Novelties in \textit{Cynanchum} L., sensu Woodson, in Mesoamerica

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\textbf{Abstract.} Eleven species and one genus from Mesoamerica are described as new and four new combinations are provided for taxa previously included in \textit{Cynanchum} (Apocynaceae, Asclepiadoideae) from Mesoamerica. \textit{Liedea} is newly described to accommodate \textit{L. jilisepala}. \textit{Cynanchum surruhiflorum}, \textit{Metastelma brachymischum}, \textit{M. thalamosiphon}, \textit{M. thalamosiphon}, \textit{M. yucatanense}, \textit{Orthosia cyanchoideis}, \textit{O. extra-axillaris}, \textit{O. ramosa}, \textit{O. smaragdina}, and \textit{O. stipitata} are described. Combinations are provided for \textit{Orthosia glaberrima}, \textit{O. misera}, and \textit{O. rubens}.


Fishbein and Stevens (2005 this issue) discuss the rationale and consequences of the disarticulation of Woodson’s (1941) concept of New World \textit{Cynanchum}. Although the process is now well under way, there are still many uncertainties in the generic circumscriptions. In providing names for an upcoming volume of \textit{Flora Mesoamericana}, I mirror the approach of Rapini (2002) for South American taxa, in gradually realigning the species into genera that better reflect our current understanding of relationships but without breaking the bonds of traditional morphology.

\textit{Cynanchum} L., Sp. Pl. 1: 212. 1753. TYPE: \textit{Cynanchum acutum} L.

It now seems clear that, in the New World, \textit{Cynanchum} is represented only by \textit{Cynanchum subgen. Mellichampia} Woodson (e.g., Rapini et al., 2003), a group of about 15 species ranging through North and South America. This new species fits easily into that group.

1. \textit{Cynanchum surruhiflorum} W. D. Stevens, sp. nov. TYPE: Mexico. Tabasco: Macuspana, Falda del Cerro de Macuspana, al E de la planta de Cal, Km 2.2 de la carretera, 75 m, 17 June 1979, C. Cowan 2326 (holotype, MO; isotypes MO, TEX). Figure 1.

\textit{Cynancho jaliscano} affinis sed antheris angustioribus alis brevioribus differt.

Twining vines, lower stems and base unknown, latex white; young stems tomentulose at the nodes and in 1 line on the internodes, trichomes 0.1-0.2 mm long, recurved, ferrugineous, internodes 8-9 cm. Leaves opposite, apparently without pseudostipules, blades ovate, 8.4-12.5 × 4.6-5.8 cm, apex acuminate, base shallowly lobate, sinus to 0.6 mm deep, glabrous or with a few scattered trichomes on the veins, lateral nerves 4 or 5 pairs, middle veins 40°-50° to midrib, collers 3 to 5; petioles 4.5-6.1 cm, tomentulose on adaxial surface. Inflorescence extra-axillary, 1 per node, racemiform, many-flowered, tomentulose on 1 side, peduncle 1.2-5.4 cm, axis to 5 cm, pedicel 6.8-8 mm, bracts 0.4-1.5 × 0.2-0.5 mm, deltate to lanceolate; calyx with 1 collet below each sinus with lobes elliptic with obtuse tips, 1.7-2.3 × 0.6-1 mm, glabrous or inconspicuously tomentulose at base axially, ciliolate, trichomes ca. 0.2 mm long, glabrous inside, green with a purple tint; flower buds conical, somewhat apiculate; corolla rotate or slightly campanulate, glabrous, white with a pink tint, tube 0.2-0.6 mm long, lobes lanceolate, with 2 submarginal fleshy ridges, tips rounded, nearly truncate, erect then spreading from above the middle, 3.1-5 × 1.3-1.7 mm; gynostegium with stipe 0.3-0.4 mm long (from base to inflated anther back), ribbed, corona borne at base of stipe, tube 0.2-0.4 mm long, the 5 free lobes laminar, trilobulate, 4-5.2 mm long, body of each lobe elliptic, 1.6-2 × 0.8-1.3 mm, lateral lobules ca. 0.4 mm long, central lobule narrowly deltate, nearly linear, twisted, terminal anther appendages ovate-retuse, 0.5-0.7 × 0.8-0.9 mm, inclined toward style apex, white, anthers T-shaped in outline, 0.8-1 × 1 mm, guide rails rounded, vertical, ca. 0.2 mm long; polinia pendent, corpusculum 0.1-0.19 × 0.11-0.13 mm, ellipsoid or subsagittate, dark red-brown, translators 0.31-0.33 × 0.06 mm, horizontal, slightly flattened, slightly geniculate, red-brown, pollinia 0.73-0.74 × 0.15-0.21 mm, narrowly obovoid; style apex 1.5-1.8 mm wide, slightly convex, densely papillate. Follicles and seeds unknown.
This new species is most closely related to *Cynanchum jaliscanum* (Vail) Woodson, with which it shares a stipitate gynostegium, short guide rails, and long, horizontal, pigmented translators. When Sundell (1981) treated *Cynanchum jaliscanum*, there were available for study only the three original syntype collections from Mexico, two from Jalisco and one from Veracruz, and one additional collection from Nayarit. There are now 16 collections available, not counting the Veracruz collection, and all range from Nayarit to Michoacán at 770–1400 m elevation, making the Veracruz collection, Botteri
Liedea W. D. Stevens, gen. nov. TYPE: Liedea filisepala (Standley) W. D. Stevens.

A Cynanchum sect. Microphyllum Liede inflorescentis pedunculatis paniculiformibus caulibus pubescentibus recedit.

Twining perennial vines with sympodial branching, apparently woody but not corky below, latex white; stems uniformly pubescent with multicellular trichomes of uniform length. Leaves opposite, without pseudostipules, small, ovate, petiolate. Inflorescence extra-axillary, 1 per node, pedunculate, cymose, fundamentally panicle-like but with some axes reduced to produce apparently racemiform inflorescences with 4 flowers and 1 axis per inflorescence node or all axes reduced and nearly umbel-form. Calyx connate at base, with colleters below appearing pseudostipules, small, ovate, petiolate. Inflorescences with 4 flowers and 1 axis per inflorescence node, while a paniculiform inflorescence has one flower and two axes, or even three axes and no node, as known, and obvious geographical distinction, and it is rare for non-weedy milkweeds to occur on both sides of Mexico. Cynanchum surubriflorum differs from C. jaliscanum in its shorter corolla tube, 0.2—0.6 mm versus 0.6—2 mm, shorter gynostegium stipe, 0.3—0.4 mm versus 0.4—0.8 mm, narrower corona lobes, 0.3—1.3 mm versus 1.3—1.9 mm, narrower anthers, 1.0 mm versus 1.3—1.9 mm, shorter guide rails, 0.2 mm versus 0.3—0.5 mm, and shorter translators, 0.31—0.33 mm versus 0.53—0.64 mm. While most of the differences are not individually dramatic, the totality suggests recognition of the east coast lowland species as distinct from the west coast upland species, Cynanchum jaliscanum, and the two are relatively easily distinguished from the other species of Cynanchum.

