

A NEW SUBSPECIES OF *COMAROSTAPHYLIS* *POLIFOLIA* (ERICACEAE) FROM COAHUILA, MEXICO

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ABSTRACT

Comarostaphylis polifolia subsp. *coahuilensis* is described from the mountains of the central Chihuahuan Desert in Coahuila, Mexico. A discussion of fruit structure supports the generic separation of *Comarostaphylis* from *Arctostaphylos* and *Arbutus*.

Recent field studies in connection with M. C. Johnston's Chihuahuan Desert Flora Project have brought forth collections of a distinct taxon of *Comarostaphylis* from six mountain ranges in south and central Coahuila. These collections appear to lie within the general variation that Standley (1924) advocated for *Arctostaphylos* (*Comarostaphylis*) *polifolia* H.B.K.

Comarostaphylis was first segregated from *Arctostaphylos* by Zuccarini (1837) on the basis of gynoecial and fruit characters. The gynoecium of *Comarostaphylis* consists of 5 (rarely 4) carpels, each with 1 ovule, and the fruit is a drupe with a reddish to blackish, granular or warty exocarp, a thin mesocarp, and a solid, bony, thick-walled, spheroidal endocarp stone that contains (4–)5 seeds each with a distinct conical grayish cap on the apical end. *Arctostaphylos*, in contrast, may have 5–9(–10) carpels each with 1 ovule, but the mature fruit is brownish, has a smooth exocarp, mealy mesocarp, and seeds are enclosed in separate portions of the endocarp, which may then consist of 5–9(–10) separate segments. In other species of *Arctostaphylos*, the endocarp segments may be variously combined into groups of 2 or 3, or in one species (*A. glauca* Lindl.), as in *Comarostaphylis* and *Xylococcus*, they are combined into a single, solid, but often vertically ridged endocarp stone.

Fruits of *Comarostaphylis* are superficially similar to those of *Arbutus* in that both have warty or granular exocarps. *Arbutus*, however, has several ovules per carpel and the seeds are enclosed in a cartilaginous to lignified endocarp wall that is open, i.e. not lignified, along the dorsal trace of each carpel.

I cannot agree with the placement of *Comarostaphylis* within *Arctostaphylos* as has been done in Standley (1924) and Standley and Williams (1966). I support the contention (Adams, 1940) that each of these genera, as well as *Xylococcus* and *Ornithostaphylos*, is worthy of generic recognition.

Small (1914) recognized *Comarostaphylis* as a distinct genus with 22 species, six of which he described as new. Standley (1924) placed *Comarostaphylis* within *Arctostaphylos*, recognizing only 14 species and combining five of Small's species into his *Arctostaphylos polifolia* H.B.K. with a comment that the key characters used by Small (1914) to distinguish these segregates were "utterly worthless". As recognized by Standley (1924), the delineation of taxon *polifolia*, one of the oldest names within *Comarostaphylis*, has been greatly broadened to include specimens with puberulent, canescent, or glandular stems and inflorescences and entire, linear to oblong-lanceolate, revolute to flattened, glabrous to glaucous, puberulent, villous to somewhat glandular leaves. This entire complex of taxa is also quite variable in floral features. Ovaries can be glabrous to weakly pilose or villous and corolla size also varies through the range of the species. At present the actual circumscription of the species is not known as a comprehensive study has not been made of the variation encountered in the field. Our specimens from the mountains of the Chihuahuan Desert appear to fit within the morphological range of *C. polifolia* in the broadest sense. To name this new taxon at a rank equal to *C. polifolia* is not defensible, in my opinion. I here present the taxon as a new subspecies of *C. polifolia* in anticipation that further studies will recognize additional, geographically distinct, minor variants of the species at the rank of subspecies (e.g., *A. novoleonsis* Rehder).

