Notes on three new species described from California

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Abstract: Three new species recently described from California are briefly discussed: *Acarospora bernardinensis, A. erratica*, and *Ramalina sarahae*.

***Acarospora bernardinensis* K. Knudsen, J.N. Adams, Kocourk. & Y. Wang**

This is a calciphyte in the *Sarcogyne canadensis-wheeleri* clade, which is sister to the European *Acarospora glaucocarpa* group (Knudsen et al. 2020). This is the only member of this clade so far reported from California. The species is currently considered endemic to the San Bernardino Mountains where it is common in the Mojave Desert interface on dolomite or occasionally on granite where the two substrates are mixed. It was the basis for the California report of *Acarospora glaucocarpa* in the Sonoran lichen flora (Knudsen 2007). It has verruciform areoles or elevated apothecia that can be epruinose or densely pruinose, the margin eventually formed by the expanded parathecium, a character common in this clade and in the European *Acarospora glaucocarpa* group. Also common in these clades is the dark blue (amyloid) hymenial gel in Lugol's (IKI). Euamyloid hymenial gel is always deep blue even if Lugol's is old (Knudsen & Kocourková 2019). A majority of Acarosporaceae have hemiamyloid hymenial gel. For pictures of this calciphyte see the paper in *The Bryologist* available through many university libraries if you are not a subscriber, or it can be requested from the authors (Knudsen et al. 2020).

***Acarospora erratica* K. Knudsen & Kocourk. (Figure 1)**

This is a calciphyte that is usually found on small pebbles in Idaho, Montana, and Utah. It is currently only known in California from the White Mountains in Inyo National Forest on dolomite rubble in the Bristlecone pine forests (Knudsen & Kocourková 2018). It is usually verruciform with a single apothecium, 0.3–0.4 mm tall, and 0.3–0.5 mm wide. It is distinguished by its broad ellipsoid to globose ascospores and usually stout paraphyses (2–3 µm thick at midlevel). It has hemiamyloid hymenial gel in Lugol's (red or blue-to-red in thin sections squashed). For protocol see Knudsen & Kocourková (2018). The stain of hymenial gel in Acarosporaceae is a species-level character but if Lugol's is old or too concentrated hemiamyloid gel can appear blue and not fade (Knudsen & Kocourková 2018). The use of hymenial gel for identification was not used in recent treatments of Acarosporaceae because Magnusson's records of hymenial gel are often not reproducible (Magnusson 1929). There was no protocol for reproducible results and reaction of hymenial gel to Lugol's was not utilized as a diagnostic character in recent treatments (Clauzade et al. 1981; Fletcher et al. 2009; Knudsen 2007; Westberg et al. 2011). The margin around apothecia is formed from the thallus and parathecium is narrow and unexpanded. Occasional specimens are pruinose.

Some previous specimens from White Mountains were identified as *Acarospora obnubila* H. Magn. (Knudsen 2007). *Acarospora elevata* H. Magn. and *A.*

Figure 1. *Acarospora erratica* (holotype, Knudsen & Kocourková 2018). Scale = 1.0 mm.

obnubila have euamyloid hymenial gel (the revision of these taxa is in preparation). The article describing the species with more pictures is available for free download at the sites of Opuscula Philolichenum, Recent Literature on Lichens, and ResearchGate (Knudsen & Kocourková 2018).

***Ramalina sarahae* K. Knudsen, Lendemer & Kocourk.**

This is a species possibly endemic to the Channel Islands. It is currently known from specimens from San Miguel Island, its type locality, and from San Nicolas Island. It usually grows on *Leptosyne gigantea.* Its distribution on other islands, the central coast of California, or in Baja Mexico needs further study. It could be confused with *R. lacera* (With.) J.R. Laundon that also has a cortex without chondroid strands (Gumboski et al. 2014; Kashiwadani & Nash 2004). *Ramalina sarahae* differs in having only linear pseudocyphellae and no soralia. *Ramalina sarahae* has a caespitose growth form with thinner branches 1.5–3.0 mm wide vs. the branches of *R. lacera* that are strap-like and up to 15 mm. For pictures see the paper in The Bryologist, available through many university libraries if you are not a subscriber, or it can be requested from the authors (Knudsen et al. 2018).

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