Paratype. MEXICO. Veracruz: Orizaba, 1850—1874, M. Botteri s.n. (GH, NY).


Liede (1997) placed Cynanchum filisepalum, from Costa Rica and Ecuador, in Cynanchum sect. Microphyllum Liede, along with nine high-altitude northern Andean species. This section was defined primarily by the “dichasial” branching pattern, unbearded corollas, and single follicles. The molecular study of Liede and Täuber (2002) suggests that Woodson’s (1941) concept of New World Cynanchum is untenable and that Cynanchum sect. Microphyllum can no longer be included in the current concept of the genus Cynanchum. At the generic level, the name available for Cynanchum sect. Microphyllum is Scyphostelma Baillon (Liede & Meve, 2004). However, it seems clear to this author that Cynanchum filisepalum does not belong with the other nine species in Scyphostelma and Liedea is here described as new with but one species, although the generic description is prepared to accommodate several apparently undescribed species from northern South America.

The sympodial branching pattern of Liedea, and the remaining species of Cynanchum sect. Microphyllum, is shared with many species of the related genera Ditassa Brown, Orthosia Decaisné, Stenomeria Turczaninow, and Tassadia Decaisné. This branching pattern is characterized by twining, indeterminate, more or less sterile shoots with long internodes and more or less non-twining, determinate, fertile, lateral branches with short internodes and distichous leaves; in the extreme, especially in Stenomeria and Tassadia, the lateral branches become leafless and appear to be inflorescences. Liedea differs from the remainder of Cynanchum sect. Microphyllum in inflorescence structure, stem indumentum, and habit. The other nine species have sessile, fasciculate inflorescences, while those of Liedea are pedunculate and paniculiform. The typical milkweed racemiform inflorescence, as for example in Cynanchum sect. Melichampia Sundell, has two flowers and one continuing axis at each node, while a paniculiform inflorescence has one flower and two axes, or even three axes and no flowers, at each node. Liedea has three or four flowers and one axis at each node, but on close examination one or two of the flowers are borne on reduced axes; thus it is a paniculiform

s.n., relatively more anomalous than it might have seemed to Sundell. On closer examination, the Veracruz collection, with the ambiguous locality “Orizaba,” generally matches a collection from lowland Tabasco, the type designated here for Cynanchum surubriflorum. In addition to the difference in elevation, as far as known, and obvious geographical distinction, and it is rare for non-weedy milkweeds to occur on both sides of Mexico. Cynanchum surubriflorum differs from C. jaliscanum in its shorter corolla tube, 0.2—0.6 mm versus 0.6—2 mm, shorter gynostegium stipe, 0.3—0.4 mm versus 0.4—0.8 mm, narrower corona lobes, 0.3—1.3 mm versus 1.3—1.9 mm, narrower anthers, 1.0 mm versus 1.3—1.9 mm, shorter guide rails, 0.2 mm versus 0.3—0.5 mm, and shorter translators, 0.31—0.33 mm versus 0.53—0.64 mm. While most of the differences are not individually dramatic, the totality suggests recognition of the east coast lowland species as distinct from the west coast upland species, Cynanchum jaliscanum, and the two are relatively easily distinguished from the other species of Cynanchum.
cence with the general appearance of a racemiform one. Liedea has stems that are uniformly pubescent, while the species of Cynanchum sect. Microphyllum that I have been able to examine have the indumentum confined to one or two lines. Liedea filisepala seems to be a high-climbing liana in cloud forest at 1000—1500 m in Costa Rica (e.g., A. Skutch 3165, MO), Panama (e.g., N. Hensold 1018, MO), and Ecuador (e.g., A. Gentry & G. Shupp 26377, MO), while the other species of Cynanchum sect. Microphyllum seem to be low herbs or shrubs in open vegetation at 2300—4200 m in the northern Andes from Venezuela to Peru.

Metastelma R. Brown, Asclepiadaceae 41. 1810.

TYPE: Metastelma parviflorum (Swartz) R. Brown ex Schultes.

Metastelma, as represented by the type, is relatively easily circumscribed in North America, Central America, the Caribbean, and northern South America, and has been accepted in most modern floristic treatments. The inclusion of a disjunct group of species from southern South America, however, is more problematical and has led some authors, e.g., Rapini (2002), Rapini et al. (2003), and Liede-Schumann et al. (2005), to question the genus as a whole. Five new species of Metastelma in the sense of the type species are described below.

1. Metastelma brachymishcum W. D. Stevens, sp. nov. TYPE: Mexico, Chiapas: El Sumidero, 22 km N of Tuxtla Gutiérrez, 1350 m, 19 Aug. 1972. D. Breedlove 27183 (holotype, MO). Figure 2.

A specicus Metastelmatis stipitis brevibus et coronis laminaribus terminalibus habe lobos coronae integris trichomatibus corollae longioribus infl orescentiis brevioribus distinguenda.

Twining vines, woody and corky below, cork brown, latex unknown, underground parts unknown; young stems puberulent on 1 side, with recurved white trichomes 0.1—0.2 mm long, internodes 1—3 cm. Leaves opposite, without pseudostipules, blades elliptic to ovate, 2.3—4.1 × 0.7—1.2 cm, apex acute to acuminate, apiculate, base obtuse to rounded, adaxially glabrous except inconspicuously puberulent on midrib and margin, abaxially glabrous, lateral nerves 10 to 12 pairs, middle veins 40—45° to midrib, collateres 0 to 2; petioles 2—4 mm, puberulent on adaxial margin. Inflorescence extra-axillary, 1 per node, sometimes aggregated on short leafless shoots, congested-racemiform, 10- to 20-flowered, peduncle 0.5—1 mm, puberulent on 1 side, axis to 3 mm, thickened by a tight spiral of pedicel bases, pedicel 0.5—1 mm, puberulent on 1 side, sulate when dry, bracts 0.2—0.4 × 0.1—0.3 mm, ovate; calyx with 1 colletor below each sinus within, lobes ovate with rounded tips, 0.7—0.8 × 0.6—0.7 mm, puberulent at base abaxially, ciliate, glabrous inside, green to purple with scarious margins; corolla campanulate, white, tube 0.8—1 mm long, glabrous, lobes lanceolate with acute tips, erect, 1.7—1.8 × 0.9—1 mm, abaxially glabrous, adaxially with marginal trichomes erect, white, unicellular, 0.3—0.5 mm long distally, becoming 0.15—0.2 mm long proximally, not reaching base of lobes, and with center trichomes dense, retrorse, translucent, unicellular, 0.25—0.35 mm long; gynostegium with stipe 0.4—0.5 × 0.5—0.7 mm, broadly winged, corona lobes borne at or near top of stipe, lanceolate with attenuate tips, laminar, loosely appressed to anthers and meeting over style apex, free part 0.8—1 × 0.2—0.4 mm, terminal anther appendages ovate, 0.3—0.35 × 0.3—0.4 mm, erect or inclined toward style apex, white, anthers quadrate in outline, 0.3—0.4 × 0.5—0.55 mm, guide rails straight, at ca. 45° to gynostegium axis, salient at base, ca. 0.25 mm long; pollinia pendant, corpusculum 0.17—0.19 × 0.06—0.07 mm, obovoid, pale brown, translators 0.06—0.09 mm, flattened, bent at middle, pollinia 0.17—0.19 × 0.07—0.09 mm, obovoid with a narrow neck; style apex 0.6—0.8 mm wide, strongly convex, ca. twice the height of corpuscula. Follicles and seeds unknown.

