Lichenes Exsiccati Magnicamporum Fascicle 2, with comments on selected taxa

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ABSTRACT. – Data are provided for the second 50 numbers of a series exemplifying the lichen biota of the Great Plains of central North America. The set includes isotypes of Biatoridium lasiothecium, Phaeocalicium atenitikon, Physcia thomsoniana, and Reichlingia americana, as well as several rare or regionally restricted taxa. Detailed discussions, images, specimen data, and range maps are provided for Caloplaca lobulata (≡ Calogaya lobulata), Gyalecta farlowii (≡ Petractis farlowii), and Thelidium minutulum. Caloplaca lobulata is reported new for Iowa, Nebraska, North Dakota, South Dakota, and Wyoming; G. farlowii is reported new for Kansas; and T. minutulum is reported new for Kansas and Oklahoma. Previous identifications of T. microbolum from Kansas are based on specimens attributable to T. zwackhii, which is reported new for Iowa, Kansas, Nebraska, and Oklahoma. Corrected collection data are provided for Lichenes Exsiccati Magnicamporum No. 49.

KEYWORDS. – Biogeography, grasslands, scheda, taxonomy, trentepohlioid lichens.

INTRODUCTION

In conjunction with ongoing floristic studies of the lichens of the Great Plains of North America, the authors have assembled exsiccati of representative taxa from the region. Enumerated here are the second set of 50 numbers distributed by the R.L. McGregor Herbarium (KANU) as Fascicle 2 of Lichenes Exsiccati Magnicamporum. Complete sets have been sent to BG, BR, BRY, CANL, COLO, F, FH, GZU, H, Hb. Essl., Hb. Ladd, M, MIN, MOR, MSC, NY, OSC, PRA and SBBG; the primary set is deposited at KANU.

This series is intended to exemplify the lichen biota of the Great Plains, with emphasis on taxa that are unusual or poorly known outside the region. Fascicle 2 includes 50 specimens of 49 taxa from 43 collection sites representing a diversity of plant communities in Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming (Figs. 1 & 2). Included in Fascicle 2 are isotypes of Biatoridium lasiothecium C.A. Morse & Lendemer (Morse & Lendemer 2019), Phaeocalicium atenitikon Ladd & C.A. Morse (Ladd & Morse 2022), Physcia thomsoniana Esslinger (Esslinger 2017), and Reichlingia americana C.A. Morse & Ladd (Morse & Ladd 2021). Also included are the first distributed sets of several recently described taxa—Enterographa osagensis C.A. Morse (Morse 2013), Pachyphysis ozarkana R.C. Harris & Ladd, Phoebus hydrophobius R.C. Harris & Ladd (both Harris & Ladd 2007), and Thelenella calcicola C.A. Morse (Morse 2016), as well as several other rarely collected species. Because of few modern records, a lack of detailed descriptions, and/or previous confusion regarding their identification, three species included this fascicle are described and discussed in detail below.

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**Materials and Methods**

All specimens cited in comments and distributed as part of *Lichenes Exsiccati Magnicamporum* Fascicle 2 were examined by one or both authors; selected specimens were also confirmed by specialists. Some specimens were analyzed using standard spot tests (Brodo et al. 2001) or thin layer chromatography (TLC) using solvent systems A, C, and sometimes B', following the methods of Orange et al. (2001). With
Figure 2. Collection sites for specimens in Fascicle 1 (grey) and Fascicle 2 (black), with states and provinces highlighted in the inset. Ecoregions (The Nature Conservancy 2017): 1 = Aspen Parkland; 2 = Northern Great Plains Steppe; 3 = Dakota Mixed-Grass Prairie; 4 = Black Hills; 5 = Northern Tallgrass Prairie; 6 = Prairie-Forest Border; 7 = Central Tallgrass Prairie; 8 = Central Shortgrass Prairie; 9 = Central Mixed-Grass Prairie; 10 = Osage Plains/Flint Hills; 11 = Ozarks; 12 = Cross Timbers and Southern Tallgrass Prairie; 13 = Southern Shortgrass Prairie; 14 = Edwards Plateau; 15 = Tamaulipan Thorn Scrub.
two exceptions, nomenclature follows Esslinger (2021). For Gyralecta farlowii, we follow the nomenclature adopted by Ertz et al. (2021). For recent realignments in Teloschistaceae (e.g. Arup et al. 2013), where generic concepts remain in flux, we have retained a conservative taxonomy, providing contemporary names as synonyms. Specimen descriptions were developed from vouchers deposited in KANU and Hb. Ladd, and from published literature. Measurements were made from hand sections mounted in water and are presented as a simple range or, where sufficient material allowed, as the average (\(\bar{x}\)), +/- one standard deviation (SD), bounded by the smallest and largest observed values, and followed by the sample size (n) (i.e., (smallest observed) \(\bar{x}\)–\(\bar{x}\)+1SD (largest observed) \([n=\text{]}\)).

