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In This Issue —

Phemeranthus and *Talinum* (Portulacaceae) in New Mexico

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The plants known under the generic name "*Talinum*" for a long time have been highly confused in floras, commonly misidentified in herbaria, and generally confusing for botanists and field biologists. This is difficult to explain, as most of the species are well defined and easily recognized.

Since 1985, I have studied and propagated living material from type locations of nearly all of the species and have examined type specimens of most species. In addition, I have studied populations in the field and cultivated multiple collections of nearly all species.

Working with this group of plants quickly led to the realization that the many of the "Talinums" I had been studying were not *Talinum* species at all.

The true *Talinum* species are basically tropical or subtropical plants with flat leaves. They show very different morphological and reproductive features from the primarily northern and mountain species with terete leaves.

I was not the first to notice this distinction. Rafinesque described the first terete-leaved species as *Phemeranthus* in 1801. This was *Phemeranthus teretifolius.* In 1814 Pursh transferred this species to *Talinum*.

Since that time, numerous terete-leaved species were named; however, the epithet *Phemeranthus* was ignored, as was generally the case with Rafinesque's work, and the species were placed in *Talinum*.

In recent years, much work has been done on the phylogeny and relationships of the genera of the Portulacaceae. The methods vary from author to author and range from simple observational comparisons, through cladistic analysis, to molecular studies involving samples of genetic material. The results of these studies invariably set *Phemeranthus* apart from *Talinum*, and have served to help re-enforce our work with the group [Carolin, 1987; Hershkovitz, 1993].

Interestingly, not only do the two groups prove to be distinct, but they are probably not even very closely related. Molecular evidence in particular helps point to the mostly likely kinships of these two genera [Hershkovitz & Zimmer, 1997; Applequist & Wallace, 2001; etc.].

Phemeranthus is related to genera such as *Calyptridium, Cistanthe, Calandrinia, Lewisia, Montia,* etc.

Talinum is apparently most closely related to *Talinella, Schreiteria,* and probably *Amphipetalum.* It is also close to *Portulaca, Anacampseros, Grahamia,* and *Talinopsis.* As a group these genera are also perhaps more closely akin to the Cactaceae than they are to the rest of the Portulacaceae!

Phemeranthus and *Talinum* are succulent herbaceous perennials (except *Talinum polygaloides*, which is suffrutescent, becoming woody with age) with fleshy tuberous taproots. In common with most Portulacaceae, the flowers have 2 foliaceous or scarious sepals subtending a whorl of usually 5 (4-8) petals. Stamens are from a number equaling the petals to at least 30, depending upon species. The style is slender and topped by usually 3 short spreading to capitate stigmata. Inflorescences in both genera are cymose or derived from cymes. The fruits are unilocular 3 (rarely 2-4)-valvate capsules, bearing seeds on a free-central placenta, dehiscing longitudinally and often circumscissally at the base.

Phemeranthus may be caulescent with closely placed alternate leaves, to acaulescent with leaves in tight caespitose clumps. The terete leaves will separate the genus from all other Portulacaceae except some species of *Portulaca*, which are always caulescent, have wool in the leaf axils, have flowers in tight terminal heads, and the fruit are perigynous circumscissal capsules (not superior and valvate as in *Phemeranthus*). *Lewisia pygmaea* can be confused with *Phemeranthus*, but has acropetally dehiscent fruit, and the leaves are distinctly broader than thick and flattened above. Plants of *L. pygmaea* are found in moist, usually gravelly Subalpine or Alpine habitats, generally well above 9000 ft. *Phemeranthus* species are

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Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(Portulacaceae, Continued from page 1)

not found above Montane elevations, rarely above 8000 ft., and favor more xeric habitats.

Talinum species are caulescent and produce alternate flattened leaves with distinct midribs. In New Mexico, the flat leaves and acropetally dehiscent mostly pendent 3-valved fruits are enough to recognize this genus at a glance. *Talinum* species are absent from northern New Mexico. They occur mostly below 6000 ft.

Naturally occurring hybrids are rare in *Phemeranthus*, but I have found individuals of *P. brevicaule* X *P. confertiflorus* near Ramah in Cibola County. These two rarely grow together, but in this location they can be found within a few feet of one another where limestone and basalt abut. The hybrids are very attractive, combining the best of both parents. These hybrid plants appear to be totally sterile. Hybrids involving other species are also occasionally encountered.

Species of both *Phemeranthus* and *Talinum* are only active during warm weather, usually starting growth after summer rains, but occasionally earlier in late spring. Most species are capable of surviving extended drought, and in some years may not grow at all. Flowers in all species are normally open for an hour or two during only one day, and in all species flowers open at a specific time of day (mostly afternoon.

The brief life of the flower is the basis of the name *Phemeranthus*, and also of some of the vernacular names of species of *Phemeranthus*, such as 'Flower-of-the-hour" and "Fame Flower". There are many common names for *Phemeranthus* species. Some of the most common include 'Rockrose', 'Rockpink', 'Sandpink', etc. The adulteration of 'Fame Flower' to "Flame Flower" is also common in literature. Some of the true Talinum species are now also seen in popular literature as 'Flame Flower', and it actually fits them better, with their often showy (albeit fleeting) yellow to red flowers. Vernacular names for *Talinum* species are few in English. Relatives of *T. paniculatum* are often called 'Baby's-breath' or 'Jewels of Opar'. I have also heard vernacular names used for *Talinum* species in Mexico, but neglected to keep record of them. They all started with the word 'Yerba'. A few additional names are listed below.

Several species of *Phemeranthus* are very attractive. A few are now popular in cultivation, where they are often used as miniature "Alpines" in rockeries.

