

A review of Resia (Gesneriaceae).

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KEYWORDS:

Beslerieae, Colombia, Napeantheae, Resia, Venezuela

A REVIEW OF *Resia* (GESNERIACEAE)Laurence E. Skog¹ & Flavia F. de Jesus²¹ Department of Botany, MRC-166, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560, U.S.A.² Rua Paissandu 88/401, Rio de Janeiro, RJ 22210-080, Brazil.

ABSTRACT

The poorly-known and rarely-collected genus *Resia*, is reviewed in light of recent collections, and a new subspecies, *Resia ichthyoides* subsp. *bracteata*, is described and illustrated from Colombia.

Key words: Gesneriaceae, *Resia*, Beslerieae, Napeantheae, Colombia, Venezuela.

RESUMEN

Mediante el uso de colecciones recientes, se revisa el género *Resia*, un género poco conocido y rara vez colectado. Se describe y se ilustra una subespecie nueva, *Resia ichthyoides* subsp. *bracteata* de Colombia.

Palabras claves: Gesneriaceae, *Resia*, Beslerieae, Napeantheae, Colombia, Venezuela.

INTRODUCTION

Among the ca. 1500 species of neotropical Gesneriaceae, there are several belonging to poorly known or rarely-collected genera, e.g., *Napeanthus* Gardner, *Tylopsacas* Leeuwenb., *Rhoogeton* Leeuwenb., *Anetanthus* Hiern ex Benth., and *Resia* H.E. Moore. The last genus, *Resia*, like most species of the other genera listed above is native to South America, and plants are low-growing terrestrial herbs or subshrubs, and often pendent from damp cliff faces or shaded stream sides. The corollas are either white, yellow, or orange, and the flowers are usually small compared to the size of the plants, and short-lived. The two described species of *Resia* have been collected in Colombia (*R. nimbicola* H.E. Moore) and Venezuela (*R. ichthyoides* Leeuwenb.). Until now, few collections have been made, but recent collections from Colombia have revealed a new subspecies, described below, showing by the bracteate inflorescences that current tribal location of the genus in the Beslerieae may be incorrect. Currently, the genus is included in the ebracteate tribe Beslerieae

of the neotropical subfamily Gesnerioideae of the Gesneriaceae. *Resia* has been suggested to be related to genera of similar habit, habitat, and rarity, e.g., *Napeanthus*, *Tylopsacas*, or *Rhoogeton*. A re-examination of *Resia* and other genera, as well as inclusion of the new taxon, has shown that *Resia* should be placed in a different tribe.

TAXONOMIC HISTORY

Resia, named for the eminent ethnobotanist Richard Evans Schultes, was first described (Moore, 1962), along with its type species *Resia nimbicola*, from specimens collected by Schultes and others in Colombia (Meta, Caquetá, & Cundinamarca departments) (Fig. 2). Moore included the genus in the primarily Old World Gesneriaceae subfamily Cyrtandroideae and listed the following genera as possibly being related to *Resia*: *Anetanthus*, *Cremosperma* Benth., *Klugia* Schldl. (currently known as *Rhynchoglossum* Blume), and *Napeanthus*. As noted by Moore, the characters shared by these genera are the presence of capsular fruits and an annular nectariferous disk (or sometimes the disk lacking). Because of the lack of up-to-date information regarding the tribes in the family, Moore did not place the genus in any of the already existing tribes.

A second species in *Resia*, *R. ichthyoides*, was described by Leeuwenberg in 1968, based on specimens collected in Venezuela (Carabobo & Yaracuy states) (Fig. 2). According to Leeuwenberg, the indument of the corollas and the pistils distinguished this new species from *R. nimbicola*. *Resia nimbicola* has corollas "glabrous inside" and pistils "densely short-pilose", whereas *R. ichthyoides* has corollas "villose inside the throat" and pistils glabrous. Differences in the inflorescence type were also noted in the original description, but not emphasized by Leeuwenberg.

