

Bulletin of the California Lichen Society



Volume 29 No. 2 Winter 2022

Bulletin of the California Lichen Society

Volume 29 No. 2 Winter 2022

Contents

<i>Scytinium siskiyouense</i> , sponsorship for the CALS Conservation Committee.....	19
<i>Tom Carlberg, Daphne Stone</i>	
Noteworthy Collections from California.....	25
<i>Ken Kellman</i>	
<i>Acarospora brattiae</i> : Current assessment of a rare western North American taxon.....	30
<i>Jason Dart, Kerry Knudsen, Eva Hodková, J. Maliček</i>	
California Lichen Society Grants Program.....	35
News and notes.....	36
President's address.....	3838

This issue of the *Bulletin of the California Lichen Society* (ISSN 1093-9148) was edited by Jes Coyle and Justin Shaffer (editor@californialichens.org), and was produced by Annie Chen. The *Bulletin of the California Lichen Society* is copyright © California Lichen Society. Authors and photographers retain ownership of their individual work and have permission to use and distribute their submitted material and photos; all other uses restricted. Photos in the articles are by the authors unless otherwise attributed.

Interested in submitting an article, photo, or workshop information for an upcoming issue of the Bulletin?

The Bulletin welcomes manuscripts on technical topics in lichenology relating to western North America and on conservation of lichens, as well as news of lichenologists and their activities. The best way to submit manuscripts is by email attachments in the format of a major word processor (DOC or RTF preferred). Use italics for scientific names. Please submit figures in electronic formats with a resolution of 300 pixels per inch (600ppi minimum for line drawings); preferred minimum width for images is 2100 pixels, but widths down to 1050 pixels may be accepted. Email submissions are limited to 10MB per email, but large files may be split across several emails or other arrangements can be made. Contact Editor@californialichens.org for details of submitting illustrations or other large files. A review process is followed. Nomenclature follows Esslinger's cumulative checklist online at <https://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm>. The editors may substitute abbreviations of authors names, as appropriate from The International Plant Names Index - www.ipni.org/index.html. Style follows this issue. Electronic reprints in PDF format will be emailed to the lead author at no cost.

Volume 29(2) of the Bulletin of the California Lichen Society was issued on May 8, 2023.

Cover image: A trail leads off into an *Alectoria sarmentosa*-clad forest along the Cascade Crest, at the boundary of Jackson and Klamath counties in southern Oregon. Photo by Jesse Miller.

***Scytinium siskiyouense* (D. F. Stone & Ruchty) Otálora, P. M. Jørg. & Wedin**
Sponsorship for the CALS Conservation Committee

Tom Carlberg

Six Rivers National Forest, Eureka, CA 95501

thomas.carlberg@usda.gov

Daphne Stone

Lichen Herbarium, OSC, Oregon State University, Corvallis, OR 97333

daphstone@gmail.com

EXECUTIVE SUMMARY

Scytinium siskiyouense is endemic to northern California and southwest Oregon, where it grows primarily on hardwoods in mixed mid-seral *Pseudotsuga menziesii*/hardwood forest stands. This habitat is moderately widespread but mid-seral conifer forests are financially lucrative to harvest. Prior to 2015 there were 35 occurrences across its range, 19 of which were in California. Occurrence monitoring following wildfires in 2015 and 2021 showed that these numbers have declined to 29 and 13 (respectively), which represents a 17% decline in occurrences across its range and a 32% decline in California. Wildfire is a significant threat, and is responsible for the decline between 2015 and 2021. Unvisited occurrences within fire perimeters may increase the rate of decline. Eventual canopy closure due to conifer growth can result in death of the substrate tree. Protections in California are limited to a very small number of occurrences, and rely on moderate activity restrictions associated with particular land allocations. Recommended conservation ranks for California are G2G3 S1 and CRPR 1B.1.

TAXONOMY

Accepted scientific name

Scytinium siskiyouense (D. F. Stone & Ruchty)
Otálora, P. M. Jørg. & Wedin

Common name

Siskiyou jellyskin lichen

Type specimen and location

Holotype OSC 134509, Daphne Stone 5610.4

Synonyms

Leptogium siskiyouensis, *Scytinium siskiyouensis*

DESCRIPTION (adapted from Stone & Ruchty 2008)

Thallus foliose, circular, of rounded lobes that are 0.3-4.0 mm wide, containing the cyanobacterium *Nostoc*, forming a thallus up to 3.0 cm in diameter, with rounded sinuses through which the substrate can sometimes be seen (Figure 1); lobes closely appressed along their centers longitudinally with sharply upraised margins, gray but lobe tips becoming brown, shiny to matte, not distinctly wrinkled, with occasional tufts of hair on the lower surface (Figure 2); isidia mostly marginal but sometimes laminal and reduced, the marginal isidia densely fringing the upturned lobe edges, simple or branched, with branching that is dichotomous to coralloid, knobby, gray, not dimpled, brown and shiny at the tips (Figure 3); apothecia rare, spores ~38 x 11µm, with 6-8 transverse septa and 0-1 longitudinal septum; medulla composed of short hyphae that have a length to width ratio of 3(5):1,

densely packed, with little space between hyphae and chains of cyanobacterial cells.

SIMILAR SPECIES AND DISTINGUISHING CHARACTERISTICS

Leptogium pseudofurfuraceum resembles *Scytinium siskiyouense* but differs by having a thallus that is brown with larger lobes (up to 1 cm) that are finely wrinkled, without the appressed habit of *S. siskiyouense*. Lobe edges tend to be

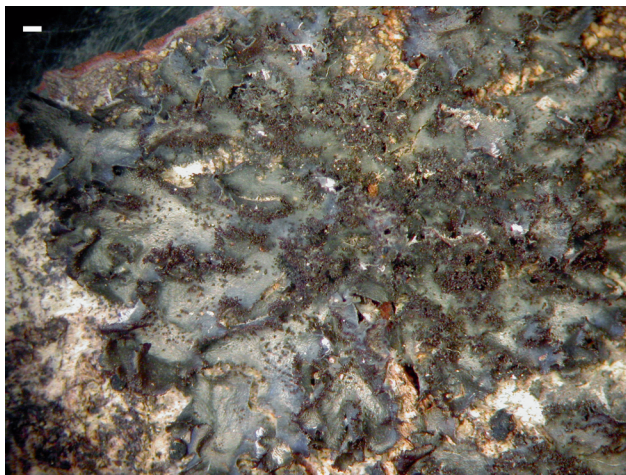


Figure 1. *Scytinium siskiyouense*, whole thallus. Scale bar = 1 mm. Photo by D.F. Stone.

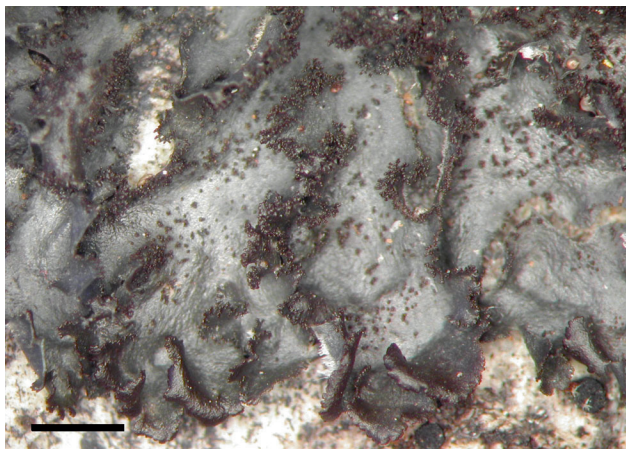


Figure 2. Lobes, showing adnate habit. Scale bar = 1 mm. Photo by D.F. Stone.

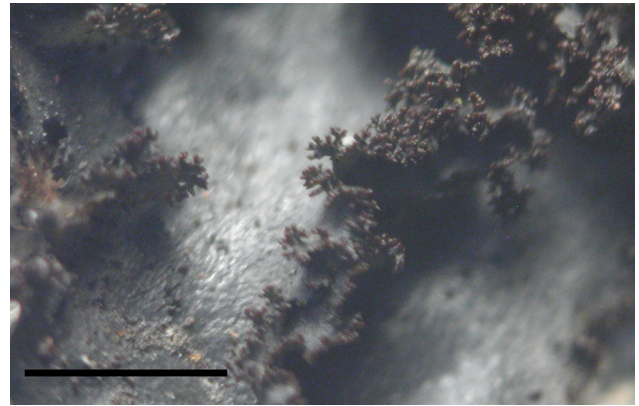


Figure 3. Lobe margin with 90° angle and coralloid isidia. Scale bar = 1 mm. Photo by D.F. Stone.

downturned or flat, contrasting with the distinctive upturned edges in *S. siskiyouense* (Figure 2). The lower surface has an evenly-distributed tomentum, compared to the patchy groups of holdfast hairs of *S. siskiyouense*. The isidia of *L. pseudofurfuraceum* have dimpled tips and may become lobulate and flattened. The medulla of *L. pseudofurfuraceum* is composed of proportionately longer hyphae (greater than 5:1) in a loose matrix of hyphal and algal cells, as opposed to the dense cellular medulla of *S. siskiyouense*.