The species of *Talinum* are mostly not popular in cultivation, though collectors who specialize in succulent or tuberous-rooted plants occasionally grow a few. One cultivar of *T. paniculatum* with yellowish leaves and reddish stems is now becoming popular, and another with variegated leaves is well known. Foliage and/or roots of various species of *Talinum* have also been used medicinally or as food. I have tasted the roots, which can be likened to bitter potatoes. A few species are occasionally grown as leafy green vegetable crops.

Here I hope to help clear up some of the confusion which surrounds these plants in New Mexico. I have written an identification key, and included some notes on the various species. This should allow the identification of plants in the field, and should help to sort out the numerous misidentified specimens found in the various herbaria.

In some cases, the appropriate nomenclatural combinations have not been made in the genus *Phemeranthus*, and the taxa retain the *Talinum* affiliations awaiting the nomenclatural corrections. No nomenclatural innovations nor new taxa are proposed herein.

1 Leaves terete or nearly so, midvein not obvious. Fruit dehiscing basipetally or disintegrating. Seeds with an investing translucent pellicle (developing as a funicular aril) ... ***Phemeranthus***

1 Leaves flat or nearly so, with midvein readily visible. Fruit dehiscing acropetally (beginning at the base and progressing toward the tip), the valves deciduous upon dehiscence, with apices of valves sometimes remaining connected after falling. Seeds without investing pellicle ... ***Talinum***

PHEMERANTHUS Rafinesque

1808, Med. Repos. II. 5: 350; reprinted in March, 1814, Specchio delle Scienze 1: 86..

Type: *Phemeranthus teretifolius* Rafinesque, 1801, Med. Repos. II. 5: 350;

Eutmon Rafinesque [as genus], 1833, Atl. Jour. I: 177.

Type: *Talinum* (sect. *Phemeranthus*) *napiforme* de Candolle, 1828, Prodr. 3: 357.

Litanum Nieuwland, 1915, Am. Midl. Nat. 4: 90.

Type: *Talinum parviflorum* Nuttall

This is a genus of temperate latitudes or mountains. It occurs away from the coasts, from British Columbia to Pennsylvania , Georgia, Arkansas, Texas and Oaxaca in Mexico. One species occurs in w. Argentina and sw. Bolivia. The preferred habitat of most species is thin layers of growth medium (gravel, sand, soil, etc.) over a rock substrate, usually in broken terrain on ledges, rock slopes, cliffs, hilltops, etc. A few species are more broad in their preferences.

1 Seeds with concentric ridges

2 Stems well developed. Flowers white to pink. Capsules briefly persistent after dehiscing. Calcareous substrates ... ***Phemeranthus longipes***

2 Nearly acaulescent, leaves in basal rosettes. Flowers yellow. Capsules deciduous at maturity. Mostly on igneous substrates, primarily rhyolite

3 Leaves mostly under 3 cm long, narrowed at base appearing petiolate (narrowed portion often below soil level). Flowers usually under 8 mm in diameter. Likely in Animas or southern Peloncillo Mountains, but not yet recorded from New Mexico ... ***Talinum* (*Phemeranthus*) *parvulum***

3 Leaves mostly over 3 cm long, not appearing petiolate. Flowers usually over 8 mm in diameter ... ***Phemeranthus humilis***

1 Seeds nearly smooth, with rows of low tubercles

4 Plants with predominantly vertical aspect. Inflorescence with long slender peduncle, held erect, usually exceeding leaves, usually many-flowered

5 Flowers mostly over 2 cm across, lavender to magenta, fragrant. Stamens more than 15 in number. Sepals persistent in fruit. Likely in northeastern sandhills areas, but not verified from New Mexico ... ***Phemeranthus calycinus***

5 Flowers under 2 cm across, not fragrant. Stamens usually 5 (rarely to 10) in number

6 Flowers white to pale pink, magenta not known to occur. Sepals often with purplish mark, usually acute, persistent in fruit. Fruit elongate, typically acute, basipetally dehiscent, persistent at maturity (but delicate). Seeds usually appearing bluish to grayish due to pellicle ... ***Phemeranthus confertiflorus***

6 Flowers usually magenta, but often white to pink in western populations. Sepals with no purplish mark, usually obtuse, early deciduous. Fruit usually nearly globose and obtuse or

(*Continued on page 3, Portulacaceae*)

(Portulacaceae, Continued from page 2)

rounded; disintegrating upon dehiscence (apparently acropetal?). Seeds usually appearing black ... ***Phemeranthus parviflorus***

4 Plants with predominantly procumbent to horizontal aspect. Inflorescence small, one to few-flowered, appearing axillary, not erect and often not exceeding leaves

7 Leaves acute. Flowers usually magenta (rarely white) petals usually acute apically. Sepals acute, persistent in fruit. Inflorescence indeterminate and usually with 3 to 5 flowers (occasionally one, or more than 5). Fruit persistent at maturity but very delicate ... ***Phemeranthus brevicaulis***

7 Leaves usually obtuse or blunt. Flowers with petals usually obtuse apically. Sepals usually obtuse, early deciduous. Inflorescence single-flowered (rarely 2). Fruit deciduous upon dehiscing

8 Plants rhizomatous. Leaves usually more than 1.7 cm long. Flowers usually more than 2 cm in diameter, magenta ... ***Phemeranthus* sp. 1.** [publ. in prep.]

8 Not rhizomatous.

9 Leaves usually over 1.7 cm long. Flowers usually more than 2 cm in diameter, white to magenta (usually pink to magenta). Calcareous substrates, including calcareous sandstone ... ***Talinum* (*Phemeranthus*) *brachypodum***

9 Leaves usually under 1.7 cm long. Flowers usually less than 2 cm in diameter, white to magenta. Red sandstone substrates … ***Phemeranthus brevifolius***

***Phemeranthus* sp. 1** [publ. in prep.]

This species is very similar to *Talinum* (*Phemeranthus*) *brachypodum*, but there is a tendency toward dorso-ventral flattening of the leaves, the coloration is darker, and this species appears to be the only *Phemeranthus* that produces rhizomes.
It is known from only one small population north of Reserve, New Mexico, where it was found several years ago by Pat Barlow on calcareous soils overlying conglomerate.

