

# A NEW SPECIES OF *SIPHONOGLOSSA* (ACANTHACEAE) AND SOME INFRAGENERIC TRANSFERS

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## ABSTRACT

*Siphonoglossa mexicana* (Acanthaceae), a new species from Mexico, is described and illustrated. The new species is most closely related to *S. ramosa* and *S. canbyi* of *Siphonoglossa* sect. *Siphonoglossa*. Characters, variation patterns, and reproductive biology of the species are discussed with direct reference to an earlier treatment that combined *S. ramosa*, *S. discolor*, and *S. hondurensis* under the name *S. sessilis*. *Siphonoglossa ramosa* and *S. sessilis* are retained as distinct species, and the new combinations, *S. ramosa* var. *discolor* and *S. ramosa* var. *hondurensis*, are proposed. Additionally, *S. calcarea* of northern Colombia is reduced to a variety of *S. sessilis*.

## RESUMEN

*Siphonoglossa mexicana* Acanthaceae, una nueva especie de Mexico, es descrita y ilustrada. La nueva especie parece estar mas relacionada a *S. ramosa* y *S. canbyi* de *Siphonoglossa* seccion *Siphonoglossa*. Caracteres, modelos de variacion y biologia reproductiva de la especie son discutidas con referencia a un tratamiento anterior que combina *S. ramosa*, *S. discolor* y *S. hondurensis* bajo el nombre *S. sessilis*. *Siphonoglossa ramosa* y *S. sessilis* se mantienen como especies distintas, y las nuevas combinaciones, *S. ramosa* var. *discolor* y *S. ramosa* var. *hondurensis*, son propuestas. Adicionalmente, *S. calcarea* de el norte de Colombia se reduce a variedad de *S. sessilis*.

In connection with a monographic treatment and chemosystematic investigation of the genus *Siphonoglossa* Oerst. (Acanthaceae), I have discovered several new taxa. Two of these new species, *S. durangensis* (sect. *Siphonoglossa*) and *S. linearifolia* (sect. *Pentaloba*) were previously described by Henrickson and Hilsenbeck (1979). A third new species is proposed here.

***Siphonoglossa mexicana*** Hilsenbeck, sp. nov. (Fig. 1). — TYPE: MEXICO, Sinaloa, Imala, shady wooded ravine in valley, 500 ft, 29 Nov 1939, H. S. Gentry 5099 (holotype, CAS; isotypes, GH, MO, NY, US).

A speciebus affinibus caulibus saepe brunneis, pilis caulium confertis brevibus uniformibus 0.1–0.3 mm longis; foliis tenuibus mem-

