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Lichens and Lichenicolous Fungi of Yosemite National Park, California

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Abstract: We compiled literature, intensively studied 15 sites as a group, and collected opportunistically in other areas of the Yosemite National Park. We report a total of 562 species of lichenized fungi from the Park, adding 461 species to the total of 101 species reported for the Park by the National Park Service database. An additional 22 lichenicolous fungi are reported here. Two nonlichenized fungi associated with young living twigs of particular host species are also included. An additional 75 species that are known from nearby areas in the Sierra Nevada, but not yet from Yosemite, are listed. Fourteen species are apparently newly reported for the Sierra Nevada, with an additional 17 species new to California, and five species new to North America (*Gyalidea fritzei*, *Pyrenopsis reducta*, *Lecanora pseudosarcopidoides*, *L. sarcopidoides*, *L. subbravida*). Two taxonomic changes are included here: *Verrucaria carbonusta* Breuss is newly described, and *Lecidea fuscoatrina* Hertel & Leuckert is synonymized under the earlier but neglected name, *L. cascadenensis* H. Magn.

Key words: California, floristics, lichenized fungi, lichens, new records, Sierra Nevada, Yosemite National Park.

Introduction: Yosemite National Park is located in the central Sierra Nevada of California. The park encompasses a range of habitat types, elevations and substrates and consequently contains a rich and diverse flora, with many regionally endemic species (Botti 2001). Lichens are prominent, being the dominant life form in many of the rockier, xeric habitats and conspicuous as epiphytes in mesic forests. However, no substantial, systematic survey of lichens has ever been done for this region and large areas of Yosemite National Park remain entirely unexplored for lichens. Declines in air quality and climate change are likely causing significant changes in the composition of lichen communities, and a lichen community baseline is needed to begin to document these changes in the park. Furthermore, our knowledge of lichens in the Sierra Nevada is weaker than other areas of California, especially southern and coastal California.

As one of the most spectacular landscapes in western North America, and one that is located close to urban areas, Yosemite Valley and nearby areas attracted early lichenologists. At least three lichens were named after Yosemite Valley: *Buellia semitensis*, *Lecanora semitensis* and *Umbilicaria semitensis* (Tuckerman 1888, 1877, 1872, respectively). Other new species of

lichenized fungi have been described from specimens collected in this area, including *Lepraria pacifica* (Lendemer 2011), *Caloplaca lecanoroides* (Lendemer et al. 2010), and *Verrucaria carbonusta* (herein).

Imshaug (1957) reported macrolichens from nine summits in the Sierra Nevada, three of these in Yosemite National Park (Mt. Dana, Mammoth Peak, and the ridge above Parker Pass; elevations 3962, 3726, and 3596 m, respectively). Macrolichens in these areas were species poor, compared to the Rocky Mountains and the Pacific Northwest. Imshaug (1957) reported only 5, 5, and 3 macrolichen species from the three sites listed above. Most of the typical terricolous alpine macrolichens, such as *Thamnolia* and *Dactylina*, were absent. In fact, the only terricolous species reported by Imshaug from any of these three sites was *Peltigera didactyla* (as *P. canina* var. *spuria* f. *sorediata*). The crustose lichen flora of Sierra alpine areas is better developed than the macrolichen flora, but Imshaug's collections of crustose lichens from these sites were never reported. Many of those specimens still exist at MSC; some are in the collection and online database but others are among the unaccessioned collections that are sorted by genus, which makes them difficult to locate.

Nearby, Rikkinen (2003) reported on calicioid lichens from four sites on the west slope of the Sierra Nevada, one in Calaveras Big Tree State Park and three in Stanislaus National Forest, Tuolumne County. He reported 16 species in 7 genera.

Despite the historical interest in Yosemite as a casual collecting site, no one has attempted to document comprehensively the lichens of Yosemite. The National Park Service lichen database (NPLichen accessed 2011) compiled records of 101 species from Yosemite. Yet McCune et al. (2007) estimated that there should be approximately 900 species of lichenized fungi, using current species concepts, in the combined Sierra Nevada national parks (Sequoia, Yosemite, Kings Canyon, and Devils Postpile).

Knowing the lichens in Yosemite National Park is important for several reasons. First, the lichens contribute richly to the biodiversity of macroscopic fungi in the Park. Second, the species have numerous functional roles in the Sierra Nevada ecosystems (McCune et al. 2007; 11 functional groups described). Last, because lichens are sensitive to air quality, the integrity of the resource is threatened by pollutants generated by human activities in the Sacramento Valley and urban areas to the west of Yosemite.

In 2009 the National Park Service sponsored a brief but intensive effort by a group of lichenologists to improve our understanding of the lichens of Yosemite National Park (henceforth, “Yosemite”). The purpose of this paper is to report on that effort, combining our results with species previously known from Yosemite, along with species that we thought were likely to occur in Yosemite, based on occurrences in nearby areas.

Study Area: Yosemite National Park lies on the west slope of the Sierra Nevada in central California. Most visitor use is concentrated around Yosemite Valley, which is ringed by

spectacular granitic faces. But the Park is much larger, covering an area over 3300 km², with elevations ranging from about 3900 m along the crest to about 550 m along the western boundary. Much of the higher elevations and many of the major valleys were glaciated. The rocks in the Park are primarily granitic, a large exposed batholith, but extensive areas of metamorphic rock and pockets of limestone and dolomite (Graham 2012) hold special botanical interest. The metamorphic rocks are of sedimentary and volcanic origin, and were altered by the granitic intrusions.

Most of the precipitation comes in winter; summers are warm and dry. Mean annual precipitation ranges from about 160 cm at some of the highest peaks to 92 cm in Yosemite Valley (including an average of 166 cm of snow) to 85 cm at the lowest elevation western boundary of the park (Daly et al. 1994). January and July daily maximum temperatures average between 2 and 19°C, respectively, at the passes to 13 and 33°C at low elevations. In between, in Yosemite Valley, January and July maxima average 8 and 32°C.

Vegetation in the Park ranges from high elevation rock barrens and tundra, through sparse to dense conifer forests in the subalpine, to montane forests of tall conifers (mainly *Abies*, *Calocedrus*, *Pinus*, and *Pseudotsuga*), groves of *Sequoiadendron gigantea* in the mid-elevation valleys, and transitioning to *Quercus* forests and woodlands at lower elevations. A small amount of grasslands and chaparral are present on the western border of the Park. The tree species at lower elevations are diverse, with many species of conifers, *Quercus*, and other hardwoods.

Materials and Methods: We studied our own collections, material in the Yosemite National Park herbarium, and literature records. We also list species reported from nearby areas but not yet known from Yosemite, but in most cases have not checked that material, unless otherwise indicated.

All of the authors except Tønsberg and Sheard visited a set of 15 sites (Table 1) selected by Martin Hutten to span a wide range of habitats and bedrock. Each contributor focused on a particular group of lichens. Sterile corticolous crustose lichens were collected for Tønsberg and *Rinodina* was collected for Sheard. Additional records from nearby sites visited by Schultz, and others by Fryday and Knudsen are included. In addition to the sites visited by the group, Hutten and James Walton made numerous collections at other sites scattered throughout the Park. A few sites were visited just west of the Park, primarily near the Tuolumne River.

Yosemite National Park has a small herbarium of lichens. Many of these were re-examined by McCune and Root; selected other specimens were re-examined by specialists in particular groups. Historical collections in the Yosemite herbarium are prefixed by YOSE. For critical specimens we include the collector's name and give YOSE in parentheses. Specimens cited by Imshaug reside in MSC.

Voucher specimens for all taxa were deposited in the Yosemite National Park Herbarium. Duplicates of many specimens can be found in the authors' institutional herbaria. Nomenclature follows the North American checklist (Esslinger 2012).

Chemistry is reported when TLC results were available and the information is significant, either in separating the species from its relatives, in validating the species report, or in supplementing the known information about a species. Abundance ratings are based on our experience and limited sampling. Abundance ratings are necessarily subjective, and are not given when there is little basis for doing so. For example, a single occurrence of an inconspicuous species may represent an overlooked common species or a truly rare species. The more conspicuous a species, the easier it is to state an abundance. More detailed locality information is

given for the group sites (Table 1) and for specimens of particular interest.

Results and Discussion

New species

Verrucaria carbonusta Breuss, sp. nov.

MycoBank 804079

Thallus epilithicus, niger, pro maximum parte carbonaceus, superficiei verruculosus, stratum algiferum in insulae parvae disruptum. Perithecia omnino thallo immersa, apice complanato. Ascospores ellipsoideae, 20–25 × 7–10 µm.

Type: USA, California, central Sierra Nevada, Yosemite National Park, El Portal area, Highway 140 bridge over Merced River near Old El Portal, 550 m, on vertical siliceous rock face, 20.9.2009, O. Breuss 29.830 (LI–Holotype, YOSE – isotype).

Etymology: from Latin carbo = charcoal, and onustus = full, overloaded, because of the heavy carbonization of the whole thallus.

The thallus is black and finely scabrid, continuous to irregularly rimose to areolate in parts, 0.10 – 0.25 mm thick. It consists almost entirely of carbonized tissue, with the algal layer disrupted into very small, evenly distributed islands in the uppermost part of the carbonaceous thallus tissue; between these islands the carbonaceous tissue is protruding to form small papilla-like protuberances (verruccles). The perithecia are completely immersed within the thallus with their applanate apices level with the thallus surface. The exciples are c. 0.2 mm in diameter and surrounded by carbonaceous tissue; thus there is no involucrellum discernible. The ascospores are 20–25 × 7–10 µm.

Table 1. Major group collecting sites, September 2009.

Site	County	Habitat	Elev., m	Latitude	Longitude
Hazel Green Creek	Tuolumne	mixed conifers with <i>Alnus rhombifolia</i> and <i>Cornus nuttallii</i>	1387	37.7927	-119.8474
Tuolumne Grove, bottom	Tuolumne	<i>Sequoiadendron giganteum</i> - <i>Pinus lambertiana</i> forest	1696	37.7715	-119.8076
old Carlon Campground	Tuolumne	Oak - conifer forest	1286	37.8124	-119.8595
Poopenaut Dome	Tuolumne	Scattered oaks and conifers on granite outcrops	1472	37.9036	-119.8337
Pigeon Gulch	Mariposa	Foothill woodland of <i>Quercus wislizenii</i> , <i>Pinus sabiniana</i> . Metasedimentary rock dominated by phyllite.	535	37.6652	-119.8060
Barium mine, road to	Mariposa	Dry slope with non-native annual grassland on clay soils on metasedimentary rock	621	37.6768	-119.8043
Moss Creek Canyon	Mariposa	Bottom of narrow canyon in metasedimentary rock	765	37.6821	-119.8085
Merced R, Hwy 140 bridge	Mariposa	Riparian corridor of granite boulders and gallery forest	550	37.6720	-119.7924
Arch Rock Entrance	Mariposa	Riparian corridor of granite boulders and gallery forest, with <i>Quercus</i> , <i>Umbellularia</i> , and <i>Alnus rhombifolia</i>	870	37.6853	-119.7297
Marble Mound	Mariposa	<i>Pinus contorta</i> forest (with some <i>Tsuga mertensiana</i> and <i>Abies magnifica</i>), Mount Hoffman marble outcrops; granitic outcrops nearby	2652	37.8307	-119.5086
Dana Fork meadow	Tuolumne	Montane meadow surrounded by encroaching <i>Pinus contorta</i>	2645	37.8307	-119.5111
Bridalveil Falls, below	Mariposa	<i>Quercus kelloggii</i> - mixed conifer forest, along stream	1298	37.7168	-119.6471
The Rostrum, above	Mariposa	Granitic slabs with sparse trees	1449	37.7167	-119.7066
Sentinel Meadow	Mariposa	Riparian corridor with <i>Alnus rhombifolia</i> and <i>Populus trichocarpa</i>	1187	37.7395	-119.5948
Pohono Bridge	Mariposa	Mesic north-facing slope with mixed conifers and <i>Quercus</i>	1179	37.7162	-119.6662

The species was found growing on a vertical rock face of a very hard siliceous boulder at the bank of the river above the flood zone, where thalli of this lichen form large, black coverings.

With its almost thoroughly carbonized thallus the new species comes close to extreme forms of *Verrucaria nigrescens* Pers. illustrated by Servit 1949 p. 37, tab. II 51 sub f. *nigricans* (Arnold) Zahlbr. *Verrucaria nigrescens* differs in being calcicolous and in having a dark olive green to blackish brown, smooth or slightly roughened upper surface (dark specimens may appear black in overall appearance, but show a brown tinge under the microscope), whereas *V. carbonusta* has a black, verruculose thallus surface and occurs on siliceous rock. The morphologically similar *Verrucaria asperula* Servit differs, besides being calcicolous, in having a medium to dark brown upper surface with irregularly shaped and variously sized verrucules unevenly distributed over the thallus; in *V. carbonusta* the black upper surface is evenly and regularly scabrid. Moreover, the spores of *V. asperula* are shorter ($15\text{--}22 \times 6\text{--}11 \mu\text{m}$).

Species at or near their Southern Range Limit in the Coastal States

Low-elevation forests in cool, moist sites hosted numerous species that are at or near their southern range limits, including *Ahtiana pallidula*, *Alectoria sarmentosa*, *Cladonia macilentata*, *C. umbricola*, *Cyphelium karelicum*, *Japewia subaurifera*, *Nephroma helveticum*, *Nephroma resupinatum*, *Ochrolechia montana*, *Parmeliella parvula*, *Placopsis lambii*, and *Rinodina disjuncta*. In Yosemite these species are most abundant in what appear to be refugia. These are relatively low-elevation mesic forests, often where partially protected from fire by steep rocky slopes. Microclimatically they are likely to be characterized by relatively low levels of direct incident solar radiation, a higher proportion of diffuse radiation, low average windspeeds and thus stronger radiative cooling and cool air pooling.

Species of cool, moist habitats of the Pacific Northwest show a remarkable diversity of patterns as they approach their range limit in California. In one pattern, the species become increasingly restricted to the coast and they are rare or absent in the southern and central Sierra Nevada. Examples present in Yosemite include *Hypogymnia apinnata*, *H. enteromorpha*, *H. physodes*, *Leptogium palmatum*, *Melanohalea multisporea*, and *Rinodina hallii*.

In another pattern, the species have southernmost populations in the Sierra Nevada but are apparently absent or rare along coastal southern California. Examples include *Alectoria sarmentosa*, *Melanohalea subelegantula*, *Nodobryoria oregana*, *Rinodina degeliana*, and *R. disjuncta*. To some extent species that extend south in the Sierra Nevada, also tend to penetrate inland farther north, extending into northern Idaho, southeastern BC, and western Montana.

In a third pattern, species extend south along the coast, but also occur in Arizona (e.g. *Hypogymnia physodes*, *Melanelixia glabratula*, *Parmeliopsis hyperopta*, *Rinodina aurantiaca*, and *R. orculata*).

List of Species

A total of 562 species of lichenized fungi are reported from Yosemite National Park (Table 2). This adds 461 species to the total of 101 species reported for the Park by the National Park Service database (NPLichen). Five species are newly reported for North America, with an additional 17 species new for California, and an additional 14 species new for the Sierra Nevada. We list 75 more species that are known from nearby areas in the Sierra Nevada, but not yet known from Yosemite.

The following list includes historical records from Yosemite, recent specimens by the authors and others, and species known from nearby areas but not yet known from Yosemite. Sites collected by

the group are listed in Table 1. Details of localities are not listed in cases where numerous sites are known or if that information has been published elsewhere.

Table 2. Symbols and number of taxa reported for different kinds of records.

Number of records	Symbol in list	Type of record
562	none	Lichenized, accepted name, accepted record from within or immediately adjacent to Yosemite National Park
22	*	Nonlichenized, lichenicolous
2	**	Nonlichenized, nonlichenicolous, but traditionally treated with lichens
75	–	Not yet known from Yosemite, but expected based on records elsewhere in the Sierra Nevada and nearby mountains.
10	?	Questionable record
16	×	Name valid but probably not in Yosemite.

Table. 3. Abbreviation of commonly used references.

Abbreviation	Reference
NPLichen	Database of lichens in the U.S. national parks (www.nbi.gov/nplichen ; NPLichen 2011)
Son. Fl. I	Lichen Flora of the Greater Sonoran Desert Region, Volume I. Nash, T. H. et al., editors. 2002. Arizona State University, Tempe. (Note: citations of these volumes gives the chapter authors, year, and one of these abbreviations)
Son. Fl. II	Lichen Flora of the Greater Sonoran Desert Region, Volume II. Nash, T. H. et al., editors. 2004. Arizona State University, Tempe.
Son. Fl. III	Lichen Flora of the Greater Sonoran Desert Region, Volume III. Nash, T. H. et al., editors. 2007. Arizona State University, Tempe.

**Abrothallus parmeliarum* (Sommerf.) Arnold On *Parmelia* on *Alnus rhombifolia*, Hazel Green Creek, Arup LO9105.

Acarospora americana H. Magn. On granitic rock, Poopenaut Dome, Knudsen 11628, 11631. Common along Merced River, Knudsen 13670. Specimens have been identified as *A. badiofusca*, *A. veronensis*, and *Myriospora scabrada*. *Acarospora americana* is more common, polymorphic, and robust in California than *A. veronensis* (Knudsen et al. 2011). Central California specimens often have elevated parathecial crowns.

Acarospora badiofusca (Nyl.) Th. Fr. On granitic rock; Lendemer 19556, Knudsen 11703. This is a common montane species in North America and Europe. In southern California mountains and on east slopes of Sierra Nevada Mountains the species is replaced by *A. boulderensis* H. Magn. (Knudsen & Kocourková in prep.).

Acarospora elevata H. Magn. On exposed, dry rock, Moss Creek, YOSE 25, det. Root; common montane species in southern California and Rocky Mountains.

Acarospora fuscata (Schrader) Arnold On noncalcareous rock, Tuolumne Grove, Knudsen 11736; as host of *Stigmidium fuscatae* (see below), which has never been collected on *A. thamnina*, the common brown species with gyrophoric acid at Yosemite. Records in NPLichen from nearby parks may be other species in part, since the name has been applied broadly in North America. Locally common at mid-elevations in San Jacinto and Santa Ana Mountains in southern California, but apparently uncommon in Sierra Nevada.

Acarospora glaucocarpa (Ach.) Körber On marble, Marble Mound, Knudsen 11681.

Acarospora nodulosa (Dufour) Hue var. *nodulosa* On very shallow soil, exposed dry steeply inclined metamorphic rock, East Barium Ridge, 627 m, Hutten 14291.

Acarospora obnubila H. Magn. On noncalcareous rock; Hutten 14289, Knudsen

11641; common montane species in southern California.

Acarospora oreophila K. Knudsen On granitic rock, Poopenaut Dome; Knudsen 11662, 11694. This species was described from the San Jacinto Mountains, where it is frequent at middle elevations.