Talinum* (*Phemeranthus*) *brachypodum S. Watson - **Laguna Fameflower**
1885, Proc. Am. Acad. 20: 355.
T.L.: near Laguna Pueblo, New Mexico, USA

This rare species is very similar to, and closely related to *P. brevifolium*, but is larger in all proportions. The two are allopatric, with different habitat requirements. *T. brachypodum* is also superficially very similar to *P. brevicaulis*, and the two may occasionally found in the same locations. However, it seems that they usually occur in adjacent but separate colonies, and not often actually intermixed.
It is known from north of Ladrone Peak in Socorro and Valencia Counties, and from near Laguna Pueblo in Cibola County.

***Phemeranthus brevicaulis* (S. Watson) Kiger - Showy Fameflower**
2001, Novon 11 (3): 319.
Talinum brevicaule S. Watson, 1886, Proc. Am. Acad. 21: 446.
T.L.: near Santa Eulalia [Mine], Chihuahua, Mexico.
Talinum pulchellum Wooton & Standley, 1913, Contr. U.S. Nat. Herb. 16: 121.
T.L. : Queens, New Mexico, USA
Talinum eximium A. Nelson, 1931, Am. Jour. Bot. 18: 431.
T.L.: Carlsbad Caverns, New Mexico, USA.
Talinum youngii C. H. Mueller, 1933, Torreya 33: 148
T.L.: Chisos Mountains, Texas, USA.

This is one of our most attractive species, and it is becoming popular as a rockery plant. Without flowers, it and related species are often confused with *Sedum*.

P. brevicaulis has been found from Mills Canyon to the Zuni Mountains, and southward to central Chihuahua and Trans-Pecos Texas. It occurs on calcareous substrates, usually over limestone or travertine, but sometimes on calcareous sandstones, conglomerate, gypsum, etc.

Phemeranthus brevifolius (Torrey) Hershkovitz - **Short-leaf Fameflower**
1997, Taxon 46 (May): 222.
Talinum brevifolium Torrey, 1853, Sitgreaves, Rep. Exp. 156.
T.L.: On the Little Colorado [River], Arizona, USA
Claytonia brevifolia (Torrey) Kuntze, 1891, Rev. Gen. Pl. I: 57.

Material from New Mexico is usually dark for the species, often with purplish leaves, and with magenta flowers. In Utah it is usually a grayer plant with white to pink flowers. However, even though averages differ, the range of variation seems about the same throughout the distribution of the species.

This is a species of the Colorado Plateaus. In New Mexico it is known from a few scattered locations in the Chuska Mountains and from west of Mount Taylor to the state line near Gallup. It should be searched for in other favorable habitats in nw. New Mexico. It is widespread in n. Arizona and s. Utah, but has not yet been recorded from Colorado.

Phemeranthus calycinus (Engelmann) Kiger - **Sandhills Fameflower, Sandpink**
2001, Novon 11 (3): 320.
Talinum calycinum Engelmann, 1848, Wisliz. Tour N. Mex. 88.
T.L.: In sandy soil on the Cimarron [River], probably in Kansas or Oklahoma, USA.
Claytonia calycina Kuntze, 1891, Rev. Gen. Pl. I: 57.

This Great Plains species is not recorded from New Mexico, but occurs nearby in Colorado, Kansas, Oklahoma, and Texas. It should be looked for in the Cimarron and Canadian drainage areas in prairie grassland on eolian sand deposits, where it favors gravelly areas near the tops of "sandhills".

The type collection ("in sandy soils along the Cimarron") may well have been made by Wislizenus in New Mexico, but this is uncertain, and Kansas seems most likely. I have not taken time to research the type specimen data vs. the journal of Wislizenus yet, and this may well give the locality more precisely.

This species has been widely confused with a common species from the Ozark region. The Ozark plant is common in cultivation masquerading under this name, but it is actually an as-yet undescribed spe-

(Continued on page 4, Portulacaceae)

Botany is the natural science that transmits the knowledge of plants.
— Linnaeus

(Portulacaceae, Continued from page 3)
cies. The Ozark plant differs in having the rootstalk less strictly vertically napiforme, more often branching, and shallower in the soil (often partly exposed). A portion of the perennial stem is above ground (fully subterranean in *P. calycinus*). The coloration of the vegetative parts is less glaucous. The inflorescences are better developed, more branched, with more flowers. The flowers are smaller, usually darker in color, and non-fragrant (a chocolaty sweet odor to true *P. calycinus* flowers).

Phemeranthus confertiflorus (Greene) Hershkovitz - **Rocky Mountain Fameflower, Rocky Mountain Rockpink**
1997, Taxon 46 (May): 222.
Talinum confertiflorum Greene, 1881, Bull. Torrey Club 8: 121.
T.L.: Pinos Altos Mountains, New Mexico, USA.
Talinum gracile Rose & Standley [non Colla, 1833], 1911, Contr. U. S. Nat. Herb. 13: 285
T.L.: Cosihuriachi, Chihuahua, Mexico.
Talinum rosei P. Wilson, 1932, N. Am. Fl. 21(4): 287. nom. nov. for *Talinum gracile* Rose & Standley
Talinum gooddingii P. Wilson, 1932, N. Am. Fl. 21(4): 287.
T.L.: San Francisco River, Boyles, Arizona, USA.
Talinum fallax von Poellnitz, 1933, Ber. Deutsch. Bot. Ges. 51: 113
T.L.: Rab's Canyon, Grant County, New Mexico, approx. 6500 ft.

