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NEW TAXA AND RECOMBINATIONS IN OENOTHERA (ANOGR)

WILLIAM M. KLEIN¹

A biosystematic investigation of several entities of *Oenothera* (Onagraceae), subgenus Anogra, has shown the necessity of making changes in their taxonomy in order to bring it into line with the findings. Two taxa which lacked names are here described and 6 new combinations are proposed. These changes are presented in the following notes in order to make the names available. Only the essential synonymy will be given at this time; for complete synonymy the reader is referred to Munz (Am. J. Botan. 18: 309-327, 1931).

***Oenothera californica* Watson subsp. *arizonica* (Munz) Klein, comb. nov.**

Oenothera deltooides Torr. & Frém. var. *arizonica* Munz, Am. J. Botan. 18: 315. 1931.

***Oenothera californica* Watson subsp. *avita* Klein, subsp. nov.**

A subsp. *californica* differt: foliis oblanceolatis vel spatulatis; ramis fere e basin; foliis caulinis fere profundius incisus vel lobatis; gemmis maturitate 17-22 mm. longis; petalis 25-35 mm. longis; capsulis angustioribus, 22-50 mm. longis, 2 mm. diametro.

Differs from subsp. *californica* as follows: rosette leaves oblanceolate to spatulate; branches mostly from the base, their leaves usually more deeply incised or lobed; mature buds 17-22 mm. long; petals 25-35 mm. long; capsules more slender, 22-50 mm. long, 2 mm. in diameter. Gametic chromosome number, $n = 7$.

Type.—along U.S. Highway 91 about 0.5 miles northeast of Leeds, elevation about 3400 feet, Washington County, Utah, 21 May 1959, *W. M. Klein 1049* (RSA; isotypes, GH, UC).

Representative specimens examined.—UTAH. Beaver County: 4 miles west of Milford, 5200 feet, *Keck 637* (DS, POM, UC). Washington County: Forest Camp 3 miles east of Pine Valley, 7000 feet, *Gould 1833* (ARIZ, DS, GH, POM, US). NEVADA. Lander County: Austin, 6000 feet, *Kennedy 4585* (DS, UC). Esmeralda County: near Pinchot Creek, White Mountains, 7000 feet, *Duran 2753* (DS, GH, POM, RM, UC, US, UTC). Nye County: west slope of Toquima Range, 1 mile south of Round Mountain, on Manhattan road, 5400 feet, *Train 2748* (RSA, UC, UTC). Lincoln County: Kershaw, Meadow Valley Wash, *Gooding 956* (GH, POM, RM, UC, US). Clark County: Wilson's Ranch, Charleston Mountains, *B. & R. Maguire 16632* (UC, UTC). CALIFORNIA. Mono County: 1.4 miles north of Convict Lake on road from U.S. Highway 395, 7200 feet, *Everett & Balls 21966* (RSA, WS). Inyo County: about 3 miles from Lone Pine on road to Keeler, 3700 feet, *Coville & Funston 952* (US). San Bernardino County: 2 miles south of Barnwell on road to Lanfair, 4750 feet, *Wolf 3281* (DS, POM, RSA, US). ARIZONA. Mohave County: Beaver Dam River, Arizona Strip, *B., R., & C. B. Maguire 4886* (POM, RM, UC, UTC); 5 miles south of Burro Creek crossing, south of Wikieup along State Highway 93, *Miranda & Deaver 5778* (RSA).

This subspecies, which is diploid, differs from the tetraploid, more coastal subspecies *californica* only in the quantitative characteristics given above. It is impossible to determine many specimens using morphological characteristics only.

***Oenothera californica* subsp. *eurekensis* (Munz & Roos) Klein, comb. nov.**

Oenothera deltooides Torr. & Frém. subsp. *eurekensis* Munz & Roos, Aliso 3: 118. 1955.

***Oenothera deltooides* Torr. & Frém. subsp. *ambigua* (Wats.) Klein, comb. nov.**

Oenothera ambigua Wats., Proc. Am. Acad. 14: 293. 1879.

¹The generous cooperation of the curators who made herbarium material available for this study is here gratefully acknowledged. The institutions in question are indicated by the standard abbreviations of Lanjouw and Stafleu (Index Herbariorum, ed. 4. 1959).

Oenothera deltoides subsp. **cognata** (Jepson) Klein, comb. nov.*Oenothera trichocalyx* Nutt. var. *cognata* Jepson, Man. Fl. Plants of California. 681. 1925.**Oenothera deltoides** subsp. **howellii** (Munz) Klein, comb. nov.*Oenothera deltoides* var. *howellii* Munz, Aliso 2: 81. 1949.**Oenothera deltoides** subsp. **piperi** (Munz) Klein, comb. nov.*Oenothera deltoides* var. *piperi* Munz, Am. J. Botan. 18: 314. 1931.**Oenothera wigginsii** Klein, sp. nov.

