

## President's Message: Status on Trees and Shrubs of Kern County, California.

by Richard Spjut

**A**FTER JOINING CNPS IN 2009, I VOLUNTEERED to teach a short course on the trees and shrubs of Kern County during the 2011 fall session at the Levan Institute, the subject chosen in anticipation of not seeing much in the way of annual flowers during the month of October. At the time I felt it would not be difficult to put together an identification guide, which seemed essential, since the **Ernest Twisselmann** 1967 flora with **Maynard Moe's** 1995 key was out-of-print. Although I limited my field trips to woody plants along Highways 58, 14,

...I soon realized that preparing an identification guide was not going to be an easy task despite all the previously published floras on Kern County plants...

published floras on Kern County plants. So what was the problem? I will present two examples:

1. Kern *Ephedra* plants do not meet the technical descriptions given for the species in floras, and
2. It is difficult to decide the correct scientific name for a common species of buckbrush (*Ceanothus*).

### *Ephedra* —

Twisselmann recognized *Ephedra* in Kern County as having three species: *E. californica* (whorled leaves, green stems, 1-seeded cones), *E. nevadensis* (opposite leaves, gray stems, 2-seeded cones), and *E. viridis* (opposite leaves, green stems, 2-seeded cones). Here I will focus on green *ephedra* (*E. viridis*). **Stephanie M. Ickert-Bond** in the 2nd edition of the **Jepson Manual** described the seed cones as developing on stalks not more than 4 mm long — shorter than that given for the seed, 5-8 mm. An image shown here from a plant near Frazier Park (Fig.1) has seed stalks twice that length. Another image of a plant near the south end of Lake Isabella (Fig. 2) has green leaves, but **Dennis Stevenson** - in **Flora of North America (1993)** - described the leaves of green *Ephedra* as "non-photosynthetic." Moreover, no U.S. species are reported to have green leaves.

In a CNPS chapter field trip to Short Canyon this year, we briefly stopped below Walker Pass. There I recall

**Paul Gipe** looking for leaves on an *Ephedra* with cones, but none were evident. I had encountered the same result in previous spring trips at this location, while I recognized the plants as green *ephedra* by their parallel green-colored stems, in contrast to Nevada *ephedra* which has wide spreading, inter-twining, gray stems. However, this past July I visited The Nature Conservancy

easements north of Caliente with **Zachary Principe**, the Stewardship Ecologist, who showed me a green *ephedra* that had new leaves, no doubt the result of a recent rain. Soon after, I drove to Walker Pass and found the *Ephedra* there with new leaves. Thus, green *ephedra* plants at Lake Isabella and Frazier Park, for example, develop leaves and cones in the spring after winter rains, whereas at Walker Pass and near Caliente cones only appear in the spring and leaves after a summer rain. The type specimen from the Coso Mts. in Inyo County (US44885, image no. 12125) lacks leaves and appears to have recently shed pollen when collected on June 12, 1891. Therefore, the Lake Isabella and Frazier Park *ephedras* represent, in my opinion, distinct species or varieties.

### *Ceanothus* —

Our most common buckbrush is known by the scientific name, *C. cuneatus*, attributed either to **William Jackson Hooker**, who described the species in 1831 (**Flora boreali-americana, vol. 3**) in the coffeeberry genus (*Rhamnus*), or to **Thomas Nuttall**, who provided a description of *C. cuneatus* to **John Torrey** and **Asa Gray**, published in 1838 (**A Flora of North America**).



Photo by Richard Spjut.

Fig. 1 - *Ephedra viridis* showing two seeds subtended by two pairs of scales (= seed cone) at the end of a stalk-like branch ~10 mm long with four pairs of leaves. Kern Co.: slopes bordering Cuddy Valley, southeastern slopes of Tecuya Mountain, 26 June 2012.



Photo by Richard Spjut.

Fig. 2 - *Ephedra viridis* with green leaves. Rocky bench above Kern River near southern shore of Lake Isabella, 9 May 2014. Note short seed stalks and similar lower leaf parts compared to those in the preceding photo.