Trentepohlioid lichen records mapped in Figure 6A were compiled from a dataset of 1,466 digitized specimen records in KANU from the following genera and species: Acrocladia A. Massal, Alyxia Ach., Anisomeridium distans (Willey) R.C. Harris, A. polypori (Ellis & Everh.) M.E. Barr, Arthothelium A. Massal, Coenogonium Ehrenb., Crespinea Egea & Torrente, Dirina Fr., Graphis Adanson, Gyralecta Ach., Inodera (Ach.) Gray, Lithothelium Müll. Arg., Melaspila Nyl., Opegrapha herbarum Mont., Pachyphiale Lönnr., Phoebus R.C. Harris & Ladd, Pseudosagedia (Müll. Arg.) Choisy, Pyrenula A. Massal, Strigula Fr., Thelopsis Nyl., and Topelia P.M. Jørg. & Vězda. For Figure 6B, this dataset was expanded with 600 records from Hb. Ladd [all taxa selected from KANU plus Arthonia anglica Coppins, Opegrapha viridis (Pers. ex Ach.) Behlen & Desberger, and O. vulgata Ach.] and 6,753 records of Alyxia varia (Pers.) Ertz & Tehler, Anisomeridium polypori, Coenogonium pineti (Ach.) Lücking & Lumbsch, Dirina, and Graphis scripta (L.) Ach downloaded from CNALH (2022). Taxa were selected from CNALH (2022) based on the likelihood that specimens would be correctly determined.

**COMMENTS ON SELECTED TAXA**

*Caloplaca lobulata* (Flörke) Hellb.

[\(\equiv\) *Calogaya lobulata* (Flörke) Frödén et al.]

**FIGURES 3 & 4.**

**DESCRIPTION.** – Thallus corticolous, to 6 mm in diam., irregularly notched or with lobes to ca. 0.6 mm long. greyish to more commonly yellow-orange to orange, mostly K+ magenta; upper cortex smooth and shiny to rough and matte, sometimes pruinose, paraplectenchymatous, 20–30 µm thick; lower cortex absent; photobiont chlorococcoid. Apothecia typically abundant and often forming compact aggregations, initiating near lobe tips (Fig. 3B), to 1(–2) mm in diameter at maturity and obscurely stipitate, arising from the thallus surface by short stalks characterized by loose medullary hyphal strands and a cortex 50–60 µm thick (‘pseudopodetia,’ Fig. 3C), with photobiont limited to a zone near the cortex; stipe expanding with increasing disc diameter, the whole structure initially cylindrical, later obconic; amphithecium concolorous with the thallus, typically roughened, forming a slightly rounded raised rim ca. 0.1 mm thick or sometimes becoming excluded with age; discs usually a slightly darker orange than the thallus. Hymenium 55–70 µm high; paraphyses often branching; hypothecium 15–30 µm high, with a layer of algae beneath. Asci 43–60 \(\times\) 10–16 µm. Ascospores 8 per ascus, (7.0–) 10.2–11.25–12.5 \(-14.1\) \(\times\) (3.9–) 5.0–5.7–6.4 \(-7.3\) µm, isthmus (3.0–) 4.2–4.9–5.6 \(-6.7\) µm; average length : isthmus ratio = 2.35 \([n=133]\). Pycnidia rare in Great Plains material; conidia (3.0–) 3.2–3.5–3.9 \(-4.5\) \(\times\) (1.2–) 1.3–1.6–1.8 \(-2.2\) µm \([n=35]\).

**DISCUSSION.** – Ascospores of Great Plains specimens of *Caloplaca lobulata* tend to be slightly smaller than European specimens, for which Steiner and Poelt (1982) reported sizes of 11.4–12.6–13.8 \(\times\) 5.3–6.3–7.3 µm, isthmus 4.35–5.35–6.35 µm \([n=93]\). However, they are nearly identical in isthmus:length and isthmus:width ratios (average I:L = 0.43 and I:W = 0.87 in Great Plains specimens vs. average I:L = 0.42 and I:W = 0.84 in European specimens). Steiner and Poelt did not report having observed pycnidia in European specimens.

