

Bulletin of the California Lichen Society



Volume 2

No. 1

Spring 1995

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 \$10 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 and Darrell Wright and is produced by Darrell Wright and Bill Hill. 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 on 1.2 or 1.44 Mb diskette in Word Perfect 4.1, 4.2 or 5.1 format; ASCII format is an alternative. A review process is followed, and typed manuscripts should be double-spaced and submitted as two copies. Figures are the usual line drawings and sharp black and white glossy photos, unmounted. Nomenclature follows Egan's Fifth Checklist and supplements (Egan 1987, 1989, 1990: this bibliography is in the article on the Sonoma-Mendocino County field trip, *Bull. Cal. Lich. Soc.* 1(2):3) Style follows this issue. Reprints will be provided for a nominal charge. Address submittals and correspondence to The California Lichen Society, c/o Darrell Wright, 2337 Prince Street, Berkeley, CA 94705, 510-644-8220, voice and FAX (new capability); E-mail: dwright@idiom.com (new address).

Volume 2(1) of the *Bulletin* was issued June 10, 1995. Contributors were Peter Bowler and Richard Riefner, Jr., Department of Ecology and Evolutionary Biology, University of California, Irvine CA, 92717; Charis Bratt, Santa Barbara Museum of Natural History, 2559 Puesta Del Sol Road, Santa Barbara, CA 93105; Janet Doell, CALS, 1200 Brickyard Way, #302, Pt. Richmond, CA 94801; Barbara Lachelt, 76 Angela Avenue, San Anselmo, CA 94960; Sylvia and Steven Sharnoff, 2406 Roosevelt Ave., Berkeley, CA 94703; Robert West, 42 Diamond Head Passage, Corte Madera, CA 94925; and Darrell Wright, 2337 Prince Street, Berkeley 94705. We thank Dr. Bruce McCune for a review.

Cover: the only known occurrence in California of *Thamnolia* (*T. vermicularis* [Swartz] Ach.) near Dillon Beach in west Marin County at 90 m elevation two km from the Pacific Ocean (*The Bryologist* 95:458, 1992). The "North Franklin Rocks", on which the lichen grows, are an unusual form of the Wilson Ranch formation, Pliocene marine sandstone overlying Jurassic age Franciscan basement. The locality may be a refuge for migratory birds which disperse the lichen and should be protected, both for the sake of the birds and the lichens. Photos by D.M. Wright.

Bulletin of the California Lichen Society

Volume 2

No. 1

Spring 1995

Notes on the Ramalinaceae and Current Related Research in California, U.S.A.

P.A. Bowler and R.E. Riefner, Jr.

Abstract. *The genera and selected species of Ramalinaceae in California along with some extra-Californian taxa are discussed with reference to completed studies and to studies now in progress. A key to the California genera and a checklist of the species are provided. Critically needed measures to help conserve the California lichens are also discussed.*

The Ramalinaceae is a diverse, chemically and anatomically heterogeneous family represented by the genera *Ramalina*, *Trichoramalina*, *Fistulariella*, *Niebla*, *Cenozosia*, *Ramalinopsis*, and *Dievernina*. All of the genera but the monotypic *Ramalinopsis* are fruticose, and there are no known crustose forms. *Ramalinopsis* is one of the few examples in which a foliose morphology evolved from a fruticose ancestral line. An undescribed umbilicate taxon occurs in the Hawaiian Islands, and all but two of the genera, *Cenozosia* (fistulose and monotypic; South America) and *Ramalinopsis* (a truly foliose, monotypic Hawaiian Island endemic; Bowler 1976a) occur in the California Floristic Province. The cortical anatomy and chemistry of the family were reviewed by Bowler (1981, 1976c; see also Krog and Østhaugen 1980).

Ramalina sens. str. is the largest genus in the family, with hundreds of species worldwide. The complexity of this distinctive group of fruticose lichens has been evident from the earliest examinations of the region's lichen flora, as demonstrated by nomenclatural struggles from Tuckerman to Howe, Herre, and Hasse, in attempting to fit a remarkably polymorphic set of species into Old World taxa and species described from other areas outside of North America (Tucker and Jordan 1978). These early lichenological researchers were correct in some cases, but not accurate in others. From a modern perspective, the early researchers are to be admired, however, for not succumbing to the temptation of describing innumerable new taxa in an attempt to reconcile a baffling array of plastic characters.

Niebla Rundel & Bowler

The genus *Niebla* (Rundel and Bowler, 1978; Rundel, Bowler, and Mulroy 1972) is richly expressed along the coast of California, including the Channel Islands, and Baja California. A recent key to twelve North American taxa (Bowler et al. 1994) includes *N. cephalota* (Tuck.) Rundel & Bowler, *N. ceruchis* (Ach.) Rundel & Bowler, *N. josecuervoii* (Rundel & Bowler) Rundel & Bowler, *N.*

pulchribarbara (Rundel & Bowler) Rundel & Bowler; *N. isidiaescens* Bowler, Marsh, Nash & Riefner; *N. homalea* (Ach.) Rundel & Bowler, *N. laevigata* Bowler & Rundel; *N. polymorpha* Bowler, Marsh, Nash, and Riefner; *N. robusta* (R.H. Howe) Rundel & Bowler; *N. combeoides* (Nyl.) Rundel & Bowler; *N. ceruchooides* Rundel & Bowler, *N. procera* Rundel & Bowler; and *N. cedrosensis* Marsh & Nash (Marsh and Nash 1994). Most of these occur in California, and their publication, along with that of *Niebla tuberculata* Riefner, Bowler, Marsh & Nash (Riefner, Bowler, Marsh, and Nash 1995), should resolve most of the problems a lack of a key and good species descriptions have caused. *N. tuberculata* is unique in the family in having a central, friable cordlike mass (as opposed to the elastic central cord of *Usnea*).

Niebla species are extremely variable, and the chemistry of the genus is complex. In conjunction with Tom Nash and others, a synopsis of the genus in North America will be developed in the near future that should further extend our distributional, ecological, chemical, and anatomic understanding of the genus. A recent note describes the role played by *N. ceruchooides* as a seed trap and nursery for a number of *Dudleya* taxa (Crassulaceae; Riefner and Bowler, 1995). We are currently designing experiments to elucidate nutrient cycling in saxicolous coastal habitats dominated by *Niebla* species.

Present research also includes the reproductive (Bowler and Rundel 1975), ecological and anatomic strategies of "vagrant" (*sensu* Rosentreter and McCune 1992; Rosentreter 1993) ground-inhabiting morphs of otherwise saxicolous species in the *N. homalea*, *N. josecuervoii*, and *N. pulchribarbara* groups. Distinctive arenicolous (sand-dwelling) morphs have been recorded from all of the chemical races of *N. homalea*, and experiments currently being completed indicate that these terricolous, bush-like growth forms represent a dispersal strategy which can colonize large areas rapidly. They can be dispersed by wind tens of kilometers from their saxicolous origins, and can even colonize rocks far inland and distant from the regional spore rain, thus opening up dispersal corridors. These distinctive morphs do not warrant taxonomic recognition, and behave like clonal microspecies, with similar morphologies arising many times from a site as lichens fall from rocks onto sand. The vagrant "tumbleweed" ground morphs are largely sterile, possess few pycnidia, and differ from their saxicolous progenitors anatomically. Their bushy forms also form fog moisture traps. A paper presenting data from our experiments is near completion.

Fistulariella Bowler & Rundel

In California there are few fistulose taxa, and these need to be reviewed with respect to their chemistry, and the typification of the taxa whose nomenclature they currently bear. Many if not all of the western North American *Fistulariella* species need to be better described, typified, and perhaps renamed, as the current nomenclature reflects efforts to match early recognized taxa from other continents with New World plants (Bowler and Rundel 1977; Bowler 1987). The elegant dissertation work of Eileen Matthews at the University of Calgary in Canada examined many boreal taxa, and a similar modern effort is needed for coastal California, where the taxa may be distinct from previously described species.

