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- [The Correct Spelling of Commemorative Epithets](#)
- [A Clarification of Centaurea](#)
- [New Plant Distribution Records](#)
- [Botanical Literature of Interest](#)

The Correct Spelling of Commemorative Epithets

by Paul Silva

reprinted from The Jepson Globe 8(2):1,3.

The second installment of Jepson Manual Corrections (Jepson Globe Vol. 7, No. 2) includes notes on the orthography (correct spelling) of specific and infraspecific epithets. Clarification of these notes (which were repeated in the third installment, Vol.7, No.3) seems useful since they give the impression that the correction of misspelled epithets is always optional when in fact it is usually obligatory.

A peculiarity of the International Code of Botanical Nomenclature (ICBN) is that certain recommendations pertaining to orthography (Rec. 60C. 1, 60G, and 60H) are enforced by rules and hence are not really recommendations. The first two affect The Jepson Manual, while the third concerns only fungi.

Rec. 60C. 1, which governs the orthography of specific and infraspecific epithets based on personal names, is enforced by Art. 60.1 1. Grammatically, there are two kinds of commemorative epithets, substantival and adjectival. A substantival commemorative epithet is a noun in the genitive (possessive) case. The inflection (ending) of the epithet varies according to the sex and number of the person(s) being commemorated. Personal names that end in a consonant (except y, which in final position functions as a vowel) can be converted to substantival epithets by the interpolation of -i plus the genitive ending appropriate to the sex and number of the person(s), i.e., -i for a man, -ae for a woman, -arum for two or more women, and -orum for two or more men or persons with both sexes represented. Thus, *Chaenactis parishii* (Samuel Parish), *Lasthenia ferrisiae* (Roxana Ferris), and *Ceanothus hearstiorum* (the Hearst family). Personal names that end in -er are a curious exception among those ending in a consonant in that they do not take the interpolated i. Thus, *Phacelia breweri* (William Brewer), *Horkelia wilderae* (Mrs. H. E. Wilder), and *Cordia wagnerorum* (Dr. and Mrs. Richard J. Wagner).

Personal names that end in -e, -i, -o, u, or -y also can be converted to substantival commemorative epithets by the addition of the appropriate genitive inflection (-i, -ae, -arum, or -orum) without interpolating an i. Thus, *Eryngium constancei* (Lincoln Constance), *Eriastrum brandegeae* (Katherine Brandegee), *Downingia bacigalupii*

(Rimo Bacigalupi), *Astragalus serenoii* (Sereno Watson), *Carex rousseaui* (Jacques Rousseau), *Polystachya moreauae* (Mrs. R. E. Moreau), *Delphinium parryi* (Charles Parry), and *Linanthus parryae* (Mrs. Charles Parry). Personal names that end in -a are a special case: like other names ending in a vowel, they do not take the interpolated i, but the genitive inflection is limited to -e (singular) or -rum (plural) regardless of sex. Thus *Aster greatae*, which commemorates Louis Greata, would be equally correct for Mrs. Greata, while *greatarum* would commemorate both persons.

An adjectival commemorative epithet is a noun converted to an adjective by the addition of a suffix (-an), which is inflected in accordance with the gender of the generic name (-anus, -ana, -anum) but is not affected by the sex or number of the person(s) being commemorated. Personal names ending in a consonant, including those that end in -er, require an interpolated i preceding the suffix. Thus, *Bromus orcuttianus* (Charles Orcutt), *Iris douglasiana* (David Douglas), *Eriogonum eastwoodianum* (Alice Eastwood), and *Astragalus jaegerianus* (Edmund Jaeger). Personal names ending in -e, -i, -o, -u, and -y take the suffix without an interpolated i. Thus, *Pogogyne clareana* (Clare Hardham), *Eriogonum covilleianum* (Frederick Coville), *Sphaeralcea munroana* ("Mr. Munro"), and *Clarkia dudleyana* (William Dudley). Personal names that end in -a are a special case: like other names ending in a vowel, they do not take the interpolated i, but the suffix is reduced to -nus, -na, or -num. Thus, we have *Astragalus claranus* (Clara Hunt), and not *A. clarianus* as originally spelled by Jepson.

It should be emphasized that the orthography of substantival commemorative epithets depends solely on the sex and number of the person(s) being commemorated, while the orthography of adjectival commemorative epithets depends solely on the gender of the generic name in which the epithet is used. Thus, we have *Mimulus bolanderi*, *Madia bolanderi*, and *Trifolium bolanderi* (Henry Bolander) compared with *Lotus nuttallianus*, *Puccinellia nuttalliana*, and *Delphinium nuttallianum* (Thomas Nuttall), when used with masculine, feminine, and neuter generic names, respectively.

