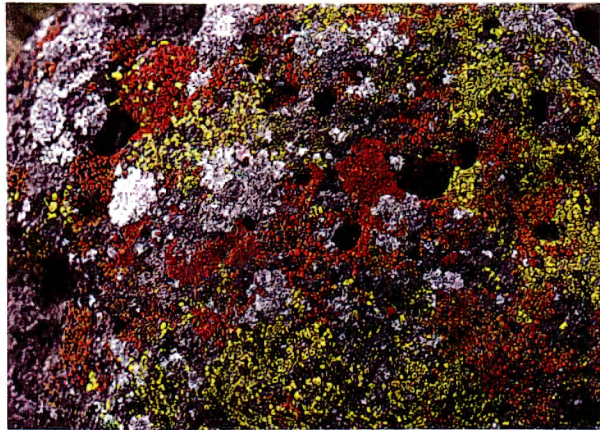


Bulletin
of the
California Lichen Society



Volume 3

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The California Lichen Society seeks to promote the appreciation, conservation, and study of the lichens. The focus of the Society is on California, but its interests include the entire western part of the continent. Dues are \$15 per year payable to The California Lichen Society, 1200 Brickyard Way, #302, Point Richmond, CA 94801. Members receive the *Bulletin* and notices of meetings, field trips, and workshops.

The Bulletin of the California Lichen Society is edited by Isabelle Tavares, Shirley Tucker and Darrell Wright and is produced by Darrell Wright. Richard Doell produced the cover of this issue. 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 apart from short articles and announcements is by E-mail or on 1.44 Mb diskette in Word Perfect 4.1, 4.2 or 5.1 format; ASCII format is an alternative. Manuscripts should be double-spaced. Figures are the usual line drawings and sharp black and white glossy photos, unmounted, and must be sent by surface mail. A review process is followed. Nomenclature follows Esslinger and Egan's Sixth Checklist (*The Bryologist* 98: 467-549, 1995). 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. Reprints will be provided for a nominal charge.

With this issue of the *Bulletin* Darrell Wright retires as editor. Starting with the next issue, send submittals and correspondence to the new managing editor, Richard L. Moe, *Bulletin of the California Lichen Society*, Valley Life Sciences Building, University Herbarium, University of California, Berkeley, CA 94720; E-mail: rlmoe@ucjeps.herb.berkeley.edu

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Cover: San Clemente Island, California. Photography by Mark Elvin (upper left) and William J. Mautz (all others). Peter Bowler made a generous contribution to cover the cost of the color reproductions.

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A Checklist of the Lichens of San Clemente Island, California

Peter A. Bowler, William A. Weber, and
Richard E. Riefner, Jr.

Abstract. *One hundred and thirty species of lichens in 69 genera are reported from San Clemente Island, Los Angeles County, California. This list was compiled from collections made in 1966 by W.A. Weber and R. Santesson, other material collected by casual visitors to the Island, species recorded by Bowler and Riefner on three forays to the Island, and from the literature. The lichen flora shows affinities with the adjacent mainland flora as well as with communities characteristic of coastal northwestern Baja California, Mexico.*

The lichen flora of San Clemente Island has been poorly known, with only one publication (Hasse 1903) dedicated exclusively to it. Hasse recorded 22 species on the basis of collections made by Blanche Trask. Since that time there have been numerous vascular plant collectors (Raven 1963) who visited the Island, many of whom made casual lichen collections which are deposited in various herbaria. The most intensive lichen collecting which has occurred was an expedition in April, 1966 by W.A. Weber (University of Colorado Museum) and R. Santesson (Uppsala). Three collection trips were made by Bowler and/or Riefner: December 16-19, 1983 (Bowler), December 8-11, 1984 (Bowler) and April 4, 1989 (Bowler and Riefner).

San Clemente Island is 102 km west-northwest of San Diego, and the main military habitation area, Wilson's Cove, lies at 23°04' N. latitude and 118°33' W. longitude. The total land area is 148.5 square km, and the island is long and narrow, 34 km (21 miles) at the largest axis, 6 km (4 miles) wide at the southern end and 3 km (2 miles) wide at the northern end (see Chambers Consultants and Planners [1981] for detailed descriptions of the physical setting of San Clemente Island). The southern portion of the Island is used for naval bombardment (Shore Bombardment Area); access is restricted, and we were not able to visit the area. The climate is maritime with mild winters and cool summers. There is little seasonal or diurnal temperature variation, with summer 18.33°C (65°F) and winter 12.78°C (55°F) means differing only by 5.56°C (10°F). Humidity is usually very high with an annual

average of 80 percent, and thick coastal fog caused by upwelling is common. San Clemente is much drier than the adjacent mainland, and receives only 12.5-20 cm (5-8 inches) of precipitation annually.

It seems likely that many native vascular plant species which would have been lichen substrates have been extirpated or significantly reduced by 200 years of grazing on San Clemente and that a corresponding simplification in the corticolous lichen flora has occurred (the complete extent of species loss and community change will never be known because goats and pigs were introduced to San Clemente Island before botanists collected there). This simplification is especially likely in view of the fact that over 13% of the native flora of Santa Catalina has been eliminated, and Santa Catalina has experienced much less grazing impact than San Clemente. Thus the present range and density of corticolous substrates for lichens in the simplified vascular plant community may be a relic of what the flora once was. It is remarkable to see species such as *Ramalina menziesii* limited to tiny groves of a dozen oaks, but these are in fact the only trees on the part of the island visited by us.

The most intact and best developed lichen community is that on the coastal rocks and shrubs in the "maritime scrub" formation. The Eel Point area contains an outstanding example of this community with comparable sites occurring in northwestern Baja California, Mexico. It should be made an official preserve, since it is the finest accessible lichen area left. The rich development of saxicolous and corticolous *Niebla* species and the abundant presence of species such as *Teloschistes californicus* (= *T. villosus* of authors), now rare or absent in mainland California maritime lichen communities of this kind but present in similar sites near San Quintin in Baja California, emphasize the coastal Mexican community components. Species common in this coastal lichen community that are richly represented along the southern San Clemente coast include such indicators as *Niebla ceruchis* and *N. cephalota* (corticolous), *N. ceruchoides*, *N. laevigata*, *N. robusta*, *N. procera*, *N. homalea* (saxicolous; abundant on all of the lower terraces; see Bowler et al., 1994; Bowler and Riefner, 1995), *Schizopelte californica*, *Dendrographa leucophaea*, *Roccella fimbriata*, *Lecanora pinguis*, and *Xanthoria* spp. which form a band on the ocean-facing bluffs. A puzzling absence is *Trichoramalina crinita*, a species whose northernmost localities were Point Loma

and Torrey Pines in San Diego County. Riefner, Bowler, and Ryan (1995) recently reported *Dendrographa leucophaea*, *Punctelia borreri*, and *Ramalina fastigiata* from the Island. Numerous *Niebla* species were recorded from San Clemente and several of the other Channel Islands by Bowler, Riefner, Rundel, Marsh and Nash (1994). *Reinkella parishii*, another member of the coastal cliff community, is also reported from the coastal saxicolous community. *Teloschistes flavicans* and *T. chrysophthalmus* have thus far been collected in one oak grove, but probably were more widespread on the Island prior to the decimation of the woody vascular plants. In addition to common coastal mainland species including a large number whose southern distributional limits are on the coast of southern California, other species found on San Clemente Island are near the northern end of their ranges. Among the vascular plants, the abundant *Bergerocactus emoryi* and isolated stands of *Euphorbia misera*, both of whose northern ranges end in Orange County on the mainland, also indicate a southern mainland origin. Although *Euphorbia misera* is a richly colonized substrate for lichens in northern Baja California, it is lichenologically barren on San Clemente Island, as it is in the mainland stand at Dana Point in Orange County.