Metastelma brachymishcum is not obviously related to any other species in the genus. It shares the general shape of the pollinaria and corona with the rather polymorphic and widespread Metastelma schlechtendalii Decaisne, but that species has a proportionally shorter corolla tube (about a quarter of the total corolla length vs. about half), corolla lobes with a pair of submarginal fleshy ridges, shorter corolla trichomes (center trichomes 0.05—0.12 mm vs. 0.25—0.35 mm), a nearly flat style apex, and longer inflorescences (1—15 mm vs. 1—3 mm), among other characters. The guide rails of this new species are similar to those of Metastelma chiapense A. Gray, M. lieuensis W. D. Stevens, described below, but each of those species is different in a variety of characters. Liede and Meve (2004) cite a duplicate of the holotype of Metastelma brachymishcum, Breedlove 27183 (TEX), under Metastelma longicornutum, which is also endemic to Chiapas at similar elevations, but that species has 3-lobulate rather than entire corona lobes, a rare char-
character shared only with Metastelma triodontum (described below) among North and Central American species of Metastelma, in addition to other differences; perhaps the Breedlove collection is mixed. The same authors cite a duplicate of the paratype. 

Breedlove 14010 (TEX), as Metastelma barbigerum var. liesnerianum (L. O. Williams) Liede & Meve, but that concept is described below as M. thalamosiphon.

Metastelma brachymischum has been collected...
only in the vicinity of El Sumidero, in seasonal evergreen forest on limestone, at 1200—1350 m elevation, and flowering in August and October.

Paratype. MEXICO. Chiapas: 17 km N of Tuxtla Gutiérrez along road to El Sumidero, D. Breedlove 14010 (F).

2. Metastelma thalamosiphon W. D. Stevens, sp. nov. TYPE: Belize. Western Hwy., 12.5 mi. W of Belize, 10 Aug. 1970, J. Wiley 193 (holotype. MO). Figure 3.

A Metastelmate liesneriano trichomatibus marginalibus albis loborum corollae longitude trichomatibus medianis translucidis aequantes et lobis corollae basi adnatis corollae recedit.

Twining vines, woody and corky below, cork pale brown, latex white, roots fibrous; young stems puberulent in a broad band, sometimes with a thin line of trichomes on opposite side, trichomes white, recurved, 0.2—0.4 mm long, internodes 0.5—5 cm. Leaves opposite, without pseudostipules; blades mostly elliptic, sometimes somewhat ovate or obovate, 1.9—3.7 X 0.8—1.3 cm, apex acute to rounded or emarginate, apiculate, base obtuse to rounded or rarely subcordate, adaxially sparsely puberulent on midrib and margin, abaxially glabrous, lateral nerves 6 to 10 pairs, middle veins 30°—65° to midrib, colleters 0 to 4; petioles 2.2—4 mm, puberulent on adaxial margin. Inflorescence extra-axillary, 1 per node or sometimes with a subsidiary inflorescence on a short axillary shoot, congested-racemiform or more commonly congested-paniculiform, 5—14-flowered, peduncle 0—1.6 mm, puberulent in 1 line, axis to 1 mm, pedicel 1—2.2 mm, glabrous to sparsely puberulent, in 1 line or generally, bracts 0.25—0.5 X 0.2—0.3 mm, ovate; calyx with 0 to 2 colleters below each sinus within, lobes ovate with rounded tips, 0.9—1.2 X 0.6—0.9 mm, sparsely puberulent abaxially, especially at base, glabrescent adaxially, green to purple with scarious margins; corolla campanulate, white or tinted pink outside, tube 0.8—1 mm long, glabrous, lobes lanceolate with acute tips, erect or tips somewhat reflexed, 2.2—3 X 0.8—1 mm, abaxially glabrous, adaxially with marginal trichomes erect, white, unicellular, 0.3—0.4 mm long, covering the distal third to three-quarters of the margin, and with center trichomes erect or retrorse, translucent, unicellular, 0.2—0.4 mm long, covering the distal half to the entire center of the lobes; gynostegium with stipe 0.2—0.4 X 0.6—0.7 mm, ovoid, corona lobes bases covering the length of the stipe, corona lobes acicular with broad, keeled bases adnate to the corolla tube up to nearly the same height as the attachment to the stipe, tips acute, erect or somewhat recurved, free part 0.8—1 X 0.15—0.2 mm, slightly exceeding style apex, terminal anther appendages ovate, 0.3—0.4 X 0.2—0.35 mm, erect or somewhat inclined over style apex, white, anthers quadrate to trapezoidal, 0.3—0.5 X 0.4—0.65 mm, guide rails straight, salient at base, 0.25—0.3 mm long; pollinia pendent, corpusculum 0.15—0.19 X 0.08—0.1 mm, subsagittate, pale brown, translators 0.06—0.09 mm, thin, round in cross section, somewhat geniculate, pollinia 0.19—0.23 X 0.07—0.1 mm, narrowly obvoid, proximally thin and sterile; style apex 0.5—0.6 mm wide, shallowly conical. Follicle 1, fusiform-attenuate, 1.2—6 X 0.2—0.3 cm, glabrous, seeds ca. 18; seeds obovate, cucullate, ca. 3.8 X 1.8 mm, reddish brown, margin 0.1—0.2 mm, irregularly dentate on distal third, concave side tuberculate, convex side sparsely tuberculate near margin, coma 1.5—2 cm, tawny.