Scytinium tacomae resembles *S. siskiyouense* in that it is small, gray, isidiate, and has similar substrate and habitat, but differs in growth form and anatomy. Specimens of *S. tacomae* with well-developed isidia form thalli that are loosely adnate or cushion-shaped, while thalli of *S. siskiyouense* are always tightly adnate with sharply upturned lobe margins, the isidia are much more abundant (Figure 2), and are consistently shiny at the tips. *Scytinium tacomae* has a medulla of elongate hyphae (up to 8:1) with abundant space between algal and hyphal cells, as opposed to the dense medulla of *S. siskiyouense*.

BIOLOGICAL CHARACTERISTICS

Growth form

Foliose, adnate.

Reproductive method

Isidia (asexual) and (since one collection is fertile) spores.

Dispersal agents

Wind (spores); precipitation and animals (isidia and spores).

Substrate and specificity

Epiphytic and corticolous. 87% of collections are from *Quercus kelloggii* and *Chrysolepis chrysophylla*, but *Scytinium siskiyouense* is also found on *Fraxinus latifolia*, *Pseudotsuga menziesii*, *Quercus garryana*, *Quercus chrysolepis*, *Cornus nuttallii*, and *Notholithocarpus densiflorus*.

Habitat and specificity

From Stone & Ruchty (2008): usually on smooth bark of young *Quercus spp.* in mixed hardwood/conifer forests, where the overstory is partially closed mid-seral *Pseudotsuga menziesii* with some *Calocedrus decurrens* or *Pinus ponderosa*. Understory can include *Arbutus menziesii*, *Notholithocarpus densiflorus*, and *Quercus kelloggii*. Other cyanolichen species are often present.

Pollution sensitivity

Unknown.

Ecological function

Nitrogen fixation and dissemination, invertebrate food and shelter.

GEOGRAPHY, GLOBAL AND LOCAL

Scytinium siskiyouense is endemic to northern California and southwest Oregon (Figure 4). It

is known from Jackson and Josephine counties in Oregon, and Butte, Humboldt, Monterey, Shasta, Tehama, Trinity and Tuolumne counties in California, at elevations from 633 to 1458 meters. There were 52 known sites across this range (Carey 2022, CNALH 2022, Kofranek 2022, McCune 2022, McRae & Carlberg 2022, Stone 2022, USDI 2022), and using the California Native Plant Society's ¼ mile rule, these sites constitute 35 occurrences, however, see Table 1 for current numbers. A site typically but not consistently refers to one or more occupied tree boles; the number of individual thalli is unknown. Seven reported sites in California and

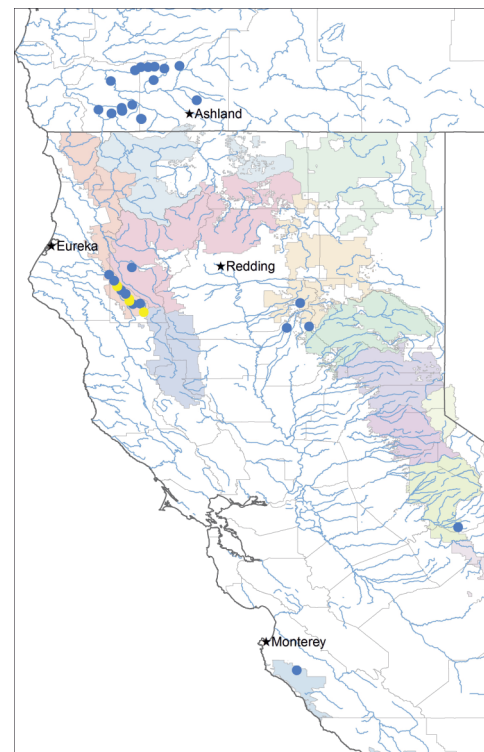


Figure 4. Global distribution of occurrences of *Scytinium siskiyouense* (Carey 2022, CNALH 2022, Kofranek 2022, McCune 2022, McRae & Carlberg 2022, Stone 2022, USDI 2022). Blue occurrences are extant, presumed extant, or unknown; yellow occurrences are extirpated as of 2021. Pastel polygons are National Forest lands.

Oregon are not analyzed here due to insufficient spatial data.

The majority of the 19 California occurrences were located in Trinity County, CA along Mad River Ridge, a long fog-catching NW-SE landscape feature that is part of the upper Mad River watershed. The Gobbler (2015) and August (2021) fires resulted in the extirpation of these six occurrences.

POPULATION TRENDS

Seven occurrences of *Scytinium siskiyouense* in the upper Mad River watershed were visited during the summer of 2021, following the Gobbler (2015) and August (2020) fires. The species was not found at six of those occurrences, which is a 17% reduction in the number of occurrences across its range. For California, these numbers represent a 32% reduction of occurrences. Two additional occurrences lie within the perimeters of the fires but were not visited in 2021. One occurrence is in an area of low- to unburned severity, the other occurrence is in a high-severity area. All occurrences where *S. siskiyouense* was not found experienced 100% mortality of substrate trees. Population trends for all other occurrences are unknown.

THREATS, HISTORY

Moderate- and high-intensity fire has resulted in direct extirpation of at least six occurrences, but the effects of ash and other particulate deposition on other occurrences from fire has not been evaluated. Data from collections of *Scytinium siskiyouense* indicate that it is often found in mixed conifer-hardwood forests with a moderate to high level of canopy closure from encroaching conifers. Where the substrate is a hardwood species, complete closure of the canopy will eventually result in substrate death.

THREATS, FUTURE

Moderate- to high-intensity fire and the resulting deposition have the potential to extirpate occurrences. Without pre-disturbance surveys, fuels reduction treatments in anticipation of wildfire can remove occupied substrate. Eventual canopy closure due to conifer growth can result in death of the substrate tree.

PROTECTION

There are 28 extant and presumed extant occurrences of *Scytinium siskiyouense* in California and Oregon (Table 2). One occurrence in Butte County in California falls on private forested

Table 1. Pre- and post-2015 extant, presumed extant, and unknown occurrences of *Scytinium siskiyouense*. Pink highlight showcases occurrence losses in California.

<u>State</u>	<u>County</u>	<u>Number of occurrences pre-2015</u>	<u>Number of occurrences post-2015</u>
CA	Butte	2	2
CA	Humboldt	1	1
CA	Monterey	1	1
CA	Shasta	1	1
CA	Tehama	1	1
CA	Trinity	12	6
CA	Tuolumne	1	1
OR	Jackson	9	9
OR	Josephine	7	7
TOTALS		35	29

land of unknown provenance. One California occurrence falls on National Park Service land. Sixteen occurrences are on Bureau of Land Management lands in Oregon and California, but without sufficient land use information to determine levels of protection. The remaining 10 occurrences are on National Forest lands. Of these, one is within the Illinois River Wild and Scenic River corridor on the Rogue River-Siskiyou National Forest in Josephine County Oregon; one lies within a Late-Successional Reserve on the Six Rivers National Forest in Humboldt County California; two fall within designated campground areas; the remaining six are on National Forest land that is classified as general forest/matrix.

Occurrences in Oregon have conservation status with the Oregon Biodiversity Information Center (ORBIC), with ranks of G2G3 S1; however, there is no Oregon equivalent to the California Environmental Quality Act, which is intended to inform government decision makers and the public about the potential environmental effects of proposed activities and to prevent significant, avoidable environmental damage (State of California 2022). *Scytinium siskiyouense* currently

has no conservation status in California other than incidentally through land allocations.

Late Successional Reserves are part of the reserve system of the Northwest Forest Plan and are protected from some management practices but not all, for example commercial logging is not permitted but thinning is permitted. Wild and Scenic Rivers are intended to be maintained “...in a natural condition, and terrestrial processes will function at normal rates and regimes” (USDA 1995). The corridor in this case (on the Rogue River-Siskiyou National Forest) is one kilometer wide, with the river running down the center. Designated campgrounds are protected from logging activities, but older trees (including hardwoods) are often removed as hazard trees. Occurrences on National Park lands are considered well-protected, especially if the occurrence is not part of a campground, trail, or other infrastructure part where management activities take place.

