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of the
California Lichen Society



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The California Lichen Society 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. Dues categories (in \$US per year): Student and fixed income - \$10, Regular - \$20 (\$25 for foreign members), Family - \$25, Sponsor and Libraries - \$35, Donor - \$50, Benefactor - \$100 and Life Membership - \$500 (one time) payable to the California Lichen Society, P.O. Box 472, Fairfax, CA 94930. Members receive the Bulletin and notices of meetings, field trips, lectures and workshops.

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The Bulletin of the California Lichen Society (ISSN 1093-9148) is edited by Tom Carlberg, tcarlberg7@yahoo.com. The Bulletin has a review committee including Larry St. Clair, Shirley Tucker, William Sanders, and Richard Moe, and is produced by Eric Peterson. The Bulletin welcomes manuscripts on technical topics in lichenology relating to western North America and on conservation of the lichens, as well as news of lichenologists and their activities. The best way to submit manuscripts is by e-mail attachments or on a CD in the format of a major word processor (DOC or RTF preferred). Submit a file without paragraph formatting; do include italics or underlining for scientific names. Figures may be submitted electronically or in hard copy. Figures submitted electronically should provide a resolution of 300 pixels-per-inch (600 minimum for line drawings in JPEG format); hard copy figures may be submitted as line drawings, unmounted black and white glossy photos or 35mm negatives or slides (B&W or color). Email submissions of figures are limited to 10 MB per email, but large files may be split across several emails or other arrangements can be made. Contact the Production Editor, Eric Peterson, at eric@theothersideofthenet.com for details of submitting illustrations or other large files. A review process is followed. Nomenclature follows Esslinger cumulative checklist on-line at <http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chcklst7.htm>. The editors may substitute abbreviations of author's names, as appropriate, from R.K. Brummitt and C.E. Powell, Authors of Plant Names, Royal Botanic Gardens, Kew, 1992. Instructions to authors will soon be available on the Society's web site (below). Style follows this issue. Electronic reprints in PDF format will be emailed to the lead author at no cost.

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Front cover: Yana Boulders. Image by Carrie Diamond and Tina Dishman. See report on Yana Trail field trip by Erin Martin.

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VOLUME 15 No. 1 SUMMER 2008

Bryoria pseudocapillaris, Sponsorship for the CALS Conservation Committee

Doug Glavich
2015 NW Taylor Ave.
Corvallis, OR, 97330
dglavich@yahoo.com

Executive Summary

Bryoria pseudocapillaris is endemic to the west coast of North America with a distribution from San Luis Obispo County, California north to the Puget Sound in Washington. It was once only known from the Samoa Peninsula in Humboldt County, California and Cape Blanco in Curry County, Oregon, but recent studies have found several new sites. The largest known populations occur along the coastline from northern California to Central Oregon (Humboldt County, CA to Lane County, OR). This species is mostly found on conifers of coastal dunes and headland forests. Because this species reproduces and disperses by fragmentation, it is likely dispersal limited. Coastal development, air pollution, and climate change are likely threats to this species.

TAXONOMY

Accepted scientific name: *Bryoria pseudocapillaris* Brodo & Hawksworth.

Common name: none.

Type specimen and location: Cape Blanco, Curry County, Oregon (Brodo 20539; CANL 50596).

Synonyms: none.

DESCRIPTION

From Brodo & Hawksworth (1977) and Glavich (2003): Thallus fruticose and hair-like, 5-7 cm long (Figure 1). *Bryoria pseudocapillaris* from the Oregon Dunes in Coos County, Oregon.. Main branches mostly terete with no foveolate portions. Pseudocyphellae long and linear to ~3 mm. Color

mostly pale brown but can be brown to dark brown.

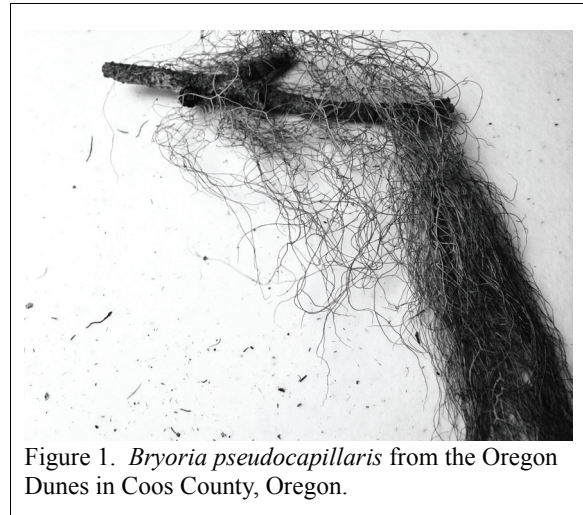


Figure 1. *Bryoria pseudocapillaris* from the Oregon Dunes in Coos County, Oregon.

Spot tests Cortex K+ yellow, C+ pink or reddish, KC+ pink or reddish, P + yellow. Secondary compounds barbatolic and alectorialic acids, sometimes together with an unidentified substance.

Similar species and distinguishing characteristics:

Several *Bryoria* or *Bryoria*-like species can be mistaken for *Bryoria pseudocapillaris*. The distinguishing characteristic for *B. pseudocapillaris* is the long, linear pseudocyphellae plus the spot test reactions. *Bryoria spiralifera* has long pseudocyphellae, but they spiral around the thallus branches; this lichen also differs in spot test reactions (K+ yellow changing to red, C-, and KC-). *Bryoria capillaris* differs in having short, usually less than 1 mm, pseudocyphellae. *Sulcaria badia* differs in its more robust appearance; its branches often appear

twisted with long pseudocyphellae in deep furrows.

BIOLOGICAL CHARACTERISTICS

Growth form: fruticose, filamentous.

Reproductive method: fragmentation.

Dispersal agents: gravity, wind, animals.

Substrate and specificity: it is not substrate specific, but it does appear mostly on conifers of the immediate coast: dominantly *Picea sitchensis* and *Pinus contorta* var. *contorta* and also *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla*.

Habitat and specificity: hyper-maritime coastal headland and dune forests.

Pollution sensitivity: unknown.

Ecological function: unknown.

GEOGRAPHY

Global: Occurs on the coastline mostly from northern California (Humboldt County) to central Oregon (Lane County). A few sites are found on the coastline of Washington and central California.

Local: In California, the largest populations are in Humboldt County, which include forests on the dunes of the Samoa Peninsula and on headlands, but also extend as far south as San Luis Obispo Co. (Geiser et al. 2004; Glavich et al. 2005a, 2005b: Fig. 1). California sites include these collections. SAN LUIS OBISPO CO.: Baywood Park, Riefner 87-336 (CANL.) The following are housed at OSC: MENDOCINO CO. H.J. Ranch, Point Arena, Glavich 611. HUMBOLDT CO. Samoa Peninsula, BLM parcel, Glavich 523; Humboldt Bay NWR, Lanphere Dunes, Glavich 527; Humboldt Lagoons SP, Dry Lagoon, Glavich 530; Little River SP, Glavich 595; Patrick's Point SP, Glavich 503; Trinidad Beach SP, Glavich 534. DEL NORTE CO. Redwood NP, Crescent Overlook, Glavich 548; L. Earl SP, Glavich 544. The sites near Point Arena and Los Osos appear to be disjunct.

POPULATION TRENDS

Actual population trends are unknown, but recent studies have increased the knowledge of population sites. Previous to more recent work, *B. pseudocapillaris* was known only from two California locations: Samoa Peninsula (Manila), Humboldt Co.

(Brodo & Hawksworth 1977) and Baywood Park, San Luis Obispo Co. (Riefner et al. 1995). Due to more recent surveys, it is now known from Lake Earl State Park, Humboldt Lagoons State Park, Patrick's Point State Park, Trinidad Beach State Park, Little River State Park, Redwood National Park (Geiser et al. 2004, 2005b; Fig 1).

THREATS

History: Its likely that coastline development was the largest historical threat, and air pollution likely played a threatening role in highly populated areas.

Future: Although both coastal development and air pollution still play a threatening role, climate change may be the major future threat to *B. pseudocapillaris* populations. Climate factors appear to be of major importance to *B. pseudocapillaris* habitat; a habitat model suggests that a winter temperature increase of 1°C could negatively affect a site's suitability for this lichen. With the Mote et al. (2003) warming prediction upwards of 1.5 °C by 2050, climate change should be considered in the management of *B. pseudocapillaris* populations.

PROTECTION

As of now, it is not known how many *B. pseudocapillaris* populations exist on private lands, but several northern California populations are protected by existing on conservation-based state or federal land parcels: Lake Earl State Park, Humboldt Lagoons State Park, Patrick's Point State Park, Trinidad Beach State Park, Little River State Park, Redwood National Park, US Fish & Wildlife Lanphere Dunes, and Samoa Dunes (BLM)(Geiser et al. 2004; Glavich et al. 2005b)

CONSERVATION SUMMARY

Although the distribution of *B. pseudocapillaris* has been studied across northern California (Glavich et al. 2005b), a more site-level study assessing this lichen's local abundance has only occurred on the Samoa Peninsula of Humboldt Bay in northern California (Glavich 2003). Efforts should not only be made to document the size of populations at California State Parks identified in Glavich et al. (2005b), but also surveys should

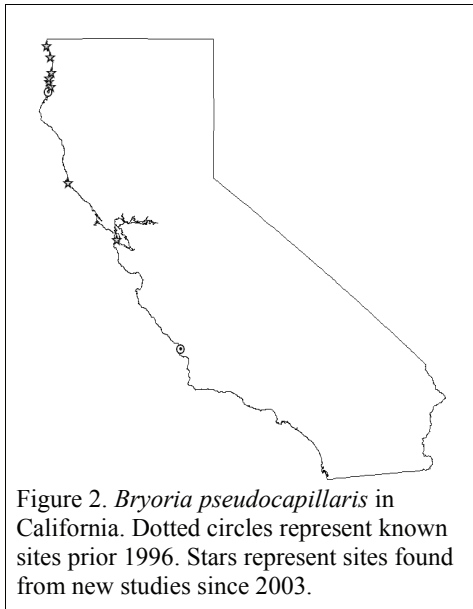


Figure 2. *Bryoria pseudocapillaris* in California. Dotted circles represent known sites prior 1996. Stars represent sites found from new studies since 2003.

be conducted in areas with potential habitat not yet visited: e.g., Lost Coast of the BLM King Range Conservation area and the Sinkyone Wilderness State Park.

