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NEW SPECIES AND COMBINATIONS IN THE GENUS *OENOTHERA* (ONAGRACEAE)¹

WARREN L. WAGNER²

ABSTRACT

Four new combinations in *Oenothera* sect. *Megapterium* and one each in sects. *Pachylophus* and *Oenothera* are made here to make them available for use in regional floras. *Oenothera harringtonii* (sect. *Pachylophus*) from southeastern Colorado, *O. clelandii* (sect. *Oenothera* subsect. *Raimannia*) principally from the Great Lakes region south to Iowa and Illinois, and *O. heterophylla* subsp. *orientalis* from two disjunct areas in Alabama and Arkansas are newly described here in order to also make them available.

A series of revisionary papers on *Oenothera* sects. *Megapterium* (Wagner, in prep.), *Pachylophus* (Wagner et al., in press), and *Oenothera* subsects. *Oenothera* (Dietrich & Wagner, in prep.) and *Raimannia* (Dietrich et al., in prep.) that contain new taxa and combinations are currently in press or in the late stages of preparation. The publication of one or more regional floras that contain information resulting from these detailed studies on *Oenothera*, however, will likely precede that of the revisions. Therefore, in order to make these new names and combinations available for the *Great Plains Flora*, the *Vascular Flora of the Southeastern United States*, vol. 3, and the *Michigan Flora*, vol. 2, they are published here in advance of the revisions. Detailed discussion of these changes and new taxa will be included in the revisions.

Oenothera sect. *Megapterium* (Spach) Endl.

Oenothera macrocarpa* Nutt. subsp. *incana (A. Gray) W. L. Wagner, comb. et stat. nov.

Oenothera missouriensis Sims var. *incana* A. Gray, Boston J. Nat. Hist. 6: 189. 1850. TYPE: "Canadian River" probably in the Texas Panhandle in one of the following counties—Oldham, Potter, Hutchinson, Roberts or Hempshall—Texas, April 1848, A. Gordon 31 (GH, lectotype, photo MO; MO, isolectotype; Munz, Amer. J. Bot. 17: 366. 1930).

Oenothera macrocarpa* Nutt. subsp. *oklahomensis (Nort.) W. L. Wagner, comb. et stat. nov.

Megapterium oklahomense Nort., Annual Rep. Missouri Bot. Gard. 9: 153. 1898. TYPE: Marena, Payne

County, Oklahoma, 1893, F. A. Waugh 183 (MO-2529631, lectotype here designated; KSC, US, isolectotypes). Munz (Amer. J. Bot. 17: 365. 1930) selected the US specimen as the lectotype, however, Norton apparently only examined the KSC and MO sheets.

Oenothera macrocarpa* Nutt. subsp. *fremontii (S. Wats.) W. L. Wagner, comb. et stat. nov.

Oenothera fremontii S. Wats., Proc. Amer. Acad. Arts 8: 587. 1873. TYPE: "White rock on Smoky Hill River," Ellsworth, Russell, Ellis, Trego, Cove, or Logan county, Kansas, 7–23 June 1867, C. C. Parry 79 (GH, lectotype here designated; MO 3 sheets, US, isolectotypes). Munz (Amer. J. Bot. 17: 367. 1930) indirectly selected the Fremont collection (second expedition), also mentioned by Watson, as the lectotype. Since GH has no Fremont collection that could be the one Watson saw I have selected the other collection cited by Watson, Parry 79, as the lectotype.

Oenothera macrocarpa is a variable species that has differentiated extensively in the Great Plains region. Each of the four subspecies occupies a different geographical and ecological situation and in general they are sharply distinct. They are treated as subspecies primarily because of their complete interfertility and extensive intergradation in any area of marginal contact. Intermediates are known between *O. macrocarpa* subsp. *macrocarpa* and subsp. *fremontii* and *oklahomensis* and between subsp. *oklahomensis* and *incana*. There is also evidence that suggests past hybridization between subsp. *incana* and *fremontii*, although there is at present no contact between them.

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Oenothera howardii (A. Nels.) W. L. Wagner, comb. nov.

