
Compositae of the Guayana Highlands—VI. *Huberopappus maigualidae* (Vernonieae), a New Genus and Species from Venezuela

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ABSTRACT. *Huberopappus maigualidae*, a new genus and species of Compositae tribe Vernonieae from Sierra de Maigualida, Venezuela, is described and illustrated. *Huberopappus* is the only genus of the tribe with a coroniform pappus and dimorphic achenes. By its pappus *Huberopappus* is similar to *Struchium* and especially to *Ekmania* and *Gorceixia*, the latter two being taken as its closest relatives. *Huberopappus*, *Ekmania*, and *Gorceixia* seem to form a generic group and are placed near *Pollalesta* in the Vernonieae subtribe Piptocarphinae.

Among collections of Compositae submitted to me for determination by Otto Huber and Paul Berry from their recent expeditions to the previously unexplored, granitic Sierra de Maigualida in Guayanan Venezuela were specimens that could not be assigned to any genus of the family. These plants are referable to the cichorioid tribe Vernonieae, in which only three described neotropical genera have a strongly coroniform pappus. The plants from Sierra de Maigualida, however, are the only Vernonieae with both a crownlike pappus and dimorphic achenes. They are thus described as a new genus and species in conjunction with my treatment of the family for the *Flora of the Venezuelan Guayana* by Julian Steyermark and collaborators.

Huberopappus maigualidae Pruski, gen. et sp. nov. TYPE: Venezuela. Bolívar: Depto. Cedeño, Sierra de Maigualida, sector nor-oriental, altiplanicie tepuyana disectada sobre granito en las cabeceras del Río Chajura, afluente occidental del Río Erebató, aprox. 100 km (en línea recta) al SW del Campamento Entreríos, 05°33'N, 65°13'W, 2,100 m, 18 Nov. 1988, Otto Huber & Liz Izquierdo 12791 (holotype, VEN; isotypes, MY, NY, US). Figures 1, 2.

Frutex 1–2 m altus pauciramosus; caules subteretes vel angulati pubescentes vel dense pubescentes nigri; folia simplicia alterna petiolata, lamina subcoriacea vel coriacea

elliptica vel obovata (2–)3–6 × (1.3–)1.7–3.6 cm cuneata apice acuta vel rotundata integra, pinnatim venosa supra glandulosa punctata subtus trichomatibus subappressis tomentella, petiolo 4–7 mm longo; capitulescentia terminalis cymosa; pedunculi 0–7 mm longi; capitula homogama epaleacea, flosculis 14–22; involucre campanulatum 5–7 × 3–4 mm 3–4-seriatum; phyllaria dimorpha imbricata, quinque externa plerumque coriacea nigra deltoidea vel elliptica dense pubescentia; corollae discoideae quinquelobatae 4.5–5 mm longae glandulosae, tubo 2.6–3.1 mm longo, lobis adscendentibus linearibus ca. 1.8 mm longis; achaenia turbinato-prismatica 2.6–3.2 mm longa glabra, pappo in corpus coroniforme serulatum 1.7–2.1 mm longum confluenti vel arista singula 4 mm longa usque praedito.

Subshrub 1–2 m tall; stems erect, few-branched, subterete below, irregularly angled distally, pubescent to densely so, this pubescence imparting a blackish color to the stems; internodes 0.5–2.5 cm long. Leaves simple, alternate, petiolate; blade subcoriaceous to coriaceous, elliptic to obovate, (2–)3–6 cm long, (1.3–)1.7–3.6 cm wide, basally cuneate, apically acute to rounded, entire, venation pinnate, reticulate, upper surface dark green, glandular-punctate, otherwise glabrous, secondary veins slightly raised, lower surface sometimes glandular, tomentose with a dense mat of appressed trichomes, veins darker than areoles, the lower surface thereby reticulate; petiole 4–7 mm long, densely pubescent. Capitulescence cymose, sometimes partially obscured by juvenile leaves, of ca. 3–11 closely spaced capitula, these terminal on axillary branches from the uppermost nodes or from stem apex; peduncles densely pubescent, the lateral ones 2–7 mm long, the central ones often lacking; capitula homogamous, discoid, 14–22-flowered, often subtended by reduced, densely pubescent, black foliar bracts; involucre campanulate, 5–7 mm high, 3–4 mm broad, 3- or 4-seriate; phyllaries 14–17, imbricate; outer series deltoid to broadly elliptic, to ca. 7 × 3 mm, occasionally slightly longer than the next series, coriaceous, densely pubescent, blackish, apically acute to rounded, margins entire; innermost series elliptic to lanceolate, 6–7 mm long, 1.5–2 mm wide, proximally glabrous, stramineous, stiffly charta-

