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A BRYOLOGICAL SURVEY OF NORTH-CENTRAL NEBRASKA

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A checklist of 38 species of mosses and two liverworts is presented for Blaine, Boyd, Brown, Cherry, Garfield, Holt, Keya Paha, Loup, Rock, and Thomas counties of Nebraska. Several county reports are given along with two state records: *Brotherella recurvans* (Michx.) Fleisch., and *Calypogeia trichomanis* (L.) Corda.

† † †

INTRODUCTION

This report summarizes bryophyte collections made in Blaine, Boyd, Brown, Cherry, Garfield, Holt, Keya Paha, Loup, Rock, and Thomas counties of north-central Nebraska primarily during the summer of 1980. Some collections (other than those of the author) were made prior to that time. All collections have been identified, catalogued, and placed in the Kearney State College Herbarium.

Reports of mosses and liverworts have been made from scattered locations in Brown, Cherry, Garfield, Holt, Keya Paha, and Thomas counties by Webber (1889 and 1892), Evans (1924), Wolfe (1924), Koch (1971 and 1975), Churchill (1976, 1977, and 1979), Churchill and Redfearn (1977), and Jacobson and Prior (1979). There is no known report from Blaine, Boyd, Loup, or Rock counties.

Blaine, Brown, Cherry, Garfield, Holt, Loup, Rock, and Thomas counties are, for the most part, located in the Sand Hills region of Nebraska. The Sand Hills is an extensive region of grass-covered, stabilized sand dunes. Soils (Valentine-Thedford, Loup-Elsmere-Valentine) of the Sand Hills region are of sandy textures, with quartz sand being the parent source of most (Keech and Bentall, 1971). The major rivers of the Sand Hills are the Dismal, North Loup, Middle Loup, Calamus, and Snake. Most collections were made from forested areas (Nebraska National Forest) and along the edges of rivers and streams which flow through the Sand Hills region. Some open habitats were also examined for bryophytes.

Collections in Boyd and Keya Paha counties were made in the forested areas of the Niobrara River valley with *Quercus macrocarpa* Michx. being the predominant forest tree. Other collections were made from the chernozem soils (Holt-Valentine) of Keya Paha County.

Thirty-eight species in 25 genera of mosses and two species of liverworts were collected by J. C. W. Bliese (JCWB), N. J. Czaplewski (NJC), D. R. Friskopp (DRF), L. L. Spessard (LLS), C. E. True (CET), and M. C. Williams (MCW). Nomenclature follows Crum, Steere, and Anderson (1973) for mosses, and Stotler and Crandall-Stotler (1977) for the liverworts. State records are indicated by an asterisk (*) preceding the taxonomic name, and county records are indicated by an asterisk preceding the site number. Voucher specimens are given for each collection site (collectors and collection numbers are given).

COLLECTIONS

Collection Sites

1. Blaine County: Dunning City Park.
2. Boyd County: 0.8 km W of the US 281/11 junction, near Spencer.
3. Brown County: Ainsworth City Park.
4. Brown County: Long Pine State Recreation Area, near Long Pine.
5. Cherry County: Fort Niobrara Wildlife Refuge, on Niobrara River near Valentine.
6. Cherry County: Smith River Falls, ca. 33.8 km SW of Valentine.
7. Cherry County: Valentine City Park.
8. Garfield County: Burwell City Park.
9. Holt County: S of O'Neill Sewage Treatment Plant.
10. Holt County: 9.7 km N and 9.7 km E of Atkinson.
11. Holt County: 12.7 km N and 12.7 km E of Atkinson.