Not much is known about its southern populations. The area of its southern most site—Baywood Park, San Luis Obispo Co. (Riefner et al. 1995)—should be surveyed. Other areas near the Mendocino, CA site (Geiser et al. 2004) should be surveyed as well.

SPECIFIC CONSERVATION RECOMMENDATIONS

Recommended Global Rarity Rank: G3

The bulk of the population appears to occur from Humboldt Co., CA northward to central Oregon, and the habitat range is narrow; it occurs only within a few miles of the coastline.

Recommended Global Threat Rank: .2

Coastal development and climate change could affect this species.

Recommended Local Rarity Rank: S2

The largest California population appears to be distributed along the coastline of Humboldt and Del Norte Counties. Population sizes for the more southern sites are unknown.

Recommended Local Threat Rank: .2

Coastal development and climate change could affect this species.

Recommended List: 3

Little is known about population sizes outside the Samoa Peninsula in Humboldt Co.

RECOMMENDED CONSERVATION/MANAGEMENT ACTIONS

All sites, with the exception of the Samoa Peninsula, should be relocated and assessed for population size. More potential habitat should also be surveyed and documented.

RELEVANT EXPERTS AND KNOWLEDGEABLE BOTANISTS

Doug Glavich
Ecologist/Lichenologist
2015 NW Taylor Ave.
Corvallis, OR 97330

Bruce McCune,
Professor of Ecology and Lichenology
Dept. Botany and Plant Pathology
Cordley 2082
Corvallis, OR 97331

STAKEHOLDERS FOR NOTIFICATION OF COMMENT PERIOD
USDI, Bureau of Land Management
Arcata Field Office
1695 Heindon Road
Arcata, CA 95521

US Fish & Wildlife Service
Humboldt Bay National Refuge
(Lanphere and Ma-le'l Dunes Units)
6800 Lanphere Rd.
Arcata, CA 95521

Redwood National and State Parks
1111 Second Street
Crescent City, CA 95531

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- Riefner, R.E., P.A. Bowler, B.D. Ryan. 1995. New and interesting records of lichens from California. *Bulletin of the California Lichen Society* 2(2): 1-11.

***Bryoria spiralifera*, Sponsorship for the CALS Conservation Committee**

Doug Glavich
2015 NW Taylor Ave.
Corvallis, OR, 97330
dglavich@yahoo.com

Executive Summary

Bryoria spiralifera is endemic to the west coast of North America with a distribution from central California to southern Oregon (San Luis Obispo County, California north to Coos County, Oregon). It was once only known from the Samoa Peninsula in Humboldt County, but recent studies have discovered new sites. However these sites are few and disjunct. The two largest populations occurring in the dunes forests on the Samoa Peninsula in Humboldt County, California and on the Oregon Dunes in Coos County. This species is mostly found on conifers in coastal dunes. Because this species reproduces and disperses by fragmentation, it is likely dispersal limited. Coastal development, air pollution, and climate change are likely threats to this species.

TAXONOMY

Accepted scientific name: *Bryoria spiralifera* Brodo & Hawksworth.

Common name: none.

Type specimen and location: Manila [Samoa Peninsula], Humboldt Co., California (Dowty 137; CANL 38403).

Synonyms: none.

DESCRIPTION

From Brodo & Hawksworth (1977) and Glavich (2003): Thallus fruticose and hair-like, 5-7 cm long. Main branches mostly terete with no foveolate portions. Pseudocyphellae long (~3+ mm) and spiraling around branches. Color mostly reddish brown to brown but can be very pale brown. Spot tests Cortex K+ yellow changing to red, C-, KC-, P+ yellow. Secondary compounds norstictic and conorstictic acids and atranorin.

Similar species and distinguishing characteristics:

Several *Bryoria* or *Bryoria*-like species can be mistaken for *Bryoria spiralifera*. The distinguishing characteristic for *B. spiralifera* is the long, spiraling pseudocyphellae plus the spot test reactions. *Bryoria pseudocapillaris* has long pseudocyphellae, but they are linear with some wrapping around the thallus

branches; this lichen also differs in spot test reactions (K+ yellow, C+ pink, and KC+ pink). *Bryoria capillaris* differs in having short, usually less than 1 mm, pseudocyphellae.



Figure 1. *Bryonia spiralifera* from the Samoa Peninsula dune forest in Humboldt County, California. Characteristic spiraling pseudocyphellae are subtle in the inset.

Sulcaria badia differs in its more robust appearance; its branches often appear twisted with long pseudocyphellae in deep furrows.

BIOLOGICAL CHARACTERISTICS

Growth form: fruticose, filamentous.

Reproductive method: fragmentation.

Dispersal agents: gravity, wind, animals.

Substrate and specificity: it is not substrate specific, but it does appear mostly on conifers of the immediate coast: dominantly *Picea sitchensis* and *Pinus contorta* var. *contorta* and also *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla*.

Habitat and specificity: hyper-maritime dune forests.

Pollution sensitivity: unknown.

Ecological function: unknown.

GEOGRAPHY

Global: Occurs only on the west coastline of North America and only in a few locations from central California (San Luis Obispo Co.) to central Oregon

(Coos County).

Local: The largest known population is on the Samoa Peninsula dunes in Humboldt Co., California, and the other few sites appear to have small populations (Geiser et al. 2004; Glavich et al. 2005b: Fig. 1). California sites include these collections. SAN LUIS OBISPO CO.: Baywood Park, *Riefner 87-336* (CANL)and Montaña de Oro State Park, *Riefner 87-142*. MONTEREY CO.: near Point Lobos, *Riefner 88-147*. SONOMA CO.: Stewart's Point Rd., *Riefner 88-128*. In OSC: HUMBOLDT CO.: Samoa Peninsula, BLM parcel, Glavich 524; Humboldt Bay NWR, Lanphere Dunes, Glavich 522. DEL NORTE CO.: Lake Earl State Park, Glavich 590.

POPULATION TRENDS

Actual population trends are unknown.

THREATS

History: It is likely that coastline development was the largest historical threat, and air pollution likely played a threatening role in highly populated areas.

Future: Although both coastal development and air pollution still play a threatening role, climate change may be the major future threat to *B. spiralifera* populations. Climate factors appear to be of major importance to *B. spiralifera* habitat; a habitat model suggests that a winter temperature increase of 1°C could negatively affect a site's suitability for this lichen. With the Mote et al. (2003) warming prediction upwards of 1.5 °C by 2050, climate change should be considered in the management of *B. spiralifera* populations.

PROTECTION

As of now, it is not known how many *B. spiralifera* populations exist on private lands, but northern California populations are likely protected by state or federal land parcels: Lake Earl State Park, Park, US Fish & Wildlife Lanphere Dunes, and Samoa Dunes (BLM)(Geiser et al. 2004; Glavich et al. 2005b). Little is known about the central California sites.

CONSERVATION SUMMARY

Although the distribution of *B. spiralifera* has been studied across northern California (Glavich et al. 2005b), a more site-level study assessing this lichen's local abundance has only occurred on the Samoa Peninsula of Humboldt Bay in northern California (Glavich 2003). Efforts should not only be made to document the size of populations at California State Parks identified in Glavich et al. (2005b), but also surveys should be conducted in areas with potential habitat not yet visited: e.g., Lost Coast of the BLM King Range Conservation area and the Sinkyone Wilderness State Park.

Not much is known about its southern populations. The areas of its central California sites—Baywood Park and Montaña de Oro State Park (San Luis Obispo Co.), near Point Lobos (Monterey Co.), and near Stewart's Point road (Sonoma Co.)(Riefner et al. 1995)—should be surveyed.

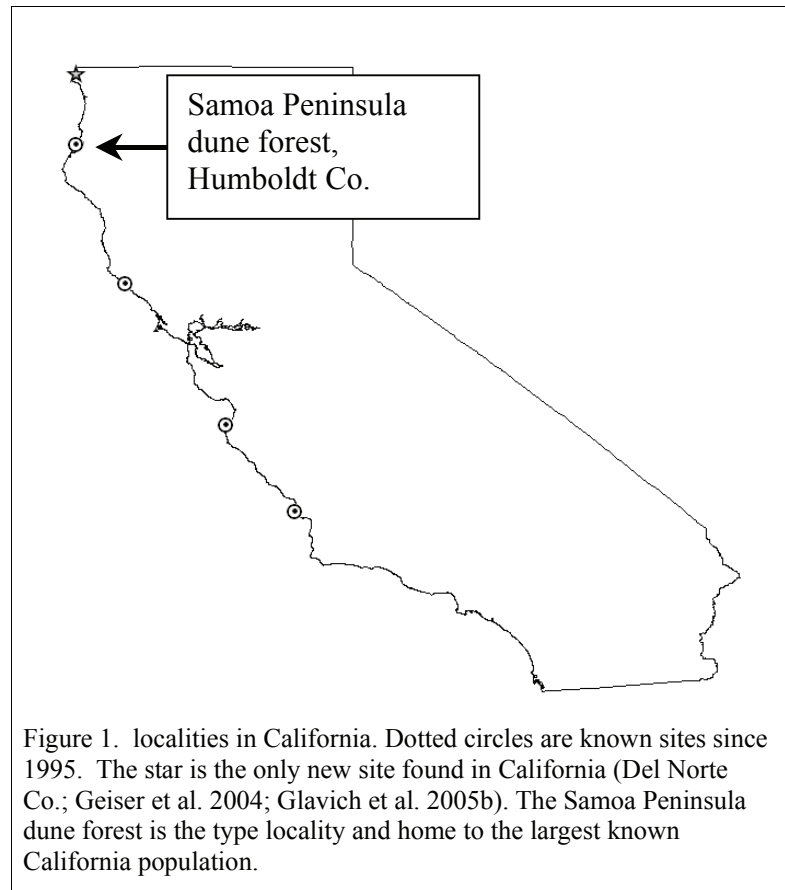


Figure 1. localities in California. Dotted circles are known sites since 1995. The star is the only new site found in California (Del Norte Co.; Geiser et al. 2004; Glavich et al. 2005b). The Samoa Peninsula dune forest is the type locality and home to the largest known California population.

