

**Montana Collections of
Scorpidium scorpioides and *Meesia triquetra***

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The mosses, *Meesia triquetra* and *Scorpidium scorpioides*, in Montana, are often associated with rich fens and are considered potentially imperiled by the Montana Natural Heritage Program because of species and habitat rarity. The U.S. Forest Service also designates them as "sensitive species" and, on federal lands, affords them special management status under the National Forest Management Act. In Europe, both of these species are rare as a result of acidification and eutrophication of fen habitats from pollution and water management practices (Odgaard 1988, Kooijman and Westhoff 1995).

Prior to this report, there were two known locations for *Scorpidium scorpioides* in Montana, Pine Butte Swamp (a fen), Teton County (Lesica 1986) and a collection near Columbia Falls, Flathead County (Williams 1902). There was one published location for *Meesia triquetra* in Montana, Pine Butte Swamp, Teton County (Elliott and Moore 1989).

This report identifies 15 sites in Montana with *Meesia triquetra* and 20 sites with *Scorpidium scorpioides*. Information presented in this report was obtained from our field collections and collections that were made by other Montana botanists and wetland biologists. We identify herbaria where specimens have been deposited as: MONTU (University of Montana); MRC (Missoula Research Center, Rocky Mountain Research Station, U.S.D.A. Forest Service, Missoula, MT); FORTINE (herbarium at the Murphy Lake Ranger Station, U.S.D.A. Forest Service, Fortine, MT); BUF (Clinton Herbarium, Buffalo Museum of Science); COLO (University of Colorado); UBC (University of British Columbia); ALTA (University of Alberta); and MO (Missouri Botanical Garden). We have looked at all specimens cited in this report.

Distribution and habitat

Meesia triquetra and *Scorpidium scorpioides*, circumboreal species, usually have high fidelity to rich fens (i.e., high concentrations of sodium bicarbonate, calcium, and magnesium; high electrical conductivities; and neutral or basic pH values), although they sometimes occur in wetlands that do not possess all of the typical attributes of rich fens (Montagnes 1990, Kooijman and Westhoff 1995).

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The North American distribution of *Meesia triquetra* includes Alaska, most of the Canadian provinces, the Great Lakes states, east to New York, and northern California (Montagnes 1990). One of us also collected *Meesia triquetra* from a rich fen in McHenry County, western North Dakota (Elliott 1982, MO). In the Rocky Mountains, *Meesia triquetra* has been found as far south as Wyoming (Cooper and Andrus 1994), in a high elevation fen (3000 m.) of the Wind River Range. *Meesia triquetra*, usually grows intermixed with other mosses and occasionally forms dense patches in wet depressions of fens and carrs.

Scorpidium scorpioides, typically grows floating or emergent in shallow water of fens or emergent on marly substrates of seeps and springs. It also grows as a submersed aquatic (to depths of 5 m.), attached to bottom substrates of lakes with high pH (8.0) and electrical conductivities of 250-350 mho/cm. (Pierce and Jensen in preparation). *Scorpidium* also has been found in the West in the Canadian provinces (Lawton 1971, Ireland et al 1997), Wyoming (Eckel 1996), and Colorado (Cooper 1991 and Cooper 1995). The *Scorpidium* record reported by Eckel (1996), from Wyoming is from the Swamp Lake Fen, Park County, a rich fen also harboring the rare species *Cinclidium stygium* (Elliott 1943, BUF). The Colorado collection, from an extreme rich fen, elevation 2,840 m., is the southernmost record for *Scorpidium* in the West.

Mosses typically occurring with *Scorpidium* and *Meesia*, are *Aulacomnium palustre*, *Calliergon giganteum*, *Campylium stellatum*, *Limprichtia revolvens*, *Bryum pseudotriquetrum*, *Rhizomnium magnifolium*, and *Tomentypnum nitens*. Less common associates include *Sphagnum warnstorffii*, *Hamatocaulis vernicosus*, *Helodium blandowii*, *Thuidium recognitum*, *Polytrichum strictum*, *Hypnum pratense*, and *Dicranum undulatum*. Rare associated mosses in Montana fens include: *Calliergonella cuspidata*, *Catascopium nigrum*, *Cinclidium stygium*, *Fissidens adianthoides*, *Pseudocalliergon turgescens*, *Meesia uliginosa*, and *Paludella squarrosa*.

