The Lichen Flora of Santa Barbara Island, California

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Abstract - This paper constitutes the second investigation of the lichens of Santa Barbara Island. The collections made on the island by Blanche Trask in 1901-1902 were previously reported by Hasse (1903a-d, 1913). The known lichen flora is increased from 22 to 64 species. A checklist of the lichen species collected on Santa Barbara Island is included.

Methods and Materials

This report is the result of four collecting trips to Santa Barbara Island from 1983 to 1987. Most areas of the island were surveyed except for the cliffs and the unstable cliff tops on the southwestern portion of the island. The north-facing vertical cliffs were visited with the assistance of the island ranger who found a way to reach a single ledge on the north face.

Specimens were collected at all areas visited. Identifications were made using standard microscopic techniques and chemical spot tests. Thin layer chromatography was done on all Niebla specimens using Merck's aluminum sheets coated with silica gel. The solvent used was toluene (140 parts): ethylacetate (80): formic acid (8). The plates were dried, then sprayed with H₂SO₄ and developed by heating in an oven at 100°C for about 10 minutes or until the norstictic acid control turned bright yellow.

Not all specimens could be identified, reflecting the state of lichen taxonomy at this time. Such collections will be available for future taxonomic workers. The identification of several specimens was provided or confirmed by lichenologists in this country and in Canada. Voucher specimens of all species are housed at the Santa Barbara Museum of Natural History and a partial set is at the National Museum of Natural History, Smithsonian Institution.
Results

From the lichen collections made, 64 species of lichens have been identified. Of these, 16 species were found on plants and 52 species were found on rocks and/or soil. Only four species were found in both substrates.

The low number of species found on plants reflects the fact that on Santa Barbara Island there are no trees or large shrubs. The largest plant on the island, Cevropis giganteus, served as the substrate for 13 of the 16 species found on plants. The distribution of lichen species within the various Cevropis populations would be an interesting topic for further study. Lycium californicum, a small dense shrub, yielded 7 species of lichens. Opegrapha littorilis and 0. praelonga also have been found with lichens. It is difficult to impossible to collect lichens from cacti so only three lichen species can be confirmed from these spiny plants.

The most obvious lichens are those that grow on rocks all over the island. Even in the midst of the grasslands, wherever a rock protrudes above the surface, it is richly coated with crustose lichens of a diversity of colors.

One of the most significant lichen communities is one which is rarely seen. This is the fog zone lichen community that inhabits north-facing vertical cliffs. Although access to these cliffs is nearly impossible, several of these lichens can be found on the north-facing slopes of Cat, Middle, and Graveyard Canyons and also on the north faces of a few rock outcrops on the western side of the island. The whole north side of the island has its steep cliffs densely covered with these lichens. The grey color of the cliffs, as seen from the ocean, is not a mineral color, but is derived from the lichens. Crustose lichens such as Dendrographa leucophaea, D. minor, Rocella funaria, Combea californica, and several Niebla spp. form thick mats while crustose species such as Dimelaena radinta, Reinkelella parisiis, Schizomatummy hypothallinum and Opegrapha calcearea coat any open spaces.

Orange lichens, mostly species in the genus Caloplaca, are found on all parts of Santa Barbara Island. Eleven species have been identified, nine from rock substrates and two from plants. Unfortunately there are no modern taxonomic works on this genus and several species cannot be identified positively at this time.

The genus Niebla, a light grey-green crustose lichen, is richly represented. One species occurs on plants and five species on rocks. Taxonomic work is incomplete and three of the species found on the island do not have validly published names. Although found in most of the island habitats, they are most prevalent on the islands south-facing cliffs.

While some lichens are abundant, others are notable for their scarcity. Teloschistes villous was thought to be extinct within the United States until collected on Santa Barbara Island in 1985. It was found growing on Lycium californicum along the north ridge of Graveyard Canyon. In 1987 this area was inaccessible due to pelican nesting activity. A second, small population has been found in the Cevropis patch on North Peak.