SPECIFIC CONSERVATION RECOMMENDATIONS

Recommended Global Rarity Rank: G2

The two largest known populations occur on the Samoa Peninsula, Humboldt Co., CA and on the Oregon Dunes near Coos Bay, OR. Both populations have been assessed for those areas. Outside of these two areas, the populations appear to be very small. Although this species may occur in other coastal habitat types, its optimum habitat amplitude is very narrow: coastal dune forests.

Recommended Global Threat Rank: .1

Until more is known about the populations other than Humboldt Co., CA and Coos Bay, OR, it is reasonable to assume development and climate change would have a strong negative affect on this species.

Recommended Local Rarity Rank: S1S2

The bulk of thalli in California appear to occur on the Samoa Peninsula in Humboldt Co., CA, and all the populations appear to be disjunct.

Recommended Local Threat Rank: .1

Coastal development and climate change could impact this species.

Recommended List: 1B

Until populations outside the Samoa Peninsula in Humboldt Co., CA, can be assessed for size, this species should be considered rare.

Recommended conservation/management actions:

All sites, with the exception of the Samoa Peninsula, should be relocated and assessed for population size. More potential habitat should also be surveyed between sites to determine if populations are truly disjunct. Small populations should be identified and protected.

RELEVANT EXPERTS AND KNOWLEDGEABLE BOTANISTS

Doug Glavich, Ecologist/Lichenologist
2015 NW Taylor Ave.
Corvallis, OR 97330

Bruce McCune, Professor of ecology and lichenology
Dept. Botany and Plant Pathology
Cordley 2082
Corvallis, OR 97331

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Preliminary Report: Lichen Transplantation Test on Bonsai Buckeye

Howard R. Cooley
Belmont, California
howcool101451@aol.com

One of my pastimes is growing trees from seed, including a number of California buckeye (*Aesculus californica*), and training them as bonsai by infrequent root trimming. As they've grown with the years I often wondered if it would be possible to introduce the orange lichen I had observed in the wild onto outdoor bonsai subjects of its associated species of buckeye. It would be interesting to see the results of this attempt, as growing lichen under cultivation is not a well-developed practice.

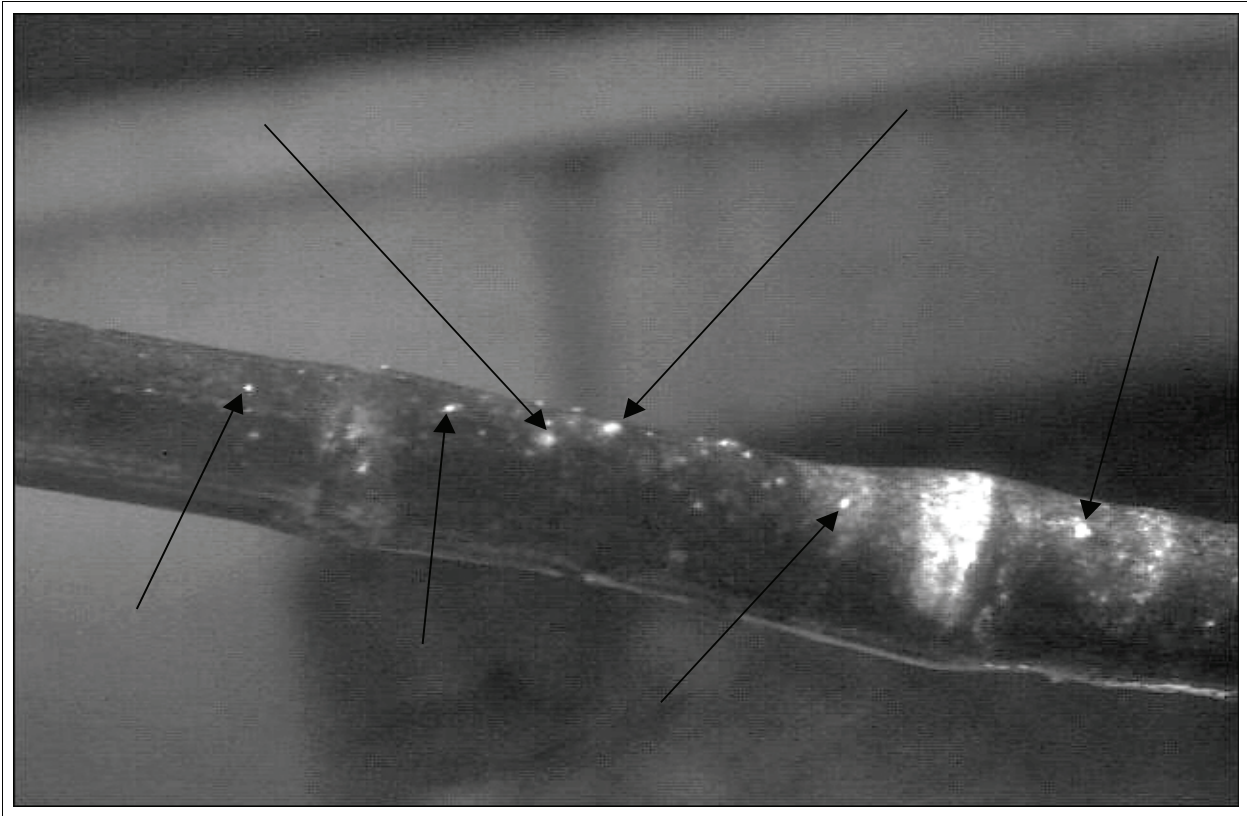
An experiment was undertaken to test achievement and potential success, or failure, with a transplanting method in getting native lichen fragments to adhere and grow in a controlled environment using bonsai native associated tree species as host subjects. The experiment regards the ability of tiny vegetative pieces (fragments and soredia), including fungal hyphae to adhere, or anchor, to the surface substrate (in this case bark) and to grow into symbiotic lichens, including its layer or network of algae, in a controlled environment, and to adhere long term. Furthermore, it involved the exact same species of lichen and native tree that are associated in the wild. The fact that the subject tree is a bonsai should make little or no difference in biological factors. However, since the growth of lichen can be as little as a few millimeters in a decade, it would be interesting to see how long it takes for testable adherence to occur. And then, how it spreads over time.

Orange lichens occur on the branches of some California buckeye trees, particularly those individuals exposed on sunny ridges above the shady wooded canopy of the ravines. In January 2008, an initial study was made of lichen adherence on a California buckeye tree in its native habitat in the East Bay Hills (or Oakland-Berkeley Hills). The lichen was scraped from the branch with an edge and the fragments gathered on a sheet of paper. Whatever layers fell apart, the lichen never scraped completely off the bark, and a layer remained tightly adhered to the stem surface. The scraped fragments ranged in size from small flakes to even smaller particles the size of a period (Figure). I took the crushed samples home to the metro-flatlands, sprayed water on one bonsai California buckeye and sprinkled the fine powder on its branches. The fragments were pinched

with fingers and sprinkled on the new substrate (bark). This is the same method applied to moss to get it to anchor in soil, rather than simply laying moss on top of soil. With mosses, the fresh spores and powdered fragments, when moistened, grow and adhere to the substrate. Established research in laboratory and in field experiments has revealed the characters of lichen rhizoids in anchoring thalli to bark and other substrates (Wikipedia 2008).

Identification of many lichen species is difficult. Hundreds of species of lichens produce several secondary compounds, some of which have been used as dyes and antibiotics. Chemical tests and close examination of these compounds are required for specific lichen identification to determine exactly which species one has collected. There are at least four different species of crustose orange or yellowish lichen that occur on native buckeye trees in the San Francisco Bay Area, *Xanthoria fallax*, *X. polycarpa*, *Candelariella concolor*, and *Chrysothrix candelaris*. While these species may grow on many hardwood species, they seem to be especially associated with buckeye. All are far more tolerant of air pollution than most other lichens. In fact, the occurrence of large quantities of these lichens on trees in the hills above the Bay Area or elsewhere in California may be an indication of high concentrations of atmospheric nitrogen emissions from automobiles. In that case, for their nitrogen tolerance, I expected that growing them in the midst of the metro area should pose no problem. Furthermore, in the San Francisco Bay Area, particularly in the East Bay, the general climate is not much different in the foothills and the metro flatlands around the bay – the elevation change is only a few hundred feet. Since the fungal hyphae of lichen include specialized cells which help prevent water loss, and since lichens are known for existing under extreme environmental conditions and in a great variety of habitats in nature, presumably these factors should also help to assure success in the experiment.

Many lichens grow as epiphytes on other plants, particularly on the trunks and branches of trees. In scientific terms, when growing on other plants, lichens are not parasites; they do not consume any part of the plant nor poison it, and are not known to directly harm the trees they grow on. In the case of



lichen growing on the bark of trees the lichen typically grows and functions so slowly over a long period of time that the surface layer of bark is likely to chip away and fall off of its own accord before the lichen can be considered responsible for the bark chipping and falling off.

The treated stems of the miniature buckeye were kept moist with daily misting with tap water to assist in adhering and anchoring the lichen fragments and / or spores and to help prevent potentially dry material from falling or blowing away. The tree was brought indoors during rain so as to prevent the fragments from washing away, and the misting continued indoors. The buckeye was misted several times a day, but always dried. So the lichen was constantly allowed to dry for a while and then moistened again as most lichens *must* dry out between wettings to achieve net positive photosynthesis. Falling or blowing away in the long run would be a failure. This moisture was to be applied vigilantly until the first proof of adherence is observed. These lichens remain viable on tree branches in the wild all year, even in the driest months and in 15 hours of direct sunlight and drought. There is no doubt the lichen can remain dormant when dry; the question is one of permanent adherence and growth.