Acarospora peliscypha Th. Fr. s. l. On dry, partially shaded boulder, 2644 m, May Lake, Walton 11032, ver. Knudsen. American material is currently being revised by Knudsen.

Acarospora rosulata (Th. Fr.) H. Magn. On rock, both low and high elevations, Lendemer 19700, Knudsen 11672, YOSE 102; common in southern California mountains.

Acarospora sinopica (Wahlenb.) Körber On metal-rich rock at low elevations, frequent along the Merced River; recently reported new for California (Lendemer et al. 2010).

Acarospora socialis H. Magn. Common on noncalcareous rock at lower elevations in California, especially in arid habitats; Lendemer 19730, Knudsen 11705.

Acarospora terricola H. Magn. Reported from Yosemite and Sequoia NP in Son. Fl. III; infrequent in biotic soil crusts and as solitary pioneer in California.

Acarospora thamnina (Tuck.) Herre Common on noncalcareous rock; originally described from Mono Pass; in California the dominant brown species with C+ red cortex (gyrophoric and lecanoric acids).

Agonimia tristicula (Nyl.) Zahlbr. On dry, partially shaded moss over rock on steep incline, Ribbon Falls area 1, Hutten 14196; det. McCune. Rarely collected, apparently more frequent in northern N. Am., but occurring south to Arizona (Breuss in Son. Fl. I, 2002); apparently new to California.

Ahtiana pallidula (Tuck. ex Riddle) Goward & Thell Occasional but never abundant, on conifer twigs.

Ahtiana sphaerosporella (Müll. Arg.) Goward On conifers, mainly at middle elevations (1280-2400 m).

Alectoria sarmentosa (Ach.) Ach. Corticolous; disjunct oceanic element that is locally common but regionally infrequent.

Amandinea punctata (Hoffm.) Coppins & Scheid. Apparently infrequent locally but widespread regionally, YOSE 84

Anaptychia elbursiana (Szatala) Poelt On dry, partially shaded rock on steep incline, Ribbon Falls, Hutten 14192. This widespread calciphile is apparently rare in California.

– *Anisomeridium polypori* (Ellis & Everh.) M. E. Barr Reported from Sequoia NP (NPLichen).

– *Arthonia dispersa* (Schrader) Nyl. Reported from Sequoia NP (NPLichen).

**Arthonia excentrica* Th. Fr. On *Lepraria* on soil (Lendemer et al. 2010; Kocourková et al. 2012).

Arthonia glebosa Tuck. On soil, exposed, East Barium Ridge, Hutten 14289

–* *Arthonia intexta* Almq. This widespread hymenial parasite has been reported from Sequoia NP (NPLichen) and likely occurs in Yosemite.

Arthrorhaphis citrinella (Ach.) Poelt On rock wall, Benson Lake, 2356 m, YOSE 41.

Aspicilia anglica Owe-Larss. & A. Nordin Dana Fork meadow, on granite boulder, Esslinger 18985, field det. Knudsen. Ribbon Falls, partially shaded granite boulder, Hutten 14200 det. Root. This is treated as *A. aff. simoensis* in Son. Fl. III.

Aspicilia aquatica Körber On rocks in stream beds; Moss Creek, Hutten 13039; South Fork Merced River, Walton 11249, 11250.

Aspicilia brucei Owe-Larss. & A. Nordin On granitic rock, Poopenaut Dome, Knudsen 11652, 11652.

– *Aspicilia californica* Rosentreter Reported from the central Sierra Nevada (Owe-Larsson et

al. 2007, Son. Fl. III). A few miles west of Camp Mather in Yosemite on soil and rock of sparsely vegetated old volcanic mudflows, Hutten 15000.

– *Aspicilia cinerea* (L.) Körber Reported from the central Sierra Nevada (Owe-Larsson et al. 2007, Son. Fl. III).

Aspicilia confusa Owe-Larss. & A. Nordin On noncalcareous rock, Pigeon Gulch, Breuss 29788; The Rostrum, Hutten 14091; Stately Pleasure Dome, YOSE 108.

Aspicilia cuprea Owe-Larss. & A. Nordin On noncalcareous rock, The Rostrum, Walton 11037.

Aspicilia cyanescens Owe-Larss. & A. Nordin Common on noncalcareous rock.

Aspicilia fumosa Owe-Larss. & A. Nordin On shaded noncalcareous rock; old Carlon Campground, Breuss 29723; Benson Lake, YOSE 96.

Aspicilia glaucopsina (Nyl. ex Hasse) Hue On very shallow soil, exposed dry steeply inclined metamorphic rock, East Barium Ridge, 627 m, Hutten 14289, 14290; det. Root. Previously reported from very near the coast in extreme southern California (Owe-Larsson et al. 2007, Son. Fl. III).

– *Aspicilia laevata* (Ach.) Arnold Sequoia NP (NPLichen), but dubious record considering absence from Owe-Larsson et al. (2007, Son. Fl. III).

? *Aspicilia sipeana* (H. Magn.) Owe-Larss. & A. Nordin On noncalcareous rock; Pigeon Gulch, Fryday 9320.

Bacidia beckhausii Körber On both hardwoods and conifers in low-elevation moist sites, Printzen 12071, 12092, 12093.

Bacidia circumspecta (Nyl. ex Vainio) Malme On hardwood trunks at low elevations, Pigeon Gulch and Bridalveil Falls, Printzen 12118, 12161. In the Pacific coastal states this species occurs primarily near the coast. These are the only specimens we know of from the Sierra Nevada.

× *Bacidia hegetschweileri* (Hepp) Vainio Sequoia NP (NPLichen; specimen in MIN was annotated by Ekman as *B. vermifera*).

Bacidia subincompta (Nyl.) Arnold On hardwoods at low elevations, McCune 30301, Lendemer 19542, YOSE 56; apparently new to California; in western North America known from Alaska south to Oregon and south in the Rocky Mountains to Arizona (Ekman 1996, Ekman in Son. Fl. II).

– *Bacidia vermifera* (Nyl.) Th. Fr. Tulare Co., Kern Canyon, substrate not stated, but apparently conifer bark, Blakeman 360 (MIN; Ekman 1996).

Bacidina inundata (Fr.) Vězda On rock near or in creeks at low elevations, Fryday 9244, Schultz 16567c. Previously reported from California by Herre (1944), but this considered a misidentification for CA (Tucker & Ryan 2006, based on communication with Ekman 1996)

Bellemerea alpina (Sommerf.) Clauzade & Cl. Roux Common on noncalcareous rock.

Bellemerea cinereorufescens (Ach.) Clauzade & Cl. Roux Common on noncalcareous rock.

Bellemerea sanguinea (Kremp.) Hafellner & Cl. Roux On granite at Marble Mount, Lendemer 19678. This name is applied to perhaps several taxa in the coastal states that need further study.

Biatora globulosa (Flörke) Fr. On trunks of *Pseudotsuga* at low elevations; Tuolumne Grove and Pohono Bridge, Printzen 12083, 12190.

Biatora turgidula (Fr.) Nyl. Yosemite Valley (Hasse 1913, as *Lecidea turgidula*); on decorticate *Pinus*, Rafferty Creek, 2793 m, Hutten 14636c.

Bryoria fremontii (Tuck.) Brodo & D. Hawksw. Locally common but sporadic at low elevations, this species is of particular interest because of its ecological roles and Yosemite lying near the southern edge of its range (McCune et al. 2007). It does, however, extend south to Sequoia National Park, where sizable populations are present.

Buellia aethalea (Ach.) Th. Fr. On noncalcareous rock, Pigeon Gulch, Fryday 9523. Previously reported from California by Rajakaruna et al. (2012); found in the San Benito Mountains (Fryday specimens, MSC).

Buellia arborea Coppins & Tønsberg On conifer bark; Pohono Bridge, Fryday 9382; Bridalveil Falls, McCune 30396.

Buellia badia (Fr.) A. Massal. Yosemite and Sequoia NP (NPLichen). In its original concept *B. badia* grows on moss over rock and rock, but the species concept was broadened by Bungartz & Nash (2004) to include the corticolous *B. turgescens* Nyl. ex Tuck.

Buellia concinna Th. Fr. On rock, points near Yosemite and Sequoia NP (Bungartz et al. 2007, Son. Fl. III). Yosemite is the type locality for *Buellia semitensis* (Tuckerman 1888), now considered a synonym of *B. concinna*.

Buellia erubescens Arnold On coarse woody debris, Moss Creek, 1696 m, Hutten 13041.

Buellia griseovirens (Turner & Borrer ex Sm.) Almb. Very common on bark and wood of both hardwoods and conifers; apparently one of the most common sterile (sorediate) crusts in moist low-elevation sites in Yosemite.

– *Buellia nashii* Bungartz Known from San Bernardino Mountains and the east side of the Sierra Nevada, so also likely on the west slope of the Sierras.

Buellia ocellata (Flörke) Körb. On rock, west-facing crags, south side of Mariposa River, 600 m, Fryday 9526.

– *Buellia semitensis* Tuck. (= *Buellia concinna*) Yosemite (Tuckerman 1888).

Buellia triseptata A. Nordin On pine, Tenaya Creek, Yosemite Valley, 1220 m, Reed 3203 (UCR), det. Knudsen.

Calicium abietinum Pers. On damp, shaded lignum, old Carlon Campground, Fryday 9285.

Calicium adaequatum Nyl. On *Populus* twigs, old Carlon Campground, McCune 30339b.

– *Calicium corynellum* (Ach.) Ach. This rare species on sheltered noncalcareous rock has been reported from Sequoia NP (Wetmore 50433, MIN) and the San Jacinto Mountains (Knudsen 10000, NY, UCR); expected for Yosemite NP.

Calicium glaucellum Ach. Locally common conifer bark and wood at low-elevation moist sites.

Calicium lenticulare Ach. Mariposa Grove, 1974 m, Hutten 14025.

– *Calicium salicinum* Pers. Calaveras Co. (Rikkinen 2003).

Calicium viride Pers. Common on conifer bark and wood at low-elevation moist sites.

Caloplaca albovariegata (B. de Lesd.) Wetmore On damp, shaded rock-face with bryophytes, west-facing rock outcrop, crag south of Merced River, Fryday 9670 (outside Park boundary).

Caloplaca aff. alnetorum Giralt, Nimis & Poelt On *Populus* bark, Crane Flat, Lendemer 19744, Arup L09153.

Caloplaca aff. arenaria (Pers.) Müll. Arg. To be described as a new species. On noncalcareous rock, Arup L09127, L09224, L09225, L09234, L09238; On partially shaded rocks, May Lake, 2676 m, Hutten 14225, Walton 11028.

Caloplaca arenaria (Pers.) Müll. Arg. s.l. On soft sandstone rock surfaces, open, road to Barium Mine, Arup L09183.

Caloplaca atroalba (Tuck.) Zahlbr. On marble, Lendemer 19673.

Caloplaca aff. atroflava (Turner) Mong. On noncalcareous rock, Pigeon Gulch, Arup L09169, L09170, L09171.

Caloplaca atosanguinea (G. Merr.) I. M. Lamb On shrubs, low elevation moist sites, Lendemer 19547, Arup L09100, L09101, L09118.

Caloplaca biatorina (A. Massal.) J. Steiner On shaded noncalcareous rock, Bridalveil Falls, Arup L09253, Hutten 14224.

– *Caloplaca bolacina* (Tuck.) Herre On noncalcareous rock in coastal southern California; also a dubious report from Sequoia NP (NPLichen).

Caloplaca aff. castellana (Räsänen) Poelt s.l. On rock, below Bridalveil Falls, Arup L09254, L09255.

Caloplaca cerina (Ehrh. ex Hedwig) Th. Fr. Common on bark of hardwoods at low elevations.

Caloplaca cerinelloides (Erichsen) Poelt s.l. On twig of *Calocedrus decurrens*, Bridalveil Falls, Arup L09261.

Caloplaca chlorina (Flotow) H. Olivier On both calcareous and noncalcareous rock; Marble Mound, Lendemer 19681, 19686; Pohono Bridge, Lendemer 19760; May Lake, Walton 11030.

– *Caloplaca cinnabarina* (Ach.) Zahlbr. Reported from the Sierra Nevada (Eastern Brooks Range, Nash 22745 (ASU), Wetmore (2007, in Son. Fl. III).

? *Caloplaca citrina* (Hoffm.) Th. Fr. This is probably not *C. citrina* but some other species; *C. citrina s.str.* is not verified with certainty from North America. On rock, Sequoia NP (NPLichen, det. Wetmore, several specimens in MIN).

Caloplaca aff. conversa (Kremp.) Jatta On noncalcareous vertical rock face, Moss Creek Canyon, Arup L09196; on granite cliff, Five Open Books, 2011 m, YOSE 15.

Caloplaca decipiens (Arnold) Blomb. & Forss. This widespread calciphile has been reported from Sequoia NP (NPLichen, det. Wetmore, several specimens in MIN).

Caloplaca demissa (Körber) Arup & Grube On steep faces on noncalcareous rock, common.

Caloplaca cf. diphyodes (Nyl.) Jatta On partially shaded periodically flooded streamside rock, Tuolumne River at Indian Creek, downstream

from confluence with Clavey River, 323 m, Hutten 15551, 15553 (outside of Park).

Apparently new to California, but common on noncalcareous rock in low-elevation streams and rivers in western Oregon. Wetmore (1994) considered the North American reports of *C. diphyodes* to be misidentifications of *C. atroalba*. However the distinctive morphology of the North American streamside material suggests that there is justification for continuing to use a name other than *C. atroalba* for the semi-aquatic species in North America. In contrast, *C. atroalba* typically occurs in dry, exposed habitats. Whether the streamside species of the Pacific states belongs to *C. diphyodes s. str.* remains to be determined.

Caloplaca aff. dolomiticola (Hue) Zahlbr. On concrete railing and vertical faces of bridge over Merced River, Arup L09203, L09204, L09206, L09207.

Caloplaca epithallina Lynge This common species parasitizes various saxicolous lichens at middle to high elevations. Yosemite: Kocourková et al. (2012).

– *Caloplaca feracissima* H. Magn. On rock, Sequoia NP (NPLichen, four specimens in MIN coll. and det. Wetmore).

Caloplaca ignea Arup On sheltered noncalcareous rock at low elevations, apparently common.

Caloplaca aff. lactea (A. Massal.) Zahlbr. New species. On concrete rail of bridge, Merced River Hwy 140 bridge, Arup L09210, L09211.

Caloplaca lecanoroides Lendemer On oak bark, Bridalveil Falls (Lendemer et al. 2010).

Caloplaca "neophlogina" Arup ined. On shaded perpendicular face of concrete bridge foundation, Merced River Hwy 140 bridge, Arup L09205, L09156, L09157.

Caloplaca oregona H. Magn. Apparently common on bark at lower elevations, mainly hardwoods but also seen on *Abies*.

Caloplaca aff. oxfordensis Fink On low siliceous boulders in semi-shaded situation, lower part of

Tuolumne Grove, Arup L09112, L09113, L09116, L09117. Originally described from rock near Oxford, Ohio. This collection does not belong to *C. oxfordensis* s.str., but probably to a new species.

– *Caloplaca peliophylla* (Tuck.) Zahlbr. On rock, Sequoia NP (NPLichen, specimens in MIN coll. and det. Wetmore).

Caloplaca saxicola (Hoffm.) Nordin s.l. The identity of this taxon is not clear, despite recent studies. YOSE 76.

Caloplaca "solaris" Arup ined. On vertical noncalcareous rock walls, Moss Creek Canyon, Arup L09201, L09202.

– *Caloplaca squamosa* (B. de Lesd.) Zahlbr. Very common on both calcareous and noncalcareous rock in southern California; also in Sequoia NP (NPLichen, Wetmore 50116 in MIN).

Caloplaca stellata Wetmore & Kärnefelt Common on vertical sheltered rock faces; also occurring on base of *Pseudotsuga*, Bridalveil Falls, Arup L09262, L09263, L09264.

Caloplaca subsoluta (Nyl.) Zahlbr. Common on rock at low elevations.

Caloplaca tirolensis Zahlbr. Granitic ledge along trail to Vogelsang Pass, 2784 m, Hutten 13147.

– *Caloplaca vitellinula* (Nyl.) H. Olivier Reported from Kings Canyon NP (NPLichen, Blakeman 235 in MIN, det. Wetmore), but the record is doubtful.

Calvitimela aglaea (Sommerf.) Hafellner On noncalcareous rock; Marble Mound, Fryday 9341, 9349; Benson Lake, YOSE 438.

Calvitimela armeniaca (DC.) Hafellner On noncalcareous rock; Mt. Lyell – Mt. Maclure Gap, 3788 m, Hutten 13125; Dana Fork meadow, Lendemer 19694.

Candelaria pacifica M. Westberg Common on bark at low elevations. Although some sterile specimens are not easily separated from *C.*

concolor, fertile specimens have been *C. pacifica*. The two species are distinct in molecular phylogenetic reconstructions (Westberg et al. 2011).

Candelariella aurella (Hoffm.) Zahlbr. On calcareous rock; Marble Mound, Knudsen 11687; Benson Lake, YOSE 76.

Candelariella biatorina M. Westberg The type is from Sequoia NP (Westberg 2007b); occasional in arid and semi-arid climates in western North America, to be expected from Yosemite.

Candelariella californica M. Westberg Yosemite, trail to May Lake, on noncalcareous rock (Westberg 2007a). The type locality is from nearby Stanislaus National Forest, edge of Emigrant Wilderness, 2750 m, on granite (op. cit.).

– *Candelariella citrina* B. de Lesd. Typically parasitic on blackish filamentous cyanobacteria (e.g. *Stigonema*) or cyanolichens or on decayed plant matter; Sequoia NP (Westberg 2007a).

Candelariella granuliformis M. Westberg Terricolous, ridge above Parker Pass, Imshaug 18229 (MSC, det. Westberg; Westberg et al. 2011).

Candelariella lutella (Vainio) Räsänen Common on hardwoods at low elevations.

× *Candelariella reflexa* (Nyl.) Lettau This 8-spored sorediate European species has been reported from North America, including Sequoia NP (NPLichen), but does not occur here (Westberg 2005). It has been confused with the polyspored *C. efflorescens*.

Candelariella rosulans (Müll. Arg.) Zahlbr. Common on noncalcareous rock.

Candelariella vitellina (Hoffm.) Müll. Arg. Common on a wide variety of substrates, most often on noncalcareous rock.

**Carbonea vitellinaria* (Nyl.) Hertel A common parasite of *Candelariella* on rock.

Catapyrenium psoromoides (Borrer) R. Sant. On bark, usually oak; infrequently collected, but reported from the Sierra Nevada (Breuss 2002 in Son. Fl. I, this record based on the following specimen: Fresno Co., foothills c. 55 km SE of Fresno, grassy landscape with *Quercus douglasii*, 600 m, Moberg 6821 (UPS).

Catillaria chalybeia (Borrer) A. Massal. On granite, Poopenaut Dome, Schultz 16575c.

