Richard Doell

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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 (ISSN 1093-9148) is edited by Isabelle Tavares, Shirley Tucker, Richard Moe, and Darrell Wright and is produced by Richard Moe. 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. Manuscripts may be submitted to Richard Moe, Bulletin of the California Lichen Society, University Herbarium, 1001 Valley Life Sciences Bldg. #2465, University of California, Berkeley, CA 94720-2465. The best way to submit manuscripts apart from short articles and announcements is by E-mail or on diskette in Word Perfect or Microsoft Word format; ASCII format is a very good 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. The *Bulletin* has a World Wide Web site (URL http://ucjeps.herb.berkeley.edu/rlmoe/cals.html).

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Cover: *Usnea arizonica* Motyka, from the Waterman Creek area, Santa Cruz Mountains, San Mateo County, California. Photography by Richard Doell.

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A Preliminary Key to *Usnea* in California

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The genus *Usnea* is easily recognized by its central axis or medullary cord, but its constituent species are considered to be difficult to identify. Although there is generally a great deal of variation in form within a species, there is usually a suite of structural features characteristic of a species. The form of the thallus, as well as surface and internal characters, must be observed in order to identify specimens to species.

It is often necessary to tease tangled branches apart when they are slightly damp so that the form of an individual can be seen. It is rarely possible to identify specimens without cutting away the cortical covering to expose the axis and medulla. Cuts can be made at a distance from breaks in the cortex on a moderate-sized branch in the lower, central part of the specimen. If a sharp razor blade is held at a slight angle, but almost parallel to the surface of the branch, the cortex can be shaved away, exposing the medulla within; the medulla can be removed until the full width of the axis can be detected (this can be done without magnification, but is easier with a dissecting microscope). Branches should never be cut through or severed, destroying the integrity of the individual.

Characters used in the key below can be seen with a 10 to 12x hand-lens using good light. Chemical and microscopic characters that are included in the key may not be necessary for identification, but they aid in verification. Approximate cortex (C-% of 1 side), medulla (M-% of 1 side), and axis (A-%) proportions are given below for purposes of comparison as a percentage of the total width of a central branch, C and M being multiplied by 2 to achieve 100% of the branch width (compare Clerc 1997). The traditional descriptive terms: lax, dense, stuppeous, and compact are not used. Rather, the density and direction of growth of the medullary hyphae and the extent of open spaces among the hyphae are indicated. Definitions of terms and relative papilla sizes of many species are given in note 8 following the key. For species reported for California that are not mentioned in the key, see note 9.

1. **Thallus long, pendulous**; axils at bases of branches narrow or arching out and closing, so that lateral branches mostly are parallel to main branches. 2
1′. **Thallus short, shrubby, and erect**; in age sometimes becoming somewhat prostrate as branches elongate; mostly with wide axils and divergent branching. 10

2. **Larger branches becoming ecorticate**, densely covered with evenly spaced fibrils that are mostly equal in length. . . . . *U. longissima* Ach.
2′. **Larger branches retaining cortex**. 3

3. **Main branches irregular in cross-section**, because of elongate, obtuse, longitudinal ridges, often flattening at axils, smooth, somewhat wrinkled and foveolate, irregularly segmented; papillae absent; cortex soft, medulla loosely interwoven with distinct interhyphal spaces; axis somewhat sinuous, proportions approximately C7% M26% A34%; main branches slender, much-divided branch apices very narrow; soredia absent; rarely apotheciate. . . . . *U. cavernosa* Tuck.
3′. **Main branches terete**; short ridges at the bases of some branches, associated with ecorticate papillation, or forming the margins of areas of new cortex (rugae), sometimes present. 4

4. **Axis pinkish-gray; medulla white to pale vinaceous pink**; branch segments often slightly inflated, smooth to conspicuously verruculose; C9% M25%

A32%; medullary hyphae somewhat densely interwoven but with interhyphal spaces clearly visible. *U. californica* Herre (California specimens identified as *U. ceratina* Ach. should key out here; see note 1)

4'. **Axis whitish, medulla white.** 5

5. **Branches not inflated or only slightly inflated.** 6

5'. **Branches definitely inflated,** showing constrictions at ends of regularly formed, somewhat elongated segments; fibrils irregularly arranged, tortuous; papillae small, thin, low, cylindrical to tapered, few small isidiate soralia, becoming elevated and conspicuous on some narrow branches and fibrils; foveolae sometimes present, but branches typically terete; C8% M27% A30%; medullary hyphae somewhat loosely interwoven, with clearly visible interhyphal spaces; distinct, dense outer medullary layer. . . . . *U. pendulina-U. graciosa* group (see note 2)

6. **Branches never inflated; mostly smooth or with occasional low, indistinct papillae;** cortex relatively soft, about same width as medulla; medulla narrow, with densely interwoven hyphae and few, if any, noticeable interhyphal spaces; axis wide. 7

6'. **Branches sometimes with some slightly inflated segments; distinct papillae present.** 8

7. **Regularly branched; small soralia or pseudocyphellae with minute isidia,** mostly level with surface, barely elevated on scattered, curving fibrils; branches mostly smooth, frequently long-segmented, especially near basal region; surface sometimes coated with yellow-orange substance; C14% M15% A45%; medulla KOH -, PD + orange red. Found so far only near north coast in California. . *Usnea subgracilis* group (see note 3)

7'. **Irregularly branched; sharply elevated, closely spaced, isidiate soralia on main branches, fibrils, and branch apices;** branches frequently closely annulate; crowded groups of curved fibrils often present; yellow-orange surface pigmentation lacking; C13% M12% A 50%; medulla typically KOH + yellow to red; known from collections along central coast cited in Clerc (1991, as syn. *U. madeirensis* Motyka in C. N. Tavares). . . . . *Usnea silesiaca* Motyka (see note 4)

8. **Papillae short, thin, cylindrical or slightly tapered; branches regularly rugose, with flat, shallow depressions having somewhat sharp-edged sides;** main branches articulated, little constriction or inflation evident; fibrils sparse, irregular in distribution; soralia often abundant, isidiate; occasional ecorticate ridges joining short rows of papillae; C7% M29% A28%; medulla loosely interwoven, the hyphae sometimes radiating, separated by wide interhyphal spaces; dense outer medullary layer. *U. scabiosa* Motyka (see note 5)

8'. **Papillae usually tall and cylindrical.** 9

9. **Branches evenly terete, lacking rugae; papillae thin, cylindrical,** dense on main branches but sometimes worn off in places; long, pendent, roughly parallel branches bearing abundant fibrils or short laterals arising almost at right angles; clusters of isidia often conspicuous on smaller branches and fibrils; C9% M23% A36%; medulla densely interwoven with indistinct interhyphal spaces except for narrow zone of sparse radiating hyphae next to axis. . . . . *U. filipendula* Stirt. (see note 6)

9'. **Branches not evenly terete; deep, flat-bottomed rugae with blunt edges forming on branches as they elongate; papillae broad, tall,** sometimes irregular in shape, moderately large papillae extending on narrow branches almost to apices; long, pendent parallel branches bear few fibrils; C6% M29% A30%; medulla with interwoven hyphae of medium density with many small interhyphal spaces; denser outer medullary layer. . . . . *U. scabrata* Motyka (see note 5)

10. **Medulla dark purplish red,** at least in part; small thalli, rare in coastal southern California. . . . . *U. mutabilis* Stirt.

10'. **Medulla white** (orange red color in outer medullary hyphae in *U. subcornuta* Stirt. or yellow color close to axis in *U. wirthii*); axis whitish (yellow to orangish in *U. wirthii*). 11

11. **Cortex with red or orange-red color;** color present as a continuous layer, mottling, or as isolated spots such as on tips of fibrils; in *U. subcornuta*, orange-red color also in outermost medullary hyphae. 12

11'. **Cortex lacking red or orange color.** 14

12. **With deep carmine-red cortical spots** (sometimes paler and more diffuse); axis usually yellowish, often with periaxial yellow medulla; branches inflated, with small, short, thin papillae, eroding soralia. . western North American morphotypes of *U. wirthii* Clerc

12'. **With orange-red, diffuse cortical color** (visible with hand-lens when top surface of cortex is removed; not to be confused with discoloration of old herbarium specimens); axis whitish; pigment outlining and distinguishing lumina of individual, hypha-like cells

(in *U. subcornuta* also in outermost medullary hyphae). 13

13. **Orange-red color localized in innermost part of cortex and outer medulla**; C10% M20% A40%; medullary hyphae loosely interwoven, with abundant interhyphal spaces. . . *U. subcornuta* group
13'. **Red color not limited to inner cortical region**; diffuse or localized in patches along branches of the thallus; C10% M10% A60%; medullary hyphae densely interwoven, with no noticeable interhyphal spaces. . . . . western North American morphotypes of *U. rubicunda* Stirt.

