

Bulletin  
of the  
California Lichen Society



Volume 17

Nos. 1 & 2

Fall 2010

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, PO Box 472, Fairfax, California 94978. Members receive the Bulletin and notices of meetings, field trips, lectures and workshops.

Board Members of the California Lichen Society:

President: Erin Martin, [shastalichens@gmail.com](mailto:shastalichens@gmail.com)  
Vice President: Michelle Caisse  
Secretary: Patti Patterson  
Treasurer: Cheryl Beyer  
Editor: (incoming): John Villella  
Editor (outgoing): Tom Carlberg

Committees of the California Lichen Society:

Data Base: Bill Hill, chairperson  
Conservation: Eric Peterson, chairperson  
Education/Outreach: Erin Martin, chairperson  
Poster/Mini Guides: Susan Crocker, chairperson  
Events/field trips/workshops: vacant, chairperson

The Bulletin of the California Lichen Society (ISSN 1093-9148) is edited by John Villella [johnvillella@yahoo.com](mailto:johnvillella@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 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](mailto:eric@theothersideofthenet.com) for details of submitting illustrations or other large files. A review process is followed. Nomenclature follows Esslinger's cumulative checklist online 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. Style follows this issue. Electronic reprints in PDF format will be emailed to the lead author at no cost.

**The deadline** for submitting material for the Spring 2011 CALS Bulletin is 15 January 2010.

The California Lichen Society is online at <http://CaliforniaLichens.org> and has email discussions through <http://groups.yahoo.com/group/CaliforniaLichens>.

Volume 17 (1 & 2) of the Bulletin was issued 14 October 2010.

Front cover: *Umbilicaria phaea* var. *phaea* and *U. phaea* var. *coccinea* growing intermixed; see Horseshoe Ranch paper starting page 10. Photography by John Villella.

# Bulletin of the California Lichen Society

---

VOLUME 17      Nos. 1 & 2      WINTER 2010

---

## Lichen Inventory at the Santa Barbara Botanic Garden, Santa Barbara County, California

Shirley Tucker  
Santa Barbara Botanic Garden  
1212 Mission Canyon Rd.  
Santa Barbara, California, 93105  
tucker2440@cox.net

The Santa Barbara Botanic Garden in May, 2007 held “Bioblitz”, an inventory of all organisms in the Mission Canyon portion of the Garden. The Garden includes approximately 65 acres and is approximately 90% natural vegetation (mostly Coast Live Oak woodland) in a south-facing canyon of the Santa Ynez Mountains, adjacent to the city of Santa Barbara in Santa Barbara County, California. The climate is Mediterranean, with hot summers, intermittent rain in winter, and frequent coastal fog. The “Bioblitz” area proper was concentrated in the canyon, but the lichen survey included other areas as well (Fig. 1). Specialists, amateurs and professional scientists were recruited to assess populations of plants, fungi, lichens, mosses, algae, mammals, birds, amphibians, spiders, and insects that could be found in the canyon and adjacent hillsides during a 24-hour period. Plants, mosses and lichens were collected over a longer period than the 24-hour “snapshot”, since identifications take time and microscopic examination for many of the taxa involved. The Garden held a “Free” day for the public with plenty of publicity on the Saturday (May 11, 2007). A display of lichens organized by Amanda Heinrich, including identification games for children, was a big attraction. Bob Muller, the Garden’s Director of Research, announced the final results at the end of the afternoon, with the lichen totals at a respectable number of about 95 species. The lichen total for the canyon is now 107, and the total for the entire Garden is 168 species, due to additional identifications made after the day of “Bioblitz”. A few lichenicoles remain to be identified, and some determinations, such as for species of *Aspicilia* and *Verrucaria*, remain tentative. Voucher collections are deposited in the herbarium at the Botanic Garden (SBBG). The “Bioblitz” list will

provide a baseline to allow periodic updated surveys for new introductions or disappearance of species.

The lichen total for the entire Garden is relatively high (168 species), since it includes not only the shaded canyon but also open sunny planted areas that have a high species diversity on rock. Several of the Garden trails are bordered by huge sandstone boulders that have a fine display of lichens. The main tree species supporting lichens are coast live oak (*Quercus agrifolia*), scrub oak (*Q. dumosa*), California laurel (*Umbellularia californica*), western sycamore (*Platanus racemosa*), cottonwood (*Populus trichocarpa*), toyon (*Heteromeles arbutifolia*), and chaparral shrubs, especially chamise (*Adenostoma fasciculatum*). Introduced species native to other parts of California such as island oak (*Q. tomentella*), Torrey pine (*Pinus torreyana*), horse chestnut (*Aesculus*), mesquite (*Prosopis juliflora* v. *glandulosa*), catclaw (*Acacia greggii*), *Ephedra viridis*, and big cone spruce (*Pseudotsuga macrocarpa*) supported unusual lichen crusts. Cactus pads of a large tuna cactus (*Opuntia ficus-indica*) in the Desert section bore species of *Xanthoparmelia*, *Parmotrema*, *Ramalina* and *Teloschistes*.

A few lichens on non-native trees such as persimmon (*Diospyros kaki*) and olive (*Olea europaea*) were collected around homesites on the Jensen section of the Garden property. The Redwood Section in the canyon, while impressive, is deeply shaded and did not yield any lichen species, even on fallen twigs and branches. Sandstone boulders predominate in the Garden, the result of prehistoric mudflows in Mission Canyon. These are excellent lichen substrates because seasonal flaking of the rock facilitates lichen collecting. There are other rock types as well among the boulders with much harder

consistency; these were not as thoroughly sampled. A few soil lichens (*Endocarpon* spp.) plus pebbles bearing crusts occurred in openings in the chaparral section.

Some infrequently collected lichens were found in our survey. Among these are *Bacidia heterochroa* and *Bacidina californica* on *Umbellularia* trunks; *Cladonia hammeri* on soil, *Micarea denigrata* on pine bark or wood, *Punctelia punctilla* on sandstone boulders, and *Tomasellia americana* on *Platanus* twigs and bark. A few lichenicolous species have been identified: *Sphinctrina tubaeformis* on *Pertusaria*, *Syzygospora physciacearum* (common on several *Physcia* species), and *Vouauxiella lichenicola* on *Lecanora* apothecia.

A few lichens were collected that may be considered rare. *Thelenella hassei* was found on twigs of island tree mallow (*Lavatera assurgentiflora*) in the Island Section plantings. This pyrenocarpous crustose lichen, known from southern California and Mediterranean Europe (Mayrhofer 2002), was first collected in the Los Angeles area of California by Herman Hasse about 1913 and was distributed in the Exsiccati of his collections under the misapplied name *Pyrenula thelomorpha*. Few collections have been made of *T. hassei*; the distribution map of Mayrhofer (2002) indicated only two collections, one on an undesignated California island and the other, probably Hasse's collection, on the adjacent southern California mainland. Another rarity is *Rinodina confragulosa*, found on sandstone boulders in the Botanic Garden. This lichen is said by John Sheard (Sheard 2010, p. 78), expert on the genus, to be new to North America. A third rarity is a species of *Porina* close to *P. aenea*, that was collected on olive bark and remains to be identified. A fourth locally rare species, *Cresponea chloroconia*, was collected by Amanda Heinrich on a hardwood along Mission Creek in an area that has since completely burned.

This lichen inventory is particularly important now, because a wildfire (the "Jesusita" fire) devastated the Santa Barbara Botanic Garden and adjacent Mission Canyon in May, 2009. It burned two-thirds of the Garden grounds, as well as the Director's home and another major building. Fortunately the herbarium, library, and some other buildings were saved. The conifer collections were lost, as well as most vegetation in the upper part of the canyon including the chaparral section, the only site for *Cladonia* and for soil lichens. The Island section burned, including the island tree mallow that was host to the rarity *Thelenella hassei*. A year later,

many of the live oaks, although charred, are producing new greenery. The introduced *Opuntia* cacti that previously had a thriving lichen flora on the pads were badly burnt but quickly produced new pads, and will probably again host lichens. Many parts of the Garden are still not accessible because of damage to trails, including the Campbell and Pritchett Trails that were rich in lichens. Damage to rock crusts was severe in many areas, particularly *Xanthoparmelia* species, foliose thalli that dried and flaked off soon after the fire. When trails are again open, there will be an opportunity to assess which lichen species survived.

#### ACKNOWLEDGMENTS

I thank Dr. Ed Schneider, Director of the Garden for permitting the collections, as well as Dr. Robert Muller and Dr. Dieter Wilken, botanists in the Garden Herbarium who helped in many ways. Amanda Heinrich and Kenneth Tucker helped collect on several occasions. A few Garden collections were made in earlier years by Mariette Cole, Janet Doell, and Cherie Bratt, retired collector at the Garden. Specialists who assisted with identifications include B. Coppins (Royal Botanic Garden, Edinburgh), D. Ertz (National Botanic Garden, Meise, Belgium), T. Esslinger (North Dakota State University, Fargo), M. Grube (Karl-Franzens University, Graz, Austria), Kerry Knudsen (University of California, Riverside), and J. Sheard (University of Saskatchewan, Saskatoon). Betsy Collins assisted with preparing the map. Reviews of the manuscript by Bruce McCune and Roger Rosentreter were helpful and appreciated.

Most collections are those of the author, and are identified only by her collection number. Collections by others are identified by collector's name and collection number. The collecting was done primarily during early 2007 before the May "Bioblitz", with a few earlier Tucker collections in 2003 and 2005. Determinations are by the author except where noted. All collections are deposited at the Santa Barbara Botanic Garden.

#### LITERATURE CITED

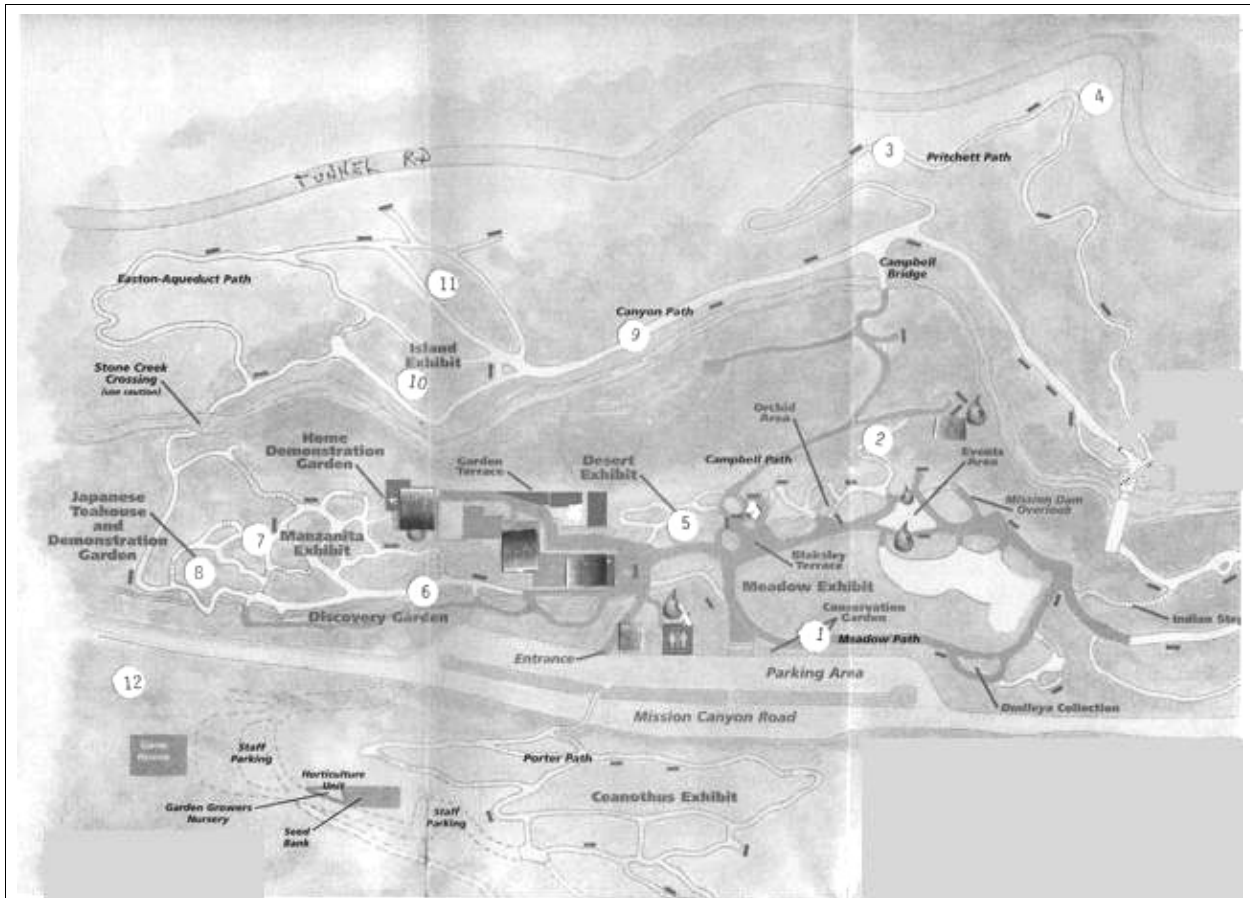
- Arup, U. 2009. The *Caloplaca holocarpa* group in the Nordic countries, except Iceland. *Lichenologist* 41:111–130.
- Esslinger, T. 2004a. *Phaeophyscia*. [in T. H. Nash III, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz eds.], *Lichen flora of the Greater Sonoran Desert region*, Vol. 2: 403–414. Lichens Unlimited, Arizona State University, Tempe.

Grube, M. 2008 (2007). *Arthonia*. [in T. H. Nash III, C. Gries, & F. Bungartz eds.], Lichen flora of the Greater Sonoran Desert region, Vol. 3: 39-61. Lichens Unlimited, Arizona State University, Tempe.

Sheard, J. 2010. The lichen genus *Rinodina* (Lecanoromycetidae, Physciaceae) in North

America north of Mexico. National Research Council of Canada, Ottawa.

Westberg, M., & T. H. Nash. 2002. *Candelaria*. [in T. H. Nash III, B. D. Ryan, C. Gries & F. Bungartz, eds.], Lichen flora of the Greater Sonoran Desert region, Vol. 1: 116-118. Lichens Unlimited, Arizona State University, Tempe.



- 1 Meadow trail, upper level. Open sunny area, bordered by rocks
2. Campbell trail and Campbell bridge, Shaded live oak woodland in canyon
3. Pritchett trail: shaded live oak woodland in canyon, bordered by rocks
4. Chaparral and clearing at top of Pritchett Trail
5. Desert Garden, on upper level, open rocky slope with boulders and small trees (mesquite, catsclaw)
6. Discovery Garden in ravine, shaded live oak woodland
7. Manzanita Garden below cottage, upper level, open, mostly sunny, with scattered live oaks and conifers, numerous large boulders
8. Japanese Teahouse and water tank: native woodland of live oaks, sycamore, *Umbellularia*
9. Canyon Trail. Shaded live oak woodland in canyon
10. Island Plant Section, open area in canyon close to creek
11. Pine collection, on slope in canyon
12. Hansen property East of Mission Canyon Rd, with cultivated trees along minor road.

## Lichens at Santa Barbara Botanic Garden

Most collections are those of the author, and are identified only by her collection number. Collections by others are identified by collector's name and collection number. The collecting was done primarily during early 2007 before the May "Bioblitz", with a few earlier Tucker collections in 2003 and 2005. Determinations are by the author except where noted. All collections are deposited at the Santa Barbara Botanic Garden.

### EXPLANATIONS REGARDING THE LIST

Common or frequently encountered species are labeled as such. Others, especially with only one or two collections, may be considered locally rare.