Catillaria nigroclavata (Nyl.) Schuler On oak, Arch Rock Entrance, Breuss 29842.

**Cercidospora macrospora* (Uloth) Hafellner & Nav.-Ros. On *Lecanora muralis* group, above The Rostrum, Knudsen 11700.

– *Chaenotheca brachypoda* (Ach.) Tibell Sequoia NP (NPLichen).

Chaenotheca brunneola (Ach.) Müll. Arg. On trunk of *Pseudotsuga menziesii*, Hazel Green Creek, Printzen 12069.

– *Chaenotheca chlorella* (Ach.) Müll. Arg. Sequoia NP (NPLichen).

Chaenotheca chrysocephala (Ach.) Th. Fr. On damp, shaded lignum, old Carlon Campground, Fryday 9286.

Chaenotheca furfuracea (L.) Tibell On wood, bark, and soil, at low elevations.

– *Chaenotheca cf. nitidula* Tibell Tuolumne Co. (Rikkinen 2003).

Chaenotheca phaeocephala (Turner) Th. Fr. On damp, shaded lignum, old Carlon Campground, Fryday 9285.

Chaenotheca subroscida (Eitner) Zahlbr. On trunk of *Calocedrus decurrens*, Hazel Green Creek, Printzen 12065.

– *Chaenotheca trichialis* (Ach.) Th. Fr. Sequoia NP (NPLichen); Calaveras Co. (Rikkinen 2003).

Chaenotheca xyloxena Nádv. On trunk of *Calocedrus decurrens*, Hazel Green Creek, Printzen 12062.

***Chaenothecopsis savonica* (Räsänen) Tibell On wood, Snow Flat (near May Lake), Schultz 16591.

– *Chaenothecopsis cf. vainioana* (Nádv.) Tibell Tuolumne Co. (Rikkinen 2003).

Chrysothrix chlorina auct. non (Ach.) J. R. Laundon On rock, Bridalveil Falls, Lendemer 19719; Pohono Bridge, Hutten 15501.

Chrysothrix xanthina (Vain.) Kalb Sierra National Forest, on quartzite along Merced River, Knudsen 13643. In southern and central California common at lower elevations on bark and rock (Kukwa and Knudsen 2012).

? *Circinaria caesiocinerea* (Nyl. ex Malbr.) A. Nordin, S. Savić & Tibell On noncalcareous rock. Given comments in Owe-Larsson et al. (2007, Son. Fl. III), we have some doubts about these and earlier records in Yosemite. Hutten 14389, Breuss 29761, YOSE 88. Owe-Larsson et al. (2007) reported it from Sequoia NP.

? *Circinaria contorta* (Hoffm.) A. Nordin, S. Savić & Tibell. Questionable record from Sequoia NP (NPLichen) predates revision by Owe-Larsson et al. (2007, Son. Fl. III).

Cladonia borealis (L.) Willd. On soil, Gaylor Basin, 3207 m, Walton 11134, det. McCune (TLC: usnic and barbatic acids).

Cladonia cariosa (Ach.) Sprengel Sequoia and Yosemite NP (NPLichen, Robbins 1931).

Cladonia carneola (Fr.) Fr. On soil, Dana Fork Meadows where it formed unusual masses of small squamules with very few podetia; TLC showed usnic acid and zeorin; McCune 30389, Printzen 12155.

Cladonia cervicornis (Ach.) Flotow subsp. *cervicornis* On soil, Dana Fork Meadows, Printzen 12153.

Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel s.l. (not TLCd). On thin soil in a variety of habitats; Hutten 14027, 14037, 14049, YOSE 162, 178.

Cladonia coniocraea (Flörke) Sprengel On bark and wood; Carlon Trail/S.F. Tuolumne River, 1315 m, Walton 11111; riparian area near barium mine road, 537 m, Hutten 14028; Bridalveil Falls, 1214 m, YOSE 385. Following Pino-Bodas et al. (2011) we include *Cladonia ochrochlora* Flörke under *C. coniocraea*.

Cladonia fimbriata (L.) Fr. Common on various substrates and in various habitats.

Cladonia macilenta Hoffm. Vernal Falls, 1642 m, Hutten 14070, det. McCune (TLC: thamnolic acid); infrequent in California.

Cladonia pocillum (Ach.) Grognot On soil and organic matter, Dana Fork Meadow, McCune 30388.

Cladonia pyxidata (L.) Hoffm. On moss over vertical side of partially shaded, mesic granite boulder, South Fork Merced River, 1306 m, Hutten 14251; Barium mine, 866 m, Hutten 14047.

? *Cladonia subradiata* (Vainio) Sandst. Reported from the central Sierra Nevada (Ahti & Hammer in Son. Fl. I; "... the specimens from California could not be identified with certainty." Common in neotropics and subtropics.)

Cladonia umbricola Tønsberg & Ahti On rotten log, Hazel Green Creek, McCune 30299; apparently not previously reported for the Sierra Nevada, this is the southernmost record along the Cascade-Sierra axis of a species that is common in Oregon and Washington.

Cladonia verruculosa (Vainio) Ahti On soil, moss, and humus or those substrates over rock or gravel, including disturbed sites, at low elevations.

**Clypeococcum hypocenomyces* D. Hawksw. On *Hypocenomyce*; old Carlon Campground, Knudsen 11649.

– *Collema conglomeratum* Hoffm. Sequoia NP (NPLichen).

Collema furfuraceum (Arnold) Du Rietz On bark of hardwoods at low elevations.

Collema nigrescens (Hudson) DC. Common on bark of hardwoods at low elevations.

Collema polycarpon Hoffm. On calcareous rock, reported from Sequoia NP (NPLichen; Wetmore 50118, MIN).

Collema tenax (Sw.) Ach. On partially shaded, periodically misted granite boulder, Bridalveil Falls, 1213 m, Hutten 14217.

Collema undulatum Laurer ex Flotow Sequoia NP (NPLichen; Wetmore 50813, MIN)

Cyphelium chloroconium (Tuck.) Zahlbr. On *Quercus*; Yosemite (NPLichen; Hasse 1185, MIN)

Cyphelium inquinans (Sm.) Trevisan Common on bark and wood of conifers at low elevations.

Cyphelium karelicum (Vainio) Räsänen On conifer bark and wood at low elevations; Schultz 16572b, Breuss 29671, 29674, 29698, 29942; apparently the southernmost reports of this species in western North America; previously reported from California only from Siskiyou Co. near Lassen NP (Tucker and Ryan 2006). Found growing with *Cyphelium inquinans*, but thallus faintly yellow, apothecia smaller, and spores with coarsely areolate surface.

Cyphelium pinicola Tibell Common on conifer wood, especially *Pinus contorta* and *Juniperus occidentalis* at open high elevation forest.

Cyphelium trachylioides (Nyl. ex Branth & Rostrup) Erichsen On bark of *Pinus ponderosa*, Arch Rock Entrance, Printzen 12140.

"*Dendroscocaulon*" On partially shaded, moist *Quercus kelloggii* trunks, 1.1 mile south of Bass Lake dam on Road 222, 1004 m, Hutten 14342. The taxonomy within this placeholder name is still unresolved, the name being ambiguously applied in North America to the cyanobacterial morph of *Lobaria amplissima*, *Sticta oroborealis*, and perhaps other species.

Dermatocarpon americanum Vainio On noncalcareous rock along stream, Marble Mound, Lendemer 19683.

Dermatocarpon cf. *bachmannii* Anders On noncalcareous, streamside slick rock, Pigeon Gulch, McCune 30367; on fully exposed dry rock, Dana Fork, Tuolumne River Watershed, Gaylor Basin area 11, Hutten 14170 with *Staurothele areolata*; semi-aquatic on noncalcareous rock, El Portal, Crane Creek, 647 m, Hutten 7980. American samples of this species are probably not conspecific with the European records (Heidmarsson & Breuss in Son. Fl. II). Vagrant thalli occur a few miles west of Camp Mather, and at North Mountain in Yosemite, on soil and rock of sparsely vegetated old volcanic mudflows, Hutten 15001; Colwell 09-127, 09-131.

Dermatocarpon intestiniforme (Körber) Hasse On rock, Moss Creek Canyon, McCune 30374, det. Breuss, spores $12.5\text{--}13.5(15) \times 7.3\text{--}7.7 \mu\text{m}$; medulla Melzers I-. This taxon is treated as a synonym of *D. miniatum* var. *complicatum* (Lightf.) Th. Fr. by Heidmarsson (2001), but is a distinct species according to Orange (1998) on account of its many holdfasts, whereas *D. miniatum* var. *complicatum* has a single central holdfast.

Dermatocarpon leptophyllodes (Nyl.) Zahlbr. On both calcareous and noncalcareous rock, Marble Mound and Bridalveil Falls, Fryday 9347, Hutten 14219, Lendemer 19677, Breuss 29845, 29885, 29886; Tuolumne River, Hutten 14211, 15552.

Dermatocarpon meiophyllizum Vainio On periodically flooded rock, Basin East Mt Lyell, 3194 m, Hutten 13103.

Dermatocarpon miniatum (L.) W. Mann Mt. Dana (Imshaug 1957; ver. A. Fryday 2011).

Dermatocarpon reticulatum H. Magn. Common on noncalcareous rock.

Dermatocarpon rivulorum (Arnold) Dalla Torre & Sarnth. On fully exposed rock in snowmelt area, Buena Vista Peak snowfield, 2862 m, Hutten 8178; on rock in periodically flooded stream, W Green Lake rivulet, 2753 m, Hutten 15671.

Dermatocarpon taminium Heidmarsson On shaded rock, sometimes with seepage, Moss Creek Canyon and Pigeon Gulch; Breuss 29765, 29766, 29817, 29818.

Dimelaena oreina (Ach.) Norman Common on noncalcareous rock.

Dimelaena radiata (Tuck.) Müll. Arg. On shaded side of boulder under trees, crag south of Merced River, Fryday 9579 (outside Park boundary).

Dimelaena thysanota (Tuck.) Hale & Culb. Fairly common on noncalcareous rock.

Diploschistes gypsaceus (Ach.) Zahlbr. On partially shaded, granite rock outcrop, The Rostrum, 1413 m, Walton 11039; On partially shaded granite boulder, Camp 4 area, 1440 m, Hutten 11076.

Diploschistes muscorum (Scop.) R. Sant. Sequoia and Yosemite NP (NP Lichen).

Diploschistes scruposus (Schreber) Norman On granite, Poopenaut Dome and above The Rostrum; Breuss 29746, 29900; Fryday 9304; Hutten 14125; Knudsen 11658, 17104.

Diplotomma alboatrum (Hoffm.) On partially shaded, mesic granite boulder, Bridalveil Falls, 1214 m, Hutten 14223.

Diplotomma penichrum (Tuck.) Szatala Common on bark, mainly conifers, moist forests at low elevations.

Endocarpon loscosii Müll. Arg. On soil, road to Barium Mine, Breuss 29803.

Endocarpon pulvinatum Th. Fr. On partially shaded, dry, gently inclined metamorphic rock, Gaylor Basin, 3211 m, Hutten 14161.

Endocarpon pusillum Hedwig On soil, road to Barium Mine, Breuss 29801.

**Endococcus stigma* (Körber) Stizenb. On *Acarospora badiofusca*, Knudsen 11702 (Kocourková et al. 2012).

Ephebe lanata (L.) Vainio Fairly common on damp noncalcareous rock, both low and high elevations.

Ephebe ocellata Henssen On steeply inclined granite wall in partial shade, with periodic seepage, Granitic ledge along trail south of Vogelsang Pass, 2784 m, Hutten 14638, 14641.

Ephebe solida Bornet On noncalcareous rock, Dana Fork Meadows and Bridalveil Falls, Schultz 16595b, 16596b.

Evernia prunastri (L.) Ach. Common on both conifers and hardwoods at low elevations.

Flavopunctelia flaventior (Stirton) Hale On bark of both conifers and hardwoods at low elevations.

Flavopunctelia soledica (Nyl.) Hale Common on riparian conifers and hardwoods at low elevations mostly west of Yosemite National Park; south of KOA in Midpines west of Bear Creek, Walton 16105.

Frutidella pullata (Norm.) Schmull (syn. *Lecidea pullata* (Norm.) Th. Fr.) On *Calocedrus* bark, Tuolumne Grove, McCune 30311, 30313, det. Tønsberg.

Fuscidea praeruptorum (Du Rietz & H. Magn.) V. Wirth & Vězda On vertical shaded rock by river bank, Merced River, Highway 140 bridge Fryday 9336; new to California.

Fuscidea recensa (Stirton) Hertel, V. Wirth & Vězda On metal-rich rock, Pigeon Gulch; Fryday 9307, 9324. This normally sterile, sorediate crust is locally common in eastern North America; new to California.

Fuscopannaria aurita P. M. Jørg. On moss over rock and rock (noncalcareous) at low elevations; Hazel Green Creek and The Rostrum, Fryday 9249, 9377, Hutten 14121, Schultz 16565b, 16601e; Fryday specimens confirmed by Jørgensen.

Fuscopannaria coralloidea P. M. Jørg. On soil, partially shaded and moist, Pigeon Gulch, Hutten 15368.

Fuscopannaria cyanolepra (Tuck.) P. M. Jørg. On soil and soil over rock, often on steeply inclined banks; Pigeon Gulch, Fryday 9537; Barium Mine road, Hutten 14043, Knudsen 13659; Ribbon Falls, Hutten 14191.

Fuscopannaria mediterranea (Tav.) P. M. Jørg. On bark of *Quercus kelloggii*, Pohono Bridge, Schultz 16605f.

Fuscopannaria pacifica P. M. Jørg. Corticolous, old Carlon Campground and Tuolumne Grove; Breuss 29697, 29729.

Fuscopannaria pulveracea (P.M. Jørg. & Henssen) P.M. Jørg. On shaded streamside tree trunk, Cold Canyon, 2 km SW of El Portal, Sierra National Forest, 732 m, Hutten 14458.

Fuscopannaria thiersii P. M. Jørg. On dry metamorphic silt in partial shade, East Barium Ridge, 627 m, Hutten 14298.

Gyalidea fritzei (Stein) Vězda On shaded boulder in gulch, Pigeon Gulch, Fryday 9325, conf. R. Lücking. New to North America.

Harpidium cf. *rutilans* On granite, above The Rostrum, Schultz 16602b, intermingled with *Pyrenopsis triptococca* (16602a).

Heppia adglutinata (Kremp.) A. Massal. On fully exposed, mesic silt, Hite Cove, Hutten 14395, det. Hutten; above Rancheria, 687 m, Hutten 14893, det. McCune.

Hertelidea botryosa (Fr.) Kantvilas & Printzen On *Calocedrus*, Hazel Green Creek, Lendemer 19541-A.

Heteropladidium zamenhofianum (Clauz. & Cl. Roux) Gueidan & Cl. Roux. (= *Verrucaria zamenhofiana* Clauz. & Cl. Roux) On dry marble rock outcrop in partial shade, May Lake, 2676 m, Walton 11030; on *Staurothele drummondii*, Marble Mound, outcrop at Snow Creek confluence, Fryday 9353; San Bernardino Mountains (Breuss 2007, Son. Fl. III).

Hypocenomyce anthracophila (Nyl.) P. James & Gotth. Schneider Fairly common on conifers at low elevations.

Hypocenomyce castaneocinerea (Räsänen)

Timdal On trunk of *Pseudotsuga menziesii*, old Carlon Campground, Printzen 12090; Mariposa Grove, Timdal 7096 (ASU).

× *Hypocenomyce friesii* (Ach.) P. James & Gotth. Schneider Reported from Sequoia NP (NPLichen, Wetmore 51304, MIN), but is actually *H. sierrae* (det. McCune 2012).

Hypocenomyce scalaris (Ach.) M. Choisy On bark and wood of conifers.

Hypocenomyce sierrae Timdal On bark and wood of conifers, especially *Calocedrus* and *Sequoiadendron* (Timdal 2001), Pohono Bridge and Tuolumne Grove, Fryday 9256, 9383.

× *Hypogymnia enteromorpha* (Ach.) Nyl. Although reported from Kings Canyon and Sequoia NP (NPLichen; MIN), these are misapplications of a name that historically had broad use. Although *H. enteromorpha* ranges south into California near the coast, there are no confirmed records of *H. enteromorpha* from the Sierra Nevada.

Hypogymnia imshaugii Krog Common on a wide variety of substrates at low to middle elevations.

× *Hypogymnia physodes* (L.) Nyl. So far, records south of Mount Shasta in the Sierra Nevada have turned out to be in error, but the species does occur in northern California and in more coastal mountains.

Hypogymnia tubulosa (Schaerer) Hav. Occasional on bark and wood at low elevations.

Ionaspis lacustris (With.) Lutzoni On seasonally inundated rock (Lendemer et al. 2010).

Japewia subaurifera Muhr & Tønsberg On *Calocedrus* bark, Tuolumne Grove, McCune 30312b. This species, while common west of the Cascades in the Pacific Northwest, becomes infrequent in northern California. Apparently the Yosemite record is the southernmost in western North America.

Kaernefeltia merrillii (Du Rietz) Thell & Goward Common on conifers and *Arctostaphylos* twigs.

– *Koerberia biformis* A. Massal. On bark, especially *Quercus*, Sequoia NP (NPLichen).

Koerberiella wimmeriana (Körber) Stein On granite bedrock depression with seasonal standing water, between Marble Mound and May Lake Road, Breuss 29865; on underside of granitic rock, below Bridalveil Falls, Fryday 9363.

– *Lecania brunonis* (Tuck.) Herre Sequoia NP (NPLichen). Central and southern California on noncalcareous rock and serpentine (Son. Fl. II).

Lecania hassei (Zahlbr.) W. Noble On fully shaded, dry granite boulder, Lembert Dome, 2756 m, YOSE 143.

– *Lecanora albella* (Pers.) Ach. var. *albella* Sierra Nevada near Yosemite (Son. Fl. II).

Lecanora albellula Nyl. On bark and wood of conifers, Marble Mound, Printzen 12147, 12150.

Lecanora allophana Nyl. f. *sorediata* Nyl. On rock in semi-open woodland (no understory), Tuolumne Grove, Fryday 9262; apparently new to California.

Lecanora anopta Nyl. On dry pine stumps and lignum in woodland, old Carlon Campground, Fryday 9270, 9272, det. Z. Palice. Apparently new to California.

Lecanora argentata (Ach.) Malme On trunk of *Acer macrophyllum*, Pigeon Gulch, Printzen 12128.

Lecanora argopholis (Ach.) Ach. On noncalcareous rock, often on sheltered rock faces; Mt. Lyell – Mt. Maclure Gap, 14 km S of Tuolumne Meadows, Hutten 13128.

Lecanora austrocalifornica Lendemer & K. Knudsen On trunks and twigs of conifers and *Arctostaphylos*, Poopenaut Dome and The Rostrum, Printzen 12107, 12108, 12109, 12169.