*Caloplaca lobulata* was included [as *C. boulyi* (Zahlbr.) M. Steiner & Poelt] in *Caloplaca* section *Xanthoriaella* M. Steiner & Poelt by Steiner and Poelt (1982), who circumscribed the section to accommodate three small-lobed species formerly included in *Xanthoria* (L.) Th.Fr. (For a nomenclatural discussion, see Jorgensen & Coppins 1983.) Members of the section were united in lacking a lower cortex, and in producing crowded, pseudopodiate apothecia, which often give the thallus a ± pulvinulate appearance, and simple to deeply 1–2(+)-branched paraphyses. Affinities between the *C. lobulata* group and the saxicolous species *C. saxicola* (Hoffm.) Nordin were discussed by Wetmore and Kärnefelt (1998). Indeed, Arup et al. (2013) found support for a sister relationship of the *C. lobulata* group with members of the *C. saxicola* group (sensu Gaya...
Figure 3. Caloplaca lobulata. A, habitus (Advaita 5666). B, habitus, showing apothecia developing near lobe tips (arrows; Advaita 5666). C, longitudinally sectioned apothecia showing loose medullary tissues of pseudopodetia (arrow; Advaita 5666). D, asci with mature ascospores (Advaita 8521-A). E, branching paraphyses (arrow; Advaita 10075). F, conidia (Advaita 8313). Scales: A–C = 1 mm; D–F = 20 μm.

2009), erecting the genus Calogaya Arup et al. to accommodate all members of both of these groups and some other species of Caloplaca.

Caloplaca lobulata has been included in the North American lichen checklist since the second version (Hale & Culberson 1960; as Xanthoria lobulata (Flörke) B. de Lesd. in some subsequent versions of the checklist), including the current iteration (Esslinger 2021, as Calogaya lobulata). The validity of early North American reports is uncertain, as many works (e.g., Fink 1935) applied the name of this species to saxicolous taxa; these are likely based on misidentifications of C. subsoluta (Ny.) Zahlbr. (see Jorgensen & Coppins 1983, McCune 2017). A cursory examination of the records in the Consortium of North American Lichen Herbaria website (CNALH 2022) shows that many specimens determined as C. lobulata are saxicolous, and almost certainly not referable to C. lobulata.

Steiner and Poelt (1982) reported specimens of Caloplaca lobulata from central Sweden south to Spain and Macedonia, and east to the U.S.S.R., Hungary, and Rumania, as well as an isolated occurrence in Pakistan, noting that the species appeared to be absent from western Europe. Kärnefelt (2001) reported the species from cultivated trees in Tasmania, even as he observed it was experiencing a general decline in Europe. In the Great Plains, the species is largely limited to the Dakota Mixed-Grass Prairie and Northern Tallgrass Prairie ecoregions (Fig. 4). Caloplaca lobulata was previously documented from Minnesota (Advaita et al. 2016). Here, it is reported new for Iowa, Nebraska, North Dakota, South Dakota, and Wyoming.

It is possible that the species is recently introduced in the Great Plains, where suitable woody substrates were historically rare; the earliest collection known to the authors is from 1976, on cottonwood (Populus deltoides) in Eddy County, North Dakota (Esslinger 5065, hb. Esslinger!, KANU!). In the Great Plains, Caloplaca lobulata is most frequently found on the boles and branches of cottonwood, where it often occurs in mixed populations with C. pyracea (Ach.) Zwackh, but it has also been documented from a variety of other tree genera, including Celtis, Fraxinus, Prunus, Quercus, Tilia, and Ulmus, as well as on the non-
native shrub genera Caragana, Elaeagnus, Lonicera, and Syringa. Occasionally, it has been collected from lignum and rarely from concrete and metal. Although often encountered in shelterbelts in the northern Great Plains, it appears to show a preference for microsites with comparatively high humidity, developing particularly luxuriant growth on woody plants along shores of lakes and large streams.

