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NEW SPECIES AND COMBINATIONS IN *HOUSTONIA* (RUBIACEAE)

EDWARD E. TERRELL

Terrell, Edward E. (Plant Taxonomy Laboratory, Plant Genetics and Germplasm Institute, U.S. Department of Agriculture, Beltsville, MD 20705). New species and combinations in *Houstonia* (Rubiaceae). *Brittonia* 31: 164–169. 1979.—Two new species are described: ***Houstonia butterwickiae*** from Texas and ***H. teretifolia*** from Mexico, and two new combinations are made: ***H. acerosa*** subsp. ***polypremoides*** and ***H. mullerae***.

Studies of *Houstonia* from Mexico and the southwestern United States have revealed a need for various changes and additions. Two new species and two new combinations are included here. Generic limits for *Hedyotis*, *Houstonia*, and *Oldenlandia* were discussed recently (Terrell, 1975).

Houstonia butterwickiae Terrell, sp. nov. (Fig. 1)

Herba perennis usque ad 25 cm alta; radix ut caudex crassa lignosa. Caulis numerosi duri glabri. Folia filiformia 0.5–1 mm lata. Inflorescentia diffusissima. Calycis lobi 0.8–3.0 mm longi. Corolla alba infundibuliformis 2.3–4.7 mm longa. Capsulae globosae 1.5–2.0 mm longae. Semina paulo compressa plus minusve ellipsoidea 0.4–0.7 mm longa, hilo punctato.

Herbaceous perennial to 25 cm tall, with a thick woody tap root and woody crown; stems often numerous, slender, wiry, glabrous, diffusely branched from upper nodes, the internodes longer than leaves, the nodes often tinged black. Stipules scarious, whitish, deltoid, acuminate or truncate, to 1 mm long and 1 mm wide. Basal leaves somewhat clustered, sessile, linear, at once shorter, slightly wider, and thicker than cauline ones, glabrous, to 7 mm long, to 1 mm wide; cauline leaves sessile, stiffly erect, filiform or linear, acuminate at apex, to ca 20 mm long, 0.5–1.0 mm wide, rather rigid, glabrous or scaberulous, the midrib thick, the margin revolute. Flowers heterostylous, in small, few-flowered cymes, the pedicels filiform, to ca 1 cm long, the inflorescence very diffuse. Calyx glabrous, the lobes with thick midribs, linear-lanceolate, sharply acute or acuminate, stiffly erect, 0.8–3.0 mm long, ca $\frac{1}{2}$ – $\frac{3}{4}$ as long as corolla tube. Corolla funnelform, white with several dark nerves, glabrous externally, 2.3–4.7 mm long; corolla tube gradually widened distally, densely puberulent within, 1.3–3.0 mm long; corolla lobes ovate-lanceolate, puberulent within, 1.0–1.7 mm long, 0.5–1.0 mm wide; pin flower with stigma branches 0.3–0.5 mm long, exserted 0.5–1.5 mm beyond corolla throat, anthers 0.8–1.0 mm long, included, attached near midpoint or $\frac{3}{4}$ -point of corolla tube; thrum flower with anthers whitish, ca 1 mm long, subsessile at sinuses of corolla lobes, and stigmas included in tube. Mature capsule $\frac{1}{2}$ – $\frac{3}{4}$ inferior, dehiscing loculicidally, globose or subglobose, glabrous, 1.5–2 mm long, 1.5–2 mm wide, much exceeded by erect calyx lobes. Seeds ca 10–26 per capsule, elliptic, oblong or oval in outline, slightly or somewhat compressed, 0.4–0.7 mm long, 0.3–0.4 mm wide, black or brown, finely reticulate, the hilum punctate, lacking a hilar ridge.

TYPE: UNITED STATES. TEXAS. Brewster County: numerous in shallow pockets or crevices of limestone bedrock along ridgetop of Bullis Range, Bullis Gap Ranch, ca 20 mi S of Sanderson, 2–3 mi NW of Rio Grande River, 29°47' 30"N, 102°32'30"W, assoc. with *Penstemon baccharifolius*, *Phyllanthus ericoides*,

BRITTONIA 31: 164–169. January–March, 1979.