In The Jepson Manual, substantival commemorative epithets, when translated, are correctly translated as a possessive, such as Bolander's clover. Adjectival commemorative epithets, when translated, are translated in the same manner. A more literal, but rarely used translation would be, for example, Nuttallian lotus and Eastwoodian buckwheat. Substantival commemorative names are much more common than adjectival commemorative names.

Not all contributors to The Jepson Manual interpreted correctly the rules governing the orthography of specific and infraspecific epithets. Although the editors made an earnest effort to bring the orthography into conformity with the ICBN, a few incorrectly spelled epithets persisted. The following names have incorrectly spelled commemorative epithets and are to be corrected (obligatorily) without change of author or date:

- p. 402 *Arabis pinzlae* to *A. pinzliae*
- p. 573 *Ditaxis clariana* to *D. claryana* (Marjorie Clary)
- p. 592 *Astragalus clarianus* to *A. claranus* (Clara Hunt)
- p. 632 *Lupinus holmgrenanus* to *L. holmgrenianus*

- p. 726 *Salvia brandegei* to *S. brandegeei* (T. S. Brandegee)
- p. 826 *Eriastrum brandegeae* to *E. brandegeae* (Katherine Brandegee)
- p. 935 *Ceanothus ferrisiae* to *C. ferrisiae*
- p. 1178 *Allium sharsmithae* to *A. sharsmithiae*
- p. 1195 *Fritillaria brandegei* to *F. brandegeei* (I. S. Brandegee)

Rec. 60G, which deals with connecting vowels in compound epithets, is enforced by Art. 60.8. The following names in The Jepson Manual have incorrectly formed epithets and are to be corrected (obligatorily) without change of author or date:

- p. 146 *Eryngium alismaefolium* to *E. alismifolium*
- pp. 758, 759 *Sidalcea malvaeflora* to *S. malviflora*
- p. 1130 *Carex luzulaifolia* to *C. luzulifolia*

It should be noted that Rec. 60C.2, which governs the orthography of specific and infraspecific epithets based on personal names already in Greek or Latin or possessing a well-established latinized form (a subjective decision!), is not enforced by a rule. Therefore, the requirement to retain the original spelling of a name or epithet (Art. 60.1) means that the protologue must be consulted. *Swallenia alexandrae* as given in The Jepson Manual (p. 1299) is correct because Swallen used this spelling when publishing the basionym, *Ectosperma alexandrae*, named after Annie Alexander. *Eriogonum ochrocephatum* var. *alexandrae* (p. 878), also named for Annie Alexander, is similarly correct, although contrary to Rec. 60C.2, because Reveal used this spelling when proposing the variety. Assuming that Maximilianus is a well established latinized form of Maximilian, *Helianthus maximiliani* as originally written by Schrader is correct rather than *H. maximilianii*.

Quercus wislizenii as used in The Jepson Manual (p. 662) follows Rec. 60C.2 in converting a personal name already in Latin to a substantive epithet by using the appropriate Latin genitive. The honoree, however, spelled his name Wislizenus rather than Wislizenius, yielding *wislizeni*, as originally proposed by Alphonse DeCandolle.

Rec. 60C.2 discourages treating modern names that end in -o and -on as if they were Latin and thus using the genitive inflection -onis. Such a practice was widespread among older authors, however, so that such epithets as *chamissonis* (Adelbert von Chamisso), *congdonis* (Joseph Congdon), *ecklonis* (Christian Ecklon), *guiradonis* (F. Guirado), and *richardsonis* (Sir John Richardson) are in The Jepson Manual and, while contrary to Rec. 60C.2, are correct.

A Clarification of *Centaurea*

A Clarification of *Centaurea americana* and *Centaurea rothrockii* (Compositae: Cardueae).

by Eric Roalson and Kelly W. Allred

ABSTRACT

Centaurea americana and *Centaurea rothrockii* are two closely related basketflowers that have been confused in herbarium collections. Four hundred and seventy-eight specimens from across the range of each species were studied to determine the morphological differences between them. *Centaurea americana* and *C. rothrockii* can be differentiated by the number of medial phyllary lobes (5-7 vs. 10-13, respectively), and by the color of the upper portion of the phyllary (straw colored vs. dark brown). Full descriptions of both species are provided as well as their geographic ranges and habitat preferences.

