

Ustilagineae from East Greenland.

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As botanist of the Norwegian Government Expedition to Greenland and Spitsbergen in 1933 I collected fungi in Eirik Raudes Land, i. e. North-East Greenland between $71^{\circ} 30' N$ and $75^{\circ} 40' N$. Beneath is given a list of the smuts found. In this list I have also included a number of smuts (i. a. from South-East Greenland), which I found by looking over the rich phanerogamic collections from East Greenland in the Botanical Museum of the University in Oslo. The names of the collectors of these specimens have been abbreviated: A = S. Aandstad, B = B. Bjørlykke, D = J. Devold, S = P. F. Scholander, V = J. Vaage. When not otherwise stated, the writer is the collector.

As to the locality names, I have used those of the official Norwegian maps.

Previous literature records from East Greenland are mentioned under each species.

Cintractia caricis (Pers.) Magn.

On *Carex atrofusca* Schkuhr. N. - E. Gr.: Geographical-Society-øya: Sofiasund: 2—3 km SW of Strømhytta, Aug. 21, 1933. Ymerøya: Dusénfjorden: Kapp Graah, Aug. 17, 1929 (V); Dusénfjorden: at the rivulet beneath Skredbergene, Aug. 7, 1933; Dusénfjorden: near Sandvelta, Aug. 7, 1933; Claveringfjorden: Kapp Stosch, July 24, 1930 (V).

Spores more or less ellipsoidal, length $17.5-25 \mu$. — Previously not recorded on this host from East Greenland.

On *C. brunnescens* (Pers.) Poir. S.-E. Gr.: Lindenowfjorden: Narsak, July 29, 1932 (D & S). Umanak: Innfjorden, Sept. 11, 1932 (D & S); Claradalen, Sept. 12, 1932 (D).

Spores more or less ellipsoidal, length $13.5-19 \mu$. — Previously not recorded from East Greenland on this host.

On *C. deflexa* Hornem. S. - E. Gr.: Tingmiarmiut: Brattneset, Aug. 8, 1932 (S).

Spores dark, smooth, length $16-22.5 \mu$, chiefly $18-20 \mu$. — Previously not recorded on this host from Greenland.

On *C. glareosa* Wg. S. - E. Gr.: Tingmiarmiut: Brattneset, Aug. 8, 1932 (D & S); Lomvatnet, Aug. 2, 1931 (B). Umanak: Pilerkit, Aug. 14,

1931 (B). Akorninarmiut: Dronning Marias Dal, Aug. 5, 1931 (B); Imarsivikøya at Krappundet, Aug. 24, 1931 (B).

Spores more or less ellipsoidal, length 14—19.5 (27) μ ; e. g. $19.5 \times 13.5 \mu$, rarely $27 \times 13.5 \mu$. — In East Greenland previously found on this host in Nenesø, 60° 28' N (R o s t r u p 1888 p. 532, L i r o 1938 p. 22).

On *C. lachenalii* Schkuhr. S. - E. G r.: Kangerdlugsuatsiak: Lindenowfjorden: Narsak, July 29, 1932 (D & S); Møretun, Aug. 3, 1932 (D & S). Tingmiarmiut: Brattneset, Aug. 8, 1932 (D & S). Tingmiarmiut: Brattneset, Aug. 8, 1932 (D & S); Tvihamna, Sept. 9, 1932 (D). Akorninarmiut: Skjoldungen: inner N side, Aug. 7, 1931 (B); Trollfjordeidet, Aug. 13, 1931 (B); Floneset, Aug. 18, 1932 (D).

Spores more or less ellipsoidal, length 13.5—18.5 μ . — Not found on this host in Greenland before.

On *C. macloviana* D'Urv. S. - E. G r.: Umanak: Innfjorden, Sept. 11, 1932 (D). Akorninarmiut: Skjoldungenområdet: Dronning Marias Dal, Aug. 5, 1931 (B); Dronning Marias Dal, July 24, 1932 (D & S).

Spores more or less ellipsoidal, length 13.5—18.5 μ . — Not found on this host in Greenland before.

On *C. rigida* Good. s. lat. S. - E. G r.: Kangerdlugsuatsiak: Møretun, July 31, 1932, also on a form ad *C. haematolepis* Drejer (D & S). Umanak: Claradalen, Sept. 12, 1932 (D). Akorninarmiut: Skjoldungenområdet: Dronning Marias Dal: July 24, 1932 (ad *C. haematolepis* Drejer, D & S); Dronning Marias Dal, Aug. 12, 1932 (D & S). Kangerdlugsuak: Brandai, Aug. 22, 1932 (S).

Spores more or less ellipsoidal, length 15.5—21.5 μ . — Previously recorded on this host from East Greenland by R o s t r u p (1904 p. 113) and L i n d (1933 p. 4).

On *C. rupestris* All. N. - E. G r.: Scoresbyland: Alpfjorden, July 28, 1933. Geographical-Society-øya: 5 km W of Husbukta, Aug. 16, 1930 (V); 15 km W of Husbukta, Aug. 17, 1930 (S). Moskusoksefjorden: Hoelsbu, July 29, 1933.