The presence of *Meesia triquetra* with *Sphagnum squarrosum*, *S. angustifolium*, and *S. magellanicum*, species often associated with poor fens (Andrus 1980 and McQueen 1990), is rare in Montana, occurring at three sites (Drop Creek Fen, Lincoln County; Rock Creek wetlands, Ravalli County; and McGee Meadow, Glacier National Park). The association of *Meesia* with *S. angustifolium* and *S. magellanicum* also is rare in Alberta (Montagnes 1990).

Vascular plants, often growing in association with *Meesia* and *Scorpidium* in fens include: *Betula glandulosa*, *Menyanthes trifoliata*, *Carex aquatilis*, *Carex lasiocarpa*, *Carex limosa*, *Carex livida*, *Carex simulata*, and *Carex utriculata*. Species associated with *Scorpidium*, growing as submersed aquatics in lakes include

Chara sp., *Nuphar variegatum*, *Scirpus acutus*, *Scirpus subterminalis*, *Potamogeton natans*, *Potamogeton gramineus*, and *Utricularia vulgaris* (Pierce and Jensen in preparation). In general, fens that we visited appear to be similar in species composition to fens described farther north in Alberta, Canada by Slack et al (1980).

***Meesia triquetra* location sin Montana**

Carbon County. Wet meadow along West Fork Rock Creek; 20 km. W. of Red Lodge; Sec. 34, T7S, R18E, Lat. 45.1745, Long. 109.4960; Elev. 2386 m.; *Elliott 1971* (MONTU).

Flathead County. Crystal Bench Fen, 13 km. N. of Columbia Falls; Sec. 9, T31N, R20W (Lat. 48.4649, Long. 114.1646); Elev. 1055 m.; *Spribille 3100* (FORTINE). Teepee Lake Fen; 16 km. N. of Polebridge; Sec. 3, T36N, R22W (Lat. 48.9060, Long. 114.4291); Elev. 1236 m.; *Greenlee 9902* (MONTU). Glacier National Park, McGee Meadow, 12 km. N. of West Glacier; Sec. 34, T33N, R19W (Lat. 48.3525, Long. 114.3525); Elev. 1190 m.; *Golinski 1628* (UBC). Magnesia Creek Fen; marly banks of rill, 8 km. S. of Trego; Sec. 7, T33N, R25W (Lat. 48.6461, Long. 114.8783); Elev. 1152 m.; *Spribille 3906* (FORTINE).

Glacier County. Fen at head of Flat Iron Creek; 11 km. W. of Browning on Blackfeet Indian Reservation; Sec. 16, T32N, R12W (Lat. 48.5395, Long. 113.1632); Elev. 1455 m.; *Lesica s.n.* (MONTU).

Lake County. Plum Creek Fen; foothills of Mission Mountains, 13 km. S. of Swan Lake; Sec. 1, T23N, R18W (Lat. 47.7812 Long., 113.8497); Elev. 1012 m.; *Chadde and Shelly 569* (MRC). Swan River Research Natural Area; spring-fed domed fen, 6 km. S. Swan Lake; Sec. 2, T24N, R18W (Lat. 47.8694, Long. 113.8660); Elev. 939 m.; *Elliott 2532* (MONTU).

Lincoln County. Bowen Creek Fen; 24 km. W. of Olney; Sec. 1, T31N, R26W (Lat. 48.4779 Long., 114.8606); Elev. 1445 m.; *Elliott 2340* (MONTU). Drop Creek Fen; 35 km. N. of Libby; Sec. 13, T34N, R31W (Lat. 48.7097 Long., 115.5471); Elev. 1515 m.; *Spribille 5726* (FORTINE). Rattlebone Fen; 1 km. S. of Rattlebone Lake; Sec. 26, T34N, R25W (Lat. 48.6805, Long. 114.7911); Elev. 1060 m.; *Elliott 2799* (MONTU), *Spribille 3582* (FORTINE). Wigwam River Fen; 0.5 km S. of Canadian border; Sec. 2, T37N, R25W (Lat. 48.9959, Long. 114.8142); Elev. 1394 m.; *Spribille 3317C* (FORTINE).