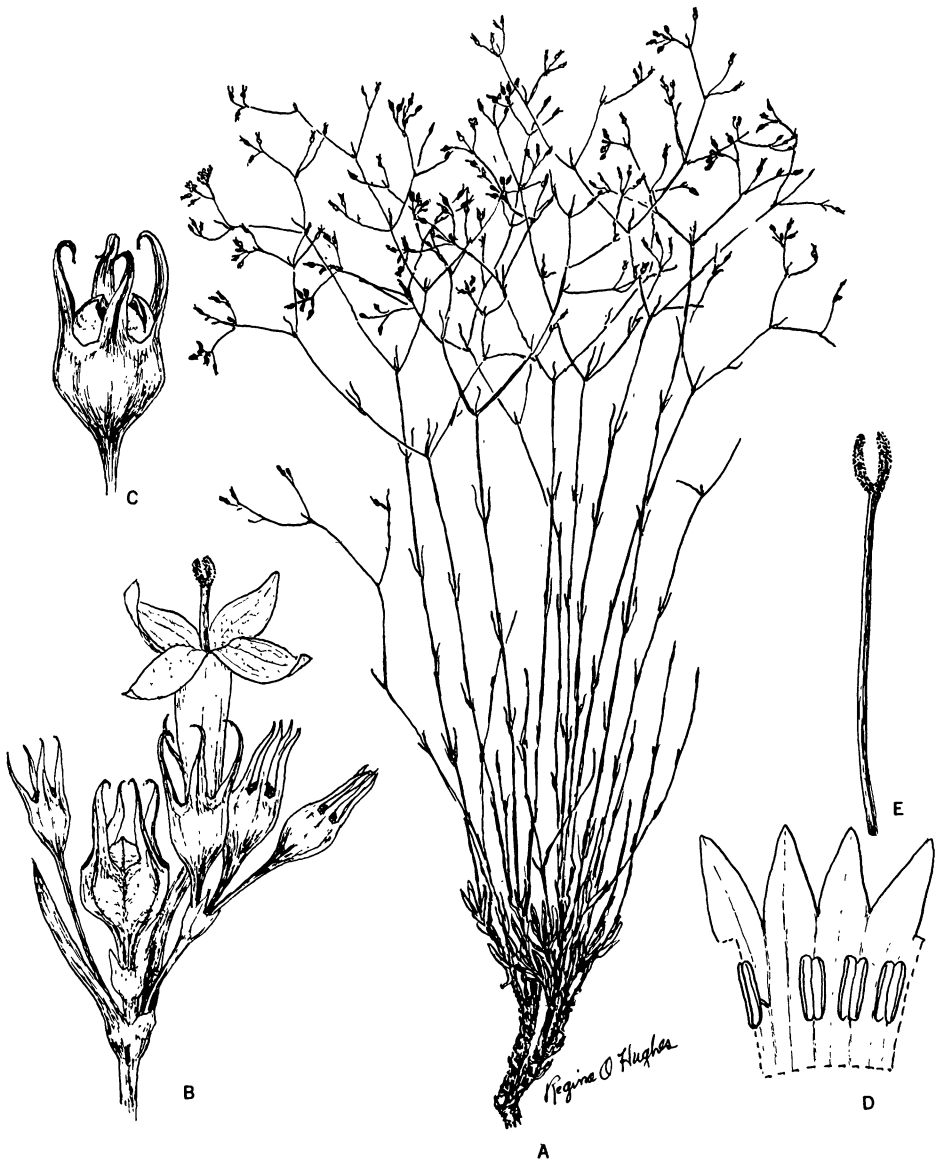


FIG. 1. *Houstonia butterwickiae* Terrell (from holotype). A. Habit, $\times \frac{1}{2}$. B. Detail of inflorescence, pin form, $\times 8$. C. Capsule, $\times 6$. D. Opened corolla with anthers, pin form, $\times 6$. E. Style and stigma, $\times 6$.