Spores irregularly ellipsoidal, length 16.5—21 μ . — In East Greenland not found on this host before.

On *Kobresia myosuroides* (Vill.) Fiori et Paol. (syn. *K. scirpina* Willd., *Elyna bellardii* [All.] Koch). S. - E. G r.: Akorninarmiut: Skjoldungenområdet: Dronning Marias Dal, Aug. 12, 1932 (D & S). From Eirik Raudes Land I have material from 26 localities.

Spores more or less ellipsoidal, length (12.5) 14.5—21.5 μ . — From East Greenland previously recorded on this host by R o s t r u p (1904 p. 113) and L i n d (1910 p. 150).

Finally, some specimens of *Cintractia caricis* from W. Greenland may be mentioned here; they have all been discovered by the writer by looking over phanerogamic collections:

On *C. brunnescens* (Pers.) Poir. \times *lachenalii* Schkuhr. Holstensborg, July 31, 1871, leg. Th. M. Fries (determined by Fries as *C. vitilis* Pers.).

On *C. glareosa* Wg. Holstensborg, July 31, 1871, leg. Th. M. Fries.

On *C. nardina* Fr. var. *hepburnii* (Boott) Kük. Disco: Ritenbenk's Coalpit, July 13, 1871, leg. Th. M. Fries.

On *C. stans* Drej. Disco: Godhavn, Sept., 1931, leg. Frits Johansen.

On *Kobresia myosuroides* (Vill.) Fiori et Paol. Foulke Fjord (78° 18' N): "in clivo arenoso ad Reindeer Point. 11, 12. VIII. 1899". leg. H. G. Simmons.

C. hyperborea (Blytt) Liro.

On *Luzula confusa* (Hartm.) Lindeb. N.-E. Gr.: Trailløya: Kapp Simpson, Aug. 12, 1929 (V); Holmvika, Aug. 11, 1929 (V). Geographical-Society-øya: 15 km W of Husbukta, Aug. 17, 1930 (S). Ymerøya: Ceisiusfjellet, Aug. 4, 1929 (V). Hold-with-Hope: Trollvatnet, abundantly, Aug. 9, 1933. Gael Hamkebukta: Jacksonøya, abundantly, intermixed with smutted *Luzula nivalis*, Aug. 12, 1933. Hochstetter Forland: Ardencaplefjorden: Jonsbu, Aug. 3, 1933.

On *L. nivalis* Beurl. N.-E. Gr.: Gael Hamkebukta: Jacksonøya, Aug. 12, 1933.

Luzula nivalis is a new host of *C. hyperborea*. Spores in my material of *C. hyperborea* more or less ellipsoidal, length 15.5—22.5 (25) μ . Spore wall ca. 2 μ thick. — Previously recorded from one locality in Greenland by Liro (1938 p. 43). On examining phanerogams, I also found it on *L. confusa* in the collections of H. G. Simmons from W. Greenland: Foulke Fjord (78° 18' N) "in clivo ad Etah. 11, 12. VIII. 1899".

Schizonella melanogramma (DC.) Schroet.

On *Carex nardina* Fr. N.-E. Gr.: Strindberghalvøya: Near the Danish hut, July 30, 1933. Spores 6—12 μ in diam. — To my knowledge not recorded on this host before.

On *C. rupestris* All. N.-E. Gr.: Outer Hudsonland: Myggbukta, NW of the station, July 31, 1933. Strindberghalvøya: Ca. 1 km East of the Danish hut, very copiously, July 30, 1933. — Spores 6—10.5 μ in diam.

On *Kobresia myosuroides* (Vill.) Fiori et Paol. N.-E. Gr.: Scoresbyland: Alpfjorden, July 28, 1933. Clavingfjorden: Vesle Finschøya, July 18, 1933. Wollaston Forland: Kapp Herschel, July 29, 1929 (V); at Herschelhus, Aug. 1, 1933. — Spores 6—10.5 μ in diam.

Schizonella melanogramma is new to the flora of Greenland.

Tuburcinia junci (Lagh.) Liro.

On *Juncus biglumis* L. N.-E. Gr.: Outer Hudsonland: Myggbukta, near the station, July 31, 1933.

Sori in the culms. Spore-balls 16.5—51.5 μ , often 25—35 μ , mostly with 1—6 spores. Spores 12.5—17 \times 10.5—14.5 μ , membrane ca. 1 μ thick. Sterile cells numerous, forming a continuous layer round the spores, of very irregular form, length 6—11.5 (14.5) μ . — New to the flora of Greenland. *J. biglumis* appears to be a new host of *T. junci*, of which our form perhaps represents a separate race.

T. sorosporioides (Koern.) Liro.

On *Thalictrum alpinum* L. N. - E. Gr.: Geographical-Society-øya: Husbukta, Aug. 15, 1930 (V).