***Comarostaphylis polifolia* (H.B.K.) Zucc. subsp. *coahuilensis* Henrickson, subsp. nov.**

Frutices saepe humiles nodosi vel arbores parvae ad 1.5 m altae; rami hornotini purpureo-brunnei, dense albo-puberulentes vel canescentes. Laminae foliorum oblongo-ellipticae vel anguste oblongo-ovatae, planae vel conduplicatae ad costum, apice saepissime mucronatae, sparse puberulentes, supra glabratae nitidae, subtus glaucae subpersistente pubescentes. Racemi terminales puberulentes pilis crispis glandulosis; lobi calycis deltoidei, glandulosi puberulentesque ciliati roseoli; corolla ovoidae vel elliptico-urceolatae, pallide roseolae vel roseolae, lobis orbicularibus vel ovatis reflexis (Fig. 1).

Low, rounded, somewhat gnarled shrubs to miniature trees 0.2–1.5 m high; young stems maroon-brown, densely white puberulent, hirtellous to subcanescent with trichomes 0.05–2 mm long; bark reddish brown, flaking, weathering gray in old stems. Leaves congested at stem tips; petioles 3–7 mm long, flattened to grooved adaxially, puberulent as young stems; blades oblong-elliptical to narrowly oblong-ovate, oblong-obovate, 2–4(–4.5) cm long, 7–11(–20) mm wide, subcoriaceous to coriaceous, flat or conduplicately folded along midrib, obtuse to rounded or acute but mostly mucronate at apex, rounded to cuneate at base, entire, rarely slightly toothed, revolute to undulate, callose-thickened at margins, sparsely puberulent to glabrate, shining