Only in 1983 was *Resia* placed in the tribe Beslerieae, which had been expanded by Wiehler in his synopsis of the neotropical Gesneriaceae. He related *Resia* to *Cremosperma* and *Tylopsacas* Leeuwenb. (also placed in Beslerieae, along with *Anetanthus*, *Reldia* Wiehler, *Besleria* L., and *Gasteranthus* Benth.). The key character to distinguish the Beslerieae from other tribes was the lack of inflorescence bracts. Wiehler pointed out that it was remarkable that prophylls and subtending bracts were typically present in the other tribes of neotropical Gesneriaceae: Gesnerieae, Gloxinieae, Episcieae, and Napeantheae. Therefore, according to Wiehler (1983), "the presence or absence of floral bracts thus becomes an important generic and tribal character in the Gesnerioideae". Although he went on to discuss some Beslerieae genera (i.e., *Besleria*, *Gasteranthus*, *Anetanthus*, & *Reldia*), Wiehler did not include a discussion of the other genera that he placed in the tribe (i.e.,

Cremosperma, *Resia*, & *Tylopsacas*). *Napeanthus*, a genus with bracts, was placed by itself in the new tribe Napeantheae. Unfortunately, Wiehler did not include a detailed discussion of the genus *Napeanthus* either.

MORPHOLOGICAL CHARACTERS.

Habit. Among the species in the Beslerieae, all except some species of *Besleria* and *Gasteranthus* are low-growing plants, sometimes rosulate, and only occasionally producing elongated stems in more mature individuals. *Besleria* and *Gasteranthus* are unusual in the upright shrubby habit in most of the included species.

Leaves. The leaves of *Resia* often have elongate oblanceolate or obovate laminas with short petioles. The veins are prominent. The secondary veins are pinnate and resemble a fish skeleton giving rise to the specific epithet "ichthyoides" for the Venezuelan species. Some species of *Napeanthus*, *Reldia*, *Cremosperma*, etc. also have this habit of prominent secondary veins, which may function to strengthen the leaves that are often pendent from the horizontal or drooping stems growing on cliff faces. Stomata in *Resia* are scattered on the abaxial lamina surface, and none on the adaxial surface. This arrangement contrasts with the clusters of stomata on the abaxial laminar surfaces of *Napeanthus*.

Inflorescence. Elongated peduncles holding the flowers at nearly the level of the leaf tips is characteristic of *Resia*. Similar long peduncles can be found in genera of similar habit and habitat, e.g., *Napeanthus*, *Cremosperma*, etc. The long peduncles are usually combined with short or reduced pedicels. Outside Wiehler's concept of Beslerieae (1983) are other genera with similar inflorescences, e.g., *Rhoogeton* Leeuwenb., in the tribe Episcieae. Within Beslerieae, only the new subspecies of *Resia* has bracts at the bases of the pedicels, similar to *Napeanthus*. Because the bract character is key to the delimitation of the Beslerieae, the presence of the bracts in *Resia* forces us to consider moving the genus from the Beslerieae.

Nectary. *Resia* has a nectariferous disc that is a thin collar surrounding the base of the ovary. This type of disc is found in several other genera of similar habit to *Resia*, in some other genera in the family and in other families in the Scrophulariales. *Napeanthus* and a few other genera in the Gesnerioideae with subrotate corollas lack a nectariferous disc.

Fruit and seeds. The fruit of *Resia* is a dry capsule dehiscing loculicidally into two valves, similar to members of the tribes Gloxinieae and Gesnerieae, some species of *Napeanthus*, and *Rhynchoglossum azureum* (Schltdl.) B.L. Burtt. Other members of

the Beslerieae have other sorts of dehiscence: 1) septicidal dehiscence of a dry capsule in *Anetanthus*; 2) septicidal and loculicidal dehiscence of a dry capsule into 4 valves in a few species of *Napeanthus*; 3) irregular dehiscence in *Cremosperma* and *Tylopsacas*; 4) a fleshy capsule with loculicidal dehiscence in *Gasteranthus* and *Reldia*; and 5) a berry in *Besleria*. Seeds in *Resia* are similar to many others in the family in size, shape, and coloration (Beaufort-Murphy, 1983).