The Final Environmental Impact Statement (Chambers Consultants and Planners 1981) noted that "When [maritime coastal scrub] covered larger areas, this vegetation may have included a significant component of chaparral shrubs, including *Adenostoma*, *Ceanothus*, *Crossosoma*, *Dendromecon*, *Heteromeles*, *Malosma* (*Rhus laurina*), *Prunus*, *Rhamnus*, *Sambucus*, and *Toxicodendron*, perhaps similar to the mixtures on nearby Santa Catalina Island. These shrubs apparently were part of the Island vegetation, but currently occur only as widely scattered, fully mature (and often browse-damaged) individuals: several species reportedly can no longer be found on the Island" (see Dunkle 1950). The California Department of Fish and Game's California Natural Diversity Data Base identified the San Clemente communities as Coastal Bluff Scrub and Coastal Sage Scrub (Jensen 1983), and described it as "... a low-growing community on the mainland and may be somewhat taller on the islands. Most of the species are woody and/or succulent. Characteristic species include *Dudleya* spp., *Coreopsis gigantea* and *Coreopsis maritima* (not present on San Clemente), *Eriogonum giganteum*, *E. grande*, *Rhus integrifolia*, and the introduced taxa *Carpobrotus aequilaterus* (= *C. chilensis* [Molina] N.E. Br.) and *Mesembryanthemum crystallinum*..." The Data Base cited 2,500 acres of coastal scrub and 150 acres of coastal bluff scrub on San Clemente, which represent the maritime scrub communities that probably provided lichen substrates at one time. Recent studies of the Channel Island

vascular plant flora appear in Power (1980), and in Halvorson and Maender (1994). In terms of the lichen community, the "Boxthorn Maritime Desert Scrub" association, on the lowest of the wave cut terraces along the southern and western shores, has the best representation seen by us of the coastal lichens occurring on the mainland, particularly in coastal Baja California (see Mooney [1977] and Mulroy, Rundel and Bowler [1979] for descriptions of similar Baja California communities). Iceplant (*Mesembryanthemum crystallinum*) dominates the ground cover in places, and has probably reduced open ground areas once inhabited by lichens. This situation occurs in many other places, such as the San Quintin area of Baja California.

Table 1. The generic disposition of taxa reported from San Clemente Island. Nomenclature throughout follows Esslinger and Egan (1995) unless further information was available:

Acarospora (3), *Amandinea* (1), *Aspicilia* (1), *Buellia* (4), *Caloplaca* (11), *Catillaria* (1), *Chrysothrix* (1), *Cladonia* (1), *Collema* (1), *Dendrographa* (2), *Dermatocarpon* (1), *Dimelaena* (2), *Diploicia* (1), *Diploschistes* (1), *Dirina* (1), *Endocarpon* (1), *Evernia* (1), *Flavoparmelia* (1), *Flavopunctelia* (1), *Fuscopannaria* (1), *Heppia* (1), *Heterodermia* (2), *Lecanactis* (1), *Lecania* (2), *Lecanographa* (1), *Lecanora* (8), *Lecidea* (1), *Lecidella* (1), *Leprocaulon* (2), *Leproloma* (1), *Leptochidium* (1), *Leptogium* (1), *Lichenothelia* (1), *Mobergia* (1), *Neofuscellia* (1), *Nephroma* (1), *Niebla* (8), *Opegrapha* (1), *Parmelia* (1), *Parmotrema* (2), *Peltula* (1), *Pertusaria* (4), *Phaeophyscia* (1), *Physcia* (6), *Physconia* (2), *Polycauliona* (1), *Psora* (1), *Psorula* (1), *Punctelia* (3), *Pyrrosopora* (1), *Ramalina* (7), *Reinkella* (1), *Rimelia* (1), *Rimularia* (1), *Rinodina* (5), *Roccella* (2), *Schizopelte* (1), *Sclerophyton* (1), *Sigridea* (1), *Sticta* (1), *Teloschistes* (3), *Tephromela* (1), *Thelomma* (1), *Toninia* (2), *Umbilicaria* (1), *Usnea* (2), *Verrucaria* (2), *Xanthoparmelia* (3), *Xanthoria* (2), *Zahlbrucknerella* (1).

Collectors and Collection Sites

Collectors' names are abbreviated *B*, P.A. Bowler and *B&R* (or *R&B*), P.A. Bowler and R.E. Riefner, Jr. Numbers beginning with "L-" are those of Weber and Santesson in 1966; except where indicated, these are at COLO. Collections of Bowler and Riefner are at IRVC. Collection sites are designated by two-letter codes as follows:

EP: Eel Point.

BO: Just north of Boulder, head of canyon near reservoir, east side of the Island, 1000 ft. alt., on *Quercus tomentella* or on soil.

FS: Near the field station.

LP: Lost Point Canyon, just northwest of Thirst, a west-trending canyon running seaward toward the Point, west side of the Island, 1500 ft. alt.

LT: Canyon just below "Lemon Tank," between Stone and Nanny Canyons, east side of the Island, 1000 ft. alt.

Checklist of the lichenized fungi of San Clemente Is.

Acarospora

fuscata (Schrader) Arnold – LP: L-42876, L-42876 (LAM).

schleicheri (Ach.) A. Massal. – EP: L-42624.

smaragdula (Wahlenb.) A. Massal. – EP: L-42645, L-42656.

Amandinea

punctata (Hoffm.) Coppins & Scheid. (*Buellia punctata* [Hoffm.] A. Massal.) – EP: L-42660, L-42662, L-42662 (LAM); BO: L-42851, L-42852.

Aspicilia

contorta (Hoffm.) Krömp. – EP: L-42634. The areoles are more densely clumped than is usual for this species, but their more or less conical shape, together with the immersed disk which is characteristically pruinose, is a good mark. The spores are 20 x 15 μ .

Buellia

cerussata Llimona & Werner (*B. stellulata* of American authors, not Mudd [Llimona and Werner 1975]) – EP: L-42611. The Sixth Checklist (Esslinger and Egan 1995) did not include this species.

halonia (Ach.) Tuck. – EP: L-42632, L-42661.

oidalea (Nyl.) Tuck. – LT: L-42844.

Buellia sp. – EP: L-42606; LT: L-42823. This appears to be a parasite on *Lecanora* cf. *gangaleoides* Nyl. (Brodo 1984), and is probably not a *Buellia* at all. The apothecia are sessile, about 1 mm in diameter, sometimes almost globular, convex at any rate, black. Spores are brown, 8 per ascus, 18 x 6 μ . One cell seems to be narrower than the other.

Caloplaca

bolacina (Tuck.) Herre – EP: L-42615, L-42629, L-42635, L-42635 (LAM); LP: L-42910.

californica Zahlbr. – EP: L-42670. This has been mistaken for *C. flavorubescens* (Hudson) J.R. Laundon, whose presence in North America is still questionable. The San Clemente plant is from small twigs and has a yellow thallus with large, thick, wavy apothecial margins. Hasse (1903) reported this from San Clemente Island as *Placodium aurantiacum*.

catalinae H. Magn. – BO: L-42854 p.p. Thallus gray; apothecia deep rust red. On bark.

coralloides (Tuck.) Hulting – See *Polycauliona*.

luteominia (Tuck.) Zahlbr. var. *bolanderi* (Tuck.) Arup – R&B 89-110 (WIS). On rock.

oregona H. Magn. – BO: L-42854 p.p. Thallus gray; apothecia small, yellow. On bark.

rosei Hasse – EP: L-42609, L-42616.

saxicola (Hoffm.) Nordin – EP: L-42628, L-42646, L-42648 (LAM); LP: L-42888.

cf. *sipeana* H. Magn. – R&B 89-108 (IRVC, WIS).

stanfordensis H. Magn. – EP: L-42665. Apothecia yellow with slightly pruinose disk. On bark.

stantonii W.A. Weber ex Arup – LT: L-42831. On poorly consolidated rock derived from clay.

Caloplaca sp. – LT: L-42850. This is a 1 cm diameter rosette, continuous, not lobed, with thallus and apothecia uniformly red-brown. Apothecia to 0.7 mm in diameter; spores 20 x 11 μ ; septum 5 to 7 μ wide. On a smooth-barked tree with *Lecanora horiza*.

Catillaria

columbiana (G. Merr.) W. Noble – LT: L-42849. On smooth bark. Confirmed by W. Noble.

Chrysothrix

candelaris (L.) J.R. Laundon – LT: L-42841.

Cladonia

scabriuscula (Delise) Nyl. – LP: L-42911; FS: B&R 89-413, beneath oaks. Det. S. Hammer.

Collema

Collema cf. *tenax* (Sw.) Ach. – BO: L-42864; LP: L-42866. On soil. Lacking apothecia and therefore unidentifiable. It might be *C. coccophorum* Tuck.

Dendrographa

leucophaea (Tuck.) Darbish. – EP: L-42601; *B. et al. s.n.*, 1989; B 84-106; R&B 89-102. Recorded by Riefner et al. (1995) and Hasse (1903).

alectoroides Sundin & Tehler f. *parva* Sundin & Tehler (*D. minor* of authors, not Darbishire) – EP: L-42621, B 84-104, B&R 89-415; LT: L-42837. This extends the range as reported by Sundin and Tehler (1996) 170 km southwest from Santa Cruz Is. See the article by Wright in this issue of the Bulletin for a discussion of the new names and other issues.