14. **Papillae and verruculae absent**, although scattered protrusions preceding fibril formation may be present. 15
14'. **Papillae or verruculae present**, relatively close together and numerous at least in some patches on the larger branches. 16

15. **Isidiate**; base of thallus not black; branches slightly inflated, irregular in outline; cortex with blunt-edged ridges, depressions, and foveolae; C7% M27% A32%, medullary hyphae loosely interwoven with abundant small interhyphal spaces. . . . . *U. hirta* (L.) Wigg.
15'. **Non-isidiate; soraliate**; base of thallus black; branches strongly inflated, relatively even and terete in outline, with some foveolae; lateral branches short; C6% M33% A22%, medullary hyphae sparse, mostly radiating outward from axis. . . . . *U. glabrata* (Ach.) Vainio

16. **Soralia and isidia absent; apothecia present**; papillae narrow, short to intermediate in height; fibrils tapering from base. . . . . *U. arizonica* Motyka (*U. retifera* Motyka is closely related and might be regarded as conspecific)
16'. **Soralia present, sometimes isidiate; apothecia lacking or rare**. 17

17. **Soralia usually conspicuously isidiate**; divergently branched, lateral branches usually almost perpendicular to main branches. 18
17'. **Soralia typically lacking isidia**; variously branched. 19

18. **Branches inflated and segmented, constricted at ends of segments**; verruculose, often shiny; C9% M27% A28%, medullary hyphae loosely interwoven with abundant small interhyphal spaces, cortex tending to be rigid and easily cracking. . . . . morphotypes mostly intermediate between *U. fragilescens* Havaas ex Lynge and *U. cornuta* Körber (see note 7, which includes comments about *U. dasaea* Stirt. and *U. occidentalis* Motyka)
18'. **Branches not inflated and constricted**; broad to narrow, short papillae or verruculae; not noticeably shiny; C12% M13% A50%, medulla densely interwoven, with few noticeable interhyphal spaces. . . . . *U. subfloridana* Stirt.

19. **Surface of cortex dull, almost appearing to be pruinose; papillae typically large, appearing broad and blunt, more or less cylindrical**, but lower part of thallus sometimes bearing only small papillae; branches not inflated and constricted; lateral branches often short, emerging at wide angle, then ascending directly, with spiralled tips; soralia often slightly raised, mostly remaining restricted in size; C12% M23% A30%, medulla loosely interwoven, with abundant small interhyphal spaces. . . . . morphotypes of *U. substerilis* Motyka
19'. **Surface of cortex glabrous or shiny, not conspicuously dull; papillae small, narrow, short, not blunt at tips**; branches inflated or uninflated; lateral branchlets long, slender, abundant; soralia widening, often flaring and exposing axis. 20

20. **Branches strongly inflated, shiny; papillae barely visible, typically abundant and closely spaced**; C4% M37% A18%, medullary hyphae very sparse, radiating from axis. . . . . *U. kujalae* Räsänen (*U. stuppea* [Räsänen] Motyka, a British Columbian species, is similar in appearance, C6% M31% A26%, medullary hyphae more abundant, radiating; papillae larger)
20'. **Branches having little or no inflation at ends of segments; papillae more distinct**, narrow, low to moderate in height; cortex and axis wider, medulla narrow or moderately wide. 21

21. **Lateral branches loosely tortuous, usually emerging at narrow angle and ascending irregularly**; papillae moderate in size; C10% M25% A30%, cortex glabrous; medullary hyphae sparsely interwoven and radiating, with wide interhyphal spaces. . . . . *U. lapponica* Vainio (*U. laricina* Vainio, an intense green northern species, might be found in northern California; it differs by its more divergent branching and larger papillae)
21'. **Branches and fibrils ascending to more divergent**; papillae short, indistinct; medulla narrow or moderately narrow, moderately to densely interwoven; axis moderate in width to relatively wide. . . 22

22. **Narrow fibrils often ascending;** C12% M13% A50%, medullary hyphae densely interwoven, without distinct interhyphal spaces; cortex of black base often splitting into right-angled segments. . . . . near *U. wasmuthii* Räsänen

22'. **Fibrils and lateral branches more divergent;** C11% M21% A36%, medullary hyphae less densely interwoven, with visible interhyphal spaces. . . . specimens that may be referred to *U. fulvoreagens* [Räsänen] Räsänen as generally understood (see note 9)

Note 1. Although *Usnea ceratina* Ach. was reported for California by Hale and Cole (1988), the cortical cell lumina in California specimens are generally less than 1 μm in width and smaller than those of *U. ceratina* of Europe; consequently, California specimens having a pinkish medulla and axis and containing usnic and diffractaic acids are referred to *U. californica* Herre.

Note 2. California specimens allied to *U. pendulina* Motyka, described from Italy, and *U. graciosa* Motyka, described from Sweden, include some individuals with strongly fusiform segments that may belong to a distinct taxon.

Note 3. Specimens in the *U. subgracilis* group, which contain usnic and protocetraric acids, may have a sparsely distributed, yellow-orange coating on the surface of the cortex. Clerc (1997) listed *U. subgracilis* Vainio (1906) as a synonym of *U. hesperina* Motyka (1936–1938). The former name has priority, however, and should have been employed for the combined taxon. It would be possible to conserve *U. hesperina* over *U. subgracilis*, but in my opinion it would be unwise, since the holotype of *U. subgracilis* exists (in the herbarium at Turku, Finland) and the holotype of *U. hesperina* is missing.

Note 4. If *U. silesiaca* Motyka (Wydawnictwa Muzeum Ślaskiego w Katowicach 3[2]:19. 1930; of which the holotype, from Poland, is divergently branched) and *U. madeirensis* Motyka in C. N. Tavares (Revista de Biologia [Lisbon] 4:136. 1964; of which the holotype, from Madeira, is more pendulous and compressed) are considered conspecific, the name with nomenclatural priority is *U. silesiaca*. As pointed out by Clerc (1997) the holotype of *U. silesiaca* exists in Lublin, Poland. Motyka's protologue included a detailed description in Latin of the appearance of the species, as well as cortical, medullary, and axis measurements and the medullary color reaction with KOH; the accompanying photograph showed the appearance of the type distinctly. A careful review of the descriptions of the European species published by Motyka (1936–1938) clearly suggests a similarity between *U. silesiaca* and *U. madeirensis*. It is difficult to imagine a satisfactory reason for proposing the conservation of *U. madeirensis* over *U. silesiaca*, given the extent of detail in Motyka's protologue (1930).

Note 5. Although there seems to have been much confusion about the characters of *Usnea scabrata* and *U. scabiosa* in North America (for example, see *U. scabrata* in McCune and Goward 1995, and Brodo 1984), these species are very distinct and do not seem to be closely related.

Note 6. Any collection of divergent specimens resembling *U. filipendula* and having isidiate soralia near spiralling branch apices might be referable to *U. diplotypus* Vainio (Clerc 1987, reported corticolous *U. diplotypus* in central Europe); this taxon has not been found in California yet, to my knowledge.

Note 7. *Usnea fragilescens* was described by Clerc (1987) as having large, widely spaced soralia, whereas *U. cornuta* was said to have small, crowded soralia. Other characters also separate these taxa. Preliminary observations suggest that California specimens represent a series of intermediate taxa.

Usnea dasaea Stirt. (1881, p. 104; type locality: Madeira, collected by J. Payne) has been reported by Clerc and Herrera (1997) on bark from Santa Barbara; this species is often densely spinulose, with crowded fibrils and isidia. Clerc and Herrera (1997) placed *U. undulata* Stirt. (1881, p. 104; type locality: South Africa, collected by Dr. J. Shaw) in synonymy with *U. dasaea*. Because the two taxa were described in the same publication, either name could be chosen if the two are considered conspecific. In my opinion, *U. undulata* would have been a better choice, because, unlike *U. dasaea*, it has been extensively discussed in publications (see Asahina 1967, Motyka 1936–38, Swinscow and Krog 1975).

Another taxon with inflated branches, *U. occidentalis* Motyka, has been reported from California (see Tucker and Jordan 1979); the medulla is more densely interwoven than that of *U. fragilescens* and the axis is proportionally wider. More information will be presented later in the *Bulletin* about this species.