Lecanora cadubriae (A. Massal.) Hedl. On conifer bark, Marble Mound and Tuolumne Grove, Printzen 12086, 12146.

Lecanora carpineae (L.) Vainio On both hardwoods and conifers at low elevations.

Lecanora cenisia Ach. On noncalcareous rock, widespread.

Lecanora chlarotera Nyl. On fallen tree, Hazel Green Creek, Lendemer 19548.

– *Lecanora circumborealis* Brodo & Vitik. Mainly on conifers, one of the most common epiphytic *Lecanora* species of the interior West, but not yet found in Yosemite.

– *Lecanora coniferarum* Printzen Sequoia NP (Printzen 2001).

– *Lecanora dispersa* (Pers.) Sommerf. Sliwa (2007) listed no specimens for the Sierra Nevada, but the broad range suggests it is present there; the dot map in Ryan et al. (2004, Son. Fl. II) shows one occurrence in the Sierra Nevada.

Lecanora expallens Ach. On bark of conifers and *Cornus*, old Carlon Campground, McCune 30330, Printzen 12100, 12104; TLC 6982, 6988: usnic acid and terpenoids.

Lecanora fuscescens (Sommerf.) Nyl. On dead *Calocedrus decurrens* branch, fully exposed and dry, Moss Creek, YOSE 52.

Lecanora garovaglii (Körber) Zahlbr. On dry granite boulder in full shade, Pothole Dome, 2657 m, YOSE 45; On dry rock outcrop, Benson Lake, 2356 m, YOSE 69.

Lecanora hybocarpa (Tuck.) Brodo On mesic *Cornus nuttallii*, Crane Flat shooting range, 1914 m, Hutten 13009; On *Alnus rhombifolia* trunk, in partial shade along moist streamside, Carlon, 1320 m, Hutten 14284.

Lecanora intricata (Schrader) Ach. On rock, Basin East Mt Lyell, 3194 m, Hutten 13111.

Lecanora invadens H. Magn. On lichens on granite, Poopenaut Dome, McCune 30340; On

fully exposed, dry metamorphic cliff, Benson Lake East, 2373 m, YOSE 76.

Lecanora laxa (Śliwa & Wetmore) Printzen On conifer twigs, common in the Sierra Nevada (McCune & Printzen 2011).

Lecanora melaena (Hedl.) Fink On fully exposed, dry granite boulder, Five Open Books, 2011 m, YOSE 23; det. Root.

Lecanora mellea W. A. Weber Common on noncalcareous rock.

– *Lecanora mughicola* Nyl. Found in the San Jacinto Mts (Knudsen & Kramer 2007); apparently infrequent or absent in most of California (McCune & Printzen 2011).

Lecanora muralis (Schreber) Rabenh. On mesic, granite rock outcrop in partial shade, South Fork Merced River, 1340 m, Walton 11245.

? *Lecanora nigromarginata* H. Magn. Reported from Sequoia NP (NPLichen, citing a Wetmore report), but no California specimens in MIN are currently assigned to this species.

Lecanora novomexicana H. Magn. On rock; Sierra Nevada (Ryan et al. 2004, Son. Fl. II); more common east of the Cascade-Sierra axis.

Lecanora orizabana Vainio On bark; Sierra Nevada and elsewhere in southwestern US (Ryan et al. 2004, Son. Fl. II).

Lecanora orosthea (Ach.) Ach. On granite, Poopenaut Dome, McCune 30349, Knudsen 11661, det Lendemer.

Lecanora pacifica Tuck. On bark of broadleaved tree, Pigeon Gulch, Breuss 29787; uncertain: on trunk of *Populus trichocarpa*, Sentinel Meadow, Printzen 12187, TLC: atranorin, chloroatranorin, isousnic acid?

Lecanora cf. persimilis (Th. Fr.) Nyl. On twigs of *Calocedrus decurrens*, Arch Rock Entrance, Printzen 12142, Epithymenium POL+, granules soluble in K, insoluble in N, granules on top of amphithecium POL+, insoluble in K, soluble in N, amphithecium P-.

Lecanora phaedrophthalma Poelt On dry granite boulder in full shade, Pothole Dome, 2657 m, YOSE 45.

Lecanora polytropa (Hoffm.) Rabenh. Common on noncalcareous rock.

Lecanora pringlei (Tuck.) Lamb subsp. *pringlei* On dry rock wall in partial shade, granitic ledge along trail to Vogelsang Pass, 2784 m, Hutten 13149.

– *Lecanora pseudistera* Nyl. Occurring in Sierra Nevada, and very common farther south (Ryan et al. 2004, Son. Fl. II).

Lecanora pseudomellea B. D. Ryan On noncalcareous rock, The Rostrum and Poopenaut Dome, Hutten 13088, Knudsen 11701, Lendemer 19618, YOSE 44.

Lecanora pseudosarcopidoides M. Brand & van den Boom On wood, Vernal Falls/Nevada Falls Trail, 1864 m, Walton 11008; TLC: isousnic acid. Distinguished from the chemically similar *L. saligna* by smaller ascospores and the N+ reddish reaction of the epihymenium. Apparently not reported from North America so far.

Lecanora pulicaris (Pers.) Ach. On bark, fairly common.

Lecanora reagens Norman At base of very tall perpendicular, siliceous rock shaded by mixed deciduous forest, Bridalveil Falls, Arup L09256, L09257.

Lecanora rupicola (L.) Zahlbr. On noncalcareous rock; Poopenaut Dome, Knudsen 11657; Pohono Bridge, Lendemer 19757.

Lecanora sarcopidoides (A. Massal.) Hedl. On bark of *Pseudotsuga*; above The Rostrum, Printzen 12185; Tuolumne Grove, Printzen 12087; TLC (both specimens): pseudoplacodiolic acid. A species from the *Lecanora saligna* group that is apparently new to North America. For a description see van den Boom & Brand (2008). North American species of the group are in need of revision.

Lecanora schizochromatica Pérez-Ortega, T. Sprib. & Printzen Common on bark and wood.

Lecanora semitensis (Tuck.) Zahlbr. On noncalcareous rock (Lendemer et al. 2010).

Lecanora sierrae Asahina On noncalcareous rock, common in the Sierra Nevada (Ryan et al. 2004 in Son. Fl. II).

Lecanora stenotropa Nyl. On noncalcareous rock at mid to high elevations, Benson Lake, 2356 m, YOSE 81, YOSE 95.

Lecanora cf. strobilina (Sprengel) Kieffer On trunk of *Alnus rhombifolia*, Hazel Green Cr., Hutten 14011, 14244, Printzen 12076; preceding specimens det. Printzen; YOSE 56; det. Root. TLC: usnic acid and terpenoids including zeorin. This material is similar to *L. strobilina*, but lacks decarboxysquamic acid and has a bit broader ascospores.

Lecanora subintricata (Nyl.) Th. Fr. On bark of *Pinus ponderosa*, Arch Rock Entrance, Printzen 12126; poorly developed, TLC not possible, possibly = *L. sarcopidoides*.

Lecanora subravida Nyl. On wood in riverbed, Pigeon Gulch, Printzen 12127; TLC: usnic and placodiolic acids. Apparently not reported from North America so far. For a description see van den Boom & Brand (2008).

Lecanora wetmorei Šliwa On trunk of *Populus trichocarpa*, Sentinel Meadow, Printzen 12188; Schultz 16578, 16603; previously reported from central coast ranges of California (Solano Co.) by Šliwa (2007).

Lecidea ahlesii (Körber) Nyl. On noncalcareous rock, typically in shaded, humid, areas in the splash zones of streams (Thüs & Shultz 2009), Tuolumne Grove, Schultz 16567d; apparently new to western North America; known from eastern North America and Europe (Harris 1995).

Lecidea atrobrunnea (Ramond ex Lam. & DC.) Schaerer Near Tioga Pass (ssp. *atrobrunnea*, Hertel & Leuckert 2011). This species in the broad sense is common in Yosemite, but all individuals from low elevations for which we obtained TLC

data proved to be other species (see *L. brodoana*, *L. protabacina*, and *L. syncarpa*). Ridge above Parker Pass, Imshaug 18225, 18237 (MSC, det. Hertel & Leuckert). Knudsen made 16 collections of the *L. atrobrunnea* group at Tioga Pass just outside the Yosemite entrance at 2930 m. These included *Lecidea syncarpa*, *L. protabacina*, and *L. perlatolica*, with the last being the most abundant.

? *Lecidea auriculata* Th. Fr. Reported from Sequoia NP and Kings Canyon NP (NPLichen), but this name has been applied broadly to include *L. promiscens*. In the strict sense, *L. auriculata* is a more northern and arctic-alpine species than *L. promiscens*.

– *Lecidea berengeriana* (A. Massal.) Nyl. On rock, Tulare Co., Sequoia NP (NPLichen, Wetmore 50568, MIN).

Lecidea brodoana Hertel & Leuckert On noncalcareous rock, Pigeon Gulch and Merced River, McCune 30361, 30363, 30364, 30365, 30366, 30376; all showed perlatolic acid by TLC; previously known only from the type locality in Butte Co., California, farther north in the Sierra Nevada.

Lecidea cascadiensis H. Magn. (= *Lecidea fuscoatrina* Hertel & Leuckert, Son. Fl. II: 292 (2004), *syn. nov.*). On granite; Pohono Bridge, Knudsen 10605; Sentinel Meadow, Knudsen 11605 (McCune TLC: 2'-O-methylperlatolic and confluent acids). Examination of the type of *L. cascadiensis* (Grant 8609, UPS) from volcanic rock, Upper Naches River Region on the east slope of the Cascade Range in Yakima Co., Washington (Magnusson 1932), showed it to contain 2'-O-methylperlatolic acid, thus falling within Hertel & Leuckert's concept of *L. fuscoatrina*. Its IKI– medulla and relatively broad spores place it in the *L. fuscoatra* group rather than the *L. atrobrunnea* group.

Lecidea cruciaria Tuck. On dry, noncalcareous rock, exposed or in partial shade, The Rostrum, Hutten 14094; Moss Creek, YOSE 24; det. B. McCune.

Lecidea diducens Nyl. On noncalcareous rock at low elevations, Hazel Green Creek and Poopenaut Dome, Fryday 9251, 9305.

Lecidea fuscoatra (L.) Ach. On granite; Pohono Bridge, Lendemer 19759; The Rostrum, McCune 30406, Knudsen 11699; Bridalveil Falls, Knudsen 11593. Some specimens seem to blend the chemistry of *L. fuscoatra* and *L. cascadiensis*: 2'-O-methylperlatolic, confluent, and gyrophoric acids in McCune 30406, confirmed in TLC of two duplicates. Similarly, a paratype of *L. fuscoatrina* (Davis 2300, herb. J. Davis) contained abundant amounts of all three substances. Because Hertel & Printzen (2004, Son. Fl. II) included rare chemotypes with gyrophoric and 2'-O-methylperlatolic acids with *L. fuscoatra*, we provisionally include with *L. fuscoatra* chemotypes with gyrophoric acid along with 2'-O-methylperlatolic and/or confluent acids. Clearly this species complex needs closer examination with molecular tools.

Lecidea holopolia (Tuck.) Zahlbr. Apparently common on conifer bark and wood at low elevations.

Lecidea laboriosa Müll. Arg. On noncalcareous rock, including iron-rich rock, at numerous sites.

Lecidea leprarioides Tønsberg On conifer bark and wood at low elevations, Fryday 9289, Lendemer 19602-A, McCune 30324, Printzen 12078, 12102; apparently new to California. TLC of Printzen specimens: pseudoplacodiolic acid.

Lecidea mannii Tuck. On noncalcareous rock, Pigeon Gulch, Lendemer 19646, Fryday 9319; Hwy 140 bridge over Merced River, Fryday 9337. TLC: gyrophoric and schizopeltic acids.

Lecidea paddensis (Tuck.) Zahlbr. On trunk of *Pinus ponderosa*, above The Rostrum, Printzen 12183.

Lecidea perlatolica Hertel & Leuckert On granitic rock, Dana Fork Meadow and Marble Mound, Lendemer 19699, 19671; Saddlebag Lake, 3200 m (Hertel & Leuckert 2011). These specimens were collected at higher elevations

than the chemically similar *L. brodoana*. See also under *L. atrobrunnea*.

– *Lecidea plana* (J. Lahm) Nyl. On noncalcareous rock, Sequoia NP (NPLichen).

Lecidea praetermissa Tønsberg On conifer bark at low elevations (Arch Rock Entrance, Bridalveil Falls, Pigeon Gulch) Printzen 12111a, 12140a, 12162 (ver. Tønsberg). TLC: fumarprotocetraric acid. Previously known from coastal Alaska on bark of hardwoods, this is a substrate shift and considerable disjunction; new to California.

Lecidea promiscens Nyl. On noncalcareous rock, Mt. Lyell Summit, Hutten 13139; Benson Lake NW, 2339 m, YOSE 82.

Lecidea protabacina Nyl. (= *Lecidea atrobrunnea* subsp. *stictica* Hertel & Leuckert) On noncalcareous rock, Benson Lake East, 2373 m, YOSE 92; Mt. Dana, Imshaug 18160 (Hertel & Leuckert 2011).

Lecidea rubrocastanea T. Sprib. & Printzen On trunk of *Calocedrus decurrens*, Tuolumne Grove and above The Rostrum, Printzen 12084, 12167, 12181.

Lecidea syncarpa Zahlbr. (= *Lecidea atrobrunnea* subsp. *saxosa* Hertel & Leuckert) On noncalcareous rock at a wide range in elevation; McCune 11635, Lendemer 19700-A, Knudsen 11635; Mammoth Peak (Hertel & Leuckert 2011). TLC: norstictic acid.

Lecidea truckeei Herre (the earliest name for *L. schizopeltica* Hertel & Leuckert) West of Sonora Pass, 2805 m, Nash 8093 (schizopeltic acid and confluent acid syndrome, chemotype N, Hertel & Leuckert 2011). Chemotype Q (schizopeltic acid with planaic acid syndrome) is known in North America only from nearby Stanislaus National Forest, Burst Rock, 2750 m (Ryan 24186, Hertel & Leuckert 2011). Knudsen has four high montane collections from southern California in the Cuyamaca and San Jacinto Mountains and as a relic in Santa Monica Mountains (Pleistocene montane floristic element). Truckee is a town in the Sierra Nevada west of Reno.

Lecidea tessellata Flörke Common on noncalcareous rock.

Lecidella asema (Nyl.) Knoph & Hertel On granite in partial shade, The Rostrum, Hutten 14096, 14126.

Lecidella carpathica Körber On granitic rock at low elevations; Poopenaut Dome, Breuss 29759, Knudsen 11650; Fryday 9301; Pigeon Gulch, Knudsen 11666.

Lecidella effugiens (Nilson) Knoph & Hertel On rock at low elevations, Tuolumne Grove and Poopenaut Dome, Fryday 9261, McCune 30348; needs TLC or HPLC for confirmation, applying concepts of Knoph & Leuckert 2004 (Son. Fl. II).

Lecidella elaeochroma (Ach.) M. Choisy On bark, Pohono Bridge, Breuss 29938; f. *soralifera*, Bridalveil Falls, Lendemer 19714.

Lecidella euphorea (Flörke) Hertel On bark at low elevations.

Lecidella stigmatea (Ach.) Hertel & Leuckert Common on noncalcareous rock (elsewhere in western U.S. also on calcareous rock); TLC of Fryday specimens from Poopenaut Dome: atranorin and zeorin.

Lecidoma demissum (Rutstr.) G. Schneid. & Hertel On moist soil, snowmelt area, Madera Co., BV Peak snowfield, 2862 m, Hutten 8179. Although this northern species extends far south to the central Rocky Mountains (Brodo et al. 2001), it has not been previously reported from the Sierra Nevada. Tucker and Ryan (2006) did list two reports from California, one from Pasadena and one from Mount Diablo. Hale and Cole (1988) stated that the species occurs in California, but gave no other distributional information.

Leimonis erratica (Körber) R. C. Harris & Lendemer On side of exposed boulder, Pigeon Gulch, Fryday 9324; west of Pigeon Gulch, Fryday 9534.

Lempholemma cf. *minutulum* (Born.) Zahlbr. In sand-filled rock cleft, road to Barium Mine, Schultz 16584. Spores 16-21 × 10-12 µm, broadly

ellipsoid, similar to "*Psorotichia*" *segregata* (Nyl. ex Hasse) Hasse (= *Lempholemma chalazanum* (Ach.) de Lesd.; Schultz 2007) but ascospores smaller and thallus consisting only of scattered, minute, compressed squamules carrying one or several, small, subglobose apothecia with narrow discs.

Lempholemma botryosum (A. Massal.) Zahlbr. On limestone, Stanislaus National Forest west of Bower Cave, Schultz 16563b.

Lempholemma cladodes (Tuck.) Zahlbr. On noncalcareous rock face near Bridalveil Falls; Breuss 29881, Schultz 16597a.

Lepraria adhaerens Knudsen, Elix & Lendemer On rock, rather common at low elevations.

Lepraria alpina (B. de Lesd.) Tretiach & Baruffo On soil, Dana Fork meadow, Printzen 12152; on damp grus in seepage area, forming a cohesive crust that had to be torn to separate a specimen, low west slope of Donohue Peak, Mariposa Co., ca. 3588 m, Colwell 11-323.

– *Lepraria borealis* Lohtander & Tønsberg Frequent in southern California in San Jacinto and Cuyamaca Mountains at high elevations and in the Santa Ana and Santa Monica Mountains in southern California at lower elevations (Knudsen, unpubl.).

Lepraria caesioalba (B. de Lesd.) J. R. Laundon Common on various substrates (rocks, bark, mosses).

Lepraria eburnea J. R. Laundon On mosses, wood, and bark at several low-elevation sites; Lendemer 19600, 19624, 19655, 19725.

Lepraria elobata Tønsberg On soil and rock at middle elevations, Dana Fork Meadow and Marble Mound; Lendemer 19670, 19675, 19691.

Lepraria pacifica (L.) Ach. Common on conifer trunks and logs at low elevations. Recently segregated from *L. incana* by Lendemer (2011), the type specimen is from Pohono Bridge (Table 1).

Lepraria lobificans Nyl. On *Abies*, Tuolumne Grove, Lendemer 19564.

Lepraria neglecta (Nyl.) Erichsen s. str. On rock, Pigeon Gulch, Lendemer 19635.

Lepraria rigidula (B. de Lesd.) Tønsberg On large log, Tuolumne Grove, Lendemer 19577; on *Calocedrus*, Bridalveil Falls, Lendemer 19707.

Lepraria santamonicae Knudsen & Elix On rock, Moss Creek Canyon, Lendemer 19659, 19660.

Leprocaulon subalbicans (I. M. Lamb) I. M. Lamb & Ward On dry, vertical granite wall in partial shade, The Rostrum, Hutten 14131; on mesic granite boulder in partial shade, South Fork Merced River, 1306 m, Walton 11240.

Leptochidium albociliatum (Desmaz.) M. Choisy Common on mossy rock.