12. Holt County: Atkinson Wildlife Area, near Atkinson.
13. Holt County: Atkinson Cemetery.
14. Keya Paha County: Niobrara River, 9.7 km S and 1.6 km W of Norden.
15. Keya Paha County: Niobrara River, 9.7 km S and 16.1 km W of Norden.
16. Keya Paha County: 8.0-9.7 km S of Norden, along Niobrara River.
17. Keya Paha County: Niobrara Valley, just S of Norden at N end of Transect II.
18. Keya Paha County: Niobrara Valley, SW end of Transect II.
19. Keya Paha County: Springview Cemetery.
20. Loup County: Taylor City Park.
21. Rock County: Spring Valley Park, near Newport.
22. Thomas County: Middle Loup River, just N of Nebraska National Forest (Halsey National Forest).
23. Thomas County: Nebraska National Forest, at campground area.
24. Thomas County: Nebraska National Forest, at picnic and recreation area.

Musci

Amblystegium serpens (Hedw.) B. S. G.

*Site 4: LLS 6964, on base of *Quercus macrocarpa*. *Site 5: LLS 6762, edge of stream on shaded soil. Site 7: LLS 6808, base of *Quercus macrocarpa* on bark. *Site 8: LLS 6877, sandy soil near tree root. *Site 9: MCW 63, on sandy soil. *Site 15: MCW and CET 217c, in crevice of large rocks near stream. Site 16: JCWB 221, shaded soil. Site 17: CET 224, edge of river on shaded, sandy soil. *Site 21: LLS 6975, bark at base of *Populus deltoides* Rydb. *Site 22: LLS 6649, on moist, sandy soil. Site 23: LLS 6683, on moist sand under bridge. Site 24: LLS 6740, on bark at base of *Acer negundo* L.

A. varium (Hedw.) Lindb.

*Site 1: LLS 6901, N side of building on cement wall. Site 4: LLS 6922, on moist, sandy soil. Wolfe (1924) reported a collection from Long Pine. Site 5: LLS 6757, on moist, sandy soil. Wolfe (1924) reported a collection from Cherry County, but no specific location was given. Site 6: DRF 30, taken below the base of Smith Falls on log. Site 7: LLS 6820, in drainage ditch on wet humus. *Site 8: LLS 6879, on moist, sandy soil. *Site 22: LLS 6652, on moist, sandy soil.

Atrichum undulatum (Hedw.) P.-Beauv.

Site 4: LLS 6959, on sandy soil. Wolfe (1924) reported a collection from Long Pine.

Barbula acuta (Brid.) Brid.

*Site 8: LLS 6884, on dry, sandy soil. *Site 19: LLS 6910, on dry, sandy soil.

B. convoluta Hedw.

*Site 15: MCW and CET 217a, in crevice of large rocks near stream.

B. fallax Hedw.

*Site 23: LLS 6693, on dry, sandy soil beside trail.

B. unguiculata Hedw.

*Site 3: LLS 6906, on dry, sandy soil. Site 4: LLS 6950, on dry, sandy loam. *Site 7: LLS 6857, on shaded, limestone rock. *Site 8: LLS 6873, on dry, sandy loam at base of tree. Site 13: LLS 6989, on sandy loam on N side of building. Koch (1971) reported a collection from Holt County. *Site 15: MCW and CET 217b, in crevice of large rocks near stream. Site 16: JCWB 220, shaded soil. *Site 20: LLS 6893, at base of tree on soil. *Site 22: LLS 6646, on wet, sandy soil.

Brachythecium oxycladon (Brid.) Jaeg. and Sauerb.

*Site 17: CET 226, taken along roadside. *Site 23: LLS 6690, on sandy soil.

B. salebrosum (Web. and Mohr) B.S.G.

Site 2: LLS 6999, at base of *Quercus macrocarpa* on bark. *Site 4: LLS 6939, on moist, sandy soil. *Site 7: LLS 6826, on moist, sandy loam. *Site 8: LLS 6886, on moist, sandy soil. *Site 20: LLS 6893, at base of tree on soil. *Site 21: LLS 6976, on bark at base of *Populus deltoides*. *Site 23: LLS 6714, on bark at base of *Fraxinus americana* L.

Brhynia graminicolor (Brid.) Grout

*Site 17: CET 223, on sandy soil. Churchill (1979) reported this taxon from Richardson County.