INTRODUCTION

Centaurea (Compositae: Cardueae), described by Linnaeus in 1753, is composed of approximately 500 species (Bremer 1994). The circumscription of this genus has varied widely, with several of the sections of Bentham (1873) and Hoffmann (1890) recognized as genera by Wagenitz (1955, 1962, 1963) and Dittrich (1966, 1968). Even more severe generic splitting of *Centaurea* has been proposed by Holub (1973, 1974) and Dostdl (1975).

Centaurea ranges throughout Eurasia, North and East Africa, and North America, with a few species in South America (Bremer 1994). Several species are rather weedy and have invaded elsewhere. Only two species are native to North America (*Centaurea americana* and *C. rothrockii*) and are the topic of this paper.

In 1821, Nuttall described *Centaurea americana*. He characterized the species as a tall annual (4-6 ft) with the "...calix [involucre] ... large and partly globular, its segments [phyllaries] furnished with pennate, recurved, sphacelous, and shining appendages, the internal ones purplish." He also described the rays as being long and reddish. This species was described from a collection made somewhere in "the upper part of Arkansa territory." The information with the type collection is similarly vague. Two sheets are in the type folder at PH. The first sheet is composed of material from two collections: a Nuttall collection annotated "Red River (Nutt.)" and a collection by Palmer from "Arizona." The second sheet is composed of material annotated by Nuttall with "Arkansa." The two specimens annotated by Nuttall are most likely the material referred to in the original description.

Greenman described a similar species, *Centaurea rothrockii*, in 1904. Included with his description was a key differentiating *C. rothrockii* from *C. americana*. *Centaurea americana* was characterized as having "involucral bracts stramineous or the inner ones slightly purplish, pectinate with 3-8 pairs of lateral firm teeth." *Centaurea rothrockii* was described as having "involucral bracts greenish or stramineous below, conspicuously tipped with chestnut-brown, pectinate-fimbriate with 8-12 pairs of lateral rather slender teeth." Greenman cited Rothrock 527 from "Arizona: Chiricahua" as the type collection. Type material was not available to us for study.

Even though Greenman stated rather clearly the differences between the two species, and the most recent floral manuals for Arizona (Kearney and Peebles 1960) and New Mexico (Martin and Hutchins 1981) (the only USA states where both species occur) distinguished the two in an equally well-defined manner, we have found many misdetermined herbarium specimens. This paper clarifies the differences between the two species and discusses the geographic range and habitat of each species.

MATERIALS AND METHODS

Four hundred and seventy-eight specimens were examined from across the geographic ranges of *Centaurea americana* and *C. rothrockii*. *Centaurea americana*, being much more commonly collected, was represented by 362 specimens, whereas *C. rothrockii* was represented by 116 specimens.

To estimate the number of pairs of lobes per phyllary, the number of lobe pairs on one phyllary of one head per specimen was counted, using a phyllary from the middle of the head (hereafter referred to as medial phyllaries). Variation in the color of the phyllaries was noted for each species, and compared to Smithe's (1975) color guide.

RESULTS

An initial survey of all specimens did not reveal any detectable morphological differences between the two species other than the number of lobes on the phyllaries and the phyllaries coloration, features used by Greenman (1904) to separate them.

A high degree of variation was found in the number of phyllary lobe pairs even within a single head. Observations from three plants of *Centaurea americana* (chosen from across the species range) found that the number of lobes within a single head ranged from 4-8 pairs (plant 1) to 2-7 pairs (plants 2 & 3). In three plants of *C. rothrockii*, the number of pairs of lobes ranged from 7-15 pairs (plant 1) to 5-14 pairs (plant 2) to 7-11 pairs (plant 3). Those phyllaries toward the base of the head were small and poorly developed and those at the top of the head tended to be identical for both species. Also, the ranges in the number of phyllary lobes of the two species overlapped if all the phyllaries in a head were considered. However, when only the medial phyllaries were considered, a sharp distinction between the two species was achieved. The number of phyllary lobe pairs ranged from four to eight for *C. americana* and from nine to 15 for *C. rothrockii*.

There were obvious differences between *Centaurea americana* and *C. rothrockii* in the coloration of the upper portion of the phyllaries. Phyllaries of both species tended to grade from a darker color at the base of the upper, lobed portion to a slightly lighter color on the lobes themselves. The upper portion of *C. americana* phyllaries were usually a light to dark straw color (Buff-Yellow [Color 53] to Buff [Color 241] of Smithe 1975) with the lobes being nearly the same color. The phyllaries of *C. rothrockii* tended to be a medium brown to dark brown (Raw Umber [Color 23] to Dusky Brown [Color t9] of Smithe 1975) with the lobes often nearly white. Many *C. americana* specimens from the late 1800s and early 1900s have phyllaries that are much darker than later specimens,

almost a bronze color. Perhaps the phyllaries of *C. americana* darken with age and drying? This difference was not observed in *C. rothrockii*.