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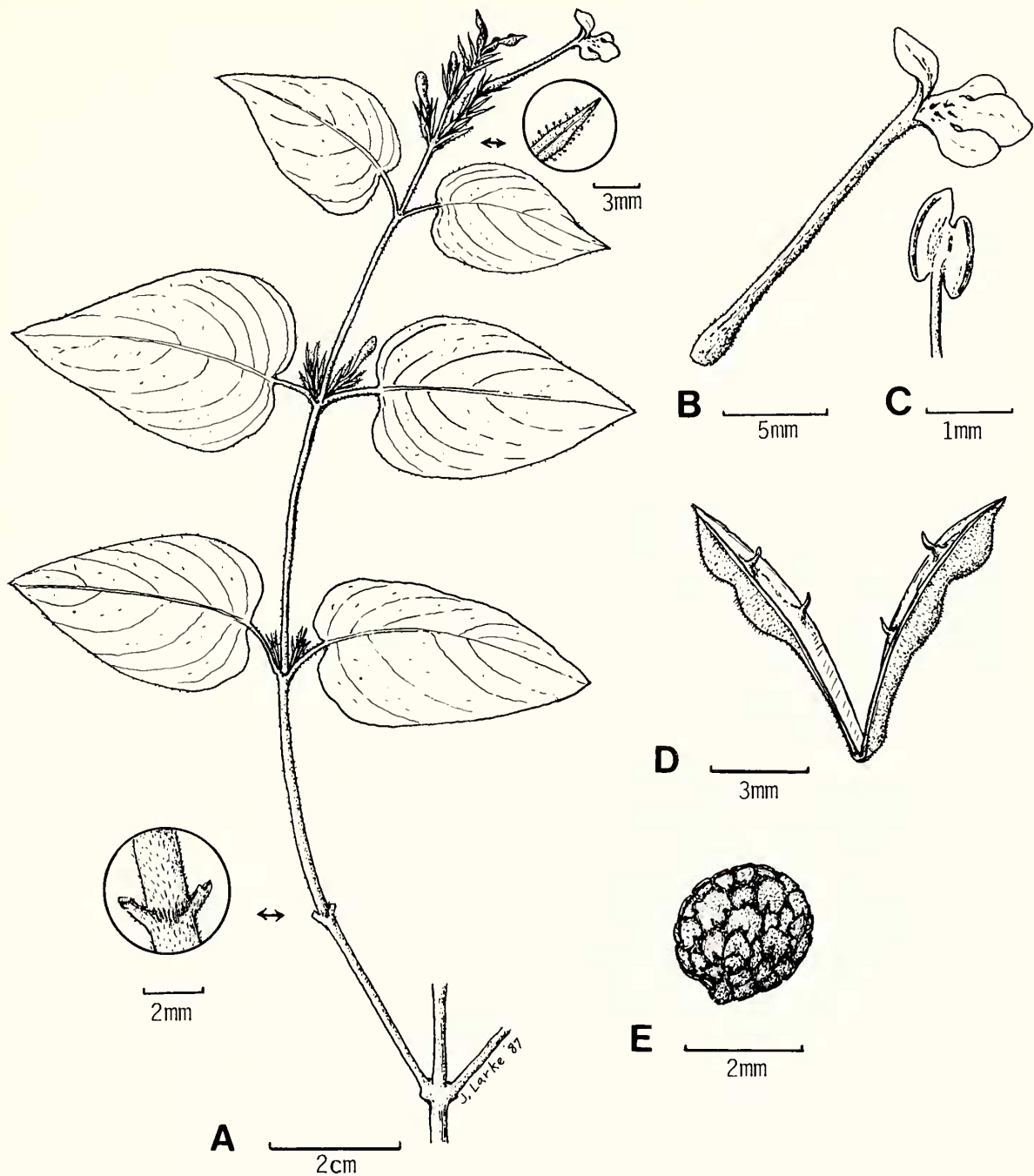


FIG. 1. *Siphonoglossa mexicana* Hilsenbeck. A. Branch showing flowering spikes and detail of stem and bract pubescence. B. Corolla showing characteristic long tube and "crowfoot" pattern on anterior lip. C. Anther, posterior view. D. Open fruit showing retinacula. E. Seeds showing characteristic muricate encrustations of the testa.

branaceis; floribus oppositis (raro alternis) in spicis dispositis, bracteis (3.5–)4–6 mm longis hispidis trichomatibus pro parte simplicibus pro parte glandularibus confertis sparsisve; fructis 7–9(–11) mm longis; seminibus ca.  $2 \times 2$  mm, testis incrustatis incrustationibus imbricatis proximaliter acutis (0.2–)0.3–0.4 mm latis differt.

Erect, ascending or clambering perennial herb to subshrub, branched above, (3–)5–10 dm high, from a rhizomatous rootstock;