Liede and Meve (2004) described and provided an excellent illustration of this new species as Metastelma barbigerum var. liesnerianum (L. O. Williams) Liede & Meve, Metastelma liesnerianum (L. O. Williams) Liede, as I recognize the taxon, was originally based upon a single collection from Guanacaste, Costa Rica, and apparently Liede and Meve saw only a photograph of the type and no other Costa Rican material and based their description and illustration on material from Belize and southern Mexico. I have now studied seven additional collections of Metastelma liesnerianum, all from Guanacaste, and find that it is amply distinct from the plants from Belize and southern Mexico. Notwithstanding the highly unlikely disjunction, spanning the well-collected countries of Nicaragua, El Salvador, Honduras, and Guatemala, the characters distinguishing the two species, or for that matter almost any species of Metastelma, are not particularly visible on photographs. The most readily obvious difference between the two species is in the corolla lobe pubescence; Metastelma liesnerianum has the white, marginal trichomes of the corolla 0.05—0.1 mm long and the central, translucent trichomes 0.4—0.5 mm long, distinctly contrasting in length, while in M. thalamosiphon the marginal trichomes are 0.3—0.4 mm long and the medial trichomes are 0.2—0.4 mm long, the central trichomes always equal to or shorter than the marginal trichomes and more or less concealed by them. Somehow less obvious, but even more compelling, the corona lobes of Metastelma thalamosiphon are broadly keeled at the base, with the keels adnate to the corolla tube; the broad bases of the corona lobes, adnate to about the same level on the stipe and the corolla tube partition the corolla tube into...
Metastelma thalamosiphon W. D. Stevens. Photograph of branches and opened flowers of Cabrera & Cabrera 11860 (MO).

5 chambers (see Liede & Meve, 2004, p. 44, fig. 4-c'). In *Metastelma liesnerianum* the corona lobes are entirely free from the corolla and the corolla tube is not chambered.

*Metastelma thalamosiphon* grows in seasonally inundated savannas at 0 to 220 m elevation. It has been most commonly collected in Belize and adjacent Mexico. Twelve additional collections cited.
by Liede and Meve (2004) under Metastelma barbigferum var. liesnerianum, not examined in this study, may be found to pertain to this species and provide the logical addition of Petén, Guatemala, to the range. The species seems to flower throughout the year.

Paratypes. MEXICO. Campeche: 6 km al E de F. de Tabi sobre el camino a Viga Chico, E. Cabrera C. & H. de Cabrera 1040 (MO). Yucatán: 3 km al O de Tabi sobre el camino Yaxcabá-Sotuta, E. Cabrera C. & H. de Cabrera 10737 (MO, BELIZE, Salt Creek Estate, M. 13 Northern Hwy., L. Dickman 153a (MO); Hatteville, J. Dwyer 10492 (MO); J. Dwyer & R. Pippen 10093 (MO); 12.5 mi. NW of Belize, Northern Hwy., J. Dwyer 10796 (F, MO); Mi. 11, Northern Hwy., J. Dwyer 10937 (MO, A. Gentry 7640 (MO); Mi. 19, Northern Hwy., J. Dwyer & R. Lienzer 12011 (F, MO); Mi. 7 3/4 Northern Hwy., J. Dwyer 12774 (MO, NY); Baumgartner's Ridge Lagoon Plantation, M. 11/2 Northern Hwy., J. Dwyer 13074 (MO); Hector Creek, P. Gentle 1568 (MO, NY); 12 mi. W of Belize, S. McDaniel 13082 (MO); 1 mi. W of jet. w/ road to Ferguson Ranch, B mi. E of Hatteville, along Hector Creek Road, P. Sorensen 7081 (F, MO); 1-2 mi. S of Gales Point, G. Proctor 36345 (MO); along New Northern Hwy. at jet. w/ road to Crooked Tree, R. Worthington 24077 (MO).

3. Metastelma thysanotum W. D. Stevens, sp. nov. TYPE: El Salvador. Ahuachapán: San Benito, en el bautizadero, 850 m, 26 July 1995, M. Sandoval Ac E. Sandoval 96 (holotype, MO; isotypes, B, EAP, LAGU). Figure 4.

Species have Metastelmati sepicaidum indumento corollae similis, a M. pedunculare forma loborum coronae similis, ab utroque lobis coronae longioribus distincta.

Twining vines, woody and corky below, cork pale brown, latex white, undergrowth parts unknown; young stems glabrous or internodes with a thin line of recurved white trichomes ca. 0.1 mm long, internodes 2-11 cm. Leaves opposite, without pseudodistipules, blades lanceolate to elliptic, 2.1-4.2 × 0.6-1.6 cm, apex acute to attenuate, apiculate, base acute to rounded, adaxially glabrous or sparsely puberulent on midrib and margin, abaxially glabrous, lateral nerves 11 to 15 pairs, middle veins 40°-55° to midrib, colleters 0 to 2; petioles 3.5-10 mm, puberulent on adaxial margin. Inflorescence extra-axillary, 1 per node or sometimes with a subsidiary inflorescence on a short axillary shoot, congested-racemiform, 4- to 20-flowered, peduncle 5-16 mm, glabrous or puberulent in 1 line, axis to 3 mm, thickened, pedicel 1.5-3.5 mm, glabrous or puberulent in 1 line, bracts 0.35-0.6 × ca. 0.3 mm, deltate; calyx with 1 colletor below each sinus within, lobes ovate with rounded tips, 0.4-0.9 × 0.3-0.6 mm, sparsely puberulent abaxially, glabrous adaxially, green to purple with scarious margins; corolla campanulate, white to pale yellowish green, tube 0.7-1 mm long, somewhat saccate below lobes, glabrous, lobes ovate with acute tips, erect, 0.3-1.3 × 0.4-0.8 mm, with 2 marginal fleshy ridges, abaxially glabrous, adaxially with a thin, submarginal line of erect, white, unicellular trichomes 0.05-0.1 mm long, center and immediate margins of lobes glabrous; gonostegium with stipe 0.5-0.6 × 0.3-0.5 mm, narrowly winged, corona lobes borne at top of stipe, ligulate with rounded tips, keeled at the base, appressed to anthers and arching over top of style, tips overlapping above style apex, free part 0.5-0.7 × 0.1-0.2 mm, terminal anther appendages nearly circular, 0.15-0.25 mm diam., appressed to margin of style apex, white, anthers rectangular, 0.18-0.25 × 0.35-0.55 mm, guide rails rounded, widest at center, 0.13-0.25 mm long; pollinaria pendent, corpusculum 0.07-0.13 × 0.04-0.05 mm, ellipsoid, pale brown, translators 0.05-0.08 mm, thin, round in cross section, strongly sigmoid, pollinia 0.12-0.15 × 0.05-0.08 mm, narrowly obovoid, proximally thin and sterile; style apex 0.5-0.7 mm wide, slightly umbonate in center. Follicle 1, fusiform-attenuate, ca. 4.7 × 0.5 cm, glabrous; seeds unknown.

This new species was treated as "Metastelma sp. B" in Flora de Nicaragua (Stevens et al., 2001). Liede and Meve (2004) placed Metastelma sepicaidum Pfitter, endemic to Costa Rica, into the synonymy of M. pedunculare Decaisne, endemic to Guatemala, stating that the two "show no constant differing characters." They also studied one of the paratypes of Metastelma thysanotum, Molina 23080, and while noting some differences, decided that more material was needed to make a decision. As recognized here, Metastelma sepicaidum consistently differs from M. pedunculare in having the inner face of the corolla lobes with a thin line of submarginal, erect, white trichomes ("verrucose trichomes" of Liede & Meve, 2004, p. 34) while the center of the
Figure 4. *Metastelma thysanotum* W. D. Stevens. Photograph of branch and opened flower of Sandoval & Román 1365 (MO).