Both *Centaurea americana* and *C. rothrockii* have small scabrate hairs on the phyllaries, often giving the phyllary lobes a ciliate appearance. This is most obvious on *C. rothrockii*, where the light-colored hairs stand out against the darker phyllaries.

Kearney and Peebles (1960) also used the shape of the undivided, upper portion of the phyllary to distinguish the two species. They characterized this region in *Centaurea americana* as lanceolate and in *C. rothrockii* as broadly triangular or ovate. We found that the shape of the undivided, upper portion of the phyllary intergraded completely, and the two species can not be distinguished using this feature.

McVaugh (1984) discussed some additional putative differences between *Centaurea americana* and *C. rothrockii*. He stated, "...*C. americana* may be distinguished by ... the peduncles evidently gland-dotted and strongly angled but glabrous or sparingly pubescent." In our observations both species often had gland-dotted and strongly angled peduncles and both varied widely in vestiture.

Additionally, *Centaurea americana* and *C. rothrockii* differed somewhat in plant height and flower color, though the differences were not diagnostic. *Centaurea americana* tended to be taller, mostly 8-15 dm, whereas *C. rothrockii* was generally shorter, 3-10 dm. The rays of *C. americana* were usually purple or pink on the outside of the head and white or yellow on the inside of the head, though the color of the rays ranged from all purple or pink to all yellow or all white. *Centaurea rothrockii* had all purple flowers, all yellow flowers, or a combination of purple and yellow flowers (purple on the periphery of the head and yellow in the center of the head).

The geographic ranges of *Centaurea americana* and *C. rothrockii* were discrete for the most part, with overlap only in southeastern Arizona (Cochise Co.), southwestern New Mexico (Grant Co.), and northern Chihuahua (Fig. 1). When the species occurred in the same region, their populations were allopatric in terms of habitat and elevation. *Centaurea americana* primarily occurred in prairies and plains, often along roadsides and in disturbed ground, and at low elevations, from sea level to approximately 2100 m. Occasionally this species was found in wooded foothills, but still in somewhat weedy habitats. *Centaurea rothrockii*, on the other hand, was primarily a species of the Sierra Madre Occidentale whose range barely entered the mountains of southwestern New Mexico and southeastern Arizona. This species appeared to always occur in relatively undisturbed mountain vegetation at generally higher elevations, 1350-2700 m. We found no localities where the two species occurred together.

The following key can be used to identify the two species:

1. Medial phyllaries with (4)5-7(8) pairs of lobes, upper portion light to dark straw-colored *C. americana*
1. Medial phyllaries with (9)10-13(15) pairs of lobes, upper portion medium brown to dark brown *C. rothrockii*

TAXONOMY

CENTAUREA AMERICANA Nutt., J. Acad. Nat. Sci. Philadelphia 2:117-118. 1821. non Rothrock, 1878. Type: "Arkansa", Nuttall s.n. (holotype: PH!).

Centaurea nuttallii Spreng., Syst. Veg. 4 (Suppl.):298.1827.

Plectocephalus americanus (Nutt.) Don in Sweet, Brit. Fl. Gard. 2: pl. 51. 1831.

Centaurea mexicana DC. in DC., Prodr. 6:575. 1837.

Description: Erect annuals. Stems (3)8-15 dm tall, simple below, branched above, grooved, glabrous below to minutely scabrous and glandular above. Leaves (2)4-8(10) cm long, alternate, simple, lanceolate to oblong-lanceolate, the basal leaves sometimes spatulate, glabrous to scabrous on both surfaces; margins entire to remotely denticulate, often mucronate at the apex. Peduncles thickened above, scabrous to tomentose, glandular. Heads solitary at the ends of branches. Involucre 3-5 cm long, subcampanulate. Phyllaries in several series, imbricate, each phyllary articulated into two parts; lower part entire, broadly elliptic to linear, light straw colored to light green and striate, occasionally tomentose; upper part lanceolate to deltoid in outline, light to dark straw-colored, bearing (4)5-7(8) pairs of subulate lobes. Phyllary lobes usually the same color as the rest of the phyllary, obscurely to conspicuously ciliate. Corollas 2-2.5 cm long, usually with the peripheral rays purple or pink and the central rays yellow or white, occasionally all rays purple or yellow, the peripheral rays usually much longer than the central rays. Pappus of minutely barbellate bristles 6-14 mm long, in one or two series. Achenes 4-5 mm long, oblong-obovate, brown to black, obscurely striate, usually glabrous, attached at an obliquely leveled area just above the base.