#### Symbols:

Asterisks = lichenicoles

Key to locations on map in Fig. 1:

- Acarospora veronensis** A. Massal. – Common; 38521, 38524 pr.p., 38536 pr. p., 38756, (7, on sandstone boulders), 38897 (2, on sandstone boulder, Campbell trail), 38976 (7, on sandstone)
- Arthonia albopulverea** Nyl. – 39051 (1, on *Aesculus*)
- Arthonia beccariana** (Bagl.) Stizenb. - 38942 (4, on chaparral)
- Arthonia pinastri** Anzi – Common; 37889 (9, on *Populus*, det. by M. Grube), 37957 (det. M. Grube), 39075 (1, on *Quercus agrifolia*)
- Arthonia pruinata** (Pers.) Steud. ex A. L. Sm. - 34357 (8, on bark of *Quercus agrifolia*), 39013 (12, on olive)
- Arthonia rhodis** Zahlbr. – 37871 (9, on *Populus* twigs, det. M. Grube)
- Arthonia sexocularis** Zahlbr. – 38942 (4, on chaparral bark)
- Arthonia tetramera** (Stizenb.) Hasse – 38865 C, 38866a (10, on *Populus* twigs)
- Arthopyrenia analepta** (Ach.) A. Massal. – 38892 (8, on *Umbellularia* bark)
- Arthopyrenia lyrata** R. C. Harris – Common; 38866 (9, on *Populus* twigs), 39004A (6, on *Quercus tomentella*), 39014 (12, on *Heteromeles*)
- Aspicilia caesiocinerea** (Nyl. ex Malbr.) Arnold - 37885, 38523A (7, on rock)
- Aspicilia fumosa** Owe-Larss. & A. Nordin – 38898 pro parte (a mixed collection with other species present; 2, on rock, Campbell trail, 38898 pr.p.)
- Aspicilia phaea** Owe-Larss. & A. Nordin – 37885 (2, on rock, Campbell Trail)
- Bacidia circumspecta** (Nyl. ex Vain.) Malme – 39076 (5, on dead palm frond)
- Bacidia heterochroa** (Müll. Arg.) Zahlbr. – 38843, pink apothecia, (8, on *Umbellularia* bark; det. B. Coppins)
- Bacidina californica** S. Ekman - 38844 (8, on *Umbellularia* bark), 38889 (9, on *Populus* twigs, det. B. Coppins)
- Bacidina ramea** S. Ekman – 34318 (6, on Torrey pine), 34320, 37875, & 38867 (9, on *Populus*)
- Buellia lepidastroidea** Imshaug ex Bungartz – 37881, 38919 (7, on sandstone)
- Buellia punctata** (Hoffm.) A. Massal. – 38943 (4, on *Quercus agrifolia*, chaparral)
- Buellia sequax** (Nyl.) Zahlbr. – Common; 38524b, 38753, 36463, 38978 (7, on sandstone boulders); 38901 (2, on sandstone), 37231, 37879, 38879, 38901, 38906 pr.p., 38935, 38979
- \***Buellia physycicola** Poelt & Hafellner – 38923 (on *Phaeophyscia orbicularis*)
- Caloplaca arenaria** (Pers.) Müll. Arg. - 38902 (3, on sandstone boulders, scant crust)
- Caloplaca atroflava** (Turner) Mong. – 37882 (7, on sandstone boulders, with *C. subsoluta* & *C. bolacina*)
- Caloplaca bolacina** (Tuck.) Herre – 35881B, 38980, 38987 pr.p. (7, on sandstone boulders)
- Caloplaca cerina** (Ehrh. ex Hedw.) Th. Fr. – Common; 34322 (9, on *Populus*), 34323, 34326 (both 7, on *Aesculus*, Torrey pine), 34324, 38525A pr. p. (7, on *Quercus agrifolia*), 38845 pr. p. (8, on *Quercus agrifolia*), 10955, 39004B (6, on *Quercus tomentella*)
- Caloplaca citrina** (Hoffm.) Th. Fr. – Common; 35881A pr.p., 37229, 38981, 35882C (7, on sandstone boulders), 38903 (2, on *Quercus agrifolia* bark)
- Caloplaca flavovirescens** (Wulfen) Dalla Torre & Sarnth. - Common; 10986, 33815A (1, on sandstone); 38762 (S), 38912 pr. p. (2, Campbell trail), 38929 pr.p. (3, Pritchett trail)
- Caloplaca impolita** Arup – Locally common on sandstone boulders, 38754 pr.p., 38764, 38983 pr.p. (7, on sandstone boulders), 38905 pr. p. (2, on sandstone)

- Caloplaca luteominia** (Tuck.) Zahlbr. **var. luteominia** Arup – Common; 33815B, 38996 (7, on sandstone boulders), 38763 (7, on sandstone boulders), 38906 pr.p. (2, on sandstone)
- Caloplaca nashii** Nav.-Ros., Gaya & Hladun – 38904 (2, on *Quercus agrifolia*.)
- Caloplaca persimilis** Wetm. - 38903 (7, on sandstone)
- Caloplaca pyracea** (Ach.) Th. Fr. – Common; 34325 (2, twigs of Torrey pine), 38845 pr.p. (8, on *Quercus agrifolia* bark), 38868 (9, on *Populus* twigs), 38904 (2, on *Quercus agrifolia*), 39116 (5, on *Ephedra*) Note: See Arup (2009) for comparison of *C. holocarpa* and *C. pyracea*.
- Caloplaca squamosa** (B. de Lesd.) Zahlbr. - Common; 35881 pr.p. (1, 7, on sandstone), 36464, 36569A, 38984 (all 7, on sandstone boulders)
- Caloplaca stanfordensis** H. Magn. – Common; 35882B, 38869 (9, on *Populus* twigs), 38982A, 38985, 39052 (1, 7, on *Aesculus*), 34326 (7, on *Aesculus* & Torrey pine), 39117 (5, on *Ephedra*)
- Caloplaca subsoluta** (Nyl.) Zahlbr. - Common; 33815A, 35881A pr.p., 35882A, 38522, 38525 pr. p., 38526, 38762, 38754 pr.p., 38986, 38982B, 38995 pr.p. (all 7, on sandstone boulders), 38905 pr.p., 38907(2, Campbell trail), 38925 pr. p. (3, Pritchett trail)
- Candelaria pacifica** Westb. (ined.) - Common; 38944 (4, on twigs, chaparral), 39016 (12, on *Quercus agrifolia* & Persimmon), 39053 (1, on *Aesculus*), 39118 (5, on *Ephedra*), C. Bratt 10721 (1, on *Quercus agrifolia* near pond)
- Candelariella antennaria** Räs. - (7, on *Aesculus* bark), 38982A, 39054 (1)
- Candelariella lutella** (Vain.) Räs. - (6, on Torrey pine, 34328)
- Candelariella vitellina** (Hoffm.) Müll. Arg. – 7969 (on rock), 34328 (6, on Torrey pine; usually on rock)
- Chrysothrix granulosa** G. Thor – Common; 34341 (9, on *Populus* twigs, bark), 38945 (4, on chaparral, *Quercus dumosa*), 39005 (6, on *Quercus tomentella*), 39017 (12, on dead tree)
- Cladonia hammeri** Ahti – 38946 (4, on soil area inside Tunnel Rd gate)
- Cliostomum griffithii** (Sm.) Coppins - Common; 34315 (9, on *Quercus agrifolia* and *Populus* twigs), 34316 (7, on Torrey pine), 38846 (2, on *Quercus agrifolia* twigs, Campbell trail), 38870 (9, on *Populus* twigs), 39055 (1, on *Aesculus*), 39119 (5, on *Ephedra*)
- Collema furfuraceum** (Arnold) Du Rietz – 38527 (2, on sandstone boulders, shaded vertical overhang, Campbell trail below Desert section), 38909, 38910 (both 2, on Campbell trail), C. Bratt 10013 (on rock)
- Cresponea chloroconia** (Tuck.) Egea & Torrente – 38890 (2, on hardwood bark along Mission Creek at Indian dam, Mission Canyon, rare, destroyed in fire)
- Dimelaena radiata** (Tuck.) Müll. Arg. – Frequent; 38911 (2, on sandstone boulders, Campbell trail), also 7, not collected)
- Diploicia canescens** (Dicks.) A. Massal. – Common; 38847 (8, twigs & bark of *Quercus agrifolia*), 34329 (2, on *Quercus agrifolia* twigs), 38871 (9, on *Populus* twigs) 39056, 39067 (1, on *Aesculus*), 38957 (4, on *Quercus dumosa*), 39120 (5, on *Ephedra*)
- Endocarpon loscosii** Müll. Arg. – A. Heinrich L-1723 (4, on soil near Tunnel Rd gate)
- Endocarpon petrolepideum** (Nyl.) Hasse - 38947 (4, on pebbles, area on Pritchett trail nr. Tunnel Rd. gate)
- Endocarpon pusillum** Hedw. – 36569B, 38948 (4, on sandstone boulders and soil)
- Evernia prunastri** (L.) Ach. - Common; 34330 & 37874 (2, on *Quercus agrifolia*), 38949 (4, on twigs of *Quercus agrifolia* & *Q. dumosa*), 39007 (6, on *Quercus tomentella*), 39015 (12, on olive), 39057 (1, on *Aesculus*)
- Flavoparmelia caperata** (L.) Hale – Common; 34331 (1, 2, on twigs, bark), 38995 pr.p. (7, on sandstone boulders; unusual substrate), C. Bratt 10716 (1, on *Quercus agrifolia* near pond)
- Flavopunctelia flaventior** (Stirt.) Hale – Common; 34332 (1, 2, on twigs, bark), 39058 (1, on *Aesculus*), C. Bratt 10756 (5, on *Acacia*)
- Flavopunctelia soledica** (Nyl.) Hale - 34345 (2, on *Quercus*)
- Hyperphyscia adglutinata** (Flörke) H. Mayrh. & Poelt – Common; 34352-3 (9, on *Populus* & Torrey pine), 38540A (7), 38872 (9, on *Populus*), 38857 (8, on *Quercus agrifolia* & *Umbellularia*), 38950 (4, on *Quercus dumosa*), 39008 (6, on *Quercus tomentella*), 39018 (12, on *Quercus agrifolia*), 39059 (1, on *Aesculus*), 39121 (5, on *Ephedra*)
- Lecanactis salicina** Zahlbr. - 37215A (9, on *Populus* twigs), 38951 (4, on *Quercus dumosa*), 38991A (7, on *Aesculus*), 39006 (6, on *Quercus tomentella*), 39019 (12, on olive), 39060 (1, on *Aesculus*)
- Lecania brunonis** (Tuck.) Herre - 38757, 38765A pr. p., 38987 pr.p. (7, on sandstone boulders), 38912 pr.p., 38914 pr.p., 38940 (all 2, Campbell trail)
- Lecania cyrtella** (Ach.) Th. Fr. - 34312 (9, on *Populus* and *Quercus* twigs)
- Lecania fructigena** Zahlbr. - M. Cole 883 MC, (2, on sandstone nr creek & Indian dam), 38528 (7, on sandstone boulders)
- Lecania naegelii** (Hepp) Diederich & van den Boom - 34319 (on bark), 39009 (6, on *Quercus tomentella*)
- Lecanora albella** Nyl. - 39061 (1, on *Aesculus*)

- Lecanora argopholis** (Ach.) Ach. - Common; 37876B (2, on sandstone boulders, concrete benches); 35883A, 38529, 38913, 38914 pr.p., 38988, 38989 (all 7, on sandstone boulders)
- Lecanora caesiorubella** Ach. - 39023 (12, on *Heteromeles*)
- Lecanora circumborealis** Brodo & Vitik. - 38873 (9, on *Populus* twigs), 39062 (1, on *Aesculus*)
- Lecanora confusa** Almb. - 34334 (9, on *Populus* twigs & Torrey pine bark), 38952 (4, on chamise), 39022 (12, on olive)
- Lecanora crenulata** Hook. - 36465 (7, on sandstone)
- Lecanora dispersa** (Pers.) Sommerf. - Common; 38990, 34335 (7, on bark of *Aesculus*), 38530, 38914 pr.p. (2, on sandstone boulders, Campbell trail)
- Lecanora expallens** Ach. - 38993 (7, on *Aesculus*); 39022 (12, on olive)
- Lecanora horiza** (Ach.) Linds. - 25222, 34338 (9, on *Populus* twigs), 38874 (9, on *Populus* twigs)
- Lecanora hybocarpa** (Tuck.) Brodo – Frequent; 37887, 38848 (8, on *Umbellularia* & *Quercus agrifolia*), 38991B (7)
- Lecanora laxa** (Sliwa & Wetmore) Printzen - 34335, 38991 as *L. varia* subsp. *laxa*), 38993
- Lecanora meridionalis** H. Magn. – 34336B (7, on *Quercus agrifolia*)
- Lecanora muralis** (Schreb.) Rabenh. - Common; 37877, 38531, 38915, 39011C (7, on sandstone boulders)
- Lecanora pacifica** Tuck. - Common; 34336A, 34337 (both 2, on *Quercus agrifolia* and Torrey pine), 38953 (4, on *Quercus dumosa*), 39011A (6, on *Quercus tomentella*), 39020, 39021 (12, on olive & *Heteromeles*)
- Lecanora polytropa** (Hoffm.) Rabenh. - 38992, 38983 pr.p. (7, on sandstone boulders)
- Lecanora strobilina** (Spreng.) Kieff. - 39063 (1, on *Aesculus*)
- Lecanora subrugosa** Nyl. - 38873 (9, on *Populus*), 39011B (6, on *Quercus tomentella*), 39064 (1, on *Aesculus*), B. Ryan 31396 [ASU]
- Lecanora symmicta** (Ach.) Ach. - 34340 (7), 38849 (2, on *Quercus agrifolia* twigs)
- Lecidella asema** (Nyl.) Knoph & Hertel – 38532 (7, on sandstone)
- Lecidella carpathica** Körb. - 38532, 38994 (7, on sandstone boulders)
- Lecidella elaeochroma** (Ach.) Hazsl. – 37873 (7, on sandstone boulder)
- Lecidella euphorea** (Flörke) Hertel - 38876 (9, on *Populus* twigs), 39024 (12, on persmmon), 39073 (1, on *Aesculus*)
- Lecidella stigmatia** (Ach.) Hertel & Leuckert – 38533 (7, greenish crust, on sandstone boulders)
- Melanelixia subaurifera** (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch 38852 (2, Campbell trail, on *Quercus agrifolia* twig. This lichen is uncommon on S flank of Santa Ynez Mts) Syn.: *Melanelia subaurifera*
- Micarea denigrata** (Fr.) Hedl. – 34321 (6, on Torrey pine bark in ravine)
- Mycoporum antecellens** (Nyl.) R. C. Harris – 39003 (6, on *Quercus tomentella*) Syn.: *Arthopyrenia antecellens*
- Mycoporum californicum** (Zahlbr.) R. C. Harris – 34314 (7, on twigs, bark of Torrey pine), 39071 (1, on *Aesculus*) Syn.: *Tomasellia californica*
- Mycoporum eschweileri** Müll. Arg.) R. C. Harris in Tucker & R. Harris – 34358 (7, on twigs of *Pseudotsuga*) Syn.: *Tomasellia eschweileri*
- Opegrapha herbarum** Mont. – 34342 (on *Quercus agrifolia*), 38853 (8, on *Umbellularia* bark); 39025 (12, on olive)
- Opegrapha varia** Pers. – 37883 (2, on *Platanus* twigs, bark)
- Opegrapha xerica** Egea & Torrente - 37883 (10, on *Platanus occidentalis*, det. D. Ertz)
- Parmotrema arnoldii** (Du Rietz) Hale – 34347 (9, on *Populus* twigs)
- Parmotrema austrosinense** (Zahlbr.) Hale – Common; 34346 (5, on bark, twigs of mesquite), 37214 (1, on *Quercus*), 38854 (8, on *Quercus agrifolia* twigs), 38954, on *Quercus dumosa*), 39026 (12, on *Heteromeles*), C. Bratt 2238 (9, on *Quercus agrifolia* nr creek), 10735 (1, on *Quercus agrifolia*), 10759 (5, on *Acacia*)
- Parmotrema hypoleucinum** (J. Steiner) Hale – Common; 34343-4 (2, on Torrey pine, *Quercus agrifolia*), 38877 (9, on *Populus*, pine), 38955 (4, on *Quercus dumosa*), 39065 (1, on *Aesculus*)
- Parmotrema perlatum** (Huds.) M. Choisy – Common; 34347 (5, on bark, twigs of mesquite); 39027 (12, on olive) Syn.: *P. chinense*
- Peltula euploca** (Ach.) Poelt – 38536 pr. p. (5, on sandstone boulders), 38917 pr.p. (2, Campbell trail, on sandstone)
- Peltula obscurans** (Nyl.) Gyeln. v. *hassei* (Zahlbr.) Wetmore – 38534 (5, on sandstone boulders)
- Peltula omphaliza** (Nyl.) Wetmore - 38535, 38536 pr. p. (5, on sandstone boulders)
- Pertusaria amara** (Ach.) Nyl. – 38855 (8, on *Quercus agrifolia* bark)
- Pertusaria lecanina** Tuck. – 39010 (6, on *Quercus tomentella*)
- Pertusaria cf. leioplaca** DC. – 38918 (2, Campbell trail, immature, on *Quercus agrifolia* bark)
- Pertusaria pustulata** (Ach.) Duby – Frequent; 38878 (9, on *Populus*), 38919 (2, Campbell trail on *Quercus agrifolia* bark), 38956 (4, on *Quercus dumosa*), 39028, 39029 (12, on *Heteromeles*), 39010 (6, on *Quercus tomentella*)
- Pertusaria velata** (Turner) Nyl. – M. Cole 1293 (8, on *Quercus agrifolia*)
- Pertusaria xanthodes** Müll. Arg. – 38856 (8, on *Umbellularia* bark)