While many earlier determinations of Caloplaca lobulata are actually referable to C. subsoluta, these are easily distinguished by the by the saxicolous habitat, distinctly areolate thallus, and adnate apothecia of C. subsoluta. Another taxon with similarities to C. lobulata is Xanthoria tenax L. Lindblom [= Polycauliona tenax (L. Lindblom) Frödén et al.]. That species occurs in Mediterranean and warm desert climates in California and Mexico, and shares sufficient morphological resemblance that it was compared with members of the C. lobulata group by Lindblom (1997). Xanthoria tenax has a better-developed, more distinctly foliose thallus, typically with a narrow region of cortex along the lower margin, which rarely has a few short pale hapters (Lindblom 1997), whereas hapters are unknown in C. lobulata. Specimens examined for this study revealed the species differ in other ways, including the tendency for apothecia to arise near the lobe tips of C. lobulata (Fig. 3B). Ascospores are larger in X. tenax, reported by Lindblom (1997) as (10.5–11.2–14.3–16.8 (–18.0) × (4.5–5.0–5.9–7.4 (–8.0) μm, isthmus (2.5–)2.9–4.6–5.8 (–8.0) μm. Conidia are slightly smaller in X. tenax, reported by Lindblom (1997) as (2.5–)2.6–2.8–3.0 (–3.2) × ca. 1–1.5 μm.

Figure 4. Distribution of *Caloplaca lobulata* in the Great Plains, based on specimens deposited in KANU. Great Plains ecoregions are enumerated as in Figure 2. Inset: state and provincial administrative units that include Great Plains ecoregions.


UNDPLAND: Åkerby s.n. [spelling?] Nyåker, 14 May 1939, T. E. Hasselrot s.n. (CANL).


Gyalecta farlowii Tuck. ex Nyl. [= Petractis farlowii (Tuck. ex Nyl.) Vězda]

FIGURES 5A & 5B.

DESCRIPTION. – Thallus saxicolous, epilithic, pale gray and sometimes darkening with age, ranging from thin and scurfy to continuous and locally rimose, sometimes forming continuous patches >5 cm diameter; photobiont trentepohlioid. Apothecia typically common and evenly scattered, developing singly from slightly thickened, rounded thalline warts, these portions of the thallus often tinged pale tan, pinkish, or orangish, often becoming separated from the thallus by a narrow circumsiccisile gap; amphithecium lacking; proper exciple 30–40 thick µm, colorless to pale yellowish, of densely packed small rounded cells that often appear gelatinized and indistinct, IKI+ yellow; discs to 0.3 mm broad, pinkish to tan, slightly immersed in the thallus mound, becoming more deeply immersed with age; all apothecial tissues in section colorless to locally tinged very pale yellowish; hymenium to ca. 200 µm thick, IKI+ blue; paraphyses simple, straight, ca. 2–2.5 µm thick, not expanded at tips and typically far exceeding the asci. Asci 90 × 15 µm. Ascospores 8 per ascus, eventually partially biseriate in the ascus, broadly ellipsoid (to nearly suborbicular in smaller spores), muriiform, ca. 9–18-celled, with blunt apices and sometimes with a slight, broad medial constriction, (13.0–) 15.2–18.4–21.5 (–23.2) × (7.3–) 8.2–9.5–10.8 (–11.9) µm; average length:width ratio = 1.92 [n=15, from 4 localities].

DISCUSSION. – Here we follow the nomenclature adopted by Ertz et al. (2001), who found the greater part of Petractis Fr. to be only distantly related to the type species, the cyanolichen P. clausa (Hoffm.) Kremp. Pending further study and perhaps recognition of several segregate genera (Ertz et al. 2021), it seems prudent to retain a broad circumscription of Gyalecta Ach. Our material is almost completely lacking the radial fissures in thalline tissue associated with the apothecia reported by Brodo (2016) and others. As noted by Ertz et al. (2021), this feature is well developed in P. clausa, but only rarely observed in G. farlowii and related taxa. Note also that ascospore size reported here is slightly smaller than the 18–24 (–27) × 9–12 (–14) µm reported by Brodo (2016).

Based on our field work, Gyalecta farlowii is infrequent in the southeastern Great Plains, where it can be locally abundant on sheltered, north-facing exposures of limestone boulders and cliffs (Fig. 1C), typically associated with other trentepohlioid lichens. The species is occasional through the Ozarks in shaded mesic habitats on both limestone and dolomite. It is also locally frequent in the southern Appalachians (Tripp & Lendemer 2019). Elsewhere, the species has been documented from the Caribbean and South America (Ertz et al. 2001, Vězda 1965); the type is from Bermuda (Vězda 1965). The species is here reported for the first time from Kansas, where its distribution typifies a pattern common among lichens of the southeastern Great Plains, which is essentially a western extension from the Interior Highlands and the southern Appalachians into eastern Kansas and Oklahoma. A related pattern of distribution, exemplified by several corticolous species in the region, extends from the Southeast Coastal Plain north into eastern Kansas (Morse in prep.).
Figure 5. Morphology of *Gyalecta farlowii* (A and B from Morse 25874) and *Thelidium minutulum* (C and D from Morse 24348). A. habitus of *G. farlowii*. B. ascospores of *G. farlowii* in 10% KOH. C. habitus of *T. minutulum*. D. ascospores of *T. minutulum* in 10% KOH. Scales: A and C = 1 mm; B and D = 20 µm.