Dermatocarpon

miniatum (L.) W. Mann – LT: L-42832; LP: L-42878.

Dimelaena

radiata (Tuck.) Hale & Culb. – EP: L-42627 (LAM), B&R 89-426.

thysanota (Tuck.) Hale & Culb. – R&B 89-116 (IRVC, WIS).

Diploicia

canescens (Dickson) A. Massal. – L-42602 (LAM), R&B 89-122, 89-123.

Diploschistes

scruposus (Schreber) Norman – LT: L-42824.

Dirina

catalinariae Hasse f. *catalinariae* – EP: L-42620.
catalinariae Hasse f. *sorediata* Tehler – FS: on *Quercus tomentella*, B&R 89-412.

Endocarpon

pusillum Hedwig – EP: L-42653, confirmed by O. Breuss; L-42673.

Evernia

prunastri (L.) Ach. – on *Quercus tomentella* (B&R), not collected.

Flavoparmelia

caperata (L.) Hale – LT: L-42840.

Flavopunctelia

flaventior (Stirton) Hale – LP: L-42900.

Fuscopannaria

praetermissa (Nyl.) P.M. Jørg. (*Pannaria praetermissa* Nyl.) – LP: L-42894.

Heppia

lutosa (Ach.) Nyl. – EP: L-42631.

Heterodermia

erinacea (Ach.) W. A. Weber – EP: L-42655.
leucomelos (L.) Poelt – FS: on *Quercus tomentella*, B&R 89-403; LP: L-42899, L-42912.

Lecanactis

dimelaenoides Egea & Torrente – EP: L-42639, L-42641.
On rock. New for the U.S. (Egea and Torrente 1992).

Lecania

brunonis (Tuck.) Herre – LT: L-42830.
dudleyi Herre – EP: L-42651, L-42658, L-42659, L-42872.

Lecanographa

hypothallina (Zahlbr.) Egea & Torrente (*Opegrapha hassei* of authors, not Zahlbr.; *Schismatomma hypothallinum* [Zahlbr.] Hasse) – EP: L-42614, L-42626, L-42640, B&R 89-425; LT: L-42829, R&B 89-109.

Lecanora

caesiorubella Ach. ssp. *merrillii* Imshaug & Brodo – FS: on *Quercus tomentella*, B&R 89-401; LT: L-42845; LP: L-42905.
demissa (Flotow) Zahlbr. – BO: L-42046 (LAM),

R&B 89-126. Confirmed by R. Santesson.
gangaleoides Nyl. *sensu* Brodo – LP: L-42884.
horiza (Ach.) Lindsay – EP: L-42666. Reported as *Lecanora subfusca* by Hasse (1903).
muralis (Schreber) Rabenh. – LT: L-42819, L-42821.
rupicola (L.) Zahlbr. – FS: R&B 89-121.
subcarnea (Lilj.) Ach. – EP: L-42625, LP: L-42883.
xanthosora B.D. Ryan & Poelt – EP: L-42618, R&B 89-111 (IRVC, WIS).

Lecidea

mannii Tuck. – LP: L-42887, on rock; EP: L-42896.

Lecidella

asema (Nyl.) Knoph & Hertel (*L. elaeochromoides* [Nyl.] Knoph & Hertel; *Lecidea catalinaria* Stizenb.) – EP: L-42630; LP: L-42873. Confirmed by J. Knoph.

Leprocaulon

microscopicum (Vill.) Gams ex D. Hawksw. (*Stereocaulon microscopicum* [Vill.] Frey) – EP: L-42633.

Leproloma

Leproloma sp. – EP: L-42617. This possibly undescribed species, distributed as Weber Lich. Exs. 455 and Nash Lich. Exs. 299, is believed by Weber to be one of the most common soil lichens on the coast of California. It has small, marginate thalli (cf. the *Lepraria neglecta* group and *Leproloma cacuminum*) which are at first adnate to soil but later become erect, at least at the margins. The surface, however, is remarkably smooth, unlike that of *L. neglecta*. Chemically, it is close to *Leproloma vouauxii* with unknowns that appear to be dibenzofurans, whose presence distinguishes *Leproloma* from *Lepraria* (Purvis et al. 1992; morphology and chemistry from T. Tønsberg based on Nash, Lich. Exs. 299, additional chemistry from C. Culberson based on Weber, Lich. Exs. 455, pers. comms.). We hope that newly awakened interest in it will cause it to be described soon.

Leptochidium

albiciliatum (Desmaz.) Choisy – LP: L-42897.

Leptogium

californicum Tuck. – LP: L-42898.
lichenoides (L.) Zahlbr. – LP: L-42892.

Lichenothelia

tenuissima Henssen – EP: L-42647. Henssen believes this to be a non-lichenized fungus.

Mobergia

angelica (Stizenb.) H. Mayrh. & Sheard (*Rinodina angelica* Stizenb., *Dimelaena angelica* [Stizenb.] Hale & Culb.) – EP: L-42657.

Neofuscelia

verruculifera (Nyl.) Essl. – LP: L-42885.

Nephroma

parile (Ach.) Ach. – LP: L-42906.

Niebla

cephalota (Tuck.) Rundel & Bowler – EP: L-42608; FS: on *Quercus tomentella*, B 84-110, R&B 89-405. Reported by Hasse (1903) as *Ramalina ceruchis* f. *cephalota*. Also known from Santa Cruz Is.: Nash 32463 (ASU); Santa Rosa Is.: Nash 32706 (ASU); San Miguel Is.: Grigarick & Schuster L-53363 (COLO); San Nicholas Is.: Foreman L-41681 (COLO); and Santa Barbara Is.: Bratt 3692 (Herb. Bratt). Many additional citations for *Niebla* species in the Islands will be listed in a synopsis of the genus *Niebla* in North America in preparation by the authors, Janet Marsh, and Thomas Nash III.

ceruchis (Ach.) Rundel & Bowler – EP: L-42608, B&R 89-421, Bowler, Mautz and Schoenherr s.n. (Herb. Bratt); LT: L-42838; FS: on *Quercus tomentella*, B&R 89-410, Santesson 17946 (mixed with *N. ceruchoides* and *N. robusta*), 17977, 18038 (also mixed with *N. ceruchoides* and *N. robusta*) (UPS). Known also from Santa Barbara Is.: Bratt 4820, 4831 (Herb. Bratt); Santa Cruz Is.: Bratt 3393, 3415 (Herb. Bratt); and Santa Rosa Is.: Nash 32734 (ASU).

ceruchoides Rundel & Bowler – EP: B 84-107, Santesson 17946 (mixed with *N. ceruchis* and *N. robusta*), 17977, 18038 (also mixed with *N. ceruchis* and *N. robusta*) (UPS). Known also from Santa Cruz Is.: Schuster 37b (COLO); Santa Rosa Is.: Nash 33103 (ASU); and Santa Barbara Is.: Bratt 4827 (Herb. Bratt).

homalea (Ach.) Rundel & Bowler – EP: L-42637, L-42637 (LAM), B 83-101, B&R 89-420. On San Clemente Is. the most common saxicolous chemotype has divaricatic acid; a terricolous, cladiniiform, sekikaic acid population is also present: B 84-99.

isidiascens Bowler, Marsh, Nash & Riefner – EP: B&R 89-427.

laevigata Bowler & Rundel – EP: B&R 89-419.

procera Rundel & Bowler – EP: B&R 83-150, B 84-100, B&R 89-424.

robusta (R.H. Howe) Rundel & Bowler – EP: L-42599, L-42599 (LAM), B&R 89-418, Santesson 17894b (Herb. Rundel, UPS); Santesson 17936, 17946 (mixed with *N. ceruchis* and *N. ceruchoides*), 17982, 18034, 18038 (also mixed with *N. ceruchis* and *N. ceruchoides*) (UPS); Moran 6852 (COLO); Bowler, Mautz and Schoenherr s.n., 16 December 1983 (Herb. Bratt).

Opegrapha

Opegrapha sp. – EP: L-42619, L-42623, LT: L-42847. The collections are not available for re-study at this time.

Parmelia

sulcata Tayl. – LP: L-42889.

Parmotrema

chinense (Osbeck) Hale & Ahti – BO: L-42860.
hypoleucinum (Steiner) Hale – LP: L-42901.

