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Lichenological notes 6: nomenclatural acts

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Abstract — *Lecanora peltastictoides* is transferred to *Aspicilia*. *Thelenella americana* is treated as *Melanophloea americana* and *T. montana* as *M. montana*. *Sarcogyne athroocarpa* is treated as a synonym of *Acarospora badiofusca* and a lectotype is designated. *Pleopsidium stenosporum* is treated as a synonym of *P. flavum*.

Key words — *Acarosporaceae*, Joshua Tree National Park, *Thelocarpaceae*

The species

Acarospora badiofusca (Nyl.) Th. Fr., Nova Acta Regiae Soc. Sci. Upsal., Ser. 3: 3 190 (1861).

≡ *Lecanora badiofusca* Nyl., Herb. Mus. Fenn.: 110 (1859).

Type: Ad saxa granitica in Lapponia, Nylander s.n. (H-NYL! holotype).

= *Sarcogyne athroocarpa* H. Magn., Ann. Crypt. Exot. 7: 137 (1935) ["1934"], **syn. nov.**

Type: U.S.A., Colorado, Boulder Co., Sugar Loaf, 2743 m, on granite, Aug. 1898, Morgan s.n., Lichenes Boreali-Americani 227 (FH! holotype, destroyed by sampling?; COLO! L-79776, **lectotype designated here**).

The holotype collection of *Sarcogyne athroocarpa* has only a *Lecidea* species remaining, and the *Sarcogyne* is presumed to have been destroyed by sampling. In COLO we have discovered a syntype of *S. athroocarpa*, originally identified by W.A. Weber, which we designate as a lectotype. Unfamiliar with extremely reduced forms of *A. badiofusca* in North America at high elevations, H. Magnusson, who described the reduced dispersed apothecia of *A. badiofusca* as an endolithic *Sarcogyne,* suggested that its sterile areoles represented another "*Acarospora*" species (Magnusson 1935). As with *A. badiofusca*, the hymenium is low (60–70 μm) and the perithecial crown (exciple) is brown (it often becomes

blackened in many specimens). Therefore, we place *Sarcogyne athroocarpa* in synonymy with *A. badiofusca.*

Plate 1. *Aspicilia peltastictoides* (Knudsen et al. 14420, UCR), Coxcomb Mountains, Joshua Tree National Park. (Tim Wheeler, photo). Scale bar = 1 mm.

Aspicilia peltastictoides (Hasse) K. Knudsen & Kocourk., **comb. nov.** Plate 1

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≡ *Lecanora peltastictoides* Hasse, Bryologist 17: 63 (1914).

Type: U.S.A., California, Palm Springs, on granite, 1901, Hasse 861 (FH!, holotype)

In 1914, the pioneer California lichenologist H.E. Hasse (1836–1915) described *Lecanora peltastictoides* from granite in the Sonoran Desert in Palm Springs, California. During the revision of *Lecanora* for the Sonoran Lichen Flora, no specimens besides the type were seen, and the species remained unrevised but recognized as an *Aspicilia* (Knudsen 2003; Ryan et al. 2004). During our inventory of Joshua Tree National Park, we collected five specimens of *Lecanora peltastictoides* in the Mojave and Sonoran Deserts.

Lecanora peltastictoides is an *Aspicilia* with small ascospores (mostly 12–13 × 9–10 µm), eight per ascus, a white striated thallus, black pruinose apothecia with elevated crenulate margins, and no secondary metabolites. No conidia have been observed. It occurs on granite, usually on softer decaying rock at Joshua Tree National Park. There are only two other *Aspicilia* species in California with similar sized ascospores. Both species, *A. brucei* Owe.-Larss. & A. Nordin and *A. cinerea* (L.) Körb., can easily be distinguished from *A. peltastictoides*

by their production of norstictic acid. *Aspicilia peltastictoides* looks similar to two other lichen species in southern California, *Acarospora strigata* (Nyl.) Jatta and *Lecanora utahensis* H. Magn. The polyspored asci easily distinguish *A. strigata* from *A. peltastictoides.* An older name for *A. strigata* in North America is *A. peltasticta* Zahlbr., which explains the etymology of the specific name of *peltastictoides. Lecanora utahensis* has been confused with *A. peltastictoides* not only because they look similar, but because they both have similar sized ascospores (Knudsen & Lendemer 2006; Knudsen 2012). *Lecanora utahensis,* a member of the *Lecanora dispersa* group (Śliwa 2007), differs especially in the production of isousnic acid and the *Lecanora*-type ascus stain. We regard both *A. peltastictoides* and *L. utahensis* as rare in California.