Note 8. For the purposes of this key, the following terms are defined:
axil—the angle between a branch and a lateral branch arising from it;
fibril—outgrowth from a branch that includes algae, medullary hyphae, and axis, surrounded by cortex;

foveolae—small, blunt-edged depressions in cortex (more or less equivalent to mark made by a finger-tip in a cylinder of modelling clay about 3 inches wide–compare definition by Motyka 1947);
glabrous—smooth, not noticeably dull or shiny;
isidia—used for any very small, fibril-like outgrowth, especially those arising in soralia, but usually restricted to those without an axis;
papilla—a cortical protrusion that is relatively tall for its width and is clearly visible in profile along a branch, generally abundant and relatively crowded;
pseudocyphella—an opening in the cortex; frequently containing isidia; often becoming transformed into a soralium by the production of soredia, spheres of algae enveloped by fungus hyphae;
ruga—a depression in cortex (more or less equivalent to mark made by a finger-tip in a cylinder of modelling clay about 1 inch wide; compare definition by Motyka 1947)–can be sharp-edged or rounded;
rugose—having numerous rugae;
soralia—used here to include both aggregations of soredia and pseudocyphellae in which it is difficult to distinguish whether any soredia are produced;
terete—round in cross-section, with gradual tapering;
verruculae—low, broad-based protrusions from cortex, not conspicuous in profile–often opening into soralia, especially on upper branches.

Approximate papilla sizes to facilitate identification of species:
60–70 μm tall x 50–60 μm wide—*U. scabrata*;
60 μm tall x 60 μm wide—*U. substerilis*;
25–30 μm wide, variable in height, but often tall—*U. filipendula*; 50 μm x 50 μm—*U. stuppea*;
50 μm tall x 40 μm wide—*U. lapponica*;
25 μm tall x 50 μm wide at base of tapered sides; somewhat glassy-looking—*U. scabiosa*;
25 μm tall x 35–50 μm wide—*U. pendulina*;
25 μm tall x 35 μm wide—*U. wasmuthii*, *U. fulvoreagens*;
25 μm x 25 μm—*U. kujalae*.

Note 9. Distribution patterns have generally not been determined, so little information is given. With regard to records for California of *Usnea* species that are not listed in the key (see Tucker and Jordan 1979), the following comments may be made: For *U. deformis* Mot. refer to the *U. fragilescens-U. cornuta* group; *U. florida* (L.) Wigg. undoubtedly refers to *U. arizonica*; *U. mirabilis* Mot. may be grouped with *U. rubicunda*; *U. subfusca* Stirt. was based on an erroneous identification of a soraliate taxon (*U. subfusca* is apotheciate) and *U. trichodea* Ach. probably also represents an erroneous determination. Any other comments can only be made after examination of the cited material. For *U. xanthopoga* Nyl., Tucker and Jordan (1979) gave no reference; for *U. condensata* Motyka and *U. occidentalis*, they cited Malachowsky's unpublished thesis of 1975, in which the descriptions clearly indicate that the identifications were incorrect.

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Editor's note—
Explanations of unfamiliar terms and concepts in Isabelle Tavares's paper can be found in the International Code of Botanical Nomenclature, now available on line (URL: http://www.bgbm.fu-berlin.de/iapt/nomenclature/code/tokyo-e/Sindex.htm).

Another Internet site of interest to lichenologists is the cumulative, updated version of the North American Lichen Checklist (URL: http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chcklst7.shtml). Thank you Ted Esslinger!

Thallus Form in *Ramalina menziesii* and its Variants on Santa Cruz Island (Santa Barbara Co., California)

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The lace lichen, *Ramalina menziesii* Tayl., is perhaps the best-known and most spectacular element of the California lichen flora. Where it occurs it is usually found in abundance, and few visiting lichenologists can resist taking a collection. Its reticulate thallus grows draped over coastal tree branches like a dripping tangle of pale green fishnet stockings. Disentangling the thalli reveals that "individuals" are irregular fragments; in many populations they are only rarely found attached by a holdfast to the tree branch they are twisted about. Individual thalli vary in appearance but are based on the same simple "Bauplan" (model of construction), consisting of repetitions of a single morphological unit in the form of an elongate, two-dimensional net. The nets arise from buds which develop perforations; the perforated tissue expands by diffuse growth to form a reticulum. New perforated tissue is produced at the apical margin of the net (Sanders 1989). New net buds are produced on the expanded reticulations, which may become so torn that it is no longer obvious that they were originally part of a net. Nets may increase in length by as much as 39% in a season (Boucher and Nash 1990); diffuse growth, occurring over the entire net rather than just within the marginal zone, appears to account for this phenomenal production. The fungal cells which make up the framework of the thallus are aligned mainly in parallel along the length of the reticulations. As diffuse growth of the tissue deforms the walls of these cells, new layers are continually deposited to the inside, building up an intercellular matrix of wall materials in a curious process very different from growth of typical fungal hyphae (Sanders and Ascaso 1995).

The lace lichen has an extensive latitudinal distribution, occurring from southern Alaska to central Baja California in Mexico, but is limited to a relatively narrow zone of maritime influence along this range. In California, where the species is best developed, thalli may vary substantially in form within relatively short distances between the coast and points inland (Larson et al.1985). At the coast, one frequently finds very fine, dissected thalli resembling *Alectoria sarmentosa* (Ach.) Ach. subsp. *sarmentosa* or *Ramalina thrausta* (Ach.) Nyl. These dissected thalli arise from nets of fragile construction which tend to be disrupted at the apex early in development. At the inland extreme of its range, thallus nets may show markedly broadened reticulations, often with the apical margin differentiated as part of the reticulum (Sanders 1992). Intermediate populations show intact nets having less broadened reticulations, commonly reaching lengths of many centimeters with an apical margin that continues to produce new perforate tissue. Development appears to differ in the relative rates of elongation versus thickening or broadening of new perforate tissue. In fine, dissected thalli, elongation of young perforate tissue occurs much more rapidly than thickening, producing attenuated, fragile reticulations subject to early rupture (Sanders 1992). The breakdown of the reticulate pattern thus produces a highly dissected thallus form which other fruticose lichens achieve exclusively by means of branch formation. It also produces a great amount of minute thallus fragments which may serve in vegetative propagation.

Although the degree of thallus reticulation has been interpreted as differential adaptation to moisture uptake from fog (Rundel 1974), experimental comparisons have not revealed important differences between thallus forms in water uptake or retention (Larson et al. 1986). Nonetheless, coastal and inland populations of the lace lichen are exposed to very different daily and seasonal cycles of moisture availability and irradiation, which elicit correspondingly different patterns of carbon fixation (Matthes-Sears et al. 1986) and thallus growth (Boucher and Nash 1990). Morphological variation might be at least in part a consequence of these different growth regimes, rather than a strictly functional adaptation. Transplanting highly reticulate thalli from Carmel Valley to Point Lobos at the coast has shown that differences in growth rates are environmentally determined (Boucher and Nash 1990).