DISCUSSION

In view of the new information about the genus *Resia*, it becomes necessary to discuss the current placement of the genus in its tribe Beslerieae. We have seen that inflorescence bracts can occur in *Resia*, which makes it incompatible with its placement in the tribe Beslerieae, at least as the tribe is currently defined according to Wiehler (1983). If the character were to be still emphasized in the tribe definition, maybe *Resia* would be better placed in Napeantheae.

The similarities of the two genera, *Resia* and *Napeanthus*, had already been noticed by Moore (1962), when he originally described *Resia*. In fact, this study of *Resia* revealed other characters, besides the inflorescence bracts, that could corroborate the placement of *Resia* and *Napeanthus* in the same tribe. Moore had described *R. nimbicola* as having the ovary vestite in contrast to the glabrous ovary in *Napeanthus*; however, both subspecies of *R. ichthyoides* have glabrous ovaries. Also, the sepals in *Resia* can be united for up to one-third of their lengths, similar to the sepals in some species of *Napeanthus* revising the observations of Moore who contrasted the free sepals in *R. nimbicola* and the connate sepals in *Napeanthus*. Therefore, considering the characters used by Moore (1962), *Resia* and *Napeanthus* are more closely related than previously thought.

A major re-evaluation needs to be done in the definition of the tribes Beslerieae and Napeantheae. The current definition of Beslerieae is certainly an artificial one, for the presence or absence of one character should not be so stressed as to account for the grouping of these genera. Further studies need to be done in these two tribes in order to possibly obtain better tribal delimitations.

TAXONOMY

Resia H.E. Moore, Bot. Mus. Leafl. 20(3):87. 1962. TYPE: *Resia nimbicola* H.E. Moore.

Herbs or subshrubs, terrestrial, perennial and rarely branched. *Stem* terete, up to 30 cm high, rugose, apex tomentose, woody at the base, erect, becoming pendent ("corky pale bark," fide Moore, 1962). *Leaves* oblanceolate, apically clustered, opposite, or rosulate, shortly petiolate. *Blade* membranous or chartaceous, oblanceolate, apex acute or acuminate, base narrowly cuneate to attenuate, margin slightly dentate-serrate, green above, dull when dry, lighter green below, dull; veins pinnate, slightly curved, immersed above, emergent below; stomata scattered on the abaxial surface. *Inflorescences* axillary, cymose and ebracteate, or congested-umbelliform and with or without bracts. *Calyx* erect, of 5 equal green sepals, each spreading with base broad and apex acuminate, connate only at the base or up to about one-third of their length. *Corolla* zygomorphic, tubular, erect, or sub-oblique in the calyx, longer than the calyx, white, orange, or yellow, tubular with bilabiate limb of 5 spreading lobes. *Stamens* 4, included, didynamous, glabrous; filaments distinct adnate to the corolla up to middle; anthers reniform, divergent at base, coherent by their apices in pairs or all coherent, dehiscing by longitudinal slits; staminode minute, without an anther. *Disc* annular, thin. *Ovary* superior, ellipsoid, laterally compressed, with placentas ovuliferous on both surfaces; style slender, stigma bilobed. *Fruit* a subglobose dry capsule, surrounded by persistent calyx, with two recurved valves, brown, dull; seeds ovoid, minute, reddish-brown, longitudinally striate, with straight cell orientation.

Two species and one subspecies are endemic to northern South America, growing in cloud forest.

KEY TO THE SPECIES AND SUBSPECIES OF *Resia*

- 1. Inflorescences umbelliform, congested; corolla villose inside at the throat; pistil glabrous.
 - 2. Inflorescences with bracts 1A. *R. ichthyoides* subsp. *bracteata*.
 - 2. Inflorescences lacking bracts ... 1B. *R. ichthyoides* subsp. *ichthyoides*.
- 1. Inflorescences an irregular open cyme; corolla glabrous inside; pistil densely shortly-pilose 2. *R. nimbicola*.

1. ***Resia ichthyoides*** Leeuwenb., Acta Bot. Neerl. 17:476. 1968. TYPE: Venezuela. Carabobo: Headwaters of Río San Gean, S of Borburata, above La Toma, 6 Dec. 1967, J.A. Steyermark 100,494 (Holotype, WAG, not seen; Isotype, P!).