Ravalli County. Meadow Creek Fen; hummocks in fen, 13 km. E. of Sula; Sec. 10, T1N, R18W (Lat. 45.8505, Long. 113.8248); Elev. 1760 m.; *Heidel s.n.* (MONTU). Rock Creek wetlands; 10 km. N.W. Darby, 1 km. E. of Lake Como; Sec. 28, T4N, R21W (Lat. 46.0730, Long. 114.2120); Elev. 1206 m.; *Chadde and Shelly 569* (MRC).

Teton County. Pine Butte Swamp (fen); 27 km. W. of Choteau; Sec. 12, T 24N, R8W, (Lat. 47.8466, Long. 112.5674); Elev. 1,402 m; *Elliott 1403* (MONTU).

***Scorpidium scorpioides* locations in Montana**

Flathead County. Ambrose Fen; shallow water emergent; 3 km S. of Creston; Sec. 26 and 27, T28N, R20W; (Lat. 48.1610, Long. 114.1060) Elev. 882 m.; *Elliott 2524*, (MONTU), *Greenlee 9808* (MONTU). Bent Flat Fen; patterned fen; 8 km. E. of Spotted Bear Ranger Station; Sec. 11, T25N, R15W (Lat. 47.9460, Long. 113.4519); Elev. 1227 m.; *Chadde and Shelly 532* (MRC). Collins Fen; marl flats; confluence of Lime and Magnesium creeks, 6.5 km. S. of Trego; Sec. 6, T33N, R25W (Lat. 48.3875, Long. 114.5300); Elev. 1067 m.;

Spribille 5472 (FORTINE). Fire Lake (Smokey Lake); floating in alkaline water; 12 km. S. of Stryker; Sec. 17, T33N, R24W (Lat. 46.6238, Long. 114.7260); Elev. 1109 m.; *Spribille 9227* (FORTINE). Paul Creek Fen; 10 km. S. of Stryker; Sec. 27, T33N, R25W (Lat. 48.5983, Long. 114.8028); Elev. 1327 m.; *Spribille 9175* (UBC). Teepee Lake Fen; 16 km. N.W. of Polebridge; Sec. 3, T36N, R22W (Lat. 48.9060, Long. 114.4291); Elev. 1236 m.; *Greenlee 9903* (MONTU).

Glacier County. Flat Iron Fen; 11 km. W. of Browning, Blackfeet Indian Reservation; Sec. 16, T32N, R12W (Lat. 48.5395, Long. 113.1632); Elev. 1455 m.; *Lesica s.n.* (MONTU).

Lake County. Swan Lake Oxbow; calcareous seep and spring complex, 2 km. S. of Swan Lake; Sec. 35, T25N, R18W (Lat. 47.8887, Long. 113.8550); Elev. 909 m.; *Elliott 1825* (MONTU).

Lewis and Clark County. Wood Lake Fen; 40 km W. of Augusta; Sec. 26, T20N, R10W (Lat. 47.4588, Long. 112.8393); Elev. 1697 m.; *Cooper s.n.* (MONTU).

Lincoln County. Blue Lake; submerged to depth of 1-5 m; 1.5 km south of Stryker; Sec. 1, T34N, R25W (Lat. 48.6580, Long. 114.7670); Elev. 991 m.; *Pierce 1621* (MRC). Cody Lake Fen; emergent in fen and submersed in open water to depth of 3m.; 15 mi. S.E. Libby; Sec.6, T.29N, R28W (Lat. 48.3088, Long. 115.2319); Elev. 1424 m.; *Elliott 2788* (MONTU). Dudley Slough; emergent on marly flats and floating in open water; 3 km W. of Trego; Sec.14, T34N, R26W (Lat. 48.7041, Long. 114.9192) ; Elev. 1030 m.; *Elliott 1584* (MONTU). Hidden Lake; marl flats, 2 km W. of Stryker; Sec.35, T34N, R25W (Lat. 48.6719, Long. 114. 7938; Elev. 970 m.; *Spribille 5320* and *5336* (FORTINE). Horseshoe Lake; submerged to depth of 2-4 m; W. of Happy's Inn; Sec. 23 T27N, R28W (Lat. 48.0828, Long.115.1721); Elev. 1014 m.; *Pierce 1606* (MRC). Murphy Lake; submerged to a depth of 1m; 4 km. S.E of Fortine ; Sec. 5, T34N, R25W (Lat. 48.7347, Long.114.8590); Elev. 909 m.; *Pierce s.n.* (MRC). Rattlebone Fen; floating, woven into caddis fly casings and submerged in open water to a depth of 1 m.; 1 km S. of Rattlebone Lake; Sec. 26, T34N, R25W, (Lat. 48.6805, Long. 114.7911); Elev. 1060 m.; *Spribille and Elliott 5139* (ALTA and COLO).