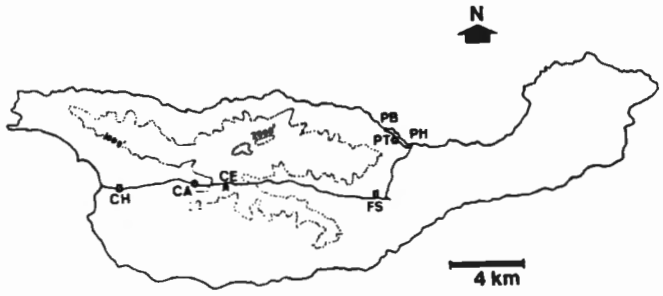
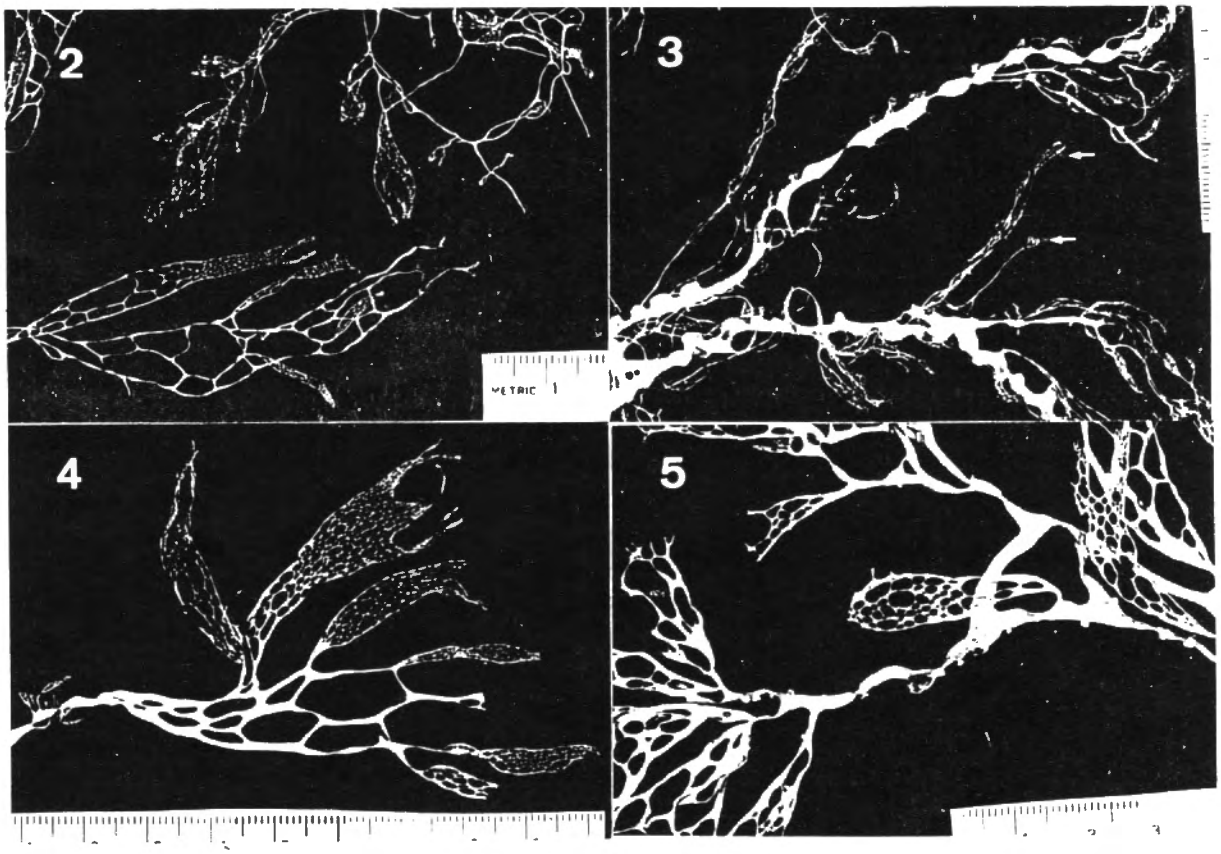


Fig. 1. Map of Santa Cruz Island. CH, Christy Ranch; CR, Campo Raton; CE, Centinela Pass; FS, U.C. Field Station; PH, Prisoners' Harbor; PB, Pelican Bay; PT, Pelican Trail.



Figs. 2–5. Thalli of *Ramalina menziesii* from Santa Cruz Island. Scale in mm. Fig. 2, Campo Raton; thallus (above) with very fine, highly dissected reticulations, and thallus (below) with fine but intact nets reaching several cm. Fig. 3, ca. 1 km east of Campo Raton; arrows, minute nets at ends of fine reticulations. Fig. 4, Campo Raton. Fig. 5, Pelican Trail.

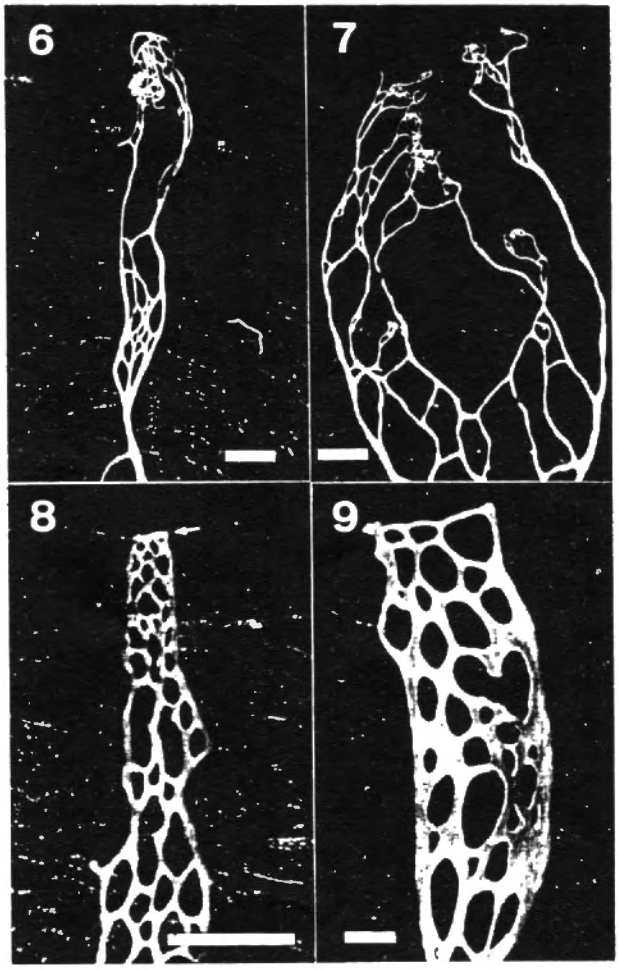
But such transplants eventually decline, leaving largely unanswered the question of the extent to which thallus form is shaped by environment.

The recent lichenological excursion to Santa Cruz Island, 30.6 km from the mainland, provided an opportunity to observe morphological variation in *Ramalina menziesii* within a different sort of geographical setting. A full range of thallus forms is present on the island, but their distribution does not seem to fit the coastal-inland gradient recorded from mainland California. *Ramalina menziesii* was seen in abundance along the Valley Road near Campo Raton, west of Centinela Pass and about 6–7 km inland from Christy Beach (Fig. 1). Many thalli at this site were fine and highly dissected (Figs. 2–3), comparable to those found at Point Lobos (Monterey Co.), although others were highly reticulate, with somewhat sturdier, intact nets reaching several cm in length (Fig. 4). A similar but somewhat less extreme range in thallus form can be observed at Tomales Bay, Marin Co. (Sanders 1992). Toward the coast from Campo Raton the valley widens and the vegetation becomes much more sparse. *Ramalina menziesii* was not observed near the coast in the vicinity of Christy Beach or Christy Ranch. A substantial coastal population occurs on the northern central part of the island, along the Pelican Trail from Prisoners' Harbor to Pelican Bay (Fig. 1). Although this open oak woodland trail passes just 20–100m from the steep shore, the thalli present show broadly reticulate nets most characteristic of populations at the inland extremity of its range on the California mainland (Fig. 5).

To recognize some of these morphological differences it is necessary to compare nets of similar size, since the various developmental stages of nets present in a given thallus adds another confusing dimension to variation in this species. For example, broad strap-shaped reticulations may occur frequently on thalli with highly dissected nets (Fig. 3), but this broadening evidently occurs long after nets are fully disrupted, since intact nets on such thalli are small, with fine, fragile reticulations (Figs. 6–8; compare Fig. 9).

Based on this rather limited sampling of the island, the distribution of dissected and broadly reticulate forms of *Ramalina menziesii* on Santa Cruz Island does not seem to correlate with distance from shore as reported in

mainland population gradients. However, it may be possible to relate the distribution of forms to similar parameters of local climatic variation on both the island and the mainland. Prevailing winds from the west and northwest bring moisture to Santa Cruz Island, which accumulates as a bank of fog concentrating where the western valley narrows below Centinela Pass. Viewed from Centinela Pass, this thick cloud cover stood in impressive contrast to the clear skies over the Central Valley to the east, where much drier conditions and more extreme temperatures generally prevail year round (Junak et al. 1995). By contrast, the Pelican Trail area has a northeasterly exposure, and may be sheltered from the brunt of moist westerly breezes by the mountains to the immediate west. At the same time its coastal position probably insures greater humidity than inland in the central part of the island.



Figs. 6–9. Thallus nets of *Ramalina menziesii* from Santa Cruz Island. Scale bar = 1mm. Fig. 6, Campo Raton. Fig. 7, Campo Raton. Fig. 8, Campo Raton; arrow, inrolled apical margin. Fig. 9, Pelican Trail.

