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Lichens of the Santa Monica Mountains, Part One

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ABSTRACT. – 63 taxa are reported from the Santa Monica Mountains in southern California. *Endocarpon pseudosubnitescens* Breuss is reported as new to North America. New collections of the rare species *Cladonia pulvinella* Hammer and *Placynthiella knudsenii* Lendemer are reported. *Acarospora arenosa* Herre, *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula, Lecanora glaucopsina* Nylander *in* Hasse, and *Lecidea subplebeia* Nylander *in* Hasse are discussed. Two new combinations are made: *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen, and *Sarcogyne arenosa* (Herre) Knudsen & Standley. *Acarospora craterifolia* H. Magnusson is synonomized with *Acarospora smaragdula* var. *smaragdula*, and *Acarospora carnegiei* Zahlbruckner is synonomized with *Acarospora obpallens* (Nylander *in* Hasse) Zahlbruckner. Lectotypes are selected for the following names: *Acarospora arenosa* Herre, *Lecanora* obpallens Nylander *in* Hasse, and *Lecidea subplebeia* Nylander *in* Hasse.

INTRODUCTION

The Santa Monica Mountains of southern California extend about 45 miles from the Los Angles River in the city of Los Angeles to the city of Santa Monica and continue along the Pacific coast into eastern Ventura County. They range from 3 to 13 miles wide with elevations from sea level to 3111 feet at Sandstone Peak in the western mountains. The native vegetation of coastal sage scrub, chaparral and oak woodlands is still largely intact. Rock substrates include sandstone, rhyolite, volcanics, and scattered occurrences of shale. (Raven 1986)

The lichens of the Santa Monica Mountains were collected by Hermann Hasse for over 25 years until his death in 1915. These collections form the basis of his *Lichen Flora of southern California* (1913). Hasse reported over two hundred species for the Santa Monica Mountains (1913). The exact number is impossible to estimate because of the way distribution information is written in the flora. For instance, the San Fernando Valley as used by Hasse may actually refer to the inland side of Santa Monica Mountains and references to species common throughout southern California may not include the Santa Monica Mountains. The majority of Hasse's collections are in the Farlow Herbarium (FH) and in the Herbarium of the New York Botanical Gardens (NY) with type material in the Nylander herbarium in Helsinki (H-NYL) and in Austria (W). The Hasse collections in the Herbarium of the University of Minnesota (MIN) are exceptional containing many valuable types. Many other herbaria contain important types and collections, including PH, US. I assume many of Hasse's collections were made in areas developed during the expansion of the city of Santa Monica into the foothills of the Santa Monica Mountains. These locations are usually designated on labels by Hasse as "near Old Soldier's Home" or "in the foothills of Santa Monica Mountains".

Hasse's collections give us a historic record of the lichen flora of the Santa Monica Mountains before urbanization of Los Angeles altered it through the impacts from human development, invasive weeds, air pollution, and increasing anthropogenic fire occurrences. The mountains from Topanga Canyon to its foothills in the city of Santa Monica are the type locality of many species described by Nylander, who studied Hasse' s collections fresh from the field in the 1890's. Because of the transformation of southern California in the 20th century, some species reported in Hasse's flora have not been collected since his death. The habitats of these species are no doubt reduced and altered. But these lost species cannot be presumed to be extinct.

Many lichenologists have collected in the Santa Monica Mountains Recreation Area, including Bjorn Owe-Larsson (UPS), Bruce Ryan (ASU), William Weber (COLO), and Clifford Wetmore (MIN). Due to the extensive area of the range and many problems of access, the Santa Monica Mountains Recreation Area has not been exhaustively explored since Hasse. And Hasse may have not explored many areas west of Malibu Canyon.

