New Combinations in *Phemeranthus* Rafinesque (Portulacaceae)

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ABSTRACT. New combinations are made to transfer 13 species from *Talinum* Adanson to *Phemeranthus* Rafinesque, which will be recognized separately in the treatment of Portulacaceae being prepared for the *Flora of North America* (FNA). The new combinations are: *Phemeranthus aurantiacus* (Engelmann) Kiger, *P. brevicaulis* (S. Watson) Kiger, *P. calcaricus* (S. Ware) Kiger, *P. calycinus* (Engelmann) Kiger, *P. humilis* (Greene) Kiger, *P. longipes* (Wooton & Standley) Kiger, *P. marginatus* (Greene) Kiger, *P. mengesii* (W. Wolf) Kiger, *P. parviflorus* (Nuttall) Kiger, *P. rugospermus* (Holzinger) Kiger, *P. sediformis* (von Poellnitz) Kiger, *P. thomsonii* (N. D. Atwood & S. L. Welsh) Kiger, and *P. validulus* (Greene) Kiger.

Key words: North America, *Phemeranthus*, Portulacaceae, *Talinum*.

Rafinesque (1814: vol. 1, p. 86) described the segregate genus *Phemeranthus*, comprising only *P. teretifolius* (Pursh) Rafinesque from southeastern North America, transferred from *Talinum* Adanson. Since then, other authors have continued to recognize that species in *Talinum*, within section *Phemeranthus* (Rafinesque) DC., along with a number of similar ones described subsequently, also restricted to New World locales. However, a fairly strongly correlated set of differences in the leaf, pollen, fruit, and seed structures of these species compared with those of section *Talinum* (Carolin, 1987, 1993; Hershkovitz, 1993) supports their segregation at the generic level. *Phemeranthus* has leaf blades ca. 1–3 mm wide and terete or semi-terete, or (only in *P. aurantiacus*) 10–20 mm wide and narrowly linear; pollen polyrugate; capsules dehiscent at maturity with the valves falling away promptly, the epicarp and endocarp not appreciably differentiated and not separating from each other; and seeds smooth or distinctly ridged, not tuberculate overall, mostly with a covering pellicle (sometimes called an "investing aril"). *Talinum* has leaf blades greater than 1 cm wide and broadly planate; pollen polyforate; capsules tardily dehiscent with the valves or portions of them persistent, the epicarp and endocarp differentiated and often separating from each other; and seeds minutely tuberculate overall, not ridged, with a small, basal aril. Recent molecular data from nrDNA (ITS1, ITS2) and cpDNA (*ndh*F) sequences (Hershkovitz & Zimmer, 1997, 2000; Applequist & Wallace, 2001) are congruent with the morphological evidence and indicate that *Phemeranthus* is phylogenetically distinct from the otherwise mainly Old World *Talinum*, which retains ca. 15 species, only two of which, *T. paniculatum* (Jacquin) Gaertner and *T. triangulare* (Jacquin) Willdenow, are found in North America (and also in the Caribbean, Central and South America, and Africa).

Phemeranthus aurantiacus (Engelmann) Kiger, comb. nov. Basionym: *Talinum aurantiacum* Engelmann, Boston J. Nat. Hist. 6: 153. 1850. TYPE: U.S.A. Texas: 1847, *F. Lindheimer 579* (lectotype, selected here, GH [fruit and late flower, printed label date "1847–48," on sheet with *F. Lindheimer 235*]; possible isolectotypes or syntypes, GH [anthesis, no fruit, ex Boston Soc. Nat. Hist., ex J. A. Lowell Herb., printed label date "1847"], K, LE, US).

For typifying species described by Engelmann and by Gray based on Lindheimer's widely distributed Texas exsiccatae, the set of specimens at GH, on which their descriptions were based, is therefore the most important. The numbers on the labels of Lindheimer's specimens are actually distribution numbers, rather than individual collection numbers, and the specimens under a given number often are from different collections made at various times and places. This is clearly the case with *Lindheimer 579*, and thus neither of the GH specimens can be considered a holotype in the proper sense. Engelmann's original description of *Talinum aurantiacum* includes both flower and fruit characters, so of the two GH sheets, neither heretofore marked as a type, the one that exhibits both flower and fruit characters, and has been in the Gray Herbarium all along, is the obvious choice for lectotype. It agrees in all particulars with Engelmann's rather terse description.