stems terete, striate, greenish to brownish above, covered with a short, even pubescence of erect to recurved hairs 0.1–0.2(–0.3) mm long, usually dark brown and becoming woody below. Leaf blades thin, membranaceous, lance-ovate to ovate, (2.5–)4–6(–7.5) cm long, (1.5–)2–3.5(–4) cm wide; tip acute to long acuminate; base often slightly oblique becoming attenuate to a petiole (4–)8–10(–15) mm long; margin entire to slightly repand with hairs to 0.5 mm, olive green above, paler and duller beneath, densely lineolate, nearly glabrous above except along veins with scattered hairs to 0.2 mm, hispid beneath with scattered hairs 0.4–0.7 mm long. Inflorescence of narrow terminal and axillary spikes; flowers usually opposite, nearly sessile; bracts linear lanceolate, (2.5–)4–6 mm long, 0.6–1 mm wide at base, hispid with mixed simple and glandular trichomes; bracteoles linear to subulate, 3–3.5 mm long, hispid. Calyx deeply 4-parted, 4.5–5.5 mm long; segments lanceolate 4–5 mm long (occasionally with a greatly reduced fifth posterior segment to 1 mm long), hispid and usually densely covered with glandular trichomes. Corolla pink to pale purple, zygomorphic, (19–)22–28 mm long; posterior lip entire, erect to slightly recurved, 4.5–6 mm long, 1.5–2 mm wide; anterior lip 3-lobed, spreading, the middle lobe 5.5–8 mm long, 2.5–4 mm wide with a purple to reddish "crow-foot" pattern on the wrinkled palate at the narrow throat, the lateral lobes 5–7 mm long, 2–3.5 mm wide; tube (13–)15–20 mm long, terete, pubescent with scattered hairs on exterior surface. Style 16–23 mm long, slightly exserted from beneath posterior lip; stigma linear, posterior lobe greatly reduced. Stamens 2, barely exserted; filaments 2.5–3.5 mm long, inserted near base of lateral lobes; anthers 2-celled, 1.2–1.5 mm long, the anther sacs slightly superposed and oblique, the upper sac 1.1–1.2 mm long, the lower sac 0.9–1 mm long, the bases blunt; connective 0.3–0.4 mm wide. Fruit a clavate, medially constricted capsule with elliptic head, 7–9(–12) mm long, with the base a solid stripe 2–4 mm long, light brown or tan, often glandular pubescent; seeds 4, (1.8–)2 × 2(–2.2) mm, light yellowish-tan prior to maturity, dark brown when mature, muricate, the irregular and pointed encrustations (0.2–)0.3–0.4 mm in diameter, forming somewhat overlapping plates. Chromosome number  $n=11$  (*Hilsenbeck* 790, 797).

PARATYPES: MEXICO, Guerrero, Distr. Mina, Puerto de Oro, 500 m, 9 Nov 1936, *Hinton* 9831 (GH, K, LL, MICH, TEX); 1 km al N de Xalitla, 740 m, 18 Nov 1975, *Lopez H. s.n.* (ENCB). Jalisco, ca. 5 mi N of Tomatlan, ca. 200 ft, 17 Mar 1982, *Daniel* 2079 (TEX). Morelos, Pedregal de Cuernavaca, 24 Dec 1960, *Paray* 3137 (ENCB); cañon de Lobos, 1270 m, 4 Dec 1970, *Vazquez* 2782 (MEXU). Puebla, ca. 8 mi SE of Izucar de Matamoros on Mexico Hwy 190, 1100 m, 24 Nov 1980, *Hilsenbeck* 797 (TEX); 2 km SE de Petlan-cingo, sobre la carretera a Huajuapán, 1450 m, 29 Nov 1972, *J.*



*Rzedowski 28928* (ENCB); ca. 20 km SE of Izucar de Matamoros, 1150 m, 18 Feb 1965, *McVaugh 22485* (ENCB, MICH). Veracruz, ca. 4 km off Mexico Hwy 140, E of Palo Gacho, on rd to Actopan, ca. 200 m, 22 Nov 1980, *Hilsenbeck 790* (TEX); Actopan, 150 m, 5 Nov 1970, *Ventura A. 2761* (ENCB); Plan del Río, 300 m, 10 Sep 1974, *Ventura A. 10510* (ENCB); Sinaloa, Ymala, 25 Sep–8 Oct 1891, *Palmer 1712* (US). No locality (but probably Guerrero), 1791, *Haenke 988* (F).