This brings up a delving question. Its settlement is likely a matter of chance by numbers. But, how and /or why does a particular species of lichen, when having migrated as spores and fragments, grow on the host? What is it in the buckeye bark that signals the lichen it's found home? The topic is another study that reveals some interesting natural history. It is known that pH is a major factor. (Michael Woerdehoff, personal communication) But would this pH be the same on very young bark or even on a bonsai subject? Anyway, one may conjecture that the by-products of lichen growth may also alter the degree of alkalinity of the bark surface. Bark structure is also a main factor and maybe even specific nutrients and environmental conditions under which the native tree host occurs.

Since visibly detectable growth and spread of the lichen takes place so slowly over a long time span, presumably, once the lichen presents some adherence on the subject bonsai buckeye, the test could then be called a success. Ideally, test for adherence of the lichen fragments or new growth is to be recorded as close as possible at the first sign of success, not some later time. Since a visibly detectable spread of growth is out of the question, a rub test is the only option. Each test occurred at an interval twice as long as the

previous; i.e., one month, two months, four months, if necessary.

In the days following application, the lichen fragments on the bark of the buckeye, seen through a lens, appeared to be adhering. However, they actually were still loose as they could be slid, and the adhesion was presumably due in great part to the presence of moisture from the misting treatments, and the fragments just lying on the branches when dry. Admittedly, several of the original fragments had fallen or blown away. In fact, nearly every time when misting there was enough water to run over and off the bottom of the branches, yet looking immediately with a magnifying lens there were the same recognizable fragments as always. When damp these fragments turned a greenish-yellow; when dry, the fragments blended with the color of the bark. Even the largest fragment was about the size of a typed period. Several other tiny flecks also remained up and down the length of the branch, about 4 ½ inches.

Whenever the rains cleared the tree was placed outside, and exposed to cold night temperatures, wind, sun, shade, and continued misting. Because the host species is the same as that associated with this lichen in the wild, long term adherence and growth seems possible; but results must wait for the adherence testing to prove successful.

After the first month, in February the lichen was again tested under a lens and it slid. Then I would test and examine the fragments again in two months, as supported by professional advice. Meanwhile, another stem sample with yellowish lichen, from a Fremont cottonwood, a tree not occurring in the same watershed basin as my buckeye, was studied when damp. When wetted this lichen also turned green, and when picked at with an edge, fragments came easily off with a thin bottom layer of bark. This may not have revealed the workings of thalli but it certainly showed the evidence for long-term adherence to a substrate. And it revealed that my test of the transplanted lichen should be done dry, not wet.

On April 7, 2008 the lichen was twice spray tested, meaning it was sprayed both with more than usual water pressure, as well as with an increased

amount of water to achieve a maximum of runoff. The fragments remained in place, but they were not rub tested since damp lichen is more likely to slide off the bark, and adherence in dry lichen is the surest proof, because it would certainly slide if not adhered. But the fact that they remained in place when both wet and dry led to a presumption that they may be displaying adherence to the bark. After that, on other days a single drop of water was allowed to hit the largest fragment directly from above.

In mid-April the largest lichen fragment was tested dry. It had not been rub tested in two months. Under the lens a toothpick was gently slid along the surface of the bark to meet the edge of the lichen fragment, which slid. At this point, after two months without testing, the experiment for adherence is a complete failure. But not to be discouraged, regardless of the preliminary result in a limited amount of time, it is still a worthy experiment, and needs to be continued.

With adherence taking place after transplantation, resistance to rubbing would prove that the lichen fragments and spores have recognized its host species and, when moistened, began to grow and adhere, that is, in a specified amount of time. And it would mark a successful attempt at introducing lichen and attaining a homeostasis of growth and adhesion of lichen under cultivation.

ACKNOWLEDGEMENTS

Thanks to Dr. Michael Woerdehoff, German Forest Ecologist, for valued scientific review and editorial advice while I was in process of performing this lichen test and writing the report. Thanks to Tom Carlberg, California Lichen Society, for botanical data.

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Book Review

The Macrolichens of New England

by James W. Hinds & Patricia L. Hinds
Memoirs of The New York Botanical Garden, Volume 96

Reviewed by Cheryl Beyer
South Lake Tahoe, California
cbeyer@fs.fed.us

It's been an interest of mine to some day go back east and check out the lichens. I had that opportunity recently, *sans* airfare, car rental, and expensive motel reservations. James and Patricia Hinds recently (2007) published their inclusive book, *The Macrolichens of New England*. This 584-page volume covers all fruticose, foliose, umbilicate, squamulose, and filamentous lichen species currently known in New England (461) plus an additional 41 species found close enough to New England's borders to warrant their inclusion.

Although there is a growing number of up-to-date, on-line keys, descriptions, and virtual floras of lichens in North America, a hardcopy flora for a specific region, with keys, descriptions, and pictures, is still valuable and helpful, if not enjoyable, to take to the field, or to flip through, peruse, dog-ear special pages, and entice the uninitiated into lichen study.

The book is meant to serve as a stand-alone field guide and reference manual for both beginners and experienced lichenologists. A 'Quick Key Index' on the inside of the front cover directs the reader to one of the 50 short keys located further in the book. They are based on discernible characters such as growth form, substrate (trees, rocks, soil), color, and presence or absence of certain vegetative reproductive structures such as soredia and isidia. The book would also appeal to those who prefer to go directly to the pictures, of which there are 308. Many, if not most, of the pictures were made at high magnification so that the identifying features are readily visible.

Macrolichens of New England is loosely organized into three main groupings of unnumbered chapters: general information, keys, and descriptions. The general information group covers 8 chapters: Morphology, Anatomy, and Reproduction; Ecological Role; Human Uses; Biophysical Regions and Their Floras; Changes in Abundance and Distribution During the Last 100 Years; Rare or Declining Macrolichens; How to Collect and Identify

Macrolichens; and Crustose Lichens – this last chapter being very brief. The short treatment of crustose lichens is just to acknowledge that a whole additional group exists that is not covered in this volume. Most likely the number of crustose species are at least double the number representing macrolichens, as currently 772 'microlichens' are known from New England – a challenge for another future publication. The sparing schematic drawings, created by Alison Dibble, and presented in this general information group, were prepared from fresh specimens. They include a number of cross-sections, and side and surface views to illustrate various structures.

Another feature of the book is a glossary, in which definitions can be found of terms that have been highlighted throughout the book. However, some of these definitions can be less than helpful, such as "Ciliate - having cilia." However, a majority of the terms give better, stand-alone explanations.

The section *Biophysical Regions of New England and Their Macrolichen Floras* briefly discusses geography, geology, climate, and vegetation zones. This is helpful for those who are not familiar with New England. Four major lichen biogeographical zones are proposed: alpine or oroarctic, boreal, transitional, and temperate.

The authors also provide information on changes in abundance and distribution of lichens within New England, based on recent collecting efforts, herbarium specimens, and other unpublished data. They then present lists of globally, then regionally, rare or declining macrolichens that occur or have been known to occur within New England, ranked by the authors using Nature Serve codes. Identification of rarity and the cause of rarity is important in the conservation of species. However, 'red lists,' that is, lists of rare species, can also be a point of controversy. It's unclear what review process the lists in *The Macrolichens of New England* have gone through and if there is consensus within the lichen

community.

The International Union for Conservation of Nature and Natural Resources, aka World Conservation Union (IUCN), has produced an online red list with data that includes a thorough explanation of why a species is on their red list. For example, at <http://www.iucnredlist.org/search/details.php/43995/all> you can read the assessment information for *Erioderma pedicellatum*, “mouse ears.” The CALS Conservation Committee (<http://californialichens.org/>) also is developing a list of California lichens that are recommended for conservation, using a sponsorship method. The completed sponsorships, which undergo a year of review, can be seen by following links to the Conservation Committee.

When one goes from the Quick Key on the inside of the front cover to one of the 50 short keys, the reader either successfully arrives at a species determination, which is usually the case, or is further directed to a specific genus key, such as is the case of *Bryoria* (12 taxa), *Cladonia* (83 taxa), *Peltigera* (21 taxa), *Stereocaulon* (14 taxa), *Usnea* (27 taxa) and *Umbilicaria* (13 taxa). Those keys are located within the third section of the book, next to that genus’ description. It is suggested in the book that the intention in the development of the keys was to make them as accessible as possible to a wide range of users, and thus rely as much as practicable on readily observable characters. As an added feature, common species have been color-coded in the keys with pale yellow highlighting.

The section on descriptions, arranged alphabetically first by genus and then species, includes first a discussion of the genus: *Description*, *Comments*, *Distribution*, *Etymology*, *Common Name*, and *References*. A key to the species within that genus then follows, and, subsequently, the description of the individual species. Taxa descriptions, closely similar to the format in *Lichens of North America* (Brodo et al. 2001) include scientific name and authority, English (common) name, figure number for the photo, *Synonym*, *Description*, *Chemistry*, *Range/Habitat* with additional information for New England (NE), and *Notes*. For those species without illustrations in the book, there is a reference where an photo can be found. For example, for *Cladonia floridana*, the reader is referred to: Brodo et al. 2001, Fig. 236.

The final sections of the book include *Literature*

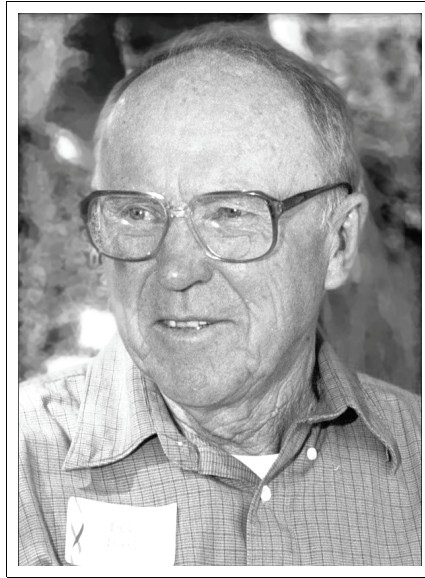
Cited, two pages of *Abbreviations* used in the text, a *Glossary*, two appendices (*Key to the Major Photobionts in New England Lichens*, and *Excluded Species*), an *Index to Latin Names*, and an *Index of English [common] Names*.