Peltula

euploca (Ach.) Poelt – EP: L-42663; LT: L-42822; LP: L-42879.

Pertusaria

amara (Ach.) Nyl. – LT: L-42843.

cf. *bispora* Lindner – BO: L-42853. The collection is comparable to this yellow, two-spored species from the Galapagos and Revillagigedo Islands (Lindner 1934). On smooth bark.

flavicunda Tuck. – EP: L-42607, B&R 89-414, R&B 89-100 (IRVC, WIS); LP: L-42877, L-42895. Reported by Hasse (1903).

Pertusaria sp. – EP: B&R 89-400.

Phaeophyscia

cernohorskyi (Nádv.) Essl. – LP: L-42869.

Physcia

adscendens (Fr.) H. Olivier – EP: L-42688; LP: L-42868.

callosa Nyl. – EP: L-42643, L-42650.

clementei (Sm.) Lynge – LT: L-42848.

phaea (Tuck.) J.W. Thomson – EP: L-42636; LT: L-42826, L-42833.

stellaris (L.) Nyl. – EP: L-42667.

tenella (Scop.) DC. var. *tenella* – BO: L-42861; LP: L-42874.

Physconia

enteroxantha (Nyl.) Poelt – BO: L-42862.

isidiigera (Zahlbr. in Herre) Essl. – LP: L-42866.

Polycauliona

coralloides (Tuck.) Hue (*Caloplaca coralloides* [Tuck.] Hulting) – EP: R&B 89-200. This perfectly good morphological genus is more distinct from *Caloplaca* than is *Xanthoria*.

Psora

decipiens (Hedwig) Hoffm. – BO: L-42865.

Psorula

scotopholis (Tuck.) G. Schneider – LP: L-42875.

Punctelia

borreri (Sm.) Krog – R&B 89-114. Reported by Riefner et al. (1995).

stictica (Duby) Krog – LP: L-42871 (LAM).

subrudecta (Nyl.) Krog – BO: L-42859; LP: L-42867.

Pyrrhospora

quernea (Dickson) Körber (*Lecidea quernea* [Dickson] Ach.) – LT: L-42842.

Ramalina

canariensis Steiner – EP: B&R 89-423; B 84-111, on rock near the airfield. See Riefner and Bowler (1994) for a discussion of the mainland distribution.

farinacea (L.) Ach. – LT: L-42839; FS: on *Quercus tomentella*, B 84-109, B&R 89-407. Reported by Hasse (1903) as *Ramalina calicaris farinacea*.

fastigiata (Pers.) Ach. – Riefner 89-103. Reported by Riefner et al. (1995).

lacera (With.) J.R. Laundon – FS: on *Quercus tomentella*, B&R 89-404, R&B 89-106.

leptocarpha Tuck. – Observed in the oak grove as small, immature specimens; collections too fragmentary to have value. Reported by Hasse (1903) as *R. menziesii* Tuck.

menziesii Tayl. – LT: L-42828, L-42846; FS: on *Quercus tomentella*, B&R 89-411. Reported by Hasse (1903) as *R. reticulata*.

pollinaria (Westr.) Ach. – FS: on *Quercus tomentella*, B&R 89-406.

Reinkella

parishii Hasse – EP: B&R 89-416; Lich. Exs. No. 176 (COLO).

Rimelia

reticulata (Taylor) Hale & Fletcher (*Parmotrema reticulatum* [Taylor] Choisy) – EP: L-42653.

Rimularia

insularis (Nyl.) Rambold & Hertel (*Lecidea insularis* Nyl.) – LT: L-42825. On a thallus of *Lecanora gangleoides*.

Rinodina

bolanderi H. Magn. – LP: L-42903, L-42891. Det. J. Sheard.

conradii Körber – EP: L-42672.

hallii Tuck. – LP: L-42902. Det. J. Sheard.

luridata (Körber) H. Mayrh., Scheid. & Sheard – EP: L-42652. Det. H. Mayrhofer.

Rinodina sp. – FS: on *Quercus tomentella*, B&R 89-402.

Roccella

babingtonii Mont. – EP: B 83-102.

fimbriata Darbish. – EP: L-42600, R&B 89-109.

Schizopelte

californica Th. Fr. – EP: L-42603, Lich. Exs. 176 (COLO), L-42603 (LA), B 84-105, B&R 89-413. Reported by Hasse (1903).

Sclerophyton

cerebriforme Egea & Torrente – EP: R&B 89-107. Confirmed by J.M. Egea. A new record for the Channel Islands. Reported by Egea and Torrente (1995) from Los Angeles and San Luis Obispo Counties.

Sigridea

californica (Tuck.) Tehler (*Dirina californica* Tuck., *Schismatomma californicum* [Tuck.] Zahlbr.) – EP: L-42669. Confirmed by A. Tehler.

Sticta

fuliginosa (Hoffm.) Ach. – LP: L-42893.

Teloschistes

californicus Sipman (*T. villosus* of authors, not Norman. [Sipman 1993]) – EP: B 83-103.

chrysophthalmus (L.) Th. Fr. – FS: on *Quercus tomentella*, R&B 89-119.

flavicans (Sw.) Norm. – LP: L-42890.

Tephromela

atra (Hudson) Hafellner (*Lecanora atra* [Hudson] Ach.) – EP: L-42622, R&B 89-120.

Thelomma

mammosum (Hepp) A. Massal. (*Cypheliopsis bolanderi* [Tuck.] Vainio) – EP: L-42628, B&R 89-422; LT: L-42827 (gray, ecorticate morphology), L-42628 (LAM); BO: L-42857 (a corticate and an ecorticate morphology).

Tonia

ruginosa (Tuck.) Herre ssp. *pacifica* Timdal – EP: L-42671. Confirmed by E. Timdal.

tristis (Th. Fr.) Th. Fr. – LP: L-42907 (COLO), L-42907 (LAM).

Umbilicaria

phaea Tuck. – BO: L-42858, L-42858 (LAM).

Usnea

rubicunda Stirton – FS: on *Quercus tomentella*, B&R 89-408 (UC).

Usnea sp. – BO: L-42855; FS: on *Quercus tomentella*, B&R 89-409 (UC). A small, bushy plant branched from the blackened base. Older parts papillate, younger parts with low soralia.

Verrucaria

Verrucaria sp. 1 – EP: L-42644. Extremely minute dark gray, angular areoles on a pitch black ground. Perithecia not seen. On andesite and talus.

Verrucaria sp. 2 – EP: L-42649. Thick gray areoles with a pebbly surface (cf. *V. stanfordii* of Herre [1910]). Perithecia large, visible on surface as a large black spot which is not raised. Perithecial wall thick, black, partly covered by cortex. Spores 20 x 12 μ . It would be

foolish to assign names until the genus in North America is better studied.

Xanthoparmelia

- mexicana* (Gyelnik) Hale – LP: L-42908.
somloensis (Gyelnik) Hale – EP: L-42610; LP: L-42909.
Xanthoparmelia sp. – EP: L-42605.

Xanthoria

- fallax* (Hepp) Arnold – LP: L-42870.
Xanthoria sp. – EP: L-42613.

Zahlbrucknerella

- Zahlbrucknerella* sp. – LP: L-42880.

Species not included in this checklist but recorded from San Clemente Is. by Hasse (1903). Their identifications need to be verified:

- Buellia parasema*
Lecanora pallida
Lecanora roboris (*Rinodina confragosa*)
Lecanora subfusca
Lecanora varia
Lecidea enteroleuca
Lecidea (?) sp.
Placodium ferrugineum
Placodium sp.
Ramalina combeoides
Usnea hirta

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and Einar Timdal. Chicita Culberson shared her notes on the chemistry of the unnamed *Leprolooma*. Our editor, Darrell Wright, provided substantial help with obtaining identifications of several collections.