Ramalina lacera (With.) Laundon

There are only two fruticose species (*Ramalina mollis* Krog & Østhaugen, a Canary Island endemic, and *R. lacera*, which occurs in four Mediterranean climate ecosystems) which have a single-layered prosoplectenchymatous cortex, as does the monotypic foliose *Ramalinopsis* (endemic to the Hawaiian Islands; Bowler 1976a, 1976c, 1981). Choisy (1931) viewed this characteristic and unique cortical design as being of generic significance. He proposed the genus *Dievernina* for the group, although there were nomenclatural problems associated with *Dievernina*. A paper reinstating but re-naming the genus *Dievernina* (of which *Ramalina lacera* is the type) and including information on its distribution, ecology, and chemistry is nearing completion.

Trichoramalina Rundel & Bowler

The genus *Trichoramalina* is represented by one Mediterranean climate New World species (*T. crinita* [Tuck.] Rundel & Bowler) and another from western South Africa (*T. melanothrix* [Laur.] Rundel & Bowler; Rundel and Bowler 1974). *T. crinita* is endemic to the west coast of central and northern Baja California, Mexico.

Although there are historic collections of *T. crinita* from Point Loma in San Diego and from Torrey Pines, it does not occur there today. *Trichoramalina crinita* is apparently extinct in the United States. There is a remote possibility that it could occur on San Clemente Island where there is a northern disjunction of otherwise coastal Mexican taxa such as *Teloschistes californicus*, but intensive searches on three field trips by myself and others in the best of the maritime scrub habitat did not uncover it, and it seems likely that the species is not present. As its name implies, *Trichoramalina* is a genus with laminal and marginal squarrose black cilia.

Ramalina Ach.

Fertile taxa

The fertile species of *Ramalina* in California have been challenging to taxonomists because of their polymorphism and the similarity of their chemistries. Phenotypic convergence is common in *Ramalina*, and the species are confusing because they look alike and are selected for similar morphologies (Bowler 1976b). In a discussion regarding phenotypic convergence with Henry Imshaug in 1976, Imshaug stated that he identified lichen populations rather than individual lichens—a point of view appropriate to the Ramalinaceae of California. Diversity of morphology is common at the extreme edges of species ranges, where substrate switching and aberrant morphs are regularly found.

It has recently been confirmed that *Ramalina fastigiata* (Pers.) Ach. (Riefner 1990) and *R. fraxinea* (L.) Ach. (Riefner and Bowler, in prep.), formerly regarded as Old World taxa, occur in California. As in *Cladonia* (Hammer and Ahti 1990) and many other groups, there is a series of endemic, fertile *Ramalina* species which is now more completely understood. *Ramalina puberulenta* Riefner & Bowler, closely related to *R. leptocarpha* Tuck., was recently described as an inland California endemic of oak savanna (Riefner and Bowler 1994a). Three other endemics are also near publication (Mycotaxon, 1995), and this article should largely resolve the complexity of the strap-like taxa in California. Several of these have sorediate companion taxa (species pairs) similar to *R. leptocarpha* and *R. subleptocarpha* Rundel & Bowler (Rundel and Bowler 1976) which are also endemic to California and which are being described in a separate study. It is interesting to note that bourgeanic acid and zeorin are widespread in many chemical races in this group of closely related endemics. Similar patterns of endemism in California are known in *Cladonia* (Hammer and Ahti 1990).

Ramalina

Sorediate taxa

The sorediate taxa have been as problematic as the fertile species, and there has been historic confusion about the identities and separation of even the most common species such as *R. farinacea* (L.) Ach. and *R. subleptocarpha*. *Ramalina baltica* Lettau (divaricatic acid race) was recently confirmed from California where it is a rare species occurring in the coastal fog zone in Santa Barbara and San Luis Obispo Counties (Riefner and Bowler 1994b). Otherwise *R. baltica* is known from Britain and continental Europe (Krog and James 1977). This species has been mistakenly identified as *R. obtusata* (Arnold) Bitt., but its swollen, burst apices and the presence of divaricatic acid make the two readily distinguishable. *Ramalina canariensis* Steiner is a more common North American species which has been

mistaken for *R. lacera* and has been treated under various names, e.g., *R. evernioides* auct., *R. duriaei* (de Not.) Bagl. *R. canariensis* (divaricatic acid) has attenuate lobe apices and a broad range from central coastal Baja California to northern California. Elsewhere it is known from the Mediterranean type ecosystems of Australia, Europe, the Canary Islands, South Africa, and South America (Stevens 1987). Other problem species are *Ramalina pollinaria* and *R. obtusata*, and a paper is forthcoming on the range and ecology of these species in California.

The *Ramalina farinacea* group is well represented and well understood in California (Bowler and Rundel 1978). It is possible that California populations colonized the Hawaiian Islands (Bowler and Smith 1976), although this is not a universally held view. The presence of west coast North American accessory acids in both areas suggests that there may have been colonization from this coast, rather than the Polynesian insular stepping-stone colonization evident in some other taxa in the genus (such as *R. leiodea* Nyl.). Other sorediate species currently being examined are *R. peruviana* Ach. and *R. subleptocarpha*.

Several additional studies of sorediate taxa which include numerous fertile-sorediate species pairs and interesting chemical, range, and ecological patterns are nearing completion. These will describe at least three new sorediate taxa and clarify the status of the strap-like sorediate species often placed in *R. subleptocarpha*.

Anatomic Studies of the Ramalinaceae

There has been no descriptive systematic survey of spore and pycnidial characters using scanning electron microscopy (SEM) and other modern techniques. We are currently undertaking such a study, which at the least will provide better data regarding characters central to generic definition. It is hoped that SEM using freshly collected material will be completed in the next few weeks and that the survey of the genera can be completed in the near future.

Key to the Genera of Ramalinaceae in California with a Preliminary List of the Species

- 1a Thallus hollow, cortex perforate in most species *Fistulariella*
- 1b Thallus solid 2
- 2a Cilia present, black, often squarrose *Trichoramalina*
- 2b Cilia absent 3
- 3a Cortex single-layered; broad-lobed; often decorticate on one side *Ramalina lacera* (*Dievernina*)
- 3b Cortex not single-layered 4

- 4a Cortex two-layered, external prosoplectenchymatous layer overlying supportive tissue of hyphae aligned with the plant axis; no unattached strands in the medulla; pseudocyphellae common; pycnidia pale if present; triterpenes absent or in low concentration *Ramalina*
- 4b Cortex variable with either a thick palisade layer of cells overlying supportive tissue or a simpler less distinct cortex; unattached agglutinated hyphal strands in medulla, not evident in some taxa; pycnidia black and usually abundant; pseudocyphellae rare; coastal fog zone obligate; triterpenes common, in high concentration *Niebla*

The following list is tentative, as there are a number of taxa which are in press or nearing publication (six *Ramalina* taxa; one new record; see above). Some taxa, such as *Ramalina cochlearis* Zahlbr., are misidentifications, and are therefore not included. A new report of an African *Ramalina* with a disjunct distribution is also near completion.

Dievernina

Ramalina lacera (With.) Laundon (to be placed in a separate genus renaming and reinstating *Dievernina* Choisy)

Fistulariella

- F. dilacerata* (Hoffm.) Bowler & Rundel
- F. geniculata* (J.D. Hook. & Taylor) Bowler & Rundel
- F. inflata* (J.D. Hook. & Taylor) Bowler & Rundel
- F. roesleri* (Hochst. ex Schaerer) Bowler & Rundel

Ramalina

- R. baltica* Lettau
- R. canariensis* Steiner
- R. farinacea* (L.) Ach.
- R. fastigiata* (Pers.) Ach.
- R. fraxinea* (L.) Ach.
- R. leptocarpha* Tuck.
- R. menziesii* Taylor non Tuck.
- R. peruviana* Ach.
- R. pollinaria* (Westr.) Ach.
- R. puberulenta* Riefner & Bowler
- R. sinensis* Jatta
- R. subleptocarpha* Rundel & Bowler

Niebla

- N. cephalota* (Tuck.) Rundel & Bowler
- N. ceruchis* (Ach.) Rundel & Bowler
- N. ceruchoides* Rundel & Bowler
- N. combeoides* (Nyl.) Rundel & Bowler
- N. homalea* (Ach.) Rundel & Bowler
- N. isidiaescens* Bowler, Marsh, Nash & Riefner
- N. laevigata* Bowler & Rundel
- N. polymorpha* Bowler, Marsh, Nash & Riefner
- N. procera* Rundel & Bowler
- N. robusta* (R. Howe) Rundel & Bowler

N. tuberculata Riefner, Bowler, Marsh & Nash

Trichoramalina

T. crinita (Tuck.) Rundel & Bowler

The Need for Conservation of Lichens

Our understanding of the Ramalinaceae in the California Floristic Province has grown significantly in the past decade, but there are many challenges remaining. Although it is unlikely that many taxa remain to be described, the ecological characteristics of the California species are very incompletely known. Even more significantly, the status of these species needs to be assessed. *Trichoramalina crinita* is likely already extinct in the United States, and *Ramalina lacera* (*Dievernina*) is highly endangered with remote probability of survival on the California mainland (it may occur on the Channel Islands). Other taxa need assessment, and the remnant coastal saxicolous habitats for *Niebla* and other specialized fog zone taxa need true protection. A list of rare taxa of coastal habitats from San Luis Obispo County to San Diego County will be submitted to the California Lichen Society for review, additions, and publication in the near future.

