

Lichens of the Mendenhall Valley, Southeastern Alaska

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Reviewed work(s):

Source: *The Bryologist*, Vol. 68, No. 2 (Summer, 1965), pp. 221-226

Published by: [American Bryological and Lichenological Society](#)

Stable URL: <http://www.jstor.org/stable/3241020>

Accessed: 24/10/2012 17:16

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carpment near Hamilton, Ontario, in the fall of 1964 (on a log, ravine slopes below Websters Falls, Bullocks Corners, Wentworth Co.; *cum fr.*).

I have made no attempt to work out the exact distribution of this interesting species, but I have accumulated a good many records over a number of years and can confirm the range as Ontario and Wisconsin south to Arkansas and South Carolina (or, more precisely, Arkansas, Maryland, Missouri, North Carolina, Ontario, Pennsylvania, South Carolina, Tennessee, Virginia, and Wisconsin). The species seems to be equally at home on rocks, rotten wood (stumps, logs, and dead trunks of trees), and bark of trees (on the trunks and on their bases).

Grout's description fails to mention the frequent occurrence of dense clusters of brownish, papillose brood-filaments in the axils of leaves.

In view of the well known phytogeographic relationship between the floras of eastern North America and eastern Asia, it is interesting to note a striking resemblance in the habit of *Brotherella tenuirostris* and *B. yokahamae* (Broth.) Broth., as evidenced by two Japanese specimens available for comparison. The leaf areolation does not compare very well, but considerable variability in this feature among American specimens suggests that a larger number of Japanese specimens might demonstrate a greater degree of similarity.

LITERATURE CITED

GROUT, A. J. 1932. Moss Flora of North America. Vol. 3. Newfane.

Lichens of the Mendenhall Valley, Southeastern Alaska¹

HERBERT A. McCULLOUGH²

Abstract. *Ninety-three species are reported from the Mendenhall Valley near Juneau and 35 species from nunataks in the Juneau ice field.*

The lichens of Alaska still present a challenge because the area is so large and until recently so little had been done with the flora. The present paper reports collections from a limited area in southeastern Alaska.

During the summer of 1963, from June to August, I was temporarily employed by the U.S. Forest Service and worked in the Mendenhall Glacier area of the North Tongass National Forest. During that time the Forest Service provided me the opportunity to collect in the area.

¹I thank Dr. Aino Henssen who checked many of the determinations, Dr. I. M. Lamb who identified my *Stereocaula*, Dr. Grace Howard who identified the *Ochrolechia*, Dr. John W. Thomson for some determinations including those of the crustose lichens from the nunataks, and Drs. Hildur Krog and Teuvo Ahti for several identifications or verifications.

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The Mendenhall Glacier is located about 13 miles northwest of Juneau. The study area included the region from immediately adjacent to the terminus of the glacier outward to sea level. The collection areas more distant from the glacier were outside the boundaries of the National Forest.

Physiographically, the area is dominated by the Mendenhall Glacier which extends from the Juneau ice field southward 12 miles to its terminus in the Mendenhall Valley. The maximum of the present glacier is considered to have been reached about 200 years ago and to have extended about two miles beyond its present terminus. Numerous evidences of recession are present in the valley. Morainal ridges and flats are fairly well covered by successional vegetation stages, depending upon their age. Glacial erratic boulders are scattered throughout the area.

The terminus of the glacier is bounded on the east by Bullard Mountain (4,225 ft) and on the west and northwest by McGinnis Mountain (4,228 ft) and Stroller White Mountain (5,150 ft). South of the glacier, Mendenhall Lake, a meltwater body, covers an area approximately one mile square. An outcropping of a schist bedrock crosses under the lake and is exposed on each side immediately adjacent to the glacier, as well as at one point on the glacial face. This bedrock is the material most recently exposed by the recession of the glacier. From here the valley gradually broadens out toward the southwest to terminate in the Gastineau Channel. Extending northwestward from the main valley is the Montana Creek area which provided muskeg and mature forest collecting sites. Elevation in the region of study varied from about 500 feet to sea level. Most collections were made at about 100 feet (Fig. 1).