Matthes-Sears et al. (1986) found that inland in the Carmel Valley, photosynthetic production in *Ramalina menziesii* was concentrated in the rainy winter season, and frequently limited to the early morning before thalli dried to below their moisture compensation point. By contrast, frequently overcast skies and greater humidity often permitted thalli at Point Lobos to make photosynthetic gains intermittently throughout the day and year round. It would be interesting to know whether comparable differences in photosynthetic activity occur between the Pelican Trail and Campo Raton sites on Santa Cruz Island, as well as within and near the Campo Raton site where considerable variation in thallus form is observed. In view of the distribution of thallus forms observed on Santa Cruz Island, it now seems more prudent to refer to them by morphologically descriptive terms, rather than as "coastal" and "inland" forms as was done previously.

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Notes on Recent Lichen Collections and Publications

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NEW RECORDS

Two exciting lichen finds for California have been made recently. *Thelotrema californicum* Tuck. was found on Monterey cypress trunks at Christy Ranch, Santa Cruz Island on the recent CALS lichen foray. It has large lecanorine apothecia with a black, pruinose disk and a thick, grey, raised exciple. It was associated with the pink, mostly sterile crust *Sclerophyton californicum* (Tuck.) Hasse, and also the following crusts: *Sigridea californica* (Tuck.) Tehler, *Arthonia pruinata* (Pers.) A.L. Sm., *Lecanactis californica* Tuck., and *Opegrapha vulgata* Ach. *Thelotrema californicum* apparently is rarely collected. Tuckerman (1877) described the species from San Diego, and subsequent reports have been based on the original material. It was assigned by Zahlbruckner (1924) to *Phaeotrema*, and reported under the name *Phaeotrema californicum* by Fink (1935) and Tucker and Jordan (1979). The genus *Phaeotrema* was not recognized by Hale (1980). I would like to hear from readers about other collections from California.

The second interesting find is *Lecania cyathiformis* Szat., which Isabelle Tavares brought to our attention in the last issue of the CALS *Bulletin* as a species that had not been mentioned in checklists. Isabelle showed me material from the type collection (type locality: La Jolla) when I visited the herbarium at Berkeley recently. I collected this species from the base of dead stems of chaparral shrubs at Los Osos, San Luis Obispo County (28 Dec. 1996). CALS visited this site last year on a group trip, so some participants may have collected the species also. *Lecania cyathiformis* resembles *Lecanora caesiorubella* Ach. subsp. *merrillii* Imshaug & Brodo or a large *Ochrolechia*, but differs in having 1–3-septate hyaline spores. The apothecia are often short-pedicellate (stalked), with a large, pink or grey disk, and a pale grey exciple, often partly worn away.

Caliciales, sometimes called "pin lichens", can be found most easily by sighting along twigs against a contrasting background. Young eyes are best for spotting Caliciales; I don't find them myself as often as in past years! Of the eight species of *Calicium* reported for California, I've found *C. abietinum* Pers. on chaparral at Los Osos, San Luis Obispo Co., and at Fort Bragg, Mendocino Co., and *C. glaucellum* Ach. near Weaverville, Trinity Co. I've found *Microcalicium disseminatum* (Ach.) Vainio (one of the two California species) at Lake Pillsbury, Lake Co., and *Mycocalicium subtile* (Pers.) Szat. at Lake Pillsbury and Santa Cruz Island, Santa Barbara Co. Other genera of Caliciales known from California include *Chaenotheca* (nine spp.), Chaenothecopsis (two spp.), *Phaeocalicium* (two spp.), *Sphinctrina* (four spp.), and *Stenocybe* (three spp.).

Collections of Caliciales should be handled carefully in the field to avoid breakage. Twigs should be put in small boxes or wrapped in tissues. For permanent collections, twigs can be glued to the bottom of a shallow box with protective sides, or glued to a card and protected by a fence of plastic peanuts glued nearby.

NEW PUBLICATIONS

Pyrenocarpous lichens (lichens with perithecia) — Several pyrenocarpous lichens collected in California by me have kindly been identified by Andre Aptroot of Baarn, The Netherlands: *Anisomeridium biforme* (Borrer) R.C. Harris (Marin Co.), *Arthropyrenia antecellans* (Nyl.) Arnold (Monterey Co. and Santa Barbara Co.), *A. lyrata* R.C. Harris (Santa Barbara Co. and Sonoma Co.), *A. punctiformis* (Pers.) A. Massal. (Santa Barbara Co.), and *Tomasellia eschweileri* (Müll. Arg.) R.C. Harris (Santa Barbara Co.). A forthcoming paper by Aptroot in Nova Hedwigia on pyrenocarpous lichens of the Sonoran Desert Region includes some additional records for Southern California.

Lichen parasites — Several new reports of gall-forming lichenicolous fungi (lichen parasites) from California have been published by Paul Diederich in a monograph on lichenicolous Heterobasidiomycetes. Diederich (1996) includes two new species of interest to California collectors: *Syzygospora physciacearum* Diederich on species of *Physcia* and *Physconia* (including two Tucker collections from Santa Cruz Co. and Santa Barbara Co.) and *Tremella dendrographae* Diederich & Tehler on *Dendrographa leucophaea* (Tuck.) Darbish. and *D. minor* Darbish. [see Wright 1996 for comments on this name] from Catalina, San Clemente, and Santa Cruz islands and Marin, Monterey, Orange, and San Francisco counties. The type specimen of *Tremella dendrographae* was collected by C. Bratt *5863* from Morro Bay State Park, San Luis Obispo Co. A.W.C.T. Herre and more recently, Anders Tehler, made many of the collections from California. Many more of the gall-forming parasites

described by Diederich are likely to be found in California. One should look for small galls or abnormal growths on common species of *Caloplaca, Cladonia, Evernia, Heterodermia, Hypogymnia, Leptogium, Letharia, Lobaria, Nephroma, Parmelia sensu lato, Physcia, Physconia, Ramalina, Usnea*, and others. According to Diederich, many lichen parasites can be found by looking at specimens of likely host taxa in herbarium collections.

Xanthoria — Most of us have many collections of *Xanthoria*, the brilliant gold or orange foliose lichens on bark and rock. A monograph has just been published on North American species of *Xanthoria* by Louise Lindblom (1997). It includes keys, distribution maps, and descriptions for 15 species, 12 of which occur in California. The species previously recorded from California include five that are familiar: *X. candelaria* (L.) Th. Fr., *X. elegans* (Link) Th. Fr., *X. fallax* (Hepp) Arnold, *X. parietina* (L.) Th. Fr., and *X. polycarpa* (Hoffm.) Rieber, and one that may be unfamiliar: *X. hasseana* Räsänen (described from Southern California, but omitted by Hale and Cole 1988). However, some specimens that might previously have been assigned to one or another of these species would be identified by Lindblom as one of the following taxa: *X. fulva* (Hoffm.) Poelt & Petutschnig (previously reported from British Columbia), *X. mendozae* Räsänen (type locality: Argentina; new for North America), *X. oregana* Gyelnik (type locality: Corvallis, Oregon), *X. sorediata* (Vainio) Poelt (reported from British Columbia to Utah in Goward et al. 1994), *X. tenax* L. Lindblom (a new species fairly widely distributed in California, with the type collected in northern Baja California), and *X. ulophyllodes* Räsänen (described from Voronezh and Irkutsk in Russia and lectotypified by Lindblom with the specimen from the former locality; new for North America).

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Field Trip to the Lake Pillsbury Area, Lake County, California, April 19–20, 1997

Lake Pillsbury in rural Lake County is in the Inner North Coast Ranges near 40°N at 550 m elevation 185 km NE of San Francisco, 73 km inland from the Pacific Ocean. The lake is a Pacific Gas and Electric Company reservoir created in 1921–1923 (C. Ahlgren, P.G.& E., San Francisco, pers. comm.) by damming the South Fork of the northward flowing Eel River 300 km from its mouth. The Geologic Map of California (Jennings 1960) shows the surrounding rock as Franciscan sandstone with a few intrusions of serpentine. The nearest official climatic records are from Potter Valley, 24 km to the SW (NOAA 1996), where average annual rainfall is 1140 mm, mean summer maximum temperature 29°C and mean winter minimum temperature 7°C. P.G.& E. does not maintain climatic records at the lake. Our collecting sites at elevations 200 to 500 m higher than Potter Valley (310 m) might have more rain and greater extremes of temperature (as confirmed by one resident of the area and denied by another). Vegetation includes mixed hardwood-conifer forest on the ridge, oak woodland and chaparral in the valley, and grassland throughout. The area was chosen for a field trip on the basis of lichen explorations in 1993 and 1994, when the luxuriance of *Bryoria* and *Alectoria* around the lake made me wonder what effects creation of the lake might have had on the ecology of the area. One might look for gradients in the size of *Bryoria fremontii* thalli from the lakeshore to points well back from that, something our group did not have time to do.