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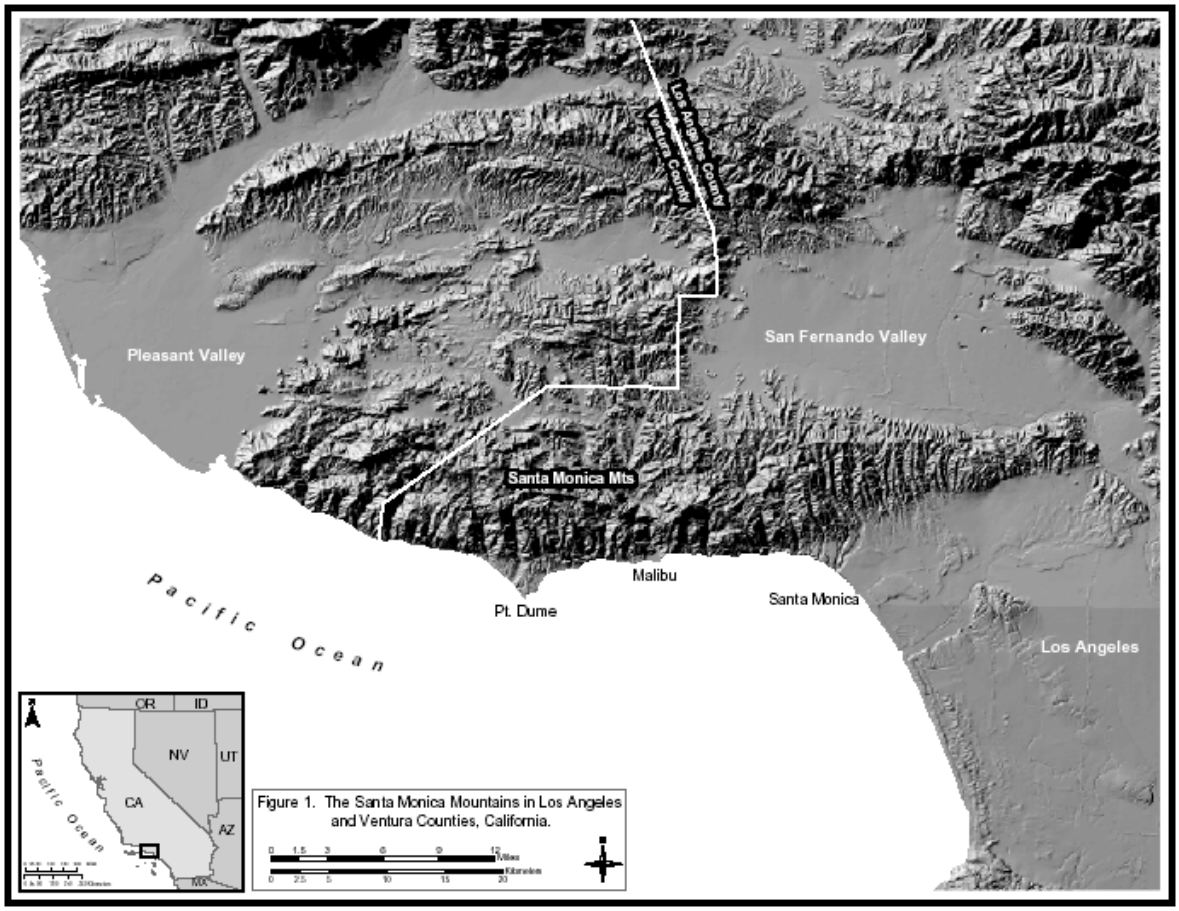
Fig. 1. Map of the Santa Monica Mountains in Los Angeles and Venture Counties, California, USA.



My collections in this paper were made exclusively in the Santa Monica Mountains Recreational Area as understood by the National Park Service. It includes in a cooperative union, federal, state, and local park agencies with private reserves and landowners west of the city of Santa Monica. It does not include the whole natural range whose eastern portion is on the other side of Sepulveda Canyon where it is often called locally the Hollywood Hills. Many of Hasse's collections may not have been made in the Santa Monica National Recreation Area.

In fall of 2003, I began a series of irregular visits that will be continued over many years to come. The goal of these trips have to been to explore in depth many areas and substrates. The main focus of the collections reported here have been sandstone outcrops and terricolous habitats scattered across the range. Most specimens of all species are deposited in the UCR herbarium (http://www.herbarium.ucr.edu/Herbarium.html). Additional collections of some species and duplicates are deposited primarily in ASU, H, MIN, hb. Lendemer. Duplicates of most Verrucariales are deposited with Othmar Breuss. The nomenclature follows *Lichen-forming and lichenicolous fungi of Fennoscandia* by Rolf Santesson et al (2004) and *The Lichen Flora of the Greater Sonoran Desert Region,* Vol. 1 & 2, edited by Nash et al (2002 and 2004). Those species described by Nylander but only reported by Hasse are treated as Nylander *in* Hasse in my nomenclature.

COLLECTIONS

Acarospora bullata Anzi

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on sandstone on north side of ridge, 34° 04.693'N 118° 38.653'W, elev. 682 m., *Knudsen et al. 661* (ASU, MIN).

Acarospora cinereoalba (Fink) H. Magnusson

USA. CALIFORNIA. LOS ANGELES CO.: Latigo Canyon, on edges of shale on north slope in oak woodland, 34° 04.832'N 118° 47.795'W, elev. 571 m., *Knudsen 1583* (ASU, MIN, UCR, hb. Lendemer).

Acarospora fuscata (Nylander) Arnold

USA. CALIFORNIA. LOS ANGELES CO.: Calabasas Peak Motorway, on sandstone outcrops surrounded by mixed chaparral in full sun, east-west exposure, growing with *Acarospora obpallens*, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 700 & Sagar* (ASU, UCR); Castro Crest, on sandstone of north side of outcrops, 34° 04.864'N 118° 45.104'W, elev. 643 m., *Knudsen 715 & Sagar* (MIN). – *A. fuscata* is relatively rare in southern California and most easily found in watershed areas at higher elevations.