There will never be more lichens or lichen species richness in California than exist today, and we need to truly realize this and endeavor to protect California's special habitats that sustain lichens. This may mean proposing new designations for sensitive communities with the California Natural Diversity Data Base and other habitat-tracking systems (county Geographic Information Systems [GIS], for example), but this needs to be undertaken quickly if we are to sustain what is left of coastal lichen diversity. Every old, lichen-rich stand of coastal sage scrub or maritime chaparral which burns or is paved over represents a net loss of lichen species richness because of a lack of re-colonization opportunity due to habitat reduction and fragmentation (Bowler and Riefner 1990).

Lichen species richness has been sharply declining since the turn of the century. The poignant plea of A.W.C.T. Herre in 1936 is a testimonial to former abundance and species richness; today even our best local sites support only declining fragments of the former communities:

...When I left California in 1912 it was still possible, with one or two exceptions, to collect endemic lichens in their type localities. What is the condition to-day? The regions where Bolander gathered amazing forms in abundance have long since been devastated by 'real estaters,' while it is now absolutely impossible to collect lichens in the favorite haunts of Dr. Hasse and myself, where hitherto unknown species were brought to light

every year, or species new to North America were constantly being discovered...Consider conditions to-day in localities such as the Santa Monica hills, the coast of Southern California, Catalina Island, the plains, foothills, and mountains of the Santa Cruz Peninsula, the cliffs of Point Lobos, the cypresses and crags of the Seventeen Mile Drive, the Oakland Hills, Sutro Heights, Cliff House, and Twin Peaks at San Francisco. Miles of terrain are covered with asphalt, concrete and houses. Cliffs are obliterated entirely, or their faces have not only been "lifted" but removed so that they stand fifty feet or more further back than formerly. Their resident lichens have not been merely discouraged, they have been wiped out of existence... The Monterey cypresses with their extraordinary coats of luxuriant endemic lichens have been shut off from the public by converting the Seventeen Mile Drive into a real estate subdivision...I have searched in vain for many earth lichens once found along every foothill and mountain road in the Santa Cruz Peninsula. Useless was my search for the lichens endemic to the rock ledges crowning the Oakland and Berkeley hills... misguided zealots have made the countryside resemble a city playground, as far as lay within their power...I therefore urge that before it is too late the botanists of California collect ample material of all lichens available...If this is not done soon, many of our lichens of greatest interest will exist only in one or two European and in two or three American herbaria (Herre 1936).

References cited:

- Bowler, P.A. 1976a. *Ramalinopsis*, a unique genus endemic to the Hawaiian Islands. Hawaiian Botanical Society Newsletter 15: 4-6.
- _____. 1976b. Of genotypes and phenotypes. International Lichenological Newsletter 9: 1-4. Guest Editorial.
- _____. 1976c. Anatomy and generic limits in the Ramalinaceae. Presented at the American Bryological and Lichenological Society, New Orleans, Louisiana, 31 May-3 June. Unpublished abstract.
- _____. 1981. Cortical diversity in the Ramalinaceae. Canadian Journal of Botany 59: 437-452.
- _____. 1987. New combinations in *Fistulariella* (Ramalinaceae). Mycotaxon 29: 345-351.
- _____. and R.E. Riefner. 1990. A preliminary lichen checklist for the University of California, Irvine, Campus and the San Joaquin Wetlands. Crossosoma 16(8): 1-10.
- _____. R.E. Riefner, Jr., P.W. Rundel, J. Marsh and T.H. Nash, III. 1994. New species of *Niebla* (Ramalinaceae) from western North America. Phytologia 77(1): 23-37.
- _____. and P.W. Rundel. 1975. Reproductive strategies in lichens. Bot. Journal Linn. Soc. (London) 70: 325-340.
- _____. 1977. Synopsis of a new lichen genus, *Fistulariella* Bowler & Rundel (Ramalinaceae). Mycotaxon 6: 195-202.
- _____. 1978. The *Ramalina farinacea* complex in North America: chemical, ecological and morphological variation. The Bryologist 81: 386-403.
- _____. and C.W. Smith. 1976 [1977]. *Ramalina farinacea* in Hawaii. The Bryologist 79: 499-501.

- Bratt, C. 1987. Point Loma lichens—now and then. Pp. 289-293 in T.S. Elias (ed.), Conservation and Management of Rare and Endangered Plants. California Native Plant Society, Sacramento.
- Choisy, M. 1931. Lichens nouveaux. Bulletin de la Société Botanique de France 78: 453-460.
- Hammer, S. and T. Ahti. 1990. New and interesting species of *Cladonia* from California. Mycotaxon 37: 335-348.
- Herre, A.W.C.T. 1936. Our vanishing lichen flora. Madroño 3: 198-200.
- Krog, H. and P.W. James. 1977. The genus *Ramalina* in Fennoscandia and the British Isles. Norwegian Journal of Botany 24: 15-43.
- ____ and H. Østhaugen. 1980. The genus *Ramalina* in the Canary Islands. Norwegian Journal of Botany 27: 255-296.
- Marsh, J.E. and T.H. Nash, III. 1994. A new lichen species, *Niebla cedrosensis* (Ramalinaceae), is described from Baja California, Mexico. Phytologia 76: 458-460.
- Riefner, R.E., Jr. 1990. *Pertusaria pseudocorallina* and *Ramalina fastigiata* new to North America. Mycotaxon 39: 31-41.
- ____ and P.A. Bowler. 1994a. *Ramalina puberulenta*: a new lichen from California. Mycotaxon 52: 247-257.
- ____. 1994b. *Ramalina baltica* and *Ramalina canariensis* in North America. Mycotaxon 51: 495-501.
- ____. 1995. Cushion-like fruticose lichens as *Dudleya* seed traps and nurseries in coastal communities. Madroño 42: 81-82.
- ____, P.A. Bowler, J. Marsh, and T.H. Nash, III. 1995. *Niebla tuberculata* (Ramalinaceae): a new lichen from California. Mycotaxon 54: 397-401.
- Rosentreter, R. 1993. Vagrant lichens in North America. The Bryologist 96: 333-338.
- ____ and B. McCune. Vagrant *Dermatocarpon* in western North America. The Bryologist 95: 15-19.
- Rundel, P.W. and P.A. Bowler. 1974. The Lichen Genus *Trichoramalina*. The Bryologist 77: 188-194.
- ____. 1976. *Ramalina leptocarpa* and *R. subleptocarpa*: a fertile-sorediate species pair. The Bryologist 79: 364-369.
- ____. 1978. *Niebla*: a new generic name to replace *Desmazieria* (Ramalinaceae). Mycotaxon 6: 497-499.
- ____ and T.W. Mulroy. 1972 [1973]. A fog-induced lichen community in northwestern Baja California, with two new species of *Desmazieria*. The Bryologist 75: 501-508.
- Stevens, G.N. 1987. The lichen genus *Ramalina* in Australia. Bulletin of the British Museum (Natural History), Bot. Ser. 16(2): 107-223.
- Tucker, S.C. and W.P. Jordan. 1978 [1979]. A catalog of California lichens. The Wasmann Journal of Biology 36: 1-105.