- Phaeophyscia hirsuta** (Mereschk.) Essl. – Common; 38539, 38920 (2, Campbell trail pr.p. on sandstone), 39032 (12, on *Quercus agrifolia*), 38538, 38539 (7, on sandstone) Syn.: *P. cernohorskyi*
- Phaeophyscia orbicularis** (Neck.) Moberg - on sandstone, 35883B (7, on sandstone), 38908, 38917 pr.p., 38922 (all on sandstone, 2, Campbell trail), 38921 pr.p., 38923 pr.p. (2, Campbell trail, on *Quercus agrifolia*, last with lichenicole)
- Physcia adscendens** (Fr.) H. Olivier – Common; 34349 (2, on bark, twigs of *Quercus agrifolia* & Torrey pine), 39030 (12, on *Quercus agrifolia*, *Heteromeles*), 39066 (1, on *Aesculus*), 39125 (5, on *Ephedra*)
- Physcia caesia** (Hoffm.) Fűrnr. – Frequent; 38917 pr.p., 38920 pr.p., 38925A, B (all 3, Pritchett trail, on sandstone boulders)
- Physcia clementei** (Sm.) Lyngé – Frequent locally; 34350, 34351 pr. p., 38879 (all 9, on *Populus* twigs), 39031, 39034 (12, on persimmon, *Heteromeles*, olive)
- Physcia dubia** (Hoffm.) Lettau - 38958 (4, on *Quercus dumosa*)
- Physcia poncinsii** Hue – 38540C, 38995 pr.p. (7, on sandstone boulders; det. T. Esslinger)
- Physcia tenella** (Scop.) DC. subsp. **tenella** – Frequent; 34366 pr.p. (with *Syzygophora* lichenicole), 38959 (4, on *Quercus dumosa* twigs, bark), 39033 (12, on *Quercus agrifolia*), 39068 (1, on *Aesculus*)
- Physcia tenellula** Moberg – 34333, 34351 pr.p. (9, on *Populus* twigs), 38858 (on *Quercus agrifolia* twigs)
- Physcia tribacia** (Ach.) Nyl. - Common; 36569D, 38921 pr.p. (2, Campbell trail, on twigs, & on sandstone boulders), 38926 (3, Pritchett trail)
- Physciella chloantha** (Ach.) Essl. – 38540B (7, on sandstone boulders; det. T. Esslinger)
- Pleopsidium flavum** (Bellardi) Körb. – 38927 (3, Pritchett Trail, on sandstone; 7, and by entrance, not collected)
- Polysporina simplex** (Davies) Vezda – 37965 (7, on sandstone boulders)
- Porina cf. aenea** (Wallr.) Zahlbr. – 39035 (12, on olive, Hansen property)
- Protblastenia rupestris** (Scop.) J. Steiner - 38541 (7, on sandstone boulders, rare)
- Punctelia jeckeri** (Roum.) Kalb – 38542, 38880 (5, on twigs of mesquite), 39036 (on *Heteromeles*) Misapplied name: *Punctelia perreticulata*
- Punctelia punctilla** (Hale) Krog – 38928 (C, Pritchett Trail, on sandstone boulders; rare)
- Pyrenopsis phaeococca** Tuck. - 38547 (7, on sandstone boulders) Syn.: *Psorotichia phaeococca*
- Pyrrhospora quernea** (Dicks.) Körb. – 39037 (12, on *Heteromeles*) Syn.: *Lecidea quernea*
- Pyrrhospora varians** (Ach.) R. C. Harris – Frequent; 38851, 38523b (8, 9, on *Populus* and *Quercus agrifolia* bark), 38875 (2, wooden bridge rail) Syn.: *Lecidea varians*
- Ramalina farinacea** (L.) Ach. – Common locally; 37215B, 34354, 38895, 38962 (4, on twigs, bark of *Quercus dumosa* & chaparral shrubs), 39069 pr.p. (1, on *Aesculus*), C. Bratt 10755 (5, on mesquite)
- Ramalina leptocarpha** Tuck. – 38882 (5, on *Acacia* twigs)
- Ramalina pollinaria** (Westr.) Ach. – 34364A, 38859 (8, on *Quercus agrifolia*), 38963 (4, on *Quercus dumosa* twigs)
- Rinodina capensis** Hampe - 38961B (4, on twigs, bark of *Quercus dumosa*)
- Rinodina confragulosa** (Nyl. in Cromb.) Müll. Arg. – 37872 pr.p (5, on sandstone boulder, rare)
- Rinodina gennarii** Bagl. – Common; 36466, 38543 (7, common, on sandstone boulders), 38764, 38765 pr. p., 38766, 38929 pr.p. (2, Campbell trail, on sandstone boulders)
- Rinodina herrei** H. Magn. - 39040 (12, on *Heteromeles*)
- Rinodina pacifica** Sheard. - 37872 pr.p. (5), 38544 (2), 39000 (7, on sandstone boulders)
- Rinodina santae-monicae** H. Magn. – Common; 34356 (11, on Torrey pine), 34355 & 38883 (9, on *Populus* twigs), 38930 (2, on *Quercus agrifolia*, Campbell trail, det. J. Sheard), 38964 (4, on *Quercus dumosa*), 39038, 39039 (12, on olive), 39012 (6, on *Quercus tomentella*), 37880
- Sarcogyne arenosa** (Herre) Knudsen & Standley – 38896 (2, on sandstone, trail from Desert section down to canyon)
- Sarcogyne regularis** Körb. - 38965 (4, on pebbles)
- Sarcogyne similis** H. Magn. – Common; 35884, 38545, 38548, 38759 (all 7, common on sandstone boulders); 37878 (3, on sandstone, det. K. Knudsen), 38932 (3, Pritchett trail, on sandstone boulders), 38977, 38998 (12, on sandstone)
- Scolicosporum umbrinum** (Ach.) Arnold – 38894 (2, on sandstone, trail from Desert section down to canyon; pinkish tan apothecia, greenish crust)
- \***Sphinctrina tubiformis** A. Massal. – 38931 (3, Pritchett trail, lichenicole on *Pertusaria* sp. on *Quercus agrifolia*)
- \***Syzygospora physciacearum** Diederich – Locally frequent (lichenicole on *Physcia* spp. ) ; 10988 (1), (4, on chaparral twigs), 34365-6 (11, on *Caloplaca cerina* on Torrey pine), 38860 (8, on *Quercus agrifolia* twigs), 38966 (4, upper Pritchett trail on chaparral), 39041 (12, on olive); 39069 (1, on *Physcia tenella* on *Aesculus*)
- Teloschistes chrysophthalmus** (L.) Th. Fr. – Locally common; 33816, 37888 (D, on twigs of *Prosopis*, *Acacia*) 34359 (C, on Torrey pine), 38884 (9, on *Populus*), 38967(N, upper Pritchett trail), 39042 (E, on *Quercus agrifolia*), 39070 (on *Aesculus*, M), 39128 (on *Ephedra*), C. Bratt 2237, 8852, 11372a, 12517 (all D, on *Acacia*), J. Doell 265 (D, on *Acacia*)

- Teloschistes exilis** (Michx.) Vain. C. Bratt 10757, 11372B (Determination is questionable; 5, on *Acacia*)
- Teloschistes flavicans** (Sw.) Norman - 38861 (5, on *Acacia*, *Prosopis*, *Quercus agrifolia* twigs)
- Thelenella hassei** (Zahlbr.) H. Mayrh. - 38881 (10, on twigs of *Lavatera*)
- Thelenella inductula** (Nyl.) H. Mayrh. - 38999 (6, 7, on sandstone boulders)
- Tomasellia americana** (Minks ex Willey) R. C. Harris - 34313 (7, on twigs, bark of *Quercus* and C, on *Platanus*)
- Usnea esperantiana** P. Clerc - 34360B, (D, minute fragment on twigs, bark of Torrey pine), 38887 (9, on *Populus*), A. Heinrich L-1686
- Usnea flavocardia** Räsänen - 38885 (4, on *Quercus dumosa*) Syn.: *U. wirthii*
- Usnea glabrata** (Ach.) Vain. - 34360A (5, on twigs, bark), 38862, 38968 (4, on *Quercus dumosa*)
- Usnea lapponica** Vain. - 38886 (4, on *Quercus agrifolia*)
- Usnea substerilis** Mot. - A. Heinrich, comm.. Tucker 38862B (on bark)
- Verrucaria amylacea** Hepp in Arnold - 38761B, C (7, on sandstone)
- Verrucaria calkinsiana** Servit - 38969 (4, on pebbles)
- Verrucaria fusca** Pers. in Ach. - Common; 38758, 38933, 38934, 38936 (2, Campbell trail, on sandstone boulders), 38935 (3, Pritchett Trail, on sandstone boulders), 38961A, 38970 (4, on pebbles), 38761C, 39002A, B (7, on sandstone boulders)
- Verrucaria macrostoma** Duf. ex DC. - 38760 (7, on sandstone)
- Verrucaria memnonia** (Flot.) Arnold - 38969 pr.p. (4, on pebbles in grassy area near upper gate)
- Verrucaria nigrescens** Pers. - 36467 (7, on sandstone boulders)
- Verrucaria viridula** (Schrader) Ach. - 38550 (7, on sandstone boulders)
- \***Vouauxiella lichenicola** (Linds.) Petr. & Sydow - 34361, 38973 (4, on disks of *Lecanora pacifica* on *Quercus dumosa*)
- Xanthomendoza fallax** (Hepp) Søchting, Kärnefelt & S. Y. Kondr. - 38939 (2, Campbell trail, on sandstone), 38971 (4, on chaparral), 38972 (3, on rock, Pritchett trail), 39001 (7, on sandstone boulders)
- Xanthomendoza fulva** (Hoffm.) Søchting, Kärnefelt & S. Y. Kondr. - 38888 (9, on *Populus*, *Quercus agrifolia*), 39129 (5, on *Ephedra*)
- Xanthomendoza hasseana** (Räsänen) Søchting, Kärnefelt & S. Y. Kondr. - 39072 (1, on *Aesculus*) Syn.: *Xanthoria hasseana*
- Xanthomendoza ulophyllodes** (Räsänen) Søchting, Kärnefelt & S. Y. Kondr. - A. Heinrich (3, Pritchett trail), 39046 (12, on persimmon) Syn.: *Xanthoria ulophyllodes*
- Xanthoparmelia californica** Hale - 38938 (3, Pritchett trail, on sandstone)
- Xanthoparmelia conspersa** (Ehrh. ex Ach.) Hale - Frequent, but rarely collected; 37876A (12, on sandstone boulders)
- Xanthoparmelia lineola** (E. C. Berry) Hale - Frequent; 38546 (5, on sandstone boulders and cactus pads), on sandstone boulders, 38937 (2, Campbell trail, on sandstone), 39043 (12, on boulder)
- Xanthoparmelia subdecipiens** (Vain. ex Lyngé) Hale - 39044 (12, on boulder)
- Xanthoria candelaria** (L.) Th. Fr. - Common; 34362 (11, on *Quercus agrifolia* twigs, bark), 39045 (12, on *Quercus agrifolia*), 39074 (1, on *Aesculus*)
- Xanthoria elegans** (Link) Th. Fr. - 38549 (5, in Desert section, on sandstone boulders)
- Xanthoria tenax** L. Lindblom - 39130 (5, on *Ephedra*)\*Lichenicole (lecidine black apothecia) - 38923 (2, Campbell trail, on *Phaeophyscia* on rock)
- \*Lichenicole (lecidine black apothecia) - 38941 (2, Campbell trail, on *Physcia tribacia* on rock)
- \*Lichenicole (lecidine black apothecia) - 38864 (8, on *Flavopunctelia flaventior* on *Quercus agrifolia*)
- \*Lichenicole - 38863 (8, on *Parmotrema austrosinense* on *Quercus*), 38974 (4, on *Parmotrema sinense* on *Quercus dumosa*)
- \*Lichenicole - 38975 (4, black apothecia on *Physcia* sp. on *Quercus dumosa*)

## The Lichens of the Horseshoe Ranch Wildlife Area

John Villella  
182 Van Ness Ave.  
Ashland, OR 97520  
johnvillella@yahoo.com

with

Shelly Benson, Tom Carlberg, Jesse Miller, Rachael Patton, and Eric Peterson

### INTRODUCTION

On April 17<sup>th</sup> seven CALS members met at the Horseshoe Ranch Wildlife Area (HRWA) in Siskiyou County to collect and catalog the lichens of the area. Horseshoe Ranch is a 8,871 acre state wildlife preserve owned by California Fish and Game, situated between the Iron Gate Reservoir on the Klamath River and the Oregon border. The HRWA is contiguous with BLM lands in California and the Soda Mountain Wilderness in the Cascade-Siskiyou National Monument in Oregon. The dominant trees include: *Pinus ponderosa*, *Quercus garryana*, *Quercus kelloggii*, *Juniperus occidentalis*, *Pseudotsuga menziesii* and *Populus trichocarpa*.

### GEOLOGICAL, BOTANICAL AND WILDLIFE SETTING

The HRWA is located in the Cascade Range geologic province on the western slope of the Cascades and covers much of the lower reaches of Scotch Creek watershed. The Scotch Creek watershed begins in Oregon on the south face of Pilot Rock, the iconic geologic feature of the Siskiyou Pass area. The geology of these lands consists of Cenozoic volcanic rock types identified as lava flows and pyroclastic deposits, primarily of andesite and basalt composition. Volcanically derived sediments and soils are abundant on the surface in some areas, while others contain bare rock from recent lava flows (Schultz 2001).