*Siphonoglossa mexicana* has a 4-parted calyx, flowers disposed in spikes with subulate bracts and bracteoles, an entire posterior corolla lip, blunt anther sacs, and ellipsoidal capsule heads. These features characterize sect. *Siphonoglossa* and, therefore, this species clearly belongs in the type section. The new species is related most closely to two other Mexican species: *S. ramosa* Oersted, the type species of the genus found primarily in Puebla and Oaxaca of southern Mexico, and *S. canbyi* (Greenman) Hilsenbeck of Tamaulipas and Nuevo Leon in northeastern Mexico. *Siphonoglossa mexicana* has been misidentified consistently as *S. ramosa* or *S. canbyi*. Because *Siphonoglossa* had never been monographed and no keys have been written, uncertainty as to what characters delimited these species has existed until now (Table 1).

*Siphonoglossa mexicana* is the most widespread species of the genus in Mexico. It extends from the state of Veracruz on the Gulf Coast westward across the northern edge of the Isthmus of Tehuantepec and then northward through Guerrero and Michoacán to Sinaloa. This species is somewhat variable throughout its range and is therefore difficult to accurately identify, but can be distinguished from other taxa of *Siphonoglossa* by the combination of: 1) thin, membranaceous, often long-petiolate leaves; 2) flowers opposite on the spikes with bracts mostly 4.5–6 mm long; 3) bracts and calyx hispid pubescent often with a dense covering of glandular trichomes; 4) usually smaller (7–9 mm) fruit; and 5) seeds with muricate, overlapping encrustations (0.2–)0.3–0.4 mm wide. In some populations of *S. mexicana*, the flowers become somewhat alternately arranged in the spike and the glandular trichomes on the inflorescence become sparse, but the other characters cited serve to distinguish this species.

Additional morphological (Hilsenbeck 1983) and chemical data (Hilsenbeck unpubl.), as well as recent collections primarily from western Mexico (Daniel pers. comm.), strongly suggest that *S. mexicana* intergrades with *S. ramosa* var. *ramosa* in Oaxaca and Puebla. Furthermore, these same data suggest that *S. mexicana* also intergrades extensively with *S. canbyi* in southern Veracruz and across the northern Isthmus of Tehuantepec into Guerrero with some populations of *S. mexicana* even as far north as Sinaloa exhibiting variation in pubescence, bracts, capsule, and seed morphology in the direction of *S. canbyi*. The significance and extent of this vari-

TABLE 1. MORPHOLOGICAL DIFFERENCES BETWEEN *SIPHONOGLOSSA MEXICANA*, *S. RAMOSA*, AND *S. CANBYI*

	<i>S. mexicana</i>	<i>S. ramosa</i>	<i>S. canbyi</i>
Stem pubescence	short, mostly even and erect, 0.1–0.2 mm long	usually recurved to spreading, 0.5–1.2 mm long	2 decussating lines, recurved, 0.4–0.6 mm long
Petiole	mostly 8–10 mm long	2–5 mm long	3–7 mm long
Leaf texture	thin, membranaceous	chartaceous	thick, coriaceous
Flower arrangement	mostly opposite	opposite	alternate
Bracts	(2.5–)4–6 mm long	2–3(–4) mm long	1.5–2.5 mm long
Bract pubescence	hispid, mostly with dense glandular trichomes	densely pilose-hispid rarely with few glandular trichomes	glabrous to sparingly hirsute
Fruit	7–9 mm long (up to 12 mm in introgressed populations)	9–11 mm long	10–14 mm long
Seed coat	muricate encrustations, 0.2–0.4 mm in diameter	muricate encrustations, 0.3–0.5 mm in diameter	papillose tubercles, 0.2 mm in diameter

ation pattern are discussed more fully in an upcoming monograph of the genus and by Hilsenbeck (1983). It is clear, however, that *S. mexicana* is a good species, albeit one that may hybridize along the southern and eastern edges of its range, but one that accounts for most of the variation within the genus in western Mexico.