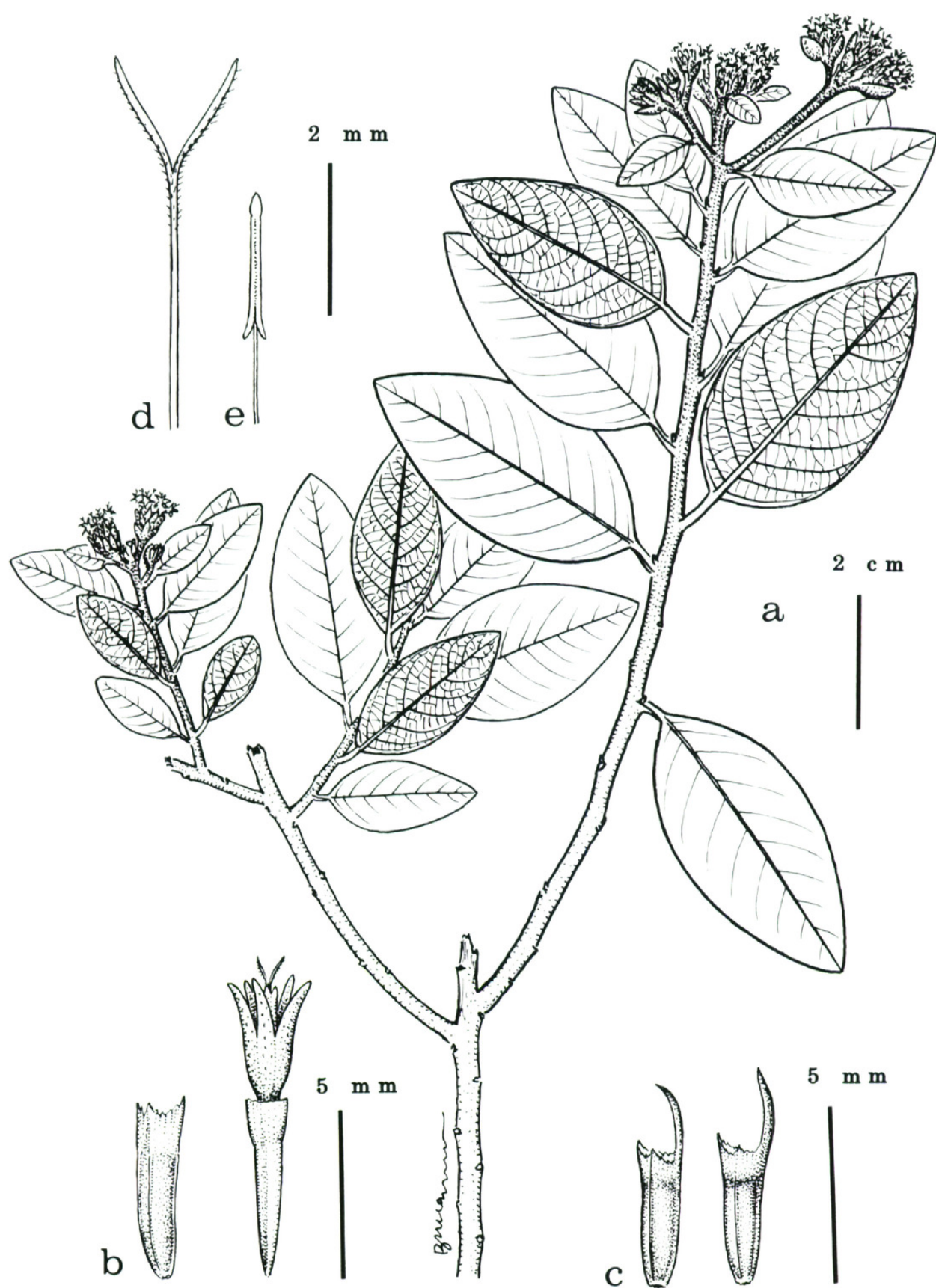


Figure 1. *Huberopappus maigualidae* Pruski. —a. Habit. —b. Achenes with serrulate coroniform pappus (left) and entire coroniform pappus (right); 5-lobed glandular corolla (right). —c. One-awned achenes. —d. Style. The slightly enlarged basal node of style not shown. —e. Anther showing spurred base. (Drawn from the holotype, Huber & Izquierdo 12791, VEN.)



Figure 2. *Huberopappus maigualidae* Pruski showing the closely spaced, ovate, subcoriaceous to coriaceous leaves (Huber & Izquierdo 12791, the type collection). Photo taken by Otto Huber.

ceous, distally black, densely pubescent, apex rounded, margins entire; *receptacle* flat, ca. 2 mm diam., naked, foveolate, inner walls occasionally elongate or pointed. *Corollas* actinomorphic, homogamous, 5-lobed, 4.5–5 mm long, abaxially glandular, especially toward apex of lobes, violet; tube (not differentiated from throat) 2.6–3.1 mm long; lobes ascending, ca. 1.8 mm long, linear; *anthers* not exserted, cream-colored, ca. 2.1 mm long, glabrous, apical appendage lanceolate, rounded apically, base calcarate, spurs fertile, 0.4–0.5 mm long; *style* to 5.5 mm long, hispidulous in the upper half, the 2 branches ascending to somewhat recurved, 1–1.5

mm long, apex rounded to attenuate, basal node only slightly expanded. *Achenes* dimorphic, turbinate, prismatic, 3–5-angled, 2.6–3.2 mm long, light brown, glabrous, ca. 10-striate; carpodium slightly stipitate, neither sculptured nor well differentiated; *pappus* thinly coroniform, entire or serrulate apically, stramineous, ca. 1.7–2.1 mm long, but in some achenes