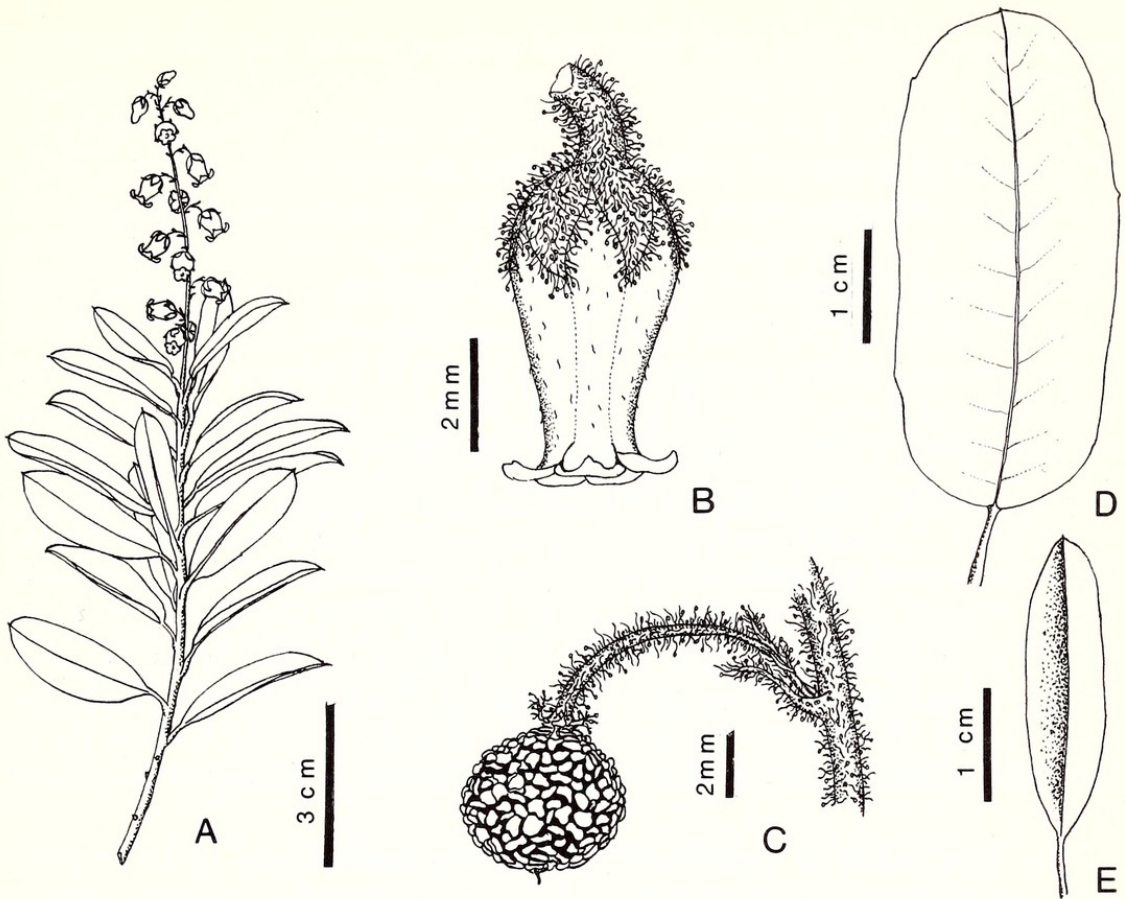


FIG. 1. *Comarostaphylis polifolia* subsp. *coahuilensis* Henrickson. A. Stem showing orientation of leaves and inflorescence (Johnston et al. 10842, LL). B. Flower with glandular sepals (Johnston et al. 10842, LL). C. Immature fruit on glandular-puberulent pedicel with bracts and rachis shown (Henrickson 13600, TEX). D-E. Extremes in leaf size from original collections. D. Subcoriaceous large leaf with slight tooth formation (Chiang et al. 9075, LL). E. Coriaceous leaf, folded along midrib (Johnston et al. 11682, LL).

green above, sparsely but more persistently puberulent with trichomes 0.1–0.5 mm long, glaucous, gray-green to yellow-green beneath. Racemes terminal, 2.5–4.5 cm long, rachis and pedicels curly-puberulent and with stalked glands 0.2–0.5 mm long, glands red or not; pedicels 3.7–7(–10) mm long, with 3 bracts, the basal to 6 mm long, the upper bracts narrowly acuminate, to 1 mm long. Flower calyx 4–5 mm broad, lobes to 1.5 mm long, triangular, acute to acuminate, glandular and puberulent, ciliate, reddish; corollas ovoid to elliptically urceolate, pale pink to rose, 5–8(–9) mm long, 3–5 mm wide, glabrous without, pilose within, lobes erect to reflexed, orbicular to ovate, 0.8–1.0 mm long, 0.8–1.5 mm wide, ciliate, papillate within; stamens 10, filaments 1.3–2.2 mm long, dilated, pilose at base; anthers ovoid 0.9–1.2 mm long, pink, appendages 0.4–0.6 mm long; ovary sparsely pilose, basal disk weakly 10-ribbed, sparsely pilose-ciliate; style 4–5 mm long. Drupe 4–6 mm in diameter; endocarp 3.0–3.5 mm broad, spheroidal;

seeds ovoid, 1.7–2.2 mm long, the gray conical cap one-third its length.

TYPE: Mexico, Coahuila, Cañon de Calabazas in Sierra Mojada, s. of Esmeralda (near 27°16'N, 103°41'W), flowers pink, 6 May 1973, *Johnston, Wendt, and Chiang 10881*. (Holotype: LL; isotype: MEXU).

PARATYPES: Mexico, Coahuila, Sierra Mojada, s. of La Esmeralda (near 27°16'N, 103°41'W), 1 Sep 1972, *Chiang et al. 9075* (LL); Sierra de Parras, ca. 16 km (10 mi) w. of Parras de la Fuente (near 25°26'N, 102°16'W), 4 Nov 1972, *Chiang et al. 10061* (LL); e. face of Sierra de Almagre (near 27°36'N, 103°53'W), 5 May 1973, *Johnston et al. 10842* (LL); n. side Sierra de Paila, Mina El Aguirreno (near 26°06'N, 101°36'W), 5 Jul 1973, *Johnston et al. 11682* (LL); Sierra de Paila, upper Cañon Corazón del Toro (near 25°54'N, 101°38'W), 5 Nov 1972, *Wendt et al. 10101* (LL); n. side Sierra de Organos (near 26°41'N, 103°03'W), 8 Aug 1973, *Henrickson 12148* (TEX); s. part Sierra de los Organos (near 26°44'N, 103°01'W), 8 Aug 1973, *Johnston et al. 12143* (LL); crest of Sierra de la Madera, above Cañon de la Hacienda (near 27°03'N, 102°24'W), 27 Sep 1973, *Henrickson 13600* (TEX).

