NOTEWORTHY COLLECTIONS

CONFIRMATION OF *CATOSCOPIUM NIGRITUM* (HEDW.) BRID. (CATOSCOPIACEAE), GOLF-CLUB MOSS, FOR WISCONSIN, USA.

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STATE OF OBSERVATION: Wisconsin.
SPECIES AUTHOR(S): *Catoscopium nigritum* (Hedw.) Brid.
FAMILY: Catoscopiaceae.
COMMON NAME: Golf-club moss.

Significance of the Report: First collection of *Catoscopium nigritum* (Hedw.) Brid. in the State of Wisconsin since 1932. There are records of only one or two previous collection events for this species in Wisconsin, and information for those collections is very sparse.

Previous Knowledge: *Catoscopium nigritum* (Catoscopiaceae) is an extreme-rich fen indicator of the northern hemisphere and is uncommon in the Great Lakes region (Chee and Vitt 1989; Vitt 2014a, 2014b; Jenkins 2020). *C. nigritum* is a circumboreal species of moss occurring in North America, northern Eurasia (particularly common in Scandinavia and in the Alps), Svalbard, Greenland, and Iceland (Vitt 2014a; Consortium of Bryophyte Herbaria 2025). Based on herbarium collection and observation data, in North America the species is relatively abundant in the northern Rocky Mountains, the northern Great Lakes region, Hudson Bay, and the northern coast of Newfoundland (Consortium of Bryophyte Herbaria 2025; Global Biodiversity Information Facility 2025). In Canada, *Catoscopium nigritum* is reported from Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nunavut, Ontario, Quebec, Saskatchewan, and Yukon; in the United States the species is reported from Alaska, California, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, and New York (Vitt 2014a; Consortium of

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Bryophyte Herbaria 2025; Global Biodiversity Information Facility 2025; NatureServe 2025).

A search of the Consortium of Bryophyte Herbaria showed three specimens held at NYBG (images of the packets shared by L. Briscoe, personal communication), listed simply as collected in Wisconsin (one notes "on moist sandy depressions on rotting wood"); the packets have no further information other than the collector (Catherine Gross Duncan or Caroline A. Lander—"presented by C. G. Duncan") and date of collection for Lander's collection (July 28th of 1932). We were able to examine the Duncan and Lander specimens and confirm the species identifications. Searches cross-referencing the collectors with Wisconsin reveal that Catherine Duncan collected several bryophyte specimens in Wisconsin between 1932 and 1937 (at Baxter's Hollow, Blue Mounds, Devil's Lake, Eagle River, Fern Dell, Parfrey's Glen, Pine Hollow, Lake Hasbrook, Lake Mendota, near Lake Tomahawk, Rocky Arbor/Wisconsin Dells, Shorewood Hills, Trout Lake Witches Gulch/Wisconsin Dells; Consortium of Bryophyte Herbaria 2025). Caroline Lander also collected in Wisconsin between 1932 and 1937 (from Artist's Glenn/Wisconsin Dells, Lake Mendota, Parfrey's Glen, and a "Swamp near Madison"; Consortium of Bryophyte Herbaria 2025).

Glime and Vitt (1987) list *Catoscopium nigritum* as a submerged hemi-calciphilous species growing in alkaline western Canadian montane streams. In western Montana, Elliot and Pipp (2020) describe the species as occurring in calcareous fens and wetlands. In 1992, the species was listed as critically imperiled in New York (Slack 1992), possibly now extirpated (Consortium of Bryophyte Herbaria 2025, NatureServe 2025). *Catoscopium nigritum* is listed as critically imperiled in Montana and New Brunswick (NatureServe 2025), with no observations from either place in iNaturalist (2025), and few recent collections from both areas in the Consortium of Bryophyte Herbaria (2025).

Discussion: Within Wisconsin, *Catoscopium nigritum* is known only from Door County in northeastern Wisconsin, at The Ridges Sanctuary State Natural Area (SNA), approximately 1km to the west-by-southwest of Pickerel Pond and ~1.3km to the west of Moonlight (previously known as Mud) Bay. Several plants were first observed in Wisconsin in October of 2024, producing sporophytes at the tops and sides of sedge tussocks in several small boreal rich fens in Door County. *Catoscopium nigritum* was found growing in tussocks of *Carex lasiocarpa* Ehrh. and other sedges. A number of bryophytes present at the site are considered indicator species of extreme-rich fens, including *Aneura pinguis* (L.) Dumort., *Campylium stellatum* (Hedw.) Lange & C.E.O. Jensen, *Drepanocladus trifarius* (F. Weber & D. Mohr) Broth., *Scorpidium cossonii* (Schimp.) Hedenäs, and *Scorpidium scorpioides* (Hedw.) Limpr.; tracheophytic extreme-rich or calcareous fen indicators observed nearby include *Carex aquatilis* Wahlenb., *Cladium mariscoides* (Muhl.) Torr., *Dasiphora fruticosa* (L.) Rydb., *Muhlenbergia glomerata* (Willd.) Trin., *Parnassia glauca* Raf., *Trichophorum cespitosum* (L.) Hartm., and *Triglochin maritima* L. (Chee and Vitt 1989; Vitt and Chee 1990; Vitt 2014b; Hedenäs 2003; Minnesota Department of Natural Resources 2016). Additional floristic work in the area will likely reveal additional rich fen indicator species, including both tracheophytes and bryophytes.