often weakly lacerate or with an elongate outer awn to 4 mm long, this protruding from an abaxial strengthened angle of achene. *Pollen* 36–40 μ m diam. (excluding spines), tricolporate, microperforate, subechinolophate (pollen type A sensu Keeley & Jones, 1979).

TABLE 1. Neotropical Vernoniaeae with a coroniform or annular pappus.

Character	Taxon							
	<i>Huberopappus maigualidae</i> Pruski	<i>Ekmania lepidota</i> (Griseb.) Gleason	<i>Gorceixia decurrens</i> Baker	<i>Harleya oxylepis</i> (Benth.) Blake	<i>Heterocoma albida</i> DC.	<i>Pacourina edulis</i> Aublet	<i>Rolandra fruticosa</i> (L.) Kuntze	<i>Struchium spargano- phorum</i> (L.) Kuntze
Habit	subshrub	subshrub to shrub	shrub	herb	subshrub	herb	herb or sub- shrub	herb
Leaf pubescence	glandular- punctate above, to- mentose be- low	glandular- punctate above, to- mentose be- low	white-tomen- tose below	white-tomen- tose below	white-tomen- tose below	glandular above and below	white-tomen- tose below	puberulent and glan- dular be- low
base	petiolate	petiolate	decurrent	petiolate	subamplexi- caule	subamplexi- caule	petiolate	petiolate
Capitulescence	terminal, cy- mose	terminal, cy- mose	terminal, glom- erate	terminal, subglomer- ate	axillary, ses- sile, solitary	axillary, ses- sile, solitary	axillary, ses- sile, glomer- ate	axillary, ses- sile, glom- erate
Flowers per head	14-22	8-20	5	8-9	50 or more	50 or more	uniflorous	30-60
Outer phyllaries apex	acute to rounded	narrowly acute to acumi- nate	acuminate	aristate	aristate	aristate	aristate	aristate
texture	coriaceous	coriaceous	scarious	scarious	scarious	marginally membra- nous	scarious	scarious