Missoula County. Boles Creek, Elk Meadow; 26 km. N. of Missoula; Sec. 35, T16N, R15W (Lat. 47.1019, Long. 113.7008); Elev. 1703 m.; *Pierce 1240* (MONTU).

Teton County. Pine Butte Swamp (fen); emergent in shallow water; 27 km. W. of Choteau; Sec. 12, T24N, R8W (Lat. 47.8466, Long. 112.5674); Elev. 1,402 m; *Elliott 1397* (MONTU) and *Lesica 2538* (COLO). Seeps along Muddy Creek at Black Leaf Wildlife Management Area, 22 km. W. of Bynum; Sec. 14, T26N, R8W (Lat. 48.0059, Long. 112.6014); Elev.1454 m.; *Elliott 2814* (MONTU). Fen at head of Cow Creek; 24 km. W. of Bynum, Sec.6, T26N, R8W, (Lat. 48.0340 Long. 112.6818); Elev 1485 m.; *Lesica s.n.* (MONTU).

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Literature Cited

- Andrus, R.E. 1980. Sphagnaceae (Peat Moss Family) of New York State. Bulletin No. 442, New York State Museum, Albany, New York.
- Cooper, D. J. 1991. The habitats of three boreal fen mosses new to the southern Rocky Mountains of Colorado. *The Bryologist* 94: 49-50.
- Cooper, D. J. 1996. Water and soil chemistry, floristics, and phytosociology of the extreme rich High Creek Fen in South Park, Colorado, U.S.A. *Can. J. Bot.* 74: 1801-1811.
- Cooper, D. J. and R. E. Andrus. 1994. Patterns of vegetation and water chemistry in peatlands of the west-central Wind River Range, Wyoming, U.S.A. *Can. J. Bot.* 1586-1597.
- Eckel, P. M. 1996. Synopsis of the mosses of Wyoming. *Great Basin Naturalist* 56(3): 197-204.
- Elliott, J. C. and G. L. Moore. 1989. Additions to the moss flora of Montana. *The Bryologist* 92: 194-197.
- Kooijman, A. M. and V. Westhoff. 1995. Variation and habitat factors and species composition of *Scorpidium scorpioides* communities in NW-Europe. *Vegetatio* 117: 133-150.
- Ireland, R. R., G. R. Brassard, W.B. Schofield, and D. H. Vitt. 1987. Checklist of mosses of Canada II. *Lindbergia* 13: 1-62.
- Lesica, P. 1986. Vegetation and flora of Pine Butte Fen, Teton County, Montana. *Great Basin Naturalist* 46(1): 22-32.
- McQueen, C.B. 1990. Field guide to the peat mosses of boreal North America. University Press of New England, Hanover and London.
- Montagnes, R. J. S. 1990. The habitat and distribution of *Meesia triquetra* in North America and Greenland. *The Bryologist* 93(3): 349-352.
- Odgaard, B. V. 1988. Glacial relicts - and the moss *Meesia triquetra* in central and western Europe. *Lindbergia* 14: 73-78.
- Slack, N. G., D. H. Vitt, and D. G. Horton. 1980. Vegetation gradients of minerotrophically rich fens in western Alberta. *Can. J. Bot.* 58: 330-350.
- Williams, R. S. 1902. A preliminary list of Montana mosses. *Bulletin New York Botanical Garden* 2: 351-380.



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