Leptogium californicum Tuck. On moss over rock, Moss Creek Canyon, Breuss 29813. Still a problematic name to apply, this taxon is included by others in *L. lichenoides* s.l.

Leptogium cellulosum P. M. Jørg. & Tønsberg Common on bark of hardwoods, especially *Quercus*, at low elevations; McCune 30378, Hutten 14474, Schultz 16598, Schultz 16600a, Schultz 16605d. The growth forms span the full range known for this species, ranging from flat simple thalli to subfruticose forms with prolific cylindrical branching (Martin et al. 2002).

Leptogium contortum Sierk In sand-filled rock cleft, road to barium mine, Schultz 16582. New to California, this species has previously been known only from Colorado National Monument (Jørgensen 2004, Son. Fl. II).

Leptogium gelatinosum (With.) J. R. Laundon On moss over granite, above The Rostrum, McCune 30402.

Leptogium laceroideis (B. de Lesd.) P. M. Jørg. On *Quercus*, below Bridalveil Falls, Lendemer 19715; apparently new to the Sierra Nevada.

Leptogium lichenoides (L.) Zahlbr. s.l. Common on moss over rock, rock, and less often on bark.

See also the segregates *L. californicum* and *L. pulvinatum*. Much of the material from the Pacific Northwest and California appears to fit the concept of *L. pulvinatum* according to Otalora et al. (2008).

Leptogium palmatum (Hoffm.) Minks Common on moss over rock and soil at low elevations.

Leptogium platynum (Tuck.) Herre On moss over rock; Moss Creek Canyon, Breuss 29819. Mariposa Co., Snyder Gulch Creek above confluence with Devils Gulch, 610 m, Hutten 14932 (outside of Park).

Leptogium plicatile (Ach.) Leighton s.l. On streamside marble outcrop, Schultz 16593b, McCune 30387, Hutten 14061; this is the "arctic-alpine form" of Jørgensen (1994).

Leptogium pseudofurfuraceum P. M. Jørg. & Wallace On *Quercus*, Merced River, Highway 140 bridge, Lendemer 19663.

Leptogium pulvinatum (Hoffm.) Otálora Common on moss over rock.

Leptogium rivale Tuck. Common on noncalcareous rocks in and along streams.

Leptogium saturninum (Dickson) Nyl. Occasional over hardwood bases at low elevations; on *Quercus kelloggii*, Bridalveil Falls, YOSE 83214, ver. D. Stone; also seen by Hutten in El Portal on bases of *Aesculus californica*.

Leptogium subaridum P. M. Jørg. & Goward Occasional on moss over noncalcareous rock at low elevations, McCune 30373, 30403, Schultz 16574c, 16601a.

Leptogium subtile (Schrader) Torss. On *Salix* bark, below Bridalveil Falls, Schultz 16600b; on moss over rotting wood, Hazel Green Creek, Breuss 29664.

Leptogium tacomae P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 1999) On dry, steeply inclined rock in partial shade, Ribbon Falls, 1217 m, Hutten 14191; on mesic *Quercus wislizeni* trunk in partial shade, Arch Rock Entrance Station, 878 m, Hutten 14628.

Leptogium teretiusculum (Wallr.) Arnold On limestone, apparently rare, Stanislaus National Forest west of Bower Cave, Schultz 16563c.

Leptogium sp. 1 of McCune and Rosentreter (2007) On compacted silt along mesic bank in partial shade, El Portal Crane Creek, 647 m, Hutten 7977; on fully exposed, dry metamorphic silt, El Portal Ridge, 592 m, Hutten 14058. Although similar in thallus size and substrate to *L. nanum*, the material from Yosemite is more like *Leptogium* sp. 1 in McCune and Rosentreter (2007, pp. 16-17; see discussion and photos comparing it to *L. nanum*.)

Letharia columbiana (Nutt.) J. W. Thomson Occasional on conifer wood and bark at low to mid elevations.

Letharia gracilis Kroken ex McCune & Altermann On litterfall, South Fork Merced River, 1282 m, Hutten 15241; apparently rare in Yosemite.

Letharia vulpina (L.) Hue Common on conifer wood and bark and *Arctostaphylos* wood at low to mid elevations.

Lichenomphalia umbellifera (L.: Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys On fully exposed, moist mineral soil and coarse woody debris; Pigeon Gulch, Hutten 14435; Yosemite West, Hutten 14597.

**Lichenostigma cosmopolites* Hafellner & Calat. On *Xanthoparmelia* species, Pigeon Gulch area, Knudsen 13652.

**Lichenostigma elongatum* Nav.-Ros. & Hafellner On *Aspicilia* species, Poopenaut Dome, Knudsen 11654.

**Lichenostigma saxicola* K. Knudsen & Kocourk. On *Pleopsidium flavum*, along Merced River. Knudsen 13665 (Kocourková et al. 2012).

**Lichenostigma subadians* Hafellner, Calatyud & Nav.-Ros. On *Acarospora socialis*, road to Barium Mine, Knudsen 11673.

**Lichenothelia convexa* Henssen Yosemite: Henssen (1987).

**Lichenothelia scopularia* (Nyl.) D. Hawksw. On *Aspicilia* and decaying shaded granite (Lendemer et al. 2010, Kocourková et al. 2012).

Lichinella stipatula Nyl. On metamorphic rock, Moss Creek Canyon, Schultz 16585d.

Lobothallia alphoplaca (Wahlenb.) Hafellner On fully exposed, dry metamorphic rock outcrop, Benson Lake NW, 2339 m, YOSE 310.

Lobothallia melanaspis (Ach.) Hafellner On siliceous stones in rivulet in mixed coniferous forest, semi-shaded, Marble Mound, Arup L09227, L09228, L09230; although numerous reports exist for California (Tucker and Ryan 2006), the name has been widely misapplied, e.g. to *L. praeradiosa*, and is not thought to occur in the area covered by the Sonoran Flora (Ryan 2004, Son. Fl. II).

Massalongia carnosia (Dickson) Körber Common on moss over rock.

Massalongia microphylliza (Nyl. ex Hasse) Henssen On mossy earth, road to Barium Mine, Breuss 29804; over granite, The Rostrum, McCune 30404, 30409; in sandfilled rock cleft, Moss Creek Canyon, Schultz 16588. This poorly understood taxon is applied here with some uncertainty. Our specimens are sterile, with tiny densely imbricate convex lobules, not resting on a black hypothallus, with marginal lobes to 2 mm long, and central lobules $0.4\text{--}0.5 \times 0.15\text{--}0.2$ mm.

Megaspora verrucosa (Ach.) Hafellner & V. Wirth On dry, steeply inclined granite rock outcrop in partial shade, The Rostrum, Hutten 14124; apparently rare in Yosemite.

Megaspora verrucosa var. *mutabilis* (Ach.) Nimis & Cl. Roux On bark and mossy bark (*Acer*, *Calocedrus*, *Quercus*), Bridalveil Falls and Poopenaut Dome, McCune 30395, Printzen 12159, Lendemer 19610, 19727, Esslinger 18916, 18995; South Fork Merced River area 10, 1310 m, Walton 11253.

Melanelixia californica A. Crespo & Divakar Very common on bark, mainly of hardwoods, occasionally on conifers; this is a recent segregate

from *M. glabra*, which does not occur in North America (Divakar 2010).

Melanelixia glabratula (Lamy) Sandler & Arup On granitic rock at base of Four-mile trail, YOSE 83218, det. McCune. Most specimens in western North America have been misplaced in *M. fuliginosa* (Fr. ex Duby) O. Blanco et al. In California, *M. glabratula* is more commonly corticolous, but also occurs on rock, as with the Yosemite specimen cited. Furthermore, *M. glabratula* appears to be the only one of the two taxa that occurs in North America (Leavitt et al 2012).

Melanelixia glabroides (Essl.) O. Blanco et al. On granite, Poopenaut Dome and above The Rostrum, Esslinger 18902, 19032, 19032; McCune 30350, Walton 11036; Ribbon Falls, Walton 11047. This relatively rare species is infrequent throughout its range.

Melanelixia subargentifera (Nyl.) O. Blanco et al. On cliff wall, Moss Creek Canyon, Esslinger 18956.

– *Melanelixia subaurifera* (Nyl.) O. Blanco et al. Sequoia NP (NPLichen); not verified.

Melanohalea elegantula (Zahlbr.) O. Blanco et al. On bark and wood at low elevations (Tuolumne Grove, old Carlon Campground, Bridalveil Falls, and the Rostrum), Breuss 29899, Esslinger 18874, 18874, 18886, 19015, YOSE 287.

× *Melanohalea exasperata* (De Not.) O. Blanco et al. Earlier reports from Sequoia and Yosemite NP (Berry 1941, Herre 1946, NPLichen) predate clarification of the species concepts by Esslinger (1977).

Melanohalea exasperatula (Nyl.) O. Blanco et al. On dead branch of *Calocedrus decurrens*, Hazel Green Creek, Esslinger 18855; on shaded boulder, Pohono Bridge, Hutten 15513. Although abundant in more continental and montane climates farther north, the species appears to be rare in the central Sierra Nevada and perhaps absent south of this area. The collection consists of numerous very small thalli, most of which have rather poorly developed isidia, and therefore

could easily be mistaken for *M. elegantula* without a close look. The identity of Esslinger 18855 has been confirmed using molecular methods (e.g. GenBank JN943698).

– *Melanohalea infumata* (Nyl.) O. Blanco et al. Sequoia NP (NPLichen, Imshaug 1957). Imshaug apparently did not report *M. infumata* from Yosemite, but from just north of there. His reports are highly likely to be based on saxicolous *M. elegantula*.

Melanohalea multispora (A. Schneider) O. Blanco et al. On dry *Quercus kelloggii* trunk, Tamarack Creek, 1442 m, YOSE 413; Leavitt et al. (2013).

× *Melanohalea olivacea* (L.) O. Blanco et al. Earlier reports from Sequoia and Yosemite NP (Berry 1941, Herre 1946, NPLichen) predate clarification of the species concepts by Esslinger (1977).

Melanohalea subelegantula (Essl.) O. Blanco et al. On bark in low-elevation moist sites, old Carlon Campground and Hazel Green Creek; Breuss 29742; Esslinger 18844 (identity confirmed using molecular methods; Leavitt et al. 2013); Walton 11114; YOSE 286, 396.

Melanohalea subolivacea (Nyl.) O. Blanco et al. Common on bark and wood.

Micarea denigrata (Fr.) Hedl. Common on wood, less often on bark, at low elevations.

Micarea lutulata (Nyl.) Coppins On side of exposed boulder, Pigeon Gulch, Fryday 9324; new to California.

Micarea misella (Nyl.) Hedl. On trunk of *Pinus lambertiana*, Hazel Green Creek, Printzen 12075.

Micarea peliocarpa (Anzi) Coppins & R. Sant. On *Calocedrus decurrens*, Arch Rock Entrance Station, Hutten 14067.

Micarea prasina Fr. s.l. On bark of *Cornus nuttallii*, old Carlon Campground, McCune 30333; on trunk of *Pseudotsuga menziesii*, Pohono Bridge, Printzen 12191.

**Microcalicium disseminatum* (Ach.) Vainio On *Abies* bark, Hazel Green Creek, Schultz 16566d.

Miriquidica atrofulva (Sommerf.) A. J. Schwab & Rambold On metal-rich rocks, Pigeon Gulch, Fryday 9309, McCune 30359; west of Pigeon Gulch, Fryday 9530. New to California.

Miriquidica scotopholis (Tuck.) B. D. Ryan & Timdal On flat, exposed top of granite slabs, above The Rostrum, Fryday 9366, 9368.

Montanelia disjuncta (Erichsen) Divakar et al. On dry granite boulder in partial shade, Ribbon Falls, 1417 m, Walton 11058; on fully exposed, dry metamorphic cliff, Piute Creek Benson, 2313 m, YOSE 65.

Montanelia panniformis (Nyl.) Divakar et al. On dry, vertical granite rock wall in partial shade, The Rostrum, Hutten 14117; Big Creek3, YOSE 806.

– *Montanelia sorediata* (Ach.) Divakar et al. Sequoia NP (NPLichen, as *Melanelia sorediata*).

Montanelia tominii (Oxner) Divakar et al. On rock, Dana Fork Meadow, Lendemer 19701; Medlicott Dome, YOSE 118.

**Muellerella erratica* (A. Massal.) Hafellner & V. John Previously treated as *M. pygmaea* var. *athallina* (Müll. Arg.) Triebel. Yosemite: on *Caloplaca atroalba*, Lendemer 19673a (NY; Kocourková et al. 2012).

**Muellerella pygmaea* (Körber) D. Hawksw. On *Lecidella stigmataea*, Poopenaut Dome, Fryday 9294.

Multiclavula vernalis (Schwein.) R. Petersen On silt of mesic roadcut bank in partial shade, Cedar Lodge, 572 m, Hutten 14385.

– *Mycocalicium sequoiae* Bonar Expected on hardened resin and charred wood of *Sequoiadendron giganteum*; reported elsewhere in the Sierra Nevada from Calaveras Big Tree State Park, Bonar 26-1949 (OSC); Tuolumne Co. (Rikkinen 2003); Kings Canyon NP (Blakeman specimens, MIN), type locality from Sequoia NP (Bonar 1971).

Mycocalicium subtile (Pers.) Szatala On conifer wood, Tuolumne Grove and Marble Mound; McCune 30320 (Ver. L. Tibell 2010 by photos of apothecial section), 30384; Lendemer 19571, 19674, Walton 11294.

Myriospora scabrida (Hedl. ex H. Magn.) K. Knudsen & L. Arcadia On rock; Marble Mound, Fryday 9345, det. Knudsen; Tuolumne Grove, Lendemer 19578.

Naetrocymbe saxicola (A. Massal.) R. C. Harris On rock, Pigeon Gulch, Fryday 9318 (det. Knudsen, Lendemer et al. 2010); the only North American collection known for this species.

Nephroma helveticum Ach. On bark in low-elevation moist forests, mainly on hardwoods; old Carlon Campground, Lendemer 19588; South Fork Merced River, 1306 m, Hutten 14243; Carlon, 1320 m, Hutten 14470; Carlon Trail/S.F. Tuolumne River, 1312 m, Walton 11121.

Nephroma resupinatum (L.) Ach. On moist *Quercus kelloggii* trunk in partial shade, 1.1 mile south of Bass Lake dam on Road 222, 1004 m, Hutten 14339.

**Niesslia peltigericola* (D. Hawksw.) Etayo & Sancho On *Peltigera didactyla* (Lendemer et al. 2010, Kocourková et al. 2012).

Nodobryoria abbreviata (Müll. Arg.) Common & Brodo On conifer branches, rarely on rock in mesic environments; low to middle elevations; Crane Flat shooting range, Hutten 13001; Vernal Falls Hutten 14069; Vernal Falls/Nevada Falls Trail 2, Walton 11001; South Fork Merced River, Walton 11240. Specimens from Yosemite and elsewhere in the central and southern Sierra are atypical, as compared with more northern specimens, having a morphology intermediate between *N. abbreviata* and *N. oregana* and commonly with apothecia. The specimen Walton 11240 (YOSE) exemplifies this well.

Nodobryoria oregana (Tuck.) Common & Brodo On bark and wood, mainly conifers, at low elevations; Moss Creek, Hutten 13016; Ledge Trail, Hutten 14606; Tuolumne Grove, Esslinger

18862; Old Big Oak Flat Road, Walton 11208; Benson Lake, YOSE 436.

Normandina pulchella (Borrer) Nyl. Common on bark and bryophytes on bark, especially *Quercus*.

Ochrolechia androgyna (Hoffm.) Arnold Common on bark, mainly of conifers, at low elevations.

Ochrolechia montana Brodo On bark of *Cornus nuttallii*, Hazel Green Creek, Breuss 29685, Esslinger 18845, 18845. New to California.

Ochrolechia subpallescens Vers. On *Cornus*, old Carlon Campground, Lendemer 19583.

Parmelia barrennoae Divakar, M. C. Molina & A. Crespo Very common at low elevations on bark and wood, less often on rock (Hodkinson et al. 2010). This species appears to replace *P. sulcata* in Yosemite and Sequoia National Parks (see also under *P. sulcata*).

Parmelia hygrophila Goward & Ahti Fairly common on conifer bark, less often on rock, at low elevations. This species is apparently rare in southern California, with no sites for the Sierra Nevada shown by Nash and Elix (2002, Son. Fl. I).

× *Parmelia pseudosulcata* Gyelnik Sequoia NP (NPLichen, Wetmore 50451, MIN; misidentification of *P. hygrophila* det. McCune 2012). No other records of this oceanic species are known for the Sierra Nevada.

Parmelia saxatilis (L.) Ach. Common on rock.

? *Parmelia sulcata* Taylor Previous reports as common in southern California (Berry 1941, Herre 1946, Hale & Cole 1988, Nash and Elix 2002, Son. Fl. I) predate description of *P. barrennoae*, which appears to at least partly replace the similar-appearing *P. sulcata* in southern California. More work is needed to resolve the distributions of these two species in California. At this time, we have not verified *Parmelia sulcata* s.s. from near Yosemite, but have locations for this species closer to the coast (e.g., Monterey Co. & Santa Barbara Co.). Of 16

specimens filed in MIN under *P. sulcata* from Sequoia NP, 15 were *P. barrenoae*, and one was *P. hygrophila*.

Parmeliella parvula P. M. Jørg. On *Cornus* bark, Hazel Green Creek, Lendemer 19530; on *Quercus* bark, Pohono Bridge, Lendemer 19758. Previously reported from northern California and northward in the coastal states and provinces, this appears to be the southernmost record for this species in western North America.

Parmeliella aff. *miradorensis* Vain. In horizontal crevice in rock face by boardwalk, Moss Creek Canyon, Fryday 9333, det. Jørgensen. Closest to *P. miradorensis* but a very disjunct record for this Mexican species as well as a different ecology.

Parmelina coleae Argüello & A. Crespo Common on hardwoods, also on conifers, at low elevations.

Parmeliopsis ambigua (Wulfen) Nyl. Fairly common conifer bark and wood, especially at the base of the trunk.

Parmeliopsis hyperopta (Ach.) Arnold On conifers, especially at the base, Hazel Green Creek Breuss 29673, Lendemer 19539; Moss Creek, Hutten 14002; Old Big Oak Flat Road, Walton 11100, 11103.

× *Peltigera canina* (L.) Willd. Although widely reported, this name has been used in a very broad sense (e.g. reports from Sequoia, Kings Canyon and Yosemite NP in NPLichen). We do not know of any reports of *P. canina* in the strict sense from central or southern California.

Peltigera collina (Ach.) Schrader Occasional on bark and rock at low elevations.

Peltigera didactyla (With.) J. R. Laundon On soil at middle elevations (Dana Fork Meadows and Marble Mound) Hutten 14421, Lendemer 19672, 19676, 19689. Mt. Dana (Imshaug 1957, as *P. canina* var. *spuria* f. *sorediata* Schaer.).