Despite its location on the west slope of the Cascades the HRWA lies at a botanical crossroads between the California and Great Basin floristic provinces (Hickman 1993). The vascular flora includes species found in the Cascade Range, Northwestern California, and Modoc Plateau. Just south of the study area, the Klamath River forms a dispersal corridor as it cuts across the Cascade Range from the east, connecting the high deserts of central Oregon with the forested Klamath Mountains to the west. As a result, plant communities not usually found on the west slope of the Cascades can be seen at HRWA: desert plants such as *Juniperus*

*occidentalis*, *Ericameria nauseosa*, and *Purshia tridentata* grow alongside plants of the California Floristic Province, such as *Ceanothus cuneatus*, *Rhamnus illicifolia* and *Quercus garryana*. The influence of the Pacific Northwest on plant communities is also apparent in the mixed conifer stands.

The HRWA and surrounding lands provide winter habitat for several mule deer herds. Although mule deer reside on the HRWA year round, most are migratory with the bulk of the population summering in Oregon. The quality and extent of winter range habitats on the HRWA and surrounding lands is critical to the persistence and health of mule deer herds in this region. Wild horses have been documented foraging in the HRWA for many years.

The first unregulated grazing by sheep and cattle started shortly after the Gold Rush. During a period of ranching in the 1850s through the 1930s, limited irrigation projects began to move water about the landscape. Hunters depleted game and local extinctions of various animal species took place; wolves, antelope, big horned sheep and grizzlies are no longer found in the area. During this ranching period, cattle and sheep grazed throughout the study area, both on an official and unofficial basis. By the early 20th century many of the pastures, rangelands and riparian communities had been badly damaged by overgrazing and indiscriminate burning. Although no historical records of lichens could be found for the HRWA from this period, it is assumed that changes in the lichen communities occurred. The introduction of non-native grasses for forage, the impact of heavy grazing and changes in the hydrologic and fire regimes of the study area all had an impact on lichens. Recovery is continuing to this day. In comparison, on the nearby Cascade Siskiyou National Monument, in areas with little or no grazing history, lichens communities include vagrants and soil crusts.

## COMPOSITION OF THE LICHEN FLORA

Although the HRWA is noted for several rare vascular plants that are found there such as California's only known populations of *Fritillaria gentneri*, a Klamath-Siskiyou endemic, the lichens of the area have not been previously cataloged. The geological and floristic diversity provides some interesting lichen habitats to explore.

Habitats that were visited during this field trip include: large exposed rock outcrops, shrub communities dominated by *Ceanothus cuneatus*, *Quercus garryana* woodlands, mixed conifer/hardwood forests and creekside areas. The mid-elevation area along the Klamath river west of the Cascade Crest and east of the Coast Ranges is noted for its conspicuous populations of *Umbilicaria phaea* var. *coccinea* that dominate the saxicolous lichen community in places. The presence of this regional endemic is what drew us to the area.

The lichens observed at the HRWA include species that are common members of several "floristic elements" (as described by Brodo 2001), found in northern California and southern Oregon. We found species from the Temperate Pacific, Western Montane, and Southwest Desert "floristic elements".

The lichen list presented here (Table 1.) is not a complete list of the lichens occurring at the HRWA, but is a representative sampling of lichen species found in a small area of the preserve. We spent one day collecting; we covered less than three acres of

area, and restricted our foray to easily accessible areas along the trail/road. Under-represented groups include epiphytic, terricolous and aquatic lichens. There are many unexplored acres still awaiting lichenizing in the HRWA.

Lichens of the Temperate Element (Pacific Northwest) are most commonly found on the west slope of the Cascades (McCune and Geiser 2009) and include: *Collema nigrescens*, *Leptogium palmatum*, *Ophioparma rubricosa*, *Physcia aipolia*, *Physcia tenella*, *Physconia americana*, *Polychidium muscicola*, *Physconia isidiigera*, and *Xanthomendoza hasseana*.

Lichens of the Western Montane Element are more common east of the Cascades (McCune and Geiser 2009) and include: *Peltigera malacea*, *Phaeophyscia sciastra*, *Physcia biziana*, *Rhizoplaca chrysoleuca*, *Tuckermannopsis platyphylla*, *Xanthoparmelia loxodes*, and *Xanthoparmelia plittii*.

Lichens of the Southwestern Deserts Element are more common in the Southwest (Nash *et. al* 2004) and include: *Aspicilia desertorum*, *Lecanora neodegelii*, and *Peltula euploca*.

Lichens that are widespread in Northern California (Brodo 2001) include: *Cladonia ochrochlora*, *Dermatocarpon miniatum*, *Dermatocarpon reticulatum*, *Diploschistes muscorum*, *Evernia prunastri*, *Hypogymnia imshaugii*, *Letharia columbiana*, *Letharia vulpina*, *Leptogium lichenoides*, *Melanohalea exasperatula*, *Melanohalea subolivacea*, *Parmelia hygrophila*, *Peltigera ponojensis*, *Physcia adscendens*, *Physcia biziana*, *Platismatia glauca*, *Pleopsidium flavum*, *Staurothele fissa*, *Umbilicaria phaea*, *Xanthomendoza fulva*, *Xanthoparmelia coloradoensis*, and *Xanthoria elegans*.

Lichens that are found on Calcareous substrates (Brodo 2001), (Nash *et. al* 2004) include: *Aspicilia contorta*, *Lecanora neodegelii*, *Leptogium tenuissimum*, and *Lichinella nigrifella*.

Several other species from the list are worthy of comment. The global distribution of *Lecanora neodegelii* is limited to parts of Europe, the Himalayas in Asia, and the state of Arizona (Nash *et. al* 2004) where it is found on limestone and sandstone and other more-or-less calcareous substrates. It has not been reported from California (Tucker 2009) until this publication.

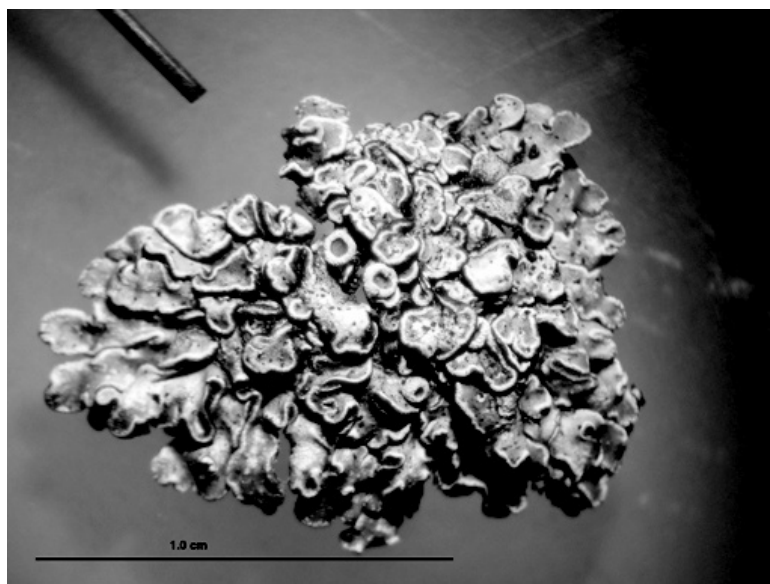


Figure 1. *Lecanora neodegelii*, a representative of the Southwestern Deserts Element found at the HRWA. Photography by Tom Carlberg.

Table 1. Lichens of Horseshoe Ranch Wildlife Area, Siskiyou County CA.

*Aspicilia contorta* (Hoffm.) Kremp.  
*Aspicilia desertorum* (Kremp.) Mereschk.  
*Cladonia ochrochlora* Flörke  
*Collema nigrescens* (Hudson) DC.  
*Chaenothecopsis pusilla*  
*Cyphelium occidentale* Herre  
*Dermatocarpon miniatum* (L.) W. Mann  
*Dermatocarpon reticulatum* H. Magn.  
*Diploschistes muscorum* (Scop.) R. Sant. ssp. muscorum  
*Evernia prunastri* (L.) Ach.  
*Hypocenomyce castaneocinerea* (Räsänen) Timdal  
*Hypogymnia imshaugii* Krog  
*Lecanora neodegelii* B. D. Ryan & T. H. Nash (= *Squamarina degelii* Poelt)  
*Leptogium lichenoides* (L.) Zahlbr.  
*Leptogium palmatum* (Hudson) Mont.  
*Leptogium tenuissimum* (Dickson) Körber  
*Letharia vulpina* (L.) Hue  
*Letharia columbiana* (Nutt.) J. W. Thomson  
*Lichinella nigritella* (Lettau) Moreno & Egea  
*Lobothallia alphoplaca* (Wahlenb.) Hafellner  
*Melanelixia subargentifera* (Nyl.) O. Blanco et al.  
*Melanohalea exasperatula* (Nyl.) O. Blanco et al.  
*Melanohalea subolivacea* (Nyl.) O. Blanco et al.  
*Ophioparma rubricosa* (Müll. Arg.) S. Ekman  
*Parmelia hygrophila* Goward & Ahti  
*Peltigera malacea* (Ach.) Funck  
*Peltigera ponojensis* Gyelnik  
*Peltula euploca* (Ach.) Poelt  
*Phaeophyscia sciastra* (Ach.) Moberg  
*Physcia adscendens* (Fr.) H. Olivier  
*Physcia aipolia* (Ehrh. Ex Humb.) Fűrnr. var. *aipolia*  
*Physcia biziana* (A. Massal.) Zahlbr.  
*Physcia tenella* (Scop.) DC.  
*Physconia americana* Essl.  
*Physconia isidiigera* (Zahlbr.) Essl.  
*Platismatia glauca* (L.) Culb. & C. Culb.  
*Pleopsidium flavum* (Bellardi) Körber  
*Polychidium muscicola* (Sw.) Gray  
*Rhizoplaca chrysoleuca* (Sm.) Zopf  
*Staurothele fissa* (Taylor) Zwackh  
*Thelomma ocellatum* (Körber) Tibell  
*Tuckermannopsis platyphylla* (Tuck.) Hale  
*Umbilicaria phaea* var. *phaea* Tuck.  
*Umbilicaria phaea* var. *coccinea* Llano  
*Xanthomendoza fulva* (Hoffm.) Søchting, Kärnefelt & S. Kondr.  
*Xanthomendoza hasseana* (Räsänen) Søchting, Kärnefelt & S. Kondr.  
*Xanthoparmelia coloradoensis* (Gyelnik) Hale  
*Xanthoparmelia loxodes* (Nyl.) Blanco, Crespo, Elix, Hawksw. & Lumbsch  
*Xanthoparmelia plittii* (Gyelnik) Hale  
*Xanthoria elegans* (Link) Th. Fr.

*Squamarina lentigera*, a closely-related species, is found on calcareous soils in California. At Horseshoe Ranch we found *Lecanora neodegelii* (Figure 1) on calcareous rocks.

*Umbilicaria phaea* var. *coccinea* (Figure 2) is the only lichen we observed that is thought to be restricted in California to the Klamath-Siskiyou region, where it is locally common (McCune and Geiser 2009). Outside of this core area it extends as far north as central Washington, where it is quite rare. It is a Pacific Northwest endemic.

*Lobothallia alphoplaca* (Figure 3) is unreported for California in



Figure 2. *Umbilicaria phaea* var. *phaea* and *U. phaea* var. *coccinea* growing intermixed. Photography by John Villevilla. The varieties are difficult to distinguish in black and white, however the photograph is provided in color on the front cover.

Tucker 2009, but in a personal communication (Tucker 2010), Shirley Tucker states that “Judy and Ron Robertson have listed *L. alphoplaca* in several field trip publications for central and northern CA, and I respect their opinion. I plan to change the listing in the catalog to accept the recent reports of *L. alphoplaca* for inland California as valid, in view of your report as well as that of the Robertson’s”.

*Thelloma ocellatum* was found on wooden corral boards at the ranch house. The distribution of this

mazaerial lichen along the fence was very interesting. It was found only along the fence boards in the immediate vicinity of the vertical metal fence posts. When one thinks of the nitrate enrichment taking place beneath the posts, caused by perching birds, the mystery behind the distribution disappears.

#### CONCLUSION AND ACKNOWLEDGMENTS

Participants in this field trip include the authors and Dennis Ball and Celise Sharpe. After a long day of collecting, a subset of the group spent the next day in the lab of the Cryptogam Biodiversity Observatory at Southern Oregon University just over the border in Ashland, Oregon. Special thanks to Dr. Steve Jessup for arranging the use of the lab, this made the trip worthwhile for folks traveling a long distance to attend the field trip. Thanks to Gretchen Vos, Jason Clark and Daphne Stone who made helpful comments on this paper.

We hope that this paper will provide a preliminary lichen list to the public and the land managers of this unique area.

#### LITERATURE CITED

- Schultz, C.M. 2001. Environmental Assessment for a proposal to amend the Redding Resource Management Plan regarding the Horseshoe Ranch Wildlife Area. USDI Environmental Assessment RE-2001-24.
- Brodo, I.M., S.D. Sharnoff, S. Sharnoff. 2001. Lichens of North America. Yale University Press, New Haven.
- Nash, T.H. III, B.D. Ryan, P. Diederich, C. Gries, F. Bungartz. 2004. Lichen flora of the greater Sonoran Desert region volumes I - III. Lichens Unlimited, Tempe, AZ.
- Tucker, S. 2009. Updated lichen taxa of California, 2009. Private publication available through the California Lichen Society.
- McCune, B., Geiser L. 2009. The Lichens of the Pacific Northwest. OSU Press, Corvallis, OR

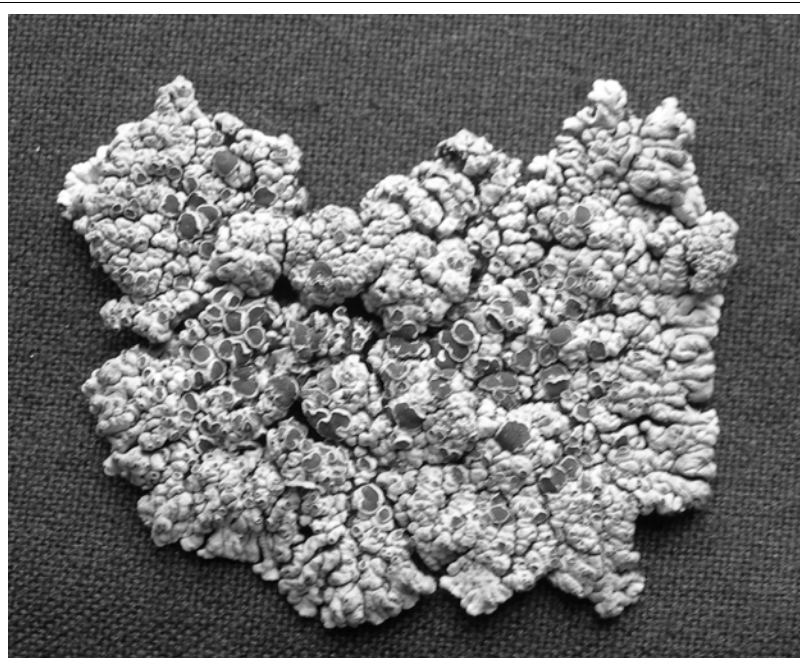


Figure 3. *Lobothallia alphoplaca*. Photography by Tom Carlberg.

## Lichens that Grow on *Ephedra*

Shirley Tucker  
 Santa Barbara Botanic Garden  
 1212 Mission Canyon Rd.  
 Santa Barbara, California, 93105  
 tucker2440@cox.net

Jim Bennett's article (2009) about a lichen growing on *Equisetum* (Scouring Rush or Horsetail) in coastal Oregon inspired me to report lichens found growing on another unusual substrate, *Ephedra*. This relic Gymnosperm genus includes seven species native to desert regions of California (Hickman 1993) and other arid regions of the southwest United States. The common names of *Ephedra* are Mexican Tea, Mormon Tea, Desert Tea, or Joint Pine. *Ephedra* species are shrubs appearing to consist mostly of stiff gray or pale green stems, although there are tiny scale leaves arranged oppositely or in whorls. They bear male catkins on male plants and seeds on female plants.