Lavauxia howardii A. Nels., Bot. Gaz. (Crawfordsville) 34: 368. 1902, non M. E. Jones, Zoe 3: 301. 1893. TYPE: "In clay, Vermilion," Sevier Co., Utah, 1,600 m, 16 July 1894, M. E. Jones 5631c (RM-13996, lectotype here designated; BM, G, MO 2 sheets, MSC, NY, POM, UC, US, isolectotypes). Jones's publication of the name *Oenothera howardii* is invalid since he proposed the name in anticipation of its future acceptance (Art. 34.1b, International Code of Botanical Nomenclature, 1978). He placed his discussion of "*Oenothera howardii*" under the name *Oenothera johnsonii* Parry (= *O. primiveris* A. Gray) and stated that should the entity prove distinct he named it *O. howardii*. Thus the first valid publication of the epithet was by Aven Nelson as *Lavauxia howardii*. I am grateful to Dan Nicolson for his helpful comments on this situation.

Oenothera brachycarpa sensu Munz, Amer. J. Bot. 17: 367. 1930, pro parte.

Plants from Hamilton Co., Kansas, eastern Colorado, Utah, and Nevada formerly included in *Oenothera brachycarpa* are segregated here as *O. howardii*. This species is quite distinct from *O. brachycarpa* in its brilliant yellow petals that dry reddish brown, floral tubes 4.3–11(–12.5) cm long and in that it consists of entirely tetraploid, hexaploid, and octoploid plants whereas *O. brachycarpa* from west Texas to southeastern Arizona and northern Mexico has pale yellow petals that dry lavender, floral tubes (10.5–)12–22 cm long and is entirely diploid, $n = 7$.

Oenothera L. sect. *Pachylophus* (Spach) Endl.

Oenothera caespitosa Nutt. subsp. ***macroglottis*** (Rydb.) W. L. Wagner, Stockhouse & Klein, comb. et stat. nov.³

Pachylophus macroglottis Rydb., Bull. Torrey Bot. Club 30: 259. 1903. TYPE: "Turkey Creek and tributaries," in present vicinity of La Veta Pass, Huerfano Co., Colorado, 2,800–2,900 m, 8 & 9 June 1900, P. A. Rydberg and F. K. Vreeland 5857 (NY, holotype, photo MO; RM, isotype). Locality reconstructed with the aid of R. Barneby (pers. comm.).

The plants treated here as *Oenothera caespitosa* subsp. *macroglottis* were included by Munz (1931, 1965) within his broadly defined and artificial *O. caespitosa* var. *montana* (Nutt.) Du-

rand. Slightly curved capsules (1.7–)2.5–5.6 cm long with an undulate ridge along the valves, coarsely dentate spatulate to broadly oblanceolate leaves and cool montane habitat clearly distinguish this entity from the other subspecies of *O. caespitosa*. It ranges from southern Wyoming, Colorado to southeastern Utah and northern New Mexico.

Oenothera harringtonii W. L. Wagner, Stockhouse & Klein, sp. nov. TYPE: United States: Colorado, El Paso Co., Colorado Springs, 2,000 m, 29 May 1939, J. H. Ehlers 7461 (MICH, holotype, photos MO, COLO; MICH 2 sheets, NA, isotypes).

Oenothera caespitosa var. *eximia* sensu Munz, Amer. J. Bot. 18: 731. 1931, pro parte (as to plants from Colorado).

Herba annua caulescens. Folia tenuia, hirtella pilis minutis glandulosis. Tubus floralis 3.1–6 cm longus. Petala alba demum pallido-subrosea, 2–2.6 cm longa. Capsula lanceoloidea, recta, (2.1–)2.5–3(–3.5) cm longa, valvularum marginibus 6–8 tuberculis prominentibus 2–3 mm altis interdum coalescentibus porcam sinuatam formantibusque, per didimium velduos longitudinalis trientes deshiscens. Numerus chromosomaticus gameticus, $n = 7$.

This attractive species named in honor of the late Harold D. Harrington (1903–1981) is known only from grasslands in the southeastern Colorado counties of El Paso, Fremont, Otero, and Las Animas. *Oenothera harringtonii* is distinctive in the *O. caespitosa* complex in being a coarse annual with densely leafy, erect stems; capsules ovoid with 5–8 conspicuous tubercles 2–3 mm high and five or more flowers opening at one time.