Polygala maravillasensis, and *Cirsium turneri*, 27 Aug 1977, M. Butterwick, E. Lott & S. Kennedy 3893 (HOLOTYPE: US; ISOTYPES: GH, MICH, MO, NY, TEX).

Additional collection at type locality: 16 May 1977, M. Butterwick & E. Lott 3588 (TEX).

This new species was discovered by Mary Butterwick, formerly botanist for the Texas Natural Area Survey, during field studies of the Bullis Gap area in south-

eastern Brewster Co., Texas. Plants were locally frequent along the summit of the southern half of the Bullis Gap Range. Plants of *H. nigricans* (Lam.) Fern. were found in this area but were not seen growing with the new species.

Seeds of *H. butterwickiae* and *H. nigricans* are similar in shape and size. The two species also are similar in their thick, woody crowns and tap roots. Study of numerous variants of the notoriously variable *H. nigricans* throughout its wide range has not, however, revealed any specimens like *H. butterwickiae* or any intergradient specimens. *Houstonia nigricans* is common in parts of Brewster County, from which the University of Texas (TEX) herbarium lent me 27 sheets.

Houstonia butterwickiae in its filiform leaves and globose capsules also resembles *H. acerosa* subsp. *polypremoides* (discussed below) and *H. palmeri* A. Gray (including *H. longipes* S. Wats.), a species of northern Mexico. The following key separates the taxa and attempts to take into consideration the great variation present in the majority of the specimens of *H. nigricans* occurring in the Chihuahuan Desert region.

- 1 Seeds somewhat compressed, \pm elliptic or oblong, the hilum punctate, inconspicuous.
 - 2 Capsules usually turbinate, longer than wide, or varying to subglobose; leaves, usually at least some, more than 1 mm wide; buds and corolla lobes often pubescent on apices; inflorescence variable, usually not diffuse *H. nigricans*
 - 2 Capsules globose or subglobose; leaves to 1 mm wide; buds and corolla lobes glabrous; inflorescence very diffuse *H. butterwickiae*
- 1 Seeds saucer- or cup-shaped with conspicuous hilar ridge on ventral face.
 - 3 Leaves verticillate or opposite, usually many, linear or acerose; bractlike leaves in inflorescence resembling the setaceous calyx lobes *H. acerosa* subsp. *polypremoides*
 - 3 Leaves opposite, few and scattered, filiform; reduced leaves in inflorescence absent or if present then not resembling calyx lobes *H. palmeri* (incl. *H. longipes*)

***Houstonia teretifolia* Terrell, sp. nov. (Fig. 2)**

H. fasciculatae primo adpectu maxime similis, sed folia opposita non fasciculata, teretia cuspidata. Corollae ad circa capsulam maturam persistentes. Capsulae subglobosae, 2–3 mm longae lataeque. Semina 0.5–0.8 mm diametro, rotundo-angularia, acetabuliformia, porcis hilaribus conspicuis.

Low shrub ca 3 dm tall; stems woody, to 3 cm thick, the internodes short and partially obscured by overlapping leaves, the branches ascending, glabrous, angulate, densely leafy, tan or dark, becoming gray or tan with age and exfoliating. Stipules scarious, whitish, sheathing, truncate or deltoid, with 0–few minute teeth or glands. Leaves sessile, opposite, terete or subterete, somewhat fleshy, somewhat falcate, glabrous, 4–19 mm long, 0.8–1.3 mm wide, more or less cuspidate with whitish, rigid point. Flowers apparently (?) homostylous, in terminal, few-flowered, crowded cymes, the pedicels stout, 2–6 mm long. Calyx glabrous, the lobes spreading or erect, deltoid, lanceolate or ovate, acuminate or acute, 0.8–1.7 mm long, 0.7–1.0 mm wide at bases. Corolla short-funnelform, white, glabrous, 3–5 mm long, persisting through fruiting stage, the tube 0.7–1.1 mm long, 1–2 mm wide, scarcely wider distally, the lobes ovate-lanceolate or ovate, spreading or recurved, 1.5–2.3 mm long, 1.0–1.2 mm wide, 2–3 times longer than tube; anthers oblong, whitish or yellowish, 0.6–0.8 mm long, ca 0.2 mm wide, on filaments 0.5–1.5 mm long; stigma branches diverging, subglobose, 0.1–0.2 mm long, the styles ca 1.8–2.3 mm long; ovaries and developing capsules rose or pink. Mature capsule ca $\frac{1}{2}$ inferior, thick-walled, dehiscing loculicidally, subglobose, 2–3 mm in all 3 dimensions, surrounded by dried persistent corolla, the apex obtuse or obtusely knobbed. Seeds ca 6–10 per capsule, black, shiny, finely reticulate, somewhat compressed, 0.5–0.8 mm diam., roundish-angular to elliptic or oblong in outline, shallowly concavo-convex (acetabuliform), the concave