This species is amazingly constant in characters for such a widespread species, but there is some variation in coloration, particularly in the degree of purplish pigment on leaf apices and sepals. Flowers are usually white, but may vary to pink. There is also a trend, in plants from southwestern New Mexico southward, toward the persistence of slender perennial and often branched stems. Plants growing from Arizona to Texas and northward usually loose most of their stems to winter, and rarely develop a branching habit to the degree of the more southern plants. Based upon behavior of cultivated material, this seems to be at least partly environmentally induced.

This is our most common species in New Mexico. It has been consistently misidentified as *P. parviflorus* (see below). In New Mexico this species probably occurs in all counties. It is usually found above desert and below subalpine areas in varied non-calcareous gravelly or rocky habitats, usually in full sun. It probably has the widest distribution in the genus, occurring from sw. North Dakota to central Utah and south to ne. Sonora, central Chihuahua, w. Texas, and probably n. Coahuila.

Phemeranthus humilis (Greene) Kiger - **Pinos Altos Fameflower**
2001, Novon 11 (3): 320.
Talinum humile Greene, 1881, Bot. Gaz. 6: 183.
T.L.: "rocky tableland near the south base of the Pinos Altos Mountains., New Mexico, USA.
[1] *Talinum greenmannii* Harshberger, 1897, Bull. Torrey Bot. Club 24: 182-184!!
T.L.: "volcanic gravel, Sierra de Ajusco, Mexico"; "exposed volcanic rocks … 8500 ft."

P. humile cannot be easily confused with any other species in New Mexico. The acaulescent caespitose cluster of terete succulent leaves, bearing small yellow flowers on laterally directed cymes, is distinctive.

This species was described from the Pinos Altos Mountains in New Mexico by Greene, and then not seen again for many years. It was then found in northeastern Sonora and southeastern Arizona. In 1987 I visited the population in Arizona, and then started looking for it elsewhere. The next year I found it near San Lorenzo, New Mexico, and in three locations in northern Chihuahua; it has since turned up in more localities in Grant County, New Mexico. It is still best considered as a rare plant, but further field searches may refute this. I have found the species only in shallow gravelly clay soils over rhyolite or similar igneous rock.

The name *Talinum greenmannii* has been synonymized with *P. humile*, but this is incorrect. That species is Mexican, occurring no further north as west central Chihuahua. It grows in gravel scree on steep slopes under pine forest at higher elevations. It differs by the leaves often having one or two short lateral lobes, usually on one side only; by the very short, often single-flowered inflorescences; and by having a smooth pellicle which obscures the raised ridges on the seed surface beneath.

Phemeranthus longipes (Wooton & Standley) Kiger - **Tortugas Fameflower, Long-stem Fameflower**
2001, Novon 11 (3): 320.
Talinum longipes Wooton & Standley, 1913, Contr. U.S. Nat. Herb. 16: 120.
T.L.: Tortugas (= A) Mountain, Las Cruces, New Mexico.

P. longipes resembles *P. confertiflorus*; however, the flowers are white to pale pink with contrasting pink to magenta filaments, while those of *P.* confertiflorus have filaments usually white, and always at least as light as the petal color. The fruits of this species are more rounded with a "lumpy" look, and tend to disintegrate soon after splitting, instead of remaining intact. The seeds are distinctly different. Also, *P. longipes* grows on calcareous substrates in usually hotter and drier habitats.

I have, in a few locations found this species and *P. confertiflorum* growing sympatrically (as south of San Ysidro in Sandoval County), but this is rare. It can be confusing if one doesn't pay close attention.

This species occurs in New Mexico from Santa Fe and Sandoval Counties through the central part of the state, across extreme western Texas, into Coahuila and Chihuahua. It's distribution in Mexico needs further investigation, but it is likely extensive in the Chihuahuan region of the northern states. It favors calcareous substrates, preferably limestone, but occasionally even gypsum.

Phemeranthus parviflorus (Nuttall) Kiger - **Prairie Fameflower, Small Fameflower, Prairie Rockpink**
2001, Novon 11 (3): 320.
Talinum parviflorum Nuttall, 1838, T. & G. Fl. N. Am. 1: 197.
T.L.: On rocks; Arkansas, USA.
Claytonia nuttalliana Kuntze, 1891, Rev. Gen. Pl. I: 57. nom. nov. for *T. parviflorum* under *Claytonia*, but mistakenly called *T. parvifolium* Nuttall by Kuntze; the nom. nov. meant to avoid homonymy under *Claytonia parvifolia* Moçiño., of which the epithet *Claytonia parviflora* would not actually have been a homonym! However, this would have been a later homonym of *Claytonia parviflora* Douglas, 1832!
Litanum parviflorum Nieuwland, 1915, Am. Midl. Nat. 4: 90.
Talinum appalachianum W. Wolf, 1939, Am. Midl. Nat. 22: 319-320.

This species is included only because of the persistent reports of its occurrence in the state. None of these reports have been verified, and all specimens and populations examined have turned out to be referable to *P. confertiflorus.* There is a very slim chance that the species may turn up in ne. New Mexico, but this is very unlikely. The nearest known populations I have been able to verify are at Granite, Greer County, Oklahoma., and Brady, McCulloch County, Texas. The habitat preference of this species is similar to that of *P. confertiflorus*, but it seems almost restricted to shallow benches and rock ledges on exposed non-calcareous slopes.

It occurs from s. Minnesota and se. N. Dakota southward to central Texas and central Alabama. *(Continued on page 5, Portulacaceae)*

(Portulacaceae, Continued from page 4)

Chromosome counts for this species are diploid [2n = 24], and for *P. confertiflorus* are tetraploid [2n = 48]. Artificially produced hybrids have been consistently sterile (personal experience and pers. com. Stephen Jankalski).

