The third access point to New River ACEC is at Floras Lake. Here the BLM manages approximately 170 acres north of the lake. Just south of Langlois on 101, after crossing Floras Creek turn left and follow the signs to Boice-Cope county park. Park at the outlet of the lake and cross the small bridge to reach

the public lands. Here are some of the best dune plant communities in this section of coast. Unique species at this site include silvery phacelia and the northern most population of seaside gilia. North of the lake is one of the most extensive native fescue dune mat communities on the southern Oregon coast. During the summer months portions of the beach are closed to protect nesting western snowy plovers (*Charadrius alexandrinus* ssp. *nivosus*).

Plant Lists by Habitats

The following list is not comprehensive but includes the common plant species. Since some may occur in more than one habitat they may be repeated. Nomenclature follows that of Hickman (1993) or Hitchcock and Cronquist (1973).

Beaches and Sand Dunes (Coastal Strand)

Glehnia littoralis ssp. *leiocarpa*, *Agoseris heterophylla*, *Achillea millefolium*, *Ambrosia chamissonis*, *Ambrosia bipinnatifida*, *Anaphalis margaritacea*, *Artemisia pycnocephala*, *Gnaphalium purpureum*, *Hypochaeris radicata*, *Cryptantha leiocarpa*, *Cakile edentula*, *Cakile maritima*, *Cardionema ramosissimum*, *Honkenya peploides*, *Calystegia soldanella*, *Lupinus littoralis*, *Phacelia argentea*, *Abronia latifolia*, *Abronia umbellata* ssp. *breviflora*, *Camissonia cheiranthifolia*, *Platystemon californicum*, *Eriogonum latifolium*, *Polygonum paronychia*, *Rumex acetosella*, *Rumex maritimus*, *Fragaria chiloensis*, *Claytonia exigua* ssp. *exigua*, *Plectritis brachystemon*, *Juncus lesueurii*, *Juncus supiniformis*, *Ammophila arenaria*, *Aira caryophylla*, *Anthoxanthum odoratum*, *Briza maxima*, *Bromus carinatus* ssp. *maritimus*, *Bromus diandrus*, *Bromus japonicus*, *Cynosurus echinatus*, *Festuca rubra*, *Holcus lanatus*, *Leymus mollis* ssp. *mollis*, *Poa confinis*, *Poa macrantha*, *Vulpia myuros*.

Stabilized Sand Dunes

Pteridium aquilinum ssp. *pubescens*, *Picea sitchensis*, *Pinus contorta* ssp. *contorta*, *Glehnia littoralis* ssp. *leiocarpa*, *Sanicula arctopoides*, *Achillea millefolium*, *Agoseris heterophylla*, *Aster* ssp., *Baccharis pilularis*, *Bellis perennis*, *Conyza canadensis*, *Gnaphalium purpureum*, *Hypochaeris radicata*, *Leontodon taraxioides*, *Lessingia filaginifolia* var. *californica*, *Senecio jacobaea*, *Tanacetum camphoratum*, *Berberis* sp., *Cardionema ramosissimum*, *Silene gallica*, *Arctostaphylos uva-ursi*, *Gaultheria shallon*, *Vaccinium ovatum*, *Cystisus scoparius*, *Genista monosperulana*, *Lotus formosissimus*, *Lupinus arboreus*, *Lupinus littoralis*, *Ulex europaea*, *Centaurium muehlenbergii*, *Camissonia cheiranthifolia*, *Armeria maritima*, *Gilia millefoliata*, *Eriogonum latifolium*, *Eriogonum nudum* var. *paralinum*, *Calandrinia ciliata*, *Fragaria chiloensis*, *Salix hookeriana*, *Triphysaria eriantha* ssp. *eriantha*, *Carex* spp., *Brodiaea terrestris* ssp. *terrestris*, *Calochortus tolmiei*, *Zigadenus fremontii*, *Agrostis* spp., *Aira caryophylla*, *Ammophila arenaria*, *Anthoxanthum odoratum*, *Bromus diandrus*, *Cynosurus echinatus*, *Danthonia californica*, *Holcus lanatus*, *Poa confinis*, *Poa unilateralis*, *Vulpia myuros*.