Stem 3.5-30 cm long, 5-16 mm in diam. *Blade* 10-35 cm long, 3-8.7 cm wide, 2-4 X as long as wide, pilose to glabrescent above, glabrous between the veins below; veins 15-40 on a side, varying from pilose and glabrescent to tomentose-villous above, tomentose-villous below. *Petiole* 5-12 mm long, 2 mm in diam. *Inflorescences* of very congested flowers, umbelliform, equal or shorter than the leaves, peduncle slender, ascending, terete, 12.5-23.5 cm long, 1-2.5 mm in diam., 0.5-1 X as long as leaves, dark green, tomentose-villous, glabrescent. *Bracts* present or absent. *Pedicels* slender, ascending, tomentose-villous, glabrescent. *Sepals* connate at the base for about one-quarter to one-third of their length, 4-5.5 X 1-1.5 mm, margin entire with short hairs, villous outside, glabrous inside. *Corolla* white, 9-11 mm long, at the base 1-1.5 mm wide, at the throat 2.5-3.5 mm wide, not spurred, ventrally ventricose below the middle, not contracted at the throat, outside the tube pubescent, inside villous ventrally in the throat; tube 6-9 mm long; lobes unequal, spreading, glabrous inside, the ventral lobe 3.3-4 X 2-3 mm, the two lateral lobes 3-3.5 X 2.3-3 mm, the two dorsal lobes 2-2.5 X 1-2 mm. *Filaments* ca. 3 mm long, adnate near the base of the corolla, broadened at the base; anthers reniform, 0.2-0.5 X 0.6-0.8 mm. *Ovary* 2-4 mm long, 0.8-1.5 mm wide, glabrous; style 3.5-5 mm long. *Capsule* 1.5-2.5 mm long, 1.5-2.5 mm wide. *Seeds* 0.3-0.5 X 0.15-0.4 mm.

1A. **R. ichthyoides** subsp. **bracteata** L.E. Skog & de Jesus, subsp. nov. TYPE: Colombia. Santander: Mpio. Charalá, Corregimiento Virolín, approx. 4 km por la via Canaverales-Olival, 1 km antes de la escuela El Reloj, cerca al río Oibita, 25 June 1993, X. Londoño & L.P. Kvist 812 (Holotype, COL!; Isotypes, AAU!, HUA!, K!, MO!, TULV!, US!, VEN!). Fig. 1.

Stem 3.5-15 cm long, 5-16 mm in diam. *Blade* 10-35 cm long, veins 21-40 on a side. *Petiole* 6-12 mm long, 2 mm in diam. *Peduncle* 12.5-23.5 cm long, 1-2.5 mm in diam. *Bracts* sessile or very shortly petiolate, ovate, 4-22 mm long, 1.7-10 mm wide, 1-2.5 X as long as wide, apex acute to acuminate, base obtuse or decurrent, margin subentire to denticulate, adaxially green, sparsely pilose, abaxially also green, with veins tomentose-villous. *Pedicels* 0.2-3.1 cm long, 1 mm in diam. *Bracteoles* not noticeable. *Sepals* 4-5 mm long, 1-1.5 mm wide. *Corolla* 10-11 mm long, 1.5 mm wide at the base, 2.5 mm at the throat, tube 7-9 mm long; ventral lobe obovate, 4 X 3 mm, margin slightly sinuate; two lateral lobes emarginate, 3 X 3 mm, margin suberose; two dorsal lobes rounded 1-1.5 X 2 mm, margin entire. *Filaments* adnate to 5 mm from the base of the corolla, anthers 0.2-0.3 X 0.8 mm. *Ovary* 4 mm long, 0.8-0.9 mm wide, style 3.5 mm long. *Capsule* 1.5-2.5 mm long, 1.5-2.5 mm wide. *Seeds* 0.4-0.5 X 0.3-0.4 mm.

Distribution and ecology. Plants are endemic to Colombia in the departments of Cundinamarca, Putumayo, and Santander (Fig. 2), at 630-1950 m elevation, growing from cliff faces and rock walls. Flowering and fruiting apparently occurs most of the year.