Herba annua humilis pilis glandulosis eglandulosisque investa, fere ramis decumbentibus parce numerosis e basi praedita. *Caulis* centralis erecta, usque ad 15 cm. alta, subtus crassa. *Foliae* rosettae laminis late oblanceolatis vel rhombo-ovoideis, 6–20 cm. longis, 1.5–6 cm. latibus, puberulentibus, ad margines nervosque pilosis; petiolus 3–10 cm. longus. *Foliae* ramulorum ad apices confertae, laminis oblanceolatis, subtus pinnatifidus, dense pilosis. *Gemmae* maturitate obtusae, dense pilosae pilis glandulosis admixtae. *Flores* 3–5 cm. diametro, vespertinae. *Petalae* obcordatae, 1.5–2.5 cm. longi, 2–3 cm. lati, albae, rubrescentes. *Capsula* 2–4 cm. longa. *Semina* 1.5–2.5 mm. longa, olivacea, atromaculata.

Low winter annual with dark green foliage, covered with a mixture of glandular and non-glandular trichomes, the young growth woolly-pubescent; rhytidome of mature stems exfoliating; erect central stem to 15 cm. long, swollen below, commonly giving rise from the base to several decumbent-ascending branches 5–27 cm. long. *Leaves* of the rosette with blades broadly oblanceolate to rhombic-obovate, obtuse to acute, pinnately divided in lower half, puberulent, the lower veins and margins pilose. 6–20 cm. long, 1.5–6 cm. wide, the petiole often reddish, 3–10 cm. long; leaves of branches clustered near their apices, the blades oblanceolate, pinnately divided throughout or more often in lower two thirds, densely pilose throughout. *Mature buds* obtuse, densely pilose with an admixture of glandular trichomes, 10–18 mm. long, 6–7 mm. in diameter, often reddish. *Flowers* vespertine, subterminal, 3–5 cm. in diameter. *Sepals* lanceolate, individually reflexed, often reddish. *Petals* obcordate, 1.5–2.5 cm. long, 2–3 cm. wide, white, fading pink. *Stamens* subequal, the anthers about 5 mm. long. *Style* glabrous, ca. 4.5 mm. long, the stigma elevated above the anthers at anthesis, its lobes ca. 7 mm. long. *Capsule* straight, more rarely curved, 2–4 cm. long, tapering above. *Seeds* lanceolate to ovate in outline, 1.5–2.5 mm. long, olive-brown, dark-spotted. Gametic chromosome number, $n = 7$.

Type.—Sand hills along the edge of Bahía de San Quintín about 2 miles southeast of the cannery, elevation about 100 feet, 8 March 1960, *W. M. Klein & D. P. Gregory* 1202 (RSA; isotypes GH, RM, UC, and to be distributed).

Additional specimens examined.—BAJA CALIFORNIA. Near Colnett, *Harvey* 517 (US); 2 kilometers north of Colonia Guerrero, *Raven, Lewis, & Thompson* 12134 (RSA); 1 mile north of Colonia Guerrero, *Tillett* 787 (RSA); about 5 miles north of San Quintín, *Thomas* 142 (DS); San Quintín, *Bacigalupi* 3006 (RSA), *Chisaki & Bell* 534 (RSA, US), *Epling & Robinson in 1935* (ARIZ, DS, UC), *Epling & Stewart in 1936* (DS, GH, UC, US), *Palmer* 663 in 1889 (US), *Wiggins* 4521 (DS, GH, POM, UC, US); 6 miles south of San Quintín, *Ballou & Canby* 55 (POM); Pabellon Beach, about 7 miles south of San Quintín, *Klein & Gregory* 1221 (RSA); 17 miles north of El Rosario, *Epling & Robinson in 1935* (DS); Socorro, *Brandegge in 1889* (UC), *Cronemiller* 3031 (POM); about 1.5 miles east of Punta Baja on road to El Rosario, *Klein & Gregory* 1237 (RSA).

It is a great pleasure to dedicate this distinctive new species to Professor Ira Loren Wiggins of Stanford University, long-time student of the flora of Baja California.

Oenothera wigginsii is closely related to *Oenothera deltoides* but differs in its smaller size, more deeply divided leaf blades, smaller buds and flowers, and shorter capsules. It occupies a small area about 90 miles from north to south along the western coast of Baja California, and is thus geographically isolated from *Oe. deltoides*.