Coniferous Forests

Blechnum spicant, *Pteridium aquilinum* var. *pubescens*, *Polystichum munitum*, *Lycopodium clavatum*, *Polypodium scolieri*, *Chamaecyparissus lawsoniana*, *Thuja plicata*, *Abies grandis*, *Picea sitchensis*, *Pinus contorta* ssp. *contorta*, *Pseudo-*

tsuga menziesii var. *menziesii*, *Tsuga heterophylla*, *Hieracium albiflorum*, *Berberis* sp., *Vancouveria hexandra*, *Alnus rhombifolia*, *Alnus rubra*, *Corylus cornuta* var. *californica*, *Lonicera hispidula* var. *vacillans*, *Lonicera involucrata*, *Sambucus racemosa* var. *racemosa*, *Cornus canadensis*, *Arbutus menziesii*, *Arctostaphylos columbiana*, *Arctostaphylos uva-ursi*, *Gaultheria shallon*, *Ledum glandulosum*, *Rhododendron macrophyllum*, *Rhododendron occidentale*, *Vaccinium ovatum*, *Vaccinium parvifolium*, *Lithocarpus densiflorus* var. *densiflorus*, *Garrya elliptica*, *Ribes sanguineum*, *Lycopus uniflorus*, *Umbellularia californica*, *Myrica californica*, *Epilobium angustifolium*, *Boschniakia hookeri*, *Trientalis latifolia*, *Ceanothus thyrsifolia*, *Rhamnus purshiana*, *Amelanchier alnifolia* var. *semiintegrifolia*, *Crataegus douglasii*, *Holodiscus discolor*, *Malus fusca*, *Oemleria cerasiformis*, *Rubus* ssp., *Salix hookeriana*, *Scrophularia californica*, *Viola sempervirens*, *Carex obnupta*, *Lilium columbianum*, *Maianthemum dilatatum*, *Xerophyllum tenax*, *Calypto bulbosa*, *Goodyera oblongifolia*, *Listera cordata*.

Sphagnum Bogs

Solidago spathulata, *Senecio triangularis* var. *angustifolius*, *Lycopodiella inundata*, *Drosera rotundifolia*, *Lotus formosissimus*, *Hypericum anagalloides*, *Menyanthes trifoliata*, *Ledum glandulosum*, *Gaultheria shallon*, *Lysimachia terrestris*, *Vaccinium macrocarpon*, *Trientalis arctica*, *Sanguisorba officinalis*, *Darlingtonia californica*, *Viola macloskeyi* ssp. *pallens*, *Lysichiton americanum*, *Carex* spp., *Dulichium arundinaceum*, *Eriophorum criniger*, *Eriophorum chamissonis*, *Sisyrinchium californicum*, *Juncus ensifolius*, *Juncus oxymersis*, *Lilium occidentale*, *Tofieldia glutinosa* ssp. *glutinosa*, *Calamagrostis nutkaensis*.