As a group, trentepohlioid lichens are largely absent from the Great Plains west of the tallgrass prairie, a biogeographic discontinuity well correlated with the increased effective aridity associated with biomes west of the tallgrass region and east of the Rocky Mountains. This pattern is illustrated by collection records from three comparatively well-studied states in the region—Kansas, North Dakota, and South Dakota—in which the distribution of trentepohlioid lichens is sharply limited at the western limits of the Dakota Mixed-Grass Prairie in North Dakota, Northern Tallgrass Prairie in South Dakota, and the tallgrass prairie of the Osage Plains/Flint Hills in Kansas (Fig. 6A). Examination of a larger data set reinforces this pattern, showing trentepohlioid lichens are largely confined to the tallgrass regions in the central and southern Great Plains, extending westward into the mixed grass region in North Dakota and Nebraska; trentepohlioid taxa in the Colorado Rockies and Black Hills are represented by rare occurrences of *Coenogonium pineti* (Fig. 6B). The presence of trentepohlioid lichens into the Central Mixed-grass Prairie Ecoregion of north-central Nebraska is attributable to a handful of collections from humid habitats along the Niobrara River and tributaries to the Platte River; the biogeographic relationships in the area include significant mesic habitats and relictual sites with boreal/eastern deciduous affinities (Churchill et al. 1988).

Trentepohlioid lichens are known to have an affinity for warm, humid climates (Aptroot & van Herk 2007; Marini et al. 2011; Nelsen et al. 2011; Matos et al. 2015; Phinney et al. 2021), so it comes as no surprise that their distribution would be limited by the increasing aridity of the central and western Great Plains. However, the absence of this guild accounts for noteworthy regional differences. For instance, in Kansas, trentepohlioid lichens comprise ca. 12% of the lichen biota in the Osage Cuestas east of the Flint Hills (Fig. 6A, ecoregion 11; Morse, in prep.), but these decline sharply in abundance and diversity through the Flint Hills, and are absent from the Central Mixed-Grass Prairie (Fig. 6A, ecoregion 9). Similar differences are evident between the biotas of the Cross Timbers woodlands of Oklahoma and southeastern Kansas (Fig. 6A, ecoregion 13), where surfacing sandstones support a comparatively rich assemblage of trentepohlioid lichens, and the geologically similar Smoky Hills physiographic province in the Mixed-Grass Prairie Ecoregion in central Kansas, ca. 250 km to the northwest, where they are absent. This distributional pattern is not shared.
Figure 6. Extent of trentepohlioid lichens in the Great Plains. A, Central North American distribution of all lichen specimens deposited in KANU (grey dots) versus trentepohlioid lichens deposited in KANU (black dots). B, expanded sample showing distribution of trentepohlioid lichens only, with dataset from KANU supplemented with records from Hb. Ladd and CNALH (2022). Records from the Black Hills and Colorado Rocky Mountains all represent *Coenogonium pineti*; outlier in the Southern Shortgrass Prairie of southeast Colorado represents a single unidentified specimen of *Dirina*. Great Plains ecoregions are enumerated as in Figure 2. Inset: state and provincial administrative units that include Great Plains ecoregions.

by other chlorolichens, for which there is considerable taxonomic overlap between the two regions (e.g., Ladd & Morse 2012, Morse 2016, Morse & Ladd 2013).

**Thelidium minutulum** Körb.

**DESCRIPTION.** Thallus saxicolous, epilithic, thin, continuous to weakly rimose, greyish green to brownish grey, or rarely fleck-like, subgelatinous, and brown; photobiont chlorococcoid. Perithecia dark brown to black, dispersed to rarely aggregated in groups of 2–3, sessile to rarely half-immersed, subglobose, 0.1–0.2 mm in diameter; ostiole pale; involucrellum absent; exciple brown nearly to base or occasionally extending below centrum, darkening in KOH; periphyses slender, ca. 35–40 × 1.5–2 µm. Ascii pyriform. Ascospores 8 per ascus, tardily 1-septate, ellipsoid, occasionally slightly pointed at one end, occasionally with medial constriction. (16.5–) 20.1–23.1–26.1 (–28.1) × (7.0–) 9.0–10.1–11.1 (–13.0) µm; length:width ratio = (1.7–) 2.0–2.3–2.6 (–2.9) [n=96]. Pycnidia not observed.