CONSERVATION SUMMARY

Scytinium siskiyouense (D.F. Stone & Ruchty) is endemic to southwestern Oregon and northern California. It is widespread but uncommon

Table 2: Numbers of extant occurrences by land ownership and land allocations for *Scytinium siskiyouense* across its range. NF = National Forest; BLM = Bureau of Land Management.

<u>Administrative unit</u>	<u>Campground</u>	<u>General forest/matrix</u>	<u>Late Successional Reserve</u>	<u>Wild and Scenic River</u>	<u>unknown</u>
BLM California					1
BLM Medford District					15
Lassen NF	1				
Los Padres NF	1				
private					1
Rogue River-Siskiyou NF				1	
Shasta-Trinity NF		1			
Six Rivers NF		5	1		
Yosemite National Park					1

in northern California, with a cluster of six extant occurrences in Trinity County but only seven additional occurrences for the entire rest of the state. In Oregon it has a restricted distribution, appearing in only Josephine and Jackson counties. Its habitat is not common, harvesting activities typically taking place before trees reach a mid-seral stage. Five of 29 occurrences receive a certain amount of protection based on their land allocation, but that protection is not all-encompassing in all instances.

SPECIFIC CONSERVATION RECOMMENDATIONS

RECOMMENDED GLOBAL RARITY RANK G2G3

Small number of occurrences, limited range, significant decline in occurrences since 2015, ongoing possibility of threat.

RECOMMENDED STATE RARITY RANK

CALIFORNIA S1

Small number of occurrences, at least two occurrences of unknown condition may be extirpated, steep decline in number of occurrences since 2015, ongoing possibility of threat.

RECOMMENDED CALIFORNIA RARE PLANT RANK 1B.1

RECOMMENDED STATE RANK OREGON S1

As per ORBIC 2019.

RECOMMENDED LIST OREGON 1

As per ORBIC 2019.

ACKNOWLEDGEMENTS

Many thanks to those individuals and agencies who contributed data and reviewed this sponsorship; it is a much stronger document because of their work.

LITERATURE

Carey, G. 2022. Personal communication re: specimens and locations of *Scytinium siskiyouense*.

CNALH. 2022. Consortium of North American Lichen Herbaria. Accessed 17 Jan 2022. <http://lichenportal.org/portal/collections/index.php>.

Kofranek, D. 2022. Personal communication re: specimens and locations of *Scytinium siskiyouense*.

McCune, B. & L. Geiser. 2009. Macrolichens of the Pacific Northwest. Oregon State University Press, Corvallis, Oregon.

McCune, B. 2022. Personal communication re: specimens and locations of *Scytinium siskiyouense*.

McRae, J. & T. Carlberg. 2022. Personal communication re: specimens and locations of *Scytinium siskiyouense*.

Oregon Biodiversity Information Center (ORBIC). 2019. Rare, Threatened and Endangered Non-Vascular Plants, Algae, Lichen, and Fungi Species of Oregon. Portland State University, Portland, Oregon. 30pp.

State of California, Governor's Office of Planning and Research. 2022. <https://opr.ca.gov/ceqa/>. Accessed 8 Feb 2022.

Stone, D. & R. Ruchty. 2008. *Leptogium siskiyouensis*, a new epiphytic lichen species from the Pacific Northwest of the United States. *North American Fungi* (3):2, pp. 1-7.

Stone, D. 2022. Personal communication re: specimens and locations of *Scytinium siskiyouense*.

USDA. 2022. Six Rivers National Forest. Records of *Scytinium siskiyouense* in NRIS-TESP internal database. Accessed 20 JAN 2022.

USDA. 1995. Six Rivers National Forest Land Management Plan. Chapter 4, p. 26 (Wild Rivers). http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fs-m9_027542.pdf. Accessed 8 Feb 2022.

USDI. 2022. Medford Field Office, Bureau of Land Management. Records of *Scytinium siskiyouense* in Geographic Biotic Observations internal database. Accessed 10 MAR 2022.

Noteworthy Collections from California

Ken Kellman
kkellman@sbcglobal.net

ABSTRACT

Scoliciosporum pruinosum (P. James) Vězda is reported new to California. An unnamed polysporous *Buellia* that matches Noble's "Buellia Unknown #1) was collected in Humboldt County. An *Arthonia* with the same spore pattern as *Arthonia sexlocularis* Zahlbr., but apparently lichenized and with chemical differences from that species was found in Santa Cruz County. *Zahlbrucknerella calcarea* (Herre) Herre is reported from Santa Cruz County becoming the second known location in California. All collections are described and illustrated from the cited specimens.

COLLECTIONS

Scoliciosporum pruinosum (P. James) Vězda

Humboldt County, Samoa Dunes and Wetlands, near Arcata. On bark of Pacific wax myrtle, shaded by Sitka spruce. March 18, 2022. 40.83136°N, 124.18112°W, Elevation 5 m. Kellman, Carlberg & Peterson 9569 (kmk)

Thallus pale green, granular, 3 cm diameter, the granules almost invisible due to the dense cream-colored apothecia (Figure 1). KC+ violet. Apothecia abundant, up to 0.2 mm diameter, biatorine, convex. Epithecium gold, POL+ with granules soluble in K. Hymenium clear ~50-55 µm tall, paraphyses branched once or twice. Hypothecium and exciple clear. Spores clear, 8 per ascus, acicular, spirally twisted in the ascus (Figure 2.), and loosening somewhat upon release, septa difficult to count, 25-42 x 1.6-1.8 µm.

This taxon is primarily known from the eastern half of the United States. Per CNALH There are only two previous collections west of the Mississippi River: a 2002 collection from British Columbia by Goward and Zhurbenko; [The given elevation on CNALH at 7006 m.

must surely be a typo. Google Earth shows elevations in the area closer to 1000 m]; and a 1997 collection by Tonsberg from Whidby Island in Washington State, elevation 50 m. This is therefore new to California.

Two other collections from that day add to the lichen catalogue at Samoa Dunes and Wetlands: *Lecanora confusa* Almb. (Kellman 9572, CAS) and *Bryoria pseudofuscescens* (Gyelnik) Brodo & D. Hawksworth. (Kellman & Carlberg 9567 kmk)

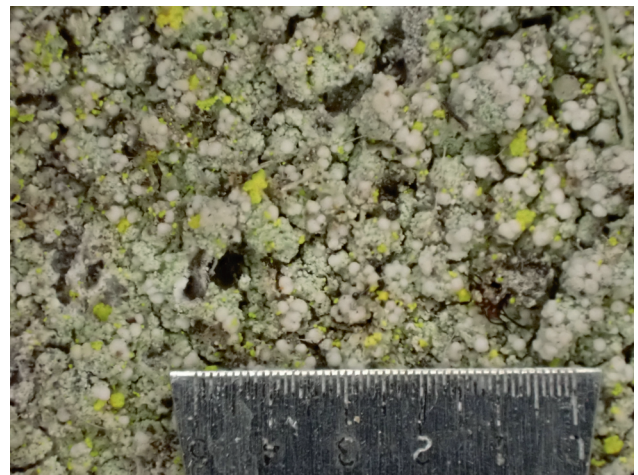


Figure 1. *Scoliciosporum pruinosum* habit with *Chrysothrix* sp. The small whiter "puffs" are apothecia.

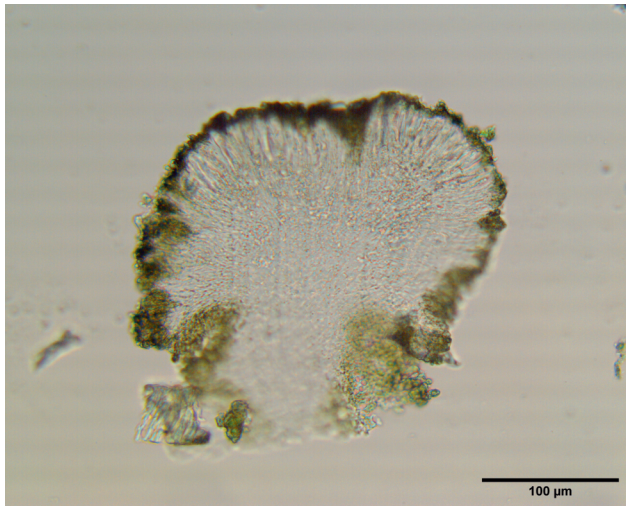


Figure 2. *Scoliciosporum pruinosum* apothecial cross section.



Figure 3. Spores from a broken ascus of *Scoliciosporum scoliciosporum*.

Buellia fecunda Björk ined.

Humboldt County, Bald Mountain, at the junction of Snow Camp Road and Bald Mountain Road. On branches from a fallen *Quercus* tree. March 17, 2022. 40.88038°N, 123.87143°W. Elevation 860 m. *Kellman 9548* (kmk).