The Santa Barbara Botanic Garden in Santa Barbara, California has a Section featuring desert plants, including *Ephedra viridis*. On dead stems of this *Ephedra*, I found a dozen species of lichens, listed below. The colonies were tiny, and all species were common on other substrates in the Botanic Garden, such as Live oak (*Quercus agrifolia*) and Mesquite (*Prosopis* sp.) nearby.

*Caloplaca holocarpa* (Hoffm. ex Ach.) A. E. Wade  
*Caloplaca stanfordensis* H. Magn.  
*Candelaria pacifica* Westberg  
*Cliostomum griffithii* (Sm.) Coppins  
*Diploicia canescens* (Dicks.) A. Massal.

*Hyperphyscia adglutinata* (Flörke) H. Mayrhofer & Poelt  
*Lecanora dispersa* (Pers.) Sommerf.  
*Physcia adscendens* (Fr.) H. Olivier  
*Rinodina cf. santae-monicae* H. Magn.  
*Teloschistes chrysophthalmus* (L.) Th. Fr.  
*Xanthomendoza fulva* (Hoffm.) Søchting, Kärnefelt & S. Y. Kondr.  
*Xanthoria tenax* L. Lindl.

A friend in Texas has sent me a lichen collection he made on *Ephedra* sp. near Seguin, Texas (near San Antonio). The lichens on this *Ephedra* were entirely different species from those on the California *Ephedra*, but were locally common on other woody substrates. Collectors in drier parts of California and nearby states should check *Ephedra* for lichens – the dead stems can be easily collected, and removing them does no harm to the plants.

### LITERATURE CITED

Hickman, J. C. (Ed.). 1993. The Jepson manual: Higher plants of California. University of California Press, Berkeley and Los Angeles.  
 Bennett, J. P. 2009. A lichen that grows on *Equisetum*. *Evansia* 26(3): 128-129.

## **Joshua Tree NP Student Climate Change Summit, Student Voices**

### **JOSHUA TREE NATIONAL PARK STUDENT CLIMATE CHANGE SUMMIT**

**Seth Shteir**

California Desert Field Representative  
National Parks Conservation Association  
61325 Twentynine Palms Highway, Suite B  
Joshua Tree, CA 92252  
sshteir@npca.org

Joshua Tree National Park, the Wildlands Conservancy, and the National Parks Conservation Association convened the student climate change summit on May 3, 2010 with the goal of teaching students about climate change, informing them about how climate change will affect park resources, and encouraging students to engage their schools and communities in an ongoing dialog about climate change. But it also took dedicated teachers and administrators to make the summit happen.

In the morning students attended presentations about climate change, but after lunch, they hiked to a remote, jumbled pile of rocks where they measured, recorded, and photographed lichens as part of a long term scientific study to see if they are being affected by air quality and climate change. Lichens were a subject that teachers and students from the previous year's summit had said fascinated them. Joshua Tree National Park responded by devising a program that could teach students about biology, climate change, and scientific inquiry.

In the afternoon, students recorded the different species of lichens on rock panels to the Southeast of the visitor's center. They identified different species of lichen, traced them carefully on transparencies with dry erase markers, and then photographed the panels. Students who participate in the summit next year will follow the same protocol to see if there have been changes in the distribution of the lichens.

The following essays were written by two Yucca Valley High School students who participated in the student summit. What's clear from their writing is that recording lichens not only gave them the opportunity to learn about scientific inquiry, but changed the way they view science, the lichens themselves and climate change.

### **LICHEN PROJECT**

**Krista Blevins**

Yucca Valley High School

On May 3, 2010, I was involved in an amazing opportunity to participate in Joshua Tree National Park's first lichen study. Before going on this trip I didn't know much about lichens other than, "It's the stuff on rocks that looks like moss, but in the wrong environment". I have been going to JTNP for over ten years now and I always pondered the name of the green, black, and orange "stuff" growing on the boulders. The park staff that ran the project did a wonderful job explaining what lichens are and how they are useful. My love of nature and interest in how to measure the amount of pollution in the air naturally went hand in hand in this study.

I learned lichens are composite organisms consisting of a symbiotic association between a fungus and a photosynthetic partner, such as green alga or cyanobacteria. Some lichens have the aspect of leaves (foliose lichens); others cover the substrate like a crust (crustose lichens). They come in many different colors such as different shades of: rust, mustard yellow, pale green, and black. Lichens do not need much water to survive. According to researchers lichens can live for a thousand years if the conditions are right. Such conditions include type of environment and the amount of pollution in the air. Too much pollution can destroy them. We can determine how long the lichens have been here through this study.

For the project we taped an 8" by 11" area to observe. Our space had four to seven different kinds of lichen, so it took a bit of time to complete. Painter's tape wasn't the best choice because it kept falling off, but it did the job and didn't destroy any of the lichen. During data collection, the first thing we did was write down observations of the lichen: foliose or crustose, color, texture, size, and other characteristics that stood out. After taking pictures of each kind of lichen, we put up a transparent grid and plotted in each square where lichen appeared.

I liked this project. In the future, I suggest staff to remind students to wear sunscreen, use a different



way of outlining the observation area, and to give us a lot more time. I am happy to say all my questions were answered and I felt very comfortable working with the researchers. I will keep tabs on future studies and believe this project will benefit the park by showing what kind of air pollution is going on within the park's environment. This study is perfect to figure out why lichen are depleting in some areas of the park. I learned the decrease may be due to an increase in air pollution.

### STUDENT CLIMATE CHANGE SUMMIT

**Kaitlyn Wooling**  
Yucca Valley High School

The Climate Change Student Summit that I attended in Black Rock was an extraordinary experience with a meaningful and educational hands-on activity. This activity, in particular, was becoming guinea pigs for the new study of lichen. I know it may seem odd and boring to some of you; I was even thinking, "Why am I going to spend my whole day with some moss?" However, that thought quickly left my mind when I actually understood the reason why we were examining the lichen. It is quite intriguing how there is a great importance to this small organic structure. In fact, lichens are extremely vital for the survival of several animal species. It simply took some participation for our group to grasp its significance.

Lichens live off of the air with the help of its algae friend that lives within, providing the lichen with nutrients it needs to survive. Lichens absorb the contents in the air, making it directly resemble the properties in our atmosphere. A change in the atmosphere produces a change in the lichen. Therefore, if there is a significant decrease in the lichen, then it shows that there has been a significant increase of pollution in our atmosphere. This lichen study could produce valuable evidence for climate change, potentially replacing some expensive equipment in which we invest our tax dollars.

Our job was to measure the amount of lichen on a given rock while physically describing each species to the best of our abilities. That meant color, size, texture, and type of species. The two general types are crustose and foliose. Foliose, as the name suggests, has a crusty, or flaky, surface and falls off the rock easily. Crustose, however, hugs onto the rock with a stronger grip and has a more bumpy appearance. With pens, paper, and magnifying-glasses in hand, we worked away in the beaming desert sun. The only minor problem was the tape, which kept falling off, and I would suggest using a stronger tape next time. With that in mind, I hope to see students in the future returning to the same rocks that we analyzed and see if there is a critical change in the lichen, and therefore our climate. To know that we were being a part of the science community was an honor that filled us with pride, and there is no question that I will be attending future Climate Change Summits in the years to come.

### In Memory of Judy Robertson



Judith (Judy) Robertson, a long-time Sonoma County resident, passed away peacefully at home on July 10, 2010, following a two-year battle with cancer. She was sixty-four.

Judy was born in Las Vegas, Nevada, to Bruce Sutton, pioneer Las Vegas businessman and Grand Master of the Las Vegas Masonic Temple, and Vera Sutton, former Mesquite Club President and charter member. Raised in Las Vegas, Judy was a Grand Worthy Advisor of the Las Vegas Chapter of the Rainbow Girls, a role that prepared her for a lifetime of service and community involvement. She was educated at the University of Utah in Salt Lake City, and the University of California San Francisco, where she became reacquainted with Ronald Robertson, her sixth grade classmate from the John S. Park Elementary school. They married in 1972 and moved to Sonoma County, where they raised cows, chickens, rabbits, and two daughters.

Judy was a former president of the California Lichen Society, and an expert on local lichens. Her family will dedicate a bench to her memory at Spring Lake Park in Santa Rosa, near the pedestrian pathway, where she spent many cherished hours walking with family and friends.

The following contributions were provided by Judy's lichenological friends.



Judy and Ron Robertson joined CALS in 1997. Judy's lichen collecting started with the CALS

Wantrup Preserve field trip that year. She dove right in and started taking lichen classes being taught by various members. Judy soon passed most of her teachers in her knowledge about lichens, and she did it with great rapidity. In the meantime my second term as president was coming to a close and 1998 found Judy ready to take over the Presidency. Besides her growing knowledge of lichens, she also had the qualification of having been active in a non profit organization, and knew how they worked. Bear in mind that Judy held a full time position as a technician in a hospital, yet CALS flourished under her leadership. Field trips and workshops kept her busy.

Ron joined her in her lichen studies and soon acquired a vast knowledge about them himself. Ron became a victim of cancer in January of 2009, after a long battle with that disease. Judy was fighting for her life with esophageal cancer around the time of his death. Although she overcame it temporarily and was able to take part in the CALS survey of the lichens in Claremont Canyon, and was able to help Irwin Brodo with his crustose workshop in Bodega Bay in 2010, an aggressive reappearance of her cancer took her life later that year. She was a determined fighter right to the end.

Judy's approach to life and lichens is exemplified in the following excerpt from her "President's Message" in the 1999 Bulletin: "To search, to expect the unexpected, to look for the surprises: the study of lichens affords all of these goals. Building stage by stage to become familiar with the common lichens

and then to add to that knowledge a new species, a new location, a new interaction. That is the delight of what we do."

~ Janet Doell



Judy Robertson was such a lovely person, the kind of person we call a "peach". She was always friendly and helpful. The last time I saw her she was once again giving her all and helping all of us to learn about lichens at Dr. Ernie Brodo's class in Bodega Bay. We will all miss her.

~ Nancy Hillyard



I got to know Judy Robertson when she came all the way to Maine to take my Crustose Lichens of Maine course at Eagle Hill. She actually took the course twice, although I felt that there was little I could teach her. There was no one in the class who could match her industry, knowledge and focus. She was simply the best in a very good class of budding lichenologists. When I was asked to repeat the workshop in California in February, I immediately thought of her and hoped we could persuade her to assist me. To have tried to tackle the California crusts without the help of a local expert was scary, and Judy, despite her precarious health, agreed. She was a mountain of help going far beyond anything I would have dared request. She helped the students throughout the week and selected all the collecting areas, gathered the literature and provided the other "laboratory stuff" needed for the success of the course. The workshop would have been impossible without her. And, as others have noted, she provided all this assistance with a smile and gentle demeanor. We have all lost a wonderful friend and colleague.

~ Ernie Brodo



The first time I met Judy was at the Regional Parks Botanic Garden, Tilden Regional Park, in Berkeley, about 10 years ago. She had come to present a lichen workshop for the Garden's docents. I had been interested in symbiosis and Judy's



presentation encouraged me to join the California Lichen Society. I joined her and Bill Hill and Mikki McGee and Janet Doell and numerous others who help with the lichen exhibits at the annual SF Fungus Fairs and later also the annual CALDay lichen exhibits at the Jepson Herbarium at the University of California, Berkeley. Judy helped me with preparing some of the lichen exhibits' demonstrations for different themes. She also helped with the lichens' identifications for a lichen inventory at the Garden.

Judy was an incredible taxonomist. It was always fascinating to be at her side while she explained lichen structures and gave names to the lichens we saw on all the field trips.

I miss Judy. She was a quiet, sympathetic, wonderful, dedicated soul.

~ Irene Winston



I remember one time when Ron was still with us. Judy and Ron came out to Audubon Canyon Ranch along with their two beautiful daughters, to hike with the Marin County Naturalist, David Herlocker. Ron and David were like two kids in a candy store when they got out on the trails.

There were some younger kids along that day. We had stopped for our lunch next to a little creek. Judy and I were hanging out with the kids by the water and thought it would be fun to show them how to make face paint out of soft creek rocks. Well, we couldn't talk the kids into painting their faces but

Judy and I had a good laugh (at ourselves!) as we painted up our own faces. I will always remember Judy’s gentle outlook on life – a lesson we can all be reminded of.

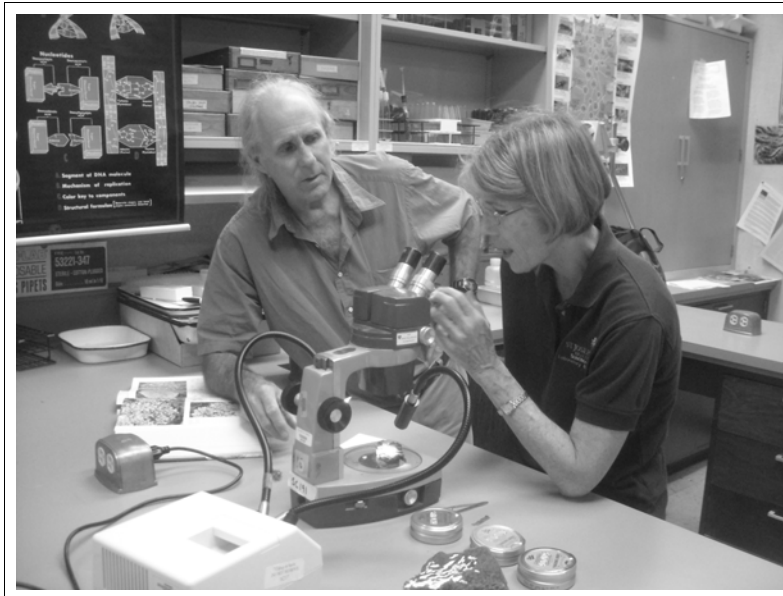
Judy was a ray of sunshine on a cloudy day – actually a whole bunch of sunshine!

~ Marge Gibbs (a fellow nature lover)



I was always astounded at the modesty that Judy exhibited around her lichenological skills, considering that she was one of the most knowledgeable people in the world when it came to the general California flora. I remember discussions with her where her part would go something like this: “Well, Tom, the color of the thallus seems like it might contain usnic acid, and the rims of the apothecia aren’t as crenate as I’m used to seeing, and I think it only grows on siliceous substrates. But I don’t really know much about it; what do you think?” I always had to remind myself that she really believed what she said; her modesty was overwhelming. She simply understood that there was so much she did *not* know. And while this is certainly true for all of us, it was a lot less true for Judy.

~ Tom Carlberg



So young. And she was one of the most amazingly lovely people I have ever met. I remember how kind she was to me at the Fungus Fairs; and she offered me rides to lichen outings since I don’t own a car. I miss her too and send my sympathy.

~ Claire Englander



I met Judy and Ron in 2006 when they visited Oregon for a Northwest Lichenologist foray at Opal Creek in the Willamette National Forest. Judy shared her enthusiasm with the group, making observations on the differences between the lichens she encountered in this new area and her California home, and helping to “cross pollinate” with the lichenologists to the north. Despite being outside of her area Judy was able to recognize many of the lichens she encountered. Her incredible knowledge and love of crustose lichens was apparent then as well as when I next encountered her at Bodega Bay in early 2010. Despite her poor health Judy put her all into that workshop and enriched the experience for all who attended. Her gentle thorough nature will be missed in California and beyond.

~ John Villella

*Compiled by Tom Carlberg with photographs from Bill Hill, John Villella, and Eric Peterson*

## The Crustose Lichens of California Workshop

Daphne Stone  
30567 Le Bleu Rd.  
Eugene, OR 97405  
daphstone@gmail.com

John Vilella  
182 Van Ness Ave.  
Ashland, OR 97520  
johnvillella@yahoo.com

Recently California lichenologists were given a rare treat, a workshop put on by the Jepson Herbarium at UC Berkley devoted exclusively to crustose lichens. This workshop was taught by Irwin Brodo and Judy Robertson, at Bodega Bay Marine Lab. What a great experience!