Habitat: Prairies, plains, open fields, and roadsides, often in disturbed areas, occasionally on wooded slopes in the foothills; soils rocky and xeric to clayey; from approximately sea level to 2100 m.

Distribution: Central United States to east-central Mexico (Fig. 1). United States: Arizona, Arkansas, Kansas, Louisiana, Missouri, New Mexico, Oklahoma, and Texas. Mexico: Chihuahua, Coahuila, Nuevo Leon, Queretaro, San Luis Potosi, and Tamaulipas.

CENTAUREA ROTHROCKII Greenm., Bot. Gaz. 37:219-222. 1904. Type: Chiricahua, Arizona, Rothrock 527 (holotype: GH, not seen).

Description: Erect annual or biennial herbs. Stems 3-10 dm tall, simple below, sparingly branched above, grooved, glabrous or slightly scabrous. Leaves 3-12 cm long, alternate, simple, lanceolate to oblong-lanceolate, the basal leaves sometimes spatulate, glabrous to scabrous on both surfaces; margins entire to remotely denticulate, often mucronate at the apex. Peduncles thickened above, scabrous to tomentose, glandular. Heads solitary at the ends of branches. Involucre 3-5 cm long, subcampanulate. Phyllaries in several series, imbricate, each phyllary articulated into two parts; lower part entire, broadly elliptic to linear, beige to light green and striate, occasionally tomentose; upper part lanceolate to deltoid in outline, medium brown to dark brown, bearing (9)10-13(15) pairs of subulate lobes. Phyllary lobes often whitish, usually conspicuously ciliate. Corollas 2-2.5 cm long, the rays commonly all purple or yellow, sometimes the peripheral rays purple and the central rays yellow, the peripheral rays usually much longer than the central rays. Pappus of minutely barbellate bristles 6-14 mm long, in one or two series. Achenes 4-5 mm long, oblong-obovate, brown to black, obscurely striate, usually glabrous, attached at an

obliquely leveled area just above the base.

Habitat: Meadows, roadsides, streamsides, and wooded canyons in the mountains; calcareous, rocky ground to moist, silty or clayey soils; approximately 1350-2700 m.

Distribution: Southwestern United States to south-central Mexico (Fig. 1). United States: Arizona and New Mexico. Mexico: Chihuahua, Durango, Jalisco, Mexico, Morelos, Oaxaca, Sinaloa, and Sonora.

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[Fig. 1 has not been posted to this page. See hard copy]

New Plant Distribution Records

New records for New Mexico are documented by the county of occurrence and the disposition (herbarium) of a specimen.

— Bob Sivinski (P.O. Box 1948, Santa Fe, NM 87504)
Penstemon ophianthus Pennell (Scrophulariaceae): San Juan Co. (UNM).

Mentzelia marginata Thompson & Prigge (Loasaceae): San Juan County (UNM).
Paronychia depressa (Torr. & Gray) Nutt. ex A. Nels. (Caryophyllaceae): Harding Co. (UNM).

Arenaria hookeri Nutt. ex Torr. & Gray (Caryophyllaceae): Torrance Co (UNM).

— Thomas Adams (Range Science Herbarium, Box 3-I, New Mexico State University, Las Cruces, NM 88003)

Tillaea aquatica L. (Crassulaceae): Catron Co. (NMCR).

Cyperus bipartitus Torrey (Cyperaceae): Catron Co. (NMCR).

Myriophyllum verticillatum L. (Haloragaceae): Catron Co. (NMCR).

Heteranthera rotundifolia (Kunth) Griseb. (Pontederiaceae): Harding & Hidalgo Cos. (UNM).

— Kelly Allred (Range Science Herbarium, Box 3-I, New Mexico State University, Las Cruces, NM 88003)

Rumex pulcher L. (Polygonaceae): Dona Ana Co. (NMCR) [second report].

— Tom Todsen (2000 Rose Lane, Las Cruces, NM 88005) reported from Freudenstein (1997) and Catling & Engel (1993)

Corallorhiza striata Lindl. var. *vreelandii* (Rydb.) L.O. Wms. (Orchidaceae).

Corallorhiza maculata Raf. var. *occidentalis* (Lindl.) Ames (Orchidaceae).

Hexalectris spicata (Walt.) Barnh. var. *arizonica* (S.Wats.) Catling & Engel (Orchidaceae): Otero Co. (UNM).

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