Acarospora obpallens (Nylander *in* Hasse) Zahlbruckner

USA. CALIFORNIA. LOS ANGELES CO.: Calabasas Peak Motorway, on sandstone outcrops, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 701 & Sagar* (ASU); Hepatic Gulch, near Schueren Road, on soil over sandstone on north side of ridge, 34° 04.709'N 118° 38.684'W, elev. 687 m., *Knudsen et al. 651* (ASU); Topanga State Park, Cathedral Rock along Backbone Trail, on sandstone, 34° 06.399'N 118° 33.481'W, elev. 631m., *Knudsen 348a* (MIN, UCR); Topanga Canyon, Ed Edelman Park, on sandstone in full sun, 34° 07.294'N 118° 35.169'W, elev. 375 m., *Knudsen 1562 & Sagar*, (UCR). – Once common on soil in the Santa Monica Mountains, *A. obpallens* is now restricted to sandstone where it reaches its best development. Magnusson's (1929) report of *Acarospora carnegiei* Zahlbruckner is a misidentification of *A. obpallens*. *Acarospora carnegiei* Zahlbruckner in both Arizona and California is here designated as a synonym of *Acarospora obpallens* (Nylander *in* Hasse) Zahlbruckner[1]. *A. obpallens* often becomes reduced under stress and this has caused the problems of classification.

Acarospora smaragdula (Wahlenberg) A. Massalongo var. ***smaragdula***

USA. CALIFORNIA. LOS ANGELES CO.: Latigo Canyon, on edges of shale on north slope in oak woodland, 34° 04.832'N 118° 47.795'W, elev. 571 m., *Knudsen 1584* (ASU, MIN, NY, UCR, hb. Lendemer). – This taxon is a parasite on *A. cinereoalba* (Fink) H. Magnusson, *Buellia* species, and in-determined lichens. The species is nitrophilous (Santesson et al, 2004) but I have seen no reports of its parasitic activity from Europe. Some areoles were observed directly growing out of the host. *Acarospora cratericola* H. Magnusson is here synonomized with *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula*[2]. One areole of the holotype of *A. cratericola* can be seen emerging from thallus of a lichen host and Magnusson (1929) describes it as a parasite.

Acarospora smaragdula var. ***lesdainii*** (Harmand *ex* A.L. Smith) H. Magnusson

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on sandstone outcrop in sun, 34° 04.840'N 118° 45.136'W, elev. 665 m., *Knudsen 707 & Sagar*, from north side of the same sandstone outcrop *Knudsen 709 & Sagar* (ASU, FH, H, MIN, UCR, hb.Lendemer), on sandstone in full sun, 34° 04.873'N 118° 44.905'W, elev. 581 m., *Knudsen 1572* (UCR). – See Knudsen (2004a)

Acarospora socialis H. Magnusson

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on Conejo volcanics on west-facing slope among coastal sage scrub and invasive weeds, 34° 08.431'N 118° 45.500'W, elev. 301 m. *Knudsen 589 & Sagar* (ASU, UCR), *Knudsen 593 & Sagar* (ASU); Topanga Canyon, Ed Edelman Park, on sandstone in full sun, 34° 07.323'N 118° 35.148'W, elev. 375 m., *Knudsen 1557 & Sagar* (UCR), *Knudsen 1558 & Sagar* (UCR, hb. Lendemer). – Note *Knudsen 1557* is an epruinose specimen intergrading with *Knudsen 1558*. Topanga Canyon was the type locality of *A. subalbida* H. Magnusson and *A. socialis* is heavily pruinose at this site. Similar specimens were labeled *A. xanthophana* var. *dealbata* by Hasse.

Acarospora veronensis A. Massalongo

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on small stones, 34° 08.237'N 118° 44.674'W, elev. 371 m., *Knudsen 600.2 & Sagar* (UCR), on small rocks and

pebbles, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 608 & Sagar* (UCR); Rocky Oaks Park, on boulder of unknown rock type, 34° 05.840'N 118° 49.016'W, elev. 507 m., *Knudsen 678.1* (UCR).

Aspicilia glaucopsina (Nylander *in* Hasse) Hue

USA. CALIFORNIA. VENUTRA CO.: Thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble, on spike moss and soil and Cladonia species, 34° 07.266'N 118° 56.049'W. elev. 890 m., *Knudsen 1963 & Owe-Larsson* (UCR, hb. Lendemer) - Note: Collections from the same locality were deposited at UPS by Bjorn Owe-Larsson who will re-describe it in Vol. 3 of the Sonoran flora. This terricolous lichen, lacking any lichen substances (Lendemer, per com.), appears to be related to the *Aspicilia californica*-group but is only sub-fruticose. The type locality in the Santa Monica Mountains, Barton Peak, has not been located. Though I have collected it in other parts of southern California (see material in ASU, NY, UCR) it is rare and usually sterile. Basionym: *Lecanora glaucopsina* Nylander *in* Hasse.

