

**TYPIFICATIONS IN *PHACELIA* SECT. *BARETIANA*  
(HYDROPHYLLACEAE)**

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**ABSTRACT**

*Phacelia* sect. *Baretiana* (*Phacelia* subg. *Phacelia*) contains three taxa: *P. bolanderi*, *P. hydrophylloides*, and *P. procera*. Typifications and an updated key for these taxa are provided here. Lectotypes are designated for *P. hydrophylloides* and *P. procera*.

*Phacelia* sect. *Baretiana* Walden & R. Patt. (*Phacelia* subg. *Phacelia*) is a monophyletic clade consisting of *P. bolanderi* A. Gray, *P. hydrophylloides* A. Gray, and *P. procera* Torr. ex A. Gray (Walden 2010; Walden & Patterson 2012; Walden et al. 2014). Needed lectotypifications and pertinent discussion are given here, and an updated key to distinguish the species is also presented.

**KEY TO SPECIES OF *PHACELIA* SECT. *BARETIANA***  
Modified from Walden et al. (2013)

1. Plants 10–30 cm tall at maturity; inflorescence appearing capitate, generally congested or dense; stamens glabrous ..... ***Phacelia hydrophylloides***
1. Plants generally > 30 cm tall at maturity (occasionally less in *P. bolanderi*, especially in water stressed plants); inflorescence appearing paniculate, generally open (at least proximally); stamens hairy.
  2. Plants decumbent to ascending to substrictly erect; corolla pale blue to purple, 10–12 mm, limb 10–20 mm diam., lobe margins ± flat at anthesis, apices appearing obtuse; seeds 30–60, 1–1.5 mm ..... ***Phacelia bolanderi***
  2. Plants erect; corolla cream to green or brown-white, 3–7 mm, limb 7–9 mm diam., lobe margins revolute at anthesis, apices appearing acute; seeds 12–16, 2 mm ..... ***Phacelia procera***

**NOMENCLATURE**

***Phacelia*** Juss. sect. ***Baretiana*** Walden & R. Patt., Madroño 59: 215. 2012. **TYPE:** *Phacelia hydrophylloides* Torr. ex A. Gray, Proc. Amer. Acad. Arts 7: 400. 1868.

***Phacelia hydrophylloides*** Torr. ex A. Gray, Proc. Amer. Acad. Arts 7: 400. 1868. **LECTOTYPE:** (designated here): **California**. [Mariposa Co: Lake Tenaya, Yosemite Valley, 25 Jun 1863], 1860–62, *W.H. Brewer 1688* (GH00395036 digital image! [mounted with GH00395937 and GH00395038]; islectotypes: NY00083918 digital image! [mounted with NY00083916 and NY00083917], US322323-01160495 digital image!, YU002018 digital image!, K000662541! [mounted with *Bolander 2092* (likely *Brewer 2062*) and *Bolander 4893*]).

**SYNTYPES:** **California**. [**Alpine Co:** Near camp at Ebbett's Pass, alt. 8500–9000 ft, 7 Aug] 1863, *W.H. Brewer 2062* (GH00395037 digital image! [mounted with GH00395936

and GH00395038]; isosyntypes: NY00083917 digital image! [mounted with NY00083918 and NY00083916], YU002021 digital image!, US322325-01160494 digital image!, UC24381!, K000662541! [mounted with *Bolander* (likely *Brewer*) 1688 and *Bolander* 4893]). Mariposa Co.: Yosemite Trail, 5000–8000 ft, 1866, *H.N. Bolander* 4893 (GH00395038 digital image! [mounted with GH00395936 and GH00395037]); isosyntypes: NY00083916 [mounted with NY00083918 and NY00083917], US322306-01160493 digital image!, BM000502675 digital image!, YU002020 digital image! [Yosemite Valley], NY00083915 digital image! [Yosemite Valley], UC24380!, K000662541! [mounted with *Bolander* (likely *Brewer*) 1688 and *Bolander* 2092 (likely *Brewer* 2062)]).

In the protologue, Gray (1868) cited two collections made by Brewer (Ebbett's Pass and near Lake Tenaya) and one collection made by Bolander (Yosemite); specimens of those collections in GH are syntypes; duplicates of those collections are isosyntypes. Whether or not Gray saw specimens in Torrey's personal herbarium, which was sold to Columbia College and is now incorporated in NY (Britton 1887; Reveal 2014), is not known. Some specimens stamped Torrey Herbarium in NY are doubtless duplicates of specimens cited by Gray. Specimens at Kew are given with Bolander as the collector and the collection number 2092 [not 2062], but these were received from Gray and are included here as duplicates.