Brotherella recurvans (Michx.) Fleisch.

*Site 10: MCW 274, near water on soil.

Bryum algovicum Sendtn. ex C. Muell.

Site 4: LLS 6921, on dry, sandy soil. Churchill (1979) reported a collection from Pine Glen State Refuge, along Long Pine Creek. Site 5: LLS 6760, on dry, sandy loam. Churchill (1979) reported a collection from the Niobrara River valley S of Nenzel, off Hwy. 97. Site 7: LLS 1913, on dry, sandy soil. *Site 8: LLS 6874, on soil at base of tree. *Site 19: LLS 6913, on dry, sandy loam. Site 22: LLS 6665, on dry, sandy soil. Site 23: LLS 6697, on dry, sandy soil.

B. argenteum Hedw.

*Site 5: LLS 6759, on dry, sandy soil. Site 7: LLS 6869, on limestone rock beside stream. *Site 13: LLS 6988, on dry, sandy loam. *Site 16: JCWB 218, on sandy soil beside river. *Site 20: LLS 6890, on bark at base of tree. *Site 22: LLS 6678, on moist, sandy soil.

B. caespiticium Hedw.

*Site 8: LLS 6881, on soil at base of tree. *Site 11: MCW 270, on soil. *Site 19: LLS 6907, on sandy loam. *Site 22: LLS 6645, on moist, sandy soil.

B. pseudotriquetrum (Hedw.) Gaertn., Meyer and Scherb.

*Site 15: MCW and CET 217a, in crevice of large rock.

Campylium hispidulum (Brid.) Mitt.

*Site 4: LLS 6955, on sandy loam.

Ceratodon purpureus (Hedw.) Brid.

*Site 10: MCW 271, on soil of road ditch.

Desmatodon obtusifolius (Schwaegr.) Schimp.

*Site 8: LLS 6882, soil at base of tree.

Dicranella heteromalla (Hedw.) Schimp.

*Site 4: LLS 6961, on sandy loam.

D. varia (Hedw.) Schimp.

*Site 15: MCW and CET 217a, in crevice of large rock.

Entodon cladorrhizans (Hedw.) C. Muell.

*Site 7: LLS 6835, on bark at base of *Quercus macrocarpa*. *Site 12: LLS 6897, bark at base of *Populus deltoides*. *Site 24: LLS 6735, bark at base of *Fraxinus americana*.

Eurhynchium hians (Hedw.) Sande Lac.

*Site 4: LLS 6958, on moist, sandy loam.

E. pulchellum (Hedw.) Jenn.

*Site 4: LLS 6955, on moist, sandy loam. *Site 23: LLS 6686, on moist, sandy soil.

Funaria hygrometrica Hedw.

Site 6: NJC 56, wet, clay bank beneath waterfalls. Wolfe (1924) reported a collection from Cherry County from an unknown location. *Site 22: LLS 6682, on moist sand under bridge.

Hygroamblystegium tenax (Hedw.) Jenn.

Site 4: LLS 6923, on log at edge of Pine Creek. Wolfe (1924) reported a collection from Long Pine in Brown County.

Leptobryum pyriforme (Hedw.) Wils.

*Site 5: LLS 6761, on moist, sandy loam. *Site 22: LLS 6677, on moist sand under bridge.

Leptodictyum riparium (Hedw.) Warnst.

*Site 4: LLS 6930, on side of log beside Pine Creek.

*Site 5: LLS 6767, on moist, sandy loam. *Site 22: LLS 6654, on wet, sandy soil.

L. trichopodium (Schultz) Warnst.

*Site 23: LLS 6692, on dry, sandy soil.

Leskea gracilescens Hedw.

*Site 2: LLS 6992, on bark at base of *Quercus macrocarpa*. *Site 24: LLS 6731, on bark at base of *Ulmus americana* L.

Mnium cuspidatum Hedw.