Spore-balls 25—68 \times 18.5—55.5 μ . Spores mostly 4—10 in each ball, chiefly oblong, length 10.5—16.5 μ . Sterile cells forming a continuous layer around the spores, length of the cells 6—14.5 μ . — From East-Greenland previously recorded by Rostrup (1894 p. 11 and 1904 p. 113).

T. triseti Ciferri.

On *Trisetum spicatum* (L.) Richt. N. - E. Gr.: Outer Hudsonland: Myggbukta, Aug. 19, 1933.

Spore-balls oblong to subspherical, length 17.5—47.5 μ , often 20—35 μ . Spores mostly 1—4 in each ball, 12.5—16.5 \times 8—14.5 μ . Sterile cells forming a continuous layer around the spores, 6—13 \times 5—9.5 μ . — New to the flora of America.

Ustilago histortarum (DC.) Koern.

On *Polygonum viviparum* L. N. - E. Gr.: Scoresbyland: Alpfjorden: N of Gullybreen, July 27, 1933; Alpfjorden, East side, July 28, 1933. Geographical-Society-øya: Sofiasund: near Strømhytta, Aug. 21, 1933. Gael-Hamke-bukta: Jacksonøya, at the hut, Aug. 11, 1933; Jacksonøya, inner parts, Aug. 12, 1933. Wollaston Forland: Kapp Herschel, July 30, 1929 (V). Claveringstredet: Kvalrossøya, July 21, 1933. Sabineøya: Germaniahavn, July 21, 1933. Hochstetter Forland: Ardencaple fjorden: Jonsbu, very abundantly, Aug. 3, 1933.

Spores 11.5—22.5 μ in diam., chiefly spherical-sub-spherical, or shortly and broadly ellipsoidal (then mostly ca. 15—16 μ in diam.), often somewhat angular, also long-ellipsoidal (e. g. 20.5 \times 10.5 μ) or ovoid or irregularly elongate. — From East-Greenland previously recorded by Rostrup (1894 p. 10).

U. inflorescentiae (Trel.) Maire.

On *Polygonum viviparum* L. Of this smut I have material from 24 localities in Eirik Raudes Land.

Spore diameter 9—20.5 μ . ca. 85% of the spores measured were 10.5—14.5 μ in diam., occasionally greater, e. g. 16.5 \times 10.5 μ , once 20.5 \times 9.5 μ . — From East-Greenland previously recorded by Rostrup (1894 p. 10 and 1904 p. 113).

U. koenigiae Rostr.

On *Koenigia islandica* L. N.-E. Gr.: Geographical-Society-øya: Husbukta (72° 51' N), Aug. 8, 1929 (V). Ymerøya: Kapp Humboldt (73° 6' N), Aug. 3, 1929 (V). Outer Hudsonland: Myggbukta (73° 29' 5 N), Aug. 1, 1930 (V); Myggbukta, the damp plain East of the houses, July 31, 1933.

Sori 1.2—4 × 0.4—1.1 mm great. Spores spherical — ovoid — long-ellipsoidal, sometimes more or less irregular, 5—12.5 μ long, 75 % of all spores measured were 6—9 μ . — New to the flora of East Greenland.

U. nivalis Liro.

On *Sagina intermedia* Fenzl. N.-E. Gr.: Kapp Hold-with-Hope (ca. 73° 30' N), Aug. 13, 1932 (A). Claveringøya: Kapp Mary (ca. 74° 11' N), Aug. 5, 1933.

Spores mostly sphaeroidal (or broadly ellipsoidal, e. g. 11.5 × 9.5 μ), now and then a little irregular or slightly elongate, 9.5—13 μ in diam.. 80% of the spores measured were 10.5—11.5 μ in diam. — New to the American flora (Hagen 1941 p. 7).

U. vinosa (Berk.) Tul.

On *Oxyria digyna* (L.) Hill. Of this smut I have material from 12 localities in Eirik Raudes Land.

Spores 6—10 μ in diam., mostly 8 μ (elongated anomalous spores very rarely upto 12.5 μ long). — From East Greenland previously recorded by Rostrup (1894 p. 10 and 1904 p. 113) and Lind (1933 p. 4).

U. violacea (Pers.) Rouss.

On *Melandrium apetalum* (L.) Fenzl. N.-E. Gr.: Hold-with-Hope: Stormdalen, abundantly, Aug. 9, 1933; Trollvatnet, East end, Aug. 9, 1933. Gael Hamke-bukta: Jacksonøya, Aug. 11, 1933. Wollaston Forland Landingsdalen, July 28, 1929 (V). Sabineøya, July 22, 1932 (A); Sabineøya: on the top of the hill at Germaniahavn, Aug. 16, 1932 (A); Germaniahavn, in great abundance, July 21, 1933.

Spores 5—8 μ in diam. — Previously not recorded on this host in Greenland.

On *Silene acaulis* L. S.-E. Gr.: Lindenowfjorden: Møretun, Aug. 3, 1932 (D & S). From Eirik Raudes Land I have material from 27 localities of this smut.

Spores 5.5—10.5 μ in diam., ca. 70% were 6—8 μ in diam. — Previously not recorded on this host from Greenland.

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