Thallus white (Figure 6), but thin so that the algal layer shows through the cortex making it appear green, continuous, 1 cm in diameter. Apothecia black, plane, with a black slightly raised and shiny rim, 0.3-0.5 mm diameter, epruinose, lecideine. Epihymenium red-brown, hymenium clear, ~70 μm tall., not oil infused. Subhymenium brown. Asci with 12 spores (Figure 7). Spores brown (Figure 8), 2-celled, elliptical but often flattened on one side, *Buellia* type (Bungartz 2007 p. 115), 14.7-16.7 X 6.0-7.4, n=15. Conidia not seen.

Noble (1982) described and illustrated “*Buellia*

Unknown #1” from two specimens. It is a lichen with 12 brown, bicellular spores per ascus, with spores 15-19 X (5)6-8 μm. She reported a K+ Yellow turning into Red and P+Red reactions. Apothecia were described as 0.3-0.6 mm, and the hymenium clear, 70-75 μm tall.

In her discussion, Noble mentions three other polysporous *Buellia* species: *B. polyspora* (Willey) Vainio, from eastern North America, *B. dives* Th. Fr. and *B. polysporella* (Nyl.) Arn. from Europe. The spores of *B. polyspora* are smaller at 8-11 X 3-5 μm (Bungartz et al 2007), so that is easily eliminated. The two European species have spores 12-16 μm in length, but the apothecia are convex, and the rim is soon excluded. The larger spores, the plane apothecia, and the geographic distance suggest that *B. fecunda* is different from *B. dives* and *B. polysporella*, but further work needs to be done to confirm this.

My specimen shows spore size at the lower end

of Noble's range, but the spore shape and wall thicknesses match, as do her description of the apothecial margin and the depth of the hymenium. The presence of norstictic acid (Figure 8) explains her K+R, and P+R reactions.

I originally collected this twig with the intention of identifying the "*Melanelia*" that covered most of the stick (it turned out to be *Melanohalea subolivacea* (Nyl. Ex Hassse) O. Blanco et al.) I only looked at this *Buellia* much later and was shocked to see the 12 spores in each ascus. At first I thought to send this directly to Dr. Frank Bungartz, but then thought I should track down Noble's two collections so that he could have all three. That is when I found that Björk had given one of her collections the provisional name *Buellia fecunda*. It is not clear if Björk has access to additional specimens.

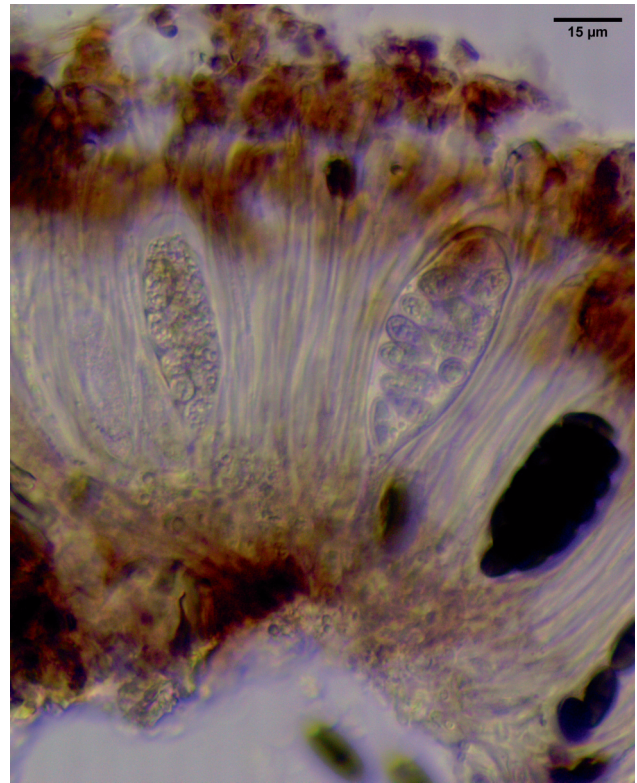


Figure 5. *Buellia* "*fecunda*" asci.

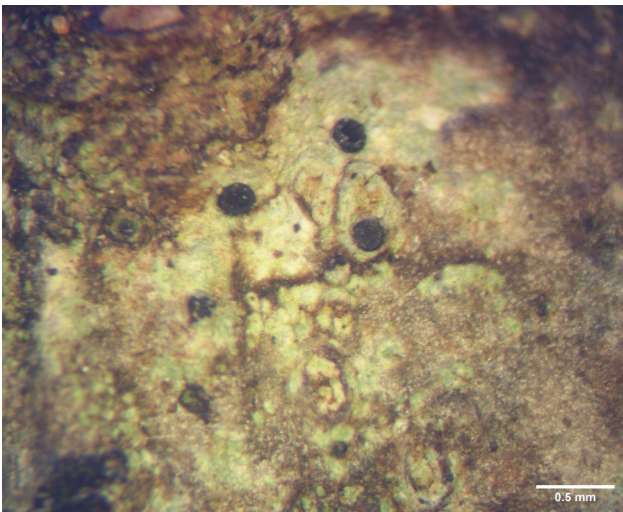


Figure 4. *Buellia* "*fecunda*" habit.

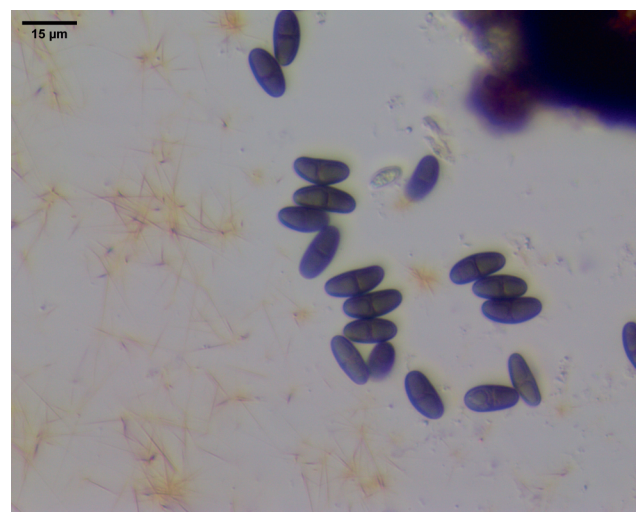


Figure 6. *Buellia* "*fecunda*" spores in K also showing norstictic acid crystals.

***Arthonia* aff. *sexlocularis* Zahlbr**

Santa Cruz County. Forest of Nisene Marks State Park. On hardwood twig in riparian island in Aptos Creek. July 21, 2022. 36.98675°N, 121.90761°W. Elevation 25 m. *Kellman 9602* (kmk)

Thallus pale green, roughly 1 cm in diameter. This specimen appears to be lichenized as an algal layer is easily revealed under the cortex, K-, C-, KC-. Ascomata ± circular, ~0.2 mm in diameter, often clumped in groups of 3-4, black, pruinose. Epihymenium brown. Hymenium IKI orange, 65 µm tall. pores 4-7 septate. with last 2 end cells narrower than central cells; 18.7-20.9 x 5.5 µm; clear, 8/ ascus.

Grube (2007) emphasized the strange spores with narrow cells at the ends and thicker cells in the center. (Figure 10) He did not note spore size in this description, but the original description by Zahlbruckner (1914) cited spores 16-19 x 5-6.5 µm. Zahlbruckner's description also stated that the thallus was K+Y. which is not the case with my specimen. Grube noted another (unidentified) collection from Santa Barbara



Figure 7. *Arthonia* aff. *Sexlocularis* habit.

County that differed from *A. sexlocularis* by an orange reaction in the hymenium to IKI which matches my collection. The lichenized thallus also separates this collection from *A. sexlocularis*. as described by Grube.