Talinum* (*Phemeranthus*) *parvulum Rose & Standley - **Bottle-leaf Fameflower**

1911, Contr. U.S. Nat. Herb. 13: 283.
T.L.: Otinapa, Durango, Mexico.
Talinum marginatum Greene, 1912, Leaflets 2: 270.
T.L.: near Santa Teresa, Tepic [= Nayarit], Mexico.

This species is an entirely smaller plant than *P. humile*, and can also be recognized by the stipitate base of the leaves. This stipe may be hidden under the soil surface, so a little poking around the plant base may be necessary to be certain of identity. The leaves may vary with conditions, and from plant to plant, from very slender, to rather fat and bottle-like; regardless, the base is always obviously narrowed.

Talinum (*Phemeranthus*) *parvulus* may enter the state in the southwest corner. The Peloncillo and Animas Mountains would be the most likely places to look. The habitat preference is similar to that of *P. humile*, but it seems more restricted to mountains than is *P. humile.* I have found it from 2000 ft to 6500 ft in Mexico, always in mountains, and always associated with Pine and Oak.

TALINUM Adanson

1763, Fam. Pl. 2: 245.
Type: *Portulaca triangularis* Jacquin, =*Talinum fruticosum* (Linnaeus) Willdenow. The type species may have been officially changed to *Talinum fruticosum*, but this needs verification.
Helianthemoides Medicus, 1798, Phil. Bot. 1: 95.
Type: *Portulaca patens* Linnaeus, 1771, Mant. 242.
Chromanthus Philippi, 1871, Sert. Mendoc. Alt.: 14.
Type: *Talinum polygaloides* Gillies ex Arnott

A mostly tropical and subtropical genus, best represented in semiarid subtropical regions with summer rainfall in North America, South America, and Africa. The genus breaks into four distinct groups, and it is interesting that three of the groups of species are represented in both North and South America, but the group which is best represented in North America is split between our continent and Africa.

1 Peduncle triangular in cross section. Inflorescence terminal, cymose. Pollen pantoporate, with approximately 30 pores. Fruit explosive at maturity ... ***Talinum fruticosum***

1 Peduncle roughly terete in cross section (sometimes with low longitudinal ridges or wings). Pollen pantocolpate, with 15 or fewer colpi. Fruit not explosive

2 Inflorescence terminal, a panicle of cymes. Flowers usually less than 7 mm across. At dehiscence fruit with inner scarious layer of valves separating, and forming a basket with valve apices attached by three filaments to receptacle; outer layer of valves immediately deciduous. Seeds compressed laterally, nearly smooth to tubercled, without concentric ridges

3 Flowers yellow (rarely peach-pink or white). Seeds tubercled ... ***Talinum spathulatum***

3 Flowers purplish-pink to magenta. Seeds nearly smooth ... ***Talinum* sp. 1** [publ. in prep.]

2 Inflorescences axillary; single-flowered or short few-flowered cymes. Flowers usually more than 7 mm across. Fruit with valves dehiscing and falling in entirety, layers differentiated, but not separating. Seeds (in ours) globose with concentric raised ridges

4 Stems slender, usually little over 1 mm think in new growth; rapidly becoming suffrutescent and eventually woody; perennial with dormant buds, but usually killed to ground in freezing winters. Leaves linear, thick, usually revolute. Inflorescence short, usually less than 1 cm long; one-flowered, with peduncle much shorter than pedicel. Sepals scarious, mostly early deciduous. Flowers mostly under 1.5 cm across, yellow ... ***Talinum polygaloides***

4 Stems strictly annual, herbaceous, succulent; usually well over 1 mm thick on new growth; becoming suffrutescent only basally only in *T. aurantiacum.* Leaves relatively thin, revolute only in drought. Flowers mostly well over 1.5 cm wide, usually orange, but color may vary

5 Leaves narrowly linear. Sepals scarious and normally early deciduous. Flowers varied in color, yellow, orange, red, magenta, pink, or combinations of these ... ***Talinum* sp. 2** [publ. in prep.]

5 Leaves broadly linear to broadly elliptic or obovate. Sepals foliaceous, prominently three- to five-ribbed; persistent till fruit matures. Flowers orange to orange-red (very rarely yellow).

6 Stems usually less than 2 dm long, simple or few-branched; often becoming slightly suffrutescent basally. Leaves mostly broadly linear. Inflorescence one-flowered; short, usually less than 1 cm long, with peduncle much shorter than pedicel ... ***Talinum aurantiacum***

6 Stems usually reaching over 2 dm long, normally several lateral branches present, not suffrutescent. Leaves mostly broad, elliptic to obovate. Inflorescence usually three-flowered (1 to 5); mostly well over 1 cm long, with peduncles equaling or longer than pedicels ... ***Talinum whitei***

***Talinum* sp. 1** [publ. in prep.]

The small pink to magenta flowers and nearly smooth seeds are diagnostic in New Mexico.

This species occurs in the Sonoran floristic region, and enters only the southwest corner of New Mexico, where it favors canyon bottoms among trees and shrubs. The full distribution in Mexico is uncertain due to confusion with *T. paniculatum*, but it appears to occur from sw. New Mexico to Baja California and south to near Guadalajara (or further ?). It is nearly but not completely restricted to the Pacific drainage.

The similar *T. paniculatum* in not found here, but occurs as close as central and southern Texas. It has leaves mostly broadly obovate with attenuate apices (mostly spatulate and rounded or truncate in our species). The leaves are abruptly reduced in size and bract-like above the base of the inflorescence in *T. paniculatum*, but gradually reduced in size well into the inflorescence in *T. sonorae*. The seeds of *T. paniculatum* are finely tuberculate; not so in *T. sonorae.* The flower color of the two is the same.