Oenothera L. sect. *Oenothera* subsect. *Oenothera*

Oenothera elata H.B.K. subsp. ***hirsutissima*** (A. Gray ex S. Wats.) Dietrich, comb. et stat. nov.⁴

Oenothera biennis L. var. *hirsutissima* A. Gray, Mem. Amer. Acad. Arts II. 4: 43. 1849; ex S. Wats., Proc. Amer. Acad. Arts 8: 579. 1873. TYPE: Valley of Santa Fe Creek, Santa Fe Co., New Mexico, June 1847, A. Fendler 218 (GH, lectotype; MIN, MO, isolectotypes; Munz, Aliso 2: 18. 1949).

Recent careful study of a large number of spec-

³ This combination and *O. harringtonii* are contributed jointly with R. Stockhouse, Pacific University, Forest Grove, OR 97166 and W. M. Klein, Morris Arboretum, 9414 Meadowbrook, Philadelphia, PA 19188.

⁴ Contributed by W. Dietrich, Botanisches Institut of the University of Düsseldorf, Germany.

imens of plants assigned to *Oenothera hookeri* Torr. & A. Gray and *O. elata* suggested that the two entities are extremely similar and should be recognized as one species (Raven et al., 1979; Dietrich & Wagner, unpubl.) Populations in the United States and northern Mexico can be separated from those from coastal California and those from central Mexico south to Panama and are here recognized as *O. elata* subsp. *hirsutissima*.

Oenothera L. sect. *Oenothera*
subsect. *Raimannia* (Rose) Dietrich

Oenothera clelandii Dietrich, Raven & W. L. Wagner, sp. nov.⁵ TYPE: United States: Michigan. Mason Co., Amber Township, E half of sec. 23 NE ¼, 30 September 1974, C. J. Barkley s.n. (MO-2383779, holotype; MO, isotype).

Oenothera rhombipetala sensu Munz, N. Amer. Fl. II. 5: 108. 1965, pro parte.

Herba biennis. Inflorescentia compacta, non interrupta ramis lateralibus; efflorescent flores complures per diem. Petala late elliptica vel ovata, acuta (raro rotundata), 0.5–1.6 cm longa, flava vel pallide flava. Antherae spargunt pollen ipse in stigmatem per anthesin. Semina ambitu elliptica, brunnea, 1–1.9 mm longa. Numerus chromosomaticus gameticus, $n = 7$; planta chromosomatice structuraliter heterozygotica.

This distinctive new species is a complex structural heterozygote. A ring of 14 chromosomes is thus formed at meiotic metaphase I and the pollen is only about 50% fertile. Populations formerly included in *Oenothera rhombipetala* from southeastern Minnesota and Michigan south to Iowa, Illinois and scattered localities in Arkansas, Missouri, Kentucky, New Jersey, and New York are all autogamous complex heterozygotes and are here separated from the larger-flowered, outcrossing, fully fertile, pair-forming popula-

tions from South Dakota south to Texas and central Arkansas. *Oenothera clelandii* is named in honor of Ralph E. Cleland (1892–1970), life-long student of *Oenothera* cytogenetics.

Oenothera heterophylla Spach subsp. ***orientalis***
Dietrich, Raven & W. L. Wagner, subsp. nov. TYPE: United States: Alabama, Sumter Co., sandy clay field, 5.2 mi S of Dancy, 3 May 1972, R. Kral 46366 (MO-2379457, holotype; DUKE, GA, GH, NCU, NY, USF, VDB, isotypes).

Tubus floralis 3–4.7 cm longus, immaculatus, sine pilis pustulatis. Sepala immaculata, sine pilis pustulatis, apices sepalorum 1–3 mm longi, erecti. Ovarium et capsula saepe omninoglabrum. Numerus chromosomaticus gameticus, $n = 7$.

Oenothera heterophylla subsp. *orientalis* is clearly distinguished from subsp. *heterophylla*, which occurs from central and eastern Texas to eastern Louisiana, in its lack of red pustulate hairs on any flower parts, sepal-tips erect in bud, 1–3 mm long and the ovary glabrous. It is known from only two disjunct areas: Greene, Pickens and Sumter counties in Alabama and Calhoun, Nevada, and Ouachita counties in Arkansas.

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⁵ This species and the next subspecies contributed in collaboration with W. Dietrich and Peter H. Raven, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166.