FUNGI OF CENTRAL BAFFIN ISLAND[1]

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Introduction

The Plant Research Institute, Canada Department of Agriculture currently carries a project to study the fungi of the Canadian Arctic. This large geographical area was little known mycologically until 1950 and until 1967 Baffin Island was still poorly sampled.

In 1967, 4 DEW line (Distant Early Warning) sites were used as working bases from which to collect fleshy saprophytic fungi, parasitic fungi and their host plants. All of these sites, except inland plateau Fox 3 are on exposed coastal locations and the opportunity to use the Geographical Branch Camp at Inugsuin Fiord as another base was greatly appreciated because its location, some 70 miles inland from the outer coast, offered habitat protection not found at the other sites.

The sites at which specimens were taken are located from the east to west coasts of Baffin Island approximately at mid length. They are:

Cape Dyer (DYE Main 66°35′N 61°37′W)
Cape Hooper (FOX 4 68°26′N 66°44′W)
Inugsuin Fiord (Geographical Branch Camp 69°37′N 70°02′W)
Dewar Lakes (FOX 3 68°37′N 71°07′W)
Longstaff Bluff (FOX 2 68°56′N 75°18′W)

The time spent at each site was governed by a first impression of the flora and by the weather conditions permitting air travel. Only 3 days each were spent at Cape Hooper and at Dewar Lakes and about one week at each of the other sites. In this time some 500 specimens (phanerogamic and cryptogamic) were collected including some soil samples for future determination of soil fungi. In addition 450 specimens of mosses were made by J. R. Seaborn who assisted in the 1967 program.

The mycological specimens are deposited in the National Mycological Herbarium (DAOM) and many will be distributed in our normal exchange program. The vascular specimens are deposited in the Phanerogamic Herbarium (DAO); both herbaria are in the Plant Research Institute, Central Experimental Farm, Ottawa.

General Observations

On arrival at Cape Dyer on July 14, the plateau level of the lower camp was covered with up to 3 ft. of snow. Collecting was limited to southwest facing slopes leading to Sunneshine Fd. and plant growth was more advanced nearest the fiord and sea level. One week later and 200 hundred miles west at Cape Hooper, essentially the same snow conditions were experienced. Again collecting was limited to southerly exposures. Just four days later at the head of Inugsuin Fiord some 120 miles northwest of Hooper snow was

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absent although Lakes 1. and 2. were partly ice-covered and plant growth was considerably in advance of that seen at the other sites. Plants of the base camp area have been listed by Hainault (1966). To this list can be added:

Carex marina Dew.
C. membranacea Hook.
C. ursina Dew.
Juncus albescens (Lge.) Fern.
J. arcticus Willd.
Eriophorum triste (Th. Fr.) Hadac
E. vaginatum L. ssp. *spissum* (Fern.) Hult.
Puccinellia langeana (Berk.) Th. Sør.
Ranunculus sulphureus Sol.
Anemone parviflora Michx.
Draba hirta L.
Hippuris vulgaris L.
Saxifraga aizoides L.
S. nivalis L.

All but 5 of the above species were earlier recorded for the Isortoq Fiord area by Webber (1964) and their occurrence at Inugsuin Fiord was to be expected.

The flora of the east coast sites and the Dewar Lakes site is generally similar. Only at the west coast site of Longstaff Bluff did additional species appear. Here were found additional Leguminosae (*Astragalus alpinus* L., *Oxytropis maydelliana* Trautv. and *O. arctobis* Bunge) and Compositae (*Matricaria ambigua* (Ledeb.) Kryle., *Senecio congestus* (R.Br.) DC., *Chrysanthemum integrifolium* Rich.) These elements occur farther west along the mainland coast. A comparison of plant lists by Hainault and Webber (op. cit.) supports my general impression that the western coast of Baffin Island supports the richer flora. A number of causes may be responsible for this and a probable main factor is the slightly ameliorated climate. Accompanying an increase of species in the west will be an increase in the associated parasitic fungi.