Each morning, Ernie gave a lecture on a group of crusts (complete with handouts), his focus was on morphology, ascus characters, phylogeny and helpful hints for identification. His lectures were illustrated with lots of slides of species from California and the east coast. The lectures were informal and participants were free to ask questions as he went. This worked well; some of the lectures lasted all morning, and at the end all felt they had really soaked up the information.

Afternoons were field-trip time. Collections were made locally at the Bodega Bay Marine Lab, and as is the way of lichenologists, progress was slow in each habitat. Huge old Monterey cypress trees yielded *Gyalecta*, *Topelia*, and *Coenogonium*, just to name a few. One afternoon was spent in the rolling oak covered hills of Pepperwood Preserve, north of Santa Rosa, where collections were made from inland species on trees, wooden fences and low rock outcrops. This foray yielded two *Thelomma* species, several *Caloplaca* species, and a very diverse epiphytic crust community. A rocky point above Bodega Bay yielded a lot of coastal endemics. Lichens found there included *Pertusaria californica*, *Cladidium bolanderi*, *Buellia halonia*, *Lecanora phryginitus*, and amazingly, a minute forest of the non-lichenized *Sphinctrina leucopoda*, growing as a parasite on *Lecanora californica* on exposed rock! On the rocky coastline fewer lichens were found including *Caloplaca coralloides* and the tiny *Collempsidium halodytes*. This cryptic lichen is just perithecia in a microscopic patch of brown thallus.

Late afternoons and after dinner, participants worked long and hard on identification. Here, Judy

Robertson showed her expertise in identifying the local flora. Her enthusiasm for the crusts was infectious, as she made the rounds through the lab her “ooh’s” and “aah’s” could be heard as she looked at a plethora of specimens being examined. Many local species were unfamiliar to Ernie, so he worked along with students on identification. Often hours went into



Participants collecting corticolous lichens at the Bodega Bay residence area.

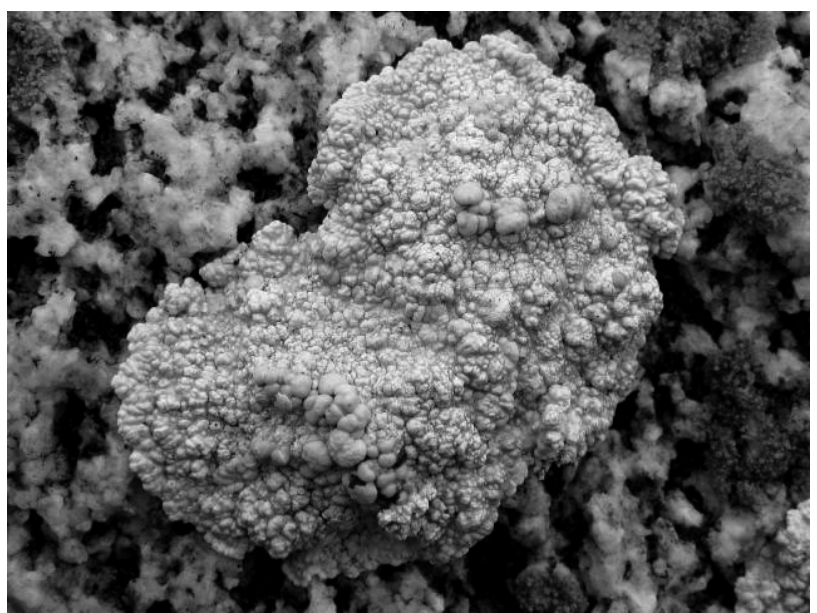
the identification of one specimen, and many people worked in teams, sharing knowledge and skills. Identified collections were shared so that all benefited from the hard work of others (see list below). Both Judy and Ernie were incredibly patient

with us as we absorbed terminology and techniques. Notable quote: "My kingdom for a spore!"

Meals were a time to get to know each other. The participants came from a wide range of places including: New Mexico, Washington, Oregon, California and even Finland.

Ernie and his wife Fenja were really enjoyable companions, giving participants the opportunity to chat and get to know them during this relaxing time. The class overall was a real boost for those learning microlichens. The Jepson Herbarium class was the perfect way to jump in to crusts and Ernie and Judy were the perfect folks to teach it.

Table 1 provides a list of the lichens that were identified during the workshop.



*Lecanora pinguis* from headland rocks at Bodega Bay.



*Pertusaria santamonicae* an epiphytic crust seen at the Pepperwood Preserve.

Table 1: list of the lichens that were identified during the workshop. Initials of identifier: KB Katie Beck, SB Shelly Benson, IMB Irwin Brodo, TC Tom Carlberg, SG Shana Gross, AH Ann Hanson, BH, Bill Hill, NH Nancy Hillyard, DS Daphne Stone, TS, Teresa Sholars, JV John Vilella

Name	General Location	Specific Location	Substrate	ID
<i>Arthonia cinnabarina</i> (DC.) Wallr.	UC Bodega Marine Lab	BML residences	<i>Baccharis pilularis</i>	JV
<i>Arthonia pruinata</i> (Pers.) A.L. Sm.	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	IMB
<i>Arthopyrenia cf carinthiaca</i>	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	DS/TC
<i>Aspicilia caesiocinera</i> (Nyl.) ex Malbr. Arnold	Pepperwood Preserve	Rock outcrops above Red Corral	rock	AH
<i>Aspicilia cyanescens</i> Owe- Larss & A. Nordin	Pepperwood Preserve	Rock outcrops above Red Corral	rock	SG
<i>Bacidina cf laurocerasi</i>	UC Bodega Marine Lab	BML residences	<i>Baccharis pilularis</i>	
<i>Bacidina ramea</i> S. Ekman	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	IMB
<i>Buellia halonia</i> (Ach.) Tuck.	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	NH
<i>Buellia penichra</i> (Tuck.) Hasse	UC Bodega Marine Lab	Intersection of Westshore & Lab entrance Rd.	Monterey pine	AH/SB
<i>Buellia punctata</i> (Hoffm.) A. Massal.	Pepperwood Preserve	Posts of Red Corral	wood	TC
<i>Buellia stellulata</i> (Taylor) Mudd	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	TC
<i>Calicium abietinum</i> Pers.	Pepperwood Preserve	post by schist outcrop	wood	SB
<i>Caloplaca cerina</i> (Hoffm.) Th. Fr.	Pepperwood Preserve	Oaks by Red Corral	<i>Quercus</i>	JV
<i>Caloplaca coralloides</i> (Tuck.) Hulting	UC Bodega Marine Lab	Rocks in splash zone	on granite	not collected
<i>Caloplaca decipiens</i> (Arnold) Blomb. & Forss.	Pepperwood Preserve	Rock outcrops above Red Corral	rock	KB
<i>Caloplaca inconspecta</i> Arup	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	NH
<i>Caloplaca luteominia</i> (Tuck.) Zahlbr. var. <i>luteominia</i>	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	AM/BH
<i>Cladidium bolanderi</i> (Tuck.) B.D. Ryan	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	not collected
<i>Cresponea cf chloroconia</i>	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	BH
<i>Diploschistes actinostomus</i> (Ach.) Zahlbr.	Pepperwood Preserve	Rock outcrops above Red Corral	rock	CB/NH/ TC
<i>Diploschistes muscorum</i> (Scop.) R. Sant.	UC Bodega Marine Lab	Trail between lab and dorms	<i>Cladonia sp.</i>	TC
<i>Endocarpon locosii</i> Müll Arg.	Pepperwood Preserve	Cypress above Red Corral	<i>Cupressus macrocarpa</i>	SB/TC
<i>Fuscopannaria cf</i> <i>mediterranea</i>	Pepperwood Preserve	Rock outcrops above Red Corral	rock	KB/DS/I MB
<i>Gyalecta herrei</i> Vezda	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	BH
<i>Lecanora californica</i> Brodo	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	KB

<i>Lecanora carpinea</i> (L.) Vainio	Pepperwood Preserve	Oaks by Red Corral	<i>Quercus</i>	IMB/TC
<i>Lecanora expallens</i> (Ach.)	UC Bodega Marine Lab	BML residences	<i>Baccharis pilularis</i>	JV
<i>Lecanora hybocarpa</i> (Tuck.) Brodo	Pepperwood Preserve	Oaks by Red Corral	<i>Quercus</i>	TC
<i>Lecanora phryganitis</i> Tuck.	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	not collected
<i>Lecanora pinguis</i> Tuck.	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	not collected
<i>Lecanora rupicola</i> (L.) Zahlbr.	Pepperwood Preserve	Rock outcrops above Red Corral	rock	DS
<i>Lecidea brodoana</i> Hertel & Leuckert	Pepperwood Preserve	Rock outcrops above Red Corral	rock	SG
<i>Lecidella elaeochromoides</i> (Nyl.) Knoph & Hertel	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	DS
<i>Ochrolechia subpallenscens</i> Vers.	Pepperwood Preserve	Oaks by Red Corral	<i>Quercus</i>	KB
<i>Ochrolechia tartarea</i> (L.) A. Massal.	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	SB/AH/ CB/NH/ TC
<i>Opegrapha atra</i> Pers.	UC Bodega Marine Lab	BML residences	<i>Baccharis pilularis</i>	DS
<i>Opegrapha herbarum</i> Mont.	UC Bodega Marine Lab	BML residences	<i>Baccharis pilularis</i>	JV
<i>Peltula bolanderi</i> (Tuck.) Wetmore	Pepperwood Preserve	Rock outcrops above Red Corral	rock	TC
<i>Peltula euploca</i> (Ach.) Poelt	Pepperwood Preserve	Rock outcrops above Red Corral	rock	TC
<i>Pertusaria amara</i> (Ach.) Nyl.	Pepperwood Preserve	Schist outcrop by Red Corral	schist	TC/IMB
<i>Pertusaria californica</i> Dibben	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	TS
<i>Pertusaria santamonicae</i> Dibben	Pepperwood Preserve	Oaks by Red Corral	<i>Quercus</i>	TC
<i>Phacopsis oxyspora</i> var. <i>fusca</i> (Tul.) Triebel & Rambold	Pepperwood Preserve	Rock outcrops above Red Corral	on <i>Flavoparmelia</i> <i>caperata</i>	JV
<i>Pyrrhospora quernea</i> (Dickson) Korber	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	Monterey pine	AH/SB
<i>Rhizocarpon obscuratum</i> (Ach.) A. Massal	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	AH/SB
<i>Rinodina cf bolanderi</i>	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	TC
<i>Sigridea californica</i> (Tuck.) Tehler	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	IMB
<i>Sphinctrina leucopoda</i> Nyl.	UC Bodega Marine Lab	Rock outcrops in coastal headlands	on granite	JV/DS
<i>Topelia californica</i> P.M. Jorgensen & Vesda	UC Bodega Marine Lab	Intersection of Westshore & housing entrance Rd.	<i>Cupressus macrocarpa</i>	IMB
<i>Trapeliopsis flexuosa</i> (Fr.) Coppins & P. James	Pepperwood Preserve	Posts of Red Corral	conifer lignum	TC
<i>Waynea californica</i> Moberg	Pepperwood Preserve	Cypress above Red Corral	<i>Cupressus macrocarpa</i>	DS



## A Preliminary List of the Lichen Flora of the San Francisco Presidio

Michael Rotter<sup>1</sup>

Presidio Native Plant Nursery  
Golden Gate National Parks Conservancy  
San Francisco CA  
mjrotter@gmail.com

### INTRODUCTION

Located at the Northern most end of the San Francisco peninsula, the Presidio is a unique mixture of cultural and natural heritage. As an army base from the beginning of European settlement up until 1994 many of its unique natural features have been preserved from the development that has almost completely changed the rest of the San Francisco peninsula. This unique heritage has led to an intense effort to preserve and restore some of the now rare communities of the bay area and much attention has been given to the Presidio's unique and endemic vascular plant flora (National Park Service and Presidio Trust 2001). These restoration efforts started soon after the army abandoned the base in 1994 and left it in the hands of the National Park Service and the Presidio Trust. The restoration efforts going on are having a clear impact on the native vascular vegetation, bringing back many extirpated species to the area and enlarging areas of remnant native habitats. One overlooked aspect of all the restoration efforts is the impact on the "lower" taxa. Although California has had a rich history of lichen collecting and an impressive checklist of 1690 taxa (Tucker and Ryan 2009), little has been done with the Presidio's lichen flora. Bolander, in his 1870 list of plants for the San Francisco area, included a list of lichens. The locality of these specimens were not included but probably included some specimens from the area of the Presidio. Even if Bolander included the locations of these lichens, the Presidio of 1870 is a radically different place than today's Presidio. A group from the California Lichen Society led by Doris Baltzo and Janet Doell came to the Presidio in 1997. This visit was composed of two trips and came up with a list of 77 different lichen taxa. This list included many crust lichens, and several specimens were sent to the herbarium at U.C. Berkley (J Doell, personal communication 11/17/2009). This list was, until the current investigation of the Presidio lichen, lost to the Presidio Natural Resources staff. In the whole of the Golden Gate National Recreation Area, only 5 citations from literature have lichen occurrences and

these only reference 7 lichen taxa (Bennett and Wetmore 2005). None of these records concern the Presidio specifically. This lack of insight to the Presidio lichen past makes it impossible to currently understand any change that happens to the Presidio lichen flora in an empirical context. The purpose of this list is to attempt a preliminary inventory of the Presidio's lichen flora in order that the National Park Service and the Presidio Trust can have a starting place when assessing how the management of the Presidio influences the lichen flora in the park. As trees are cut down for natural sand dunes, brush cleared for grasslands and landfills are hauled away the habitat is rapidly changing for the lichens that find a home in this urban park. Understanding these changes could have important implication for lichen species management in this rare urban national park.

### METHODS

Collection took place over the period of several months between February and November of 2009. Many locations in the Presidio were sampled but all fall into one of several categories; current restoration sites, restored and remnant sites, historical forests, non historical forests, non-historical buildings and structures. These were selected due to the change they have and might face in the coming decades. Collections were taken by searching the sites for representatives of the most common species. For time reasons and technical ability, only macro-lichens were sampled. These specimens were keyed with the help of several keys (listed in the citations). Voucher specimens are located at the California Academy of Sciences.

Additionally, existing collections were searched for any existing specimens from the Presidio. The Consortium of North American Lichen Herbaria database was searched online at <http://symbiota.org/nalichens/collections/index.php>. The herbarium at San Francisco State was visited and checked for specimens from the Presidio. Both of these searches were conducted in November of 2009.

The 1997 Lichen survey by CALS was also

<sup>1</sup> Currently of the Natchez Trace Parkway, National Park Service, Tupelo, Mississippi.

added to the collection list. The localities of these collections are marked in bold in the lichen records list (Table 1).

#### DISCUSSION

Table 1 represents 131 recordings of lichens and includes 81 taxa (including species only known to genus levels). The only records that had been included in the list are collections made by the author and from the CALS trip in 1997. Although San Francisco State University did contain specimens from other areas in the Golden Gate National Recreation Area, including localities in San Francisco, none of these were collected in the Presidio. There were also no records found from literature or database searches.

Several sources have mentioned previous collecting in the Presidio beyond those already discussed. Though efforts were made to verify those records no specimens, references or any other evidence could be found. It is possible that those records do exist and could become available as lichens get more attention in herbariums and as those herbariums make public their collection catalogues.

Table 1 represents only a start to a complete lichen flora of the Presidio. Many additional species exist inside the park. A careful search may reveal more species of macrolichens. As more restoration sites are finished, soils will be stabilized and existing plants will die or grow, creating new spots for lichen establishments. In this way, a complete lichen list could be used to research establishment of new lichen species. Another source to increase the list will be to look at all the microlichens. Particularly, species existing on the coastal bluffs would add a great diversity to the list. Another area to search would be the shore line and intertidal rocks for marine lichens.