Present were Doris Baltzo and son Dan Baltzo, Rudi Becking, Mona Bourell, Cherie Bratt, Richard and Janet Doell, Bill Hill, Barbara Lachelt, Mikki McGee, Tim Milliken, Judy and Ron Robertson, Curt Seeliger, Dave Toren, Shirley and Ken Tucker and Darrell Wright. Darrell Wright led the excursions. Dave Toren, who grew up in

Lake County, is co-author of *Haematomma californicum* (Sigal and Toren 1975), now merged into *Ophioparma rubricosa*, q.v. Lake Pillsbury is the type locality of *H. californicum* and the type specimen was collected by CALS founding member Dr. Harry Thiers.

The group explored 5 localities; locality 6 was added on the basis of earlier collections by Toren and Wright:

1. The Slides, a saddle at the top of a steep slope, 5 km W of the lake near the summit of the Old Eel River Road from Potter Valley, elevation 805 m: hardwood-conifer association with *Arctostaphylos* understory and grassland with rock outcrops, including serpentine.

2. A rocky cliff on the road 0.6 km NW of site 1: open grassland.

3. Base of the hill opposite the Soda Creek Ranger Station, 1.5 km W of the lake, elevation 550 m: plant community similar to (1).

4. Bloody Rock, named for an early massacre of Native Americans by whites at this site 6.5 km NE of the lake on the Hull Mountain Rd. (poor) to Mendocino County, elevation 870 m: *Quercus douglasii-Pinus sabiniana* woodland with grassland and rock outcrops.

5. The area around our lodgings at DeBoer's Lake Pillsbury Resort, elevation 560 m: hardwood-conifer woodland and chaparral.

6. Old Eel River Road ascending from Soda Creek Ranger Station to The Slides, elevation about 650 m: wet *Pseudotsuga* forest.

Special thanks are due Shirley Tucker and Doris Baltzo, whose collections and identifications of about 100 taxa provide the basis for this list. A few records were added by Dave Toren, Cherie Bratt and myself. I thank Rudi Becking for help obtaining literature reprints. Collector codes are Baltzo (B), Bratt (R), Toren (N), Tucker (T) and Wright (W). Nomenclature follows Esslinger and Egan (1995). The annotation of a species and accompanying comments are by the collector unless otherwise indicated. A question mark indicates an uncertain identification.

Alectoria

sarmentosa (Ach.) Ach. subsp. *sarmentosa* — 1T, 3T

Aspicilia

calcarea (L.) Mudd — 1T, 4T
gibbosa (Ach.) Körber — 4T
laevata (Ach.) Arnold — 1T

Bryoria

capillaris (Ach.) Brodo & D. Hawksw. — 1W, 2B?, 5B?
fremontii (Tuck.) Brodo & D. Hawksw. — 1T, 2B?, 3T
furcellata (Fr.) Brodo & D. Hawksw. — 1T

Buellia

Buellia cf. oidalea (Nyl.) Tuck. — 4B

Caloplaca

cerina (Hedwig) Th. Fr. var. *cerina* — 3T
ferruginea (Hudson) Th. Fr. — 1T, 3T
flavovirescens? (Wulfen) Dalla Torre & Sarnthein — 4T
holocarpa (Hoffm. *ex* Ach.) M. Wade — 1T, 3T. This is similar to *C. cerina* var. *cerina*, another fairly common, inconspicuous crust on bark. Apothecia of *C. holocarpa* are solid orange, while those of *C. cerina* var. *cerina* have a lighter yellow outer exciple.
luteominia (Tuck.) Zahlbr. var. *bolanderi* (Tuck.) Arup — 2T. Apothecia red-orange; in the more coastal var. *luteominia* they tend to be lighter orange.
ulmorum (Fink) Fink — 3T. On bark. The disks are a remarkably intense gold-orange color. Rare or underreported in California.

Candelaria

concolor (Dickson) Stein — 1T, 3T

Candelariella

rosulans (Müll. Arg.) Zahlbr. — 2T
vitellina (Hoffm.) Müll. Arg. — 1T

Cladonia

conista A. Evans — 3T
ochrochlora Flörke — 3T

Collema

Collema cf. crispum (Hudson) F.H. Wigg. — 1T
furfuraceum (Arnold) Du Rietz — 1T. On bark.
nigrescens (Hudson) DC. — 1T, 3T

Dermatocarpon

intestiniforme (Körber) Hasse — 2T. Polyphyllous with bullate, dark gray or bluish gray squamules. Rare in California.
miniatum (L.) W. Mann — 2T. On rock.
canescens (Dickson) A. Massal. — 1T. Rare, on twig.

Diploschistes

actinostomus? (Ach.) Zahlbr. — 1T
muscorum (Scop.) R. Sant. subsp. *muscorum* — 4T

Diplotomma

penichrum (Tuck.) Szat. — 3T

Esslingeriana

idahoensis (Essl.) Hale & M.J. Lai — 1TW, 3T

Evernia

prunastri (L.) Ach. — 2B, 3T, 4B

Flavoparmelia

caperata (L.) Hale — T. Common, not collected.

Flavopunctelia

flaventior (Stirton) Hale — T. Common, not collected.

Heterodermia

leucomelos (L.) Poelt — 1T, 4B

Hypogymnia

enteromorpha (Ach.) Nyl. — 1T, 3T
imshaugii Krog — 1T, 3T, 4TB?
inactiva (Krog) Ohlsson — 3T
tubulosa (Schaerer) Hav. — 1T, 5B

Kaernefeltia

merrillii (Du Rietz) Thell & Goward (Syn.: *Cetraria merrillii* Du Rietz; *Tuckermannopsis merrillii* [Du Rietz] Hale) — 1T, 2T, 3T, 4B

Lecania

dubitans (Nyl.) A.L. Smith — 3T

Lecanora

confusa Almb. — 1T, 3T

pacifica Tuck. — 4T

Lecidea

atrobrunnea (Ramond *ex* Lam. & DC.) Schaerer — 1T, 2T, 4T

tessellata Flörke — 1T, 2T

Lecidella

asema (Nyl.) Knoph & Hertel — 1T. On rock.

elaeochroma (Ach.) Hazsl. — 1T, on oak twigs; 3T, on wood; 4T, on pine twig; 5B.

Leptochidium

albociliatum (Desmaz.) Choisy — 1WB, 2T

Leptogium

corniculatum (Hoffm.) Minks — 1T, 2T, 3T

lichenoides (L.) Zahlbr. — 2R. Widely distributed in California. There is at least one Lake County collection already at SFSU (S.T.).

Lethariа

vulpina (L.) Hue — 1T, 2B, 4B. *L. columbiana* (Nutt.) J.W. Thomson has also been reported from Lake County, but was not seen on this trip (S.T.).

Lobaria

hallii (Tuck.) Zahlbr. — 3T

scrobiculata (Scop.) DC. — 1T, 3TW

Melanelia

glabra (Schaerer) Essl. — 1T, 3T, 4T

multispora (A. Schneider) Essl. — 1T

subargentifera (Nyl.) Essl. — 1T

Microcalicium

disseminatum (Ach.) Vainio — 1T. On dead oak wood. The sessile black apothecia contain simple hyaline spores.

Nephroma

laevigatum Ach. (*nom. rej. prop.*) — 3T

resupinatum (L.) Ach. — 3T

Normandina

pulchella (Borrer) Nyl. — 2B, 3T

Ochrolechia

africana Vainio — 3T. This and *O. mexicana* Vainio are somewhat unusual finds for California, although both are reported from the Sonoran Desert of Mexico; *O. africana* is primarily pantropical. They resemble each other as well as other large Ochrolechias such as *O. subpallescens* Vers. in having apothecia to 2.5 mm with a large orange disk and a fairly thick, raised, smooth exciple. These species require careful observation of chemical responses in a section of the apothecium under a dissecting microscope; in *O. africana* only the medulla of the apothecium is C+ red; in *O. africana* cortex and medulla of the apothecium as well as the surface of the disk are all C+ red (cf. Tucker 1996; Brodo 1991).

farinacea Howard — 1T

juvenalis Brodo — 1T, 3T. The apothecium has a very thick, smooth, pale exciple, and the disk is minimal in size compared to that of *O. africana* and *O. mexicana*.

mexicana Vainio — 1T, 3T

Ophioparma

rubricosa (Müll. Arg.) S. Ekman (Syn.: *Haematomma californicum* Sigal & D. Toren, *H. pacificum* Hasse) — 1TW, 3BT. In this taxon, the red pigment of the apothecium is said by Ekman (1993) to be KOH+ blue, but, in my material (*Wright 6041*, locality 1), even dilute KOH, when applied to the surface of the disk, gave a black or blackish color. However, when an apothecium was sectioned vertically, as in preparing material for the microscope, blue color was visible against the white of the amphithecial medulla, if the disk was first wetted with KOH. Under the microscope, the upper hymenium was bright blue and the lower hymenium and hypothecium reddish in a section mounted in KOH (D.W.).