THE FUNGI

In the following annotated list, the fleshy fungi (Agaricales) have been identified by J. W. Groves and Sclerotinias were named by Mary E. Elliott. The collection numbers are those of the author.

FUNGI IMPERFECTI

Cladosporium herbarum (Pers.) Lk. on *Poa arctica* R.Br. (3998 c Inugsuin). Primarily saprophytic following heavy incidence of mildew. A common saprophyte on a wide range of hosts.

Cylindrosporium serabrankowii (Bub.) Bub. on *Astragalus alpinus* L. (4042, 4151 Longstaff) and on *Oxytropis maydelliana* Trautv. (4150 a Longstaff). The latter is a new host for this parasite.

Phyllosticta sp. on *Oxytropis maydelliana* Trautv. (4150 b Longstaff). Temporarily assigned to *Phyllosticta*.

Selenophoma drabae (Fuckel) Petrak. (=*Selenophoma donacis* (Pers.) Sprague var. *stomaticola* (Baeuml.) Sprague & Johns.) on *Arctagrostis latifolia* (R.Br.) Griseb. (4051 b Longstaff). This fungus has a wide host range including many Cruciferae. The above grass is thought to be a new host.

PHYCOMYCETES

Peronospora parasitica (Pers.) Fr. on *Eutrema edwardsii* R.Br. (4070 b), on *Draba* sp. (4084), on *Cochlearia officinalis* L. (4147) all from Longstaff. Occurs on the undersurface of leaves of these and other Cruciferae in the arctic.

ASCOMYCETES

Cenangium arcticum Ehrenb. ex Fr. on *Cassiope tetragona* (L.) D.Don (3787 b Cape Hooper). Saprophytic on stems from previous season.

Erysiphe graminis DC. ex Mérat on *Poa arctica* R.Br. (3998 Ingusuin and 4021b, 4035 Dewar Lakes). Fairly common, known on other grasses and regularly associated with rust infection.

Helvella leucomelaena (Pers.) Nannf. On moist bare soil at sea level (4122 Longstaff). A fleshy discomycete, or cup fungus, black-brown and deeply cup-shaped.

Helvella queletii Bres. on disturbed wet gravel near airstrip (4087 Longstaff). Size: 1-4 cm. diam., color: dark brown.

Isothea rhytismoides (Bab. ex Berk.) Fr. on *Dryas integrifolia* M. Vahl. (3937 b Inugsuin and 4039 b Longstaff). Causing locally heavy infection at both sites. This fungus ranges widely in the northern hemisphere and is known only on *Dryas*.

Mycosphaerella chamaenerii Savile. stat. conid.: *Ramularia chamaenerii* Rostr. on *Epilobium latifolium* L. (4111 b Longstaff).

Mycosphaerella saxifragae (Pass.) Lind on *Saxifraga foliosa* R.Br. (3885 c Inugsuin).

Peziza melaleuca (Bres.) Seaver. On disturbed wet gravel in close proximity to *H. queletii;* readily distinguished by smaller size, 1.0 cm. diam. or less, and darker color (4088 Longstaff).

Rhytisma bistortae (DC.) Rostr. on *Polygonum viviparum* L. (4157 C. Dyer). Symptoms as in the following fungus but found only rarely.

Rhytisma salicinum (Pers. ex Fr.) Fr. on *Salix arctophila* Cock. (4009 c Inugsuin, 4022 b Dewar L., 4091 b, 4133 Longstaff) and on *S. herbacea* L. (3930 Inugsuin, 4092 c Longstaff). Infection was usually heavier on *S. arctophila*. Widespread throughout the arctic and subarctic on numerous species of willow. The raised, black shiny fructifications on young leaves are easily observed. Maturity occurs over winter and ascospores are produced on necrotic leaves one to three years old.