Additional specimens examined — U.S.A., California, Riverside Co., Little San Bernardino Mountains, Berdoo Canyon, 1025 m, rare on granite along wash, 7 Dec. 2010, Knudsen 12869.2 & Harding (UCR); upper Covington Flats, 1426 m, on granite, 9 Nov. 2011, Knudsen 14043 & Kocourková (UCR); San Bernardino Co., 49 Palms Canyon, 844 m, on granite boulder in palm oasis, 29 Dec. 2010, Knudsen 13469 (UCR); Coxscomb Mountains, 635 m, on decaying granite boulder, 7 Dec. 2011, Knudsen et al. 14420 (UCR).

Melanophloea americana K. Knudsen & Lendemer, Opusc. Philolich. 9: 61 (2011).
≡ *Thelenella americana* (K. Knudsen & Lendemer) Aptroot, Lichenologist 44: 504 (2012).

Type: U.S.A., Pennsylvania, Montgomery Co., Pennypack Watershed, on silicate rock, Nov. 1987, A. Aptroot 21376 (NY! holotype; ABL[n.v.], BR[n.v.], isotypes).

Melanophloea montana P.M. McCarthy, Australas. Lichenol. 62: 26 (2008).
≡ *Thelenella montana* (P.M. McCarthy) Aptroot, Lichenologist 44: 506 (2012).

Type: Australia, Queensland, Atherton Tableland, Tully Falls, on siliceous rock, 7 August 2006, McCarthy 2520 (CANB, holotype, n.v.).

Melanophloea (*Thelocarpaceae*) contains three species. The type of the genus is *M. pacifica* P. James & Vězda, described from the Solomon Islands (James & Vězda 1971). The saxicolous *M. montana* was described from Australia (McCarthy 2008), and the saxicolous *M. americana* was described from eastern North America (Knudsen et al. 2011). Recently Aptroot & Schumm (2012) transferred *M. americana* and *M. montana* from the *Thelocarpaceae* to *Thelenella* in the *Thelenellaceae*. *Melanophloea americana* and *M. montana* differ from *Thelenella* species in the following important characters that were overlooked by these authors:

1. *Melanophloea americana* and *M. montana* have *Thelocarpon*-like ascomata that are apothecioid with an inner wall that is an incurving exciple, reducing the size of the hymenial disc (clearly visible when wetted), and an outer wall that is basically a thalline margin (Salisbury 1966; Horáková 1998; Knudsen & Lumbsch 2007; McCarthy 2008; Knudsen et al. 2011). In *M. americana* and

M. pacifica, algae are scattered between the outer and inner walls, extending up from the algal layer in the thallus. This apothecioid fruiting body differs fundamentally from the single-walled perithecia of *Thelenella* species (Mayrhofer & Poelt 1985; Mayrhofer 2002; Orange et al. 2009).

2. *Melanophloea americana* and *M. montana* differ from *Thelenella* species in having apothecioid ascomata with distinct outer and inner walls. The outer or thalline wall of the ascomata in the *Melanophloea* species is melanized, with the melanization of the outer thalline wall possibly protecting the algae beneath. The inner wall (an incurving exciple) is hyaline. Aptroot & Schumm (2012) misinterpreted the outer wall of *M. americana* as a clypeus, which we define as a wall in corticolous species formed of fungal and bark cells, not the melanized wall of a saxicolous fungus containing no distinct substrate particles and which is basically thalline (Nash et al. 2002). *Thelenella* has single-walled perithecia, also without a clypeus using the definition we accept (Mayrhofer & Poelt 1985; Mayrhofer 2002; Orange et al. 2009).

3. *Melanophloea americana* and *M. montana* have hyaline simple ascospores in polyspored asci with a K/I+ blue stain, while all *Thelenella* taxa have 2–8-spored asci with a K/I– stain and large muriform or submuriform spores (Mayrhofer & Poelt 1985; Mayrhofer 2002; Orange et al. 2009).

Based on these characters we reject the emendation of *Thelenellaceae* proposed by Aptroot & Schumm (2012). The speculations of Aptroot & Schumm (2012) about the evolutionary development of polyspory are not relevant in this case because *M. americana* and *M. montana* are not *Thelenella* species.

The radical emendation of *Thelenella* by Aptroot & Schumm (2012) lacks not only convincing morphological evidence but molecular support. While we are open to the possibility that *M. americana* and *M. montana* are not congeneric with *M. pacifica*, to radically emend another genus and family lacking molecular data and strong morphological support is speculative and undermines nomenclatural stability. That molecular data are required to confirm their hypothesis is reinforced by the fact that *M. americana* and *M. montana* differ from *Thelenella* in significant morphological characters.

Until these further results are obtained, we treat *T. americana* and *T. montana* as members of *Melanophloea* using the names *M. americana* and *M. montana*.