Jepson (1943) considered Ebbett's Pass to be the type locality for the name *Phacelia hydrophyloides* (UC24381). In 1998, D. Atwood annotated *Brewer 1688* (NY00083918) as the holotype of *Phacelia hydrophyloides*. Neither Jepson nor Atwood effected lectotypification.

***Phacelia bolanderi*** A. Gray, Proc. Amer. Acad. Arts 10: 322. 1875 [as *Bolanderi*]. **TYPE:** **California.** Mendocino Co.: Cottanaby Creek, 20 mi N of Noyo, Jun 1867, *H.N. Bolander* 6575 (holotype: GH0093199 digital image! [type in two pieces, left side of sheet, mounted with non-type specimen *V. Rattan* 60]; isotypes: US322310-00110479 digital image!, NY00083962 digital image!, UC24315!, K001096014!).

Some details were not included in the protologue (e.g., collector, collection number, date) (Gray 1875). Gray (1876, p. 509; 1878, p. 165) later added the collector information [as "*Bolander.*"] Jepson (1943, p. 252) included the collection number. The type is annotated in Gray's hand as "*Phacelia Bolanderi* (*Eutoca*) n. sp."

The type is mounted with a non-type specimen at the right side of the sheet [California. Humboldt Co.: South of Trinity River, 1878, *V. Rattan* 60 (GH)]. The type consists of a large flowering plant (in two parts) to the left and in the middle of the sheet. The distal part of the inflorescence is the left side of the sheet, and the lower portion of the flowering stem is mounted in the middle of the sheet. *Rattan* 60 (without a separate accession number) is the fruiting plant to the right side of the sheet.

The date on the label of *Bolander* 6575 (GH) is given as 1867 June, the year and month being handwritten. The duplicate specimen at US has a typed label with the date 1866, with the year crossed out and '7' (as '1867') handwritten. The duplicate specimen at NY has a typed label, but the typed date of 1866 has no correction. The specimen at K has the year handwritten with a '7,' sent by Gray [1/75] and included as a duplicate here. Bolander was based in San Francisco in 1866 and traveled north to Mendocino earlier in the year, but he left for Yosemite Valley at the beginning of June for the duration of the summer (Bolander 1866). In 1867, Bolander traveled through Mendocino and Humboldt for June (Bolander 1867), and it was on this trip that the type specimen for *Phacelia bolanderi* was likely collected and sent to Gray.

**Phacelia procera** A. Gray, Proc. Amer. Acad. Arts 10: 323. 1875. **LECTOTYPE:** (designated here): **California.** [Nevada Co.]: Bear Valley, in fence corners of rich meadows, 4–7 ft. high, 4000 ft, Jul, *H.N. Bolander s.n.* (GH000395040 digital image! [mounted with GH000395039]; isosyntype: GH00093451 digital image!). The isosyntype is mounted with non-type specimen: **California.** Siskiyou Co.: South fork of Scott River, 7000 ft, Salmon trail, 24 Aug 1876, *E.L. Greene 1023* [GH no accession number, mounted with *Bolander et al.* GH00093451]).

**SYNTYPES: California.** Sierra Co.: Bear Valley, in corners of rich meadows, 4000 ft, Jul 1874, *J.G. Lemmon & c.* [5253] (GH000395039 digital image! [mounted with GH000395040]; PH00028288 digital image!, K! [no accession number]).

Gray (1875) referenced two collections (Bolander and Lemmon) and two counties (Nevada and Sierra) in the protologue, although both localities have the same place name of Bear Valley. The Bolander isosyntype (GH00093451) has a *Plantae Californiae* label with collectors of H.N. Bolander and A. Kellogg (spelled as Kellock) and is from Bear Valley along the border of Nevada and Placer counties, near Emigrant Gap. The Lemmon collection is from the Bear Valley of Sierra County, near Sardine Point.

In a later treatment, Gray (1878) added a non-type specimen (*Greene 1023*) and expanded the range; this specimen is mounted on the same sheet with the GH isosyntype (GH00093451). Some interpretation of the isosyntype sheet of *Bolander et al.* (GH00093451) is necessary, as it has two plants mounted and overlaid each other. I interpret the larger plant, consisting of a flowering stem bent in the middle, as the isosyntype specimen of *Bolander et al.* (GH00093451). This plant approximates the state of the *Bolander et al.* syntype (GH000395040) and the *Lemmon* syntype. The non-type specimen of *Greene 1023* is the smaller plant, a flowering stem in two fragments, with the pieces mounted on top of the *Bolander et al.* plant. The *Greene 1023* has a lower portion of the stem mounted on the left side of the sheet above the "*Plantae Californiae*" label, with a distal portion of the inflorescence in the middle of the sheet beneath the "*Flora of N. California*" label.

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