Lobes are glabrous and *M. pedunculare* has no submarginal line of trichomes, but the center of the lobes are covered with retrorse, nearly translucent trichomes (“smooth, hispid, downwardly directed trichomes” of Liede & Meve, 2004, p. 34). Furthermore, the corona lobes of *Metastelma sepicola* are markedly spatulate, much broader at the tip, while those of *M. pedunculare* are ligulate or even slightly narrowed at the tip. *Metastelma thysanotum* has exactly the corolla indumentum of *M. sepicola*, but the corona lobes are ligulate, as in *M. pedunculare*. However, both *Metastelma sepicola* and *M.*
**Metastelma longicoronatum** has corolla lobes that are shorter than in *M. thysanotum* the corona lobes are longer than, loosely appressed to, and more or less reaching the opposite side of the top of the style apex, crossing at the center. Somewhat less obviously, there are pseudostipules, blades narrowly elliptic, 2.2–2.5 × 0.4–0.8 mm, apex acute, apiculate, base acute, adaxially glabrous except puberulent on midrib and margin, abaxially glabrous or with a few trichomes along midrib, lateral nerves 4 to 6 pairs, middle veins 50°–60° to midrib, colleters 0 to 2; petioles 1.5–2.5 mm, puberulent on adaxial margin. Inflorescence extra-axillary, 1 per node, congested-racemiform, 4- to 6-flowered, peduncle 1.5–3.5 mm, puberulent on 1 side, pedicel 1–2 mm, puberulent on 1 side, bracts 0.4–0.7 × 0.3–0.5 mm, ovate; calyx with 1 collet below each sinus within, lobes ovate with rounded tips, 0.6–0.7 × 0.35–0.4 mm, puberulent at base and margin abaxially, adaxially glabrous, purple with scarious margins; corolla campanulate, white, tube 0.5–0.6 mm long, abaxially glabrous, adaxially with trichomes of lobes continuing into top of tube, lobes lanceolate with acute tips, patent, 1–1.1 × 0.5–0.6 mm, abaxially glabrous, adaxially with broad margins and distal half covered with erect, white, unicellular trichomes, 0.1–0.15 mm long, center trichomes restricted to a narrow strip in basal half, dense, retorse, translucent, unicellular, 0.1–0.15 mm long; gynostegium with stipe 0.15–0.2 × 0.4–0.5 mm, broadly winged, corona lobes borne at top of stipe, 3-lobed, laminar, free part ca. 0.65 × 0.4 mm, central lobule narrowly deltate, bent sharply over style apex, lateral lobules small, borne near middle, deltate, terminal anther appendages ovate, ca. 0.2 × 0.2 mm, appressed to style apex, white, anthers rectangular in outline, ca. 0.3 × 0.4 mm, guide rails nearly vertical at top, curving outward toward base, ca. 0.3 mm long; pollinaria pendent, corpusculum ca. 0.14 × 0.05 mm, subsagittate, brown, translators ca. 0.04 mm, round, bent at middle, pollinia ca. 0.16 × 0.05 mm, asymmetrically ellipsoid; style apex ca. 0.5 mm wide, nearly flat with small umbo, follicles and seeds unknown.

Among the Mesoamerican species of *Metastelma*, only this new species and *Metastelma longicornorum* (L. O. Williams) Liede have 3-lobulate corona lobes. The flowers of *Metastelma longicornorum* are larger overall (2.4–2.9 mm vs. 1.5–1.7 mm long) and most notably the corona lobes are longer (1.4–1.9 mm vs. 0.65 mm), have their lateral lobules at the base rather than the middle and curving upward rather than straight, and have their central lobules erect and only slightly arching over the...
style apex rather than bent sharply over the style apex. *Metastelma longicoronatum* also has longer inflorescences, leaves with more secondary veins, and guide rails that are straight and at about 45° to the gynostegium axis rather than nearly vertical at the top and gradually flaring outward. A few other species have flowers in the size range of *Metastelma triodontum*, but all have entire corolla lobes and other differences. The indumentum of the corolla lobes, with the white, marginal trichomes cov-
ering most of the lobes and the translucent, central trichomes restricted to a narrow line in the basal half, seems especially distinct.

*Metastelma triodontum* is known only from the type collection from Guatemala.

5. *Metastelma yucatanense* W. D. Stevens, sp. nov. TYPE: Mexico, Quintana Roo: directly on of Puerto Morelos, 5 m, 4 May 1982, G. Davids, M. Sousa S., A. (specific & E. Cabrera C. 200050 (holotype, MO; isotype, MEXU). Figure 6.

Species hae: a *Metastelma* palmeri differt stipite brevior et corona occulta alis antherae rectis et basi non curvatis.

Twining vines, herbaceous, without cork, latex white, underground parts unknown; young stems glabrous or internodes with a thin line of recurved white trichomes 0.1—0.3 mm long, internodes 2—5 cm. Leaves opposite, without pseudostipules, glabrous or internodes with a thin line of recurved white trichomes restricted to a narrow line in the basal half, seems especially distinct.

*Metastelma triodontum* is known only from the type collection from Guatemala.

**5. Metastelma yucatanense** W. D. Stevens, sp. nov. TYPE: Mexico, Quintana Roo: directly on of Puerto Morelos, 5 m, 4 May 1982, G. Davids, M. Sousa S., A. (specific & E. Cabrera C. 200050 (holotype, MO; isotype, MEXU). Figure 6.

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Species hae: a *Metastelma* palmeri differt stipite brevior et corona occulta alis antherae rectis et basi non curvatis.

Twining vines, herbaceous, without cork, latex white, underground parts unknown; young stems glabrous or internodes with a thin line of recurved white trichomes 0.1—0.3 mm long, internodes 2—5 cm. Leaves opposite, without pseudostipules, glabrous or internodes with a thin line of recurved white trichomes restricted to a narrow line in the basal half, seems especially distinct.

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Twining vines, herbaceous, without cork, latex white, underground parts unknown; young stems glabrous or internodes with a thin line of recurved white trichomes 0.1—0.3 mm long, internodes 2—5 cm. Leaves opposite, without pseudostipules, glabrous or internodes with a thin line of recurved white trichomes restricted to a narrow line in the basal half, seems especially distinct.

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Species hae: a *Metastelma* palmeri differt stipite brevior et corona occulta alis antherae rectis et basi non curvatis.