Buellia badia (Fries) A. Massalongo

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on sandstone and undetermined lichen, 34° 04.693'N 118° 38.662'W, elev. 700 m., *Knudsen et al. 657* (UCR); Topanga State Park, Cathedral Rock along Backbone Trail, on sandstone and *Acarospora obpallens,* 34° 06.399'N 118° 33.481'W, elev. 631 m., *Knudsen 348b* (ASU, UCR). – See Bungartz, (2004).

Buellia punctata (Hoffmann) A. Massalongo *s. lat.*

USA. CALIFORNIA. VENTURA CO.: Thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble, on spike moss, soil and *Aspicilia glaucopsina*, 34° 07.266'N 116° 56.049'W, elev. 890 m., *Knudsen 1963.2 & Owe-Larsson* (UCR, hb. Lendemer). - *Buellia punctata* was observed growing on spike moss; when *Aspicilia glaucopsina* covered the spike moss it grew through or on its thallus. In keeping with the treatment of *Buellia* by F. Bungartz, *Amandinea* is rejected as the correct genus for *B. punctata* (see Sheard (2004: 469), for comment on the handling of the genus in the upcoming work of Bungartz for the Sonoran Lichen Flora, Vol. 3). Without additional taxonomic studies on a much broader scale, it is currently not possible to evaluate if our specimens belong to *Buellia punctata* s. str. Bungartz et al. (2004) examined a large amount of saxicolous specimens previously identified as *B. punctata* from the Sonoran Desert Region. They concluded that none of the material belonged to *Buellia punctata* s. str. Instead six species were distinguished that are very similar, but not identical to *Buellia punctata* s. str. However, the specimen treated here as *Buellia punctata* does not match any of the species described in Bungartz et al. (2004), even though other material has been confirmed as *Buellia Sequa* (see below). According to Bungartz (peers. comm.) typical *Buellia punctata* occurs on bark. Our specimen of *Buellia punctata* was collected on spike moss and shows some parasitic affinity to *Aspicilia glaucopsina*. Nevertheless, the material is clearly distinct from other parasitic species; e.g., *Buellia badia*. With some hesitation we refer the material to *Buellia punctata* s. lat. until a more comprehensive taxonomic study may resolve its true identity.

Buellia sequax (Nylander) Zahlbruckner

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on Conejo volcanics, 34° 08.431'N 118° 45.500'W, elev. 301 m., *Knudsen 590 & Sagar* (UCR), on small stones, 34° 08.237'N 118° 44.674'W, elev. 371 m., *Knudsen 600.1 & Sagar* (UCR).

Buellia stellulata (Taylor) Mudd.

USA. CALIFORNIA. LOS ANGELES CO.: Off Kanaan Road in canyon, on unknown rock type, a hard greenish stone, HCl-, 34° 03.641'N 118° 48.186'W, elev. 399 m., *Knudsen 623.2 & Sagar* (UCR).

Caloplaca arenaria (Persoon) Müll. Arg.

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on sandstone, 34° 04.107'N 118° 50.009'W, elev. 661 m., *Knudsen 802 & Sagar* (UCR).

Caloplaca bolacina (Tuckerman) Herre

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, unnamed ridge above Cornell Corners, on lichens and rock, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 606.1 & Sagar* (UCR); Off Kanaan Road in canyon, on unknown rock type, 34° 03.641'N 118° 48.186'W, elev. 399 m., *Knudsen 628 & Sagar* (UCR).

Caloplaca citrina (Hoffmann) Th. Fries

USA. CALIFORNIA. LOS ANGELES CO.: Royal Oaks Park, on boulder of unknown rock type, 34° 05.840'N 118° 49.016'W, elev. 507 m., *Knudsen 677 & Sagar* (UCR).

Caloplaca holocarpa (Hoffmann) Wade

USA. CALIFORNIA. LOS ANGELES CO.: Royal Oaks Park, on oak bark, 34° 05.908'N 118° 49.007'W, elev. 553 m., *Knudsen 997* (UCR).

Candelariella aurella (Hoffmann) Zahlbruckner

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on sandstone, 34° 04.867'N 118° 44.868'W, elev. 593 m., *Knudsen 1575* (UCR).

Catillaria franciscana (Tuckerman) Herre

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on lahar (volcanic ash rock) in Conejo breccia, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 606.2 & Sagar* (UCR); Calabasas Peak Motorway, on sandstone outcrops, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 704.2 & Sagar* (UCR).

Cladonia cervicornis (Acharius) Flotow subsp. ***cervicornis***

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on soil, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 811 & Sagar* (UCR).

Cladonia chlorophaea (Flörke ex Sommerfelt) Sprengel

USA. CALIFORNIA. LOS ANGELES CO.: Off Schueren Road, on soil over sandstone on north side of outcrop, 34° 04.722'N 118° 38.670'W, elev. 683 m., *Knudsen et al. 646.1* (UCR); Castro Ridge, on soil over sandstone, 34° 04.864'N 118° 45.159'W, elev. 665 m., *Knudsen 711 & Sagar* (UCR).