***Zahlbrucknerella calcarea* (Herre) Herre**

Santa Cruz County. Big Basin Redwoods State Park. On calcareous sandstone rock in full sun. Rock outcrops near the Basin Trail and below China Grade ~1.5 miles north of SR 236. 37.21101°N, 121.21122°W. Elevation 690 m. *Kellman 9079a* (kmk)

Thallus dark-brown black, filamentous, to 1 cm diameter. Branches doubled and splitting into individual tips. Photobiont *Scytonema*, and visible through the hyphal strands coating the algal cells (Figure 11). Apothecia present but not dissected, black, up to 0.2 mm diameter, disk brown, with a thick black rim (Figure 12)

Herre (1910) described *Zahlbrucknera calcarea* from a single collection from the peak of Black Mountain in southern San Mateo County: *Herre #1287* deposited in UC, F, and NEB. In 1912,

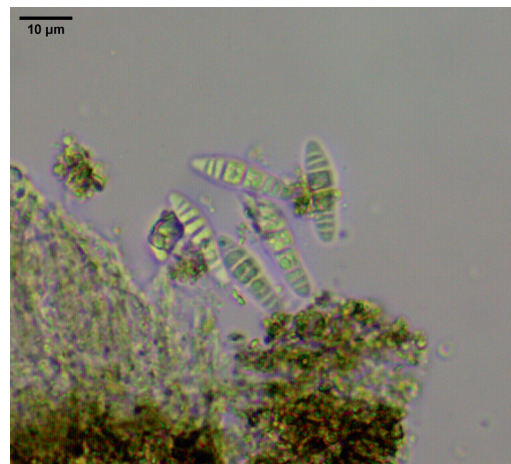


Figure 8. *Arthonia* aff. *Sexlocularis* spores. Note the narrower distal cells compared to the larger central cells.

he recognized that *Zahlbrucknera* was already a genus of flowering plants, so he renamed the genus *Zahlbrucknerella*. Moving forward over a hundred years, CALS, In June of 2016, made a field trip to the top of that same mountain, during which I relocated *Z. calcarea*. I remember that I was not overly convinced at the time, but the *Scytonema* photobiont is unmistakable with its “stacked coin” configuration, and I eventually accepted the determination.

Per CNALH, this new collection is only the second location of this taxon in California.

LITERATURE CITED

- Bungartz, F., A. Nordin & M. Grube. 2007. *Buellia* in Lichen Flora of the Greater Sonoran Desert Region. Edited by T. H. Nash, C. Gries & F. Bungartz. V3: 113-179. Lichens Unlimited, School of Life Sciences, Arizona State University, Tempe, AZ.
- Consortium of North America Lichen Herbaria (CNALH). 2022. <http://lichenportal.org/cnalh/index.php>. Accessed on August 1, 2022.
- Grube, M. 2007. *Arthonia* in Lichen Flora of the Greater Sonoran Desert Region. Edited by T.H. Nash, C. Gries, & F. Bungartz. Vol 3: 39-61. Lichens Unlimited, School of Life Sciences, Arizona State University, Tempe, AZ.
- Herre, A.W.C.T. 1910. The Lichen Flora of the Santa Cruz Peninsula, California. Proceedings of the Washington Academy of Sciences 12(2): 27-269.
- Herre, A.W.C.T. 1912. Supplement to the Lichen Flora of the Santa Cruz Peninsula, California. Journal of the Washington Academy of Sciences 2: 380-386
- Noble, W. J. 1982. The Lichens of the Coastal Douglas-Fir Dry Subzone of British Columbia. PhD Thesis, Univ. British Columbia. Part II reprinted 2017 with preface and notes by Michael Haldeman and Bruce McCune. Monographs in North American Lichenology 3: 1-260. Northwest Lichenologists, Corvallis, Oregon, U.S.A.
- Zahlbruckner, A. 1914. Neue Flechten. Annales Mycologici 12(3): 335-345



Figure 9. *Zahlbrucknera calcarea* thallus showing *Scytonema* surrounded by yellowish hyphae.

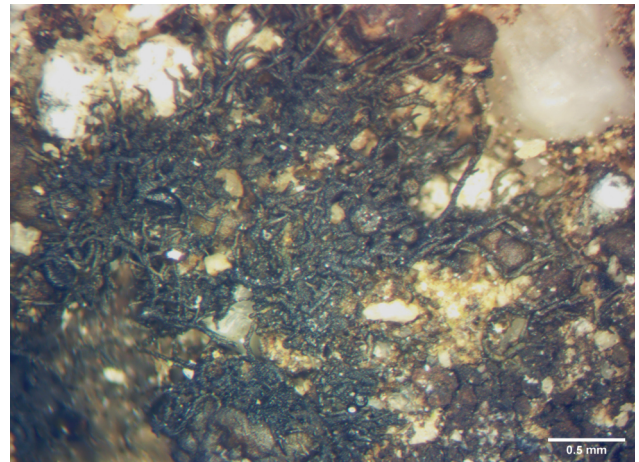


Figure 10. *Zahlbrucknerella calcarea* habit.

Acarospora brattiae: Current assessment of a rare western North American taxon

Jason Dart^{1,2}, Kerry Knudsen³, Eva Hodková³, J. Maliček⁴

¹Althouse and Meade, Inc. 1650 Ramada Drive, Suite #180, Paso Robles, CA 93446, USA;

²Robert F. Hoover Herbarium, Biological Sciences Department, California Polytechnic Institute, San Luis Obispo, CA, 93407, USA; ³Czech University of Life Sciences Prague, Faculty of Environmental Sciences, Department of Ecology, Kamýcká 129, Praha - Suchbát, 165 00, Czech Republic; ⁴The Czech Academy of Sciences, Institute of Botany, Zámek 1, CZ2 252 43 Průhonice, Czech Republic.

ABSTRACT

New records of *Acarospora brattiae* with updated species description, substrate preference, distribution, GenBank numbers and chemistry.

INTRODUCTION

For the *Acarospora* treatment in Volume 3 of the Sonoran Flora (Knudsen 2007a), the 2nd author (K.K.) was finishing the final version of his manuscript when he received a specimen collected by Cherie Bratt in 1990 from the lichen herbarium of the Santa Barbara Botanic Garden (SBBG). The specimen, from Los Alamos in northern Santa Barbara County, was labelled as growing on soil (Bratt 6521). The areoles were mostly small, about 0.5 mm or less, with a few larger areoles, all with one apothecium each. In section, the cortex and parathecium around the apothecia had a red reaction to potassium hydroxide (K+R) and produced abundant crystals of norstictic acid. Though it had a tall hymenium, there was no interrupted algal layer visible in the small fertile areoles. With these characters K.K. determined it was not *Myriospora smaragdula* (Wahlenb. Ex Ach.) Nägeli ex Uloth, a taxon also containing norstictic acid, which he had reported from a Coos County, Oregon collection by Bruce McCune (Knudsen 2007b), and instead represented an undescribed taxon.

Acarospora brattiae was formally described in Volume 3 of the Sonoran Flora (Knudsen 2007a). The taxon was named in honor of the collector Cherie Bratt for the important work she did in California lichenology, including starting the lichen herbarium at SBBG and being an important leader of the California Lichen Society. She taught many lichen classes around California and generated awareness of lichens among government managers of reserves, national forests, and national parks. The holotype specimen was designated as Bratt 6521 and housed at SBBG, while a duplicate at the University of California, Riverside (UCR) was designated as the isotype. Both specimens were rather scant, consisting of a few pieces of soft crumbly rock, each glued to card stock. During our specimen review for this study, the isotype was confirmed present at UCR (Chris Wagner, personal communication, June 2022) but the holotype was not found at SBBG (Danielle Ward, personal communication, June 2022). The UCR Lichen Herbarium is being transferred to SBBG, so soon the isotype will be back in Santa Barbara County and there is hope that the holotype will be found.

In Volume 3 of the Sonoran Flora *A. brattiae* was included in the keys as a terricolous species based on the holotype packet notation and appearance of the specimens where the substrate looked soft and glued together on card

stock. Subsequent to publication, Bratt informed K.K. that the specimen was actually collected on rock. To date, the exact location of this collection in Los Alamos has not been identified. The 1st author (J.D.) visited the described location along Palmer Road in Los Alamos in June 2022 and found the area to be characterized by low shelves of white, soft, non-calcareous sandstone eroding out of hillsides dominated by coastal scrub habitat.

COLLECTION HISTORY

A species described from a single type collection is a hypothesis. Giving a lichen a name and a description preserves valuable biological information. It may take decades, or even over a hundred years like *Trimmatothelopsis versipellis* (Nyl.) Zschacke in France, but usually new collections are made. Eventually the taxon is either verified as a species or it is found to be a synonym of a species which was already described. After the 2007 publication of *A. brattiae* in the Sonoran Flora, K.K. never examined the type specimens again, and these specimens remained the only confirmed records for the species.

Ten years after being described, in 2017, J.D. collected brown *Acarospora* specimens (Dart 847.1, 856) on crumbling shale bedrock in the Cholame Hills of southeastern Monterey County. The *Acarospora* specimens had mostly large areolate to subsquamulose thallus units which were 1–2 mm wide. He misdiagnosed the spot test results and passed over *A. brattiae* as it was reported only from soil. Examining a duplicate of Dart 847.1 in 2021, K.K. saw in the large areoles, especially when sterile and the apothecia did not fill the areoles, an interrupted algal layer (Figure 1). He thought it might be *Myriospora smaragdula* or maybe a new *Myriospora* taxon. Thinking it was new to science, K.K. recognized it as the same taxon he

identified as *M. smaragdula* from Coos County, Oregon, collected by Bruce McCune (22267) in 1995 (Knudsen 2007b). He then wrote an extensive description of the 2017 collection before he ultimately determined it was *A. brattiae*.