Plasmodiormelia catarata is common on the adjacent mainland where its habitat is on trees. On Santa Barbara Island, it has been collected only in two very restricted locations where it grows on the ground.

It is very difficult to compare the historic record of specimens to those collected for this study. On the surface, it seems as though only 10 of the 22 species have been recollected. However, it is likely that some or all of the uncollected species were misidentified. Until the actual specimens can be located, if indeed they still exist, it remains in the realm of speculation.

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Literature Cited


Appendix 1

Checklist of Lichen Species on Santa Barbara Island, California. (* = not collected by the author).

Acarospora clausi (Ach.) Mass. The only bright yellow lichen on the island. Found in Cat Canyon, Signal Peak and along the west side to Elephant Seal Cove. Identified as Lecanora zonata in material collected by Trask.

Asterina impatiens (Ehrh. ex Hoffm.) Bort. On Opegrapha and Lycium in Cat and Middle Canyons.

Buellia cerossata Linn. ex Werner. Common on rocks throughout the island. Identified as Buellia cerossata cinnamomea in material collected by Trask.

Buellia botryoides (Ach.) Trask. Found on rocks in Landing Cove.

Buellia punctata (Hoffm.) Mass. On rocks in Landing Cove and along the Nature Trail. Identified as Buellia neptunicarpa and B. punctata punctata in material collected by Trask.

Caloplaca botryosa (Tuck.) Hesse. Common on rocks throughout the island. Identified as Placodium botryosum in material collected by Trask.

Caloplaca californica Zahlbr. Found in large, conspicuous patches on the stems and branches of Cevropis gigantea.

Caloplaca cinnata (Ehrh.) Th. Fr. Lichen with small, dark orange apothecia on the twigs of Lycium. Identified as Placodium cinnatum in material collected by Trask.

Caloplaca eburnea (Pers.) Zawack. Grows on the volcanic tuff found on Signal Peak.

*Caloplaca flavovirens (Huds.) Laundon. Identified as Placodium flavovirens in material collected by Trask.

Caloplaca novae-zealandiae (Zahlbr.) Fink. Fink on rocks along cliff top on west side of island.

Caloplaca roesi Hesse. Common throughout the island. Lacks its characteristic lacy prothallus when it overgrows other crustose lichens.

Caloplaca saxiolaris (Hoffm.) Nordin. Fairly common, especially on north facing slopes.

*Caloplaca selerites (Tuck.) Zahlbr. Identified as Placodium seleritum in material collected by Trask.

Caloplaca variabilis (Pers.) Mull. Arg. Inconspicuous on rocks on Signal Peak.

Caloplaca verruculifera (Vain.) Zahlbr. An uncommon sorediate Caloplaca on rocks on the southeastern bluffs.

Caloplaca sp.*A.* Conspicuous, especially when wet, with yellowgold thallus and rusty orange apothecia. An undescribed species also found on Santa Cruz Island.

*Callitrichia franziscana (Tuck.) Herrero. Identified as Biafra franziscana in material collected by Trask.

Cladonia geodea (L.) Hoffm. Known only from one small patch on the north facing slope in Upper Cave Canyon.

Collenia cristata (Huds.) Wigg. Large patch on ground along the trail to the landing dock.
Leprocaulon microscopicum

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Lecidella subincongrua

*Lecanora varia

Lecanora horizans

Lecanora dispersa

Lecanora cenisea

Lecanora syringia

Lecania dudleyi

Lecania brunonis

Heteradermia

Flavoparmelia caperata

Diploschistes scruposus

Dimelaena radiata

Dendrographa minor

Combea californica

east side of the island.

fruticose soil lichen found in the canyons on the northern part of the island.

& Leuck. A common, yellow-green crustose lichen found on Coreopsis.

crustose lichen, found in Cliff Canyon.

Point and in Cliff Canyon.

crustose lichens. Common on pebbles at Arch Peak and Landing Cove.