Pannaria

pezizoides (Weber) Trevisan — 1(?)N

Parmelia

saxatilis (L.) Ach. — 3?T. On bark, not collected.

sulcata Taylor — 2B, 3T

Parmeliella

cyanolepra (Tuck.) Herre — 3T

Parmelina

quercina (Willd.) Hale — 3T, 4B, 5B

Peltigera

aphthosa (L.) Willd. — 6N. This and *P. venosa* are rare in California and are found only in the northern part of the state. Both turn green when wet (S.T.).

collina (Ach.) Schrader — 3B, 4B, 5T

venosa (L.) Hoffm. — 6N. Thalli of this species are fan-shaped and much smaller than those of other *Peltigera* species (S.T.).

Pertusaria

amara (Ach.) Nyl. — 1T, 3T

hymenea (Ach.) Schaerer — 1T. This is underreported in California, although it is fairly common on twigs. Young colonies have conical warts with black tips; each wart contains a single apothecium with a narrow opening which widens and becomes more lecanorine with age. Asci have up to 8 spores, 80–90 x 35μm. I have collected it also in San Luis Obispo, Santa Barbara, and Santa Clara Counties.

Physcia

adscendens (Fr.) H. Olivier — 1T

aipolia (Ehrh. *ex* Humb.) Fürnr. var. *aipolia* — 1T, 3T

caesia (Hoffm.) Fürnr. — 2T, 4T

magnussonii Frey — 2T. Pruinose, no propagules, on rock. This species, except for its KOH+ yellow medulla and heavy pruina, resembles *P. biziana* (A. Massal.) Zahlbr. Uncommon or at least underreported in California.

phaea (Tuck.) J.W. Thomson — 1T, 2T, 3T
Physcia cf. stellaris (L.) Nyl. — 4B
tenella (Scop.) DC. — 1W, 4T

Physconia

americana Essl. — 1T, 5T
enteroxantha (Nyl.) Poelt — 3T
isidiigera (Zahlbr. *in* Herre) Essl. — 1T

Platismatia

glauca (L.) Culb. & C. Culb. — 1T
herrei (Imshaug) Culb. & C. Culb. — 1T

Pseudocyphellaria

anomala Brodo & Ahti — 1W, 4B
anthraspis (Ach.) H. Magn. — 1W, 3T

Pyrrhospora

russula (Ach.) Hafellner — 1T. An exciting find for me in California, although I collected it many years ago in Trinity Co. This is a gray to gray-green crust with flat, bright scarlet, lecideine disk and concolorous exciple. It might be taken for a *Caloplaca*, but the spores are simple rather than polarilocular. It grows on bark and lignum. The more common *P. quernea* (Dickson) Körber with a granular tan thallus and tiny red-brown apothecia (often sterile on twigs) did not turn up at Lake Pillsbury.

Ramalina

farinacea (L.) Ach. — 1W, 2B, 3T
menziesii Taylor — T. Not collected.

Rhizocarpon

geographicum (L.) DC. — 1T

Rinodina

exigua (Ach.) Gray — 1T, 3T. The genus is generally underreported, but some species are likely to turn up on almost any California field trip. Most are on bark; some are on rock and soil.
hallii Tuck. — 3T. The thallus is pale brown to purple-brown, the disk dark brown, and the exciple pale. *R. hallii* is the easiest *Rinodina* to identify, as the thallus and the exciple differ in color; in most Rinodinas they are concolorous.
santae-monicae H. Magn. — 4T

Sarcogyne

privigna (Ach.) A. Massal. — 2T. A cream to gray-white, areolate or continuous crust with flat, smooth, black, lecideine apothecia to 0.7 mm. Spores hyaline, simple, oval, ca. 60 per ascus. On rock.

Staurothele

Staurothele cf. diffractella (Nyl.) Tuck. — 2T. This saxicolous, perithecial genus resembles *Verrucaria*, but differs from it by the algae within the hymenium.

Syzygospora

physciacearum Diederich — 3T, 5T. Gall parasite on *Physcia* and *Physconia* spp.

Trapeliopsis

wallrothii (Flörke) Hertel & Gotth. Schneider (Syn.: *Lecidea wallrothii* Flörke) — 4W. Gray, C+ squamules with dark brown disks. On moss. Confirmed by B. McCune.

Tuckermannopsis

chlorophylla (Willd.) Hale — 1T
orbata (Nyl.) M.J. Lai — 1T, 3T
platyphylla (Tuck.) Hale — 3T, 4B

Umbilicaria

phaea Tuck. — 1B?, 2T, 3T

Usnea

californica Herre — 3T
cavernosa Tuck. — 1T, 2B, 3T, 4B, 5B
filipendula Stirton — 3B, 4B. Pendent.
glabrata (Ach.) Vainio — 3T
glabrata/kujalae agg. — 3B
hirta (L.) F.H. Wigg. — 3T
scabiosa Mot. — 3B, 5B. Pendent.
scabrata Nyl. — 1T, 3T
subfloridana Stirton — 5B, 3T

Verrucaria

fusconigrescens Nyl. — 2T

Vulpicida

canadensis (Räsänen) J.-E. Mattsson & M.J. Lai — 3TW, 4B

Waynea

stoechadiana (Abbassi Maaf & Roux) Roux & Clerc (Syn.: *W. californica* Moberg) — 2N

Xanthoparmelia

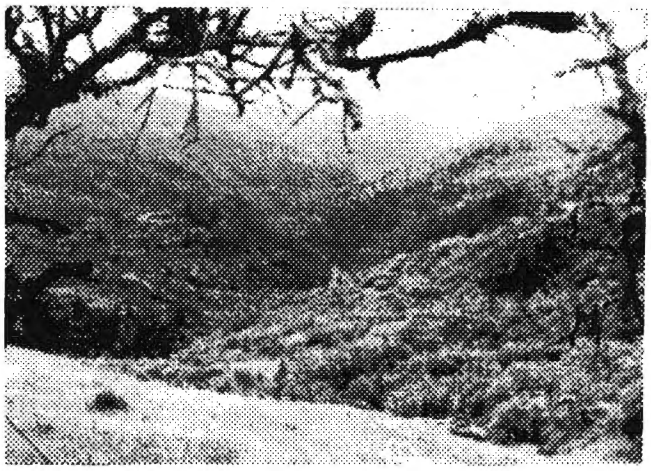
coloradoënsis (Gyelnik) Hale — 3T
subramigera (Gyelnik) Hale — 2T

Xanthoria

polycarpa (Hoffm.) Rieber — 1T, 3T
Xanthoria cf. ramulosa (Tuck.) Herre — 4B

There remain unidentified collections of *Aspicilia*, *Bryoria*, *Caloplaca*, *Hypogymnia*, *Lecanora*, *Lecidea*, *Leptogium*, *Melanelia*, *Ochrolechia*, *Parmotrema*, *Pseudocyphellaria*, *Ramalina*, *Rinodina*, *Usnea*, *Xanthoparmelia*, and *Xanthoria*, and an unknown squamulose species which is gray, merely pycnidial, and C+.

Darrell Wright



Typical Lake Pillsbury landscape with varied topography.

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PRESIDENT'S REPORT

In this, my last message as President, I would like to express my gratitude to all of you for helping the Society become such a success. I do believe the time was right to reach out to those whose interest in lichens had no easily available outlet in the Bay Area or the state. It has given me great pleasure to see our little group of nine persons grow into a society which seems to be leveling out at around 140. New members keep appearing from near and far and we can rightfully feel proud that lichenologists from as far away as Germany and New Zealand have joined our ranks.