Sclerotinia vahliana Rostr. on *Eriophorum angustifolium* Honck. (3894 Inugsuin, 4085 Longstaff), on *E. scheuchzeri* Hoppe (3807 b C. Hooper). Some general comparisons between *S. dennisii* Svreck and *S. valhiana* have been given by Savile and Parmelee (1964).

Scutellinia armatospora Denison among mosses on disturbed wet gravel, locally common (4086 Longstaff). The hymenium of this small discoycete is bright red.

Sphaerotheca fuliginea (Schlecht. ex Fr.) Pollaci on *Braya purpurascens* (R.Br.) Bunge (4071 b Longstaff). This powdery mildew was found only on *Braya* but is recorded on other Cruciferae and indeed other families.

BASIDIOMYCETES (Ustilaginales)

Anthracoidea elynae (Syd.) Kukk. var. *elynae* on *Kobresia myosuroides* (Vill.) Fiori & Paol. (3862 b, 3986, 3987 Inugsuin and 4191 C. Dyer.). A very common smut of the achenes.

Anthracoidea rupestris Kukk. on *Carex rupestris* All. As above the achene is replaced by a black ball of smut spores.

Schizonella elynae (Blytt) Liro. on *Kobresia myosuroides* (Vill.) Fiori & Paol. (4192). This leaf smut is known also from one alpine region in British Columbia. It is rarely collected and apparently this is the most northerly Canadian record.

Ustilago bistortarum (DC.) Körn on *Polygonum viviparum* L. (3841, 3842 Inugsuin; 4031 Dewar L.; 4158 C. Dyer). Occurs widely over the range of the host and in three distinct phases which have been treated also as varieties or even species. The phases are: inflorescence smut, leaf blade smut and leaf margin smut. Collections 3841 and 3842 from the same colony are the inflorescence and leaf blade phase respectively, supporting an earlier suggestion (Savile and Parmelee 1965) that the three phases are but a single species.

Ustilago vinosa Berk. ex Tul. on *Oxyria digyna* (L.) Hill (3924, 3946 a Inugsuin; 4135 Longstaff; 4159 C. Dyer). This inflorescence smut was found wherever there were good-size colonies of the host. All sites were moist but not wet, often located below a snow-drift.

Ustilago violacea (Pers.) Roussell var. *violacea* on *Silene acaulis* L. var. *exscapa* (All.) DC. (3929 Inugsuin, 4190 C. Dyer); and on *Stellaria edwardsii* R.Br. (3872 b,

4008 Inugsuin). Using hosts as a basis, this anther smut on *S. edwardsii* may be identified as *U. violacea* var. *stellariae* (Sow.) Savile. Observations of smut spores do not confirm this – their size intergrades with var. *violacea* indicating a need for additional study of this complex.

BASIDIOMYCETES (Uredinales)

Chrysomyxa ledi (Alb. & Schw.) deBary var. *rhododendri* (deBary) Savile on *Rhododendron lapponicum* Wahlenb. (3943 b, 3989 Inugsuin). The host occurred sparingly at Cape Dyer and was not rusted. It was common on the dry protected slopes at the head of Inugsuin Fiord and rust infection was moderately heavy. We have one specimen from Frobisher Bay – the only other collection from Baffin Island. This and the following species of *Chrysomyxa* are examples of heteroecious rusts existing successfully far from their alternate host in this instance, 350-800 miles north of *Picea*. Spread over such a distance can be explained using this species as an example: once established from the closest *Picea*, the uredinia build up on *Rhododendron* and repeat on adjacent plants. From the west, south or east urediniospores could survive the 100-150-250 mile aerial dispersal from Southampton I., Ungava or Greenland to Baffin Island and continue spread from *Rhododendron* to *Rhododendron*. If this is so, rust may be found on *Rhodendron* to its limit in northern Baffin.

Chrysomyxa ledicola (Peck) Lagerh. on *Ledum palustre* L. var. *decumbens* Ait. (3846 b, 3980 Inugsuin, 4028 Dewar L.: 4041 Longstaff). There was heavy infection at all collecting sites and these are at the northern limit of the host (Porsild 1957).