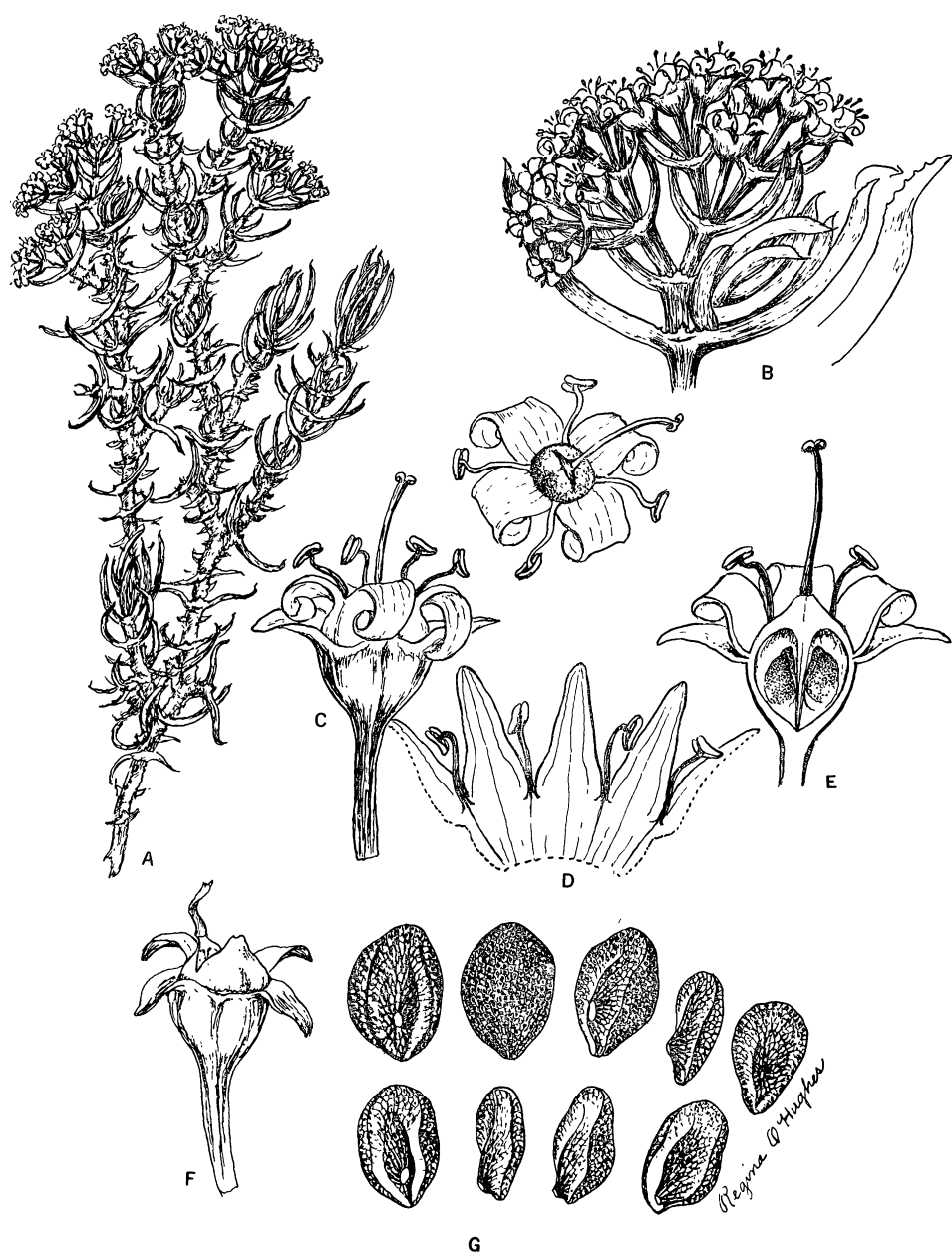


FIG. 2. *Houstonia teretifolia* Terrell (from holotype). A. Branch, $\times \frac{1}{2}$. B. Detail of inflorescence, $\times 2$. C. Flowers, 2 views, $\times 5$. D. Opened corolla with anthers, $\times 5$. E. Flower, section of ovary, $\times 5$. F. Capsule, $\times 5$. G. Seeds, $\times 20$.

side with conspicuous acentric hilar ridge $\frac{1}{2}$ – $\frac{3}{8}$ as long as seed and extending to only one margin of the seed where higher, the seed sometimes with rudimentary wing-like margins.

TYPE: MEXICO. COAHUILA: 12 km NNE of Las Margaritas on eastern-

most ridge of Sierra de las Margaritas, 26°33'30"N, 102°51'30"W, 1300–1400 m, gypsum slopes, gypseous soils, associated with *Agave lecheguilla*, *Hechtia*, *Acacia neovernicosa*, *Bouteloua* sp., *Dasyllirion* sp., 24 Sep 1972, F. Chiang, T. Wendt & M. C. Johnston 9508E (HOLOTYPE: TEX).

Additional collection: MEXICO. COAHUILA: Old Candelilla Camp, canyon on NW side of Sierra de Delicias, about 3 km S of Puerta de Sardinas, 26°21'30"–26°22'N, 103°W, 1200–1400 m, mosaic of limestone and gypsum (anhydrite), steep slopes, gypsum soil, assoc. with *Larrea tridentata*, *Viguiera stenoloba*, *Agave lecheguilla*, *Acacia neovernicosa*, *Fouquieria splendens*, 9 Aug 1973, M. C. Johnston, F. Chiang, T. L. Wendt, J. Henrickson, & D. Morafka 12191 (TEX, US).

This new species was collected twice during explorations for Marshall C. Johnston's forthcoming flora of the Chihuahuan Desert region. It is a low shrub on gypsum soil at low altitudes in desert scrub and is endemic to western Coahuila.