It should be noted that Aptroot & Schumm (2012) cited inaccurate type collections for *Melanophloea americana*. When the name *M. americana* was introduced, the type collection was clearly stated to be Aptroot 21376 (with the holotype deposited at NY). A second collection from the same site as the holotype, Aptroot 21389, was used by NY curator R.C. Harris to produce the microscopic images for the protologue to preserve the holotype material. Although Aptroot 21389 was cited in the figure caption in the protologue, it was inadvertently omitted from list of additional specimens examined. This

collection (Aptroot 21389) is a paratype or a topotype of *M. americana*, but it is not an isotype as stated by Aptroot & Schumm (2012: 504), because a separate collection number clearly indicates it does not represent part of the same gathering as the type. The holotype of *M. americana* consists of a large rock, with abundant and well developed thalli and ascomata. Although the quality of a specimen is irrelevant from a nomenclatural standpoint, this particular collection was selected as the type because of its exemplary condition compared with the other available material.

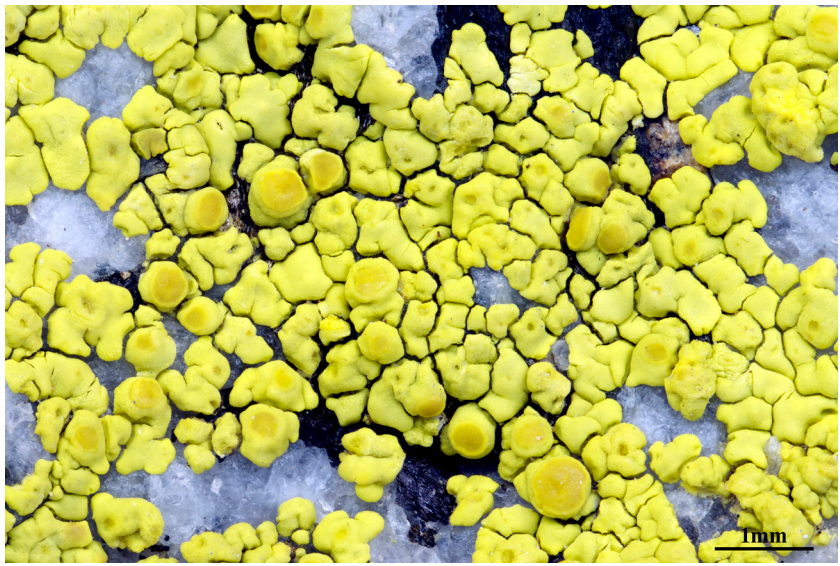

Plate 2. *Pleopsidium flavum* (Knudsen 12911, UCR), Joshua Tree National Park. (Tim Wheeler, photo). Scale bar = 1 mm.

Pleopsidium flavum Körb., Syst. Lich. Germ.: 113 (1855). Plate 2

Type: Switzerland, Schaerer, Lich. Helvet. exs. No. 335, sub *Parmelia flava* a *oxytona* (GZU, neotype, designated by Hafellner 1993, n.v.).

= *Lecanora stenospora* Stizenb. ex Hasse, Bull. Torrey Bot. Club 24: 447. 1897, **syn. nov.**

≡ *Acarospora stenospora* (Stizenb. ex Hasse) Hue, Nouv. Arch. Mus. Hist. Nat., Sér. 5, 1: 161 (1909).

≡ *Acarospora stenospora* (Stizenb. ex Hasse) Zahlbr., Cat. Lich. Univ. 5: 108 (1928), nom. illeg. superf.

≡ *Pleopsidium stenosporum* (Stizenb. ex Hasse) K. Knudsen, Opusc. Philolich. 9: 79 (2011).

Type: U.S.A., California, [Los Angeles or San Bernardino Co.] San Gabriel Mountains, above 800 m, on unknown rock type with some HCl+ inclusions, 1895, Hasse s.n. (NY! [Hasse Herb. No. 3682], neotype designated Knudsen 2011).

Lecanora stenospora was described from the San Gabriel Mountains in southern California. The holotype was missing from ZT and a neotype from NY was designated. The name was transferred to *Pleopsidium* based on its distinctive *Pleopsidium*-type ascus stain (Knudsen 2011). Due to the dispersed thallus, wandering lines of areoles, and a possible difference in the production of secondary metabolites, *P. stenosporum* was tentatively treated as a separate species from *P. flavum*. Field studies in Joshua Tree National Park and Yosemite National Park by the first author, as well as in Montana by Tim Wheeler, convinced us that the normally contiguous and effigurate thallus of *P. flavum* will become dispersed or form long lines of areoles, especially when growing in shaded overhangs or if infected with *Lichenostigma saxicola* K. Knudsen & Kocourk. Michalová (2012), who investigated the neotype for secondary metabolites, detected acaranoic acid, a substance typically present with rhizocarpic acid in *P. flavum*. Since *P. stenosporum* does not differ from *P. flavum* in thallus morphology or secondary metabolites, it is treated as a synonym of *P. flavum,* which is common in North America.