Cladonia hammeri Ahti

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on soil of north side of rock outcrop, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 607.2 & Sagar* (UCR).

Cladonia pulvinella Hammer

USA. CALIFORNIA. LOS ANGELES CO.: Topanga State Park, Musch Ranch Trail, On soil bank in shady ravine with mixed chaparral with manzanita, 34° 05.858'N 118° 35.031'W, elev. 338 m., *Knudsen 351* (UCR). – The small numbers of published reports (Hammer 1991, Ahti & Hammer 2002) may not be evidence of true rarity. This specimen was found mixed with *Cladonia chlorophaea* and field-tested with K. It could be easily overlooked.

Cladonia pyxidata (L.) Hoffmann

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on soil on shaded north slope among mixed chaparral of *Adenostoma fasciculatum* and manzanita, 34° 04.864'N 118° 45.159'W, elev. 665 m., *Knudsen 713 & Sagar* (UCR), on soil in shady drainage with black sage, 34° 04.861'N 118° 45.054'W, elev. 643 m., *Knudsen 71.9 & Sagar* (UCR).

Cladonia subulata (L.) F.H. Wiggers

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on soil, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 809 & Sagar* (UCR).

Diploschistes diacapsis (Acharius) Lumbsch

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on soil over sandstone, 34° 04.709'N 118° 38.684'W, elev. 687 m., *Knudsen et al. 650* (UCR).

Diploschistes muscorum (Scopoli) R. Santesson

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on *Cladonia* (juvenile), 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 607.1 & Sagar* (UCR).

Endocarpon pseudosubnitescens Breuss

USA. CALIFORNIA. LOS ANGELES CO.: Off Kanaan Road in canyon, on unknown rock type, 34° 03.697'N 118° 48.244'W, elev. 400 m., *Knudsen 617 & Sagar* (UCR). - Described from two collections in Baja California (Breuss 2002), this represents the first collection in the United States and was determined by Othmar Breuss.

Endocarpon pusillum Hedwig

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on soil, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 609 & Sagar* (UCR).

Lecania brunonis (Tuckerman) Herre

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on sandstone outcrops, 34° 04.127'N 118° 45.127'W, elev. 624 m., *Knudsen 1980.1 & Owe-Larsson* (UCR).

Lecanora campestris (Schaerer) Hue

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on dirt and spike moss, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 812 & Sagar* (UCR, hb. Lendemer).

Lecanora dispersa (Persoon) Sommerfelt

USA. CALIFORNIA. LOS ANGELES CO.: Latigo Canyon, on edges of shale on north slope in oak woodland, 34° 04.832'N 118° 47.795'W, elev. 571 m., *Knudsen 1583* (UCR, hb. Lendemer).

Lecidea mannii Tuckerman

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest On sandstone, 34° 04.873'N 118° 44.905'W, elev. 581 m., *Knudsen 1573* (UCR, hb. Lendemer).

Lecidea plana (J. Lahm) Nylander

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on sandstone, 34° 04.107'N 118° 50.009'W, elev. 661 m., *Knudsen 803 & Sagar* (UCR) - Though not listed in the latest treatment (Hertel & Printzen, 2004) it does occur in southern California. See also *Knudsen 1991* (UCR, hb. Lendemer) from the San Jacinto Mountains, verified with TLC by James Lendemer.

Melanelia elegantula (Zahlbruckner) Esslinger

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on sandstone, 34° 04.693'N 118° 38.662'W, elev. 700 m., *Knudsen et al. 655.1* (UCR).

Mobergia angelica (Stizenberger) H. Mayrhofer & Sheard

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on sandstone on north side of outcrop, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 804 & Sagar* (UCR).

Mycobilimbia austrocalifornica (Zahlbruckner) Knudsen ***comb. nov.*** [3]

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on sandstone outcrops, 34° 04.127'N 118° 45.127'W, elev. 624 m., *Knudsen 1978 & Owe-Larsson* (UCR). - The lectotype (H-NYL!) and my collection differ from *Mycobilimbia berengeriana* (A. Massalongo) Hafellner & V. Wirth in having wider spores (6-8 microns) and occurring on sandstone as well as soil and probably having a different ecology. The name *Lecidea austrocalifornica* Zahlbruckner was a new name for *Lecidea subplebeia* Nylander *in* Hasse, a later homonym of *Lecidea subplebeia* Vainio (a Brazilian species). The correct spelling of the specific epithet is "subplebeia" not "subplebeja" (Esslinger 1997). It should be noted that not only is Lecidea subplebeia Vainio misspelled in the North American checklist but its exclusion may be incorrect though it could in the southern United States. Based on the holotype and modern collection, I recognize this species as a member of *Mycobilimbia* s. str. *Mycobilimbia austrocalifornica* appears at this time to be rare with collections only seen from the Santa Monica Mountains. Later Hasse collections named *Lecidea subplebeia* I have examined from the Santa Monica Mountains (H!, NY!) are *Lecidella ansema* (Nylander) Knoph & Hertel.