This species is unique in the genus in having the corollas persistent on the mature capsule. It is also unusual in having a very short corolla tube and corolla lobes 2–3 times longer. It is quite distinct from all other species in the genus, despite some superficial resemblances to *H. fasciculata* A. Gray (*Hedyotis intricata* Fosberg), a low shrub which ranges from Nuevo León, Coahuila, Chihuahua, and Durango north to southwestern Texas and south-central New Mexico. These two species are contrasted in the following key:

- 1 Leaves subterete or linear, fasciculate; corollas deciduous after anthesis, their tubes ca 1–2.5 mm long, the lobes as long or slightly longer; capsules varying from longer than wide to equally long and wide, 2–4 mm long, 1.7–2.8 mm wide, often retuse; seeds 0.8–1.7 mm long, 0.5–0.7 mm wide, the hilar ridge absent or rudimentary *H. fasciculata*
- 1 Leaves terete, not fasciculate; corollas persistent on mature capsules, their tubes ca 1 mm long, the lobes 2–3 times longer; capsules subglobose, 2–3 mm long, more or less beaked; seeds 0.5–0.8 mm diam, with low acentric hilar ridge *H. teretifolia*

Seeds of *H. teretifolia* somewhat resemble those of the *H. rubra* group of species in being shallowly saucer-shaped with a distinct hilar ridge (Fig. 2).

The foregoing description refers only to the type collection. A second one, Johnston *et al.* 12191, differs in slightly larger anthers, longer calyx lobes and corolla lobes, and other minor features. Additional collections will be necessary to determine whether these differences are part of a continuum or are taxonomically significant.