Other specimens examined. Colombia. Cundinamarca: Cordillera oriental, Las Cascades, S side Guavio River, 18 km NE of Gachalá, 1950 m, 29 Oct. 1944, *M. Grant 10,525* (COL, NY, US-2 sheets, WIS-2 sheets). Putumayo: Mocoa, E of town towards Río Afan & on W slope of Alto de Afan, ca. 3 km E of town, 1°10'N, 76°42'E, 700 m, 11 Dec. 1986, *B. Hammel et al. 15,938* (US); Mpio de Mocoa, El Afán, 630 m, 11 Dec. 1986, *B. Ramírez P. 762* (US).

1B. *R. ichthyoides* subsp. *ichthyoides*

Stem 15-30 cm long, 6-10 mm in diam. *Blade* 12-30 cm long, veins 15-40 on a side. *Petiole* 5-10 mm long, 2 mm in diam. *Peduncle* 15-22 cm long, 1-1.5 mm in diam. *Bracts* absent. *Pedicels* 1-2 cm long, ca. 1 mm in diam. *Sepals* 4-5.5 mm long, 1.2 mm wide. *Corolla* 9-11 mm long, 1-1.2 mm wide at the base, 3-3.5 mm at the throat, tube 6-8 mm long; ventral lobe nearly rectangular, 3.3-3.5 X 2 mm, two lateral lobes obliquely obovate, 3-3.5 X 2.3-2.5 mm, two dorsal lobes triangular, 2.2-2.5 X 1.5-2 mm (fide Leeuwenberg, 1968). *Filaments* inserted near the base of the corolla, anthers 0.6 X 0.5 mm. *Ovary* 2 mm long, 1.5 mm wide, style 4-5 mm long. *Capsule* 2.5 mm long, 2.5 mm wide. *Seeds* 0.3-0.4 X 0.15-0.2 mm.

Distribution and ecology. The typical subspecies of *Resia ichthyoides* is endemic to Venezuela, known from the states of Carabobo and Yaracuy (Fig. 2), growing on mica-schist shaded ledges, at 1200-1360 m. Flowering and fruiting in March and October according to observations recorded on herbarium specimens.

Specimens examined. Venezuela. Yaracuy: Distr. Nirgua-Distr. San Felipe border, Cerro La Chapa, 7 km N of Nirgua by road, 68°35'W, 10°12'N, 1200-1300 m, *G. Davidse et al. 20,849* (US); Cerro Picacho, N of Nirgua, 1200-1360 m, 11 Mar. 1967, *J.A. Steyermark & G. Bunting 97,670* (NY, US); Cerro La Chapa, selva nublada en la fila, N de Nirgua, 1200-1360 m, 12-13 Oct. 1971, *J.A. Steyermark & G. Bunting 105,261* (NY).

2. *Resia nimbicola* H.E. Moore, Bot. Mus. Leaflet 20(3):88. 1962. TYPE: Colombia. Meta: Cordillera La Macarena (extremo nordeste), Macizo Renjifo, 6-20 Jan. 1951, *J.M. Idrobo & R.E. Schultes 1082* (Holotype, BH n.v.; Isotypes, COL!, GH!, US!).

Stem 15-33 cm long, 6-18 mm in diam. *Blade* 5-33.5 cm long, 1.2-5.6 cm wide, 3-6 X as long as wide, pilose to glabrescent above, pilose between the veins below; veins 15-50 on a side, pilose above, sericeous below. *Petiole* 2-12 mm long, 2 mm in diam. *Inflorescences* an irregular open cyme, shorter than the leaves. *Peduncle* slender, ascending, to 12.5 cm long, terete, dark green, villous. *Bracts* absent. *Pedicels* slender, 8-20 mm long, villous. *Sepals* connate only at the base, 5-8 mm X 0.5-1 mm, margin entire, villous outside, glabrous inside. *Corolla* white, yellow or orange, 7-13 mm long, not spurred, outside the tube pilose, inside glabrous; tube 7-11 mm long, limb pilose outside; lobes unequal, spreading, 2 upper lobes triangular, acute, 1.5-4 mm long and broad, 3 lower lobes rounded, 3-5 mm long and broad, puberulent inside (tube & lobes according to Moore, 1962). *Filaments* adnate to the middle of the corolla tube, anthers reniform. *Ovary* and style shortly-pilose. *Capsule* ca. 2.5 mm long. *Seeds* ca. 0.5 mm long.