Ochrolechia subpallens Verseghy

USA. CALIFORNIA. LOS ANGELES CO.: Royal Oaks Park, on old bark of *Quercus agrifolia*, 34° 05.840'N 118° 49.016'W, elev. 507 m., *Knudsen 679 & Sagar* (UCR).

Peltula bolanderi (Tuckerman) Wetmore

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on lahar in Coneja breccia, 34° 08.233'N 118° 44.662'W, elev. 344 m., *Knudsen 604 & Sagar* (UCR).

Peltula obscurans var. ***hassei*** (Zahlbruckner) Wetmore

USA. CALIFORNIA. LOS ANGELES CO.: Hornwort Gulch, off of Cold Canyon Road, on pillow basalt in exposed outcrop above small riparian area along intermittent creek, 34° 05.020'N 118° 40.920'W, elev. 207 m., *Knudsen et al. 671* (UCR); Calabasas Peak Motorway, on sandstone, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 705 & Sagar* (UCR).

Peltula patellata (Bagl.) Swinscow & Krog

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on soil around volcanic outcrops, 34° 08.431'N 118° 45.500'W, elev. 301 m., *Knudsen 588 & Sagar* (UCR).

Physcia tribacia (Acharius) Nylander

USA. CALIFORNIA. LOS ANGELES CO.: Off Schueren Road, on sandstone, 34° 04.709'N 118° 38.684'W, elev. 683 m., *Knudsen et al. 647* (UCR).

Physconia isidiigera (Zahlbruckner *in* Herre) Esslinger

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on *Melanelia elegantula* on north side of sandstone ridge, 34° 04.693'N 118° 38.662'W, elev. 700 m., *Knudsen et al. 655.2* (UCR).

Placidium squmulosum (Acharius) Breuss

USA. CALIFORNIA. LOS ANGELES CO.: On soil over Conejo volcanics of large rock outcrop, 33° 06.295'N 118° 48.694'W, elev. 525 m., *Knudsen 998* (UCR); Hornwort Gulch, on pillow basalt outcrops, 34° 05.012'N 118° 40.925'W, elev. 212 m., *Knudsen 1973.1 & Owe-Larsson* (UCR).

Placynthiella icmalea (Acharius) Coppins & P. James

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on soil in bowl of alluvial soil with liverworts among sandstone outcrops, 34° 04.873'N 118° 44.905'W, elev. 581 m., *Knudsen 1568* (UCR); Castro Crest, on crumbling sandstone in full sun with *Trapelia involuta*, 34° 04.799'N 118° 44.978'W, elev. 633 m., *Knudsen 1577.1* (hb. Lendemer, UCR).

Placynthiella knudsenii Lendemer

USA. CALIFORNIA. VENTURA CO.: On soil, thin-soiled Cenozoic surfaces below Sandstone Peak strewn with rubble, 34° 07.266'N 118° 56.049'W, elev. 890 m., *Knudsen 1964 & Owe-Larsson* (UCR, hb. Lendemer). – This species is rare. This is the fourth location in Southern California found with a disjunctive location in Ozarks (Lendemer 2004; Ryan et al 2004). The collection is a form where the areoles are in the early stages of breaking down to form isidioid structures and was determined by James Lendemer. The apothecia of this collection are immature (without fully developed asci) but the K+ reddish pigment mentioned in the description is present.

Placynthiella uliginosa (Schrader) Coppins & P. James

USA. CALIFORNIA. LOS ANGELES CO.: Off Schueren Road, on soil over sandstone mixed with *Cladonia chlorophaea* on soil stabilized by *Selaginella bigelovii*, 34° 04.722'N 118° 38.670'W, elev. 683 m., *Knudsen et al. 646.2* (hb. Lendemer).

Polysporina lapponica (Acharius *ex* Schaerer) Degelius

USA. CALIFORNIA. LOS ANEGLES CO.: Topanga Canyon, Ed Edelman Park, on sandstone and *Acarospora obpallens*, 34° 07.323'N 118° 35.148'W, elev. 375 m., *Knudsen 1552 & Sagar* (H, UCR, hb. Bungartz) - The synonym, *Sarcogyne bicolor* H. Magnusson, has its type locality in the Santa Monica Mountains (Knudsen 2005).

Polysporina simplex (Davies) Vězda

USA. CALIFORNIA. LOS ANGELES CO.: Calabasas Peak Motorway, on sandstone and eroded sandstone soil, 34° 06.390'N 118° 39.089'W, elev. 474 m., *Knudsen 702 & Sagar* (UCR).