The climate of the Mendenhall Valley is under the maritime influences which prevail along all of the coastal areas of southeastern Alaska. Thus, the area has abundant precipitation, little sunshine, and generally moderate temperatures. Comparison of weather records from the Juneau airport at the end of the Mendenhall Valley and from the city of Juneau itself indicate that there can be considerable climatic difference in locations only a few miles apart. The average length of the growing season in the city of Juneau is 177 days while at the airport it is 146 days. Total precipitation at the Juneau airport has reached a high of 64.06 inches while at Juneau yearly amounts have reached 119.48 inches. The mean precipitation at the airport over the period 1943-1961 is 54.56 inches. Snowfall is frequently heavy in the Juneau area varying from 32 inches in 1940-41 to a record of 246.3 inches as the annual total for the year 1917-1918 (Anderson 1955; Weather Bureau, U.S. Dept. of Commerce 1961).

Four successional stages are evident in the Mendenhall Valley. The natural vegetation is a hemlock-spruce forest with the dominant plants being *Tsuga heterophylla* and *Picea sitchensis*. Successional stages leading toward this climax originate with an initial lichen-moss community. As evidenced on the most recently exposed bedrock,

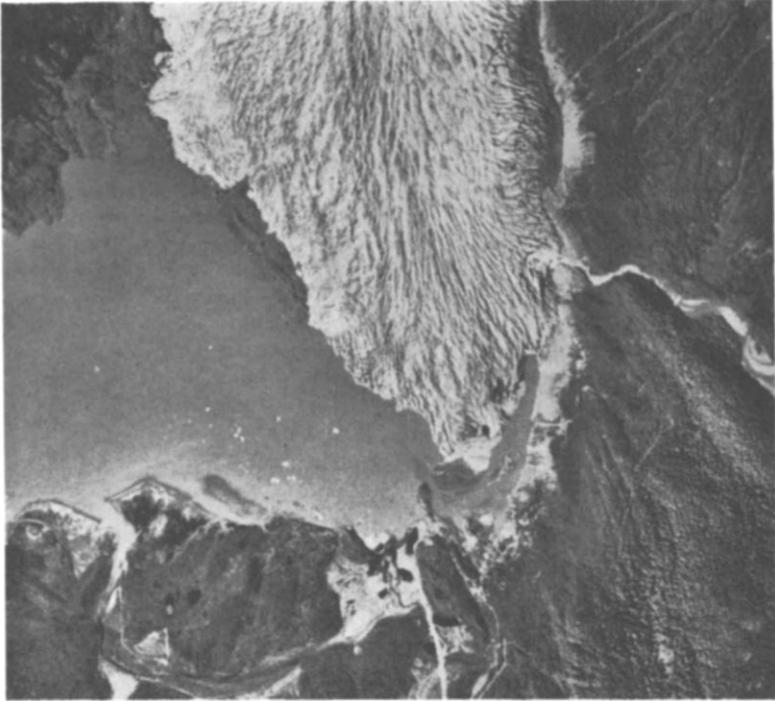


FIG. 1. Aerial view of the terminus of Mendenhall Glacier and part of Mendenhall Lake. U.S. Forest Service photograph.

the initial pioneer is *Placopsis gelida* with *Rhizocarpon geographicum*, *Vestergrenopsis isidiata*, and *V. elaeina* appearing in later phases. The second stage is characterized by the many familiar herbs of the area. Following the herbaceous stage is a shrub phase of alders, numerous types of willow, and low-growing black cottonwoods. In the study area these successional stages do not appear as distinct zones but are intermingled. In all of the stages lichens are an important part of the flora.

Collections were made in the mature forest and in the successional stages in the Mendenhall Valley primarily in the area formerly occupied by the glacier during its maximum extension. A small group of lichens from the nunataks of the Juneau ice field is also reported. The specimens are in my herbarium; duplicates are in the Visitors' Information Office of the Chatham District of the North Tongass National Forest at Juneau.

Alectoria glabra Mot. On dead wood, mature forest; 1574.

Alectoria minuscula Nyl. On erratic boulder, glacial moraine; 1539.

Alectoria nadvornikiana Gyeln. On bark, mature forest; 1568.

Alectoria sarmentosa Ach. On bark, open areas of mature forest; 1473, 1476, 1489, 1569.