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Tavares: Two *Caloplaca* Species

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Notes on Two Species of *Caloplaca* from California

Isabelle I. Tavares

An erroneous locality was given in the original description of *Caloplaca californica* Zahlbr. in Keissl. (isotypes of which were issued as *No. 2968*, *Kryptogamae exsiccatae editae a Mus. Hist. Nat. Vindobon.* [Vienna Museum of Natural History]—see Keissler 1926). The isotypes, distributed to various herbaria, bear the Latin diagnosis, the description of the species, followed by the locality "San Rafael, Marin Co.," the information that it was corticolous, the collector (H. E. Parks), and the sender (W. A. Setchell); no collection date was given. Harold E. Parks, whose collections constitute a large part of the fungal herbarium at UC (University Herbarium, University of California at Berkeley) included a typed note in a later collection of this taxon (*Parks 3494*, 16.ix.1930), indicating that the place of collection was misstated by Zahlbruckner in the original description and that *Parks 3494* came from the type locality—redwood pilings in Eureka harbor, Humboldt County, California. A comparison between the isotype, *No. 2968* from Vienna, and *Parks 3494* shows that the weathered surface of the redwood pilings of the latter is similar in appearance to the substrate of the isotype, indicating the accuracy of Parks's statement. In fact, a packet of *Caloplaca californica* (UC 1067290; *Parks 2849*, collected 13.vi.1925) is similar to Vienna *No. 2968* and is probably the type collection. A group of specimens was sent to Vienna for the exsiccatae from Berkeley in late 1925, according to the correspondence file of W. A. Setchell. Possibly the error in the locality arose because the nearby Vienna *No. 2969* (labelled as *Xanthoria*

ramulosa [Tuck.] Herre) was collected at San Rafael by Parks.

Because neither collector's number nor date of collection was included when *Caloplaca stanfordensis* H. Magn. was described (Magnusson 1944), it is not known whether the specimen in UC from *Aesculus californica* (Spach) Nutt. (*A. C. Herre 415*, 23.iv.1904, near Stanford University in the Santa Clara mountains [=Santa Cruz Mountains]) is from the type collection. It does, however, have large spores (about 16 x 7.5-8 μm) with a very wide septum (about 6.5 μm), as described by Magnusson.

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The H.D. Thiers Herbarium at San Francisco State University

Janet Doell

For those unfamiliar with the H.D. Thiers Herbarium with its impressive lichen collections, the following description should be of interest. The herbarium (acronym: SFSU) is available for use by all of you, and, in fact, the more it is used, the happier Dr. Dennis des Jardins, the director and curator, will be.

With 18,000 collections stored there, this is one of the largest lichen herbaria on the west coast. At the time Dr. Thiers arrived at San Francisco State in 1959 there was not a single lichen in the herbarium. The seminal collection was one his wife Ellen had made while she was a student at the Michigan Biological Station and had brought with her. In the years following his arrival Dr. Thiers and his students built up the herbarium to its present level. Lichenology has not been taught as a course since 1987, and the herbarium has grown little since then. Some borrowing still goes on by mail, 50% of it from other parts of the United States. European lichenologists have also borrowed a large number of collections. Unfortunately, many of these were never returned and are feared lost.

To illustrate the breadth of this herbarium, here are a few numbers: it contains 250 genera, 629 species and 27 additional varieties of lichens. Fifty-three of California's 58 counties are represented with most of the

collections made in the northern half of the state. Although the large majority of collections were made in California, lichens are stored here from 45 states of the U.S. and from all but one of Canada's provinces and territories. Specimens from almost all the countries of Europe have found their way here, along with some from distant places like China, Australia and the Philippines; and from as far north as Greenland and as far south as Chile.

Should you want to find your way to this treasure trove of lichens, read on. Once at San Francisco State University, find the most northerly building facing 19th Avenue, at the northeast corner of the campus. This is Hensill Hall, the biology building. Proceed to the fourth floor; the herbarium is within steps of both the elevator and the stairs. In the unlikely event that the door is locked and no one hears you knock, ask a passing student or one at work in the lab across the hall, and they will probably be able to let you in. Weekdays when school is in session is the best time to go there.

Once inside, you are faced with an impressive number of large metal cabinets housing the mycological collections. Get past those and you'll find the more modest black file cabinets housing the lichens in alphabetical order by genus and species. In an even more modest box on top of one of the cabinets are the file cards referring to the lichens. Some CALS members are interested in entering this catalog into a computer database [see Bull. Cal. Lich. Soc. 2(1)]. The database could then go on-line at the proposed CALS Web site.) Progress in this area continues to be slow due to technical problems such as the lack of an available computer.

For further information about the herbarium or to borrow material, contact Dr. Dennis des Jardins at (415) 388-2439.

Key to the Corticolous Species of *Ochrolechia* in California

Shirley C. Tucker, adapted from I.M. Brodo (1991)

Specimens of the crustose lichen genus *Ochrolechia* generally are recognizable by their lecanorine apothecia (cup-shaped fruits in which the rim is the same color as the plant body). Many species have a pink or pinkish orange disk and a relatively thick raised exciple or rim. Some have heavily pruinose disks that appear to be white or yellowish white rather than pink. Fruiting thalli resemble those of the common crustose genus *Lecanora* except that many *Ochrolechias* have the combination of

larger apothecia with thicker exciples and pink disks. If one has access to a microscope and can cut a vertical section of the apothecium, the spores will immediately distinguish between *Ochrolechia* and *Lecanora*. Although both genera have colorless, simple (undivided) spores, those of *Ochrolechia* have 1 to 8 per ascus and are thick-walled and large (35-75 μm long and 18-40 μm wide). Spores of *Lecanora* are thin-walled and much smaller (about 8-21 x 5-8 μm) and always eight per ascus. The C+ red reaction, together with the hymenial characters, distinguishes some species of *Ochrolechia* from *Lecanora*. The article on *Ochrolechia* by Brodo (1991) describes the nineteen corticolous species reported for North America, together with a key, information on chemistry, distribution maps, and citations of representative specimens from each state by county.

An abbreviated key not requiring TLC (thin-layer chromatography) is included here, adapted from the key by Brodo (1991), containing the nine species reported for California plus three others found in southeastern Arizona and therefore possible for California. Of the other species listed for California by Tucker and Jordan (1979), *O. californica* Verseggy is a synonym of *O. oregonensis* H. Magn., and *O. frigida* (Sw.) Lynge f. *theleporoides* (Ach.) Lynge, *O. tartarea* (L.) A. Massal. and *O. upsaliensis* (L.) A. Massal. are misidentifications for California. The last may be either *O. farinacea* G.E. Howard or *O. szatalaensis* Verseggy, according to Brodo. In the past, collections from California were often identified as *O. pallescens* (L.) A. Massal. or *O. parella* (L.) A. Massal., but Brodo (1991) says that neither occurs in the U.S.

Some terms in the key need to be explained (see also Fig. 1). The lichen consists of **apothecia** (spore-containing structures) and the **thallus**, the vegetative part of the crust which includes its own **cortex** and **medulla**. A vertical section of an **apothecium** (cup-shaped fruiting body) includes the **disk** or fertile portion and the apothecial **margin**. The **disk** contains the spore-bearing layer or **hymenium**. Below the hymenium is the **hypothecium**, a layer that may be continuous at the sides with the exciple. The **cortex** is the tissue external to the green **algal layer** (present in both the thallus and in the margin of the apothecium or **exciple**). The **medulla** is the fungal layer internal to the algal layer in both the thallus and the exciple; it also underlies the algal layer below the hypothecium. Two kinds of vegetative reproductive structures may be present on the thallus, usually on the upper side from which they break off easily: **soredia** (tiny granules or dust-like particles, consisting of algae entangled in fungal hyphae) or **isidia** (corticate coralloid or finger-like structures). A surface may be **pruinose** (dusty-looking, with a layer of tiny flakes or powder that can be rubbed off), **epruinose** (lacking pruina or powder), **scabrous** (rough), **rugose** (wrinkled), or **verruculose** or

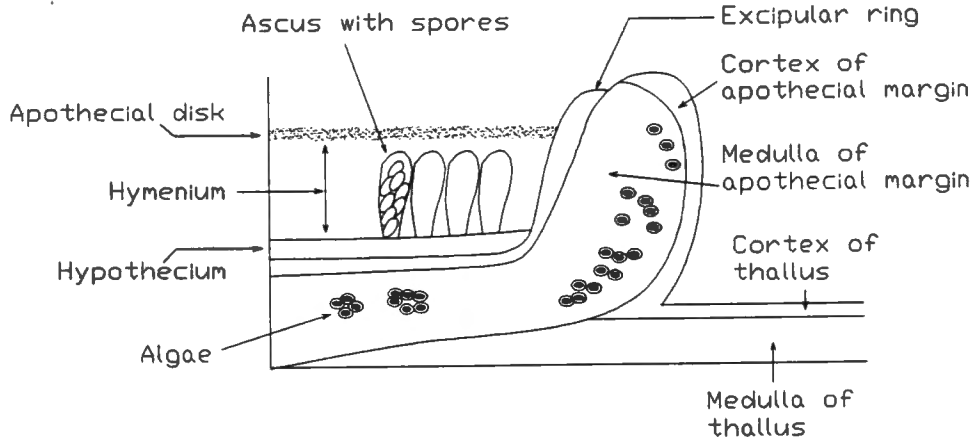


Fig. 1. Vertical section of an apothecium (schematic), modified and redrawn from Brodo (1991).

verrucose (warty). A pertusarioid apothecium resembles those of *Pertusaria* in having a very small, pore-like opening into the apothecium. To determine the C reaction a calcium hypochlorite (or Chlorox) bleach solution is used. UV reactions refer to long wave ultraviolet light.