Distribution and ecology. The type species of *Resia* is known from the Antioquia, Boyacá, Caquetá, Meta, and Cundinamarca departments in Colombia (Fig. 2), growing from rocks or cliff faces, or humus in dark, damp locations, usually at high elevations (1300-2300 m) although there has been one collection from 400 m (*Cuatrecasas* 8849, US). The species appears to have flowers and fruits throughout the year.

Specimens examined. Colombia. Antioquia: Mpio. de El Retiro, ca. 4 km al WNW de la cabecera municipal, cerca de la quebrada La Agudelo, 2200-2300 m, 9 Sep. 1979, *R. Bernal & G. Galeano* 13 (HUA); Mpio. de Yarumal, 2 km antes del alto de Ventanas, camino a Vereda Alegre, 2030 m, 20 Aug. 1986, *R. Callejas et al.* 2473 (HUA, MO, NY, US); Mpio. Briceño, Vereda San Fermín, vía Ventanas-Briceño, km 2.5, 2100-2300 m, 75°32'W, 7°10'N, 11 Nov. 1987, *R. Callejas et al.* 5527 (HUA, US); Mpio. Valdivia, Vereda San Fermín, a lo largo de la Quebrada El Oro, en la vía Ventanas (Mpio. Yarumal)-Briceño, 7°15'N, 75°30'W, 1600 m, 21 Mar. 1988, *R. Callejas et al.* 6122 (HUA); Mpio. Carmen de Viboral, Vereda La Viborita, 6 km SE del Mpio. de la Unión a La Vereda Viborita, 5°52'N, 75°20'W, 2100-2600 m, *R. Callejas* 10187 (HUA, US); Mpio. Yarumal, Alto de Ventanas, ca. 1-6 km along road to El Cedro, ca. 22 km N of Yarumal, 7°10'N, 75°28'W, 1890-2000 m, 4-5 June 1989, *J. Luteyn & L. Escobar* 13,190 (HUA, US); Mpio. Yarumal, Alto de Ventanas, along road to El Cedro, to ca. 6 km from its junction with Yarumal-Pto. Valdivia Hwy, 7°10'N, 75°28'W, ca. 2100 m, 8 Nov. 1987, *J. Luteyn & O. Maruleda* 11,884 (MO, NY, US). Boyaca: Region of Mt. Chapon, extreme W part of Boyaca, NW of Bogotá, 17 June 1931, *A. Lawrance* 231 (NY, US). Caquetá: Florencia, Quebrada de las Perdices, matorrales entre peñas, 400 m, 29 Mar. 1940, *Cuatrecasas* 8849 (COL, US); Florencia, *E. Perez Arbelaez* 737 (COL, US). Meta: Sierra de La Macarena, Vereda El Tablazo, Borro Bello, 1000-1200 m, 27 May 1973, *E. Forero et al.* 802 (COL, US); Cordillera La Macarena (extremo nordeste),

Macizo Renjifo, cumbre y alrededores, 1300-1900 m, 6-20 Jan. 1951, *Idrobo & Schultes 1059A* (COL, GH, US), Mar. 1951, 1700 m, *R. Schultes 12,121* (COL-2 sheets, GH, US-2 sheets). Cundinamarca: Paraiso (near Sumapaz), 1400 m, 5 June 1952, *M. Køie 4602* (C-2 sheets). Santander: Mpio. de Charalá, Corr. de Virolín, 1850 m, 13 May 1982, *S. Díaz P. 3396* (COL-2 sheets), *G. Lozano C. 3776* (COL-2 sheets); Mpio. Charalá, vía Cañaverales-Charalá, km 7.8 vereda El Triunfo, 1500 m, 26 June 1993, *X. Londoño & L. Kvist 814* (AAU, COL, MO, TULV, US).