**DISCUSSION.** *Thelidium minutulum* is broadly distributed through northwestern Europe, the eastern United States and southeastern Canada, with a handful of reports from the western United States and western and northern Canada (CNALH 2022; McCune 2017). In the eastern Great Plains, it occurs on slightly calcareous sandstone, frequently on small fragments, typically in shaded microsites with constant moisture, such as along permanent streams or on outcrops with groundwater seepage. Here, it is reported here for the first time from Kansas and Oklahoma.

*Thelidium minutulum* is occasionally found with *T. zwackhii* (Hepp) A. Massal., although the latter species seems to prefer more calcareous substrates, including limestone. In the field, *T. minutulum* and *T. zwackhii* can be confused with each other and with an unidentified species of *Verrucaria*; all three taxa occupy similar habits and lack an involucrellum. As a group, these lichens are easily recognized in the field by their thick greenish to grey thallus and the presence of *Verrucaria*; when moist, the perithecia tend to swell, revealing the lower colorless part of the exciple as a thin, pale ring at its base. The ascospores of *Thelidium* are often belatedly septate. It is not uncommon to find simple ascospores in sections of *T. minutulum* and 1-septate ascospores in sections of *T. zwackhii*, making these species even easier to confuse. However, ascospores of *T. zwackhii* measured for this study were slightly larger than those of *T. minutulum*: (19.2–) 24.2–27.9–31.6 (–38.0) × (9.0–) 10.3–11.7–13.1 (–15.0) µm; length:width ratio = (1.5–) 2.1–2.4–2.7 (–3.4) [n=95] (Fig. 7).

Three other *Thelidium* species have been documented from the central United States. *Thelidium decipiens* (Nyl.) Kremp. and *T. incavatum* Mudd have perithecia immersed in carbonate rock, and differ from one another in their ascospores (1-septate in *T. decipiens* and 3-septate in *T. incavatum*). A third species, with affinities to *T. fontigenum* A. Massal., differs from the others by its areolate, grey thallus and the presence of an involucrellum. Previous identifications of *T. microbolum* (Tuck.) Hasse (= *T. fontigenum*) from Kansas appear to be based on material attributable to *T. zwackhii*, which is reported here new for Iowa, Kansas, Nebraska, and Oklahoma.

Figure 7. Relationship between length and width of ascospores in *Thelidium minutulum* (small black dots; bivariate Pearson correlation coefficient $r = 0.5088$, $n = 96$, $P < 0.00001$) and *T. zwackhii* (large grey dots; $r = 0.3947$, $n = 95$, $P = 0.000076$).


26606 (both KANU); 1.75 mi. N, 0.75 mi. W of junction of US Hwy 56 & Douglas Co. Rd. 1055 in Baldwin City, University of Kansas Ecological Reserves, Forest Legacy Tract, 38.81° 95.20°W, 18 May 2016, C.A. Morse 25167b (KANU); NW side of Lawrence, City of Lawrence Nature Park along W side of North Forks Rd., just W of junction of North Forks and Peterson roads, 38.98°N 95.30°W, 08 Jan. 2012, C.A. Morse 23257 & K.J. Morse (KANU); just W of Lawrence city limits, E side of Clinton Reservoir, Overlook Park along E end of White Trail just W of parking area, 38.94°N 95.34°W, 05 Jan. 2019, C.A. Morse 26604 et al. (KANU); ca.3 mi. S, 1 mi. E of Stull, W side of Clinton Reservoir, Woodridge Public Use Area along SW section of George Latham Trail just N of parking area, 38.93°N 95.44°W, 01 Jan. 2019, C.A. Morse 26601 et al. (KANU); 4.5 mi. S, 2.25 mi. W of Stull, Clinton Lake Wildlife Area above Coblenz Marsh, 38.90°N 95.50°W, 21 Mar. 2007, C.A. Morse 14582 & B. Kuhn (KANU). FRANKLIN CO.: 2 mi. SW of Ottawa, 08 May 1954, C.L. Kramer 488 (KANU, KSC, WIS); 3 mi. S, 1 mi. E of Homewood, Ottawa University Natural History Reservation, 38.47°N 95.36°W, 12 Jan. 2021, C.A. Morse 27668a et al. (KANU).