T. paniculatum has a wide distribution in tropical South America, the Antilles, and tropical North America, reaching its northern limit in northeastern Mexico and central Texas, and its southern limit in northeastern Argentina. It seems to be absent from the Pacific slope of both North and South America, but this needs further verification.

(Continued on page 6, Portulacaceae)

(Portulacaceae, Continued from page 5)

***Talinum* sp. 2** [publ. in prep.]

The linear leaves, elongate multi-flowered inflorescence, scarious sepals, and variable flower color are all diagnostic.

This species is found in southern New Mexico from Otero County to Arizona, and north to near Socorro. It is generally found in grassland in deep silty soils of rhyolitic origin, usually in flats or near the base of slopes, but the habitat varies and occasionally it is found on rocky slopes or gravelly hilltops.

The nearest relative of this species is *Talinum lineare* (= *T. tuberosum*), which occurs in Mexico from Durango to Michoacan, and Hidalgo. Our species is larger and more robust in proportions. Also, in *T. lineare*, I have observed yellow to orange flowers, but not pink or magenta.

Talinum aurantiacum Engelmann - **Orange Flameflower**
1850, Bost. Jour. Nat. Hist. 6: 153.
T.L.: southwestern Texas.
Claytonia aurantiacum (Engelmann) Kuntze, 1891, Rev. Gen. Pl. I: 57.
Phemeranthus aurantiacum (Engelmann) Kiger, 2001, Novon 11 (3): 319.

Look for the short, single-flowered inflorescence, and the ribbed foliaceous sepals.

This is a common species, but rarely collected. It is found all across southern New Mexico south of line roughly through Logan, Villa Nueva, Belen, Magdalena, and Alma. It favors hot shallow rocky slopes and hill tops in grasslands, but turns up in many habitats.

The full distribution is from se. Arizona to Texas and south to southern Coahuila and northern Zacatecas in Mexico.

T. fruticosum (Linnaeus) Willdenow - **Water-leaf, Ceylon Spinach, Surinam Purslane, Pourpier, Lugos Bologi, Cariru, Carumbola**
1800, Sp. Pl. 2: 864.
Portulaca fruticosa Linnaeus, 1759, Syst. Nat. ed. 10: 1045.
T.L.: West Indies
Portulaca triangularis Jacquin, 1760, Enum. Pl. Carib. 22.
Portulaca racemosa Linnaeus, 1762, Sp. Pl. ed. 2: 640.
- The names *Portulaca fruticosa, racemosa,* and *triangularis* are homotypic synonyms.
?*Talinum crassifolium* Willdenow, Sp. Pl. 2: 862.
?*Talinum andrewsii* Sweet, 1826, Hort. Brit. 170.
Calandrinia andrewsii Sweet, 1830, Hort. Brit. ed. 2: 219.
Talinum racemosum (Linnaeus) Rohrbach, 1872, in Mart. Fl. Bras. 14 (2): 297.
Claytonia triangularis Kuntze, 1891, Rev. Gen. Pl. I: 56.

The terminal cymose inflorescence on a triangular scape is diagnostic. The rootstock is thickened, but not greatly enlarged. Stems are ephemeral. The plants often behave as annuals rather than perennials in strongly seasonal climates. They cannot withstand freezing.

Living material I have seen has all been white-flowering; however, herbarium specimens from the Lesser Antilles and northern South America, which appear to represent this species, often have yellow, orange, pink, or magenta flowers, and the flowers are larger than average. This complex needs further study.

The natural distribution of this species is difficult to determine due to the wide spread introductions around the world, but it would appear to have originated from areas around the Gulf of Mexico and the Caribbean (including southern Florida). It is not native to New Mexico, but occurs here occasionally as an introduced garden and greenhouse weed.

Talinum polygaloides Gillies ex Arnott - **Yellow Flameflower, Narrow-leaf Flameflower, Woody Flameflower**
1831, Edinb. Journ. Nat. et Geogr. Sc. III: 345-355.
T.L.: "In the Jarillal, and along the foot of the mountains near Mendoza [estado Mendoza, Argentina]".
Talinum aurantiacum var. *angustissimum* A. Gray, 1852, Pl. Wright. I: 14.
T.L.: "Bottoms of Live Oak Creek and on the San Felipe, Texas" (central Texas, probably Austin area?).
Talinum angustissimum (A. Gray) Wooton & Standley, 1913, Contr. U.S. Natl. Herb. 16 (4): 120.

This very distinctive species has been inexplicably confused with other species, and has even been suggested to be a synonym (as *T. angustissimum*) of *T. aurantiacum*. It is easily distinguished from other species with axillary inflorescences by the combination of very slender suffrutescent to woody stems, narrowly linear usually revolute-margined leaves, smaller always yellow single flowers with a very short peduncle, and the translucent scarious, usually deciduous sepals.

I believe that I am the first to use the name *T. polygaloides* for the North American plants, but I have collected material extensively in North America and in South America, and I can find no significant differences in the plants. In fact I cannot reliably sort volunteer plants in the greenhouse as North American or South American. The South American plants more often have flowers which turn reddish upon wilting, but this character is not reliably diagnostic.

The species seems to occur primarily in the southernmost tier of counties in New Mexico. I have found it as far north as Hobbs, Tularosa, Artesia, Caballo, and Lordsburg. It prefers areas of silty or calcareous soils in hot dry areas, but occurs in a variety of habitats from desert flats and grassland to sparsely wooded rocky slopes.