#### NEW COMBINATIONS

Because I recognize *S. ramosa* and *S. sessilis* as distinct species (Hilsenbeck 1983), it is necessary to address the treatment of the genus for the Flora of Guatemala (Gibson 1972, 1974). Gibson (1972) combined the type species, *S. ramosa*, with *S. discolor* S. F. Blake and *S. hondurensis* Standley & Steyerl., under the name *S. sessilis* (Jacq.) D. Gibson. Radlkofer (1883), however, had previously made the combination, as suggested by Oersted, and, thus, the proper citation of the name of this species is *S. sessilis* (Jacq.) Oersted ex Radlk. Furthermore, by not examining the type material of *S. ramosa* and merging this species with *S. sessilis* apparently on the basis of Oersted's original description of *S. ramosa*, Gibson overlooked the first of two consistent and discontinuous characters which separate *S. ramosa* and *S. sessilis*. Oersted (1854) states that the flowers of *S. ramosa* are solitary and sessile in the leaf axils, but in the type material of *S. ramosa* a spike is clearly evident.

I have observed, both in natural populations (including one near the type locality) and in greenhouse cultures of *S. ramosa*, that only the first few flowers are solitary in the leaf axils, but later flowers are always in spikes. On the other hand, populations of *S. sessilis*, observed in full flower in the field (Dominican Republic) and in the greenhouse, as well as all herbarium sheets of this species that I have examined, never produce a spike; the flowers are always solitary and sessile in the leaf axils. This is a conspicuous and consistent difference between the two species.

A second major difference between the two taxa is the type of seed coat sculpturing. In *S. ramosa*, the seed coat has large (0.3–0.5 mm), partially overlapping, bullate encrustations that are often muricate at their proximal ends (as in *S. mexicana*, Fig. 1, H). The seed coat of *S. sessilis*, although basically similar, has tuberculate or papillose protuberances that are always much smaller (0.1 rarely to 0.2 mm in diameter), discrete and not overlapping, and rounded, not pointed or sharp. Because these differences are consistent across the ranges of the two species, I feel the two taxa should be maintained as species.

These same two characters further disclose a very close morphological relationship between *S. ramosa* and two taxa distributed well to the south (i.e., Central America) of its range. Both *S. discolor* and *S. hondurensis*, which Gibson also placed in *S. sessilis*, have the seed coat morphology characteristic of *S. ramosa*, whereas the other



species of the genus (except *S. mexicana*) have the seed coat morphology characteristic of *S. sessilis*. In addition, *S. hondurensis* consistently produces its flowers in spikes. The only collection of *S. discolor* is represented by a holotype and an isotype of which the few available flowers are solitary and sessile in the axils. One might be tempted, therefore, to place this taxon within *S. sessilis*, if seed morphology were not considered. It is apparent from the lack of flowers and/or fruits that the material of *S. discolor* was collected at the beginning of the flowering season and, thus, it is likely that this population, although perhaps genetically capable of producing flowering spikes, was collected before any definite spikes could be produced. Unfortunately, no observations of *S. discolor* in the field or greenhouse have been conducted. In the isotype, however, the beginnings of what appears to be a spike can be seen. Because of these morphologic similarities between *S. ramosa* and *S. discolor*, I propose the following combination.

*Siphonoglossa ramosa* Oersted var. *discolor* (S. F. Blake) Hilsenbeck, comb. nov.—*Siphonoglossa discolor* S. F. Blake, Contr. U.S. Natl. Herb. 24:25. 1922.—TYPE: GUATEMALA. Zacapa, edge of thicket at Gualan, 26 May 1919, *S. F. Blake* 7669 (holotype, US!; isotypes, GH!, fragment F!).

This variety is known only from the type collection. The label on the types states that the specimens were collected in the Department of Izabel, but in the description Blake (1922) states that the collection was made in the Department of Zacapa. This variety may be recognized by a combination of the strongly discolorate leaves with cuneate bases and usually prominent apiculate tips and the very fine (0.1 mm) even stem pubescence.