SPECIMEN LABEL DATA FOR FASCICLE 2 OF LICHENES EXSICATI MAGNIFICUMOR


53. Reichlingia americana C.A. Morse & Ladd [ISOTYPE: The Bryologist 124; 34–35 (2021)]. USA, Oklahoma, Osage County: ca. 13.3–13.8 mi N, 0.25–1 mi E of Pawhuska. Osage Wildlife Management Area: Western Wall Unit: NW part. T28N R09E section 33 E½ of SE¼, section 34 N½ and section 27 S¼. 36.86001°–36.86909°N, 96.33339°–96.32283°W (± 15–19 ft; det by GPS; datum = WGS84). Elevation 850–970 ft. Cross Timbers canyon system with boulders and low cliffs of Pennsylvanian sandstone along South Fork Pond Creek and unnamed tributaries, with Carya texana, Quercus marilandica, Quercus stellata and Quercus velutina abundant in uplands, and brushy ravines and riparian woodland, with Carya cordiformis, Celtis occidentalis, Juglans nigra, Platanus occidentalis, Quercus macrocarpa, Quercus shumardii, and understory dominated by Cercis canadensis, Cornus amomum, Sideroxylon lanuginosum, Staphylea trifolia, Symphoricarpus orbiculatus and Viburnum rufidulum. Soil sandy, with frequent surfacing gravel. Locally
abundant on sheltered overhang on SE-facing slope. TLC: 2'-O-methylperlatolic acid (major), 1–4 unknowns with 2'-O-methylperlatolic acid (all minor). 14 Mar 2018. C.A. Morse 26007 & D. Ladd.


58. Xanthoria elegans (Link) Th. Fr. USA, South Dakota, McCook County: 2 mi S, 1 mi W of Salem. Concrete bridge scheduled for demolition. 43.68806°N, 97.40790°W (determined by Google Earth; datum = WGS84). Elevation 1460 ft. Concrete bridge over small year-round creek; surrounding pasture (smooth brome); minimal relief except along creek. On concrete bridge, scheduled for demolition. Locally abundant / dominant. 27 May 2015. M.K. Advaita 15685.


60. Strigula submuriformis (R.C. Harris) R.C. Harris. USA, Missouri, Andrew County: Honey Creek Conservation Area, along east side of Nodaway River, ca. 2.2 miles south/southwest of Interstate Highway 29 exit #65, ca. 0.5 miles northeast of intersection of county road 404 and MDC access road. 39.942°N, 94.987°W (method and datum unknown). Mesic, NW-facing wooded slope above Nodaway River, with Acer saccharum, Carya ovata, Fraxinus, Quercus bicolor, Q. rubra, Tilia americana, and occasional limestone slabs and low outcrops. On shaded bole of large Carya ovata on mesic slope; associated with Alyxia varia and Graphis scripta. 18 May 2017. D. Ladd 33854.

ft; det by GPS; datum = WGS 84). Elevation 980–1020 ft. Disturbed, brushy, upland mixed oak-hickory forest; open blackjack-post oak woodland with mossy understory; and low, E and W-facing sandstone cliffs along N–S trending ravine formed by unnamed tributary to Middle Creek. Soil sandy. Scattered to locally abundant on 18 in *Quercus rubra* along ravine and 10 inch DBH *Quercus rubra* at top of slope. 31 Oct 2009. C.A. Morse 20321 & K. Logan.


69. *Phaeocalicium atenitikon* Ladd & C.A. Morse [ISOTYPE: The Bryologist 125: 37 (2022)]. USA, Missouri, Texas Co., Barn Hollow Conservation Area, ca. 4.3 miles north of Mountain View. 37.0483°N, 91.6933°W (determined by GPS; datum = WGS 84). Locally abundant on small twigs of several young *Juglans nigra* in overgrown old field bordering parking area. 4 Jun 2017. D. Ladd 33903.


80. *Phoebus hydrophobius* R.C. Harris & Ladd. USA, Kansas, Montgomery County: ca. 1 mi S, 7 mi E of Elk City. NE side of Elk City Lake, on trails along Table Mound just W of Memorial Lookout. T32S R15E section 09 NW¼. Near 37°27′58″N, 95°77′45″W (± 15 ft; det by GPS; datum = WGS 84). Elevation 900–960 ft. Overgrown, xeric woodland dominated by *Carya ovata*, *Fraxinus quadranigula*, *Juniperus virginiana*, *Quercus muhlenbergii*, *Quercus stellata* and *Quercus velutina*, with *Cercis canadensis*, *Quercus prinoides*, *Rhus aromatica*, *Sideroxylon lanuginosum* and *Symphoricarpus orbiculatus* common in the understory and native tallgrass prairie vegetation persisting in openings, at top and along base of tall, E, N, and W-facing cliffs of Captain Creek Limestone of the Pennsylvanian Stanton Formation above Elk River valley (lake spillway). Soil thin, with frequent areas of exposed limestone. Scattered to locally common on sheltered face of lower part of cliff. 07 Dec 2017. *C.A. Morse 25825 & C.C. Freeman*.