Peltigera extenuata (Vainio) Lojka On shaded, moist banks derived from metamorphic rock at middle and higher elevation, May Lake, 2649 m,

Walton 11033; Benson Lake, 2373 m, YOSE 332, Bond Pass, Hutten 15744.

Peltigera "fuscopraetextata" On shaded soil, South Fork Merced River, Hutten 14226; ITS sequence by J. Miadlikowska. This is an undescribed species from the section *Peltigera* (the *P. canina* group) that is widespread in western North America. Although not yet formally published, the herbarium name "*P. fuscopraetextata*" has been applied in the literature (Miadlikowska et al. 2003 and O'Brien et al. 2009) and in GenBank.

– *Peltigera horizontalis* (Hudson) Baumg. Reported from central Sierra Nevada (Vitikainen 2002, Son. Fl. I, this perhaps based on Shevock 12665, 13629, from Fresno Co., det. B. Ryan (ASU)).

Peltigera gowardii Miadl. & Lutzoni (previously known as *P. hydrothyria* and *Hydrothyria venosa*; see Lendemer & O'Brien 2011). Occasional in streams on noncalcareous rock; Yosemite (Weber 1971, Lendemer & O'Brien 2011); numerous Hutten specimens.

Peltigera membranacea (Ach.) Nyl. On moss over mineral soil in partial shade, Old Big Oak Flat Road, Walton 11105, det. Miadlikowska; on dry granite boulder in partial shade, Bridalveil Falls, YOSE 410.

Peltigera monticola Vitik. On dry to mesic soil or moss in partial shade throughout the foothill woodlands; YOSE 91587, "Big Trees Creek" (Mariposa Grove?), S. Karlin; Pigeon Gulch, McCune 30357; Ribbon Falls, Hutten 14199, Walton 11061; Pohono Bridge Hutten 14268; Cold Canyon, Hutten 14513; 12 km NE of Hetch Hetchy Reservoir, YOSE 321. (Numerous specimens det. and DNA sequenced by J. Miadlikowska 2010-2013).

– *Peltigera ponojensis* Gyelnik Tulare Co., Sequoia NP, on base of *Quercus*, McCune 28025, DNA sequenced and det. Miadlikowska 2010; one location in Sierra Nevada in Vitikainen (2002, Son. Fl. I).

Peltigera praetextata (Flörke ex Sommerf.) Zopf
Common at lower elevations in Yosemite and elsewhere in Sierra Nevada; eight specimens confirmed by Miadlikowska, 2010.

Peltigera rufescens (Weiss) Humb. Common in the Sierra Nevada (Vitikainen 2002, Son. Fl. I), but few collections from Yosemite: Hutten 13085, Walton 11146 (det. Miadlikowska).

× *Peltigera scabrosa* Th. Fr. Reported from Sequoia NP (NPLichen), but this far northern species has been misapplied to other species, such as *P. kristinssonii* and *P. aff. monticola*.

Peltigera venosa (L.) Hoffm. Common on moist, shaded roadcut banks with metamorphic derived soils at low elevations, less frequent on granitic soils; Walton 11006, Vernal Falls, dry, shallow soil over granite in partial shade; Big Creek, YOSE 810.

Peltula bolanderi (Tuck.) Wetmore On metamorphic rock, road to Barium Mine, Schultz 16583; USFS ridge about 1 km W of El Portal Administrative Boundary, on shaded mesic, rock wall, 657 m, Hutten 14883, 15389. This is the deeply lobate form with distinctly undulating, marginally soresiate lobules forming small cushions.

Peltula euploca (Ach.) Poelt On mesic granite boulder in partial shade, trail to Wapama Falls, 1220 m, Hutten 14566.

Peltula zahlbruckneri (Hasse) Wetmore On metamorphic rock, Moss Creek Canyon, Schultz 16585c; on mesic granite bedrock in full sun, Wapama Falls, 1263 m, Hutten 14635; Tuolumne River, 0.25 miles above Cabin Rapids, 280 m, Hutten 15566 (outside of Park).

Pertusaria ophthalmiza (Nyl.) Nyl. On *Alnus* bark near Bass Lake; Hutten 15495.

Pertusaria stenhammarii Hellb. On bark, mainly hardwoods, at low elevations, McCune 30303, 30417, Lendemer 19553, Breuss 29684.

**Pezizella epithallina* (W. Philips & Plowr.) Sacc. On *Peltigera* (Lendemer et al. 2010, Kocourková et al. 2012).

**Phacopsis vulpina* Tul. On *Letharia*, Hazel Green Creek and Tuolumne Grove, Lendemer 19540, 19561-A.

***Phaeocalicium populneum* (Brond. ex Duby) A. F. W. Schmidt On *Populus* twig, old Carlon Campground, McCune 30339a.

Phaeophyscia ciliata (Hoffm.) Moberg
Occasional on bark of hardwoods at low elevations.

Phaeophyscia decolor (Kashiw.) Essl. Occasional on rock, often shaded, at low elevations.

× *Phaeophyscia endococcina* (Körber) Moberg
Sequoia and Kings Canyon NP (NPLichen); these records likely refer to *P. decolor*.

Phaeophyscia endococcinodes (Poelt) Essl. On bark of *Acer* trunk, Bridalveil Falls, McCune 30393, det. Esslinger.

– *Phaeophyscia hirsuta* (Mereschk.) Essl.
Collected at high elevations in San Jacinto Mountains (Knudsen unpubl.); records from central and southern California in Esslinger (2004, Son. Fl. II) are all coastal, although the species also occurs east of the Sierra Nevada in Arizona and New Mexico.

Phaeophyscia nigricans (Flörke) Moberg On rock, beneath overhang, trail to Vogelsang Pass, 2784 m, Hutten 13144. The upper surface and sparse isidioid soredia in older parts of the thallus are more like *P. sciastra*. However the distinctly pale lower surface and the papillose upper cortex with a few short microhairs make it more likely to be an extreme form of *P. nigricans*. Also reported elsewhere in the Sierra Nevada: Sequoia NP (NPLichen); reported from Tuolumne Co., 1.6 mi W of Sonora Pass on Hwy 108, Nash 8103 (ASU) by Tucker and Ryan (2006), but this is currently named *P. orbicularis* det. Nash, according to CNALH (2011); not reported for central or southern California by Esslinger (2004, Son. Fl. II).

Phaeophyscia orbicularis (Necker) Moberg
Common on bark, less often on rock.

Phaeophyscia sciastra (Ach.) Moberg This widespread lichen is common in the San Bernardino Mountains, especially the more inland side (CNALH 2011; Knudsen specimens). In the Sierra Nevada it is apparently uncommon. Esslinger (2004, Son. Fl. II) shows only one point in southern California. Yosemite: Gaylor Basin, 3290 m, on exposed metamorphic rock, Hutten 14166, det. Esslinger.

Phaeorrhiza nimbose (Fr.) H. Mayrh. & Poelt Usually on soil in alpine or cold steppe; reported from Kings Canyon NP (Sequoia NP, Blakeman 210, MIN) but not listed for California (Tucker & Ryan 2006); also specimens in MSC (Piute Pass and Mono Pass, coll. Imshaug).

– *Phaeorrhiza sareptana* (Tomin) H. Mayrh. & Poelt Usually on calcareous soil in cold steppe; reported from Kings Canyon NP (Sequoia NP, Blakeman 183, MIN, det J. Sheard 2004) and Eastern Brook Lakes Watershed (Ryan and Nash 1991; two specimens in ASU). Given its usual substrate and habitat these collections, presumably on granite-derived soils, should be re-examined.

Phlyctis argena (Sprengel) Flotow Common on rock and bark at low elevations.

Phylliscum demangeonii (Moug. & Mont.) Nyl. On granite, Poopenaut Dome, Schultz 16577b; on mesic granite wall in partial shade, ledge along trail to Vogelsang Pass, Hutten 14646.

Physcia adscendens (Fr.) H. Olivier Common on bark at low elevations.

Physcia aipolia (Ehrh. ex Humb.) Fűrnr. Common on hardwoods at low elevations.

Physcia albinea (Ach.) Nyl. On rock, low to high elevations; Poopenaut Dome, Esslinger 18914; The Rostrum, Hutten 14099; Gaylor Basin Area, 3291 m, Hutten 14166 & 14169l Yosemite Valley, YOSE 548.

Physcia biziana (A. Massal.) Zahlbr. Common on rock, probably also on bark, at low elevations.

Physcia caesia (Hoffm.) Fűrnr. On rock, trail to Vogelsang Pass, 2784 m, Hutten 13151.

– *Physcia dimidiata* (Arnold) Nyl. On bark and rock; Sierra Nevada (Moberg 2002, Son. Fl. I) and Sequoia and Kings Canyon NP (NPLichen).

Physcia dubia (Hoffm.) Lettau Common on rock. Three of three alpine sites visited by Imshaug (1957), one cited as *P. teretiuscula*.

Physcia phaea (Tuck.) J. W. Thomson On noncalcareous rock, Medlicott Dome, YOSE 167.

Physcia stellaris (L.) Nyl. Common on bark of hardwoods.

Physcia subalbinea Nyl. On sunny rock, old Carlon Campground, Esslinger 18891; on mosses over rock, Poopenaut Dome, Lendemer 19617; on boulder in sun, Poopenaut Dome, Esslinger 18898.

Physcia tenella (Scop.) DC. Common on bark at low elevations.

Physcia tribacia (Ach.) Nyl. On rock, Sierra Nevada (Moberg 2002, Son. Fl. I). Because of potential confusion with *P. occidentalis*, historic records of *P. tribacia* and *P. callosa* are uncertain.

Physcia sp. #1 On granite, Poopenaut Dome, McCune 30347; on sheltered, granite cliff face below The Rostrum, Hutten 14105, 14109.

Physcia sp. #2. On partially shaded dead *Quercus chrysolepis* branch near Ribbon Falls, Walton 11046; El Portal, Hutten 14036 & 14077; Bass Lake, Hutten 15192; Crane Flat, YOSE 60.

Physconia americana Essl. Common on bark and mossy bark of hardwoods at low elevations.

Physconia californica Essl. On partially shaded dry moss over boulder, The Rostrum, Walton 11019. Sequoia NP (type: Tulare Co., Buckeye Flat Campground along Paradise River, Esslinger 2000), otherwise not known from Sierra Nevada.

Physconia enteroxantha (Nyl.) Poelt On bark and rock, one of the most common physcioid lichens in Yosemite.

Physconia fallax Essl. On bark, less often on rock; numerous records for southern California, but only a few in the Sierra Nevada (Esslinger 2002, Son. Fl. I); Kern Co., mouth of South Fork Kern River Canyon, Shevock 12124-a (ASU); Madera Co., North Fork Ranger Station, Ryan 32068-b (ASU).

Physconia isidiigera (Zahlbr.) Essl. Widespread and common on bark at low elevations, especially *Quercus* spp., and *Cornus nuttallii*; also *Abies concolor*.

– *Physconia isidiomuscigena* Essl. On rock or mosses over rock, rarely on bark; southern California near the coast (Esslinger 2000), rare in San Jacinto Mountains (Knudsen & Kramer 2007); also in Arizona, Colorado, and Utah (Esslinger 2000).

Physconia muscigena (Ach.) Poelt Common northward, but apparently infrequent in the Sierra Nevada; on dry moss over granite boulder in partial shade, The Rostrum, Walton 11019; Mt. Dana and Mammoth Peak (Imshaug 1957).

Physconia perisidiosa (Erichsen) Moberg On bark and rock, one of the most common physcioid lichens in Yosemite.

– *Placidium lachneum* (Ach.) Breuss On soil; reported from Inyo and Tuolumne Counties, including Saddlebag Lake just east of the Tioga Pass entrance to Yosemite (Breuss & Bratt 2000).

– *Placidium lacinulatum* (Ach.) Breuss. On soil, mostly in arid and semiarid environments; one site reported for the Sierra Nevada: Madera Co., near Wishon, Sierra National Forest (Breuss and Bratt 2000, Bratt s.n. SBBG)

Placopsis lambii Hertel & V. Wirth On mostly exposed roadside granite boulder near Hetch Hetchy, Hutten 15394. New to the Sierra Nevada. This species is common farther north along the coast, with scattered inland locations, it has previously been reported from California only near the north coast (Hale and Cole 1988, Brodo et al. 2001, including records of *P. gelida* s.l.). The specimen cited here is quite pruinose, suggesting the possibility of *P. fusciculoides* D. J.

Galloway, but the specimen has darkening soralia as in *P. lambii*, and the TLC results are identical with our runs of *P. lambii* (gyrophoric and 5-O-methylhiassic acids; apparently lacking 2'-O-methylhiassic acid of *P. fusciculoides*, but that substance runs close to gyrophoric acid).

Placopyrenium stanfordii (Herre) K. Knudsen On rock, west-facing crags, south side of Mariposa River, 600 m, Fryday 9564; on sunny noncalcareous rock, Sequoia NP (NPLichen, Wetmore 50140 (MIN), J. W. Thomson annotation from 1987: *Catapyrenium zahlbruckneri*).

– *Placynthiella dasaea* (Stirton) Tønsberg Sequoia NP (NPLichen, Blakeman 326, Wetmore 50200, both in MIN).

Placynthiella icmalea (Ach.) Coppins & P. James Common on wood at low elevations, less frequent on bark or rock.

Placynthiella knudsenii Lendemer On fully exposed, dry metamorphic soil, hillside near Rancheria, Walton 11070, 11071; det. McCune.

Placynthiella oligotropha (J. R. Laundon) Coppins & P. James On soil and organic matter at mid to high elevations.

Placynthiella uliginosa (Schrader) Coppins & P. James On soil or soil or moss over rock, moist to fully exposed sites, Gaylor Basin, Hutten 14155, South Fork Merced River, Hutten 14230; on log, Hazel Green Creek, Lendemer 19529.

Placynthium asperellum (Ach.) Trevisan On shaded calcareous rock; Marble Mound and Stanislaus NF, Schultz 16561, 16563a, 16593a.

Placynthium dolichoterum (Nyl.) Trevis. On wet noncalcareous rock, Bridalveil Falls, Schultz 16597b.

Placynthium flabellosum (Tuck.) Zahlbr. On temporarily flushed noncalcareous rock, Dana Fork meadow, Schultz 16595a, 16606b.

Placynthium nigrum (Hudson) Gray On dry, granite in partial shade, The Rostrum, Hutten 14115.

Platismatia glauca (L.) Culb. & C. Culb. On conifers in moist areas, typically riparian, between 1300-1900 m; Carlon, Crane Flat, Vernal Falls, South Fork of the Merced River, Wawona, Yosemite West.

Platismatia wheeleri Goward, Altermann & Björk Occasional on conifers in moist areas, typically riparian, between 900-1650 m elevation: Carlon, Coulterville, Merced Grove, Pohono Bridge, SF Merced in Wawona. Recently segregated from *P. glauca* (Lumbsch et al. 2011), *P. wheeleri* lacks the isidioid projections from the margin that often develop in *P. glauca* and has a general appearance more like *Cetrelia*, with long, linear, marginal, powdery soralia. In Yosemite, *P. wheeleri* and *P. glauca* co-occur in moist site (riparian or damp bottomlands), but *P. wheeleri* may have a tendency toward lower elevations. At least some of the reports of *P. glauca* from Sequoia NP should be referred to *P. wheeleri* (Wetmore 50339, 50730, MIN, det. McCune 2012).

? *Pleopsidium chlorophanum* (Wahlenb.) Zopf Widely reported and applied in a very broad sense, but now considered by Knudsen (2007, Son. Fl. III) to be primarily a rare, alpine species in Europe.

Pleopsidium flavum (Bellardi) Körber Common on noncalcareous rock.

Polychidium muscicola (Sw.) Gray Common on moss over rock. Exuberantly fruticose morphs of *Leptogium cellulosum*, especially on *Quercus*, are easily mistaken when sterile for *P. muscicola*, but *L. cellulosum* will always have at least a few flat spots of thallus, even if proliferating into cylindrical branchlets, while *P. muscicola* never has a flat thallus.

**Polycoccum evae* Calatayud & V. J. Rico On *Dimelaena oreina* on granite, above The Rostrum, Lendemer 19731. New to California.

**Polycoccum kernerii* J. Steiner On *Lecidea fuscoatra*, Pigeon Gulch, Knudsen 13646. Knudsen (2011) reported this as new to California and only the second collection for North America.

Polysporina gyrocarpa (H. Magn.) N. S. Golubk. On granite rock on mesic, mostly exposed outcrop, Calcite Dome North Slope, Hutten 13072; on dry vertical granite rock wall, Hutten14119, det. Knudsen.

**Polysporina pusilla* (Anzi) M. Steiner ex Kantvilas On *Staurothele monicae* and algiculous on crystalline marble, Marble Mound, Fryday 9342, Knudsen 11684.

Polysporina simplex (Davies) Vězda On rock at low elevations; road to Barium Mine, Printzen 12136; Moss Creek Canyon, Breuss 29822, Fryday 9328, East Barium Ridge, Hutten 14287; on metamorphic rock in partial shade, Moss Creek, Walton 11292 det. Knudsen; also Walton 11074.

**Polysporina subfuscescens* (Nyl.) K. Knudsen & Kocourk. On *Lecidea* species, along Merced River, Sierra National Forest, Knudsen 13657; common in southern California (Kocourková et al. 2012).

Porocyphus coccodes (Flotow) Körber On granite along river margin, Arch Rock Entrance, Schultz 16590; on temporarily wetted schistose rock, Pigeon Gulch, Schultz 16579d. New to Sierra Nevada.

Porpidia crustulata (Ach.) Hertel & Knoph On damp, shaded lignum, old Carlon Campground, Fryday 9288.

× *Porpidia macrocarpa* (DC.) Hertel & A. J. Schwab Sequoia NP (NPLichen); historically applied in a broad sense; according to Gowan (1989) not in southwestern U.S.; according to Knoph & Rambold (2004, Son. Fl. II) in the "higher mountains of central and eastern Arizona."

Porpidia soledizodes (Lamy ex Nyl.) J. R. Laundon On rock, Pigeon Gulch, Fryday 9308, 9315; Merced River, Highway 140 bridge, Lendemer 19665. Previously reported new to California from Point Loma (Knudsen & Kocourková 2009).

Porpidia thomsonii Gowan Sequoia NP (Gowan 1989).

Protopannaria pezizoides (Weber) P. M. Jørg. & S. Ekman On soil over rock, Big Creek, 1230 m, YOSE 796.

– *Protoparmelia badia* (Hoffm.) Hafellner On noncalcareous rock, almost certainly present in Yosemite at middle to high elevations, based on occurrences in Ryan & Nash (1991) and Ryan et al. (2004) Son Desert.

Protoparmelia nephaea (Sommerf.) R. Sant. ex Poelt & Obermayer On metal-rich rocks, Pigeon Gulch, Fryday 9312, 9313.