I.M. Brodo and two anonymous reviewers made suggestions to improve this version of the key modified for California, for which I am grateful. Readers are urged to refer to Brodo's original article, which gives descriptions and distribution data for each of the species. It is hoped that readers will notify me of problems encountered in using this California key.

- 1. Thallus sorediate or isidiate 2
- 1. Thallus not sorediate or isidiate 4
- 2. Sorediate 3
- 2. Isidiate (none yet known with isidia in Cal.); isidia breaking down to produce a granular crust, on conifer bark, Texas to Arizona *O. subsidiata* Brodo
- 3. Soredia effuse on the surface of the thick, white verrucose thallus; all tissues C-; Humboldt Co. north to British Columbia *O. farinacea* G.E. Howard
- 3. Soredia in discrete soralia (sometimes confluent); thallus thick, verrucose; often on mosses; apothecia rare; soredia, thallus and apothecial disk C+ red, UV+ white - *O. androgyna* (Hoffm.) Arn. Note: Brodo indicates that the California populations of this species are somewhat atypical and may be distinct.

- 4. In apothecial margin, cortex and/or medulla C+ pink to red 5
- 4. In apothecial margin, cortex and medulla C+ yellow or C-; cortex of thallus C- or C+ yellow 10
- 5. Medulla of apothecial margin C+ red (or C- in chemical race II of *O. mexicana*); apothecial cortex C+ or C- 6
- 5. Medulla of apothecial margin C-; apothecial cortex C+ red 7
- 6. Cortex and medulla of apothecial margin both C+ red; inner excipular ring present; cortex UV+ gold to yellow-orange; usually epruinose; algal layer beneath hypothecium and in margin; in Mexico and southern U.S., possibly in California *O. mexicana* Vain.
- 6. Cortex of apothecial margin C-, usually white pruinose; no inner excipular ring present; UV+ orange or UV-; medulla C+; in southern U.S. and Mexico, rare in California *O. africana* Vain.
- 7. Apothecial margin consisting entirely or in part of smooth, salmon-pink, shiny tissue (this tissue often restricted to a ring around the disk); apothecia 1-4.5 mm in diam.; thallus thick, white to ashy gray, rugose to verrucose; apothecial margin remaining intact and even 8
- 7. Apothecial margin usually without pinkish tissue or excipular ring 9
- 8. Algal layer continuous below the hypothecium and extending into the exciple; hymenium 180-280 μ m high; spores 40-58 x 20-31 μ m; apothecial margin

- usually rough and dull, on various barks; California to southern British Columbia *O. subpallascens* Versegby
8. Algal layer confined to lateral margin; hymenium over 320 μm high, spores 50-75 X 28-41 μm ; apothecial margin thick, hard, often shiny, usually showing a double margin or inner excipular ring; apothecial cortex and thallus C+ red; on conifers, west coast from central California to Alaska *O. oregonensis* H. Magn.
9. Algal layer lacking below hypothecium; apothecial margin very thick, prominent; hymenium 250-430 μm high; thallus relatively thin and smooth; mainly on smooth-barked deciduous trees, especially *Alnus*; along west coast from California to Alaska *O. laevigata* (Räs.) Versegby ex Brodo
9. Algal layer continuous below hypothecium and often extending into margin as well; apothecia 1-3 (-4) mm in diam. with smooth, even, prominent margins; hymenium 180-280 μm high; thallus rough (verruculose to verrucose); on deciduous trees or conifers; from British Columbia to California *O. subpallascens* Versegby
10. Apothecial disk C- or C+ yellow, often a few disks turning UV+ yellow-orange, heavily scabrose-pruinose, yellowish to yellow-orange 11
10. Apothecial disk C+ pink or red; UV- or slightly yellow-orange, lightly pruinose to pruinose-scabrose, rarely epruinose 12
11. Thallus thin (especially when on lignum, i.e., debarked wood), pale grey; apothecia scattered, not crowded; on bark or lignum *O. szatalaönsis* Versegby
11. Thallus thick, verrucose, white; apothecia usually crowded; algal layer in apothecial margin and under hypothecium; on bark (esp. *Quercus*, oaks) *O. farinacea* G.E. Howard
12. Algal layer thick, conspicuous below hypothecium; apothecia large (to 5 mm diam.), flat, with margins relatively thin, prominent above disk or almost level with it; thallus rugose to verrucose; on conifers; S.E. Arizona to New Mexico and western Mexico *O. pseudopallascens* Brodo
12. Algal layer scanty or absent below the hypothecium; apothecia 0.6-2.5 mm diam. 13
13. Thallus very thin, often reduced to a dark grey stain; apothecia with white to orange-pink margins; apothecial disks soon expanded; on conifer lignum and rarely on conifer bark; west coast and Rocky Mountains *O. subathallina* H. Magn.
13. Thallus thin at edge, thicker and rugose or verruculose in center; apothecial margin white, thick,

prominent, often dull, rough, and decomposing; apothecium up to 2.5 mm diam.; disk often hardly exposed even when mature (but later expanding), giving the apothecium a pertusarioid appearance; west coast of U.S. *O. juvenalis* Brodo

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What happened to *Dendrographa minor*?

Darrell Wright

Anders Tehler (Naturhistoriska Riksmuséet, Stockholm), long time student of the nature of lichen species and of Roccellaceae, and his student Rikard Sundin had been wondering about the relationship of commonly fertile *Dendrographa leucophaea* (branches mostly flattened; thalli resemble some *Roccella* and *Niebla* species) to nearly always sterile *D. minor* (branches mostly round in cross section; thalli resemble tufts of gray hair). Some of us here as well had been wondering about these interesting fruticose Roccellaceae of the immediate coast of Baja California, Mexico, and California, U.S.A., ranging north to Marin County. Sundin and Tehler (1996) proceeded to study a large number of *Dendrographa* specimens from herbaria worldwide and then travelled to America and up the Pacific coast from Baja California to Marin County to see them in the living state. This is what they found:

There are two species, but they cannot be reliably separated by the shape and size of the branches as earlier workers had tried to do (Hale 1969, 1979; Hale and Cole 1988). It was found that they can be separated reliably in the following way:

1. Medulla cottony, the hyphae free (byssoid, Gk. *bysson*, fine cotton); conidia averaging 11 μm long *Dendrographa leucophaea*
1. Medulla coalescent, the hyphae more or less "glued" together; conidia averaging 13 μm long *Dendrographa alectoroides*

In Monterey County there is much intergradation with respect to flat and round branches, as can be seen in collections at SFSU, but the species would supposedly still be distinguishable there by the coalescence of the medulla and the length of the conidia (in Sundin and Tehler's key [1996, p. 23], the conidia measurements

were accidentally transposed between the leads of the first couplet). The statistical probability of these average conidia lengths coming from the same parent group was less than one chance in 10,000.

When Sundin and Tehler examined the type specimen of *Dendrographa minor*, they found that it had a cottony medulla and the shorter conidia, that is, it was actually *D. leucophaea* according to their concept, so that the name *D. minor* became a taxonomic synonym of *D. leucophaea*. This left the northern material with the coalescent medulla and longer conidia (and predominantly fine, round branches) without a scientific name. The author of the genus *Dendrographa*, Otto Darbishire (1870-1934), monographer of Roccellaceae, had informally applied the name *D. alectoroides* to two specimens of the northern material collected by Herre at Pt. Lobos in San Francisco. Rather than creating a new name, Sundin and Tehler applied this never-published name of Darbishire's to the newly nameless northern species, so that what most American lichen students have been calling *Dendrographa minor* Darbishire is now called *D. alectoroides* Sundin & Tehler forma *parva* Sundin & Tehler. As Rikard Sundin puts it (pers. comm.), what people have been calling *Dendrographa minor* varies from person to person. The material actually belongs to two different species, and only part of it, consisting of sterile southern specimens with cottony medulla and short conidia, has been merged with *D. leucophaea* as forma *minor*. The other part, consisting of northern sterile specimens with coalescent medulla and long conidia, was put together with northern fertile specimens and described as *D. alectoroides*.