As of the writing of this article CALS members have started work on a full inventory of the Presidio. This work will be exciting next step in the natural history of the Presidio. The work that will be completed in the next coming while will add an additional peg of knowledge into our understanding of not only the natural history of one of our national parks but give us a continuing understanding of the distribution that lichens have in California.

Lichens are probably one of the most diverse groups of organisms in the park. With a little time and resources spent towards this group, a greater and more knowledgeable appreciation for the Presidio's natural resources could be cultivated. Hopefully this list will leave the door open for a unique and exciting lichen future of the San Francisco Presidio.

All specimens collected by the author can be viewed at the California Academy of Science herbarium. Anyone willing to review the author's collection would be greatly appreciated. If any records omitted from this list are found or made the records should be given to the Presidio Trust Natural Resources or the author and vouchers should be deposited at the California Academy of Science. The author can be contacted at [mjrotter@gmail.com](mailto:mjrotter@gmail.com) or by phone at 231-250-3061 for any additional information. An excel file is also available with the complete details of all the records, including any specimens and names of collectors. This report and the 1997 report can also be obtained from the author or from the Presidio Trust Natural Resources.

Special thanks are needed to many of the individuals with the Presidio Natural Resources, Golden Gates National Parks Conservancy and the California Lichen Society. In particular, Kevin Phuong for his research help, Janet Doell for finding the old records, Brianna Schaffer for allowing time to work on the project and the encouragement to do it, and Tom Carlberg and Cheryl Beyer for inspiring this next round of lichen investigation. Without the passion and help of everyone involved in the protection of the Presidio this project would not have been started and I thank the whole Presidio family.

#### LITERATURE CITED

- Bennet, Wetmore. 2005. Lichens of the US National Parks. *The Bryologist* Vol 108 No 4.
- Bolander, Bruce 1870, *A Catalogue of the Plants Growing in the Vicinity of San Francisco*. Roman and CO. Publishers New York.
- Tucker, Ryan. *Constancea* 84: Revised Catalog of Lichens, Lichenicoles, and Allied Fungi in California (<http://ucjeps.berkeley.edu/constancea/84/>). Accessed on 10/24/2009
- United States Department of the Interior National Park Service, The Presidio Trust. 2001. Presidio of San Francisco Vegetation Management Plant and Environmental Assessment. National Park Service, Washington DC, Presidio, San Francisco CA.

#### LITERATURE USED IN IDENTIFICATION

- Brodo, Sharnoff, and Sharnoff, 2001. *Lichens of North America*. Yale University Press, New Haven.
- Elix, 1993. Progress in the Generic Delimitation of *Parmelia* Sensu Lato Lichens (Ascomycotina: Parmeliaceae) and a Synoptic Key to the Parmeliaceae. *The Bryologist*. Vol. 96 No. 3 pg.

359-383  
 Esslinger, T. L. 2009. A cumulative checklist for the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. North Dakota State University: <http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chcklst7.htm> (First Posted 1 December 1997, Most Recent Version (#15) 27 August 2009), Fargo, North Dakota. Accessed on 11/28/2009

Goward, McCune, and Meidinger 1994. The Lichens of British Columbia: Part 1 Foliose and Squamulose Species. Canadian Ministry of Forests Research Program, Victoria BC.

Goward 1994. The Lichens of British Columbia: Part 2 Fruticose Species. Canadian Ministry of Forests Research Program, Victoria BC.

Hale, Cole. 1988, Lichens of California. University of California Press, Berkley California

Hammer 1991, A Preliminary Synopsis of the Species of Cladonia in California and Adjacent Oregon. Mycotaxon. Vol. 38:169-197

McCune, Geiser, .2009. Macrolichens of the Pacific Northwest Second Edition. Oregon State University Press, Corvallis Oregon.

Nash III, Ryan, Gries, and Bungartz, (eds.) 2002. Lichen Flora of the Greater Sonoran Desert Region. Vol. I. Lichens Unlimited, Tempe, AZ.

Nash III, Ryan, Diederich, Gries and Bungartz (eds.) 2004. Lichen Flora of the Greater Sonoran Desert Region. Vol. II. Lichens Unlimited: Tempe, AZ.

Nash III, Gries, and Bungartz, (eds.) 2007. Lichen Flora of the Greater Sonoran Desert Region. Vol. 3. Lichens Unlimited, Tempe, AZ.

Tavares, Isabelle 1997. A Preliminary Key to the Usnea in California. Bulletin of the California Lichen Society. Vol. 4 No.2

Table 1: Lichen records of the Presidio. Localities in bold print were surveyed by CALS in 1997.

<b>Lichen Species</b>	<b>Presidio Vegetation Management Zone</b>
<i>Acarospora</i> sp.	<b>Inspiration Point</b>
<i>Apsicilla</i> sp.	<b>World War 2 Memorial Area, Inspiration Point</b>
<i>Buellia</i> sp.	<b>Inspiration Point</b>
<i>Caloplaca bolacina</i> (Tuck.) Herre	<b>Inspiration Point, World War 2 Memorial Area</b>
<i>Caloplaca saxicola</i> (Hoffm.) Nordin	<b>Inspiration Point</b>
<i>Caloplaca</i> sp.	<b>Inspiration Point, National Cemetery, Unknown</b>
<i>Candelariella</i> sp.	<b>Inspiration Point</b>
<i>Chrysothrix candelaris</i> (L.) J. R. Laundon	<b>Inspiration Point</b>
<i>Cladonia albonigra</i> Brodo & Ahti	Presidio Hills
<i>Cladonia asahinae</i> J. W. Thomson	Inspiration Point
<i>Cladonia coniocraea</i> (Flörke) Sprengel	El Polin
<i>Cladonia</i> cf. <i>chlorophaea</i> (Flörke ex Sommerf.) Sprengel	<b>Inspiration Point</b>
<i>Cladonia chlorophaea</i> group	<b>World War 2 Memorial Area</b>
<i>Cladonia</i> cf. <i>fimbriata</i> (L.) Fr.	<b>Inspiration Point</b>
<i>Cladonia furcata</i> (Hudson) Schrader	Elderberry Island, World War 2 Memorial Area
<i>Cladonia macilenta</i> Hoffm.	Horse Stables, Inspiration Point
<i>Cladonia</i> sp.	<b>World War 2 Memorial Area, Unknown</b>
<i>Chrysothrix candelaris</i> (L.) J.R. Laundon	Fort Scott
<i>Dimelina radiata</i> (?) (Tuck.) Müll. Arg.	<b>World War 2 Memorial Area</b>
<i>Diploschistes scruposus</i> (Schreber) Norman	<b>Unknown</b>
<i>Evernia prunastri</i> (L.) Ach.	Mountain Lake, Inspiration Point, Unknown
<i>Flavoparmelia caperata</i> (L.) Hale	<b>Inspiration Point, Unknown, Fort Scott, Crissy Field</b>
<i>Flavopunctelia flaventior</i> (Stirton) Hale	<b>Inspiration Point, Main Post</b>
<i>Graphis</i> or <i>Graphina</i>	<b>Unknown</b>
<i>Graphis</i> sp.	<b>Inspiration Point, Lobos Creek, Unknown</b>
<i>Heteroderma leucomela</i> (L.) Poelt	<b>Inspiration Point</b>
<i>Hypogemnia enteromorpha</i> (Ach.) Nyl.	<b>Unknown, Immigrant Point</b>

---

<i>Hypogymnia inactiva</i> (Krog) Ohlsson	Immigrant Point
<i>Lecanora caesiorubella</i> sub. <i>merrillii</i> Imshaug & Brodo	<b>Lobos Creek</b>
<i>Lecanora</i> cf. <i>conizaeoides</i>	<b>Unknown</b>
<i>Lecanora</i> sp.	<b>Inspiration Point</b>
<i>Lepraria</i> sp.	<b>Unknown</b>
<i>Leproloma membranacea</i> (Dickson) Vainio	<b>Inspiration Point</b>
<i>Melanelixia subaurifera</i> (Nyl.) O. Blanco et al.	Presidio Native Plant Nursery
<i>Niebla cephalota</i> (Tuck.) Rundel & Bowler	Coastal bluffs, Mountain Lake, Washington Blvd West, Inspiration Point, Unknown
<i>Parmelia sulcata</i> Taylor	Presidio Native Plant Nursery
<i>Parmotrema</i> sp.	Remnant Reach
<i>Parmotrema arnoldii</i> (Du Rietz) Hale	<b>Unknown</b>
<i>Parmotrema perlatum</i> (Hudson) M. Choisy	Crissy Field, Immigrant Point
<i>Parmotrema stuppeum</i> (Taylor) Hale	Rob Hill, Inspiration Point
<i>Pertusaria amara</i> (Ach.) Nyl.	<b>Lobos Creek</b>
<i>Pertusaria</i> sp. or <i>Diploschites</i> sp.	<b>Inspiration Point</b>
<i>Physcia adscendens</i> (Fr.) H. Olivier	Letterman District, Inspiration Point
<i>Physcia caesia</i> (Hoffm.) Fűrnr	Inspiration Point
<i>Physcia tribacia</i> (Ach.) Nyl.	<b>Inspiration Point</b>
<i>Pyrrhospora querneae</i> (Dickson) koerber	<b>Unknown</b>
<i>Ramalina</i> cf. <i>farinacea</i>	<b>Unknown</b>
<i>Ramalina farinacea</i> (L.) Ach.	<b>Inspiration Point, Immigrant Point, Unknown</b>
<i>Ramalina farinacea</i> group	<b>Unknown</b>
<i>Ramalina leptocarpha</i> Tuck.	Lobos Creek
<i>Ramalina menziesii</i> Taylor	Presidio Hills, Immigrant Point, Inspiration Point
<i>Ramalina</i> cf. <i>glauca</i>	<b>Unknown</b>
<i>Ramalina subleptocarpha</i> Rundel & Bowler	Lobos Dunes, Mountain Lake, Fort Scott, Unknown
<i>Rinodina</i> sp.	<b>Inspiration Point</b>
<i>Roccellina</i> sp.	<b>Unknown</b>
<i>Schismatomma decolorans</i> (Turner & Borrer ex Sm.) Clauz. & Vězda	<b>World War 2 Memorial Area</b>
<i>Tuckermanopsis chlorophylla</i> (Willd.) Hale	Immigrant Point
<i>Usnea californica</i> Herre	<b>Unknown</b>
<i>Usnea</i> cf. <i>fragilescens</i> Hav. ex Lynge	<b>Unknown</b>
<i>Usnea</i> cf. <i>lapponica</i> Vainio	Presidio Hills
<i>Usnea cornuta</i> Körber	Immigrant Point
<i>Usnea filipendula</i> Stirton	Immigrant Point
<i>Usnea fragilescens</i> Hav. ex Lynge	Sunset Scrub, Fort Scott, Unknown
<i>Usnea rubicunda</i> Stirton	Presidio Hills, Rob Hill, Immigrant Point, Fort Scott, Inspiration Point, Arguello
<i>Usnea</i> sp.	<b>Inspiration Point, Unknown</b>
<i>Usnea subfloridina</i> Stirton	Rob Hill
<i>Usnea flavocardia</i> Räsänen (= <i>wirthii</i> , Clerc 2004)	<b>National Cemetery</b>
<i>Verrucaria</i> cf. <i>nigrescens</i> Nyl.	<b>Unknown</b>
<i>Xanthoria parietina</i> (L.) Th. Fr.	Main Post, National Cemetery
<i>Xanthoria polycarpa</i> (Hoffm.) Th. Fr. ex Rieber	Mountain Lake, Letterman District
<i>Xanthoria</i> sp.	Lobos Creek

---

## News and Notes

### CALS RESEARCH / EDUCATIONAL GRANTS PROGRAM

CALS offers small grants to support research or education pertaining to lichens in California. No geographical constraints are placed on grantees or their associated institutions. The Research / Educational Grants committee administers the 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:

1. Title of the project, applicant's name, address, phone number, email address. Date submitted.
2. Estimated time frame for project
3. Description of the project: outline the 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.
4. Description of the final product: We ask you to submit an article to the CALS Bulletin, based on dissertation, thesis, or other work.
5. 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.

6. Academic status: state whether you are a graduate student or an undergraduate student. CALS grants are available to non-students conducting research in areas related to California lichens. CALS grants are available to individuals only and will not be issued to institutions.
7. 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 emailed to the chairperson of the education committee, enclosed with the application, or mailed separately to the CALS Grants Committee Chair.
8. Your signature, as the person performing the project and the one responsible for dispersing the funds.

The proposal should be brief and concise.

The research/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 or twice a year based on: completeness, technical quality, consistency with CALS goals, intended use of funds, and likelihood of completion. Grant proposals received by March 1, 2011, will be considered for the current grant cycle.

### Grant Amounts

CALS typically offers 2 grants in the amounts of \$500 and \$750 each year.

### Obligations of Recipients

1. Acknowledge the California Lichen Society in any reports, publications, or other products resulting from the work supported

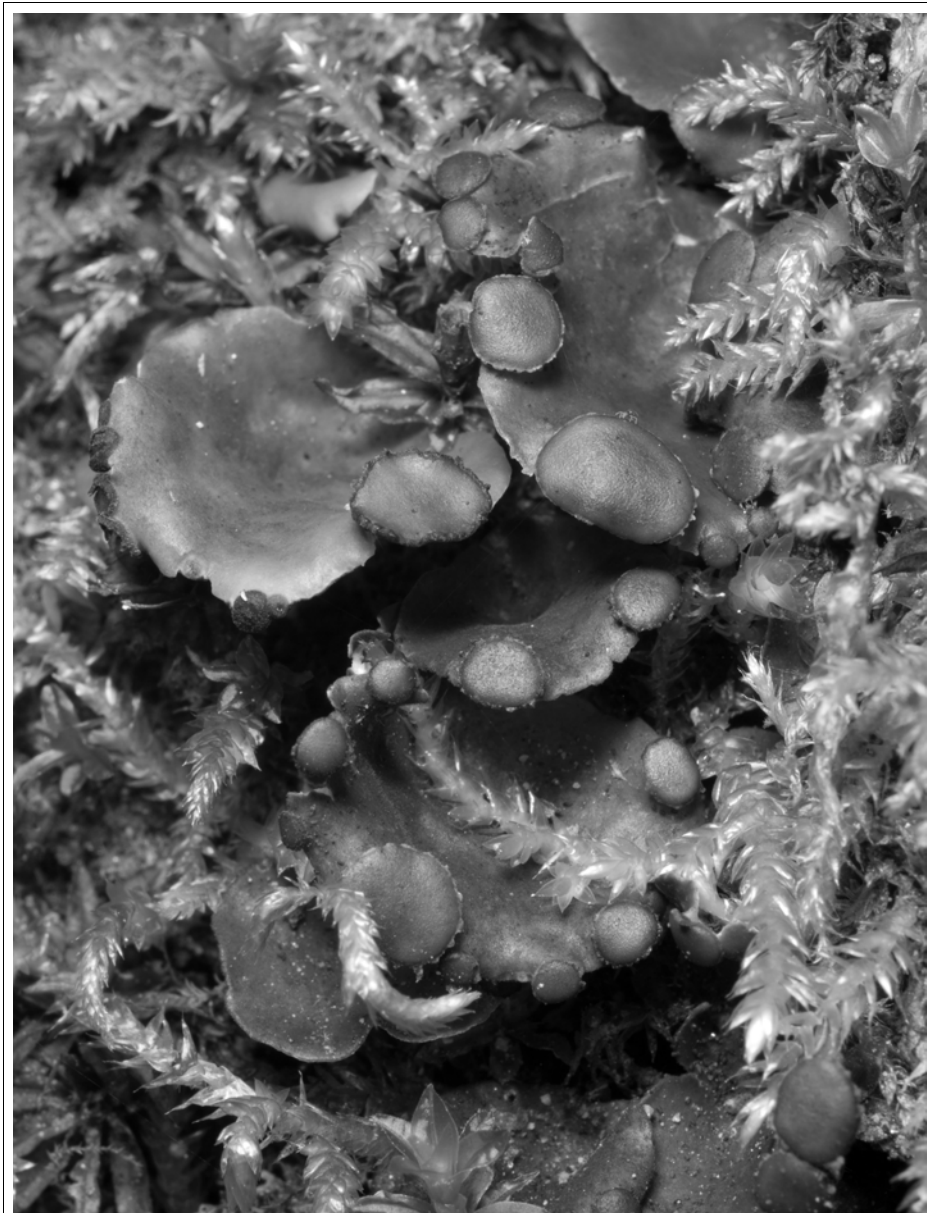
by CALS.