In May 2022, J.D. confirmed another record of *A. brattiae* (Dart 2319) from the central coast of California, in Arroyo Grande, San Luis Obispo County. The specimen is areolate, orange-brown, rarely with subsquamulose lobes, numerous apothecia per areole, and with reddish staining around the apothecia inner margin. The cortex contains norstictic acid (K+R) and the algal layer has regular interruptions from hyphal bundles (Figure 1).

One additional specimen listed in the Consortium of North American Lichen Herbaria (CNALH 2022) as *A. brattiae* was reviewed for this study. The specimen, housed at SBBG, was collected on soil at Mount Laguna in San Diego County in 2001 (Pignuolo 13), and was later determined as *A. brattiae*. J.D. confirmed the specimen lacked norstictic acid (K-) and had a C+R reaction in the lower cortex indicating likely presence of gyrophoric acid, and thus made the determination that this was in fact *Acarospora obpallens* (Nyl. ex Hasse) Zahlbr., a common *Acarospora* on soil and rock in Southern California.

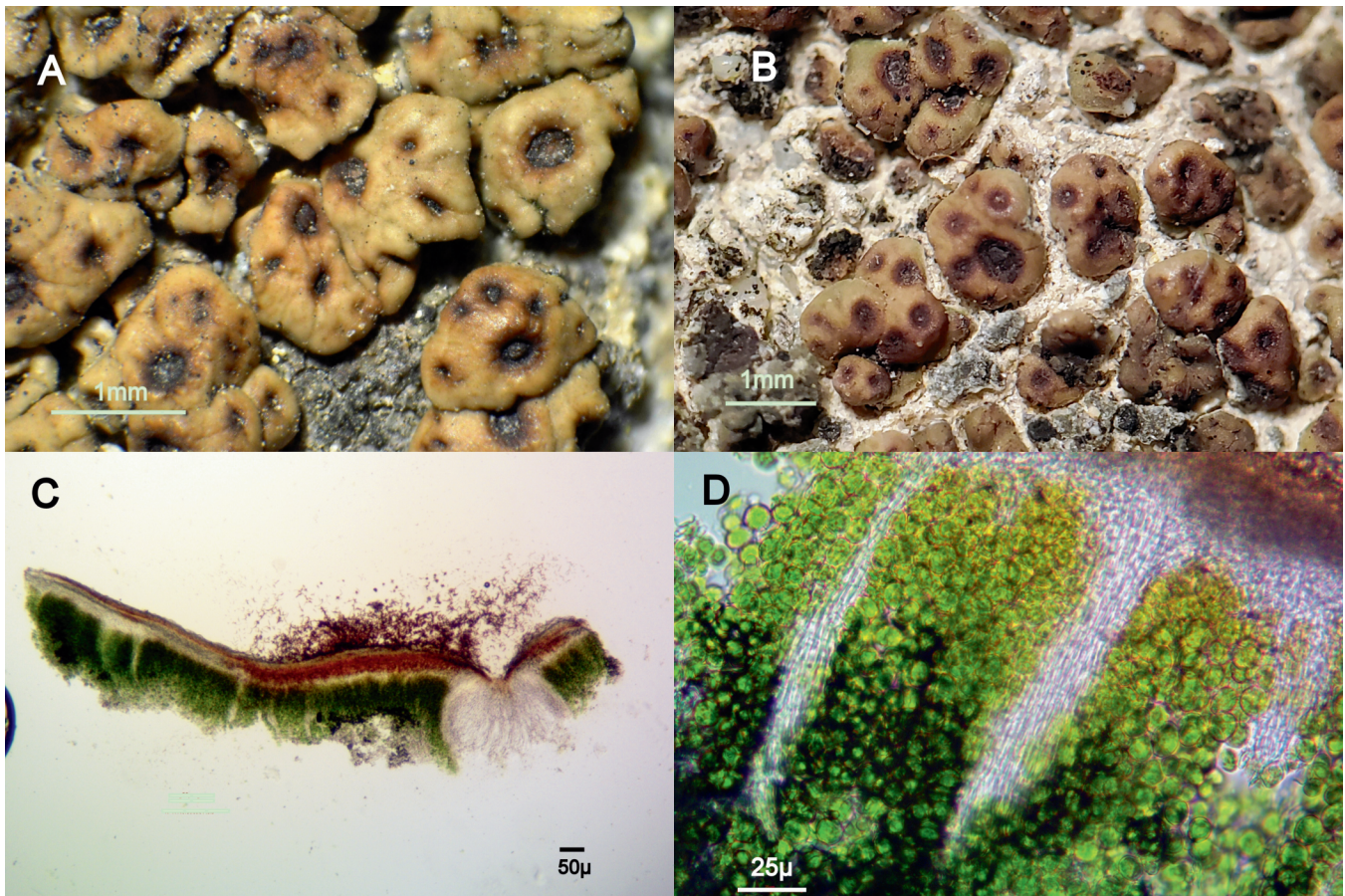


Figure 1. *Acarospora brattiae* recent collections and diagnostic characters. (A) Habit, *A. brattiae* (Dart 847.1), Monterey County, California, 2017. (B) Habit, *A. brattiae* (Dart 2319), with strong red pigmentation around apothecia, San Luis Obispo County, California, 2022. (C) Section of thallus areole with apothecium at 100x (Dart 856), in potassium hydroxide (KOH), showing red reaction and norstictic acid crystals. (D) Detail of interrupted algal layer in thallus section (Dart 856), 400x in water. All photos by J.D.

SEQUENCE DATA

Eva Hodková in the Jana Kocourková lab at the Czech University of Life Sciences in Prague sequenced the Dart 847.1 specimen. It was not a *Myriospora* but an *Acarospora*. Sequences of ITS and mtSSU were blasted to the *Acarospora* group and in an unpublished phylogeny it was recovered in a lineage with *Acarospora minuta* K. Knudsen, Hodková & J. McCarthy, nom. prov., a new species being described from Canada. GenBank numbers: ITS (ON303959), SSU (ON303850), LSU (ON303964).

UPDATED DESCRIPTION

Hypothallus in substrate. Thallus of areoles (0.5-)1–2 mm wide, ca. 0.5 mm thick, lobulate with mycelial base over one half width of areole (subsquamulose), up to 1 mm high. Upper surface orange-brown to pale brown, shiny, with some creases and 1 to 8 apothecia, epruinose. Lower surface white, ecorticate. Epicortex 10 μ m thick. Cortex 40 μ m thick of round to irregular cells 2–5 μ m wide, upper layer orange to orange-brown, lower layer hyaline varying in thickness. Algal layer 120–140 μ m thick, algal cells 10–12 μ m wide, scattered under apothecia.

Hyphal bundles 10–20 μm wide, interrupting algal layer, best observed in sections not including the apothecia. The algal layer is uninterrupted in smaller areoles. Medulla 250–300 μm thick, obscure, of variable hyphae, intricate, narrow to 4–5 μm wide with globose cells constricted at septa, easily breaking apart (at least in sections) and paraplectenchymatous, continuous with attaching hyphae.

Apothecia up to eight per areole, punctiform to 0.5 mm wide, immersed, brown, epruinose, reddish when wet, with red stain uneven on cortex around the apothecia. Parathecium 40 μm at mid-level of hymenium expanding to up to 100 μm around the disc, merging with cortex. Hymenium 180–200 μm tall, epihymenium light reddish brown, 15 μm tall, paraphyses 1 μm wide, some branching, apices unexpanded or in pigment cap, hymenial gel IKI+ red or blue turning red, hemiamyloid. Asci mostly 120–200 \times 30–40 μm , ascospores thin, 2–5 \times 1 μm , with one oil drop at each end. Subhymenium ca. 20 μm tall, IKI+ dark blue, easily bleeding upward into lower part of hymenium in sections. Hypothecium 40 μm tall. Pycnidia not observed.

Chemistry: TLC performed by J. Maliček (A, B', C): norstictic acid, connorstictic acid. Cortex and parathecium with ample norstictic acid for spot tests. In section a strong red reaction is evident after application of potassium hydroxide (K+R), with production of norstictic acid crystals (Figure 1).