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Literature cited

Aptroot A, Schumm F. 2012. The genus *Melanophloea*, an example of convergent evolution towards polyspory. Lichenologist 44: 501–509. http://dx.doi.org/10.1017/S0024282912000035

Hafellner J. 1993. *Acarospora* und *Pleopsidium* – zwei lichenisierte Ascomycetengattungen (*Lecanorales*) mit zahlreichen Konvergenzen. Nova Hedwigia 56: 281–305.

Horáková J. 1998. Distribution and ecology of the genus *Thelocarpon* (*Lecanorales*, *Thelocarpaceae*) in the Czech Republic. Czech Mycology 50: 271–302.

James PW, Vězda A. 1971. *Melanophloea* P. James & Vězda, a new lichen genus. Lichenologist 5: 89–91. http://dx.doi.org/10.1017/S0024282971000112

Knudsen K. 2003. Type specimens: investigations and observations. Bulletin of the California Lichen Society 10(2): 36–38.

Knudsen K. 2011. A preliminary study of *Pleopsidium stenosporum* (Stizenb. ex Hasse) K. Knudsen. Opuscula Philolichenum 9: 77–83.

Knudsen K. 2012. Notes on the California Lichen Flora # 4. Bulletin of the California Lichen Society 19(1): 4–7.

Knudsen K, Kocourková J. 2012. Lichenological notes 3: *Sarcogyne plicata* in California. Mycotaxon 118: 423–431. http://dx.doi.org/10.5248/118.423

Knudsen K, Kocourková J. 2013 ["2012"]. Lichenological notes 5: neotypification of *Sarcogyne magnussonii* (*Acarosporaceae*). Mycotaxon 121: 139–145. http://dx.doi.org/10.5248/121.139

Knudsen K, Lendemer JC. 2006. Changes and additions to the North American lichen mycota — V. Mycotaxon 95: 309–313.

Knudsen K, Lumbsch HT. 2007 ["2008"]. *Thelocarpon*. 301–302, in: TH Nash III et al. (eds). Lichen Flora of the Greater Sonoran Desert Region. Volume 3. Lichens Unlimited, Arizona State University, Tempe.

Knudsen K, Lendemer JC, Harris RC. 2011. Lichens and lichenicolous fungi – no. 15: miscellaneous notes on species from eastern North America. Opuscula Philolichenum 9: 45–75.

Magnusson AH. 1935 ["1934"]. On the species of *Biatorella* and *Sarcogyne* in America. Annales de Cryptogamie Exotique 7: 115–145.

Mayrhofer H. 2002. *Thelenella*. 479–481, in: TH Nash III et al. (eds). Lichen Flora of the Greater Sonoran Desert Region. Volume 1. Lichens Unlimited, Arizona State University, Tempe.

Mayrhofer H, Poelt J. 1985. Die Flechtengattung *Microglaena* sensu Zahlbruckner in Europa. Herzogia 7: 13–79.

McCarthy P. 2008. A new species of *Melanophloea* (*Thelocarpaceae*) from north-eastern Queensland. Australasian Lichenology 62: 26–28.

Michalová M. 2012. Chemistry of lichens of southwest Mojave Desert. 101 p., Ms [Dipl. Pr.; depon. in: Faculty of Environmental Sciences, Czech University of Life Sciences, Praha]. [Duplicate copy in library of New York Botanical Garden].

Nash III TH, Ryan BD, Gries C, Bungartz F. 2002. Lichen Flora of the Great Sonoran Desert Region. Volume 1. Lichens Unlimited, Arizona State University, Tempe. 532 p.

Orange A, Purvis OW, James PW. 2009. *Thelenella* Nyl. (1855). 877–879, in: CW Smith et al. (eds). The Lichens of Great Britain and Ireland. British Lichen Society, Natural History Museum Pub., UK.

Ryan BD, Lumbsch HT, Messuti MI, Printzen C, Śliwa L, Nash III TH. 2004. *Lecanora*. 176–286, in: TH Nash III et al. (eds). Lichen Flora of the Greater Sonoran Desert Region. Volume 2. Lichens Unlimited, Arizona State University, Tempe.

Salisbury G 1966. A monograph of the lichen genus *Thelocarpon* Nyl. Lichenologist 3: 175–196. http://dx.doi.org/10.1017/S0024282966000197

Śliwa L. 2007. A revision of the *Lecanora dispersa* complex in North America. Polish Botanical Journal 52(1): 1–70.