This regional guide complements other regional guides published for North America, such as *Lichens of California* by Hale and Cole (badly out of date), the two volumes of *American Arctic Lichens* by Thomson, *Macrolichens of the Pacific Northwest* by McCune and Geiser, the three volumes of the *Lichen Flora of the Greater Sonoran Desert Region*, edited by Nash *et al.* Regional floras also focus attention on a small geographic region, which helps mobilize local people to get involved with the lichens in their area. Regional floras also help reduce the complexity of keying as the characters examined generally don’t have to be as obscure. With the smaller number of species, regional floras help beginners learn the lichen flora more quickly as there are fewer species to sort out.

I thought I had saved myself some airfare and a trip to New England, but having been introduced to the macrolichens of New England, I will have to visit Maine, New Hampshire, Rhode Island, Vermont, or Connecticut, and check the fidelity of the keys – and see the macrolichens of New England for myself!

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Richard Doell
1923 – 2008

Born in Oakland in 1923, Richard Doell died in his sleep on March 6, 2008 at his home in Pt. Richmond, CA, following a series of serious illnesses.

Richard grew up in Carpinteria, CA. After serving in the infantry in Europe during World War II, he resumed his studies at Berkeley, married Ruth Jones, a fellow student, and earned his doctorate in geophysics in 1955. Following teaching positions at the University of Toronto and MIT he joined the U.S. Geological Survey in Menlo Park, CA, in the Geophysics Branch. His team established a time scale of reversals of the earth's magnetic field, which was of critical importance to the acceptance of the theory of plate tectonics. For this work Richard Doell received the prestigious Vetlesen Prize, which he shared with two of his colleagues, and was elected to the National Academy of Sciences.

Richard retired from the Survey in 1978. Having built a 38 foot sailboat, he began a series of long sailing cruises to Alaska, French Polynesia, and Northern Europe. In 1984 he married Janet Hoare who joined him on these voyages. Just as Richard introduced Janet to sailing, so she introduced him to lichens, and in 1987 during a break from cruising he audited Dr. Harry Thiers' lichen course at San Francisco State University. "In self-defense", according to Dr. Thiers.

Always interested in photography, Richard found he really enjoyed photographing lichens and after 1993 he devoted much of his time to that activity as an active (as well as a founding) member of the California Lichen Society. He provided the photographs for the two Mini Guides to California lichens he and Janet produced, and was working on a new edition of the first Mini Guide at the time of his death. He also served the Society as producer of the Bulletin for six years.

He is survived by his wife Janet Doell; daughters, Kerstin Doell of Seattle and Shirley Doell of Point Richmond, CA, and a large family of devoted stepchildren, as well as step grandchildren and great grandchildren. He will be greatly missed.



Left to Right: Allan V. Cox, Richard R. Doell Stanley Keith Runcorn and Maurice Ewing at 1971 Awards Dinner. Photo courtesy of the Vetlesen Foundation.

The California Page

Tom Carlberg
tcarlberg7@yahoo.com

If you are interested in lichenologists and lichenology in California, and would like to take a more active interest in the Society, I have an opportunity for you. I would like someone to assume the editorial duties associated with producing the California Page for the Bulletin. Kerry Knudsen has declined to continue as Editor of this feature, and I want to offer this responsibility to one of our other members. The California Page is a forum for any member to contribute lichen-related news & information, personal & otherwise, of interest to the greater membership. The Editor of this page will write, solicit and review submissions, working to deadlines, to be included in future Bulletins. For details, please email tcarlberg7@yahoo.com. This can be an enjoyable way to get involved, and looks good on a resume, too!

Friends of the Dunes in Arcata, California, is a conservation organization dedicated to conserving the natural diversity of coastal environments through community-supported education and stewardship programs. They recruit & educate individuals to become naturalists who lead groups and interact with members of the general public in the Dunes in the Humboldt area. Areas of expertise acquired by this cadre of naturalists include dune mat vegetation, snowy plover biology, native dune plants, dune geology & deflation plains, the botany of the dunes, and surprisingly enough, the ecology of lichens in this nutrient-poor habitat! In both April & May of this year, a dozen or so interested Friends spent part of their Saturday with Tom Carlberg, a coastal lichenologist, asking tons of questions about the whys & hows of lichens on the immediate coast. The number one question? “What happens when they dry up?” Number two? “What are the ones with the little red tops?” (*Cladonia transcendens*). Everyone had to learn to “think small”.

Under the Lens

Mt. BURDELL OPEN SPACE, MARIN CO. FEBRUARY 18, 2008

Mt. Burdell is one of the northern most Open Space districts in Marin County. The mountain rises 1558 feet to a summit with breathtaking views of the entire Bay Area. The mountain was originally called Mt. Olompali. In the mid-1800's Dr. Galen Burdell, a San Francisco dentist, acquired the land and Mt. Olompali became Mt. Burdell. Much of the area is oak woodland and open grassland. There are spectacular displays of wildflowers in the spring and there is a vernal pool, Hidden Lake, which is habitat for 10 species of rare plants. The area is grazed by small herds of domestic cattle to help reduce the non-native grasses which have a tendency to overcrowd many native species.

On this day, 9 lichen enthusiasts met at the San Andreas Trail head to explore the area for lichens. The Mt. Burdell trip was originally scheduled for January 26 as part of the CALS annual Birthday celebration, but was canceled because of rain. February 18 turned out to be a very nice day for a lichen hike. Morning fog dissipated to sunny skies before noon. In the late afternoon, clouds started to move in for predicted rain the following day.

We were interested not only in the names of the lichens in the Open Space preserve, but we also wanted to observe some lichen ecology. Right at the trailhead was a non-native liquidamber tree (*Liquidamber styraciflua*). This was a great place to start. Common on the trunk and branches were *Flavopunctelia flaventior* (Stirton) Hale, *Punctelia perritculata* (Räsänen) G. Wilh. & Ladd, *Ramalina farinacea* (L.) Ach., *Evernia prunastri* (L.) Ach., *Xanthoria hasseana* Räsänen, *Physcia adscendens* (Fr.) H. Olivier, *Parmelia sulcata* Taylor, and lots of lovely *Teloschistes chrysophthalmus* (L.) Th. Fr., *Lecanora pacifica* Tuck., *Ochrolechia subpallescens* Vers. With this particular assemblage of lichens we talked about the influence of bark pH on lichen growth.

Walking only 25 feet away, we investigated a live oak *Quercus agrifolia*. The lichens were different here with a large growth of *Hyperphyscia adglutinata* (Flörke) H. Mayrh., *Physcia tribacea* (Ach.) Nyl. and *Candelaria concolor* (Dickson) Stein. The uncommon *Physcia erumpens* Moberg with a black lower cortex was found on one of the large horizontal branches. We also observed the 'growth rings' of *Pertusaria amara* (Ach.) Nyl. on

the smooth, tough oak bark.

A few feet away, another live oak hosted a vertical large swath of *Waynea californica* Moberg with a few thalli of *Normandina pulchella* (Borrer). Ron Robertson, naturalist, dotted our trip with his interesting findings here and there. Under a rock in this area were 2 slender salamanders, the snail-eater *Scaphanotis* beetle, and a large millipede.

We then walked a short distance to a serpentine grassland. Small outcrops of weathered serpentine were common and thin, stable soil around them turned out to be rich with soil lichens and we found *Placidium lacinulatum* Breuss, *Endocarpon* sp., *Collema tenax* (Sw.) Ach., *Arthonia glebosa* Tuck., *Psora pacifica* Timdal.

On the rocks we found *Lecanora muralis* (Schreber) Rabenh., *Lecidea atrobrunnea* group, *Thelomma mammosum* (Hepp.) A. Massal, *Caloplaca bolacina* (Tuck.) Herre with other *Caloplaca* species. Other crusts were observed but most spectacular on the rocks were the squamulose lichens *Peltula euploca* (Ach.) Poelt, *P. bolanderi* (Tuck.) Wetmore, and *Dermatocarpon americanum* Vain. occurring in the drainage areas. *Physcia phaea* (Tuck.) J.W. Thomson, *P. dubia* (Hoffm.) Lettau, *P. tribacea* (Ach.) Nyl., *Xanthoparmelia species*, *Leptochidium albociliatum* (Desmaz.) Choisy, *Physconia isidiigera* (Zahlbr.) Essl., *Neofuscelia* sp. were some of the foliose lichens present. On the soil were *Placidium lacinulatum* Breuss, *Endocarpon* sp., *Collema tenax* (Sw.) Ach., *Arthonia glebosa* Tuck., *Psora pacifica* Timdal.

After lunch back by the parking area, we crossed the fire road to see quite a few patches of *Sphinctrina turbinata* (Pers.:Fr.) DeNot parasitizing the *Pertusaria amara* (Ach.) Nyl. on small branches of live oak.

To observe lichens on more unusual habitats, we walked up the fire road to a cement retaining wall. On the dirt that had solidified and flowed down from the top of the wall, we found *Endocarpon locosii* Müll. Arg. Also on the wall were *Sarcogyne regularis* Korber, *Lecania* species, two *Caloplaca* species and a cyanolichen.

Across from the wall was an old log where we found *Cyphelium tigillare* (Ach.) Ach. with two other pin lichens, *Trapeliopsis flexuosa* (Fr.) Coppins & P. James, *T. granulosa* (Hoffm.) Lumbsch, *Cladonia macilenta* Hoffm. var. *macilenta*, and a sorediate *Ochrolechia* species. We headed for some old fence posts and found *Xanthoria tenax* L.

Lindblom, which is unusual in Marin and Sonoma counties, with *Thelomma occidentale* (Herre) Tibell.