- Alectoria* sp. On bark, mature forest; 1470, 1510.
- Anaptychia pseudospeciosa* Kurok. On decaying wood, mature forest; 1509.
- Bacidia sphaeroides* (Dicks.) Zahlbr. On the bark of trees, mature forest; 1545.
- Baeomyces rufus* (Huds.) Rabenh. On soil or rock and over moss in wooded areas; 1432, 1454.
- Cavernularia hulthenii* Degel. On bark, mature forest; 1513, 1559.
- Cetraria chlorophylla* (Willd.) Vain. On bark, open areas of mature forest; 1571.
- Cetraria chrysantha* Tuck. On bark, mature forest; 1552.
- Cetraria glauca* (L.) Ach. On bark and decaying wood, mature forest; 1478, 1491, 1549, 1551, 1566, 1834, *Swanston*.
- Cetraria hepaticum* (Ach.) Vain. On erratic boulder, glacial moraine; 1541.
- Cetraria islandica* (L.) Ach. On soil, glacial moraine; 1464, 1465.
- Cetraria lacunosa* Ach. On decaying wood, mature forest; *Swanston*.
- Cetraria nigricans* (Retz.) Nyl. On soil, glacial moraine; 1463, 1588.
- Cetraria norvegica* (Lynge) Du Rietz. On bark, mature forest; 1501, 1529.
- Cladonia alpestris* (L.) Rabenh. Over moss, muskeg; 1495.
- Cladonia amaurocrea* (Flörke) Schaer. On moss over soil, mature forest; 1511, 1561.
- Cladonia bellidiflora* (Ach.) Schaer. On decaying wood and over moss, mature forest and muskeg; 1479, 1498, 1565.
- Cladonia chlorophaea* (Flörke) Spreng. On moss over soil, exposed bedrock; 1607.
- Cladonia coccifera* (L.) Zopf. On moss over rock, mature forest; 1518.
- Cladonia cornuta* (L.) Schaer. On rock, soil, bark, decaying wood, and over moss; mature forest; 1436, 1457, 1532, 1576.
- Cladonia cornuta* v. *groenlandica* Dahl. On rock, mature forest; 1431.
- Cladonia crispata* (Ach.) Flot. On moss over rock, mature forest; 1517.
- Cladonia delessertii* (Nyl.) Vain. On soil, glacial moraine; 1714.
- Cladonia fimbriata* (L.) Fr. On moss over rock, in bedrock areas; 1397.
- Cladonia foliacea* Willd. On glacial erratic, shrub stage; 1409.
- Cladonia furcata* v. *pinната* (Flörke) Vain. On moss over rock, mature forest; 1435.
- Cladonia gracilis* v. *chordalis* (Flörke) Schaer. On soil, glacial moraine; 1442.
- Cladonia gracilis* v. *elongata* (Jacq.) Flörke. Over moss, glacial moraine; 1521.
- Cladonia mitis* Sandst. On soil, open area of mature forest; 1424.
- Cladonia palamoea* (Ach.) Fink. On soil, on glacial moraine; 1466.
- Cladonia phyllophora* (Ehrh.) Hoffm. Over moss, mature forest; 1422.
- Cladonia pleurota* (Flörke) Schaer. On soil and over moss, rock outcrop and muskeg; 1396, 1497.
- Cladonia pyxidata* (L.) Hoffm. On soil, glacial moraine; 1450.
- Cladonia rangiferina* (L.) Web. Over moss, muskeg; 1496.
- Cladonia squamosa* (Scop.) Hoffm. Over moss and on decaying wood, mature forest and open areas; 1516, 1548, 1570, 1575.
- Cladonia turgida* (Ehrh.) Hoffm. On moss over soil, mature forest; 1560.
- Cladonia uncialis* (L.) Web. On soil, glacial moraine; 1461.
- Cladonia uncialis* f. *subobtusata* (Coem.) Arn. On soil, mature forest; 1423.
- Cornicularia aculeata* (Sherb.) Ach. On soil, glacial moraine; 1831.
- Icmadophila ericetorum* (L.) Zahlbr. On soil, moss, and decaying wood, mature forest and muskeg; 1441, 1486, 1499, *Swanston*.
- Leptogium cyanescens* (Ach.) Körb. On bark, mature forest; 1456.