2. Submit a short article to the CALS Bulletin.
3. Submit any relevant rare lichen data to California Natural Diversity Data Base using NDDB's field survey forms.
4. Periodically update the research/education committee of progress on the project.

**How to submit an application:**

Please email submissions or questions to the committee chairperson by March 1, 2011.

This year the committee chairperson is Erin Martin. Her email is [shastalichens@gmail.com](mailto:shastalichens@gmail.com). You are encouraged to submit materials electronically. If this is not an option you can mail a hard copy to Erin Martin, University of Portland – Department of Biology – MSC#68, 5000 N. Willamette Blvd., Portland, OR 97203.



*Peltigera venosa* near Whiskeytown Falls, Shasta Co. Photographed by Eric Peterson.

**Treasurer's Report - 9/10/2010**

December 31, 2009 Balance (Previous Treasurer's Report)	11,038.10
August 31, 2010 Balance	12,490.92
DIFFERENCE IN BALANCE 12/31/2009 -8/31/2010	+1,452.82

**WELLS FARGO CHECKS CLEARED**

1/4/2010	#1004	Unique Printing - MiniGuides	73.22
1/4/2010	#1005	Northern Botanists Mtg outreach	35.00
2/22/2010	#1007	CALS stipend – crustose wksp	300.00
2/26/2010	#1008	CALS stipend – crustose wksp	300.00
3/10/2010	#1009	postcards and stamps	96.69
3/11/2010	#1010	Bulletin mailing	295.24
3/10/2010	#1011	Unique Printing - Bulletins	1,350.75
6/11/2010	#1012	Board of Equalization sales tax	<u>73.00</u>
		<b>TOTAL CHECKS CLEARED</b>	<b>\$2,523.90</b>

(Checks not cleared)

#1006	State of California – non-profit filing	<u>20.00</u>
	<b>TOTAL CHECKS NOT CLEARED</b>	<b>\$20.00</b>

**CHECK CARD PURCHASES**

2/1/2010	Postage	5.75
2/1/2010	Postage	3.16
2/17/2010	1 Canadian Dep items at 5.00 per item	5.00
3/1/2010	Bank fee	20.00
3/1/2010	Postage	3.63
3/31/2010	Checkcard deposit fee	5.70
5/7/2010	Postage	6.05
6/28/2010	Earth Class Mail	29.40
7/26/2010	Earth Class Mail	39.50
8/26/2010	Earth Class Mail	29.40
	<b>TOTAL CHECK CARD PURCHASES</b>	<b><u>\$147.59</u></b>
	<b>TOTAL CHECKS CLEARED + CARD PURCHASES</b>	<b>\$2,671.49</b>

**DEPOSITS**

1/12/2010	Memberships	60.00
1/25/2010	Sales	268.50
2/16/2010	Memberships	190.00
2/16/2010	Sales	131.00
3/1/2010	Memberships	930.00
3/1/2010	Memberships	95.00
3/1/2010	Memberships	50.00
3/23/2010	Memberships	580.00
3/23/2010	Memberships	295.00
3/23/2010	Memberships	210.00
4/14/2010	Memberships	265.00
5/4/2010	Memberships	235.00
5/7/2010	Memberships	10.00
5/18/2010	Sales	455.31
6/7/2010	Memberships	60.00
8/2/2010	Memberships	90.00
8/5/2010	Branch deposit	55.00
8/31/2010	Sales	84.50
8/31/2010	Membership	<u>60.00</u>
	<b>TOTAL DEPOSITS</b>	<b>\$4,124.31</b>

## Upcoming Events

### ON-GOING LICHEN IDENTIFICATION WORKSHOP, TILDEN REGIONAL PARK, BERKELEY

Some California Lichen Society (CALs) members requested Lichen Workshops at the Regional Parks Botanic Garden, Tilden Regional Park, in Berkeley. The first session started January 9<sup>th</sup>, 2010. The afternoon sessions are ongoing and happen on the second Saturday of each month. Participants are CALs members, Garden docents, Garden visitors, and friends from local restoration groups – so far at least 25 different participants have come.

The late Judy Robertson guided us through two sessions at the Garden identifying lichens. During the March 13<sup>th</sup> session she found *Placynthium nigrum*. At other sessions, Doris Baltzo and Janet Doell have helped identify some specimens.

Usually we take a walk through the Garden observing lichens, and then return to the Visitors' Center auditorium to examine microscopically lichens that are collected off site. There is no collecting at the Garden so many times we can identify to genus only. Steve Edwards, the Director, has kindly allowed us to use the microscopes and space. Bill Hill identifies lichens during the walks and guides and demonstrates microscopic identification work and chemical testing. Irene Winston takes an introductory lichen walk with the visitors. Patti Patterson has generously provided a sample box of lichens from the College of Marin, to help participants with identification comparisons.

During the May session Bill and Irene visited Huckleberry Preserve in Oakland. The upper trail has many lichens. Tom Carlberg helped with some identifications of photos taken. We saw the following lichen in addition to numerous others not yet identified: *Cetraria orbata*, *Cladonia bellidiflora*, *Cladonia chlorophaea* group, *Cladonia squamosa* (?), *Hypogymnia physodes*, *Hypogymnia tubulosa*, *Parmelia hygrophila*, *Parmotrema* sp. and *Ramalina farinacea*.

Anyone with an interest in lichens is invited to attend this free event. By introducing the workshop participants to how to key lichens we hope to not only spark an interest in these amazing organisms but to eventually make a more definitive survey of the lichens in the Garden.

### 2011 ANNUAL NORTHERN CALIFORNIA BOTANISTS SYMPOSIUM

JANUARY 10 - 11, IN CHICO, CALIFORNIA

Northern California Botanists is an organization with the purpose of increasing communication about botanical issues in Northern California among agency, consulting, academic, and other botanists. Their primary objectives are to establish a communication forum via occasional meetings, a web site, a scholarship fund for students working on botanical problems in Northern California, a job forum, and an annual symposium that focuses on the botany of Northern California and adjacent areas.

This year one of the symposium sections will focus on the role of lichens in California. Four speakers will present on various aspects of lichenology in California, with subjects ranging from air quality to endemism. The following individuals have agreed to make presentations on topics of their choice: Sarah Jovan, a postdoctoral Fellow from Oregon State University in Corvallis, will summarize her recent work in assigning lichen-based critical loads for nitrogen in California; Eric Peterson, Ph.D. will deliver a lichen perspective on the mixing of floristics in California; John Vilella of Siskiyou BioSurveys will give a presentation on lichens of conservation concern in northern California; and Justin Shaffer, a recent graduate of UC Santa Cruz, will speak on the effects of lichen secondary metabolites on plant pathogenic fungi.

The conference is a valuable overview of northern California botany, and well worth attending. Following the presentations are two days of workshops; see the Northern California Botanists' website for details: <http://www.norcalbotanists.org/index.htm>. CALs will sponsor a table and a poster for the symposium, as in previous years.

### COLLEGE OF MARIN LICHEN WORKSHOPS

Every 2<sup>nd</sup> and 4<sup>th</sup> Friday of the month there is a lichen identification workshop at the College of Marin. Every one is welcome to attend this workshop and lab facilities are available for participants.



**President's Message**

Greetings members! I hope that this message finds you enjoying everything the natural world has to offer at this time of year. In the past, we have issued the Bulletin during the summer and the winter, as you probably have noticed we have changed the timing of our Bulletin issue to the fall and spring. The summer and winter months are very busy for our volunteers who put the Bulletin together. These months are the active season for fieldwork and like all of our members our volunteers are busy with their families during the holiday season. This change will make the process of formatting and printing the Bulletin more efficient and will accommodate those who bring the articles together, format the journal for printing, and participate in mailing the Bulletin. There are several exciting changes happening in CALS that I will share with you later in this message. First, I want to thank all of you for renewing your memberships with CALS. Many of you have been devoted members for numerous years and I thank you for your continued support. Because we are an all-volunteer organization, our regular membership fees support the publishing and mailing costs of The Bulletin, any taxes and state fees that are required for non-profits, and help to support lower income and student membership. I'm very proud of the low cost associated with running this organization. Many members regularly contribute above the regular renewal fee allowing CALS to fund educational activities and grants. Additionally, we have several new members to welcome to our society. With our membership growing at a healthy rate, and with the continued support of our long time members CALS will continue its contributions to the knowledge and conservation of lichens in California.

As you have seen in this Bulletin there is some sad news. One of our long-time and very influential members Judy Robertson passed away after a long battle with cancer. Judy was an incredible woman who gave endlessly throughout her life. She had a huge impact on our knowledge of the lichen flora in California. Judy led and coordinated many workshops and field trips, presided as the president of CALS, and wrote several articles for The Bulletin. While in graduate school, I was fortunate to attend a crustose lichen workshop at San Francisco State University lead by Judy and her late husband Ron. They were a dynamic team and made the difficult task of identifying crustose lichens satisfying and exciting. Judy and Ron contributed greatly to the success of CALS and they will be missed. However, I am confident that CALS members will continue their legacy in the future.

One of my tasks as president is to update our members on the state of our society, and now I would like to share with you some positive news. Three years ago, I moved to Oregon to further my career in academia. Since that time, I have found it difficult to keep my pulse on activities that occur in California. Although I have enjoyed being president of CALS and feel that we have made some positive changes during that time, I have begun to feel time that our organization would be better served if the president resided California. Additionally, the terms for other board members have ended and a few have also moved on in their lives. Thus, there is an immediate need to fill these positions. Board members reached out to our larger membership with a call for nominations of officers and I am happy to report that a few members volunteered for these tasks. We still need to vote on the candidates, but please join me in welcoming Bill Hill as the candidate for President, Shelly Benson as the candidate for Vice President, and Kathy Faircloth as the candidate for Treasurer. I volunteered as the candidate for Secretary, because I am familiar with our membership database and have been sharing this role with Patti Patterson for the last several years. Both Bill and Kathy have served on the board in the past and are very familiar with the tasks of the positions they volunteered for. Shelly has studied lichens throughout the western states and was recently involved in lichen studies at the Presidio in San Francisco. These studies were initiated during our annual field trip in January. John Villela is joining us as the new editor of the Bulletin. He hosted the CALS Horseshoe Ranch field trip in Northern California and Southern Oregon. He has worked extensively with lichens and is a well-respected consultant throughout the Northwest. I have personally spent time with John at several conferences and am ecstatic that he is joining our team. All of these candidates share a passion and enthusiasm for lichens, and I am confident that if voted to these positions they will advance our society in many ways. With your approval these members will take over board positions in December of this year. Please remember to mail your ballots by Nov. 30<sup>th</sup>.

I would also like to thank outgoing board members for their years of service to our society. Michelle Caisse, our former Vice president, moved to Arizona with her husband. Michelle was one of our technical gurus and helped to set up many of the technologies we use to keep our organization running smoothly. We

wish her and her husband the best. I've heard that they keep very busy exploring desert lichens. I "heart" anyone who takes on those crusts! Patti Patterson has served as both secretary and the organizer of our very popular College of Marin workshops. She is a full time student, and I really appreciate the time she has dedicated to CALS despite her busy schedule. I hope you can join her at an upcoming workshop or field trip in the Bay area. Cheryl Beyer has done a fabulous job of keeping track of our finances over the last several years. She is a botanist for the Forest Service in South Lake Tahoe and has worked hard on projects in which CALS collaborates with the Forest Service. We look forward to her continued participation on the conservation committee and to the field trips she leads in the Lake Tahoe region. Finally, Tom Carlberg served as editor of the Bulletin for over six years. His tireless efforts and editorial vision made The Bulletin a commonly referenced "academic"



journal (yes, academic folks reference The Bulletin), an always interesting read, and a delight to look at in an artistic sense (thanks for so many wonderful lichen pictures). Tom is continuing his service to the society the conservation committee and is currently planning some research projects on lichens in Northern California. I am so thankful for the work all of these board members have done. Our society can only work with active involvement from our members. If you would like to get involved in some capacity please let me know. I have lots of suggestions!

I am also happy to announce that we will be offering educational grants again this year. In the past two years we have expanded our definition of "educational" to include both student members and non-student members whose projects are aligned with the goals outlined in our mission statement. The educational grants committee looks forward to submissions and we are very proud of the work that our past recipients have accomplished.

CALS also continues to sponsor several ongoing events. The College of Marin Workshops, lead by Patti Patterson and Bill Hill, occur on a regular basis (twice a month) and provide a means to help our members with lichen identification. Irene Winston is currently holding lichen workshops at the Regional Parks Botanic Garden in Tilden Regional Park in Berkeley once a month. Several field trips are beginning to spring up throughout the state. If you are not a member of our yahoo group, please sign up to receive update announcements of activities and participate in discussion topics. Finally, several members are working on a study of lichens at the Presidio in San Francisco. Please contact Shelly Benson if you are interested in working on this project.

Our goals for the coming year are to update our website, offer more field trips and workshops throughout California, continue work on projects related to the conservation of lichens, remain active in lichenological research and grants, and continue to participate in educational outreach activities. If you can help out in any way, please let us know. We welcome your participation and look forward to all we can accomplish together! Our society can only work with your continued support and participation. One last note..... Our address has changed. Please mail all correspondence to the new PO Box listed in this Bulletin. I hope you enjoy the fall and winter seasons.

Happy lichening!  
Erin Martin  
shastalichens@gmail.com

# The Bulletin of the California Lichen Society

Vol. 17, Nos. 1 & 2

Fall 2010

## Contents

Lichen Inventory of the Santa Barbara Botanic Garden, Santa Barbara County, California ~ Shirley Tucker	1
The Lichens of the Horseshoe Ranch Wildlife Area ~ John Villella, Shelly Benson, Tom Carlberg, Jesse Miller, Eric Peterson, Rachael Patton	9
Lichens that Grow on <i>Ephedra</i> ~ Shirley Tucker	13
Joshua Tree NP Student Climate Change Summit, Student Voices ~ Seth Shteir, Krista Blevins, Kaitlyn Wooling	14
Obituary for Judy Robertson	16
Review of the Crustose Lichen of California Workshop at Bodega Bay ~ Daphne Stone, John Villella	19
A Preliminary List of the Lichens of the San Francisco Presidio ~ Michael Rotter	23
News and Notes	27
Upcoming Events	30
President's Message ~ Erin Martin	31

The deadline for submitting material for the Spring 2011 CALS Bulletin is 15 January 2010.

Back cover:

- A) *Lecanora neodegellii*, a representative of the Southwestern Deserts Element found at the HRWA; see Horseshoe Ranch paper starting page 10. Photography by Tom Carlberg.
- B) *Lobothallia alphoplaca*; see Horseshoe Ranch paper starting page 10. Photography by Tom Carlberg.
- C) *Lecanora pinguis* from headland rocks at Bodega Bay; see Crustose Workshop paper starting page 20. Photograph by John Villella.
- D) *Pertusaria santamonicae* an epiphytic crust seen at the Pepperwood Preserve; see Crustose Workshop paper starting page 20. Photograph by John Villella.