Toninia in California

Charis Bratt and Darrell Wright

Abstract. *An account of Toninia is presented to help workers separate it from similar squamulose-crustose groups in California, and an annotated key to the species is provided.*

Einar Timdal, whom one of us (C.B.) accompanied on a successful search for California *Toninia* in 1988, has now published a world monograph of the genus (Timdal 1991) in which he delimits it as follows:

thallus in most species squamulose to subsquamulose, crustose in a few species; *photobiont*

green, unicellular; *apothecia* lecideine; *asci* with non-amyloid (I-) wall surrounded by an amyloid (I+) sheath and with an amyloid tholus with pointed, wedge-shaped ocular chamber; *paraphyses* straight, little branched, mostly free, with a swollen apical cell which has a diffusely delimited pigment cap; *spores* simple to multiseptate, colorless.

For purposes of dealing in a practical way with the species reported from California, we can mostly sidestep the difficulties of evaluating ascus and paraphysis structure and use a definition of the genus very like that given by Herre (1910):

thallus squamulose, *apothecia* lecideine, *spores* septate, colorless.

However, if *T. ruginosa* ssp. *ruginosa* should turn up in a strictly crustose state, or if a *Toninia*-like species should fail to agree with descriptions, we may want to check ascus and paraphysis structure to verify that it is or is not a *Toninia*; for technic see *The Lichen Flora of Great Britain and Ireland* (Purvis et al. [eds.] 1992); Hafellner (1984) recommends studying young asci with immature spores in a Lugol's-type iodine solution (0.15 g. I and 0.3 g. KI in 10 ml distilled water). Hand-sectioning with a fresh, double-edged, Teflon-coated stainless steel razor blade helps to avoid loss of detail (Common 1991, p. 74), especially of the ocular chamber.

Timdal (pers. comm.) cautions that there are some squamulose species fitting our short description which are not *Toninias*, e.g., "*Toninia*" *cumulata* and *Mycobilimbia lobulata*. The ascus apices clearly separate *Toninia* from *Mycobilimbia* and are compared in Fig. 1, redrawn from Hafellner (1984).

Toninias may be lichenized or not, and many species, if not all, start out as parasitic, especially on cyanophilic lichens. Spores range from ellipsoid through fusiform and bacilliform to acicular with one to seven septa. Chemistries consist of terpenoids with a few fatty acids and suspected phenolics; the substances had not yet been identified as of 1991. All species are negative to standard reagents applied to the medulla, even though the apothecia of some are K+. Substrates are soil and rock, especially crevices, and the thalli of other lichens.

An interesting situation exists in *T. ruginosa*, where ssp. *pacifica*, endemic in southern California and northern Baja California, is mostly on the immediate coast, while ssp. *ruginosa* ranges from the Pacific Coast to near the center of the continent and is also in Europe and Asia. Intermediates between the subspecies occur only in

California (Riverside Co. n. to Humboldt Co.) and are mostly inland.

We thank Dr. Timdal for reviewing this article and for providing additional information. His monograph should be consulted for a complete account of the species and for a very readable discussion of the current struggle to delimit biologically realistic genera in the lichens.

Key to *Toninia* in California

- 1a Spores exclusively 1-septate 2
- 1b At least some spores with septa > 1 4
- 2a Epithecium olive to bright green, K-, parasitic on *Lecania* *T. talparum*
- 2b Epithecium gray, K+ violet 3
- 3a Spores 10-17 μ long; epithecium lacking crystals; squamules weakly to medium convex, usually not pruinose *T. massata*
- 3b Spores 12-24 μ long; epithecium often with crystals; squamules weakly convex to bullate, strongly bluish pruinose *T. sedifolia*
- 4a Spores 1- to 3-septate 5
- 4b Spores 3- to 7-septate 8
- 5a Epithecium dark brown 6
- 5b Epithecium gray 7
- 6a Epithecium dark reddish brown, K+ red; spores 12-31 μ long *T. ruginosa* ssp. *pacifica*
- 6b Epithecium dark brown, not reddish, K-; spores 11-19 μ long *T. verrucarioides*
- 7a Epithecium gray, K+; hypothecium pale brown to colorless; spores 17-43 μ long *T. submexicana*
- 7b Epithecium dark olive to bright green, K-; hypothecium dark reddish brown (paler above); spores 9-25 μ long *T. aromatica*
- 8a Epithecium dark reddish brown, K+ red *T. ruginosa* ssp. *ruginosa*
- 8b Epithecium dark olive to bright green, K- *T. squalida*

Unless otherwise given, growth form is squamulose and substrates are soil and rock crevices. The descriptions below do not repeat information in the key.

T. aromatica (Sm.) Massal. Pale gray to dark brown often with greenish tinge, pruinose or not. Apothecia to 1.5 mm, spores mostly bacilliform and 3-septate. The range of spore lengths given by Timdal is 12-23 μ , but our material seems to vary from 9-25 μ . 2 localities on the south coast (Santa Barbara Co.). Cosmopolitan.

T. massata (Tuck.) Herre. (*massata*, massed, in lumps). Dark gray green to olive brown, rarely faintly pruinose. May remain epiphytic on cyanophilic lichens at maturity. 2 localities on the central and southern coast (San Francisco Co. and San Luis Obispo Co.). On humid to arid sites throughout the Northern Hemisphere.

T. ruginosa (Tuck.) Herre ssp. *ruginosa*. Squamulose to sometimes crustose, dark brown or olive brown, very rarely faintly pruinose. Apothecia to 1.5 mm, spores narrowly ellipsoid to acicular, 3- to 7- (9-) septate. Often on serpentine. In the Coast Ranges (Riverside Co. north to Siskiyou Co.), also in the Sierra Nevada. Temperate and boreal in the Northern Hemisphere. See introduction for intermediates between the subspecies.

T. ruginosa ssp. *pacifica* Timdal. Bullate squamulose, medium brown to reddish brown, pruina as in ssp. *r.* Spores narrowly ellipsoid to bacilliform, 1- to 3- (4-) septate. On open sites in 8 California localities (northern Baja California north to Trinity Co.); see the introduction. Endemic.

T. sedifolia (Scop.) Timdal (*T. caeruleonigricans* of authors Cf. Herre 1910). Timdal describes this as dark olive green to dark brown and sometimes epruinose, but California material seems to be in general densely pruinose and bluish, making this species easy to recognize. "On soil and rock, often among mosses, apparently always associated with cyanophilic lichens when young." Widespread, on both mesic and xeric sites (Riverside Co. north to Butte Co.). The most commonly collected species, nearly cosmopolitan.

T. squalida (Ach.) Massal. Medium to dark brown, sometimes with gray tinge, epruinose, cortex often fissured. Apothecia to 1.5 mm; spores acicular, 3- to 7-septate. Mostly among mosses. 4 localities, central to northern (Tulare Co. north to Modoc Co., mostly montane). Throughout the Northern Hemisphere.

T. submexicana Bouly de Lesdain. Dark olive brown, epruinose. Apothecia to 0.5 mm, spores narrowly ellipsoid to short bacilliform, 1- to 3-septate. Mostly saxicolous on basalt and serpentine. 6 localities on the south coast (Los Angeles Co. north to San Luis Obispo Co.) and 4 in Baja California. Southwestern U.S. and Mexico, South America.

T. talparum Timdal. (*talpa*, the mole; burrowing into the thallus of the host?). No independent thallus. Apothecia to 1 mm. Spores ellipsoid, 10-15 x 4-6 μ . 6 localities, coastal southern and inland northern (Los Angeles Co. north to Tehama Co.), northern Baja California. Endemic.

T. verrucarioides (Nyl.) Timdal. Brown to gray, pruinose or not. Apothecia to 1 mm, spores ellipsoid to bacilliform, 1- to 3-septate. Apparently always on cyanophilic lichens, especially *Placynthium*, on basic rock or soil on rock, . 1 locality on the central coast (Santa Clara Co.). Temperate and boreal in the Rockies and western Europe.

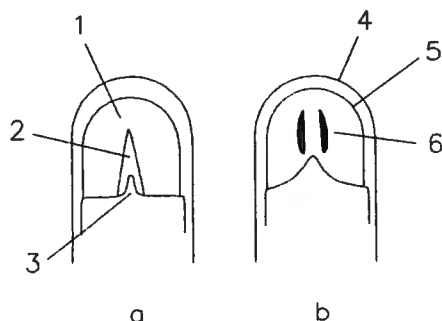


Fig. 1. Ascus apices of *Toninia cinereovirens* (Schaer.) Massal. (a), and *Mycobilimbia obscurata* (Sommerf.) Rehm, (b). 1. I+/- tholus (apical sac); 2. Axial mass. 3. Ocular chamber. 4. Outer wall of axis. 5. Inner wall. 6. I+ tubular structures ("Röhrenstrukturen"). Based on Hafellner (1984, pp. 263 and 309).