A review of herbarium records of *Catoscopium nigritum* in the Upper Great

Lakes region shows that 162 vouchered specimens have been collected from approximately 14 locations in Ontario, Canada (most recently in 2010); 44 specimens were collected from approximately 10 locations in Manitoba (most recently in 2019); three specimens have been collected from three counties in Minnesota (most recently in 1999; although Janssens (2023) notes six vouchers from the state); two specimens from two localities in two counties were collected in Illinois (both collected in 1984); 15 specimens from two counties were collected in Iowa (most recently in 1950); and 233 vouchered specimens have been collected in Michigan from 10 counties, mainly in Emmet and Presque Isle Counties (most recently in 2002; Consortium of Bryophyte Herbaria 2025). A search of iNaturalist records from the western Great Lakes region shows two observations from the Upper Peninsula of Michigan, three from the Lower Peninsula of Michigan, one from the single known Wisconsin site (the 2024 *Klingert-Wefferling* collections), and no observations from Minnesota; remaining observations from North America are restricted to Alberta, British Columbia, and Yukon (iNaturalist 2025).

In Wisconsin, boreal rich fen is most common along the Door Peninsula (northeastern Wisconsin), with a few additional recognized inland sites, mainly in northeastern Wisconsin (Epstein 2017; K. Doyle and S. Janke, personal communication). The Ridges Sanctuary SNA is surrounded by extensive calcareous spring-fed wetlands (occurring on shallow saturated peaty soils over dolomite bedrock), including portions of Toft Point SNA and Mud Lake State Wildlife Area. Other boreal rich fen and Great Lakes shore fen (sensu Epstein 2017) sites along both the western and eastern edges of Door County as well as in inland Wisconsin should be more extensively surveyed to better understand these rare plant communities (Wefferling 2024).

In addition to the new State record for Wisconsin of *Catoscopium nigritum*, the following species are county records for Door County: *Aneura pinguis*, *Drepanocladus trifarius*, *Mylia anomala*, and *Sphagnum fuscum*, bringing the total number of species reported from Door County from 224 to 229 (by our count, but see below). Further work in this ecologically diverse region will undoubtedly reveal additional bryophyte species. Rose (2019) compiled bryophyte herbarium specimen records by county for Wisconsin, showing the most speciose counties to be the northwestern counties of Ashland (267), Bayfield (331), and Douglas (309), compared to a species count for Door County of 219.

Diagnostic Characters: A small but conspicuous (when producing sporophytes) dioicous acrocarpous moss up to ~6cm in height with three-ranked erect lanceolate leaves and with a vestiture of reddish rhizoids up the reddish black stems; producing shiny ovoid dark sporophytes (appearing black in sunlight) with setae 0.8–2.4 cm and capsule 0.6–1 mm (Vitt 2014a, Jenkins 2020). Our population had nearly mature to mature (dark reddish black to black, mostly still unopened) capsules when collected in early October.

Specimen Citations: WISCONSIN: Door County: October 7, 2024, *Klingert & Wefferling 253 & 254* (UWGB), 45.082, –87.113 at ~181m elevation, in sedge tussocks in a small marly boreal rich fen southwest of the largest unnamed lake between (to the west of) Pickerel Pond and County Highway Q. October 7, 2024, *Klingert & Wefferling 258* (UWGB), 45.081°, –87.113° at ~179m elevation, on

sides of sedge tussocks in a sedge-dominated boreal rich fen south of the largest unnamed lake between (to the west of) Pickerel Pond and County Highway Q. All three specimens were collected in a boreal rich fen, either on a floating peat mat or on peaty soil with the following tracheophytes: *Andromeda glaucophylla* Link*, Calamagrostis canadensis* (Michx.) P. Beauv., *Carex aquatilis, Carex lasiocarpa, Chamaedaphne calyculata* (L.) Moench*, Cladium mariscoides, Dasiphora fruticosa, Drosera rotundifolia* L.*, Gaultheria hispidula* (L.) Muhl. ex Bigelow*, Gaylussacia baccata* (Wangenh.) K. Koch*, Juniperus communis* L.*, Larix laricina* (Du Roi) K. Koch*, Menyanthes trifoliata* L.*, Muhlenbergia glomerata, Parnassia glauca*, *Phragmites australis* var. *americanus* (Saltonstall, P.M. Peterson & Soreng) Tiehm*, Picea mariana* (Mill.) Britton, Sterns & Poggenb., *Pinus strobus* L.*, Rhododendron groenlandicum* (Oeder) K.A. Kron & W.S. Judd*, Sarracenia purpurea* L.*, Solidago uliginosa* Nutt.*, Thuja occidentalis* L.*, Trichophorum cespitosum, Triglochin maritima,* and *Vaccinium oxycoccos* L. (the tracheophytes were observed but, for the most part, not collected during visits to the site). The following bryophytes were collected near the *Catoscopium nigritum* collection sites; all are accessioned at the Gary A. Fewless Herbarium, UWGB. Growing in low, wet sites: *Aneura pinguis, Campylium stellatum, Drepanocladus trifarius* (in much greater abundance than the authors have seen anywhere else in Wisconsin), *Scorpidium cossonii,* and *Scorpidium scorpioides* (also quite abundant); and growing in small to large hummocks embedded in the fen were *Mylia anomala* (Hook.) Gray, *Sphagnum capillifolium* (Ehrh.) Hedw., *Sphagnum fuscum* (Schimp.) H. Klinggr., *Sphagnum warnstorfii* Russow, and *Polytrichum strictum* Menzies ex Brid.

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