We crossed to the western side of the Preserve and walked through live oak and bay woodland. We came upon a pile of old, cut oak trunks. Again, Ron Robertson treated us to a very interesting diversion from our lichen walk. He found 5 different species of slime molds, healthy and in different stages, under the bark. He also found an arboreal salamander and a California newt.

Our last stop of our day was at some valley oaks overlooking Novato. With many of the familiar lichens we had seen that day we found some new ones. The sorediate *Caloplaca chrysophthalma* Degel., *Physconia americana* Essl., *Leptogium pseudofurfuraceum* P.M. Jørg. The squamulose *Catapyrenium psoromoides* (Borrer) Sant. nestled in the grooves of the oak trunks.

Participating were Ken Howe, Bill Hill, Michelle Caisse, Debbi Brusco, John Fedorcheck, Henry Schott, Vishnu, Judy and Ron Robertson.

Additional species seen on the trip:

Oak bay woodland

Arthonia sp.
Candelariella sp.
Chrysothrix candelaris (L.) J.R.Laundon
Collema furfuraceum (Arnold) DeRietz
Flavoparmelia caperata (L.) Hale
Lecanora caesiorubella Ach. Subsp. merrillii
Lecanora sp.
Parmotrema chinense (Osbeck) Hale & Ahti
Pertusaria sp.
Phaeophyscia hirsuta (Mereschk.) Essl.
Physconia enteroxantha (Nyl.) Poelt
Ramalina leptocarpha Tuck.
Ramalina menziesii Taylor
Rinodina sp.
Xanthoria candelaria (L.) Th.Fr.
Xanthoria polycarpa (Hoffm.) Rieber

Serpentine and other rock outcrops

Acarospora sp.
Aspicilia sp.
Caloplaca citrina (Hoffm.) Th.Fr.
Caloplaca sp.
Candelariella vitellina (Hoffm.) Müll. Arg.
Dimelaena radiata (Tuck.) Müll.Arg.
Fuscopannaria sp.
Lecidea tessellata Flörke
Lecidella asema (Nyl.) Knoph & Hertel
Neofuscelia sp.

Placidopsis cinerascens (Nyl.) Breuss
Solenospora crenata (Herre) Zahlbr.
Staurothele sp.
Umbilicaria phaea (Tuck.)
Xanthoria fallax (Hepp.) Arnold var. fallax
Xanthoria elegans (Link.) Th.Fr.

Chaparral area

Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel
Cladonia fimbriata (L.) Fr.
Cladonia furcata (Hudson) Schrader
Cladonia ochrochlora Flörke
Collema nigrescens (Hudson) DC
Diploschistes scruposus (Schreber) Norman
Fuscopannaria cyanolepra (Tuck.) P.M. Jørg.
Hypocenomyce scalaris (Ach.) Choisy
Lecanora gangaleoides Nyl.
Leptogium palmatum (Hoffm.) Minks
Leptogium lichenoides (L.) Zahlbr.
Letharia vulpina (L.) Hue
Ophioparma rubricosa (Nüll. Arg.) S. Ekman
Parmeliella cyanolepra (Tuck.) Herre
Physconia perisidiosa (Erichsen) Mogerg
Psora sp.
Rhizocarpon geographicum (L.) DC.
Trapeliopsis glaucopholis (Nyl. ex Hasse) Printzen & McCune

List compiled by Ron and Judy Robertson

NEW AND INTERESTING RECORDS FOR CALIFORNIA
 COLLECTED BY RON AND JUDY ROBERTSON, OR TOM
 CARLBERG

***Ionaspis alba* Lutzoni:** ID confirmed by Irwin Brodo.

This lichen is quite common in counties north of the San Francisco Bay area. Most of our specimens are yellowish to brownish gray. The thallus is quite thin and easily mistaken for the rock surface. Close examination reveals the immersed apothecia. We have collected specimens from Marin to Mendocino County. It is usually found on rocks along shaded forest paths. We have also collected it in more open spots such as road-cuts and quarries where it appears to be an early colonizer of fresh rock surfaces. The only record of *Ionaspis alba* in California was a Hasse specimen collected in the Santa Monica Mountains and originally determined by Zahlbruckner as *Lecanora lacustris*.

***Ochrolechia gowardii* Brodo:** ID confirmed by Irwin

Brodo.

This specimen came from the CALS field trip to the Sierra Nevada Field Station in Yuba County. The sorediate *Ochrolechia* was collected on conifer bark. This is a new record for California.

***Peltigera pacifica* Vitik.:** ID confirmed by Bruce McCune.

Bear Basin Butte, in the Siskiyou Mountains of northern California and less than 13 miles from the Oregon border, hosts an unusually large number of cold-climate conifer species, and is considered a refugium for many species. On the same field trip that *P. pacifica* was found, six other species in that genus were identified. The specimens are small, but the combination of marginal lobules and somewhat diffuse non-threadlike veins is diagnostic. Found growing on mosses among boulders. Specimens from Oregon are larger, and might be merely uncommon within the appropriate habitat. This is a new record for California.

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 2. Corticolous species of North America

YANA TRAIL FEBRUARY 17, 2008

On Sunday Feb. 17th, CALS and the Shasta Chapter of the Native Plant Society hiked the Yana Trail along the Sacramento River. Our trip leaders were Jay and Terri Thesken and Erin Martin. About 25 people attended, including several Shasta College students. We enjoyed warm temperatures and plenty of sunshine while hiking through oak woodlands, riparian areas, and volcanic outcrops. The group enthusiastically searched for early blooming wildflowers, lichens and bryophytes. We were a bit early for the spring wildflowers, but we were delighted to get a taste of the lichen diversity in this area. Our hike focused mainly on lichen biology and ecology. Many folks in attendance were “new” to lichens, and thus this trip became a perfect introduction to these fascinating creatures. We look forward to more northern California hikes in the future.

Reported by Erin P. Martin, PhD

PEPPERWOOD PRESERVE MAY 25, 2008

Pepperwood is a beautiful 3,117 acre Preserve located in Sonoma County northeast of Santa Rosa. Oak woodlands, Douglas fir forests, redwood stands, grasslands, chaparral, wetlands and ponds make up the diverse habitats of the area. The preserve was a gift to the California Academy of Sciences in 1979 by Kenneth and Nancy Bechtol. In 2005, the Preserve was purchased by Herb and Jane Dwight, both environmental enthusiasts. At the present time Pepperwood is cooperatively managed by the Pepperwood Preserve and the SRJC.

Both Judy and Ron Robertson have fond memories of Pepperwood. This was the first place where they found *Hypotrachyna revoluta* (Flörke) Hale and had sent the specimen to Bruce McCune for identification. Also, the lovely, sorediate *Caloplaca demissa* (Körb.) Arup & Grube which they had sent to Bruce Ryan for ID. Going back the Preserve for them is always special.

A few CALS members joined Ron and Judy at the Preserve recently. Judy had compiled a list of the lichens present and a more complete article will follow in another bulletin. Our highlights for the trip were the few glimpses of *Teleschistes exilis* (Michaux) Vainio, common in other parts of Sonoma County, but more rare at Pepperwood. *Catapyrenium psoromoides* (Borrer) R. Sant., also common on the oaks in So. Co. filled many of the crevices of the oak trunks. *Solenospora crenata* (Herre) Zahlbr. displayed lovely greenish squamules on horizontal rock surfaces.

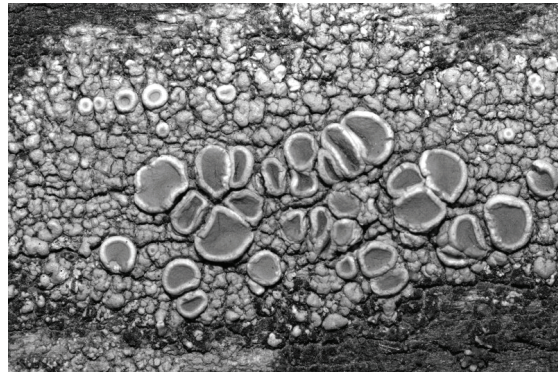
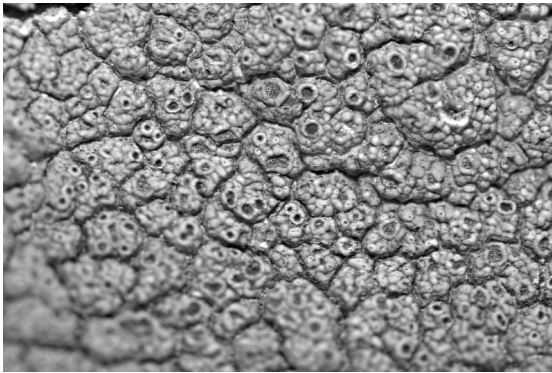
On this trip, we had a new find – *Endocarpon locosii* Müll. Arg. growing on a Monterey cypress trunk that had been planted many years ago at one of the old residences at Pepperwood.

A group traveling from Oregon to IAL will be staying at Pepperwood for a day. They will conscientiously collect to add to the list developed by Judy and Ron Robertson so this Natural Preserve will remain a rich place for lichen exploration in the future.

Photos from the trip are located on the CALS website. The photos were taken by Michelle Caisse and the identifications by Judy Robertson.



Field trip on the Yana Trail. Photography by Carrie Diamond and Tina Dishman. More photos on front and back covers.



Diploschistes scruposus and *Ochrolechia* sp. at the Pepperwood Preserve. Photography by Michelle Caisse. More photos on back cover and on the CALS website (<http://californialichens.org>).

News and Notes

CALS BIRTHDAY CELEBRATION JANUARY 26, 2008.

We had originally planned a field trip to Mt. Burdell in Marin County, however, we cancelled the trip due to rain. Instead, we went to the Thiers Herbarium at San Francisco State University to begin curating Darrell Wright's lichen collection.

The Thiers Herbarium is now equipped with compactors and working stations along the outside. Darrell Wright's collection has filled 2 tall herbarium cabinets. Tom Nash took a tray of Darrell's lichens

from New Zealand and made many identifications. Judy Robertson, Michelle Caisse, Tom Carlberg, Bill Hill, Cheryl Beyer, Charis Bratt and Russell Wagner worked on California specimens. We enjoyed the time spent together with the added plus of putting a few more identifications on Darrell's specimens.