References cited:

- Common, R.S. 1991. The distribution and taxonomic significance of lichenan and isolichenan in the Parmeliaceae (lichenized Ascomycotina), as determined by iodine reactions. I. Introduction and methods. II. *Alectoria* and associated taxa. *Mycotaxon* 51: 67-112.
- Hafellner, J. 1984. Studien in Richtung einer natürlichen Gliederung der Sammelfamilien Lecanoraceae und Lecideaceae. Beiheft zur Nova Hedwigia 79: 241-371.
- Herre, A.W.C.T. 1910. The lichen flora of the Santa Cruz peninsula, California. *Proceedings of the Washington Academy of Sciences* 12(2): 27-269.
- Purvis, O.W., B.J. Coppins, D.L. Hawksworth, P.W. James, and D.M. Moore (eds.). 1992. *The Lichen Flora of Great Britain and Ireland*. Natural History Museum Publications, London. 710 pages.
- Timdal, E. 1991. A monograph of the genus *Toninia* (Lecideaceae, Ascomycetes). *Opera Botanica* 110: 1-137.

A Simplified TLC Method

Darrell Wright

Abstract. *Thin layer chromatography with one and two solvent systems is presented with emphasis on the TLC pattern as a taxonomic character. A demonstration chromatogram of Xanthoparmelia, Parmotrema, and Niebla done at the CALS meeting of January 14, 1995, is discussed.*

At the last CALS meeting I proposed a simplified TLC method with one solvent and demonstrated how it might work. The chromatogram I did then, which I could not discuss at the meeting for lack of time, is interpreted below.

The *non-simplified* system in this case is that of C. Culberson and Kristinsson (1970) and C. Culberson (1972, 1974) with three solvents. There are other multiple solvent systems in use by lichenologists, e.g., that of Mietzsch et al. (1988), but Culberson's is now a world standard, and by adopting her solvent C we can use data published by her and others for hundreds of lichen products. Although multiple solvents allow lichen products to be identified more confidently, much information can be got with one solvent, and some lichenologists have surveyed regional collections with one solvent (G. Awasthi 1986, Ohlsson 1973).

One solvent becomes more effective with co-chromatography where we spot a lichen of known chemistry alongside an unknown which we suspect contains the same substance(s). We have around us numerous lichens of known chemistry, e.g., *Parmotremas* for alectoronic, salazinic and stictic complexes; *Cladonias* for fumarprotocetraric complex and thamnolic acid; *Flavoparmelia* for protocetraric; *Flavopunctelia* for lecanoric; *Niebla homalea* for divaricatic; *Usnea californica* for diffractaic; *Lecanora pinguis* for several xanthonenes. The list of common species just from Marin County which can provide standards is quite long. Secondary products for many species are published in C. Culberson (1969, 1970) and C. Culberson et al. (1977).

However, I know of no common California species which contains the standard control substance, norstictic acid, except *Xanthoparmelia cumberlandia* in which it is present only in small amount mixed with other substances which run inconveniently close to it. It would be better to get a scrap of *Parmotrema perforatum* from the southern states (ABLS Lichen Exchange?), which, unlike the *Xanthoparmelia*, also contains atranorin, the other standard control substance. One small thallus would be enough for many chromatograms.

I chose solvent C for the simplified system because it is the safest and simplest of Culberson's three standard solvents. It is the chemical equivalent of a little acetic acid added to lacquer thinner, and can be disposed of responsibly as lacquer thinner at a local toxic waste facility. In cases where you know or suspect that multiple low-running substances will be present (*Parmotrema chinense* and *Xanthoparmelia cumberlandia* are examples), you could substitute standard solvent G which spreads out low-running substances, making the chromatogram easier to interpret with the tradeoff that

high-running substances run closer together, although many will still be detectable. G is like C with ethyl acetate (insect-killing fluid) added and formic acid substituted for acetic acid, not as simple and safe as C but simpler and safer than A or B and more effective than either of them for studying these common low-running substances. In fact, C and G make a good two-solvent system, if one would like to expand the simplified system to the next level of effectiveness.

I like to think of this simplified approach in connection with using the TLC *pattern* as a taxonomic character in the way that Timdal (1991) used it in *Toninia* or the way the vascular plant taxonomists use it to characterize species by their petal flavonoid patterns without identifying the flavonoids (see, e.g., Niehaus 1971). It is desirable to identify the substances on the plate, but even if none of them can be identified confidently, the pattern is still useful. For example, the simple solvent C chromatogram of *Parmotrema chinense* shows much more than stictic acid, although that is often the only depsidone one sees in the literature for this species (Hale 1965; Hale and Cole 1988); the chromatogram shows also constictic, menegazziaic, and the *Parmotrema crinitum* unknowns, that is, it shows a stictic acid complex, the same complex which is in *P. crinitum*, *P. hypoleucinum* and apparently also in *Menegazzia terebrata*, but not the same stictic complex found in *Xanthoparmelia cumberlandia*. Despite the fact *P. chinense* and *X. cumberlandia* have both been reported merely as containing stictic acid, they have readily distinguishable chromatograms (TLC signatures). I would like to see CALS members determine solvent C or G signatures for California lichens, even where their chemical contents have already been published. These chromatograms could be published in the *Bulletin* and would provide a fairly simple way to verify species and to uncover regional chemical variation within species.

We spotted and ran the following chromatogram (plate 45C, Fig. 2) at the CALS conference of 1-14-95, partly as a demonstration, partly as a piece of actual research, but had to leave before the run was finished. Bill Hill kindly removed it from the jar and displayed it under UV. Here is the discussion of the results.

It was raining and ambient humidity was high, which probably accounts for the 10% increase in the usual Hf values (Fried and Sherma 1994). Apparently, water vapor absorbed by the solvent increases its polarity, allowing solutes to migrate farther. Reducing the proportion of acetic acid to toluene could compensate for this.

At origin 1 we spotted an extract of an isidiolate *Xanthoparmelia* collected on the recent CALS field trip to the

Santa Lucia Mountains. It was K+ bright red, and we thought it might be other than the common *X. mexicana* with salazinic acid which is dull orange red with K. The chromatogram shows that it has norstictic (red with K, Hf 36) and two trace spots in addition to salazinic complex (spots 1-3, cf. *Parmotrema stuppeum* in trace 2). The upper trace spot compared with divaricatic acid (the large spot in the *Niebla homalea* trace at origin 5) is at the correct Hf for barbatic (Culbertson 1972), and, if norstictic and barbatic can be confirmed by co-chromatography in a second solvent system using, say, *Usnea longissima* as a source of barbatic, we have *Xanthoparmelia schmidtii* with a range extension of 230 km

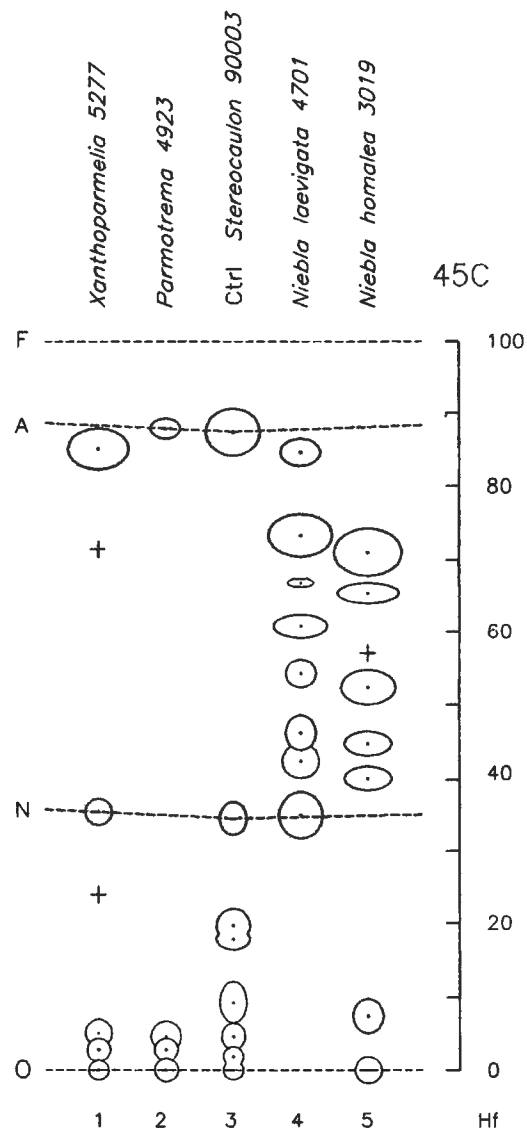


Fig. 2. Chromatogram 45C. A, atranorin; N, norstictic acid.

west from Tulare County (Hale and Cole 1988). The lower trace spot completes the TLC pattern for this lichen and could help to confirm its identification, even though we do not know what substance the spot represents.