Site 4: LLS 6947, on dry, sandy soil. Wolfe (1924) reported a collection from Brown County. Site 7: LLS 6827, on bark at base of *Quercus macrocarpa*. Koch (1975) reported a collection from Cherry County. *Site 22: LLS 6662, on moist, sandy soil. Site 23: LLS 6705, on dry, sandy soil beside trail.

Orthotrichum pumilum Sw.

Site 3: LLS 6905, on bark at base of *Celtis occidentalis* L. Churchill (1977) reported a collection from S of Meadville, along Niobrara River, on bark of *Tilia americana* L. Site 7: LLS 6800, on bark at base of *Quercus macrocarpa*. Churchill (1977) reported a collection from 12.3 km E of Valentine. *Site 20: LLS 6894, on bark at base of *Populus deltoides*. *Site 24: LLS 6728, on bark at base of *Fraxinus americana*.

Phascum cuspidatum Hedw.

*Site 18: CET 225, growing on rock at top of hill. Koch (1971) reported collections from Lancaster and Richardson counties.

Pohlia nutans (Hedw.) Lindb.

*Site 5: LLS 6756, on moist, sandy soil. *Site 22: LLS 6644, on wet, sandy soil. Site 24: LLS 6734, on wet, sandy soil.

P. wahlenbergii (Web. and Mohr) Andr.

*Site 5: LLS 6775, on moist, sandy loam. *Site 16: JCWB 219, on soil at edge of river. *Site 22: LLS 6647, on wet, sandy soil.

Pylaisiella selwynii (Kindb.) Crum, Steere, and Anderson

*Site 7: LLS 6802, on bark at base of *Quercus macrocarpa*. *Site 20: LLS 6895, on bark at base of *Populus deltoides*. *Site 24: LLS 6732, on bark at base of *Fraxinus americana*.

Rhynchostegium serrulatum (Hedw.) Jaeg. and Sauerb.

*Site 23: LLS 6698, on dry, sandy soil beside trail.

Tortula mucronifolia Schwaegr.

Site 23: LLS 6702, on dry, sandy soil beside trail. Koch (1971) reported a collection from Thomas County from an unknown location.

T. ruralis (Hedw.) Gaertn., Meyer, and Scherb.

*Site 11: MCW 270, on soil. *Site 14: MCW 204, at edge of river. *Site 23: LLS 6700, on dry, sandy soil.

Hepaticae

**Calypogeia trichomanis* (L.) Corda

*Site 4: LLS 6973, on bark at base of *Quercus macrocarpa*.

Conocephalum conicum (L.) Lindb.

*Site 15: MCW and CET 217d, in crevice of large rocks near stream.

SUMMARY

Several habitats were investigated in 10 counties of north-central Nebraska: wooded, stream banks, river banks, and open areas. Species of *Amblystegium*, *Brachythecium*, *Brhynia*, *Brotherella*, *Campylium*, *Conocephalum*, *Hygroamblystegium*, *Leptobryum*, *Leptodictyum*, and *Pohlia* were most frequently collected in the moister habitats near streams and rivers while the collections of *Barbula*, *Bryum*, *Funaria*, and *Tortula* were more frequently made in dryer, open habitats away from rivers and streams. Taxa of *Entodon*, *Eurhynchium*, and *Mnium* were collected most frequently in mesic conditions of the forested areas. Taxa of *Calypogeia*, *Leskea*, *Orthotrichum*, and *Pylaisiella* were encountered exclusively on corticolous habitats. *Amblystegium serpens*, *A. varium*, and *Pohlia nutans* were most often collected in the wetter environments with only one collection of *Brhynia graminicolor*, *Brotherella recurvans*, *Campylium hispidulum*, *Conocephalum conicum*, and *Hygroamblystegium tenax* being made. *Barbula unguiculata* and *Bryum algovicum* were collected most frequently in the dryer, open habitat. *Mnium cuspidatum* was found most frequently in the forest habitat. *Leskea gracilescens*, *Orthotrichum pumium*, and *Pylaisiella selwynii* were most often found on tree bark while *Calypogeia trichomina*s was collected twice.

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