The workshops organized by Judy Robertson have been very well received. The addition of occasional lectures at these events, such as the one by William Sanders in January, will provide further opportunities for learning and the exchange of ideas. Hopefully these workshops will continue and expand.

Speaking of Judy, I feel we are all fortunate that she appeared on the scene just when we desperately needed someone with her talents, experience, and energetic personality. I feel very confident about handing over the reins of the Society to her and the fine slate of officers being presented for election at this time.

I take this opportunity to thank those who served as officers over the past four years. Barbara Lachelt helped launch CALS as our first Vice President and Secretary, and has continued to be on hand whenever needed. Cherie Bratt, Beth Sampson, Bob Stewart and Darrell Wright saw us through the second two years after we expanded to a five-member Board of Directors.

Thanks are also due the editors of the *Bulletin*—Darrell Wright, Isabelle Tavares and Shirley Tucker, with Dick Moe taking over as Managing Editor when Darrell stepped aside. The *Bulletin* is our best ambassador at home and abroad and a very important part of CALS.

Finally I urge you all to do what you can in the coming two years to help Judy in what promises to be a job of increasing complexity as CALS grows and prospers as I know it will.

Janet Doell

UPCOMING EVENTS

January 10—Workshop at U.C. Berkeley. Mona Bourell will discuss how to prepare, label, and preserve our lichen collections. Also, William Sanders of U.C. Berkeley will speak about his work with *Ramalina menziesii*. Any remaining time will be used for participants to key out unknown lichen specimens.

January 31—Field trip to Crystal Springs Watershed in San Mateo County. We are going under the umbrella of the San Francisco Mycological Society. Access to the watershed is restricted and Bill Freedman, who is a member of both societies, has agreed to be our leader and make the arrangements. This field trip will start at 10 a.m. and end at 3 p.m. Let Janet Doell (at (510) 236-0489) know if you plan to attend so that you can be kept informed regarding where we meet, what to bring, etc.

January 31—Following the above field trip, members are welcome to congregate at Room 401, Hensill Hall, San Francisco State University, to review their collections and compare notes. At 5:00 p.m. in Room 401, Hensill Hall, there will be a membership meeting for the installation of the new officers, followed by a social hour and dinner in room 440. This will be a catered affair and a contribution of $20.00 per person is suggested. After dinner Dr. Philippe Cohen, Director of Stanford's Jasper Ridge Biological Preserve, past director of the Sweeney Granite Mountains Desert Research Center and a CALS member, will speak briefly about these two preserves, which CALS will be visiting in 1998, and on the importance of preserves in general.

This will be CALS' first dinner meeting and we plan to make it gastronomically and intellectually exciting—well, interesting anyway. Do plan to join us.

February 1—Field trip to Stanford's Jasper Ridge Biological Preserve. Members won't be able to collect here, but the lichen flora is varied and reflects the several plant communities present in this 1200 acre parcel. The preserve is located on Sand Hill Road in San Mateo County. Meeting time is 10 a.m.

For all the events on January 31 and February 1, it is essential that you inform Janet Doell at (510) 236-0489 (or at doell@slip.net for e-mail) if you plan to attend so that you can be kept informed about details in the arrangements.

There will be a limit of 25 people on the field trips.

May 24–25—Field trip to Mt. Ashland in Oregon. We are inviting the Northwest Lichen Guild to join us for this event. Both camping and motel accommodations are available in this area. Veva Stansell is arranging this event (some of you will remember the fine job she did on our 1996 Oregon trip). Please call her at (541) 247-7153 or Mona Bourell at (415) 750-7195 if you plan to come on this field trip so that you can receive detailed instructions as the time approaches.

October 9–12—Field trip to the Sweeney Granite Mountains Desert Research Center in the Eastern Mojave Desert. This is a very beautiful area if you like deserts at all and there are accommodations there on the preserve for a very modest price. Details will appear in the Summer 1998 *Bulletin*, but do save the dates if you are interested. It is a nine- or ten-hour drive down there, which is why we set aside four days for the trip.

DUES RENEWAL TIME—Please remember that CALS membership dues for 1998 are due and payable from January 1 through March 31. The various categories available are listed on the enclosed Ballot sheet. Members of all categories receive the *Bulletin* and enjoy all the privileges of membership.

NEWS AND NOTES

MUSHROOM FAIR

This year CALS again participated in the Mushroom Fair of the San Francisco Mycological Society which took place at the Presidio this year and ran for two days, December 6 and 7.

Barbara Lachelt and Richard and Janet Doell prepared a display based on CALS field trips, with enlarged photos of lichenologists in action and a sample of collections made during some of those excursions.

A constant stream of people of all ages stopped to learn some of the basics of what a lichen is, and to peer into the microscopes skillfully manned by Mikki McGee and Bill Hill.

The Mushroom Fair is a large and lively annual event. It always takes place in early December, and I hope some of you will keep it in mind for next year. We could use some fresh ideas for demonstrating how interesting lichens can be.

FIELD TRIP

On September 20–26 CALS had a major field trip to Santa Cruz Island, following a successful lichen workshop at the Santa Barbara Museum of Natural History. Reports on these events, including a lichen list, will appear in the next *Bulletin*.

Janet Doell

WORKSHOP SERIES

Three successful workshops have been completed this fall. On October 18, 9 lichenologists met at SF State for Janet Doell's presentation of lichen morphology and an overview of foliose and fruticose lichen genera. Attending were Lisa Bauer, Cheryl Beyer, Stephen Buckhout, Janet Doell, Barbara Lachelt, Christine Lindquist, Mikki McGee, Judy Robertson and Stella Yang.

On November 15, 11 lichenologists met at UC Berkeley. Barbara Lachelt led the workshop on lichen morphology and use of a key, providing unknowns for us to identify. Attending were Stephen Buckhout, Susan Crutchfield, Janet Doell, Barbara Lachelt, Sean McNeil, Richard Moe, Judy and Ron Robertson, John Rusk, William Sanders and Stella Yang.

On December 13 at SFSU, Judy Robertson and Bill Hill guided us through crustose morphology and terminology and we started keying unknowns. Mikki McGee gave us an excellent presentation on setting up and using a microscope. Attending were Cheryl Beyer, Stephen Buckhout, Andy Butcher, David Crutchfield, Susan Crutchfield, Bill Hill, Christine Lindquist, Mikki McGee, Marck Menke, Judy Robertson, and Stella Yang. More workshops: Mark your calendars for February 21, March 21, April 25, and May 23, at SFSU from 10 to 4 for more workshops. Let's bring our own material to identify and discuss specific areas for focus. Please contact Judy Robertson at (707) 584-8099 for questions or suggestions.

I want to thank Dr. Dennis Desjardin at San Francisco State and Dr. Brent Mishler at UC Berkeley for providing the space and equipment for us to hold these workshops. Also, thank you to Dr. Moe and Dr. Sanders for spending Saturday with us.

I need feedback about continuing these workshops. We have an occasional planned format or just monthly opportunities to key out our own specimens and meet with other lichenologists. Please call, e-mail or write me.

Judy Robertson
(707) 584-8099
362 Scenic Ave.,
Santa Rosa, CA 95407
JKSRR@aol.com

SPECIAL NOTICE

It is time for a change of command at CALS. Please take a moment to review the enclosed ballot. The nominating committee has come up with a fine slate of officers for your perusal and vote. Ballots should be returned by January 20. Unreturned ballots will be counted as affirmative votes.

HELP WANTED

Mikki McGee is working on the lichen flora of San Bruno Mountain and is looking for someone to work with her who is not allergic to poison oak. She can be reached at (415) 467-5285. Mikki is also preparing an index to A.W.C.T. Herre's collections.

ITEMS FOR SALE TO CALS MEMBERS

From CALS at 1200 Brickyard Way #302
Pt. Richmond, CA 94801
(415) 236-0489

Poster 24"x 30" 21 California lichens in color
$ 8.00 + $2.00 postage

Lichens of California
by Hale and Cole $11.00 + $1.50 postage

Crustose lichen keys $11.00 + $1.50 postage

Reprints and copies of old *Bulletins* $.05 per page + postage

From Cherie Bratt
Santa Barbara Museum of Natural History
2559 Puesta del Sol Rd.
Santa Barbara, CA 93105
(805) 682-4711 X 327

Complete Chemical Kits $30.00 + postage & handling

Lichen Flora of the Santa Cruz Peninsula
by A.W.C.T. Herre 1910 (copy) $15.00 + postage and handling

Lichen Flora of Southern California
by H.E. Hasse 1913 (copy) $12.00 + postage and handling

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