TABLE 1. Continued.

Taxon								
Character	<i>Huberopappus maigualidae</i> Pruski	<i>Ekmania lepidota</i> (Griseb.) Gleason	<i>Gorceixia decurrens</i> Baker	<i>Harleya oxylepis</i> (Benth.) Blake	<i>Heterocoma albida</i> DC.	<i>Pacourina edulis</i> Aublet	<i>Rolandra fruticosa</i> (L.) Kuntze	<i>Struchium sparganophorum</i> (L.) Kuntze
Achenes Pappus	dimorphic strongly coroniform, some achenes also one-awned	isomorphic outer strongly coroniform; inner elongate, deciduous	isomorphic strongly, but irregularly coroniform	isomorphic weakly annular	isomorphic outer annular; inner elongate, deciduous	isomorphic outer annular; inner short, deciduous	isomorphic coroniform, but strongly lacerate	isomorphic thickly and strongly coroniform
Pollen	type A	type A	type A	echinolophate (type D or <i>Aynia</i> -type of Robinson, 1988)	type A (fide H. Robinson)	lophate	echinolophate (type D)	echinolophate (type D)
Distribution	Venezuela	Cuba	Brazil	Mexico, Belize, and Guatemala	Brazil	South America northwestward into Nicaragua	Neotropics, Java, and Japan	New and Old World tropics

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Depto. Atures, Sierra de Maigualida, NW sector, small valley along an upper tributary of Caño Iguana, 05°30'N, 65°15'W, 2,000 m, 28 Feb.–3 Mar. 1991, *Paul Berry*, *Otto Huber & Judith Rosales 4812* (MO, MYF not seen, NY, VEN not seen). BOLÍVAR: Depto. Cedeño, Sierra de Maigualida, sector nor-oriental, altiplanicie tepuyana ubicada en las cabeceras del Río Chajura, afluente occidental del Río Erebató, aprox. 100 km (en línea recta) al SW del Campamento Entreríos, 05°33'N, 65°13'W, 2,100 m, 28 Mar. 1988, *Otto Huber 12745* (K, US, VEN).

Distribution. In savannas from 2,000 to 2,100 m in the northern sector (05°30'–33'N, 65°13'–15'W) of Sierra de Maigualida, a granitic mountain range bordering Territorio Federal Amazonas and Estado Bolívar, Venezuela. Known to flower in November and from February to March.

I take great pleasure in naming this new genus after my friend and colleague Otto Huber, who first collected it and recognized it as a new species. The epithet refers to the Sierra de Maigualida, where this species appears to be endemic.

The Vernoniaeae, a tribe of about 1,500 species and 80 genera, have long been thought to be a fairly homogeneous group because of the uniformity of the style, anther, and corolla (see Gleason, 1906, 1922; Jones, 1977; Robinson et al., 1980; Robinson & Kahn, 1986; Robinson & Funk, 1987; Keeley & Turner, 1990). However, many vernonian genera differ from the prototype of the tribe by rare or unique features. *Huberopappus* Pruski is yet another morphologically distinctive genus, the only one in the Vernoniaeae with both a coroniform pappus and dimorphic achenes.