Late in the afternoon, we drove to the Brickyard Landing clubhouse for our annual Pot Luck Dinner, General meeting and speaker. Our pot lucks are always a delicious treat. Doris Baltzo was present to lead us singing Happy Birthday to CALS. The General Meeting was led by Vice President Michelle

Caisse. The highlight was the announcement of the new CALS officers to serve for a 2 year term. They are:

Erin Martin – President
 Michelle Caisse – Vice President
 Cheryl Beyer – Treasurer
 Patti Patterson – Secretary
 Tom Carlberg – Member at large.

Retiring were Bill Hill – President, Sara Blauman – secretary and Kathy Faircloth – Treasurer. A hearty thanks was given to the retiring board members for their great contributions to the Society.

We were pleased to host Dr. Tom Nash from Arizona State University as our speaker for the evening. Dr. Nash is the organizer for the IAL meetings to take place July 13-18 in Asilomar this summer. Tom outlined the planning for the meetings.

Then he spoke about his work with pollution monitoring in Southern California.

The evening was very enjoyable for all who attended.

CALS ANNUAL BOARD MEETING MINUTES JANUARY 26, 2008

Held at Richard and Janet Doell's condominium complex, Brickyard Cove Rd., Richmond

Meeting called to order at approximately 4:30. Those present for the Board Meeting were Board Members: Erin Martin, President (present by phone); Michele Caisse, Vice President; Cheryl Beyer, Treasurer; Tom Carlberg, Editor; Patti Patterson, Secretary. Non-Board Members present were Bill Hill, committee for database; Tom Nash; Janet Doell, report for miniguide.

The New Board was recognized for the 2008 term, as provided by vote of membership. The board voted in favor of the following individuals: Erin Martin as President, term of office 1/29/2008-1/29/2010, to replace Bill Hill, President for the term of 1/29/2002-1/29/2008; Cheryl Beyer as Treasurer, term of office 1/29/2008-1/29/2010, to replace Kathy Faircloth, Treasurer for the term of 1/29/2004 –1/29/2008; Patti Patterson as Secretary, for the term of 1/29/2008-1/29/2010, to replace Sara Blauman, Secretary from 1/29/2004-1/29/2008.

Agenda Items Discussed:

IAL – Tom Nash discussed CALS participation

in the upcoming IAL sponsored event for the ABLs conference that will be held on Sunday, July 13 through Saturday, July 19, at the Asilomar Conference Grounds, Pacific Grove, California.

Commitments discussed as follows:

1) Poster for registration: Richard Doell has designed a poster. Possibility to tie into themes of conference—CA endemics may be a good topic. Richard and Janet Doell may be able to help construct a history of the Lichen Society. One large room, but only allowing 16 posters resulted in Tom Nash renting a separate room for just posters.

2) Booth display: Richard Doell designed and built freestanding display boards. Student grant information can be used in displays, and/or poster.

3) Staffing: CALS attendees will consider staffing. Need to establish a sign up list to schedule days/times. There are no concurrent sessions, therefore staffing volunteers would not miss anything, and attendees can attend each presentation.

4) Airport Greeting: Volunteers needed to man a greeting table at the airport. Tom Nash thought it may be a good idea to have a greeting table set up at the airport for the convenience of out-of-country and out-of-state travelers. The table would be set up on Sunday the 13th 10:00am to 5:30 pm to meet and greet travelers attending conference.

5) Hospitality: Tom Nash advocated for a least one suite at Asilomar, and asked the Board to sponsor such a suite. It appears that the cost for a week long rental would be approximately \$2,500, and would exceed CALS ability to pay.

One idea would be to ask members to contribute to the cost of a suite during the time of the conference. The suite would be helpful for members to take a break, and promote CALS products, and membership, which we are unable to promote at the booth. Tom Nash spoke of the possibility of matching funds from ABLs and/or IAL for the purpose of payment for suite.

Those not renting a room at Asilomar need to pay a \$6.00 use fee at the conference center because it is a State Park.

6) Assist presentation.

Cost of Conference registration is \$140.00 for students and \$230.00 for non-students. Pre-registration on the ABLs website is requested. A reception on the first and last days of the event is planned, as well as coffee breaks.

Formulate Goals for New Board:

The new board members addressed the board in

regards to their goals for their term.

Erin:

- Increase participation in the northern part of the state, through connection with Nature Society and Botany Association of Chico.
- Proposed field lichen workshops, and field trips somewhere midpoint between Bay Area and north.
- Table at symposiums and conferences.
- Education and grants. Need something to distribute.

Patti:

- Work on eTapestry and develop and document Secretary procedures.
- Work with San Francisco State on the Specify Database of Darrell Wrights lichens.

Cheryl:

- As a Forest Botanist would like to promote more involvement through contacts with regional botanists through Forest Service annual and agency meetings to bring awareness of rare lichens in California.
- Potential to pursue grants for lichen work as it pertains to air quality studies, among others.
- Have lichen center in Northern California near Redding or Weaverville.

In general, it was agreed by all members that a poster and other promotional material should be developed and organized to bring to events. A committee for such purpose was discussed, and also reaching out to our existing membership to find interested parties without the formality of a committee.

Committee Reports

Treasurer Report: The Treasurer report was discussed per agenda. An apparent loss of \$2500.00 was due to returning a portion of a grant. The \$2500 did not come out of the general budget, but was being held in CALS account, and carried forward as a liability.

CALS Sales Report: Sales figures reviewed per agenda. Discussion followed regarding the remaining mini-guides. Mini-guide sales were down. There is generally a surge of sales in Spring and fall. 68 mini-guides remained from the last issue. Janet reported

that there are usually 20 left. It was acknowledged that the mini-guides are an important part of CALS outreach. That Northern California mini-guides have a market whereas Southern California mini-guides have less appeal, and Janet recommended not issuing S. California guides again.

Money from the sales goes directly to the CALS Treasurer, and after printing costs are recovered, the profit is split with one half going to the Doell's and one half going to CALS. The profit is \$1.50 per book. The cost per book is \$6.50, and sales price is \$10.00, and the wholesale price is \$8.00.

Docent of Big Basin State Park, Scott Peden, would like a copy, as he finds them useful for day hikes.

Discussion followed regarding how to distribute the remaining copies prior to printing a new addition. Ideas include: Offer for donations Discount sales Bring to sell at Field Trips; Sociological vs. geographic distribution was discussed.

Additional copies had sold since Janet's calculation. It is estimated that 15 additional copies were sold with a balance of 53. Printing cost were increased from \$1,332.50 to \$1,600.00 for the new addition. The new issue has been designed and awaits approval before moving forward to print.

It was decided that more information regarding current CALS budget should be reviewed prior to making the printing commitment. The decision to print the new guide will be carried over to June.

Meeting adjourned.

**BEGINNING FOLIOSE AND FRUTICOSE
LICHEN WORKSHOP
MERRITT COLLEGE
FEBRUARY 16, 2008**

Fourteen enthusiastic people participated in this beginning foliose and fruticose lichen workshop led by Judy Robertson. We spent the morning using a teaching set of lichens to learn about basic lichen morphology and reproduction. In the afternoon, Judy had made a set of lichens for each participant to take home and we identified each of the specimens, highlighting the morphology featured in the morning. This was a full day, but one filled with questions, delight and chalk dust.

Special thanks to Hank Fabian, instructor at Merritt College in Oakland who invited us to use the classroom, equipped with new dissecting scopes.

Participating were Irene Winston, Katie Colbert,

Barb Byrne, Chris Alford, Jade Paget-Seakins, Greg Gallagher, Hank Fabian, Debbi Brusco, Jan Hintermeister, Karen DeMello, Tim Milliken, Bill Lupfer, Leah Tangney, Henry Schott, Bill Hill.

FIELD TRIP CHAIRPERSON SOUGHT

Dear Lichen Society,

After four or more years of organizing field trips across California, Judy Robertson has decided to devote more of her efforts towards developing the flora of Marin County she and Ron have worked on for so many years. As such, she has asked the Board of Directors to locate someone willing to become more involved in this aspect of the Society's activities, so Judy can become less involved.

Currently the tasks include finding interesting and lichenologically rich areas in the state, and making the necessary arrangements for Society members to visit these areas. Part of the task involves contacting state & federal agencies that might be administering these lands, and finding foray participants willing to write a report of the trip. Interested persons are encouraged to contact Judy at jksrr@aol.com, or the Board at cals-board@yahoo.com.

Judy Robertson is past President and past Secretary of the California Lichen Society, and Chair of the Field Trips Committee. Many of the field trip reports and lists of lichen species in the Bulletin over the past four years have resulted from Judy's efforts, sometimes as author but almost certainly as initiator.

EXSICCAT RECEIVED

The California Lichen Society has received from the Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah:

Anderson and Shushan:
Lichens of Western North America
Fascicle V Exsiccata series
numbers 101-125.

The preparation of specimens from the Bean Life Science Museum are works of art. It is an honor to have them in our CALS Collection. Thank you to Dr. Larry St. Clair.

There are 25 North American lichens: 20 are from Colorado, 2 from Idaho, 2 from Utah, and 1 from Montana

101. *Kaernefeltia merrillii* (Du Rietz) Thell & Goward
102. *Dermatocarpon reticulatum* H. Magn
103. *Flavocetraria nivalis* (L.) Kärnefelt & Thell
104. *Cetraria aculeata* (Schreber) Fr.
105. *Diploschistes scruposus* (Schreber) Norman
106. *Parmelia saxatilis* (L.) Ach.
107. *Phaeophyscia hispidula* (Ach.) Essl
108. *Physconia muscigena* (Ach.) Poelt
109. *Ramalina pollinaria* (Westr.) Ach.
110. *Umbilicaria hyperborea* (Ach.) Hoffm.
111. *Umbilicaria hyperborea* (Ach.) Hoffm.
112. *Umbilicaria hyperborea* (Ach.) Hoffm.
113. *Umbilicaria hyperborea* (Ach.) Hoffm.
114. *Umbilicaria torrefacta* (Lightf.) Schrader
115. *Xanthoparmelia chlorochroa* (Tuck.) Hale
116. *Xanthoparmelia chlorochroa* (Tuck.) Hale
117. *Cetraria ericetorum* Opiz subsp. *ericetorum*
118. *Cetraria aculeata* (Schreber) Fr.
119. *Cladonia ecmocyna* Leighton subsp. *ecmocyna*
120. *Rhizoplaca chrysoleuca* (Sm.) Zopf.
121. *Xanthoparmelia chlorochroa* (Tuck.) Hale
122. *Flavocetraria nivalis* (L.) Kärnefelt & Thell
123. *Ochrolechia upsaliensis* (L.) A. Massal.
124. *Peltigera aphthosa* (L.) Willd.
125. *Pleopodium chlorophanum* (Wahlenb.) Zopf.