Why forma *parva*? The rank of forma is in line with Sundin and Tehler's (1996) idea that the sterile form may be regarded as the anamorph (asexual or imperfect) stage of the fungus while the fertile form, forma *alectoroides* in this case, represents the teleomorph (sexual or perfect) stage. The same relationship exists between the two formae of *Dendrographa leucophaea*. Sundin and Tehler propose that among the lichens such forms should be treated under the lowest subspecific rank, that of forma.

Hale and Cole (1988) give the major secondary product as fumarprotocetraric acid, but this should be corrected to protocetraric acid in accord with Hale (1969, 1979) and the findings of Sundin and Tehler, who established that protocetraric acid is the major product while fumarprotocetraric occurs only as a trace. I chromatographed material from five of the eight Marin County populations in standard solvent systems B1 and C (C. Culberson 1972; C. Culberson and A. Johnson 1982) and found not even a trace of fumarprotocetraric acid. Fertile *D. alectoroides* forma *alectoroides* had a somewhat different chemistry with a well-developed

spot (B1:5-6, C:5) which did not appear in any of the material of forma *minor*. Sundin (pers. comm.) suspects this is the unknown they called U2, a presumed depside whose position in their HPLC tracing (longest retention time) supports this identification (Sundin and Tehler 1996). Forma *alectoroides* is currently known from only the one population and should not be collected. It is less, probably much less, than 1% of the thalli; 99+% are forma *parva*. I will be glad to loan my collection along with color photocopies of its chromatograms to anyone who wishes to study it.

Sundin and Tehler did not have information about a significant group of six populations 20 km to the north of Pt. Reyes near the Marin-Sonoma County line. Herre (1910) refers to one of them in his discussion of the Land's End population in the city of San Francisco. This distribution in northwest Marin County with five populations in an area of 10 km² might represent the summer breeding grounds of a bird which migrates, or once migrated, between northwest Marin County and southern California and was responsible for dispersing the lichen. Another previously undocumented population, about which I recently learned from Sylvia and Steve Sharnoff, is at Fort Cronkhite near the southwest tip of Marin County 5 km north of the Land's End population in the city of San Francisco, and on 8 November, Marin Open Space District Naturalist Bob Stewart and I discovered an eighth Marin Co. population near Vincent Landing on Tomales Bay. The Fort Cronkhite population is in the Golden Gate National Recreation Area and is therefore protected, but all other Marin populations are on private land, and at least one may still be under threat from a golf course proposed for the area between the Estero de San Antonio and the Estero Americano. I looked for *Dendrographa* north of the Estero Americano on the southern Sonoma County coast but did not find it.

A final note concerns the orientation of the rock faces and soil banks on which *Dendrographa alectoroides* grows. All but one population has the lichen strongly confined to northern exposures and lacking or very scanty on other exposures. However, at abandoned "Ranch 107" on the shore of the Estero de San Antonio 2 km from the ocean, *Dendrographa* luxuriates on the southwest face of its rock, that is, facing down the Estero toward the mouth, suggesting it prefers not north-facing but *fog*-facing surfaces.

I thank Rikard Sundin and Isabelle Tavares for reviews which improved this article considerably.

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Notes and News

Courageous Work Lets *Nephroma* Figure in the Defense of its Habitat

From the International Canopy Network (ICAN) in Washington State via Don Reynolds and Shirley Tucker:

9/27/96

Cobble Creek, Roseburg Bureau of Land Management (BLM), [Washington], USA – A rare lichen, *Nephroma occultum*, has been discovered in this already highly controversial timber sale. BLM had reached a decision in July to clearcut this mountain top of 120 acres, in spite of the fact that it was the last gene pool for many miles of rare healthy sugar pines and seven foot diameter old-growth Douglas Firs. The sale auction was scheduled for late October, 1996. The discovery of *Nephroma occultum* is further proof that Cobble Creek is indeed a rare and wonderful place. The lichen has been discovered in at least three sites in the sale area.

Abbey Rosso, a former Douglas County resident, now a Ph.D. student at OSU studying lichen ecology, toured the Cobble Creek timber sale on 9/22. Abbey discovered the rare lichen in the sale. Abbey looked at 6 trees, and found the rare lichen on 3 of them. The lichen trees were at two distinct sites, at opposite ends of the sale. Each site was at or near the beginning of the two proposed new roads!

When present, *Nephroma occultum* occurs most frequently in the mid- to upper canopy of old growth forests. It would take either a tree climber or fallen limbs to discover this rare lichen. However, BLM illegally felled old-growth trees within the unit on the

weekend of 9/14, so searching for this lichen was conducted on some of those trees. *Nephroma occultum* is what the Northwest Forest Plan (NFP) calls a "Rare nitrogen-fixing Lichen" and when found, BLM must manage for it. The NFP rules say: "As soon as the information becomes available, it should be used in the ... modification of activities." Abbey contacted the BLM immediately and showed them the lichen locations on 9/25. While in the field with BLM, Abbey identified a third site in still another part of the sale, again on some trees BLM had harvested for the purpose of estimating the sale value, but without having completed proper environmental analysis. BLM personnel collected samples of the lichen.

There is no word yet from BLM what their planned modifications will be. Previously, there were only 3 known occurrences of this lichen in the entire Umpqua River Watershed. Appendix J2 of NFP says that this lichen grows almost exclusively in pristine old-growth forests over 400 years. The ages of three of the lichen trees were 440, 440 and 540 years old. Environmental laws on page C-4 of the Northwest Forest Plan apply: "In most cases, the appropriate action will be protection of relatively small sites, on the order of tens of acres." It appears that BLM must protect "tens of acres" (minimum of 20 acres?) for each site location, including the locations at the beginning of the proposed roads. However, appendix J2 of the Northwest Forest Plan recommends: "Protection of key sites for the species by designation of Botanical Special Interest Areas or Areas of Critical Environmental Concern is important mitigation for them." In the spirit of ecosystem management, BLM should follow the scientific recommendation and withdraw the entire Cobble Creek timber sale.

Don R. Reynolds, Natural History Museum, 900 Exposition Boulevard, Los Angeles, California 90007, USA. Telephone 213 744 3232. FAX 213 746 2999. E-mail: dreynold@bcf.usc.edu

Fall Field Trip in Oregon

A successful field trip to the southern Oregon coast took place on the weekend of October 19 and 20. The twenty-one participants included some new faces from Oregon, thanks to the invitation extended via the Northwest Lichen Guild. A full report on this expedition, including lichen lists, will appear in the next Bulletin.

Posters

The CALS poster depicting 21 California lichens in color is the only lichen poster for North America. I urge members not only to buy one of these for \$8- (\$10- if mailed) but also to take a sample along when attending meetings of the California Native Plant Society or other natural history organizations and take orders. Anyone interested in buying the posters in quantity may contact the Society directly; we do have wholesale rates for stores.

The posters, designed by Richard Doell and Craig Stewart from photographs by Richard, are already spreading the word that lichens are interesting and beautiful if you just take the time to look at them.

Posters will be available at all CALS meetings and field trips and at events such as the San Francisco Mycological Society's Mushroom Fair (see announcement on this page). They are also available at all times at the CALS address in Point Richmond.

European Book Source

Sven Koeltz of Koeltz Scientific Books at Koenigstein has been particularly friendly and helpful with providing such items as *Die Flechten Baden-Württembergs* (\$105- for the two volumes) and *Bestimmungsschlüssel Europäischer Flechten*, and I would like to recommend him to our readers. He answers E-mail instantly at koeltz@ibm.net and has just set up a Web site (<http://www.koeltz.com>) which he describes as follows:

Your colleagues can check all our lichen books, print out the whole list, etc. Search is possible by author, title, categories (e.g., lichens, algae, fungi, Japan, Brazil, etc.). Users may also subscribe to our free catalogs (electronic or hard copy). Kind regards and all the best to you.

Sven (Koeltz)
Koeltz Scientific Books, P.O. Box 1360, D-61453
Koenigstein, Germany. Fax: (+49) 6174 937240.

Dues Again?

Time flies, and it is once more time to think CALS dues. With this issue of the Bulletin you will find a return envelope to facilitate payment of dues for 1997. These are due on January 1 and delinquent on April 1. Categories remain the same:

Regular	\$15-	Sponsor	\$35-
Donor	25-	Student	10-
			or hardship

All members have the same privileges regardless of the dues category.