Seven neotropical genera previously were known to have a connate (at least outer) pappus, which ranges from deeply lacerate to entire and from strongly coroniform to annular. These genera differ greatly from typical Vernoniaeae, which have a single or double pappus of free awns, scales, or bristles. Achene dimorphism in the Vernoniaeae is rare, previously noted (H. Robinson, 1979, pers. comm.) only in the distantly related and noncoroniform *Heterocypselia* H. Robinson, *Lychnophoriopsis* Schultz-Bip. sens. str., *Pithecoseris* Martius of Brazil, and *Dipterocypselia* S. F. Blake from Colombia. All neotropical genera of Vernoniaeae with a coroniform pappus, as well as those with dimorphic achenes (both of these conditions are taken as derived), are unispecific.

Although the presence of a coroniform pappus is useful taxonomically, it is not necessarily an indicator of phylogenetic relationships. Nevertheless, *Ekmania* Gleason, native to limestone outcrops that arise from a serpentine bed in the mountainous

Cuban Oriente (Borhidi & Muñiz, 1986; Borhidi, pers. comm.) and *Gorceixia* Baker, of the central Brazilian highlands, seem to be the closest relatives of *Huberopappus*. *Ekmania* and *Gorceixia* are related to *Huberopappus* by a terminal capitulescence, a strongly coroniform pappus, entire subcoriaceous leaves, primitive type A pollen (*Lychnophora*-type), and angled young stems. *Huberopappus* and *Ekmania* seem more closely related to each other on the basis of leaf shape, leaf pubescence, and pedicellate heads. Key traits that distinguish *Huberopappus* from *Ekmania* are dimorphic (not isomorphic) achenes, black (not gray) young stems, commonly rounded (not narrowly acute to acuminate) outer phyllary tips, and a single (not double) pappus without (vs. with) an inner row of a few deciduous pappus bristles. By its strongly coroniform pappus *Struchium* P. Br. is similar to the former three genera, but differs in many other features (see Table 1) and its affinities clearly are elsewhere.

Huberopappus, *Ekmania*, and *Gorceixia* form a tightly knit generic group that is somewhat removed from both New World and Old World coroniform genera, as well as the remaining genera of the Vernoniaeae. These three genera appear to be closest to *Pollalesta* HBK of the Piptocarphinae (as suggested by H. Robinson, pers. comm.), based on terminal capitula, type A pollen, angled young stems, leaf pubescence, and calcarate (not caudate) anther bases. However, *Pollalesta* (see Stutts, 1981) clearly differs from the former three genera by a generally double pappus with many free, rarely paleaceous or pseudocoroniform outer bristles. Nevertheless, it is perhaps best to stretch the boundaries of the Piptocarphinae (Vernoniinae sensu Jones, 1982) to include the former three genera.

The salient features that distinguish *Huberopappus* from other neotropical Vernoniaeae genera with a basally connate or annular pappus are summarized in Table 1, which includes the initial report of pollen types (see Keeley & Jones, 1979, for terminology) in the first five genera. The pollen types of *Pacourina* Aubl., *Rolandra* Rottb., and *Struchium* given in Stix (1960) and Robinson et al. (1980) are herein confirmed. Some of the information in Table 1 is from Aristeguieta (1964), Badillo (1989), and Baker (1873).

The last five genera in Table 1 tend to exhibit the combination of herbaceous to subshrubby habit, subterete stems, chartaceous often serrulate leaves, axillary sessile heads, aristate phyllaries, and lophate pollen and have been variously placed within the Vernoniaeae. Benthams (1873) and Baker (1873) referred *Heterocoma* DC., *Pacourina*, and *Struchium*

to the Sparganophoreae, whereas Robinson et al. (1980) placed them in the Vernoniinae. *Harleya* Blake, which was not positioned by Robinson et al. (1980), also seems to be best placed in the Vernoniinae. *Rolandra* has been placed in both the Lychnophoreae (Bentham, 1873; Baker, 1873) and the Rolandrinae (Robinson et al., 1980). Therefore, by the occurrence of coroniform taxa in each of these subtribes, it is apparent that pappus fusion, a derived vernonian condition (Keeley & Turner, 1990), has arisen independently in several different lineages.

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