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Figure 1. *Resia ichthyoides* Leeuwenb. subsp. *bracteata* L.E. Skog & de Jesus. A, Habit. B, Inflorescence with bracts. C, Flower. D, Opened corolla. E, Gynoecium (corolla removed). F, Fruit (corolla removed). A, E, & F based on *Grant 10525* (US); B, C, & D, based on *Grant 10525* (WIS).



John Wurdack posing for a Senate of Scientists yearbook (1963). Source: National Museum of Natural History, Smithsonian Institution.

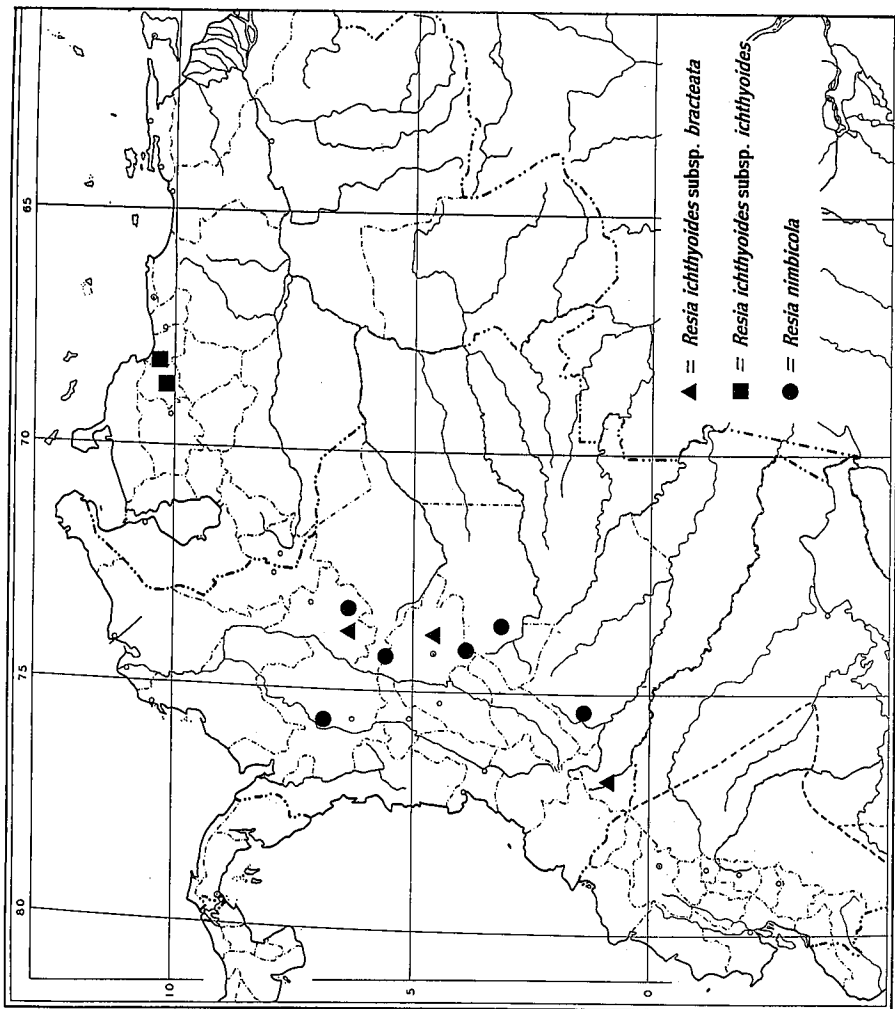


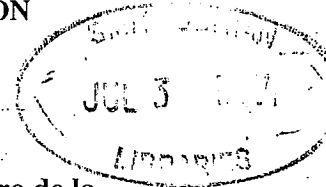
Figure 2. Distribution of *Resia* in Colombia and Venezuela; *R. ichthyoides* subsp. *bracteata* (triangles); *R. ichthyoides* subsp. *ichthyoides* (squares); and *R. nimbitcola* (circles).

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RESIÓN DE GRATITUD

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