The new taxon is known only from limestone areas at 1500–2800 m where it occurs in open chaparral with *Quercus* spp., *Acacia*, *Dasy-lirion*, *Leucophyllum*, *Fraxinus greggii*, *Sophora*, *Lindleya*, *Ptelea*, *Agave* and on the southern crests of mountains in forests of *Pinus strobiformis*, *P. arizonica*, *Abies coahuilensis*, *Pseudotsuga menziesii*, *Quercus greggii*, and *Cupressus arizonica*, often in association with *Arctostaphylos pungens* and *Philadelphus*.

The new taxon fits well into the *C. polifolia* complex as interpreted by Standley (1924) but is distinguished by the tendency to have a small shrub habit, often conduplicate folded, oblong-lanceolate to flat, oblong-ovate leaves, closely pubescent to hirtellous stems, glandular-pubescent rachis and pedicels, and by its northern distribution. When comparing this new taxon with the species recognized by Small (1914) in his North American Flora treatment it would tend to key to *C. hartwegiana* Klotzsch from which the new taxon differs in broader leaves, non-glandular twigs, and more northern distribution. The new taxon also fits within the general description of *C. caeciliana* (Loes.) Small from Oaxaca but is not so tomentose.

The nine collections on the new taxon are uniform except for small differences in leaf shape, those from more exposed sites tending to have smaller, more oblong-elliptical, entire, coriaceous leaves (Fig. 1E) than those of plants of presumed more protected sites (Fig. 1D). One specimen from the Sierra de la Paila (*Wendt et al. 10101*), lacks glandular hairs on the inflorescence while others in that collection are glandular (Fig. 1C). The new taxon is also variable in growth habit.

On exposed cliffs plants only 1.5 dm tall but 1 m broad have been observed. In protected sites plants may develop into small trees.

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NOTEWORTHY COLLECTIONS

WOLFFIA PUNCTATA Griseb. (LEMNACEAE).—USA, CA, San Diego Co., Lake Hodges, 5 km s. of Escondido, e. side of hwy I-15 (33°3'16"N, 117°3'45"W), 152 m, 14 Jun 1980, *Armstrong s.n.* (SD 105410). Scattered individuals, with ave. density of 10–12 per 250 ml of water, floating at surface near shoreline among dense homogeneous population of *Lemna gibba*. Verified by R. F. Thorne, Jun 1980.

Previous knowledge. Known from WA, OR, c. and ne. US, s. to the West Indies. A minute, free-floating rootless angiosperm, barely visible without magnification. Often associated with *Lemna*, *Spirodela*, and *Azolla*. The genus has likely been overlooked many times because of its small size. (Herbaria consulted: RSA, SD; published sources: Daubs, Ill. Biol. Monogr. 34. 1965; Mason, A fl. marshes Calif. 1957.)

Significance. First record of *Wolffia* in s. CA, a se. extension for *W. punctata* of 975 km from Fall River Mills, Shasta Co. According to Daubs (op. cit.), two spp. of *Wolffia* are native to CA: *W. punctata* and *W. columbiana*. *W. arrhiza* (and its synonym, *W. cylindracea*) are listed, apparently incorrectly, for CA by Mason (op. cit.).—WAYNE P. ARMSTRONG, Palomar College, San Marcos, CA 92069. (Received and accepted 16 Jul 1980; final version received 24 Jul 1980.)

OROBANCHE UNIFLORA L. subsp. OCCIDENTALIS (Greene) Abrams ex Ferris (OROBANCHACEAE).—USA, AZ: Gila Co., 3-bar Wildlife Area (e. of Four Peaks), 30 Apr



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