At origin 2 we spotted a *Parmotrema* which also seemed to have a brighter red K test than the common salazinic-containing *P. stuppeum*. However, this turns out to be just *P. stuppeum* with its typical pattern of salazinic complex. The chromatogram, by verifying this species, helps to confirm its wide ecological amplitude which enables it to range from this mesic creekside habitat on the seaward side of Mt. Tamalpais to dry oak woodland in the interior of the county.

At origin 3 is the control, *Stereocaulon vulcani* from Hawaii, chosen because it was the one lichen available here (courtesy of Bill Hill) with both control substances, norstictic acid (Hf 34) and atranorin (Hf 88), in the same thallus. It appears to have a stictic acid complex like that of local *Xanthoparmelia cumberlandia* (spots 1-6).

Trace 4 was a surprise. Here we spotted the just published *Niebla laevigata* (Bowler and Riefner 1994) and obtained what at first seemed to be a blank chromatogram, until one of us noticed the faint spot at Hf 85, which is most likely usnic acid (cf. usnic in trace 1, Hf 85). After acid/heat, pale lavender spots, characteristic for terpenoids, appeared at Hf 61 and 73. Bowler and Riefner give this as having a terpenoid chemistry. Then, when the post-acid/heat plate was examined with long wave UV, four more lower-running spots appeared. Perhaps the most remarkable thing about this trace is that not one of the eight substances found in *N. laevigata* appears to correspond to any of the seven substances in its congener, *N. homalea*, at origin 5.

The large spot in the *N. homalea* trace (5) is at the correct Hf (71) for divaricatic acid, although this is sometimes found only in trace amount in this species (C. Culberson 1969). In addition, usnic acid, which is generally reported for this species, is absent or below the threshold of detection, as though secondary product precursors were diverted to the production of divaricatic.

In the next issue of the *Bulletin* I take up TLC technics and equipment, including free PC software for laying out, labelling, analyzing and keeping records of chromatograms.

References cited:

- Awasthi, G. 1986 [1987]. Lichen genus *Usnea* in India. *Journal of the Hattori Botanical Laboratory* 61: 333-421.
Bowler, P.A. and R.E. Riefner, Jr. 1994. New species of *Niebla* (Ramalinaceae) from western North America. *Phytologia* 77: 23-37.
Culberson, C.F. 1969. *Chemical and Botanical Guide to Lichen Products*. University of North Carolina Press, Chapel Hill. 628 pages.

- _____. 1970. Supplement to "Chemical and Botanical Guide to Lichen Products". *The Bryologist* 73: 177-377.
_____. 1972. Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. *J. Chromatogr.* 72: 113-125.
_____. 1974. Conditions for the use of Merck silica gel 60 F₂₅₄ plates in the standardized thin-layer chromatographic technique for lichen products. *J. Chromatogr.* 97: 107-108.
_____. and H. Kristinsson. 1970. A standardized method for the identification of lichen products. *J. Chromatogr.* 46: 85-93.
_____. W.L. Culberson and Anita Johnson. 1977. *Second supplement to "Chemical and Botanical Guide to Lichen Products"*. The American Bryological and Lichenological Society; Missouri Botanical Garden, St. Louis. 400 pages.
Fried, B. and J. Sherma. 1994. *Thin-layer Chromatography: Techniques and Applications*, 3rd. ed. M. Dekker, New York.
Hale, M.E., Jr. 1965. A monograph of *Parmelia* subgenus *Amphigymnia*. *Contributions from the U.S. National Herbarium* 36(5): 192-358.
_____. and M. Cole. 1988. *Lichens of California*. University of California Press, Berkeley. 254 p.
Mietzsch, E., H.T. Lumbsch and J.A. Elix. 1993. Notice: a new computer program for the identification of lichen substances. *Mycotaxon* 47: 475-479.
Niehaus, T. 1971. A biosystematic study of the genus *Brodiaea* (Amaryllidaceae). *Univ. Cal. Pub. Bot.* 60: 1-66. Pl. 1.
Ohlsson, K.E. 1973. New and interesting macrolichens of British Columbia. *The Bryologist* 76: 366-387.
Tindal, E. 1991. A monograph of the genus *Toninia* (Lecideaceae, Ascomycetes). *Opera Botanica* 110: 1-137.

Creative Help Needed for Vernacular Names

Sylvia Duran Sharnoff and Steven Sharnoff

There are very few common names in actual use for lichens in North America. This may be one reason why lichens are so badly neglected by biological scientists and amateur naturalists. According to John Thomson (personal communication), the well-known common name British soldiers, for the East Coast species *Cladonia cristatella*, was invented by Raymond Torrey, a reporter for the *New York World* newspaper. Torrey was a Revolutionary War buff who wrote a weekly column on hiking, and an interview with A.W. Evans got him interested in *Cladonia*.

George Nearing's vernacular names in *The Lichen Book* generally failed to catch on. Roger Rosentreter (Rosentreter et al. 1993) has led a recent effort to translate Roland Moberg's Swedish vernacular names, most of which were invented for his guidebook but are now moving into common usage. Trevor Goward has published a large number of names for British Columbia lichens.

Lichens of North America will illustrate more than 700 species from the United States and Canada with color photographs. Irwin Brodo of the Canadian Museum of Nature is writing the text, and this is the final year of our photographic fieldwork for the book. We are planning to

include vernacular names in the book for the benefit of beginners, interpretive naturalists, and resource managers. For an excellent discussion of the value of vernacular names, see Pyle (1984).

Since many names for genera and species will need to be invented, we are hoping for creative assistance from anyone who is interested in vernacular names -- and from anyone who is simply interested in preventing the publication of names that he or she might consider to be unattractive, unimaginative, or inappropriate. We are maintaining a computer database of all the published and suggested names that we can find. We would be glad to share this with anyone who would like to comment on the names. Please contribute names and comments to:

Sylvia and Stephen Sharnoff
2406 Roosevelt Avenue
Berkeley, CA 94703
Messages: (510) 548-9189
E-mail: lichen@idiom.com

References cited:

- Pyle, R.M. 1984. Rebuttal to Murphy and Ehrlich on common names of butterflies. *Journal of Research on the Lepidoptera* 23(1): 89-93.
Rosentreter, R., L.C. Smithman and A. DeBolt. 1993. Vernacular lichen names: Swedish names translated to English. *Evansia* 10: 104-111.

Shall the U.S. Government Own All Collections from National Parks?

Sylvia Duran Sharnoff and Steven Sharnoff

Current National Park Service policy on the accessioning of specimens creates enormous difficulties—insurmountable in some cases and full of bureaucratic red tape at the very least. We will soon have an opportunity to influence new and improved regulations.

As interpreted by the National Park Service, federal regulations (36 CFR 2.5) mandate that specimens collected (with permits) in the national parks remain the property of the National Park Service. When accessioned into an institutional collection, these specimens are considered to be on permanent loan to the herbarium. They must have National Park Service labels.

Revised regulations are being considered that will permit the superintendents of individual parks to give ownership of specimens collected in their parks to institutions such as museums and universities. The public will be permitted to comment on the revised regulations.

Some herbaria, such as the National Herbarium (US) at the Smithsonian Institution and the Canadian Museum of

Nature (CANL), have institutional policies that prohibit the accessioning of specimens that are not owned by the herbarium.