Protoparmelia ochrococca (Nyl.) P. M. Jørg., Rambold & Hertel On trunk of *Calocedrus decurrens*, Hazel Green Creek, Printzen 12081.

Pseudephebe minuscula (Nyl. ex Arnold) Brodo & D. Hawksw. Common on noncalcareous rock at middle to high elevations; Fryday 9358, 9359, Lendemer 19704, Walton 11138, YOSE 118, 341; Mammoth Peak and ridge above Parker Pass (Imshaug 1957). The local material often has dark depressions or pseudocyphellae similar to those of *Melanelia stygia* (L.) Essl.

Pseudephebe pubescens (L.) M. Choisy On granite, Dana Fork meadow, Schultz 16594a; on dry granite boulder, in partial shade, Vernal Falls, 1883 m, Walton 11003.

Psilolechia lucida (Ach.) M. Choisy On rock, Tuolumne Grove, Lendemer 19569.

Psora californica Timdal On soil and in rock crevices; crags on south side of Merced River west of El Portal, Fryday 9555; road to Barium Mine, Printzen 12133; hillside above Rancheria, 723 m, Walton 11072.; East Barium Ridge, 627 m, Hutten 14012, 14018.

Psora decipiens (Hedwig) Hoffm. On calcareous soil, Foresta Road, 735 m, Hutten 14364.

Psora globifera (Ach.) A. Massal. On soil, exposed, East Barium Ridge, 627 m, Hutten 14017.

Psora hyporubescens Timdal On rock, Moss Creek Canyon, McCune 30372.

Psora nipponica (Zahlbr.) Gotth. Schneider Fairly common on rock or soil or moss over rock.

Psora pacifica Timdal On soil at low elevations; road to Barium Mine, Breuss 29802, McCune 30369; Moss Creek Canyon, Lendemer 19649, 19654; south- and west-facing crags, south side of Mariposa River, 600 m, Fryday 9555, 9562.

Psorotichia montinii (A. Massal.) Forss. On limestone, Stanislaus National Forest, west of Bower Cave, Schultz 16564. New to Sierra Nevada.

Pycnora praestabilis (Nyl.) Hafellner On wood, partly shaded or exposed; Dana Fork Meadow, Breuss 29874; Rafferty Creek, 2793 m, Hutten 14636b; Vogelsang Pass, 3053 m, Hutten 14637.

Pycnora sorophora (Vainio) Hafellner On conifer wood, Tuolumne Grove, McCune 30319, det. Tønsberg; On dry *Umbellularia californica* branch in partial shade, Bridalveil Falls, YOSE 387. Apparently new to California.

Pyrenopsis cf. haematina P.M. Jørg. & Henssen On shaded periodically seeping underhanging granite wall along trail south of Vogelsang Pass, Hutten 13160, 14639, 14641. The determination remains uncertain though the cited material is very well developed and richly fertile. The adnate to sessile apothecia have widely opened, reddish brown discs and a thin, persisting thalline margin. The thallus is composed of dark reddish brown granules that form thin to eventually thick, very irregularly granulose areoles. The outer ascus wall stains conspicuously blue with iodine whereas there seem to be no distinct amyloid inner structures. The asci contain eight, broad ellipsoid spores measuring 10-12 × 5-6 µm. The apothecia resemble those of *P. haemalella* (Nyl.) Blomb. & Forssell, a species differing in its very thin, ± regularly areolate thallus. European specimens of *P. haematina* seen for comparison had more compact, thick areoles but much less conspicuous apothecia. The two North American species, *P. phaeococca* Tuck. and *P. polycocca* (Nyl.) Tuck., are different. The former belongs

into the confusing group around *P. sanguinea* Anzi, *P. impolita* (Th. Fr.) Forssell and *P. fuscata* Nyl.; the latter is a distinct species with thalli dominated by fairly large, conspicuously thick-rimmed apothecia.

Pyrenopsis reducta Th. Fr. On schistose rock, Pigeon Gulch, Schultz 16579a. New to North America. This is an extremely rare cyanolichen from calciferous rock, previously known only from the type locality in Norway. Our material matches the holotype well.

Pyrenopsis triptococca Nyl. On noncalcareous metamorphic rock, in hot, exposed as well as more sheltered sites, Moss Creek Canyon, Breuss 29808, Schultz 16585b, 16586, 16587a and on steep granitic rock above The Rostrum, Schultz 16602a. New to Sierra Nevada.

Ramalina farinacea (L.) Ach. Occasional on bark at low elevations.

Ramalina menziesii Taylor. On branches of *Quercus lobata* in Midpines, Hutten 15818. Apparently one of the southernmost records in the Sierra Nevada. There are two records farther south, none farther north in the Consortium Herbarium database; apparently very few inland records in California.

Ramalina puberulenta Riefner & Bowler On partially shaded twigs of conifers in moist microsites; Moss Creek, Hutten 13046, YOSE 58; Wawona Meadow, Hutten 14299.

Ramonia gyalectiformis (Zahlbr.) Vězda Granitic rocks and boulder, Poopenaut Dome, Fryday 9298.

– *Rhizocarpon badioatrum* (Flörke ex Sprengel) Th. Fr. On noncalcareous rock, Sequoia and Kings Canyon NP (NPLichen).

Rhizocarpon bolanderi (Tuck.) Herre Common on noncalcareous rock.

Rhizocarpon cinereovirens (Müll. Arg.) Vainio Exposed rock in open wood, Hazel Green Creek, Fryday 9253; metal-rich rocks beside road, Pigeon Gulch, Fryday 9311. Previously reported

from northern California Siskiyou County (Tucker & Ryan 2006); new to Sierra Nevada.

Rhizocarpon disporum (Nägeli ex Hepp) Müll. Arg. On granite boulders in stream ravine, base of Bridalveil Falls, Lendemer 19721.

Rhizocarpon distinctum Th. Fr. On granite, Poopenaut Dome, McCune 30341.

Rhizocarpon effiguratum (Anzi) Th. Fr. On *Pleopsidium flavum*. Second record for California (Kocourková et al. 2012). Tioga Pass, Inyo National Forest, Knudsen 14760 & Kocourková.

– *Rhizocarpon eupetraeum* (Nyl.) Arnold Sierra Nevada (Feuerer & Timdal 2004, Son. Fl. II).

Rhizocarpon geminatum Körber Common on noncalcareous rock.

Rhizocarpon geographicum (L.) DC. On noncalcareous rock at middle elevations; granitic ledge along trail to Vogelsang Pass, Hutten 13152, 13152; Stately Pleasure Dome, YOSE 104; Medlicott Dome, YOSE 157; Benson Lake, YOSE 96.

Rhizocarpon grande (Flörke ex Flotow) Arnold On noncalcareous rock, Breuss 29898, Fryday 9299, 9372, Lendemer 19587.

Rhizocarpon lecanorinum Anders Common on noncalcareous rock.

Rhizocarpon macrosporum Räsänen Common on noncalcareous rock, including at middle to higher elevations.

Rhizocarpon polycarpum (Hepp) Th. Fr. On noncalcareous rock at low elevations; Hazel Green Creek, Fryday 9252, 9253; old Carlon Campground, Fryday 9267; The Rostrum, Fryday 9373.

Rhizocarpon pusillum Runem. On *Sporastatia testudinea* on noncalcareous rock, Dana Fork Meadow; Fryday 9361, Lendemer 19702; Tioga Pass, Inyo National Forest, Knudsen 14780, 14792 & Kocourková.

Rhizocarpon reductum Th. Fr. On rock, west of Pigeon Gulch, Fryday 9523b.

Rhizocarpon renneri Poelt On *Dimelaena oreina*; second record for California (Kocourková et al. 2012). Tioga Pass, Inyo National Forest, Knudsen 14753 & Kocourková.

Rhizocarpon riparium Räsänen Sierra Nevada (Feuerer & Timdal 2004, Son. Fl. II).

Rhizocarpon sulphurosum (Tuck. ex Willey) Lendemer On granite (Lendemer et al. 2010).

Rhizocarpon superficiale (Schaer.) Malme Tioga Pass, 2893 m, just outside Yosemite border in Inyo National Forest on metamorphosed shale, Knudsen 14752.1 & Kocourková.

Rhizoplaca chrysoleuca (Sm.) Zopf On metamorphic rock, on fully exposed, alpine ridge, Gaylor Basin, 3201 m, Hutten 14147.

Rhizoplaca glaucophana (Nyl. ex Hasse) W. A. Weber On noncalcareous rock at low elevations, Moss Creek Canyon and Pigeon Gulch, Arup L09179, Fryday 9334, Hutten, 14629, Lendemer 19645; Hetch Hetchy trail to Wapama Falls, Hutten 14568.

Rhizoplaca marginalis (Hasse) W. A. Weber On schist, Pigeon Gulch, Schultz 16580a; on granite, Cascade Creek climbing wall, 1093 m, Hutten 13120.

Rhizoplaca melanophthalma (DC.) Leuckert & Poelt Common on noncalcareous rock, especially at middle to higher elevations.

? *Rhizoplaca subdiscrepans* (Nyl.) R. Sant. Yosemite (NPLichen, Wetmore 14816, MIN). Although *R. subdiscrepans* is distinct from *R. chrysoleuca* (Zhou et al. 2006, Leavitt et al. 2011), the name *R. subdiscrepans* has been applied somewhat indiscriminately in western North America to include some subcrustose forms of *R. chrysoleuca*, for example regeneration morphs where the thallus has been damaged mechanically or by fire.

Rimularia limborina Nyl. On rock, west of Pigeon Gulch, Fryday 9520, 9522.

Rimularia caeca (J. Lowe) Rambold & Printzen On conifer bark at low elevations, Printzen 12107a, 12137a, 12174a.

Rinodina archaea (Ach.) Arnold On bark, Hazel Green Creek, Breuss 29666.

Rinodina aurantiaca Sheard On *Cornus* bark, Hazel Green Creek, Root 1735b.

Rinodina badiexcipula Sheard On bark and rock; Poopenaut Dome, Fryday 9302; Turtleback Dome, Knudsen 11607; Pohono Bridge, Root 1727a.

Rinodina bischoffii (Hepp) A. Massal. On bridge concrete, Merced River, Root 1739.

– *Rinodina californiensis* Sheard Sierra Nevada (Sheard 2010); usually closer to the coast.

Rinodina capensis Hampe On bark of hardwoods, less often on conifers, at low elevations; Printzen 12099, Root 1723b, 1730, 1742, Breuss 29694, YOSE 56.

Rinodina colobina (Ach.) Th. Fr. On bark of *Populus trichocarpa* at low elevations; old Carlon Campground, Root 1717; Sentinel Meadow, Root 1741a. This appears to be the southernmost record of *R. colobina* (see Sheard 2010).

Rinodina confragosa (Ach.) Körber On sheltered rock, Poopenaut Dome, Root 1745c, Knudsen 11553; The Rostrum, Hutten 14100.

Rinodina degeliana Coppins On conifer bark at low elevations, Hazel Green Creek and old Carlon Campground, McCune 30292, 30332a; det. T. Tønsberg 2010. These are apparently the southernmost locations known for this species in western North America, being more common from extreme northern California north to Alaska (Sheard 2010 and Tønsberg, unpubl).

Rinodina disjuncta Sheard & Tønsberg On conifer wood and *Alnus* bark, Hazel Green Creek and old Carlon Campground, Fryday 9280, Lendemer 19535-B; previously reported from Yosemite by Sheard (2010). Conifer wood is an unusual substrate, the species not reported on wood by Sheard (2010); these collections

represent the southernmost known populations of this species in North America.

Rinodina endospora Sheard On hardwoods, less often on conifers, at low elevations; Bridalveil Falls, Sentinel Meadow, and above The Rostrum; Root 1716, 1718, 1719c, 1729c, Lendemer 19742; Yosemite Valley, Hasse s.n. (FH, Sheard 2010).

Rinodina exigua (Ach.) Gray Common at low elevations on both hardwoods and conifers.

Rinodina freyi H. Magn. On both hardwoods and conifers, Tuolumne Grove, Root 1733, 1740.

Rinodina hallii Tuck. Yosemite Valley (Sheard 2010); near the southern end of this species' known range in the Sierra Nevada. The record is based on an old Bolander collection. It would be interesting to know if the species is still found in Yosemite Valley.

– *Rinodina herrei* H. Magn. Tulare Co., Blakeman 278 (MIN, Sheard 2010).

Rinodina laevigata (Ach.) Malme On bark of hardwoods at low elevations; McCune 30420c, Root 1715, 1719a, 1744a.

Rinodina milvina (Wahlenb.) Th. Fr. On granite, Poopenaut Dome, Fryday 9293, Root 1745a; East Side Washburn Lake, Hutten 14651; Yosemite Valley, Hasse s.n. (NY; Sheard 2010).

Rinodina mniaraea (Ach.) Körber On plant debris, Dana Fork Meadow, Breuss 29873; Tenaya Lake, Wetmore 14815 (MIN, det. Sheard).

Rinodina olivaceobrunnea C. W. Dodge & Baker On moss over rock, Poopenaut Dome, Root 1745b.

Rinodina orculata Poelt & M. Steiner Common on bark and wood, both conifers and hardwoods, at low elevations.

Rinodina oregana H. Magn. On hardwoods at low elevations; on *Quercus kelloggii*, Poopenaut Dome, Root 1736, on *Populus trichocarpa*, old Carlon Campground, Root 1741c; Yosemite Valley (Sheard 2010).

– *Rinodina parasitica* H. Mayrh. & Poelt On lichens, mostly *Aspicilia*, over rock, reported from several sites near Yosemite (Sheard 2010).

Rinodina polyspora Th. Fr. On *Calocedrus decurrens*, Arch Rock Entrance, Root 1724a; on partially shaded paint of metal bridge above Happy Isles, 1270 m, Hutten 14656, det. Sheard.

Rinodina pyrina (Ach.) Arnold On *Fraxinus latifolia*, Pigeon Gulch, Root 1723a.

× *Rinodina riparia* Sheard Yosemite Valley, Hasse s.n. (Sheard 1998, Tucker & Ryan 2006) belongs to *R. endospora* (Sheard 2010).

– *Rinodina santae-monicae* H. Magn. Reported from the Sierra Nevada (Sheard 2010).

× *Rinodina tephrae* (Tuck.) Herre Sequoia NP (NPLichen); presumably misidentification based on distribution in Sheard (2010). Californian records of this species referred to by Herre (1910) belong to *R. milvina*.

Rinodina trevisanii (Hepp) Körber On bark and wood of both conifers and hardwoods at low elevations; Hazel Green Creek, old Carlon Campground, Fryday 9243, 9274, McCune 30302, Root 1738. New to California.

Ropalospora viridis (Tønsberg) Tønsberg On log, old Carlon Campground, Printzen 12103. TLC: perlatolic acid.

Sagedia cf. *mastrucata* (Wahlenb.) A. Nordin, S. Savić & Tibell On very shallow soil, exposed dry steeply inclined metamorphic rock, East Barium Ridge, 627 m, Hutten 14288; Poopenaut Dome, Lendemer 19605, Bridalveil Falls, Lendemer 19716.

Sarcogyne clavus (DC.) Kremp. On granite; Five Open Books, 2011 m, YOSE 15; usually a riparian montane species in California on hard granite.

Sarcogyne novomexicana H. Magn. On calcareous rock; Marble Mounds, Fryday 9326, Hutten 14221, Knudsen 11691; "a rare calcicolous species" (Knudsen & Kocourková 2012).

Sarcogyne regularis Körber On rock, Moss Creek Canyon, Breuss 29809. This common California calciphile often occurs with the non-pruinose *Sarcogyne arenosa* (Herre) K. Knudsen & Standl.

Sarcogyne similis H. Magn. On granite, Poopenaut Dome, McCune 30343, det. Knudsen 2009 from photos; common in California in a wide range of habitats.

Schaereria dolodes (Nyl. ex Hasse) Schmull & T. Sprib. Fairly common on bark and wood of conifers in low elevation moist forests in Yosemite.

Sclerococcum montagnei Hafellner On *Lecanora rupicola*, Lendemer 19746 (Kocourková et al. 2012).

Solorina spongiosa (Ach.) Anzi On calcareous soil in seepage at 1900-3200 m; Calcite Dome Northside Lake, Hutten 13073, Calcite Dome North Slope, Hutten 13082; Virginia Canyon head, Colwell s.n., YOSE 832; Snow Lake, Colwell s.n., YOSE 849. Also found in Marble Mountain wilderness, Hutten 15261. This species seems to pop up in calcareous seepy sites widely scattered across western North America (e.g. Beyer & St. Clair 2004, Peterson 2006). In California, this species is previously known only from Inyo County (Peterson 2006). It is on the state List 2, "rare in state, but more common elsewhere (not rare throughout entire range)" and has global/state ranks of G4G5.3 S1.2, meaning globally "apparently secure; uncommon but generally > 80 occurrences" and "not very endangered (threat rank)." The species has a state rank of "critically imperiled; generally 1-5 occurrences" and "fairly endangered (threat rank)."

– * *Sphaerellothecium propinquellum* (Nyl.) Cl. Roux & Triebel Sequoia NP (NPLichen).

Sporastatia testudinea (Ach.) A. Massal. Common on rock at medium to high elevations; Dana Fork meadow; Fryday 9361, Lendemer 19698; Gaylor Basin, Hutten 14167.

Staurothele areolata (Ach.) Lettau Common on both calcareous and noncalcareous rock.

Staurothele clopima (Wahlenb.) Th. Fr. non auct. On seasonally wet streamside rock, Marble Mound, Breuss 29854, 29864, 29866, 29867; Schultz 16593d. The North American and California checklists have *S. clopima* as a synonym of *S. drummondii*. In Thomson (1991), however, *Staurothele fuscocuprea* is given as synonym of *S. drummondii*, and according to Thüs & Schultz (2009), *S. fuscocuprea* is a synonym of *S. clopima*, which therefore is the oldest name (*S. fuscocuprea* (Nyl.) Zschacke 1913, *S. drummondii* (Tuck.) Tuck. 1872, *S. clopima* (Wahlenb.) Th.Fr. 1860). We keep *S. clopima* and *S. drummondii* separate (see *S. drummondii*).

Staurothele clopimoides (Arnold) J. Stein On rock, first basin below Mt Lyell, Merced side, Hutten 13118.

Staurothele drummondii (Tuck.) Tuck. On calcareous rock, Marble Mound, Schultz 16593c. This species is distinguished from *S. clopima* by the thallus margin and shape of areoles. *Staurothele drummondii* has more or less radiating marginal lobes and highly convex, brittle areoles, while *S. clopima* has a continuous margin, flat, non-brittle areoles when sterile (only perithecia forming bumps), and compact thalli.

Staurothele fissa (Taylor) Zwackh Common on seasonally wet noncalcareous rock, including rocks in stream beds, spray zones of waterfalls, and seepage over rock; also rarely found on bark (Bridalveil Falls, Breuss 29889).