ECOLOGY AND DISTRIBUTION

The six known specimens of *Acarospora brattiae* represent four localities stretching from Santa Barbara County, California (type locality) to Coos County, Oregon (Figure 2). The three localities in central coastal California span

approximately 74 miles north to south, and the Oregon locality is disjunct, at 559 miles further north. We expect the center of distribution of *A. brattiae* is the central coast of California, but the Oregon specimen and another potential specimen from Humboldt County, California (Pike 1400, OSC) suggest there is more to learn. The species occupies the coastal zone, with one specimen occurring 60 miles from the Pacific Ocean (Cholame Hills, Monterey County), while the remaining specimens occur between 0 and 16 miles from the ocean. Substrate preference is non-calcareous sandstone and shale bedrock outcrops near ground level, in open areas with full sun. The rock is generally soft, fractured, or crumbly.



Figure 2. Range map for *Acarospora brattiae* verified specimens.

SPECIMENS EXAMINED

Oregon: Coos County, 14 km SW of Coos Bay, Simpson Beach near Shore Acres State Park, 43° 19' N, 124° 22' W, 3 m. elevation, on soft sandstone outcrops by the ocean, June 1995, McCune 22267 (hb. McCune). *California*: Monterey County, Cholame Hills, 35.861038, -120.326721, 459 m., on low crumbling siliceous (HCL-) shale, August 17, 2017, Dart 847.1 (OBI, duplicate at SBBG); Monterey County, Cholame Hills, 35.861038, -120.326721, 459 m., on low crumbling siliceous (HCL-) shale, September 6, 2017, Dart 856 (PRM); San Luis Obispo County, Badger Canyon Lane, Arroyo Grande, 35.155625, -120.563059, 121 m., on soft white siliceous (HCL-) sandstone bedrock, May 5, 2022, Dart 2319 (OBI); Santa Barbara County, Palmer Road in Los Alamos, on crumbling white sandstone, February 20, 1990, Bratt 6521 (Holotype at SBBG, Isotype at UCR); Santa Barbara County, Los Alamos, 4 Deer Lease, on sandstone, June 27 1991, Bratt 7461 (ASU).

DISCUSSION

In the 32 years since Cherie Bratt first collected *Acarospora brattiae* in Santa Barbara County, California, only five additional verified specimens have been found. The dearth of specimens resulted in early confusion about the species substrate preference and morphological description. An updated key to 90 *Acarosporaceae* of southwestern North America to be published in 2023 by Knudsen and co-authors accurately places *A. brattiae* as occurring on rock and having an interrupted algal layer within the areoles. It is very possible that additional specimens could be in herbaria under misidentified names such as *Myriospora smaragdula*, a taxon also containing norstictic acid. A renewed effort should be made to find additional localities and misidentified specimens. The authors believe *A. brattiae* is a

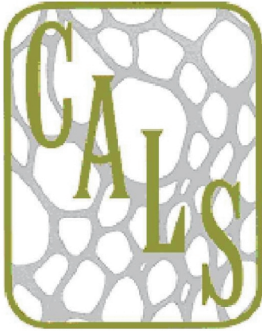
rare taxon worthy of legal protections, but further work is needed before a conservation proposal can be made.

ACKNOWLEDGMENTS

The authors thank Rikke Reese Naesborg, Tucker Lichenologist and Curator of The Lichenarium at SBBG, for access to the Lichenarium, and to Lichenarium Technician Danielle Ward for assistance with specimen review. Chris Wagner provided photos and information on the Isotype specimen at UCR. To the many technical reviewers, thank you for your time and efforts. Althouse and Meade, Inc. supports Jason Dart's lichen endeavors, thank you LynneDee Althouse, Dan Meade, and Zach Raposo. The work of Kerry Knudsen and Eva Hodková was financially supported by the grant of Ministry of Education, Youth and Sports of the Czech Republic, the program of international cooperation between the Czech Republic and U.S.A. for research, development and innovations INTEREXCELLENCE, INTER-ACTION, no. LTAUSA23238. The work of Jiří Malíček was supported by the long-term development grant project RVO 67985939.

CITED LITERATURE

- CNALH. 2022. Consortium of North American Lichen Herbaria. Accessed May 28, 2022.
- Knudsen, K. 2007a [2008]. *Acarospora*. 1–38. In: T.H. Nash, III, C. Gries & F. Bungartz. Lichen Flora of the Greater Sonoran Desert Region, Vol. 3, Lichens Unlimited, Arizona State University, Tempe.
- Knudsen, K. 2007b. *Acarospora smaragdula* in North America. *Evansia* 24: 94–96.



California Lichen Society Grants Program

The California Lichen Society offers small grants to support research pertaining to the lichens of California. No geographical constraints are placed on grantees or their associated institutions, but grantees must be members in good standing of the California Lichen Society. The Grants Committee administers the grants program, with grants awarded to an individual only once during the duration of a project. Grant proposals should be brief and concise.

Grant Applicants should submit a proposal containing the following information:

- Title of the project, applicant's name, address, phone number, email address, and the date submitted.
- Estimated time frame for project.
- Description of the project. Outline the purposes, objectives, hypotheses where appropriate, and methods of data collection and analysis. Highlight aspects of the work that you believe are particularly important and creative. Discuss how the project will advance knowledge of California lichens.
- Description of the final product. We ask you to submit an article to the *Bulletin of the California Lichen Society*, based on the results of your work.
- Budget. Summarize intended use of funds. If you received or expect to receive other grants or material support, show how these fit into the overall budget. The following list gives examples of the kinds of things for which grant funds may be used if appropriate to the objectives of the project: expendable supplies, transportation, equipment rental or purchase of inexpensive equipment, laboratory services, salaries, and living expenses. CALS does not approve grants for outright purchase of capital equipment or high-end items such as computers, software, machinery, or for clothing.
- Academic status (if any). State whether you are a graduate student or an undergraduate student. CALS grants are also available to non-students conducting research on California lichens. CALS grants are available to individuals only and will not be issued to institutions.
- Two letters of support from sponsors, academic supervisors, major professors, professional associates or colleagues should be part of your application. These should be submitted directly from the author to the committee Chair.
- Your signature, as the person performing the project and the one responsible for dispersing the funds. All of the information related to your application may be submitted electronically.

Review: Members of the Grants Committee conduct anonymous evaluation of grant proposals twice a year based on completeness, technical quality, consistency with CALS goals, intended use of funds, and likelihood of completion. Grant proposals received by May 1 and November 1 each year will be considered for that year's grant cycles. The Grants Committee brings its recommendations for funding to the Board of Directors of the California Lichen Society, which has final say regarding approval or denial.

Grant Amounts: This year, CALS offers up to four grants of \$1,000-\$1,500. Typically grants are awarded to separate individuals, however depending on the quality of the applications and the amount of funding available, the committee maintains the option to disburse funds as appropriate. All grants are partially dependent on member contributions, therefore the amounts of these awards may vary from year to year.

Obligations of recipients: 1) Acknowledge the California Lichen Society in any reports, publications, or other products resulting from the work supported by CALS. 2) Submit an article to the *Bulletin of the California Lichen Society*. 3) Submit any relevant rare lichen data to California Natural Diversity Data Base using NDDDB's field survey forms. See <http://californialichens.org/conservation> for additional information.

How to submit an application: Please email submissions or questions to the committee Chair at grants@californialichens.org by **May 1, 2023** or **November 1, 2022**. The current Chair is Rikke Reese Næsborg.

News and Notes

CALS Annual Meeting

When: January 28-29, 2023

Where: UC Berkeley Point Reyes Field Station

We took field trips to notable lichen locations at Pt. Reyes during the day, followed by an evening social, potluck dinner, meeting, and guest lecture at the field station. We were very excited to welcome two of California's rising stars in lichenology, Danielle Ward and Michael Mulroy, as our guest speakers during the evening session. Danielle talked about her study of the lichen flora of Brunei, Borneo, and Michael talked about his research on serpentine lichens in California. Turnout was excellent, with over 50 attendees.

Tribute to Janet Doell, CALS founding member

From Diane Renshaw: Many of you may remember Janet Hoare Doell, a Jasper Ridge docent and an avid and knowledgeable lichenologist. Janet became a Jasper Ridge docent in 1982. Her lichen collections from the preserve, made during the 1980s and 1990s, form the heart and core of the Oakmead Herbarium lichen collection, and her lichen keys and informative articles are familiar to all of us who have taken the docent training class. Janet was a founding member of the California Lichen Society. Her interest in Jasper Ridge continued long after she moved away from the area. In 2011 she revisited the preserve, reviewed the lichen collection, and enjoyed a walk along familiar trails with other lichen enthusiasts. Janet's collections and numerous publications on lichens are a lasting legacy that continues to add value to our understanding of biodiversity and natural systems. Her obituary

appeared in the San Jose Mercury News on Wednesday, 10/12/22:

<https://www.legacy.com/us/obituaries/mercurynews/name/janet-doell-obituary?id=36773453>



Photo credit: Justin Shaffer

Jepson Herbarium Workshop on California Lichens

Topic: California lichens

Dates: February 25 – 26, 2023

Organizers: Jesse Miller and Klara Scharnagl

Location: UC Berkeley and Marin Municipal Water District Field Site

Transportation: Personal vehicle required for field trip (carpooling possible).