Chrysomyxa empetri (Pers.) Schroet. on *Empetrum nigrum* L. (4000 b, Inugsuin; 4103, 4143 Longstaff). Light to heavy infection was encountered. Porsild (1957) shows widely dispersed host records north of 70° lat. and these rust collections may be at the northern limit of the rust.

Melampsora epitea Thuem. on *Salix arctica* Pall. (3706 b C. Dyer), on *S. arctophila* Cock. (3700 a, 3743 C. Dyer; 3996 C. Hooper; 4022 c Dewar L.; 3864 b, 4009 b Inugsuin), on *S. herbacea* L. (4019 b Dewar L.; 4092 b Longstaff), on *S. reticulata* L. (3882 b, 3931 b Inugsuin; 4074 b, 4129 b Longstaff) on *Salix* sp. (3835 a Inugsuin). The aecial state occurs on *Saxifraga* in the arctic, but was not found. In the high arctic the rust generally overwinters in the buds of *Salix* and survives without host alternation. Comparison of urediniospores originating from the different *Salix* spp. shows slight differences but extensive study of the complex is required before such characters can be used in any taxonomic revision.

Puccinia arenariae (Schum.) Wint. on *Cerastium alpinum* L. (4052 b, 4148 b Longstaff). Widely distributed throughout the world on Caryophyllaceae. It is especially widely represented in DAOM from alpine and subarctic regions.

Puccinia bistortae (Strauss) DC. on *Polygonum viviparum* L. (3702 b C. Dyer; 3843 a, 3973 Inugsuin). Both uredinia and telia were present on young plants recently emerged from snow cover when collected on 14 July.

Puccinia eutremae Lindr. on *Cochlearia officinalis* L. (4146 Longstaff). Infection was heavy on young plants otherwise only moderate in protected habitats along the rocky coast. Other susceptible Cruciferae include *Eutema edwardsii*. Our rust records do not extend farther north although hosts are amply recorded from the high arctic.

Puccinia pazschkei Diet. var *tricuspidatae* Savile on *Saxifraga tricuspidata* Rottb. (4145 Longstaff). The host is a wide ranging arctic-alpine species with which the rust is nearly coextensive.

Puccinia poae-nemoralis Otth. ssp. *poae-nemoralis* on *Poa ?arctica* R.Br. (4040 a Longstaff). The host was locally common and just lightly infected with rust. As is usual for this species, only uredinia were present on the leaves.

Puccinia pedicularis Thuem. on *Pedicularis flammea* L. (4160 b C. Dyer). This is the first North American collection of this microcyclic rust. It was found only once, and then sparingly, although searched for diligently at all collecting sites. This rust is known also from northeast Greenland on the same host.

BASIDIOMYCETES (Exobasidiaceae)

Exobasidium vaccinii Wor. var. *vaccinii* on *Cassiope tetragona* (L.) D.Don (4020 b Dewar L; 4114, 4152 Longstaff; 4189 C. Dyer).

Exobasidium vaccinii – uliginosi Boud. var. *vaccini-uliginosi* on *Vaccinium uliginosum* L. (3829 a Inugsuin, 4104 b Longstaff). *Exobasidium* is parasitic on leaves

and is readily recognized. Leaves are slightly enlarged, often reddened and covered by a downy bloom formed by the fungus. The first species recorded here is common and widely distributed throughout the arctic; the second is mainly at low-arctic and subarctic sites.

BASIDIOMYCETES (Lycoperdales)

Calvatia cretacea (Berk.) Lloyd on soil in various plant associations. (3732, 3773, 3776 C. Dyer; 3907 Inugsuin; 4018 Dewar L.; 4090 Longstaff). A common puffball, often abundant; in 1967 found up to 8.5 cm. diameter. It is edible when young.