The full distribution of this species is large, and apparently disjunct. It is common in North America from southern Arizona to central Texas and southward to at least Hidalgo. In South America it is common in the Chaco and Monte regions of Argentina, Bolivia, Paraguay, and perhaps other neighboring countries. It seems to have not been recorded from anywhere in between.

Talinum spathulatum Engelmann ex A. Gray - **Yellow Baby's-breath, Jewel's of Opar, Rama del Sapo, Carne Groda**
1852, Pl. Wright. 1: 14.
T.L.: Mountains of New Mexico east of the Rio Grande.
Talinum chrysanthum Rose & Standley, 1911, Contr. U.S. Nat. Herb. 13: 288.
T.L.: Bolaños, Jalisco, Mexico.

The yellow flowers and tubercled seeds must be seen to distinguish this from *Talinum* sp. 1; however, the two rarely grow together, and probably do not occur sympatrically in New Mexico.

This species is not common in New Mexico, but should be looked for in low elevation canyons and along moist arroyos and streams in the south-central portion of the state. It is similar to the previous species, but the yellow flowers and finely tuberculate seeds are diagnostic. It rarely has flowers varying to light peachy pink, and in South America I have found white-flowering populations.

It has a wide range on the Atlantic slope of inland Mexico, just entering the US in Trans-Pecos Texas and s. New Mexico. It is also common on the Atlantic slope of sub-Amazonian South America. Due to confusion between this and *T. paniculatum* the full distribution in between is not known. It may occur also in northern South America and Central America; however, it may also have a disjunct distribution similar to that of several other plants, including *T. polygaloides*.

(Continued on page 7, Portulacaceae)

(Portulacaceae, Continued from page 6)

Talinum whitei I.M.Johnston - **Madrean Flameflower**

1940, 'New Phanerogams from Mexico, III', Jour. Arnold Arb. XXI: 257-258.

T.L.: 10 mi. west of El Pose, road to Santa Eulalia, 4600 ft., Chihuahua, Mexico.

This species is very close to *T. aurantiacum*, but becomes larger in all proportions except flower size, and the longer multi-flowered inflorescence is diagnostic. Flowers are almost always orange, but I have found yellow and red. The yellow clones were stunted and found growing on an ashy white substrate (not identified) on a steep slope in Hidalgo County. Cuttings from these, became larger and orange-flowering under cultivation.

This is the most common species in Southern Arizona and northern Mexico, and is not rare in New Mexico. It's eastern limits in the state need investigation. All of my observations and all the herbarium sheets I have examined are from west of the Pecos, except for some specimens from the Texas Hill Country. It favors deep soil in rocky areas, particularly in arroyos and at the bases of slopes, but can be found in a variety of habitats.

Acknowledgments

I would like to thank Steven Jankalski, who has been a great help in my work on the genera *Phemeranthus* and *Talinum*, and, without whose tireless library searches and insights and suggestions, much of this work would have perhaps been impossible to complete.

Literature Cited

Applequist, Wendy L. & Robert S. Wallace, 2001, 'Phylogeny of the Portulacaceous cohort based on *ndhF* sequence data', Systematic Botany 26 (2): 406-419.

Arnott, G. A. Walker, 1831, 'On some new species of Portulaceae', Edinburgh Journal of Natural and Geographical Science 3: 354-356.

Atwood, N. Duane, & Stanley L. Welsh, 1985, 'New species of *Talinum* (Portulaceae) from Utah', Great Basin Naturalist 45 (3): 485-487.

Bentham, G., 1839, Plantae Hartwegianae: 9.

Black C. B. & William H. Murdy, 1972, 'The evolutionary origin of Talinum teretifolium Pursh', Botanical Gazette 133(4): 405-410.

Brandegee, 1908, 'New species of Mexican plants', Zoe 5 (11): 245-246.

Brown-Carter, M. E. & William H. Murdy, 1985, 'Systematics of *Talinum parviflorum* Nutt. And the origin of *T. teretifolium* Pursh (Portulacaceae), Rhodora 87 (850): 121-130.

Carolin, Roger, 1987, 'A review of the family Portulacaceae', Australian Journal of Botany 35: 385-412.

Cory, V. L., 1937, 'The occurrence of Talinum pulchellum in Texas', Madroño 4 (2): 67-69.

Engelmann, George, 1850, 'Plantae Lindheimerianae', Boston Journal of Natural History 6: 153-155.

Gray, Asa, 1852, Plantae Wrightianae 1: 13-15.

Gray, Asa, 1887, 'Contributions to American Botany', Proceedings of the American Academy of Arts and Sciences 22: 272-285`.

Greene, Edward Lee, 1881, 'New plants of New Mexico and Arizona', Botanical Gazette 6: 183.

Greene, Edward Lee, 1881, 'New species of plants, chiefly New Mexican', Bulletin of the Torrey Botanical Club 8 (11): 121.

Greene, Edward Lee, 1912, 'Miscellaneous specific types – VI', Leaflets 2: 270-271.

Grisebach, A., 1879, Symbolae ad floram Argentinam: 30.

Harshberger, J. W., 1897, 'An ecological study of the genus Talinum with descriptions of two species', Bulletin of the Torrey Botanical Club 24: 178-188, pl. 299.

Hershkovitz, Mark A., 1993, 'Revised circumscriptions and subgeneric taxonomies of *Calandrinia* and *Montiopsis* (Portulacaceae) with notes on phylogeny of the Portulacaceous Alliance', Annals of the Missouri Botanical Garden 80 (2): 333-365.

Hershkovitz, Mark A., 1993, 'Leaf morphology of *Calandrinia* and *Montiopsis* (Portulacaceae)', Annals of the Missouri Botanical Garden 80 (2): 366-396.

Hershkovitz, Mark A. & Elizabeth A. Zimmer, 1997, 'On the evolutionary origins of the cacti', Taxon 46: 217-232.