Phemeranthus brevicaulis (S. Watson) Kiger, comb. nov. Basionym: *Talinum brevicaule* S. Watson, Proc. Amer. Acad. Arts 21: 446. 1886. TYPE: Mexico. Chihuahua: Santa Eulalia Mountains, 20 May 1885, *C. G. Pringle 26* (holotype, GH; isotype, US).

Phemeranthus calcaricus (S. Ware) Kiger, comb. nov. Basionym: *Talinum calcaricum* S. Ware, Rhodora 69: 466. 1967. TYPE: U.S.A. Tennessee: Davidson County, SW of Nashville on US Route 70S across road from Mountain View School, 21 Aug. 1966, *S. Ware 215* (holotype, US; isotypes, C, SMS not seen, UT not seen, VDB not seen).

Phemeranthus calycinus (Engelmann) Kiger, comb. nov. Basionym: *Talinum calycinum* Engelmann, in F. A. Wislizenus, Mem. Tour N. Mexico, 88. 1848. *Claytonia calycina* (Engelmann) Kuntze, Revis. Gen. Pl. 1: 57. 1891. TYPE: U.S.A. Kansas or Oklahoma: Cimmaron River, June 1846, *F. A. Wislizenus s.n.* (holotype, MO).

Phemeranthus humilis (Greene) Kiger, comb. nov. Basionym: *Talinum humile* Greene, Bot. Gaz. 6: 183. 1881. TYPE: U.S.A. New Mexico: Grant County, Pinos Altos Mountains, mesa at southern base of Twin Peak, 11 Aug. 1880, *E. L. Greene 217* (holotype, presumably NDG not seen; isotypes, GH, K).

Since the type collection was made by Greene himself, the holotype should be in his own herbarium (NDG), but I have not yet had an opportunity to look for it there.

Phemeranthus longipes (Wooton & Standley) Kiger, comb. nov. Basionym: *Talinum longipes* Wooton & Standley, Contr. U.S. Natl. Herb. 16: 120. 1913. TYPE: U.S.A. New Mexico: Dona Ana County, Tortugas Mountain, 27 Aug. 1894, *E. O. Wooton s.n.* (holotype, US).

Phemeranthus marginatus (Greene) Kiger, comb. nov. Basionym: *Talinum marginatum* Greene, Leafl. Bot. Observ. Crit. 2: 270. 1912. TYPE: Mexico. Nayarit: Sierra Madre near Santa Teresa, Tepic, 12 Aug. 1897, *J. N. Rose 2221* (holotype, US).

Phemeranthus mengesii (W. Wolf) Kiger, comb. nov. Basionym: *Talinum mengesii* W. Wolf, Amer. Midl. Naturalist 6: 153. 1920. TYPE: U.S.A. Alabama: Cullman County, Little River, n.d., *W. Wolf 1668* (holotype, SB transferred to AUA not seen).

Wolf's original description of *Talinum mengesii* matches unproblematically with plants from the southeastern U.S. that are consistently distinguishable from other species of the genus by the combination of sepals deciduous, petals more than 8 mm long, stamens 50 or more, style longer than the stamens, stigma subcapitate, and mature seeds lustrous and lacking a pellicle.

Phemeranthus parviflorus (Nuttall) Kiger, comb. nov. Basionym: *Talinum parviflorum* Nuttall, in J. Torrey & A. Gray, Fl. N. Amer. 1: 197. 1838. TYPE: U.S.A. Arkansas: n.d., *T. Nuttall s.n.* (possible isotypes or syntypes, K [in type folder, on sheet with *Drummond 34*], K [in general herbarium]).

One of the Nuttall specimens at K is filed in a type folder, but with no indication of status, and bears a Hooker Herbarium label identifying it as *Talinum teretifolium*, an original attribution (to a strictly southeastern species) typical for early American collections from the Midwest and Trans-Mississippi West that actually represent either Nuttall's *T. parviflorum* or Holzinger's *T. rugospermum*. The other sheet at K, in the general collection, also is from Hooker's herbarium and bears a label like that of the first specimen, indicating only "Nuttall" and "Arkansas" (Territory), without number or date. I have found no other specimens that could be types, but since type material of Nuttall's species is scattered in many herbaria, and my search has not been exhaustive, I prefer to delay lectotypification until certain that no holotype exists and that there is no better choice for lectotype. Meanwhile, the specimens at K agree fully with the original description, and there is no doubt about the biological identity of the species or the correct application of Nuttall's name.