BASIDIOMYCETES (Agaricales)

These fleshy fungi are associated with a soil habitat where there is some decaying organic material. Occasionally they are associated with living plant material, although usually not as a parasite (cf. *Leptoglossum lobatum*). Many are edible, some doubtfully so and some are poisonous. Notes about edibility are based on remarks by Singer (1962) and Groves (1962). Identifications herein are by Dr. J. W. Groves.

Amanitopsis inaurata (Pers.) Fayod. (3962, 3992 Inugsuin; 4172 C. Dyer). Scarce on moist slopes. Cap or pileus is silvery brown, shiny but not sticky. Widely distributed in Canada. Singer considers this in the genus *Amanita* which has a number of poisonous species.

Clitocybe luteovitellina (Pilat & Nannf.) Bigelow (3888, 3890 Inugsuin). Associated with sphagnum and having a predominantly northern distribution. Cap is pale yellow.

Clitocybe umbellifera (Fr.) Bigelow. (3772 C. Dyer). Widely collected in the arctic and often associated with mosses.

Cortinarius sp. (3731 C. Dyer; 3825 C. Hooper; 3886, 3975, 3994 Inugsuin).

Galerina vittaeformis (Fr.) Singer var. *vittaeformis* f. *tetraspora* (3887 Inugsuin). There is one previous Canadian collection in DAOM from Victoria, B.C. The genus contains edible and poisonous species and is therefore not widely used as food.

Hebeloma hiemale Bres. (3910, 3993 Inugsuin). Specimens in DAOM are mostly from northern Canada, a few from Ontario, and are often from an association with *Dryas*.

Hebeloma ?sordidulum (Peck) Sacc. (3749 C. Dyer; 3889, 3974 Inugsuin). These specimens are from *Cassiope* heaths and all specimens in DAOM are from north of tree line. According to Singer (1951) the species concept of the genus is not clear. At least one species is known to be poisonous.

Inocybe ?lorillardiana Murr. (4171 C. Dyer). Arctic collections in DAOM are often but not always from a *Dryas* association.

Laccaria tetraspora Singer (3775 C. Dyer). There are only 3 specimens in DAOM all from sandy habitats. Not among the species listed as being edible.

Lactarius speciosus Burl. (4153 Longstaff). Most species of *Lactarius* are edible but Groves (1962) warns that those with an acrid taste should be avoided.

Leptoglossum lobatum (Pers. ex Fr.) Ricken (4170 C. Dyer). This is a common fungus in the arctic, always growing parasitically on mosses. It is of doubtful food use – pileus, or cap, very thin.

Omphalia onisca Fr. (3823, 3286 C. Hooper). Both collections are from lowlying wet sand. Fructifications small and poorly represented in DAOM.

Russula flava Rom. (4045 Longstaff). Rare on a grassy, stony beach. The slimy and sticky yellow pileus in this collection up to 6.0 cm. diameter. Common in wooded regions of Canada and U.S.A. Most *Russula* species are edible – Singer names *R. foetans* as being probably slightly poisonous. Groves reports *R. flava* as edible.

Russula fragilis Fr. (3958 Inugsuin). The cap is pale pink, tinged red, smaller than *R. flava* and with a like distribution. Groves considers the edibility of this species as doubtful.

Russula nigrodisca Peck (3908, 3976, 3990 Inugsuin; 4117 Longstaff). In this species the cap becomes bright red. During August of 1967 the fructifications became almost abundant on some slopes and moist areas.

Russula venosa Vel. (3959 Inugsuin). The cap is dark orange-red. The fungus was growing adjacent No. 3958 in a wet runnel. Both fungi were rare at this site.

Stropharia aeruginosa (Curt. ex Fr.) Quél. (3909 Inugsuin). The cap is yellowish green. Some species in the genus are considered edible but are rarely eaten. Groves indicates that this species is reported to be poisonous.

Many saprophytic Ascomycetes and Fungi Imperfecti have been removed from 1, 2 and 3 year old stems and leaves of numerous plants. These await future study.

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