Coastal Headlands, Bluffs and Prairies

Picea sitchensis, *Pinus contorta* var. *contorta*, *Corylus cornuta* var. *californica*, *Lonicera involucrata*, *Gaultheria shallon*, *Pteridium aquilinum* var. *pubescens*, *Lycopodium clavatum*, *Vaccinium ovatum*, *Chamaecyparissus lawsoniana*, *Carpobrotus chilensis*, *Angelica hendersonii*, *Angelica lucida*, *Heracleum lanatum*, *Achillea millefolium*, *Baccharis pilularis*, *Erigeron glaucus*, *Grindelia nana*, *Helenium bolanderi*, *Hypochaeris radicata*, *Lasthenia macrantha* ssp. *prisca*, *Senecio bolanderi*, *Wyethia angustifolia*, *Berberis* sp., *Cochlearia officinalis* var. *arctica*, *Erysimum capitatum*, *Erysimum menziesii* ssp. *concinnum*, *Lonicera hispidula* var. *vacillans*, *Sagina* ssp., *Dudleya farinosa*, *Sedum spathulifolium*, *Marah oreganus*, *Cuscuta californica* var. *occidentalis*, *Empetrum nigrum*, *Arctostaphylos uva-ursi*, *Juniperus communis*, *Phacelia nemoralis* ssp. *oregonensis*, *Romanzoffia tracyi*, *Sidalcea malvaeflora*, *Myrica californica*, *Clarkia amoena* ssp. *amoena*, *Epilobium angustifolium*, *Oenothera wolfii*, *Boschniackea hookeri*, *Plantago coronopus*, *Armeria maritima*, *Eriogonum latifolium*, *Delphinium menziesii*, *Fragaria chiloensis*, *Sanguisorba occidentalis*, *Salix hookeriana*, *Heuchera micrantha*, *Saxifraga howellii*, *Castilleja affinis* ssp. *littoralis*, *Veronica* sp., *Centranthus ruber*, *Viola adunca*, *Carex* spp., *Iris douglasiana*, *Calochortus tolmiei*, *Calamagrostis nutkaensis*, *Holcus lanatus*, *Dactylis glomerata*, *Nardus stricta*, *Poa unilateralis*, *Sieglingia decumbens*, *Piperia elegans*.

Freshwater Wetlands

Isoetes sp., *Equisetum telmateia*, *Lycopodiella inundata*, *Botrychium multifidum*, *Picea sitchensis*, *Salix hookeriana*, *Solidago spathulata*, *Callitriche* sp., *Ledum glandulosum*,

Vaccinium macrocarpon, *Vaccinium uliginosum* ssp. *occidentale*, *Lotus formosissimus*, *Gentiana sceptrum*, *Cicendra quadrangularis*, *Hypericum anagalloides*, *Lycopus uniflorus*, *Utricularia vulgaris*, *Lysimachia terrestris*, *Menyanthes trifoliata*, *Myrica californica*, *Nuphar luteum* ssp. *polysepalum*, *Centunculus minimus*, *Ranunculus flammula* var. *ovalis*, *Potentilla anserina* ssp. *pacifica*, *Potentilla palustris*, *Gratiola neglecta*, *Veronica* sp., *Viola lanceolata* ssp. *lanceolata*, *Lysichiton americanum*, *Carex aquatilis*, *Carex obnupta*, *Carex pansa*, *Carex* spp., *Dulichium arundinaceum*, *Eleocharis macrostachys*, *Eriophorum chamissonis*, *Scirpus acutus*, *Scirpus americanus*, *Sisyrinchium californicum*, *Juncus balticus*, *Juncus effusus*, *Juncus lesueurii*, *Juncus oxymeris*, *Juncus falcatus*, *Lilaea scilloides*, *Maianthemum dilatatum*, *Spiranthes romanzoffiana*, *Deschampsia caespitosa*, *Panicum acuminatum*, *Phalaris arundinacea*, *Polypogon maritimus*, *Potamogeton natans*, *Potamogeton richardsonii*, *Ruppia maritima*, *Sparganium emersum* ssp. *emersum*, *Typha latifolia*, *Sanguisorba officinalis*, *Spiraea douglasii*, *Hydrocotyle ranunculoides*, *Hydrocotyle verticillata*.

Saltwater Wetlands

Grindelia stricta var. *stricta*, *Jaumea carnosa*, *Spergularia canadensis* var. *occidentalis*, *Spergularia macrotheca* var. *macrotheca*, *Atriplex patula* var. *obtusata*, *Salicornia virginica*, *Cuscuta salina* var. *major*, *Plantago maritima*, *Limonium californicum*, *Glaux maritima*, *Cordylanthus maritimus* ssp. *palustris*, *Scirpus americanus*, *Scirpus maritimus*, *Scirpus cernuus*, *Juncus gerardii*, *Triglochin concinna* var. *concinna*, *Triglochin maritima*, *Deschampsia caespitosa*, *Hordeum jubatum*, *Distichlis spicata*, *Parapholis incurva*, *Puccinellia pumila*, *Zostera marina*.

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