- Leptogium saturnium* (Dicks.) Nyl. On bark, mature forest; 1547.
Lobaria linita (Ach.) Rabenh. On soil, glacial moraine; 1590.
Lobaria oregana (Tuck.) Müll. Arg. On bark, mature forest; 1460, 1488.
Lobaria pulmonaria (L.) Hoffm. On bark, mature forest; 1538.
Lobaria verrucosa (Huds.) Hoffm. On bark, mature forest; 1527, 1537, 1672.
Massalonia canosa (Dicks.) Körb. On rock, mature forest; 1434.
Mycoblastus sanguinarius (L.) Norm. On bark, mature forest; 1493, 1508.
Nephroma bellum (Spreng.) Tuck. On bark, mature forest and shrub stage; 1487, 1514, 1558, 1673, 1737.
Nephroma helveticum v. *sipeanum* (Gyeln.) Wetm. On bark, mature forest; 1504, 1738.
Nephroma parile (Ach.) Ach. On rock and bark, mature forest; 1455, 1485.
Nephroma resupinatum (L.) Ach. On decaying wood, mature forest; 1556.
Pannaria mariana (Fr.) Müll. Arg. On soil, bark of trees; 1512.
Pannaria pezizoides (Web.) Trev. On soil and decaying wood, glacial moraine; 1451, 1525.
Parmelia enteromorpha Ach. On bark and decaying wood, mature forest; 1421, 1459, 1505, 1528, 1531.
Parmelia exasperatula Nyl. On erratic, glacial moraine; 1584.
Parmelia saxatilis (L.) Ach. On rock, bark and decaying wood, all habitats; 14 collections.
Parmelia sulcata Tayl. On bark and rock, all habitats; 8 collections.
Parmelia vittata (Ach.) Nyl. On bark, mature forest; 1492, 1567.
Peltigera apthosa v. *variolosa* (Mass.) Thoms. On moss and rock, all habitats; 1389, 1413, 1589, 1598.
Peltigera apthosa v. *typica* (L.) Willd. On bark and soil, glacial moraine; 1562, 1587.
Peltigera canina (L.) Willd. Over moss, mature forest; 1430.
Peltigera canina v. *rufescens* (Weis.) Mudd. Over moss, in bedrock area; 1388, 1400, 1447, 1604.
Peltigera canina v. *albescens* (Wahlb.) Thoms. On soil, glacial moraine; 1563.
Peltigera canina v. *spuria* (Ach.) Schaer. On soil, glacial moraine; 1445.
Peltigera malacea (Ach.) Funck. On bark, shrub stage; 1415.
Peltigera polydactyla v. *typica*. (Neck.) Hoffm. On soil, rock and over moss, glacial moraine; 7 collections.
Peltigera polydactyla v. *crassoides* Gyeln. On rock, bedrock area; 1609.
Peltigera scabrosa Th. Fr., On decaying wood, mature forest; 1472.
Peltigera scutata (Dicks.) Duby. On bark, shrub stage; 1428.
Pertusaria pacifica Henss. On decaying wood, mature forest; 1469.
Physcia dubia (Hoffm.) Lett. On granite erratic, glacial moraine; 1582, 1586.
Piliphoron aciculare (Ach.) Nyl. On moss over rock; *Swanston*.
Polychidium musicola (Sw.) S. Gray. On soil or over moss, glacial moraine and in bedrock area; 1399, 1419, 1449.
Psoroma hypnorum (Vahl.) S. Gray. On soil over moss, glacial moraine and exposed bedrock; 1387, 1392, 1404, 1592.
Ramalina dilacerata (Hoffm.) Vain. On bark, mature forest; 1573.
Ramalina farenacea (L.) Ach. On rock, mature forest; 1483.
Solorina crocea (L.) Ach. On soil, glacial moraine; 1448, 1462.
Sphaerophorus fragilis (L.) Pers. On bark, mature forest; 1564.
Sphaerophorus globosus (Huds.) Vain. On bark and decaying wood, mature forest; 1458, 1471, 1490, 1502, *Swanston*.
Sphaerophorus melanocarpus DC. On bark, mature forest; 1550, 1580.

Stereocaulon alpinum v. *erectum* Frey. On moss, exposed bedrock; 1599.

Stereocaulon coniophyllum Lamb. On rock or over moss, on exposed bedrock; 1394, 1420, 1520, 1601.