California Lichen Society Educational Grants Program

CALS offers small academic grants to support research pertaining to the lichens of California. No geographical constraints are placed on grantees or their associated institutions. The educational Grants committee administers the educational grants program, with grants awarded to an individual only once during the duration of a project.

Grant Applicants should submit a proposal containing the following information:

- Title of the project, applicant's name, address, phone number, email address and 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 CALS Bulletin, based on dissertation, thesis, or other work.
- Budget: summarize intended use of funds. If you received or expect to receive grants or other 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
Living expenses
Supplies

CALS does not approve grants for outright purchase of high-end items such as computers, software, machinery, or for clothing.

- Academic status: 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.

- Academic support: one letter of support from a sponsor, such as an academic supervisor, major professor, or colleague should accompany your application. The letter can be enclosed with the application, or mailed separately to the CALS Grants Committee Chair.
- Your signature, as the person performing the project and the one responsible for dispersing the funds.

The proposal should be brief and concise.

The education grants committee brings its recommendations for funding to the CALS Board of Directors, and will notify applicants as soon as possible of approval or denial.

Review: Members of the education committee review grant proposals once a year based on: completeness, technical quality, consistency with CALS goals, intended use of funds, and likelihood of completion. Grant proposals received by October 1, each year, will be considered for the current grant cycle. Award announcements will be made by December 1 of the same year, and will appear in the Bulletin the following January.

Grant Amounts: CALS has offered grants between \$500 and \$2500 annually. Typically two grants are awarded one of \$500 and one of \$750.

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 a short article to the CALS Bulletin.
3. Submit any relevant rare lichen data to California Natural Diversity Data Base using NDDDB's field survey form (<http://www.dfg.ca.gov/whdab/pdfs/natspec.pdf>).

How to submit an application: Please email submissions or questions to the committee chairperson by October 1, 2008. This year the committee chairperson is Erin Martin; her email is shastalichens@gmail.com

Upcoming Events

IAL 6 ABLs JOINT MEETING
MONTEREY PENINSULA, ASILOMAR CONFERENCE
GROUNDS
JULY 13-19, 2008

Join lichenologists and bryologists from around the world. This is the first time the IAL is meeting in the United States. See the IAL website: http://www.lichenology.org:8080/IAL6_ABLs/registration.jsp

ONGOING LICHEN IDENTIFICATION WORKSHOPS
MARIN COMMUNITY COLLEGE
THE SCIENCE CENTER, ROOM 191
2ND AND 4TH FRIDAYS, 5:30 TO 9:00 PM

We encourage you to attend these enjoyable workshops at the Community College. Dr. Paul DiSilva has graciously allowed us to use the classroom and scopes. Patti Patterson organizes the logistics. We bring our own lichens and work with each other to identify them. There are usually snacks. Parking at the college is \$3, however, there often is free parking on the side road next to the campus.

Look for CALS field trips for the fall listed on the CALS website: <http://www.californialichens.org>.

LICHEN WORKSHOP
SPONSORED BY FRIENDS OF THE BIOLOGICAL SCIENCES
HERBARIUM, CALIFORNIA STATE UNIVERSITY CHICO
OCTOBER 4, 2008

This will be an all-day lichen workshop at the Chico State Herbarium, presented by Tom Carlberg and Erin Martin, of the California Lichen Society. The morning will be an interactive lecture-type format, with handouts, reference specimens, and visual aids, and will cover vocabulary, morphology, anatomy, and reproduction. Part of the afternoon will be spent at nearby Bidwell Park, the time devoted to lunch and observing lichens in the "wild." The rest of the afternoon will be back in the lab, where participants will spend self-guided time investigating lichens, with the assistance of the presenters.

There will be a fee charged for attendance. Interested persons should check <http://www.csuchico.edu/biol/Herb/Events.html> for information and updates, or contact Lawrence Janeway, Workshop Coordinator at LJaneway@csuchico.edu.

A Special Thanks

Life Members:

Irene Brown
 Stella Yang
 Stephen Buckhout
 Lori Hubbart
 Greg Jirak
 Dr. Thorsten Lumbsch
 Jacob Sigg
 Mrs. Ellen Thiers
 Trevor Goward
 Kathy Faircloth
 Sara Blauman
 Sue Wainscott

Benefactor:

Boyd Poulsen

Donors:

Doris Baltzo
 Les Braund
 Dana Ericson
 Bill Hill
 Curt Seeliger
 James Shevock
 Stein Weissenberger
 Ken Howard
 L David Williams

Sponsors:

Dr Theodore Esslinger
 Elizabeth Rush

President's Message

Dear fellow CALS members,

This January three new board members assumed positions as officers on the CALS board. Please join me in welcoming Patty Patterson as our new secretary and Cheryl Beyer as our new treasurer. Patty is a mother and fulltime student at the College of Marin and at San Francisco State University. She is one of the organizers for our bimonthly lichen identification workshops at the College of Marin and is also helping to curate the newly acquired Darrell Wright collection. Patty brings incredible energy to the board and has already tackled the organization of the CALS members database in our new format, eTapestry. Cheryl Beyer is a botanist for the USDA Forest Service in Lake Tahoe and would like to promote the awareness of rare lichens in California through involvement at agency meetings, and through her involvement in the CALS Conservation Committee. She brings an agency perspective to our board and great enthusiasm for lichens. Cheryl is currently hard at work tracking our finances and tending to accounting matters. I would also like to thank our former secretary Sara Blauman, and



and treasurer Kathy Faircloth. Both of these women contributed countless hours of work to CALS, and have been instrumental in this transition of board members. Michelle Caisse and Tom Carlberg are continuing in their positions of Vice President and Editor. It is a great pleasure to work with both Michelle and Tom.

Also this year, I have replaced Bill Hill as president. Bill has dedicated six years as president of CALS and has helped us grow in many ways. I certainly have very large shoes to fill. Bill remains active in CALS and I am indebted to him for his guidance, advice, and countless hours of conversation. I first joined CALS as an undergraduate student in Boise, Idaho where I became intrigued by lichens while working with Roger Rosentreter. I then pursued my lichen passion and a Ph.D. in botany at Oregon State University with Bruce McCune. Currently, I am a fulltime instructor in the biological sciences at Shasta College in beautiful northern California. I look forward to serving CALS as president and being part of our collaborative effort to promote the appreciation, conservation and study of lichens. Please contact me anytime with ideas and questions regarding the California Lichen Society.

At the January meeting of the board we discussed goals that the new board would like to accomplish in 2008 with the assistance of CALS members. We hope to increase our exposure at conferences and events of others to promote an awareness of lichens in California and build our membership. Currently, many field trips occur in the Bay area and we plan to increase the frequency of field trips in other parts of California by targeting unsurveyed areas of our great state. Michelle Caisse has redesigned our CALS brochure, which can be downloaded at <http://CaliforniaLichens.org> and brought along by any member to field trips and meetings. In addition, the education outreach committee has reviewed our educational grants program, and we are offering several grants this year. Details on submission of proposals and guidelines can be found in this issue of the Bulletin. The conservation committee has been hard at work and two species of *Bryoria* are sponsored in this Bulletin, by Doug Glavich, a prominent northwest lichenologist. We hope that land managers will use this information as they consider decisions that may

affect lichen species. Bill Hill is currently researching different database utilities that may help CALS develop a statewide master list of lichens for California.

CALS members have participated in many exciting events so far this year. Judy Robertson continues to organize participation in events, field trips, and workshops as head of this committee. Members meet bimonthly at the College of Marin to identify and share their lichen collections. CALS members also put up displays and participated in the San Francisco Mycological Society's Fungus Fair, CalDay at the UC Berkeley Herbarium, and at the Northern California Botany Symposium. This year the International Association of Lichenologists and the American Bryological and Lichenological Society are meeting at Asilomar in Pacific Grove, California. CALS will co-host this meeting, which takes place July 13 - 19, and includes presentations, workshops and numerous field trips. This is an amazing opportunity for Californians interested in lichens; both amateurs and academics are sure to have a great time. We hope that you will join us for this conference. We currently need volunteers to staff the CALS booth, and to greet folks at the airport during the conference. We are also designing a six panel display, and welcome any interested members to assist in this task. Please contact any board member or committee chair if you are willing to help out. Information on the conference can be found on the web at http://www.lichenology.org:8080/IAL6_ABLS/.

On a sadder note, this year brought the passing of Richard Doell, a founding member of CALS. We are ever grateful for his dedication to our organization, his contributions to the production of the Bulletin, his excellent photographs, and we hold many fond memories of him. Our condolences reach out to Janet, his wife and CALS founder, who remains active in CALS. We will honor his life by continuing the efforts of CALS as our group grows and diversifies.

Erin P. Martin, Ph.D., shastalichens@gmail.com

The Bulletin of the California Lichen Society

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The deadline for submitting material for the Winter 2008 CALS Bulletin is 31 October 2008.

Back cover:

- Top two images: Yana Trail field trip. Images by Carrie Diamond and Tina Dishman.
- Bottom two images: Lichens (*Caloplaca* sp. and *Teloschistes exilis*) of the Pepperwood Preserve. Images by Michelle Caisse.

See reports in the section Under the Lens.