***Houstonia acerosa* (A. Gray) Benth. & Hook.f. subsp. *polypremoides* (A. Gray) Terrell, stat. nov.**

Houstonia polypremoides A. Gray, Proc. Amer. Acad. Arts 21: 379. 1886. *Hedyotis polypremoides* Shinnars, Field & Lab 17: 168. 1949. *Hedyotis acerosa* var. *polypremoides* W. H. Lewis, Ann. Missouri Bot. Gard. 55: 31. 1968.

Houstonia polypremoides var. *bigelovii* Greenm. Proc. Amer. Acad. Arts 32: 291. 1897. *Hedyotis acerosa* var. *bigelovii* W. H. Lewis, Ann. Missouri Bot. Gard. 55: 397. 1969.

W. H. Lewis (1968, 1969) relegated *Hedyotis polypremoides* to the rank of variety under *Hedyotis acerosa* A. Gray. I agree that it is better treated as an infraspecific unit, but prefer to rank it as a subspecies, as now transferred to *Houstonia*. It is morphologically distinct in its typical form and occupies a distinct western segment of the collective range. The two subspecies intergrade in southwestern Texas, western Coahuila, and eastern Chihuahua. The range of subsp. *acerosa* includes San Luis Potosí, southwestern Tamaulipas, west-central and southern Nuevo León, Coahuila, and western Texas north to 34°N and east to 100°W. The range of subsp. *polypremoides* is western and northern Coahuila,

east, central, and northern Chihuahua, southwestern Texas and central New Mexico. The chromosome number of subsp. *acerosa* is $2n = 22$ and of subsp. *polypremoides* is $2n = 22$ or 44 (Lewis 1962). The following key points out differences in the subspecies.

- 1 Leaves mostly verticillate, fasciculate, acerose; stems densely leafy with internodes shorter than leaves; flowers and capsules sessile or subsessile, the pedicels less than 3 mm long *H. acerosa* subsp. *acerosa*
- 1 Leaves opposite or some verticillate, not or some fasciculate, linear or acerose; stem not densely leafy, internodes often longer than leaves; flowers and capsules on pedicels 3–22 mm long, the inflorescence sometimes somewhat diffuse *H. acerosa* subsp. *polypremoides*

***Houstonia mullerae* (Fosberg) Terrell, comb. nov.**

Hedyotis mullerae Fosberg, Lloydia 4: 288. 1941. TYPE: MEXICO. COAHUILA. Munic. de Cuatro Ciénegas: Cañon del Agua, Sierra de la Madera, 9 Sep 1939, C. H. Muller 3234 (HOLOTYPE: US!, where transferred from NA; ISOTYPE: GH!).

This is a dwarf, prostrate, matted shrublet of cliff crevices and similar habitats in central and western Coahuila. Several loaned collections, typical and atypical, have been examined.

Houstonia mullerae is closely related to *H. nigricans*, as shown by their similar seeds, but vegetatively is very different. Their close relationship is borne out by three collections from central and western Coahuila which are somewhat inter-gradient, suggesting the possibility of hybridization.

Acknowledgments

I wish to thank Marshall C. Johnston and Mary Butterwick for providing type and other collections for study, Regina O. Hughes for her illustrations, and John J. Wurdack for Latin diagnoses. Both Wurdack and Harold Robinson gave helpful nomenclatural and taxonomic advice.

Literature Cited

- Lewis, W. H. 1962. Phylogenetic study of *Hedyotis* (Rubiaceae) in North America. Amer. J. Bot. 49: 855–865.
- . 1968. Notes on *Hedyotis* (Rubiaceae) in North America. Ann. Missouri Bot. Gard. 55: 31.
- . 1969. *Hedyotis acerosa* var. *bigelovii*, comb. nov. (Rubiaceae). Ann. Missouri Bot. Gard. 55: 397.
- Terrell, E. E. 1975. Relationships of *Hedyotis fruticosa* L. to *Houstonia* L. and *Oldenlandia* L. Phytologia 31: 418–424.

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