The North American Lichen Project has collected voucher specimens for photographs taken in a number of national parks. The intention has been to deposit the primary specimens at CANL and any duplicates at US, but the conflict between the federal regulations and the museum policies makes this impossible. It seems likely that other lichenologists (and other biologists) may also be experiencing inconvenience because of the federal regulations.

We had been hoping that the new regulations would resolve our predicament. Unfortunately, the new regulations, as currently proposed, will not be retroactive. When we have the opportunity to comment on the regulations, we are going to request that they be made retroactive.

Ann Hitchcock, the chief curator at the National Park Service, advised me that all public comments must be read and considered and that comments from organizations might have more impact than comments from individuals and that comments from large numbers of people would be more effective than comments from small numbers.

Since this issue may be of direct interest to many lichenologists and bryologists (and of indirect interest because of the North American Lichen Project vouchers), we would like to suggest that the California Lichen Society consider adopting a policy of advocating that the new regulations be made retroactive. We also urge concerned individuals to comment as well.

Notice of the scheduling for public comment will appear in publications of the Association of Systematics Collections and the American Association of Museums.

[Notice of where and when to write will be mailed to CALS members so that may write in support of flexible ownership of collections from national parks. Ed.]

News

Marin County Field Trip

On Saturday morning, April 8th, 20 members of the California Lichen Society met at the Dillon Beach home of Pat and Bob West to launch a weekend of lichen-related activities. Bill Hill reported on a meeting of the Northwest Guild for Lichens and Mosses held recently at Pocatello, Idaho, and shared keys he had brought back.

Darrell Wright then led us to the "South Franklin Rocks", a Pliocene sandstone formation of elephantine

size and shape on a fog-swept hillside overlooking the mouth of Tomales Bay. This proved to be a lichen-rich location. The following were identified:

Acarospora sp.
Caloplaca bolacina (of Volk [1963], perhaps not *C. bolacina* [Tuck.] Herre)
Dendrographa minor Darbish., abundant.
Flavoparmelia caperata (L.) Hale, on rock.
Heterodermia leucomelos (L.) Poelt
Lecanora phryganitis Tuck.
L. subfusca group
Niebla homalea (Ach.) Rundel and Bowler
Parmotrema chinense (Osbeck) Hale and Ahti
P. crinitum (Ach.) Choisy
Parmeliella cyanolepra (Tuck.) Herre
Pertusaria californica Dibben
Physcia callosa Nyl.
Punctelia stictica (Duby) Krog
Ramalina menziesii Taylor, abundant as an epiphyte on *Niebla homalea*.
Teloschistes flavicans (Swartz) Norman
Verrucaria sp.
Xanthoria candelaria (L.) Th. Fr.

No sooner had we got back into our cars than the heavens opened with a cloudburst of rain and hail. We had lunch in the house while the weather miraculously cleared. We then followed Darrell to Pt. Reyes and a grove of pygmy Bishop Pine (*Pinus muricata*) on podzol on the east slope of Mt. Vision. Here we found, mostly on pygmy Bishop Pine:

Bryoria furcellata (Fr.) Brodo and D. Hawksw. (also on *Arctostaphylos*).
Cetraria californica Tuck. (= *Cornicularia c.*)
Hypogymnia physodes (L.) Nyl.
H. cf. occidentalis Pike
Platismatia sp.

Our last stop on the west side of the mountain yielded:

Calicium cf. curtum, abundant on dead Bishop Pine
Nephroma laevigatum
Sticta limbata,

the latter two on *Baccharis* in a foggy draw. We did not see *Pannaria rubiginosa* which Darrell had found there earlier.

We returned to Dillon Beach for a happy hour, business meeting and dinner. The day was topped off by a talk and beautiful slide presentation on the ethnic uses of lichens by Sylvia and Steve Sharnoff. The following morning the members still present went south via

Highway 1 and the Bolinas-Fairfax Road to Mt. Tamalpais. On the Bolinas-Fairfax Road the group found

Niebla cephalota (Tuck.) Rundel and Bowler
Parmeliella cyanolepra (Tuck.) Herre
Punctelia stictica (Duby) Krog
Ramalina pollinaria (Westr.) Ach.

and in the Rock Springs area on Mt. Tamalpais:

Stereocaulon, tentatively identified as *S. intermedium* (Savicz) Magnusson
Teloschistes exilis (Michaux) Vainio, which is less rare in southwest Marin than one might expect.

Bob West and Janet Doell

Reference cited:

Volk, Sherry. 1963. Crustose lichen flora of Marin County, California. Unpublished master's thesis, San Francisco State College, California.

January Seminar

At the CALS meeting of January 14th at SFSU Darrell Wright held everyone's attention with his discussion and demonstration of the simplified TLC method which he describes elsewhere in this *Bulletin*. Present to hear him were Doris Baltzo, Mona Bourell, Janet and Richard Doell, Kevin Foley, Sara Fultz, Bill Hill, Lianne Kurina, Barbara Lachelt, Mikki McGee, Ellen and Harry Thiers, and Ruth van Seventer.

Lunch was served in the Herbarium, hosted by Dr. and Mrs. Thiers. The members took this opportunity to thank them for their help to the Society during its formative months; to wish them all the best for their new lives in Peoria; and to present them with Life Memberships in the California Lichen Society. Lunch was followed by a business meeting.

Winter storms had changed the complexion of the meeting somewhat. Cherie Bratt of the Santa Barbara Museum of Natural History, who was slated to give a seminar on crustose lichens in the afternoon, could not attend, having been stranded on San Nicholas Island along with several other lichenologists during the storms raging that week. Her lecture was postponed until July 15. An announcement concerning it appears elsewhere in this *Bulletin*.

The State Lichen Effort

Our attempt to have *Ramalina menziesii* declared State Lichen has not yet met with success. The legislators, aides and lobbyists involved did not deem the subject important enough to introduce a bill at this time. CALS

members should write their State legislators in the fall expressing interest in having this species made State Lichen in order to call attention to the lichens in general, to their need for conservation, and to their importance as pollution monitors. A reminder will appear in the *Bulletin* closer to the time for action.

Janet Doell

Upcoming Events

July 8 and 22: Beginners' classes on foliose and fruticose lichens, Room 401, Hensill Hall, San Francisco State University, 9 a.m. to 3 p.m. Bring lunch, hand lens (\$5- in class), forceps and dissecting needles, and *Lichens of California* by Hale and Cole, U.C. Press (\$16- in class). Sign up for one, two or three classes with Barbara Lachelt, 415-456-2918. She will need to know two weeks in advance if she is to order a book for you.

July 15: Seminar on crustose lichens with Cherie Bratt, Santa Barbara Museum of natural History, "appropriate to every level of expertise", 9 a.m., Room 401, Hensill Hall, San Francisco State University. Bring hand lens, books and a few specimens to study.

July 16: Field trip to San Bruno Mountain led by Mikki McGee and David Schooley. Meet 9 a.m. at the Bank of America parking lot, 70 Old County Rd. at the corner of Bayshore Blvd., Brisbane. If coming on U.S. 101 from the north, take the Cow Palace exit onto Bayshore Blvd. south to Old County Rd; if from the south, take the Brisbane exit (immediately after the South San Francisco exit) north to Old County Rd. See map, Fig. 3.

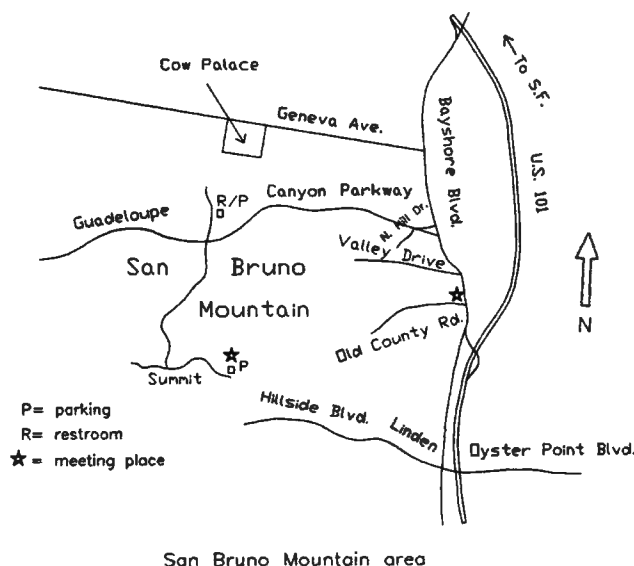


Figure 3. Map for field trip of July 16.