Phemeranthus rugospermus (Holzinger) Kiger, comb. nov. Basionym: *Talinum rugospermum* Holzinger, Asa Gray Bull. 7: 117. 1899. TYPE: U.S.A. Wisconsin: Trempeleau Prairie, July 1888, *J. M. Holzinger s.n.* (holotype, WINO transferred to MIN not seen).

Although I have not seen the holotype, I have seen topotypes at GH, K, and RM collected by Holzinger himself in August 1899 and in July 1900, identified by him as *Talinum rugospermum*. As well, I have visited the type location myself and found plants that match Holzinger's description in all details.

Phemeranthus sediformis (von Poellnitz) Kiger, comb. nov. Basionym: *Talinum sediforme* von Poellnitz, Ber. Deutsch. Bot. Ges. 51: 113. 1933. TYPE: Canada. British Columbia: Seme-ke-mele River, 49°N, 15 July 1851, *J. Jeffrey 177* (holotype, B? not located; isotype, K).

The protologue does not indicate the herbarium where the type was deposited, but presumably that was B, where von Poellnitz worked and where his types usually are located. However, I did not find it there.

Phemeranthus thompsonii (N. D. Atwood & S. L. Welsh) Kiger, comb. nov. Basionym: *Talinum thompsonii* N. D. Atwood & S. L. Welsh, Great Basin Naturalist 45: 485. 1985. TYPE: U.S.A. Utah: Emery County, Cedar Mountain, E of Castledale, 19 July 1981, *N. D. Atwood & R. Thompson 8056* (holotype, BRY not seen; isotypes, NY not seen, POM not seen, US).

Phemeranthus validulus (Greene) Kiger, comb. nov. Basionym: *Talinum validulum* Greene, Leafl. Bot. Observ. Crit. 2: 270. 1912. TYPE: U.S.A. Arizona: Coconino County, Tusayan Forest Reservation, 11 Aug. 1912, *R. R. Hill s.n.* (lectotype, selected here, US).

Specimens from Hill's collections usually were deposited in USFS, which later was transferred to RM, except for the types, which went to US. However, there is no specimen now at RM that could be type material of *Talinum validulum*, and there is only the one sheet at US, marked as an isotype and bearing no indication that it came from USFS. In the absence of any evidence that a holotype in the proper sense does or should exist, it seems appropriate to designate the US specimen as lectotype.

Above I have made new combinations for all but four of the species that originally were described in *Talinum* and that will be recognized under *Phemeranthus* in the treatment of Portulacaceae for the *Flora of North America*. Rafinesque transferred Pursh's *T. teretifolium*, as already noted, and recently Hershkovitz (Hershkovitz & Zimmer, 1997) made the combinations needed to transfer *T. brevifolium* Torrey, *T. confertiflorum* Greene, and *T. spinescens* Torrey.

Talinum ciliatum Lindley and *T. trichotomum* Desfontaines also are referable to *Phemeranthus* but are synonyms of *P. teretifolius*. Other names under *Talinum* that pertain to the area covered by FNA and that are referable to *Phemeranthus*, as synonyms of the species transferred herein, include: *T. angustissimum* (A. Gray) Wooton & Standley, *T. aurantiacum* Engelmann var. *angustissimum* Engelmann ex A. Gray, and *T. whitei* I. M. Johnston (= *P. aurantiacus*); *T. eximium* A. Nelson, *T. pulchellum* Wooton & Standley, and *T. youngae* C. H. Mueller (= *P. brevicaulis*); *T. greenmanii* Harsberger (= *P. humilis*); *T. okanoganense* C. S. English and *T. wayae* Eastwood (= *P. sediformis*); and *T. appalachianum* W. Wolf, *T. fallax* von Poellnitz, and *T. gooddingii* P. Wilson (= *P. parviflorus*).

Taxa found in Mexico and Central and South America that do not occur within the FNA area and that also are referable to *Phemeranthus* include: *Talinum cymbosepalum* Rose & Standley, *T. lineare* Kunth, *T. mexicanum* Hemsley, *T. multiflorum* Rose & Standley, *T. napiforme* DC., *T. oligospermum* Brandegee, *T. palmeri* Rose & Standley, *T. parvulum* Rose & Standley, *T. punae* (Fries) Carolin, *T. rosei* P. Wilson, and *T. tuberosum* (Bentham) P. Wilson. I am not making new combinations for these at present, pending further study and resolution of their taxonomic status, thus to avoid needless nomenclatural proliferation.

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