Psora decipiens (Hedwig) Hoffmann

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on sandstone-derived hardened soil, 34° 04.703'N 118° 38.689'W, elev. 682 m., *Knudsen et al. 663.2* (UCR).

Psora pacifica Timdal

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on west-facing slope around volcanic outcrops in openings of coastal sage scrub and invasive weeds, growing on soil over rock with spike moss, 34° 08.431'N 118° 45.500'W, elev. 301 m., *Knudsen 587 & Sagar* (UCR).

Psora russellii (Tuckerman) A. Schneider

USA. CALIFORNIA. LOS ANGELES CO.: Hornwort Gulch, off of Cold Canyon Road, on pillow basalt on exposed outcrop above small riparian area along intermittent creek, 34° 05.105'N 118° 41.044'W, elev. 207 m., *Knudsen et al. 669* (UCR).

Rinodina bolanderi H. Magnusson

USA. CALIFORNIA. LOS ANGELES CO.: Latigo Canyon, on edges of shale, 34° 04.832'N 118° 47.795'W, elev. 571 m., *Knudsen 1581* (UCR).

Rinodina californiensis Sheard

USA. CALIFORNIA. LOS ANGELES CO.: Royal Oaks, on old bark of *Quercus agrifolia*, 34° 05.908'N 118° 49.007'W, elev. 553 m., *Knudsen 997.2* (UCR).

Rinodina confragosa (Acharius) Körber

USA. CALIFORNIA. LOS ANGELES CO.: On Conejo volcanics of large rock outcrop, 33° 06.295'N 118° 48.694'W, elev. 525 m., *Knudsen 999* (UCR).

Rinodina intermedia Bagl.

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, ridge above Cornell Corners, on *Selaginella bigelovii* and soil, 34° 08.406'N 118° 45.312'W, elev. 375 m., *Knudsen 599 & Sagar* (UCR). - At this location I observed *Texosporium sancti-jacobi* (Tuckerman) Nàdvornikius growing as a parasite on thallus of *R. intermedia.* (UCR).

Sarcogyne arenosa (Herre) Knudsen and Standley, *comb. nov*.[4]

USA. CALIFORNIA. LOS ANGELES CO.: Topanga Canyon, Ed Edelman Park, on sandstone, 34° 07. 294'N 118° 35.169'W, elev. 375 m., *Knudsen 1564 & Sagar* (UCR). – *Sarcogyne arenosa* is closely related to *S. regularis* differing in having a thallus from which the apothecia erupt and ascospores ca. 3.5-5.0 x 1.3-1.5µm. This is the first reported collection of the species since Herre collected the holotype in the Santa Cruz Mountains of southern California in 1904 (Knudsen 2004b) A full treatment of the species will appear in Vol. 3 of the Sonoran Lichen Flora (Knudsen & Standley in prep.)

Sarcogyne similis H. Magnusson

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on sandstone, 34° 04.840'N 118° 45.136'W, elev. 665 m., *Knudsen 978* (UCR); Zuma Ridge, on sandstone, 34° 04.107'N 118° 50.009'W, elev. 661 m., *Knudsen 799 & Sagar* (UCR); Topanga Canyon, Ed Edelman Park, on sandstone, 34° 07. 294'N 118° 35.169'W, elev. 375 m., *Knudsen 1564 & Sagar* (UCR), *Knudsen 1567 & Sagar* (UCR).

Texosporium sancti-jacobi (Tuckerman) Nàdvornikius

USA. CALIFORNIA. LOS ANGELES CO.: Agoura, un-named ridge above Cornell Corners, on *Selaginella bigelovii,* soil, and *Rinodina intermedia*, on ridge top with thin soil and outcrops of volcanic rock, 34° 08.406'N 118° 45.312'W, elev. 375 m., *Knudsen 598 & Sagar* (ASU) – This is the first of four further locations where populations were found along ridge: (2) 34.08.237'N 118.94.674'W, 371 m.; (3)34.08.231'N 118.44.649'W, 370 m.; (4) 34.08.229N 118.44.644'W, 368 m. Other populations should be expected scattered through the area on the ridge west of water tank (Knudsen 2003).

Thelomma santessonii Tibell

USA. CALIFORNIA. LOS ANGELES CO.: Off Schueren Road, on sandstone, 34° 04.709'N 118° 38.684'W, elev. 683 m., *Knudsen et al. 649* (UCR).

Trapelia involuta (Taylor) Hertel

USA. CALIFORNIA. LOS ANGELES CO.: Hepatic Gulch, near Schueren Road, on sandstone, 34° 04.722'N 118° 38.670'W, elev. 687 m., *Knudsen et al. 645* (UCR); Zuma Ridge, on sandstone, 34° 04.107'N 118° 50.009'W, elev. 661 m., *Knudsen 798 & Sagar* (UCR); Castro Crest, on crumbling sandstone, 34° 04.799'N 118° 44.978'W, elev. 633 m., *Knudsen 1577.2* (UCR, hb. Lendemer).