Upcoming Events

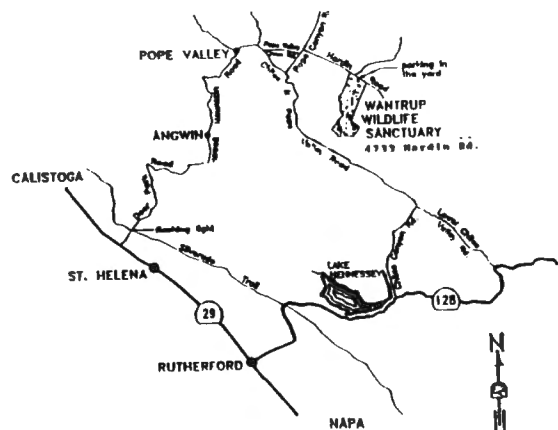
December 8: Mushroom Fair from 10 to 5 at the County Fair Building in Golden Gate Park. This event, presented by the San Francisco Mycological Society and organized under the direction of CALS member Lisa Bauer, promises to be a large and lively affair. Barbara Lachelt and Lynn Marsh are preparing a lichen display with the theme "Lichens and their Habitats". Bill Hill will man his microscopes as in the past, and Richard Doell will give several presentations of new, short multi-media lichen and mushroom slide shows.

January 5, 1997: San Bruno Mountain, San Mateo County. Mark Mencke of the Yerba Buena Chapter of the California Native Plant Society is organizing a field trip to San Bruno Mountain to look at lichens and has invited CALS members to join the group. CALS member Mikki McGee will lead the walk. Call Mikki at (415) 467-5285 or Mark at (415) 824-8959 for details.

January 14: CALS member Don Kowalski will teach a class entitled "Lichens of California" at the Coast Campus of the College of the Redwoods in Fort Bragg. The class will meet on Tuesdays from 9 a.m. to 1 p.m. and will end May 20. Tuition is \$32-. Contact Don at (707) 964-7213 or write to him at P.O. Box 1415, Fort Bragg, CA 95927.

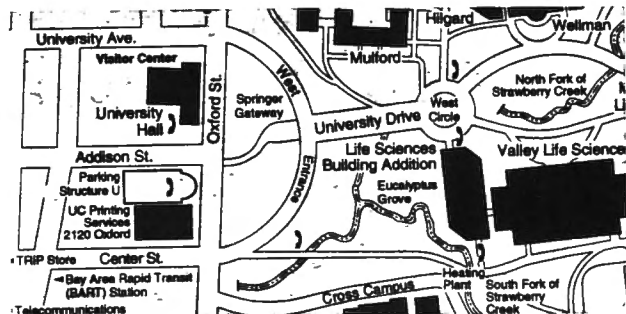
January 19-20: Field Trip to Napa County. This will be a trip to the Wantrup Wildlife Sanctuary in Pope Valley. The area's lichen habitats include oak woodland, boulders and trees of Las Posadas State Forest, rocks of the Sonoma Volcanic Formation and a serpentine area. Resident manager and CALS member Joe Callizo has invited us to visit the Sanctuary as his guests, and, if some of those attending volunteer to bring some food, there will be *no charge* for what promises to be a most interesting field trip. The residence at Wantrup sleeps eight persons in four bedrooms, eight to ten on cots in the large living room, and others on the porch, with room for several RV's in the yard. Weather might be problematic, but the residence has indoor space for study and/or lectures. Call Janet Doell, (510) 236-

0489, or Barbara Lachelt, (415) 456-2918, by January 14 to let us know if you are coming. For directions see the map below.



February 14-16: Lichen Workshop at the Jepson Herbarium. CALS members Dr. Larry St. Clair of Brigham Young University and Clayton Newberry of UC Berkeley will teach a lichen workshop as part of the Weekend Workshops sponsored by the Friends of the Jepson Herbarium. This will be a short course in lichenology with a heavy emphasis on basic skills for field identification. There will be a seminar on the use of lichens as biomonitors of air quality and a field trip. Tuition is \$135- for members of the Friends of the Herbarium, \$150- for non-members (membership is \$25-). For further information contact Susan D'Alcamo, (510) 643-7008.

February 14: CALS Reception for Dr. Larry St. Clair. The California Lichen Society will host a reception for Dr. St. Clair following the general audience seminar on the evening of Friday, February 14. The subject of the seminar will be the use of lichens as biomonitors of air quality. Those interested in this open event should come to Room 1001, Valley Life Sciences Building, University of California, Berkeley at 7 p.m. Someone will be at the north end of the building to let you in. Evening parking is available at faculty-staff, student



and non-restricted central campus permit areas. Bring \$3- in quarters for the meter. The Valley Life Sciences Building is within walking distance of BART. See map.

April 19-20: Spring Field Trip to Lake County. Plan to join CALS on a field trip to Lake Pillsbury on this weekend. Darrell Wright is familiar with the area and will lead the hikes. He promises a generous lichen flora, and with any luck there should be wildflowers galore as well. Details will be sent out in a later mailing.

Fall, 1997: CALS crustose experts Dr. Shirley Tucker and Cherie Bratt will hold a workshop in Santa Barbara. This is for the convenience of our southern members and of these instructors who have been very generous in the past about coming north to our activities. This is tentatively planned as a 3-day workshop followed by an excursion to Santa Cruz Island if there is enough interest. There will be a fee; the amount is still undetermined. We will keep you informed as details are worked out.

President's Report

You will have read elsewhere that we have had a change of watch with regard to the editorship of the Bulletin. We have lost our managing editor and gained a new one in something like the blink of an eye.

Darrell Wright has been very instrumental in the success of the California Lichen Society by taking on the editorship of our Bulletin and doing a fantastic job. Many of our members belong to CALS primarily to receive the Bulletin. On behalf of the Society I would like to thank Darrell most heartily for the long hours and hard work it has taken over the last three years to produce this publication.

We need to thank Dr. Isabelle Tavares that even as Darrell's last Bulletin goes to press, a new managing editor has been found to replace him. Let's welcome Dr. Richard Moe to the CALS editorial staff and thank him for being willing to take over this important and time consuming task. Dr. Moe sends this biographical note:

Dick Moe [he says he is comfortable with informality] is a phycologist with an interest in marine algae, especially Antarctic marine algae. Isabelle Tavares recently introduced him to the wonders of corticolous crustose lichens. He helped to assemble the Catalogue of benthic marine algae of the Indian Ocean (Univ. Calif. Publ. Botany 79, 1996) and produced camera ready copy for the University of California Press. He indulged his interest in elec-

tronic publication by generating an electronic version of the catalogue ([http://ucjeps.berkeley.edu/rlmoe/tioc/ioctoc.html](http://ucjeps.herb.berkeley.edu/rlmoe/tioc/ioctoc.html)).

Many thanks to those who took the trouble to return the ballot distributed with the last Bulletin. There were no negative votes in the 20 ballots received, and, as any non-vote was recorded as positive, the new by-laws were accepted unanimously. The main thrust of the changes in the by-laws was the increase in the number of officers from two to four and the formation of a Board of Directors of five members. This was necessary, as CALS continues to grow and expand.

At the year's end we can look back on a reception for Dr. Tom Nash, three field trips, two classes, the production of a lichen poster and the publishing of two Bulletins. Membership grew to 142 and seems to be stabilizing just below that number. Next year promises to be just as productive, and I invite members to suggest what new directions CALS might take to address your needs and interests.

Best wishes for the coming Holiday Season and all of 1997.

Janet Doell

Down the Bayou

The cypress swamp around me wraps its spell,
With hushing sounds in moss-hung branches there,
Like congregations rustling down to prayer,
While Solitude, like some unsounded bell,
Hangs full of secrets that it cannot tell,
And leafy litanies on the humid air
Intone themselves, and on the tree trunks bare
The scarlet lichen writes her rubrics well.

The cypress-knees take on them marvelous shapes
Of pygmy nuns, gnomes, goblins, witches, fays,
The vigorous vine the weathered gum-tree drapes,
Across the oozy ground the rabbit plays,
The moccasin to jungle depths escapes,
And through the gloom the wild deer shyly gaze.

Mary Ashley Townsend

(Sent to Shirley Tucker by a botanist friend in Louisiana. The "scarlet lichen" is *Cryptothecia rubrocincta*, which covers entire trunks of old live-oaks there.)

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