81. *Thelidium minutulum* Körb. USA, Kansas, Douglas County: Lawrence, SE side. Along E side of Haskell Ln, between E 29th St and E 30th St. T13S R20E section 08 W edge of SW¼ of SW¼. 38°93′05″N, 95°22′34″W (± 32 m; determined by GEOLocate Web application; datum = WGS84). Elevation 850 ft. Brushy, degraded, upland, glaciated tallgrass prairie remnant at top of N and E-facing sandstone roadcut of Tonganoxie Sandstone of Pennsylvanian Stranger Formation. Locally abundant on outcropping sandstone on N-facing slope. 27 Sep 2018. *C.A.Morse 26490*.


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90. *Dermatocarpon muenhlenbergii* (Ach.) Müll. Arg. USA, Kansas, Bourbon County: ca. 4 mi S, 5.5 mi W of Uniontown. SW side of Bourbon County State Fishing Lake and Wildlife Area. T26S R21E section 14 N½ of SW¼ of NE¼. 37.78584°N, 95.07510°W (± 28 ft; determined by GPS; datum = WGS84). Elevation 950–980 ft. Disturbed, open, mixed oak-hickory forest with *Carya ovata*, *Juniperus virginiana*, *Quercus muenhlenbergii*, *Quercus rubra*, *Cercis canadensis*, *Cornus drummondii*, *Rhus serotina*, and upland tallgrass prairie vegetation on cherty, limestone outcrops, low cliffs and talus of Pennsylvanian Swope Limestone on moderate, S-facing slope above Wolfpen Creek. Common on cliffs. 11 Dec 2015. *C.A.Morse 24931*.

91. *Dermatocarpon dolomiticum* Amtoft. USA, Kansas, Chase County: ca. 2.5 mi S of Elmdale. YMCA Camp Wood: Fox Pasture (from Peston Outdoor Education Station, S and E across ravine). T20S R07E section 3 S½. 38.33745°–38.34008°N, 96.64919°–96.64177°W (± 15–20 ft; determined by GPS; datum = WGS84). Elevation 1230–1340 ft. Formerly grazed, upland Flinthills tallgrass prairie with scattered *Cornus drummondii* and *Rhus aromatica*, and mixed hardwood woodlands along draws with seeps and spring runs, on moderate to steep, E and S-facing slopes above unnamed tributary to Cottonwood River, and riparian woodland along tributary; soil rocky, with abundant boulders and outcrops of Permian Council Grove Group limestone on slopes, and low cliffs on upper slopes. Locally common on top and face of shaded cliffs. 08 Jun 2017. *C.A.Morse 25582 & C.C. Freeman*.


97. **Thelenella calcicola** C.A. Morse. USA, Kansas, Jefferson County: 0.7 mi S, 7.3 mi E of Williamstown. University of Kansas Ecological Reserves: Nelson Environmental Study Area and Rockefeller Experimental Tract: unit 4018. T11S R20E section 33 SW¼ of SW¼ of NE¼. 39.052208°N, 95.1962°W (±64 m; determined by GEOLocate Web application; datum = WGS84). Elevation ca. 1030 ft. Brushy, mesic, mixed hardwood forest along WNW-trending ravine at head of unnamed tributary to Mud Creek. Soil rocky, scattered limestone boulders on slope and along creek. Locally common on limestone boulders along creek. Collection site near type locality. 01 Feb 2019. *C.A. Morse 26610.*


**ERRATUM FOR FASCICLE 1, NO. 49**

Recipients of *Lichenes Exsiccati Magnicamporum* Fascicle 1 were sent a label bearing incorrect collection data for *Lichenes Exsiccati Magnicamporum* 49 (*Phaeophyscia hirsuta*). The specimens *Advaita 9018*, which indeed were collected from lignum, are still in storage at KANU and will be distributed as part of Fascicle 3. The specimen distributed as *Lichenes Exsiccati Magnicamporum* 49 is actually *Advaita 9483*, also *P. hirsuta* but collected from bark. Correct label data are printed below; a corrected label will be distributed with the shipment of Fascicle 2.


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**Literature Cited**