Staurothele monicae (Zahlbr.) Wetmore On dry calcareous rock, Marble Mound, Fryday 9342, Fryday 9343, and numerous other collections, mostly by Fryday, at that site.

Stereocaulon glareosum (Savicz) H. Magn. On soil, pockets of metamorphic derived mineral soil in talus, alpine fellfield, Tuolumne Co., west side Mt. Excelsior, 3685 m, Colwell 10-125, Also known from Alpine Co. (Carson Pass) and Inyo Counties (Hungry Packer Lake; Brodo specimens

in CANL; not seen). Apparently rare in the Sierra Nevada, and not known elsewhere in California.

**Stigmidium fuscatae* (Arnold) R. Sant. On *Acarospora fuscata*, Tuolumne Grove, Knudsen 11637 (Kocourková et al. 2012).

**Stigmidium lendemeri* Kocourk. & K. Knudsen. On *Aspicilia* on noncalcareous rock at low elevations (Kocourková & Knudsen 2012, Kocourková et al. 2012).

– * *Stigmidium squamariae* (B. de Lesd.) Cl. Roux & Triebel Common on *Lecanora muralis* group, frequent in California (Kocourkova et al. 2012).

– *Strangospora deplanata* (Almq.) Clauz. & Cl. Roux San Jacinto Mountains (Knudsen & Ryan 2007).

Strangospora microhaema (Norman) R. Anderson On *Quercus* and *Calocedrus*, above The Rostrum, Printzen 12173, Arup L09274, L09275.

– *Strangospora moriformis* (Ach.) Stein San Jacinto Mountains (Knudsen & Ryan 2007).

Syzygospora physciacearum Diederich On Physciaceae. Yosemite: Lendemer 19666 (Kocourková et al. 2012).

Tephromela atra (Hudson) Hafellner On granite, base of vertical rock face, Poopenaut Dome, Fryday 9304.

Tetramelas chloroleucus (Körb.) A. Nordin (= *Buellia chloroleuca* Körb.) On *Pseudotsuga menziesii* var. *menziesii* root in partial shade, South Fork of Merced River, 1306 m, Hutten 14228; det. McCune.

Tetramelas insignis (Nägeli) Kalb (= *Buellia insignis* (Naeg. ex Hepp) Th. Fr.) On dry granite wall in partial shade, The Rostrum, Hutten 14128, det. McCune.

Thelenella muscorum (Fries) Vainio var. *muscorum* On moss over *Cornus nuttallii* in partial shade, Pohono Bridge, Hutten 14264.

– *Thelomma occidentale* (Herre) Tibell Tuolumne Co. (Rikkinen 2003).

Toninia ruginosa (Tuck.) Herre In horizontal crevice, Moss Creek Canyon, Fryday 9332.

– *Toninia sedifolia* (Scop.) Timdal On calcareous rock and soil, Sequoia NP.

Toninia squalida (Ach.) A. Massal. In rock crevices or moss over rock, Sequoia and Yosemite NP (NPLichen); Sierra Nevada (Timdal 1991).

Trapelia coarctata (Turner ex Sm. & Sow.) M. Choisy On dry, shallow soil over metamorphic rock, East Barium Ridge, Hutten 14286; south side of Mariposa River, Fryday 9549.

Trapelia glebulosa (Sm.) J. R. Laundon On rock, Bridalveil Falls, Lendemer 19713.

Trapelia obtegens (Th. Fr.) Hertel On noncalcareous rock and metal-rich rock at low elevations; Fryday 9317, 9329, Lendemer 19664, 19667; east side of Pigeon Gulch, Fryday 9545.

Trapelia placodioides Coppins & P. James On rock, near Pohono Bridge, Lendemer 19755.

Trapeliopsis bisorediata McCune & Camacho On soil; road to barium mine, Printzen 12130, 12132; Moss Creek Canyon, Lendemer 19653.

Trapeliopsis flexuosa (Fr.) Coppins & P. James Fairly common on wood and bark at low elevations.

Trapeliopsis glaucopholis (Nyl. ex Hasse) Printzen & McCune Common on soil over rock or rock at low elevations.

Trapeliopsis granulosa (Hoffm.) Lumbsch Common on soil, organic matter, and bases of conifers.

Trapeliopsis steppica McCune & Camacho On soil at low elevations; road to Barium Mine, Pigeon Gulch, and above The Rostrum; Fryday 9375, McCune 30354, Printzen 12135, Breuss 29770, 29771, 29806, 29914.

**Tremella lethariae* Diederich Sequoia NP (Diederich 2003).

Tremolecia atrata (Ach.) Hertel On metal-rich rock, Pigeon Gulch, Breuss 29776; YOSE 89.

Tuckermannopsis chlorophylla (Willd.) Hale Common on bark and wood at low elevations.

Tuckermannopsis orbata (Nyl.) M. J. Lai Common on bark and wood, mainly of conifers, in moist, low-elevation forests.

Tuckermannopsis platyphylla (Tuck.) Hale Common on bark and wood of conifers at low elevations.

Umbilicaria americana Poelt & Nash Sierra Nevada (Mariposa Co., Poelt & Nash 1993; Hestmark 2004, Son. Fl. II). On mostly shaded granite wall, Pohono, Hutten 15514.

× *Umbilicaria angulata* Tuck. Apparently all previous reports of *U. angulata* from Yosemite and central to southern California (e.g. Llano 1950, NPLichen) belong to *U. semitensis*, an outwardly similar species but with muriform rather than simple spores (McCune & Curtis 2012).

– *Umbilicaria cinereorufescens* (Schaerer) Frey Sequoia NP (NPLichen) and Tucker & Ryan (2006), but not reported for southern California by Hestmark (2004, Son. Fl. II).

– *Umbilicaria decussata* (Vill.) Zahlbr. Sequoia NP (Imshaug 1957).

Umbilicaria deusta (L.) Baumg. On dry granite and metamorphic rock in partial to full shade, Medlicott Dome, 2782 m, YOSE 111, 112; Piute Creek Benson, 2313 m, YOSE 269; Bartlett Creek, 2145 m, YOSE 858.

Umbilicaria hyperborea (Ach.) Hoffm. On noncalcareous rock, so far from 2300-2800 m; Benson Lake YOSE 68, 316; Medlicott Dome, YOSE 165; Lambert Dome, YOSE 470; Yosemite, Kelly 5/7/1930 (FM) and other Sierra Nevada specimens in Llano (1950).

Umbilicaria krascheninnikovii (Savicz) Zahlbr. On exposed noncalcareous rock, especially metamorphic rock, mostly at mid to high elevations; Walton 11139, 11148, YOSE 34, 165,

272, 328, 329; Yosemite (Kelly 5/7/1930, Llano 1950; three alpine sites, Imshaug 1950). Llano also reported var. *darrowii* (Frey) Llano from Yosemite (Bolander 1867, FH).

Umbilicaria phaea Tuck. Common on noncalcareous rock, probably the most common *Umbilicaria* species at lower elevations in the Sierra Nevada (see maps in Hestmark (2004, Son. Fl. II) and Hale and Cole (1988)). We found unusual color morphs with pale tan, pale gray, to pinkish lower surfaces on granite outcrops at Poopenaut Dome and above The Rostrum; ongoing studies of DNA sequence data are examining relationships between this and other color morphs of *U. phaea*.

– *Umbilicaria polyphylla* (L.) Baumg. Sequoia NP (NPLichen); not reported for southern California by Hestmark (2004, Son. Fl. II), but reported for the California Coast Ranges by Llano (1950). Apparently the reports of Ryan and Nash (1991, Ryan 12842, ASU) and NPLichen (Wetmore 50651, 51079, MIN) are the only reports of this species from the central to southern Sierra Nevada.

Umbilicaria polyrhiza (L.) Fr. Occasional on noncalcareous rock at lower elevations. Yosemite, Llano (1950).

Umbilicaria semitensis Tuck. Common on noncalcareous rock, especially large granite outcrops, often where somewhat sheltered. See note under *U. angulata*.

Umbilicaria torrefacta (Lightf.) Schrader On noncalcareous rock, apparently uncommon in the Sierra Nevada, judging by the few collections; Sequoia and Yosemite NP (NPLichen, Llano 1950), Sierra Nevada (Hestmark 2004, Son. Fl. II).

Umbilicaria vellea (L.) Hoffm. Common on sheltered noncalcareous rock faces, low to high elevations.

Umbilicaria virginis Schaerer Common on noncalcareous rock at mid to high elevations; Mammoth Peak (Imshaug 1957).

Usnea diplotypus Vainio On bark of *Pseudotsuga*, Bridalveil Falls, McCune 30399. TLC: usnic and salacinic acids; Moss Creek and nearby Merced Grove, Hutten 13045, and 15771.

Usnea lapponica Vainio Carlon, 1320 m, Hutten 14279, Merced Grove, Hutten 14463, 15770 (TLC usnic and barbatic acids), 15769, (TLC: usnic salacinic acids); all det. McCune. Although common and widespread in interior western North America, the species is apparently rare in the Sierra Nevada: one location shown in Clerc (2007, Son. Fl. III)

Usnea scabrata Nyl. On twig of conifer, old Carlon Campground, McCune 30334; TLC: usnic acid with minor unknowns; Merced Grove, Hutten 15770, 15772; Moss Creek, Hutten 14004; Wawona Meadow, Hutten 14294.

Vahliella californica (Tuck.) P. M. Jørg. On rock, Moss Creek Canyon, McCune 30371.

Vahliella leucophaea (Vahl) P. M. Jørg. On partially shaded dry gently inclined rock, Ribbon Falls, Hutten 14193, det. McCune.

Verrucaria carbonusta Breuss 29830. On noncalcareous rock; see above.

Verrucaria dolosa Hepp On hard granite near water; Tuolumne Grove, Knudsen 11639; Pohono Bridge, Knudsen 11603; old Carlon Campground, Knudsen 11647 (all det. Breuss).

Verrucaria elaeomelaena (A. Massal.) Arnold On rocks in and at the edge of the creek, Marble Mound, Breuss 29849, 29853. New to California.

Verrucaria endocarpoides Servit On rock in dry creek, Tuolumne Grove, Breuss 29711, 29717; Schultz 16567b. New to Sierra Nevada.

Verrucaria floerkeana Dalla Torre & Sarnth On rock in dry creek, Tuolumne Grove, Breuss 29714. New to Sierra Nevada.

Verrucaria fusca Pers. On rock in dry creek and roadside rock, Tuolumne Grove and Pigeon Gulch, Fryday 9316, Knudsen 11627, Breuss 29719. New to Sierra Nevada.

Verrucaria hydrela Ach. On damp noncalcareous rock near streams, Bridalveil Falls, Hazel Green Creek, Fryday 9245, Breuss 29887; Tuolumne Grove, Knudsen 11638. New to Sierra Nevada.

Verrucaria margacea (Wahlenb.) Wahlenb. Common on rock in or near creeks or seasonal creeks or seepage at low elevations; Hutten 14185, Breuss 29715, 29718b, 29792, 29847, Walton 11248.

Verrucaria memnonia (Flotow) Arnold On damp igneous rock, bridge over Hazel Green Creek, Fryday 9243; on hard granite in sunny location in forest, Tuolumne Grove, conifer woodland, Knudsen 11627; on granite boulder in shade of an oak tree in grassland, barium mine slope, Knudsen 11575; all det. Breuss. New to Sierra Nevada.

Verrucaria praetermissa (Trevisan) Anzi On rocks in and at the edge of the creek, Marble Mound, Breuss 29850. New to California.

Verrucaria rufofuscella Servit On siliceous rock in open wood, Tuolumne Grove, Breuss 29710. New to Sierra Nevada.

– *Verrucaria sphaerospora* Anzi In mountains of southern California (Breuss 2007, Son. Fl. III).

Verrucaria subdivisa Breuss On noncalcareous rock in dry site, Pigeon Gulch, Breuss 29767, 29768. New to Sierra Nevada.

Vestergrenopsis sonomensis (Tuck.) T. Sprib. & Muggia (syn. *Koerberia sonomensis* (Tuck.) Henssen) On vertical granitic rock faces, Poopenaut Dome and above The Rostrum; Fryday 9293, McCune 30414, Schultz 16577c, 16602b, Arup L09134, L09135.

**Vouauxiella lichenicola* (Lindsay) Petrak & Sydow On *Lecanora* species, Poopenaut Dome and Sentinel Meadow, Knudsen 11609, 11655.

Vulpicida canadensis (Räsänen) J.-E. Mattsson & M. J. Lai Occasional on conifer branches at low elevations.

Waynea californica Moberg Common on *Quercus* bark, less often on other species (e.g. *Calocedrus*) at low elevations.

Xanthomendoza fallax (Hepp ex Arnold) Söchting, Kärnefelt & S. Kondr. On bark; Sentinel Meadow and above The Rostrum; Breuss 29902, 29925, Walton 11086.

Xanthomendoza fulva (Hoffm.) Söchting, Kärnefelt & S. Kondr. Common on bark of *Populus* and *Quercus* at low elevations; Hutten 14041, Lendemer 19741, Esslinger 19044, Arup L09128, L09131, L09143, L09270, L09271, L09273, L09287.

Xanthomendoza hasseana (Räsänen) Söchting, Kärnefelt & S. Kondr. Easily the most common esorediate epiphytic *Xanthomendoza* or *Xanthoria* in Yosemite; on both hardwoods and conifers at low elevations.

Xanthomendoza mendozae (Räsänen) S. Kondratyuk & Kärnefelt On siliceous vertical rocks in narrow gorge, Moss Creek Canyon, Arup L09197.

Xanthomendoza oregana (Gyelnik) Söchting, Kärnefelt & S. Kondr. On bark of hardwoods, Sentinel Meadow, Printzen 12186; On *Quercus* bark in partial shade, Arch Rock Entrance Station, Walton 11184.

– *Xanthoparmelia ajoensis* (T. H. Nash) Egan Reported from extreme southern Arizona and Mexico, but one disjunct location in Sierra Nevada (Nash & Elix 2004, Son. Fl. II; Tulare Co., along state route 198, 310 m, Nash 10329).

Xanthoparmelia coloradoënsis (Gyelnik) Hale Fairly common on noncalcareous rock at low to high elevations; TLC: usnic and salacinic acids and satellites.

× *Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale Earlier reports from the Sierra Nevada (Smith 1980; NPLichen) are presumably based on the broad sense of this species.

Xanthoparmelia cumberlandia (Gyelnik) Hale Fairly common on noncalcareous rock at low

elevations; TLC: usnic, norstictic, and stictic acids and satellites.

– *Xanthoparmelia hypomelaena* (Hale) Hale Sierra Nevada: Nash & Elix (2004, Son. Fl. II).

– *Xanthoparmelia incerta* (Kurok. & Filson) Elix & J. Johnst. One location reported for Sierra Nevada (Nash & Elix 2004, Son. Fl. II, Madera Co., Ryan 32046, ASU).

– *Xanthoparmelia loxodes* (Essl.) Crespo et al. Sierra Nevada: several specimens from Tuolumne Co. not far north of Yosemite (coll. B. Ryan, ASU).

Xanthoparmelia mexicana (Gyelnik) Hale On noncalcareous rock, above the Rostrum, Lendemer 19737; The Rostrum, Walton 11035; Ribbon Falls, Walton 11059; Thomas 21. TLC: usnic and salacinic acids and satellites.

Xanthoparmelia mougeotii (Schaerer) Hale On rock, Pigeon Gulch, Lendemer 19643.

Xanthoparmelia neotaractica Hale On noncalcareous rock; Lambert Dome, 2756 m, YOSE 140; Benson Lake West, 2331 m, YOSE 337; TLC: norstictic and stictic acid complex.

Xanthoparmelia neowyomingica Hale On granite boulder, Tamarack Creek, 1442 m, YOSE 411.

Xanthoparmelia novomexicana (Gyelnik) Hale On noncalcareous rock, Sierra Nevada: Nash and Elix (2004, Son. Fl. II).

– *Xanthoparmelia plittii* (Gyelnik) Hale Although common in southwestern US and reported for the Sierra Nevada (Nash & Elix 2004), we did not encounter this species.

– *Xanthoparmelia schmidtii* Hale Reported from Sequoia NP (Tucker & Ryan 2006), but not in Nash & Elix (2004, Son. Fl. II).

– *Xanthoparmelia subdecipiens* (Vainio) Hale Sequoia NP and Sierra Nevada (NPLichen; Nash & Elix 2004, Son. Fl. II)

– *Xanthoparmelia subhosseana* (Essl.) Crespo et al. Sierra Nevada (Nash & Elix 2004, Son. Fl. II).

– *Xanthoparmelia subplittii* Hale Common on noncalcareous rock in the Sierra Nevada (Nash & Elix 2004, Son. Fl. II), but not seen by us.

Xanthoparmelia subramigera (Gyelnik) Hale On rock, Pigeon Gulch, McCune 30356. TLC: usnic and fumarprotocetraric acids.

Xanthoparmelia verruculifera (Essl.) Crespo et al. Common on noncalcareous rock.

Xanthoria candelaria (L.) Th. Fr. On dry granite boulder in full to partial shade, Ribbon Falls, Walton 11042; Medlicott Dome, YOSE 166. Sierra Nevada (Lindblom 1997).

Xanthoria elegans (Link) Th. Fr. Common on rock. Yosemite, Lindblom (1997).

Xanthoria polycarpa (Hoffm.) Rieber On twigs, Merced River, Highway 140 bridge, Breuss 29833; on *Quercus*, El Portal Ridge, Hutten 14057; Malarkey Ridge, Hutten 14659. Also reported from Yosemite by Rudolph (1955) as *X. ramulosa*.

Xanthoria sorediata (Vainio) Poelt On nutrient-enriched rock; summit of Mt. Dana, Imshaug 18153; ridge above Parker Pass, Imshaug 18224 (MSC, ver. Fryday); Sierra Nevada (Lindblom 1997, Lindblom 2004, Son. Fl. II).

Xanthoria tenax L. Lindblom Yosemite (Lindblom 1997, Eckfeldt s.n., 1882, CANL).

Xylographa hians Tuck. On wood, top of downed log, Tuolumne Grove, McCune 30317.

– *Xylographa opegraphella* Nyl. Ex Rothr. Sequoia NP (NPLichen, Tucker & Ryan 2006); not reported by Ryan (2004, Son. Fl. II).

Xylographa parallela (Ach. : Fr.) Behlen & Desberger On conifer wood, Pohono Bridge and old Carlon Campground, Fryday 9269, 9379.

Xylographa parallela var. *rubescens* (Räsänen) anon. On twigs of *Calocedrus decurrens*,

Printzen 12184. Thallus and exciple forming K+ red needles.

Xylographa soralifera Holien & Tønsberg This recent segregate of the *X. vitiligo* group is common in the Pacific coastal states, including at low elevations in Yosemite; on wood (Lendemer 2010).

Xylographa vitiligo (Ach.) J. R. Laundon On twigs of *Calocedrus decurrens*, Hazel Green Creek, Printzen 12070.

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