Jacquin, 1760, Enum. Pl. Carib.: 22

Johnston, 1940, 'New phanerogams from Mexico', Journal of the Arnold Arboretum 21: 257-258.

Kiger, Robert W., 2001, 'New Combinations in *Phemeranthus* Rafinesque (Portulacaceae)', Novon 11: 319-321.

Linnaeus, 1759, Syst. Nat. ed. 10: 1045.

McNeill, J., 1974, 'Synopsis of a revised classification of the Portulacaceae', Taxon 23 (5/6): 725-728.

Mueller, C. H., 1933, 'A new species of Talinum from Trans-Pecos Texas', Torreya 33 (6): 148-149.

Nelson, Aven, 1931, 'Rocky Mountain Herbarium Studies I', American Journal of Botany 18: 431.

Rafinesque, C. S., 1808, Medical Repository 2 (5): 350.

Rafinesque, C. S., 1833, Atlantic Journal 1: 177.

Rose, J. N. & Paul C. Standley, 1911, 'The genus Talinum in Mexico', Contributions from the National Herbarium 13 (8): 281-288.

Rydberg, Per Axel & Percy Wilson, 1932, 'Portulacaceae', Flora of North America 21 (4): 279-336.

Steiner, Erich, March 1944, 'Cytogenetic studies on Talinum and Portulaca', Botanical Gazette 105: 374-379.

Toolin, L. J., 1986, 'Notes on rare U.S. plants from Arizona, I: including a *Talinum* (Portulacaceae) new to the U.S.', Phytologia 60 (4): 237-242.`

Torrey, J., 1853, 'Report on the botany', in Sitgreaves, L., Report of an expedition down the Zuni and Colorado Rivers: 156.

von Poellnitz, Karl, 1933, 'Zur kenntnis der gattung Talinum Adans. (Portulacaceae)', Berichte Deutsch. Bot. Gesellsch. 51: 112-127.

von Poellnitz, Karl, 1934, 'Monographie der gattung *Talinum* Adans.', Rerpertorium specierum novarum regni vegetabilis 35 (911): 1-34.

Watson, S., 1885, Proceedings of the American Academy of Arts and Sciences 20: 855.

Wijnands, D. O. & Westphal-Stevels, J. M. C., 'Nomenclatural aspects of the plants pictured by Jan and Caspar Commelin with three proposals to conserve or reject', Taxon 34 (2): 307-309.

Wooton & Paul C. Standley, 1913, 'New plants from New Mexico', Contributions from the National Herbarium 16: 120-121.

What's In A Name?

There seems to be continual confusion about *ex* and *in* as they are used in author citations in complete botanical names. Therefore, perhaps it might be beneficial to go, once more, into the breach… From the International Code of Botanical Nomenclature (1994, Tokyo Code): *Article 46.4*. "A name of a new taxon must be attributed to the author or authors of the publication in which it appears when only the name but not the validating description or diagnosis was ascribed to a different author or different authors. A new combination or a *nomen novum* must be attributed to the author or authors of the publication in which it appears, although it was ascribed to a different author or to different authors, when no separate statement was made that they contributed in some way to that publication. However, in both cases authorship as ascribed, followed by "ex", may be inserted before the name(s) of the publishing author(s). *Ex. 13*. Seemann (1865) published *Gossypium tomentosum* "Nutt. mss.", followed by a validating description not ascribed to Nuttall; the name may be cited as *Gossypium tomentosum* Nutt. ex Seem. or *G. tomentosum* Seem."

[Note: Our last little entry about botanical anagrams (issue 17) prompted Lisa Huckell to call my attention to a web site dealing with this kind of nomenclatural jabberwocky: "Curiosities of Biological Nomenclature" at http://www.best.com/~atta/taxonomy.html#wordplay]

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New Plant Distribution Records

New records for New Mexico should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*).

—George W. Cox [Biosphere & Biosurvival, 13 Vuelta Maria, Santa Fe, NM 87506]

Euphorbia mysinites Linnaeus (Euphorbiaceae): Santa Fe Co., adventive along roadsides, Calle Adelina west of Santa Fe, n.d., Cox 01-3 (UNM).

Berberis vulgaris Linnaeus (Berberidaceae): Taos Co., understory of cottonwood woodland on floodplain of Rio Pueblo de Taos in Los Cordovas, n.d., Cox 01-5 (UNM).

—Bob Sivinski [P.O. Box 1948, Santa Fe, NM 87504]

Carex albonigra Mackenzie (Cyperaceae): Santa Fe Co., Santa Fe Baldy in alpine tundra, Sivinski 3915 (UNM); Taos Co., Fletcher 4023 (UNM). [Both specimens identified by Miriam Fritts; this verifies the report by M&H]

—Richard Worthington [P.O. Box 13331, El Paso, TX 79913]

Chaenactis carphoclinia Gray (Asteraceae): Hidalgo Co., Pyramid Mts., 5 rd. mi. by I-10 SW of Lordsburg, 27 Apr 1997, Worthington 26402 (TEX-LL, UNM). [Determined by B. L. Turner; verifies an early report in North American Flora]

Chamaesaracha edwardsiana Averett (Solanaceae): Otero Co., Guadalupe Mts., Worthington 30459 (UTEP), Worthington 30514 (NMC). [Previously known from Texas.]

—Kelly W. Allred [Box 3-I, New Mexico State University, Las Cruces, NM 88003]

Nymphaea mexicana Zuccarini (Nymphaeaceae): Sierra Co., Kingston, small pool at head of spring, 200 m north of Percha Creek and a picnic area on the east side of town, 6400 ft, 30 June 1998, T.P. Adams 279, 288 (NMCR). [Known from Texas & Arizona, and long suspected to be in New Mexico.]

Kelly Allred

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