Twining vines, herbaceous, without cork, latex white, underground parts unknown; young stems glabrous or internodes with a thin line of recurved white trichomes 0.1—0.3 mm long, internodes 2—5 cm. Leaves opposite, without pseudostipules, glabrous or internodes with a thin line of recurved white trichomes restricted to a narrow line in the basal half, seems especially distinct.

*Metastelma triodontum* is known only from the type collection from Guatemala.
of *M. yucatanense* and is somewhat disjunct from the other collections.

*Metastelma yucatanense* is primarily a coastal species but has been found somewhat inland, up to about 65 m elevation, and apparently flowers year-round.

**Paratypes.** MEXICO: Quintana Roo: 10 km al N de Puerto Morelos, camino a Punta Caracol, E. Cabrera C. &
Novelties in Cynanchum

Stevens

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H. de Cabrera 3139 (MO); 15 km al N de Punta Sam, E. Cabrera C. & H. de Cabrera 6457 (MO); camino a Nizuc, P. Moreno 101 (MEXU); Punta Sam, 5 km al N de Puerto Juárez, H. Quero, H. Flores & R. Grether 2884 (ENCB, MO), O. Tellez Y. & E. Cabrera C. 1545 (MO); Isla Holbox, V. Rico-Gray & I. Espejel 131 (F); Puerto Morelos, P. Moreno 312 (MEXU), M. Sousa S., J. Tellez V., F. Cabrera 2005

III. Quero. III. Flores & R. (Wether 2331 (KNCB)

III. de Cabrera 9674 (MO); above Calcelitok, S. Darwin 2317 (MO); 3.5 km al N de Dzemul camino a X'tampu, R. Durán & M. Méndez 2969 (MO).

GUATEMALA. Izabal: Cadenas (Puerto Méndez), Sarstun River, E. Contreras 9336 (MO).

Orthosia Decaisne in A. DC., Prodr. 8: 526. 1844.


Liede (1997) first pointed out that some North American species of Cynanchum, sensu Woodson, belonged to the genus Orthosia, previously only known from southern South America. In her analysis of Orthosia and the related genera, the inflorescences were described as axillary or extra-axillary, simple and sciaidioidal. While the inflorescence description is basically correct in a descriptive sense, it is instructive to understand their development. Typical inflorescences of Asclepiadoideae are either terminal or extra-axillary, apparently developmentally terminal, but pushed aside by the emerging shoot, and one per node. Many species of Orthosia have these apparently axillary inflorescences, two per node, that are congested-racemiform or congested-panicleform. Other species, clearly related in other regards, have both axillary and extra-axillary inflorescences or even exclusively extra-axillary inflorescences, Orthosia glaberrima, validated below, is especially informative in understanding the origin of this inflorescence type, having axillary, extra-axillary, and even terminal inflorescences, sometimes more than one kind at a node, and most unusual, the apparently axillary inflorescences often revert to being vegetative shoots, leaving a cluster of pedicel scars at the base of lateral shoots. Clearly, the axillary inflorescences of Orthosia, as is the case with the related Tassadia (Stevens, 2002), are actually condensed axillary branches with one, then racemiform, or more, then paniculiform, terminal or extra-axillary true inflorescences. Only Mesoamerican species of Orthosia are considered here; five species are described as new and three new combinations are provided.

1. Orthosia cynanchoides W. D. Stevens, sp. nov. TYPE: Mexico. Chiapas; Rodeo, near Siltepec, 2300 m, 1 Aug. 1941, E. Mattuda 4562 (holotype, MO; isotypes, F, MEXU). Figure 7.

Inter species Orthosiae inflorescentiis solitariis et axillariis et extra-axillariis tubo corollae brevi tubo corolaee brevi lobis coronaee brevibus arcuatis gynostegii cylindrici brevistipitato pollinis ellipsoidis dimidio minor quam corpusculis differt.

Twining vines, woody and corky below, latex and underground parts unknown; young stems puberulent in a broad band, trichomes erect, 0.2-0.25 mm long, white, internodes 2-13 cm. Leaves opposite, persistent, without pseudostipules, blades lanceolate, 2.1-3.2 X 0.4-0.6 cm, apex acute to attenuate, apiculate or not, base obtuse to rounded, adaxially puberulent on midrib and margin, sparsely puberulent on basal half of surface, abaxially glabrous or with a few trichomes along midrib, lateral nerves 3 to 4 pairs, inconspicuous, middle veins 55°-60° to midrib, colleters 2; petiole 2.3-3.5 mm densely puberulent along adaxial margin. Inflorescence axillary or extra-axillary, 1 per node, congested-racemiform, nearly umbelliform, 2 to 4 flowers open at a time, peduncle 0.2-2.5 mm, puberulent on 1 side, pedicel 3.3-3.5 mm, puberulent except 1 line glabrous, bracts lanceolate, 0.2-0.7 X 0.1-0.2 mm, purple; calyx without colleters, lobes elliptic with rounded tips, 0.7-0.8 X 0.5-0.6 mm, apressed-puberulent outside, glabrous inside, erect to ascending, purple; corolla shallowly campanulate, nearly rotate, glabrous, white, tube 0.5-0.6 mm long, lobes elliptic with rounded tips, 4.2-2.2 mm, spreading; gynostegium cylindrical, with stipe ca. 0.3 mm, corona of 5 lobes connate at base, borne at base of the stipe, tube ca. 0.1 mm long, lobes lanceolate, somewhat shouldered toward the rounded tip, ca. 0.8 X 0.45 mm, center of lobe adnate to stipe, then arching outward toward corolla tube and then back toward gynostegium, with the tips touching the center of the anther backs, terminal anther appendages ovate, ca. 0.3 X 0.3 mm, arching over and nearly covering style apex; anthers rectangular, ca. 0.7 X 0.5 mm, guide rails vertical, slightly bowed outward at center, ca. 0.7 mm long; pollinaria pendunculatet; corpusculum ellipsoid, ca. 0.21 X 0.09 mm, brown, translators ca. 0.06 mm, thin, round in cross section, strongly sigmoid, pollinia ellipsoid, ca. 0.13 X 0.08 mm; style apex flat, ca. 0.6 mm wide. Immature follicles 2, divergent 130°, fusiform-attenuate, to 41 X 2 mm, smooth, sparsely puberulent, mature follicles and seeds unknown.

The single collection of this species, from near Siltepec and probably from cloud forest, was distributed as Metastelma angustifolium Turczaninow, a species of Orthosia from north and central Mexico that also passes under the name Cynanchum kun-
Orthosia cynancheoides is superficially similar to this species, but the latter differs in many details, including having a conical gynostegium and corona lobes larger than, and completely covering, the anthers. Among the species of Orthosia with both apparently axillary and extra-axillary inflorescences, O. cynancheoides stands out in having both the corolla and the corona...
divided nearly to the base and the corona lobes relatively short and strongly curved.