Trapeliopsis flexuosa (Fries) Coppins & P. James

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on dead dry wood on soil on north side of sandstone outcrop, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 808 & Sagar* (UCR).

Trapeliopsis glaucopholis (Nylander *ex* Hasse) Printzen & McCune

USA. CALIFORNIA. LOS ANGELES CO.: Zuma Ridge, on soil on north side of sandstone outcrop, 34° 05.000'N 118° 49.964'W, elev. 613 m., *Knudsen 807 & Sagar* (UCR).

Xanthoparmelia cumberlandia (Gyelnik) Hale

USA. CALIFORNIA. LOS ANGELES CO.: Castro Crest, on soil in full sun at base of sandstone outcrops, 34° 04.867'N 118° 44.868'W, elev. 593 m., *Knudsen 1574* (UCR, hb. Lendemer) – Coastal populations often occur on soil and may represent a different species (Nash and Elix, 2004).

Xanthoparmelia neotaractica Hale

USA. CALIFORNIA. LOS ANGELES CO.: Hornwort Gulch, on pillow basalt outcrops among chaparral, wet and shaded, 34° 05.012'N 118° 40.925'W, elev. 212 m., *Knudsen 1972* (UCR).

CONCLUSION

I spent most of my field trips visiting sandstone outcrops and searching for terricolous lichen communities. Sandstone outcrops are only rich in lichen flora generally at the top of ridges. This may be because catastrophic fires have destroyed much of the lichen flora on smaller outcrops in dense chaparral areas. Terricolous communities were common in Hasse's time (Hasse 1913). I have only found two good sites so far: the un-named ridge top in Agoura above Cornell Corners and the Cenozoic surfaces near Sandstone Peak. More taxa from the latter site will be reported in Part Two of this study. The reduction of this microhabitat may have several causes: development in lower areas, invasive weeds, long periods of grazing, and possible type conversions to coastal sage scrub. It is an ecological and conservation problem worth further study. The possible reduction of the lichen flora on sandstone outcrops and rarity of thin-soiled habitats meant I spent much more time exploring some days then collecting.

In this list are the first modern reports of *Acarospra arenosa* Herre, *Aspicilia glaucopsina* Nylander *ex* Hasse, and *Lecidea subplebeia* Nylander *in* Hasse, all three with type localities in California. Access to new collections has allowed taxonomic re-assessment.

Two species are given new combinations: *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen and *Sarcogyne arenosa* (Herre) Knudsen & Standley.

New records for the Santa Monica Mountains are the currently rare species *Cladonia pulvinella* Hammer and *Placynthiella knudsenii* Lendemer. That these are new to Santa Monica Mountains is based on the literature of these recently described species (Hammer 1991; Ahti & Hammer, 2002; Lendemer 2004). A number of other species are probably new reports for the Santa Monica Mountains: *Cladonia cervicornis* (Acharius) Flotow subsp. *cervicornis, Lecanora dispersa* (Persoon) Sommerfelt, *Placynthiella icmalea* (Acharius) Coppins & P. James, *Xanthoparmelia neotaractica* Hale, among up to a dozen others. They are not reported here as new because at this time there is no comprehensive checklist of the lichen flora of Santa Monica Mountains. To make one is a massive project and involves the serious study of all specimens from Santa Monica Mountains at FH, H, MIN, NY, UCB and US and their annotation to current nomenclature as

well as gathering numerous scattered reports of individual collections from the literature. That is beyond scope of this paper.

Reported as both new to the Santa Monica Mountains as well to California and North America is the species is *Endocarpon pseudosubnitescens* Breuss. This represents only the third verified collection of this recently described species (Breuss 2002). Its type locality and other collection are in Mexico in Baja California.

Possibly un-described species of *Aspicilia* and *Verrucaria* have been discovered, are currently being analyzed, and were not included in this report.

I report here for the first time a valid collection of *Acarospora smaragdula* (Wahlenberg) A. Massalongo var. *smaragdula* in the Santa Monica Mountains. Most reports of *A. smaragdula* in United States are based on Weber's metaphysical concept of the species (Knudsen 2004a). I have actually at this time only seen valid specimens from Maine, New York, and Latigo Canyon on shale in the Santa Monica Mountains. The varietal status refers to differences mainly between numerous punctiform apothecia (var. *smaragdula*) and having usually dilated apothecia (var. *lesdainii*). Both may contain norstictic acid. The two varieties are distinguishable in the Santa Monica Mountains and occur within several kilometers of each other on different substrates. In Europe they intergrade.

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ENDNOTES

1. *Acarospora obpallens* (Nylander *in* Hasse) Zahlbruckner

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2. *Acarospora smaragdula* (Wahlenberg) A. Massalongo

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3. *Mycobilimbia austrocalifornica* (Zahlbruckner) Knudsen, *comb. nov.*

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