Hiking: Easy but possibly in cold, wet, and windy conditions. Some uneven terrain.

Start/End: Saturday, 9:00 a.m. – Sunday, 5:00 p.m.

Course fee: \$315/\$345

Description: Lichens are all around us and they have fascinating stories to tell. This two-day workshop will focus on developing skills for identifying common Bay Area macrolichens (foliose and fruticose lichens) to genus. Students will learn to recognize and distinguish between pollution-tolerant lichen communities that we often see in cities and the more pristine communities that occur in places with high air quality. After taking this course you will be sure to observe lichens, big or small, almost everywhere you go! Saturday morning will begin with an introductory classroom session where we will cover basic lichen anatomy and terminology and discuss the roles lichens play in ecosystems, such as supporting wildlife. Saturday afternoon will be spent exploring the UC Berkeley campus and the natural areas just uphill from campus. We will collect some material to bring back to the lab in the second part of Saturday afternoon in order to practice keying and identification. On Sunday, the class will meet on the UC Berkeley campus and then caravan to Mount Tamalpais, meeting at the Rock Spring Trailhead parking lot, for a half-day field trip so that students can observe lichens in their natural habitats. Total hiking time will be approximately 2 hours, including about 2 miles of walking. The class will then return to UC Berkeley for the afternoon for one more classroom session.

Registration link: <https://docs.google.com/forms/d/e/>

1FAIpQLSdXS9RZy3sl47QzTjoCUOcLQe7lS

AarWMrm_gf586yqQTcFSA/viewform
Jepson Herbarium workshops: <https://ucjeps.berkeley.edu/workshops/>

American Bryological and Lichenological Society, Annual General Meeting 2023

ABLS will be meeting with the Botanical Society of America for a joint conference.

Location: Boise, Idaho

Dates: July 22-26, 2023

Conference website: <https://2023.botanyconference.org/>

President's Address

By Jesse Miller

Winter is lichen season. The lichens are living their best lives, and there are few experiences more sublime in life than observing thriving lichens.

2022 was good to the California Lichen Society. We fully returned to adventuring in the hills after the pandemic hiatus. The Lichen Society and friends held forays or workshops in Arcata, Hopland, Sugarloaf Ridge SP, Mt. Tam, Pepperwood, Berkeley, Santa Cruz and Cupertino in 2022...and I am probably missing some. If you have ideas about where we should hold forays in 2023, please drop me a line. One-day and multi-day trips are both of interest, and it would be great to hear from anyone who wants to help organize 2023 forays.

Several CALS members and friends, including **Danielle Ward, Michael Mulroy, Jen Riddell, Annie Chen, Michal Borton**, and myself attended the California Native Plant Society conference in San Jose in October. This meeting is the ultimate gathering of California botanists, and it was great to see lichens so richly represented. CNPS did a great deal of work to make the meeting welcoming to people from diverse backgrounds, including students and other early career scientists, people of color, and LGBTQ+ people. CALS member **Cat Chang** played a leadership role in shaping this process, and the impact of this effort was clearly visible. It was wonderful to see CNPS becoming more representative of the population of California, and it led to conversations among some of the CALS members in attendance about how we could do similar work in our organization.

To this end, I am happy to report that we have formed a new CALS committee focused on diversity, equity, inclusion and justice (DEIJ) within our organization. I am very grateful to **Cat Chang, Jen Riddell, and Adrienne Kovasi** who are acting as founding members of the committee. I think the time is ripe for this—we are living in an era when natural scientists of all stripes are examining the colonial past of our fields and the barriers that may exclude some people from our organizations. The first goal for the CALS DEIJ committee in 2023 is to make recommendations to the board about some simple and achievable steps we can take to make CALS a more welcoming and inclusive organization in the short-term. If you are interested in joining us in this work, please drop me a line! Stay tuned for updates later this year.

Thanks to your support, the California Lichen Society has had enough resources to expand our small grants program in 2022, increasing the number and amount of grants. We hope to further grow our grants program in 2023. As a first step, we are planning to begin to offer grants twice a year instead of just once. This should make grants more accessible, since it will allow for shorter lead times between project proposals and on-the-ground research. This is only possible because of the generosity of our members, for which we are very grateful.

We held an excellent annual meeting and field trip at Pt. Reyes on January 28. During the day, we took field trips to visit some of the fascinating lichen communities in Pt. Reyes National Seashore, and in the evening we held our customary open board meeting, social hour,

potluck dinner, and hosted two guest speakers. We greatly enjoyed hearing from two of California's rising stars in lichenology, **Danielle Ward** and **Michael Mulroy**, during the evening session. Danielle talked about her study of the lichen flora of Brunei, Borneo, and Michael talked about his research on serpentine lichens in California. For the first time, we offered stipends to students who need financial support to attend our annual meeting—I see this as a useful step in our efforts to make CALS a more welcoming and inclusive organization.

Although the pandemic is not over, CALS has recovered from our covid slump and perhaps even surpassed pre-pandemic activity levels. Now that we are up and running again, we can think about the bigger picture of where we want our organization to go in the years ahead. Understanding, let alone conserving, the diversity of California lichens remains a

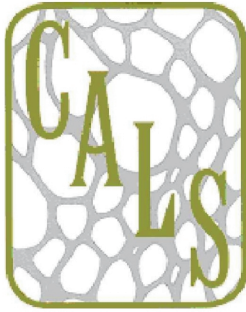
challenge. However, there seems to be more interest than ever in these small organisms, and we have many tools to aid this work that were not available even a few years ago. Through the ups and downs, I look forward to continuing this adventure with you in the year ahead.

Finally, I am happy to share that CALS Bulletin co-editor **Jes Coyle**, her partner Jesse, and their daughter Everna have successfully welcomed a new potential lichenologist into the world—Lucas “Lucanora” Coyle Fitzpatrick was born on December 8, 2022. Mom and baby are well, and we thank co-editor **Justin Schaffer** for putting together this issue while Jes attends to the next generation. Thanks also to **Annie Chen** for taking on production for this issue!

Symbiotically yours,
Jesse



The three Jes(s/i/e)s of North American lichenology finally united at the American Bryological and Lichenological Society meeting this summer. From left, Jes Coyle, Jesse Miller, and Jessi Allen.



CALIFORNIA LICHEN SOCIETY

PO Box 472, FAIRFAX, CALIFORNIA 94978

The California Lichen Society (CAL S) seeks to promote the appreciation, conservation, and study of lichens. The interests of the Society include the entire western part of the continent, although the focus is on California.

Members receive the Bulletin of the California Lichen Society (print and/or online access), voter rights in society elections, access to the CAL S community, and notices of meetings, field trips, lectures, and workshops.

Membership Dues (in \$US per year)

Student and fixed income (online eBulletin only) - \$10
Regular - \$20 (\$25 for foreign members)
Family - \$25
Sponsor and Libraries - \$35
Donor - \$50
Benefactor - \$100
Life Members - \$500 (one time)

Find CAL S online!

californialichens.org

twitter.com/CALichenS

iNaturalist.org/users/cals

facebook.com/californialichens

Membership dues can be made payable to:

California Lichen Society, PO Box 472, Fairfax, California 94978

To join or renew online, please visit www.californialichens.org/membership

Board Members of the California Lichen Society

President: Jesse Miller, President@californialichens.org

Vice president: Julene Johnson, VicePresident@californialichens.org

Secretary: Lise Peterson, Secretary@californialichens.org

Treasurer: Kathy Faircloth, Treasurer@californialichens.org

Members-at-large: Tom Carlberg, Ken Kellman, Jennifer Rycenga, Memberatlarge@californialichens.org

Committees of the California Lichen Society

Conservation: Shelly Benson, Chairperson, Conservation@californialichens.org

Grants: Rikke Reese Næsborg, Chairperson, Grants@californialichens.org

Sales: Tom Carlberg, Chairperson, Sales@californialichens.org

Activities and events: vacant, Activities@californialichens.org

Outreach: Lishka Arata, Chairperson, Outreach@californialichens.org

Bulletin: Jes Coyle and Justin Shaffer, Editor@californialichens.org

Webmaster: Sarah Burton

Diversity, Equity, Inclusion and Justice (DEIJ): Adrienne Kovasi



The co-occurrence of *Alectoria sarmentosa* and *Letharia vulpina* signals a biogeographic transition at the crest of the Cascade range at the boundary of Jackson and Klamath Counties in Southern Oregon. Photo by Jesse Miller.