## Message (Continued)

David Fross and Dieter Wilken — in their book, “*Ceanothus*”, (Timber Press, 2006) — concluded that only Nuttall should be credited for the name, because Hooker’s description was based on a plant collected by David Douglas that — in their judgment — had to be a different species from the one studied by Nuttall. But I

*Ceanothus pauciflorus*  
Similar to lectotype



*Ceanothus vestitus*  
isotype



Note Size Difference in Stipules

Fig. 3 - Comparison of stipules from specimens of two species of *Ceanothus*; *C. pauciflorus* from the suspected type locality, collected by D. O. Burge near Guanajuato, Mexico (Syst. Bot. 38:413, image 2013) and *C. vestitus* isotype, collected by E. Green 25 June 1989, deposited in the US National Herbarium, barcode 00094469.

wondered about this, so I looked for the original (type) specimen used by Hooker and found what I presume to be the one specimen used by him (holotype), in

the **Kew Herbarium** (K000729281 with *T. Coulter 110*). It matches Hooker’s description, notably the flowers being in bud and a rusty (“*ferrugineous*”) color that were questioned by Torrey and Gray (1838) and by Fross and Wilken (2006). But in my view, it is the *Ceanothus cuneatus* originally described under the name *Rhamnus cuneata*; the citation, therefore, should be *Ceanothus cuneatus* (Hooker) Nuttall — a minor technicality to those concerned more about identifying characteristics of the species — which leads me to the next problem: *How to distinguish C. cuneatus from other similar species*



Fig. 4 - Comparison of leaves and fruit of *Ceanothus cuneatus* on Breckenridge Mt. and *C. vestitus* along the Pacific Crest Trail northeast of Tehachapi.

Photos: Richard Spiitt

that we have in Kern County?

These include *Ceanothus vestitus*, described by Edward Greene in 1890 from a plant specimen collected along the “*borders of the pine forest on the mountains near Tehachapi*” and *C. pauciflorus* described by Alphonse de Candolle in 1825 based on a painting of the plant made around 1790, near Guanajuato, Mexico (Dylan O. Burge & Katherine Zhukovsky, **Systematic Botany**). Burge and Zhukovsky (2013), concluded - after a quantitative analysis of leaf character features of numerous specimens of *C. pauciflorus*, *C. perplexans*, and *C. vestitus* collected from Mexico to California- that our *C. vestitus* is the same as *C. pauciflorus*. The earliest name, therefore, is the one that must be adopted.

However, a type specimen (isotype) of *C. vestitus* at the **Smithsonian National Museum of Natural History** (US Catalog No.: 17101) is not what I have come to learn is *C. vestitus* (Fig. 3, 4). Indeed, Howard E. McMin in his **Illustrated Manual of California Shrubs** (1939) stated that “*the specimen...is a good match for C. perplexans*” which he did not recognize as occurring in Kern County. Nor have I. Contrary to McMin, I see the *C. vestitus* type as equivalent to a small-leaved variant of *C. crassifolius*, possibly *C. crassifolius* var. *planus*. The **Consortium of California Herbaria** lists one or two collections of this variety by H. L. Bauer, April 1930, from wooded hillside in “*the Tehachapis near Keene*.” As for *C. pauciflorus* in Kern County, I see a huge difference in the size of the stipules between the Mexican and our plants, while I distinguish *C. cuneatus* by the leaf undersurface having prominent reticulate veins, in contrast to white flecks aligned along lateral and mid veins in *C. vestitus*.

These examples demonstrate that, while my approach does not necessarily adopt the most recent taxonomy, it does take more time to accurately assess species characteristics.

Additionally, I have contacted the editor of the **Botanical Research Institute of Texas**, who has expressed interest in publishing the **Trees and Shrubs of Kern County, California**.

Acknowledgments: The following institutions’ online databases were consulted: Calflora Consortium of California Herbaria, Consortium of Pacific Northwest Herbaria, Harvard University Herbaria, New York Botanical Gardens, Kew Royal Botanic Gardens (K), Smithsonian Institution, National Museum of Natural History (US), the Museum of Natural History, (London), the Missouri Botanical Gardens (Tropicos), Southwest Environmental Information Network (SEINet) 🌱