2. Orthosia extra-axillaris W. D. Stevens, sp. nov. TYPE: Costa Rica. San José: Cordillera de Talamanca, W ridge of Cerros Cuericf, 3160 m, 9°34′N, 83°40′W, 15 Sep. 1983, G. Davide 24730 (holotype, MO; isotype, CR).

Inter species Orthosiae inflorae-mentis solitariis extra-axillaribus tubo coroneae longo campanulato lobis coroneae latiss gynostegio cylindrico brevistipitato pollinis asymmetricalis corpusculum fere acqueantibus differt.

Twining herbaceous vines, latex white, underground parts unknown; young stems puberulent in a narrow to broad band, trichomes erect to somewhat reflexed, 0.2—0.4 mm long, white, internodes 1—13 cm. Leaves opposite, persistent, without pseudostipules, blades lanceolate, 2.5—4 × 0.5—1 cm, apex attenuate, apiculate or not, base acute, adaxially puberulent on midrib and margin, abaxially glabrous or puberulent on midrib, lateral nerves 4 to 6 pairs, middle veins 40°—50° to midrib, collerets 2; petiole 2—6 mm, puberulent along adaxial margin. Inflorescence extra-axillary, 1 per node, congested-racemiform or congested-paniculiform, 2 to 9 flowers open at a time, peduncle 0—4 mm, puberulent on 1 side, pedicel 2.5—5.5 mm, puberulent in 1 line, bracts lanceolate, 0.7—1.2 × 0.4—0.6 mm, green or purple; calyx with 0 to 2 colleters below each sinus within, lobes ovate with acute to rounded tips, 1.1—1.3 × 0.7—0.8 mm, with a few trichomes at base and margin outside, glabrous inside, ascending, green or purple; corolla shallowly campanulate, nearly rotate, glabrous, white or outside tinted with yellow, green, pink, or purple, tube 0.3—1 mm long, lobes ovate with rounded tips, 1.9—2.5 × 1.2—1.7 mm, ascending; gynostegium cylindrical, with stipe 0.1—0.3 mm, corona of 5 lobes connate at base, borne at the base of the stipe, tube 0.3—0.5 mm long, campanulate, lobes lanceolate, somewhat to strongly shouldered toward the rounded tip, 1.3—1.8 × 0.8—1.2 mm, erect, somewhat shorter to somewhat longer than the gynostegium, terminal anther appendages ovate, 0.35—0.5 × 0.25—0.5 mm, arching over and nearly covering style, very short and larger lobes. The shapes of the corona lobes and of the pollinia are unusually variable but many other characters hold this small group of specimens together. The inflorescences are always of the typical extra-axillary sort and one per node, apparently the only Orthosia from North America without at least some axillary inflorescences. This Costa Rican endemic has been found in cloud forests between 2300 and 3160 m elevation and has been collected with flowers between June and October.


This species was treated as Cynanchum pallidum (Decaisne) Standley in the Flora of Guatemala (Standley & Williams, 1969) and Cynanchum glaberrimum (Woodson) L. O. Williams in the Flora of Panama (Spelmann, 1975). The species of Orthosia sometimes known as Cynanchum sepium is actually rare and endemic to a small area in the mountains east of Oaxaca, Mexico, in the district of Ixtlan, while O. glaberrima is common in the mountains from Chiapas to the Panama-Costa Rica border. Metastelma pallidum Rushby from Colombia is obviously related, and would provide an older epithet, but has a dense, yellowish indumentum not seen in the Mesoamerican collections, and is not considered synonymous.
Figure 8. Orthosia extra-axillaris W. D. Stevens. Photograph of branches and opened flowers of Almeda et al. 3101 (MO).


This species was treated as Cynanchum miserum
in the *Flora of Guatemala* (Standley & Williams, 1969). It is most similar to *Orthosia ramosa*, described and compared below. *Orthosia misera* is among the species of *Orthosia* completely leafless at maturity. It is found in cloud forests from Chiapas to Honduras.

5. *Orthosia ramosa* W. D. Stevens, sp. nov. 

Inter species *Orthosia* inflorcescentiis solitariis vel gemmatiis axilariis tubo corollae longo tubo coronae brevi lobis coronae brevibus arcuatis an tymo longo tubo coronae longo gynostegi um lobis coronae brevibus arcuatis an tymo longo tubo coronae longo differit.

Twining or scendent vines, woody and corky below, latex white, underground parts unknown; young stems puberulent in an inconspicuous line, trichomes erect to reflexed, ca. 0.1 mm long, white, internodes 2–11 cm. Leaves opposite, caducous, without pseudostipules, when present on young shoots, blades linear to narrowly lanceolate, 1.1–3 cm, apex acute to attenuate, base obtuse to rounded, adaxially inconspicuously puberulent on midrib and margin, abaxially glabrous, lateral nerves ca. 15 pairs, inconspicuous, middle veins ca. 60° to midrib, colleters 2; petiole 1–3 mm, puberulent along adaxial margin. Inflorescence axillary, 1 or 2 per node, congested-racemiform, 2 to 4 flowers open at a time, peduncle 0–2 mm, puberulent on 1 side, pedicel 2–3.5 mm, glabrous or with a few scattered trichomes, bracts ovate, ca. 0.2 × 0.2 mm, green; calyx with 0 to 1 colleters below each sinus within, lobes ovate with rounded tips, 0.6–0.7 × 0.5–0.55 mm, with a few trichomes at base outside, glabrous inside, erect to ascending, green; corolla campanulate, nearly tubular, glabrous, white, tube 1.2–1.6 mm long, lobes ovate with rounded tips, 0.5–0.6 × 0.5–0.6 mm, erect; gynostegium with anther backs inflated, broadest in the center and tapering toward tip and base, with stipe 0.45–0.5 mm, narrowed in middle and 5-ribbed, corona of 5 lobes connate at base, borne at the base of the stipe, tube ca. 0.05 mm long, lobes deltate with rounded tips, 0.25–0.3 × 0.15–0.3 mm, arching outward toward corolla tube and then back toward gynostegium, with the tips touching the center of the stipe, terminal anther appendages ovate, 0.1–0.2 × 0.1–0.2 mm, arching over style apex; anthers rectangular in outline, 0.25 × 0.4–0.45 mm, guide rails somewhat tilted in at the top, straight, ca. 0.25 mm long; pollinaria pendent, corpusculum subsagittate, 0.10–0.11 × 0.05–0.06 mm, pale brown, translators 0.06–0.09 mm, thin, round in cross section, geniculate, pollinia narrowly obovoid, 0.13–0.14 × 0.05–0.06 mm; style flat or slightly convex, 0.4–0.5 mm wide. Follicles and seeds unknown.

This new species corresponds in superficial appearance to *Orthosia misera*, and both share pollinaria with long, geniculate translators and narrowly obovoid pollinia that are longer than the corpusculum. However, *Orthosia misera* has a more open campanulate corolla, a shorter stipe (ca. 0.3 mm), and straight, erect corona lobes that are as large as, and completely cover, the anthers. *Orthosia ramosa* is found in pine-oak and cloud forests in Honduras, between 1600 and 2200 m elevation, and is known to flower in May and August.