Stereocaulon glareosum (Sav.) Magn. On soil, glacial moraine; 1408, 1418.

Stereocaulon grande (Magn.) Magn. On rock, exposed bedrock; 1393.

Stereocaulon myriocarpum Th. Fr. Over moss, exposed bedrock; 1402.

Stereocaulon rivulorum Magn. On rock, exposed bedrock; 1606.

Sticta anthraspis Ach. On bark, mature forest; 1503, 1739.

Sticta crocata (L.) Ach. On bark, mature forest; 1506.

Sticta fuliginosa (Dicks.) Ach. On bark, mature forest; 1515, 1533.

Sticta weigeli (Ach.) Vain. On bark, mature forest; 1554.

Thamnolia vermicularis (Sw.) Ach. On soil or over moss, open areas all habitats; 1425, 1444.

Umbilicaria hyperborea (Ach.) Hoffm. On rock, glacial moraine or exposed bedrock; 1395, 1542, 1740.

Umbilicaria torrefacta (Lightf.) Schrad. On rock, exposed bedrock; 1741, 1833.

Usnea longissima Ach. On bark, mature forest; 1567.

Vestergrenopsis elaeina (Wahlenb.) Gyeln. On rock, exposed bedrock; 1416, 1603.

Vestergrenopsis isidiata (Degel.) Dahl. On rock, exposed bedrock; 1391, 1540.

Xanthoria candelaria (L.) Kickx. On bark or rock, mature forest or glacial moraine; 1480, 1577, 1581.

JUNEAU ICE FIELD COLLECTIONS

The following collections from nunataks in the Juneau ice field were made by David Potter and Margaret McCaul:

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|---------|---|--|
| Llano. | <i>Agrophora rigida</i> (Du Rietz) | <i>Lobaria pulmonaria</i> (L.) Hoffm. |
| | <i>Buellia scabrosa</i> Mass. | <i>Ochrolechia pallescens</i> (L.) Mass. |
| | <i>Caloplaca ferruginea</i> (Huds.) Th. | <i>Parmelia centrifuga</i> (L.) Ach. |
| Fr. | | <i>Parmelia sulcata</i> Tayl. |
| | <i>Candelariella canadensis</i> Magn. | <i>Peltigera aphthosa</i> (L.) Willd. |
| | <i>Cetraria islandica</i> (L.) Ach. | <i>Peltigera aphthosa</i> v. <i>variolosa</i> (Mass.) Thoms. |
| | <i>Cetraria hepatizon</i> (Ach.) Vain. | <i>Peltigera polydactyla</i> (Neck.) Hoffm. |
| | <i>Cetraria nigricans</i> (Retz.) Nyl. | <i>Peltigera scabrosa</i> Th. Fr. |
| | <i>Cladonia bellidiflora</i> (Ach.) | <i>Pertusaria sommerfeltii</i> Flörke. |
| Schaer. | | <i>Placopsis gelida</i> (L.) Nyl. |
| | <i>Cladonia coccifera</i> (L.) Zopf. | <i>Psoroma hypnorum</i> (Vahl) S. Gray. |
| | <i>Cladonia gracilis</i> (L.) Willd. | <i>Solorina crocea</i> (L.) Ach. |
| | <i>Cladonia mitis</i> Sandst. | <i>Sphaerophorus fragilis</i> (L.) Pers. |
| | <i>Cladonia pleurota</i> (Flörke) | <i>Stereocaulon alpinum</i> Laur. |
| Schaer. | | <i>Stereocaulon</i> sp. |
| | <i>Cornicularia aculeata</i> (Schreb.) Ach. | <i>Thamnolia vermicularis</i> (Sw.) Ach. |
| Ach. | | <i>Umbilicaria cylindrica</i> (L.) Del. |
| | <i>Haematomma lapponicum</i> Räs. | <i>Umbilicaria hyperborea</i> (Ach.) Hoffm. |
| | <i>Lecanora campestris</i> (Schaer.) Hue. | <i>Umbilicaria velea</i> (L.) Ach. |
| Hue. | | |
| | <i>Lecanora chlarona</i> (Ach.) Nyl. | |
| | <i>Lecidea atomarginata</i> Magn. | |
| | <i>Lecidea demissa</i> (Rutstr.) Ach. | |

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