Lecanora spodophaeiza

(Ach.) Th. Fr. An easily overlooked species which lives on the trunks of Coreopsis.

Herterodermia cf. erinacea (Ach.) Weber. Very small specimens found on rock outcrops on Signal Peak.

Lecanora brunonis (Tuck.) Herre. A brown crustose lichen found on rock outcrops on Signal Peak.

Lecanora dudleyi Herre. A dark brown crustose lichen found on volcanic tuff and other rocks. Signal Peak and Landing Cove.

*Lecanora spurdigita* (Nyl.) Smith. Identified as *Lecanora podophylla* in material collected by Trask.

*Lecanora syringia* (Ach.) Th. Fr. An easily overlooked species which lives on the trunks of Coreopsis.

*Lecanora coniferi* Ach. One of several species of grey crustose lichens. Common on pebbles at Arch Point and in Cliff Canyon.

*Lecanora dispersa* (Pers.) Somm. Another grey crustose lichen, found in Cliff Canyon.

*Lecanora baronii* (Ach.) Lindsay. A prominent, lobed crustose lichen found on Coreopsis.

*Lecanora varia* (Hoffm.) Ach. In material collected by Trask.

*Lecidea synnokeia* (Ach.) Ach. Identified as *Lecanora sinuata* in material collected by Trask.

Lecidella nubimunigra var. chenobrannex (Nyl.) Hert. & Leuck. A common, yellow-green crustose lichen found on the northern part of the island.

Leprocaulon microserpentine (Vill.) Gams. A tiny, fruticose soil lichen found in the canyons on the east side of the island.

*Nicolia cephala* (Tuck.) Rendel & Bowler. Identified as *Roccella cernua* var. cephala in material collected by Trask.

*Nicella cernua* (Ach.) Rendel & Bowler. Common on the twigs of Lycium. Also found on Carexoides and both *Opuntia* species.

*Nicolia conchoidis* (Nyl.) Rendel & Bowler. Identified as *Roccella conchoidis* in material collected by Trask.

*Nicella banata* (Ach.) Rendel & Bowler. The most common species of *Nicella* found everywhere on the island. Identified as *Ramalina banatae* in material collected by Trask.

*Nicella robusta* (Howe) Rendel & Bowler. On rocks primarily in the eastern canyons.

*Nicella sp. "A"*. Found on rocks. Notable features are the split tips and the pycnidia. Both sorediate and esorediate morphs.

*Nicella sp. "B"*. A smooth version of *Nicella banatae* found on north-facing rocks.

*Nicella sp. "C"*. Resembles *N. robusta* except for consistently smaller size and a shiny thallus.

Opegrapha calarora Turn. ex Sm. A prominent, white-grey crustose lichen on the north-facing cliffs.

Pennaria leucopephala (Vahl.) Jørg. A dark brown, minutely foliose lichen that blends with its substrate.

Peltula holendrai (Ach.) Wetm. A small, dark squamulose lichen found in the eastern canyons.

Portia spuria spp. One, possibly two, gray-brown two-spored saxicolous species not included in Dibbou’s 1980 monograph. Found in several locations around the island.

Physcia aegina (Ehrh.) Hampe. On Carexoides and on rocks in the eastern canyons.

*Physcia camosa* (Exchw.) Mass. Probably misidentified. In material collected by Trask.

*Physcia phana* (Tuck.) Thom. The most widespread species of the Physcia on the island.

Physcia tenella (Scop.) DC. On rock, wood (weather station) and *Opuntia* stems in eastern canyons.

Plyssania distorta (With.) Laundon. Common on rock outcrops in Landing Cove.

Polyphysium curvuloides (Tuck.) Hue. Found only once along the cliff south of Webster Point. Probably more widespread. Identified as *Placodium curvuloides* in material collected by Trask.

Ramalina everniioides Nyl. Grows on Carexoides on North Peak and on *Opuntia* along the Nature Trail.