Paratypes. HONDURAS. Cortes: trail from Cerro Cantiles to Cerro Jilinco, T. Hawkins 671 (EAP, MO). Lempira: Montana dela Celaque, SE part of massif, trail from Gracias to top of mtn, G. Davids & R. Zuniga 34697 (EAP, MO).


This species was treated as *Cynanchum rubens* in the *Flora of Guatemala* (Standley & Williams, 1969) and is endemic to Guatemalan cloud forests. It is the only Mesoamerican *Orthosia* with more than a hint of red on the corolla.

7. *Orthosia smaragdina* W. D. Stevens, sp. nov. 
TYPE: Guatemala. San Marcos: Finca Armenia, San Rafael Pie de la Cuesta to Carrizal, past Finca Africa, 1300–1600 m, 9 to 12 Aug. 1980, J. Dwyer 15327 (holotype, MO). Figure 10.

Inter species *Orthosia* inflorcescentiis solitariis vel gemmatiis axilariis tubo corollae longo tubo coronae longo partim obtengenti gynostegium lobis coronae longis gynostegio cylindrico pollinis ellipsoides minor quam corpusculis differit.

Twining vines, woody and corky below, latex and underground parts unknown; young stems glabrous or with a few trichomes at the nodes, trichomes erect, ca. 0.1 mm long, white, internodes 2–5 cm. Leaves opposite, persistent, without pseudostipules, blades lanceolate, 4–6 × 1.2–1.7 cm, apex acute, apiculate, base obtuse to rounded, adaxially puberulent on midrib and
margin, abaxially puberulent on base of midrib, lateral nerves 7 to 9 pairs, middle veins ca. 55° to midrib, colleters 2; petiole 5–6 mm, sparsely puberulent along adaxial margin. Inflorescence axillary, 1 or 2 per node, congested-racemiform, sessile, 3 flowers open at a time, pedicel 3.5–4.2 mm, sparsely puberulent, bracts ovate, 0.3–0.5 × 0.2–0.3 mm, green; calyx without colleters,
lobes ovate with rounded tips, ca. 0.7 × 0.7 mm, appressed-puberulent outside, glabrous inside, erect, green; corolla campanulate, 5-fluted, glabrous, green, tube ca. 1.4 mm long, lobes elliptic with rounded tips, ca. 2 × 0.8 mm, erect; gynostegium cylindrical, sessile, corona of 5 lobes connate at base, borne at the base of the gynostegium, tube ca. 0.5 mm long, clasping around the lower third of the gynostegium, lobes narrowly deltate with acute or slightly bifid tips, ca. 1.5 × 0.7 mm, erect, exceeding the gynostegium, terminal anther appendages semicircular, ca. 0.3 ×
0.3 mm, arching over style apex; anthers rectangular or slightly trapezoidal in outline, ca. 1.2 × 0.55 mm, guide rails vertical, bowed inward, narrowest a little above the middle and slightly flared at base, ca. 1.1 mm long; pollinaria pendant, corpusculum ellipsoid, ca. 0.16 × 0.11 mm, pale brown, translators ca. 0.05 mm, thin, round in cross section, straight, pollinia ellipsoid, ca. 0.11 × 0.09 mm; style flat, ca. 0.6 mm wide. Follicles and seeds unknown.
This distinctive species, known only from the type, has relatively large leaves and flowers, described by the collector as emerald-green. This is the only Mesoamerican species of Orthosia with a tubular corona tightly clasping around the lower part of the cylindrical gynostegium; pollinators must probe the narrow gap between the gynostegium and the corona tube to access the opening at the base of the guide rails. The translators are short and straight and the pollinia are symmetrical and smaller than the corpuscula.

8. Orthosia stipitata  W. D. Stevens, sp. nov.
TYPE: Mexico. Chiapas: El Triunfo Reserve, 2100 m, 15°39'N, 92°50'W, 19 Feb. 1990, R. J. Hampshire, R. J. Stafford, A. Reyes G., M. Heath & A. Long 466 (holotype, MO; isotypes, BM, MEXU). Figure 11.

Inter species Orthosiae infloroscentiis solitariis vel geminatis axillaribus tubo coronae longo tubo coronae brevi lobis coronae brevibus areuatis gynostegio conico longitudinali stipitato dorsis antherarum vesiculatis pollinis anguste ellipsoideis longis differt.

Twining or scandent vines, latex and basal parts unknown; young stems puberulent in a fine line, trichomes erect, ca. 0.1 mm long, white, internodes 3-5 cm. Leaves opposite, caducous, without pseudostipules. Inflorescence axillary, 1 or 2 per node, congested-racemiform, sessile. 1 to 2 flowers open at a time, pedicel 3.5-4 mm, puberulent, mostly in 1 line, bracts deltate, 0.3-0.5 × 0.3 mm, green; calyx with 1 to 3 colleters below each sinus within, lobes ovate with rounded tips, 0.8-0.9 × 0.7-0.8 mm, appressed-puberulent outside, especially on midrib, glabrous inside, ascending, green; corolla campanulate, glabrous, white, tube ca. 1.5 mm long, lobes ovate with rounded tips, 1.6-1.7 × 1.1 mm, erect; gynostegium conical, anther backs inflated, stipe ca. 1.4 mm, narrowed in middle, corona of 5 lobes connate at base, borne at the base of the stipe, tube ca. 0.1 mm long, lobes deltate with acute tips, ca. 0.6 × 0.4 mm, arching outward toward corolla tube and then back toward gynostegium, with the tips touching the stipe about a quarter of the way up, terminal anther appendages ovate, ca. 0.25 × 0.25 mm, arching over style apex; anthers trapezoidal in outline, ca. 0.35 × 0.5 mm, guide rails ca. 45° from vertical, straight, ca. 0.25 mm long; pollinaria pendent, corpusculum ellipsoid, ca. 0.17 × 0.03 mm, red-brown, translators ca. 0.05 mm, thin, round in cross section, straight, pollinia narrowly ellipsoid, ca. 0.23 × 0.05 mm; style flat, 0.6 mm wide. Follicles and seeds unknown.

This new species, known only from the type, collected in cloud forest in Chiapas, Mexico, shares the caducous leaves, inflated anther backs, coronal structure and size, and general pollinaria characteristics with Orthosia ramosa, but has corolla lobes about as long as the tube, instead of half as long, a stipe about three times longer than that of O. ramosa and a more strongly conical gynostegium.

Acknowledgments. Fred Keusenkenothen and Brigham Fisher prepared the images. Amy Pool improved the manuscript in many ways, especially in reining in rhetorical excesses. The assiduous editors of Novon took care of the rest.

Literature Cited