Some cars will go to the Summit Parking Area via Guadeloupe Canyon Parkway, turning left at the intersection into the park. This will enable those hikers who so choose to walk down the mountain in the afternoon and have their cars waiting for them. Late comers may proceed directly to the Summit Parking Area. The morning exploration will be in that area. Please bring lunch and beverage. There is no need to sign up ahead of time. We will leave the Bank of America parking lot as close to 9:00 as possible.

Editorial

Should CALS be in part an environmentalist organization? The long quote from Herre at the end of Peter Bowler's and Richard Riefner's article, I think, answers that question. You might argue that we should direct our energies to projects like protecting vascular plant habitat because the lichens will thereby be protected. Protecting vascular plant habitat is good for the lichens, but protecting the lichens is good for the vascular plants and, in addition, says loudly and clearly that there is more reason to save this habitat than just the vascular plants. Pressure to save the lichens, which, as we know, are much more canaries in the coal mine than are the vascular plants, helps in a special way to secure the whole environment, and would coordinate with and be added to pressure aimed at forest and other protection.

How do we apply pressure? We have begun a lobbying effort to have *Ramalina menziesii* recognized as state lichen, good for attracting attention to the lichens, so we are already politically involved (see the president's article below). Peter Bowler and Rick Riefner are preparing a red list of endangered Ramalinaceae which the *Bulletin* will publish. The next steps, as I see them, would be to produce a red list for the whole state and to begin political work to obtain official endangered status for these plants, so that environmental planning will take into account all native plant life, not just the vascular plants. I would welcome hearing from anyone who would like to work on the red list.

Darrell Wright

President's Corner

Last December I was able to report that our membership had grown to 38 during our first year. Over the last four months this number has more than doubled: our membership has now reached 80.

New members represent many parts of California and beyond. They also represent all levels of expertise and interest in things lichenological. We believe it is our responsibility to offer a wide range of activities to meet the varied expectations of our members. The *Bulletin*, the classes offered in July, and the field trips in July and October will fill some of these needs, but some members

who prefer more involvement might want to begin work now on proposed projects:

1. Preparing a red list of endangered California lichens.
2. A retrospective on A.W.C.T. Herre's work based partly on visits to his classic localities.
3. Mapping of the distributions of the California lichens based on verified herbarium records.
4. Computerization of the SFSU catalog of lichen collections. See below.
5. Planning meetings and field trips in other parts of the state and beyond.
6. A CALS expedition to the lichenologically under-explored Revillagigedo Archipelago 300 miles out into the Pacific from Puerto Vallarta. See below.

Anyone interested in one of these projects should contact Janet Doell at 510-236-0489 or Darrell Wright at 510-644-8220.

Dues

As we approach the middle of the year it is time to remind those of you who joined CALS during the first half of 1994 that your fees are due and payable. The amount is still a remarkably low \$10.00. And thanks to those who have already paid. To join CALS and receive the *Bulletin* and other mailings, send \$10.00 annual dues to

The California Lichen Society
1200 Brickyard Way #302
Point Richmond, CA 94801

U.S. Mail Problems

Some mail properly addressed to CALS has never been received. Others in this area have reported similar problems. Anyone who has sent mail to the above address without receiving a reply where one was expected should check with me by phone at 510-236-0489.

Janet Doell

Project Proposals

Red List of California Lichens: see editorial above and contact me.

Catalog of Lichen Collections at SFSU: I propose that CALS enter this catalog into a computer database. Searches will then become fast, flexible and accurate with results printable on the spot, and after identifications are checked for accuracy it would be fairly easy to put the computerized catalog on-line, so that any worker anywhere in the world could have immediate

Internet access to it. Updating and other maintenance would be easier: our president reports that the cards are becoming dog-eared; an electronic database could regenerate one card or 5000 cards with a few key-strokes. I suggest also that CALS donate a new cabinet for the card file. To volunteer for data entry, contact Darrell Wright, 510-644-8220. The only requirement is a commitment to being careful with the file cards and to being accurate.

Mapping of the Distribution of the California Lichens:

This has already been started by Harry Thiers and his students who based their work on the catalog of lichen collections at SFSU. It will be more easily completed after the catalog is databased and records from other herbaria are incorporated.

The Revillagigedo Islands: CALS members are considering a Society sponsored lichen exploration of this volcanic island arc 600 km offshore from Puerto Vallarta (480 km s.w. of Cabo San Lucas). It appears that the islands, San Benedicto, Socorro, Roca Partida, and Clarion, have not been visited by a lichenologist, although a vascular flora with an impressive number of endemics is documented (Gray Herbarium on-line catalog). John Thomas Howell collected 18 lichen species on Socorro and Clarion Islands in 1932, incidental to his vascular plant collections (Lindner 1934). Another six species were added from the same islands by the G. Allan Hancock Expedition of 1934 (Dodge 1936). W.A. Weber doubts there have been any lichen collections from the islands since that time, and searches of a number of Internet databases found very little on the Revillagigedos.

We would expect to coordinate the trip with the University of Guadalajara, and, if permits can be obtained, we would visit the two largest and closest of the islands, Socorro and San Benedicto (uninhabited and, as far as we know, not collected for lichens at all), sometime in 1996.

We thank Dr. W.A. Weber for steering us to the Lindner and Dodge references, and Dr. P.A. Bowler for interesting references to the volcanic geology of the Revillagigedos.

Darrell Wright

References cited:

- Dodge, C.W. 1936. Lichens of the G. Allan Hancock Expedition of 1934, collected by Wm. R. Taylor. *The Hancock Pacific Expeditions* 3: 33-48.
- Lindner, D.H. 1934. The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 18. *Proceedings of the California Academy of Sciences, Series IV*, 21: 211-224.

New members since the Winter 1994 issue of the *Bulletin*
(addresses are CA except where indicated):

Beverly Bauges, Wofford Heights
Jane Becker-Haven, Palo Alto
John Birsner, Lancaster
Cornelius Bouscaren, San Marcos
Mark Boyll, Salem, OR
Irwin Brodo, Ottawa, Ontario, Canada
William R. Buck, Bronx, N.Y.
Oliver Crichton, Wilmington, DE
Peter Ehrlich, Petaluma
Gail Enfiajian, San Francisco
Marjorie Fletcher, San Mateo
Karen Gray, Orofino, ID
Denise Gregory, San Bruno
Helen Crocker Russell Library,
Golden Gate Park, San Francisco
Zane Johnson, Laguna Niguel
Stephanie Kroll, Albany
Lianne Kurina, Stanford
Jeanne Larson, Fresno
Steve Lauterbach, San Francisco
David Magney, Ojai
Donna Maythem, San Bruno

Bruce McCune, Corvallis, OR
Mikki McGee, Brisbane
Franchesca Perez, Santa Rosa
Andrew Pignolo, San Diego
John Pinelli, San Francisco
Robert Piwarzyk, Santa Cruz
Elizabeth Rush, Los Altos Hills
Elizabeth Sampson, San Francisco
Herb Saylor, Sunnyvale
Shasta-Trinity National Forests,
Redding
Dennis Sheridan, Los Osos
James Shevock, San Francisco
Jacob Sigg, San Francisco
A.C. Bill Solis, Los Banos
Sheila Sondik, Berkeley
Veva Stansell, Gold Beach, OR
Mary Stevens, Berkeley
Alvera Storm, San Diego
Jim Trumbull, San Mateo
Carol Weiske, Greenbrae



CALS field trip to the "South Franklin Rocks" near Dillon Beach, Marin County, April 8, 1995.

The Bulletin of the California Lichen Society

Vol. 2. Part 1

1995

Notes on the Ramlinaceae and current related research in California, U.S.A.		
	P.A. Bowler and R.E. Riefner, Jr.	1
<i>Toninia</i> in California	C. C. Bratt and D.M. Wright	5
A simplified TLC method	D.M. Wright	7
Creative help needed for vernacular names	Sylvia Sharnoff and Steven Sharnoff	9
Shall the U.S. Government own all collections from national parks?		
	Sylvia Sharnoff and Steven Sharnoff	10
News		10
Editorial		12
President's Corner		12
Project proposals		13