The type specimen, and all other collections of *S. hondurensis*, have their flowers disposed in spikes. In their description of *S. hondurensis*, Standley and Steyermark (1952) state that this species differs from *S. discolor*, the only other species in Central America, in its foliage and details of the inflorescence. These differences, however, do not hold when the total variation of the taxa is considered and are not of sufficient magnitude to warrant the retention of *S. hondurensis* as a species. It shares with *S. ramosa* spikes with opposite flowers and short bracts, bracteoles and calyx with hirsute-hispid pubescence, and characters of the seed coat. I feel it is best to place *S. hondurensis* at the varietal level, thus recognizing its populational variation and slight divergence from *S. ramosa* var. *ramosa* of Puebla and Oaxaca, rather than to synonymize it with *S. ramosa* and obscure its variation pattern. I therefore propose the following new combination.

*Siphonoglossa ramosa* Oersted var. *hondurensis* (Standley & Steyer-erm.) Hilsenbeck, comb. nov.—*Siphonoglossa hondurensis* Standl. & Steyer-erm., Ceiba 3:131. 1952.—TYPE: H. Morazán: moist thicket, vicinity of Suyapa, region of La Travesia, 1100–1200 m, 18 Sep 1948, *P. C. Standley 12459* (holotype, F!).

*Additional specimens examined:* COSTA RICA, Guanacaste, near Cataract Falls, Hacienda Tenorio, 16 Feb 1956, *Schubert 1066* (US). GUATEMALA, Jutiapa, vicinity of Jutiapa, ca. 850 m, 24 Oct–5 Nov 1940, *Standley 75836* (F); between Jutiapa and La Calera, SE of Jutiapa, ca. 850 m, 2 Nov 1940, *Standley 76098* (F). HONDURAS, Comayagua, near Agua Salada, 650 m, 29 Sep–5 Oct 1951, *Williams 18320* (F); Morazán: vicinity of Suyapa, region of La Travesia, 1100–1200 m, Sep–Dec, *Standley 12453* (F); near San Francisco, 800 m, 21 Aug 1949, *Standley 22988* (F, NY); along Río Yeguaré near San Francisco, 850 m, 21 Aug 1949, *Williams 15912* (F); along Río Yeguaré, E of El Zamorano, 850 m, 10 and 15 Dec 1946, *P. C. Standley 1090* (F); near El Jicarito along road toward El Pedregal, ca. 900 m, 6 Ju 1949, *Standley 20845* (F); mountains above El Jicarito, near Río Caparrosa, 900–1300 m, 26 May 1951, *Standley 28492* (F); Margenes de la Quebrada de las Burras entre Suyapa y Tegucigalpa, 1050 m, 11 Dec 1948, *Molina R. 1836* (F, GH); vicinity of Suyapa, 1100–1200 m, Sep–Dec 1948, *Standley 15394* (F); Dpto. de Francisco, Morazan, 1 Aug 1975, *Garcia 104* (MO); Olancho: vicinity of Catacamas, 450–500 m, 18–26 Mar 1949, *Standley 18432* (F); vicinity of Catacamas, 450–500 m, 18–26 Mar 1949, *Standley 18408* (F).

Variety *hondurensis* may be distinguished from var. *ramosa* by a combination of the dark brown stems, the more ovately-lanceolate leaves, and the usually shorter corollas. In the holotype, an inflorescence is not readily apparent, but the beginning (or vestige?) of a spike can be seen at two places on the specimen. Almost all of the other specimens seen have several conspicuous flowering spikes.

Leonard (1958) described *Siphonoglossa calcarea* based on a single collection from La Paz, Department of Magdalena, in extreme northeastern Colombia. This taxon is clearly conspecific with *S. sessilis*; almost every qualitative and quantitative character of *S. calcarea* falls within the range of variation of *S. sessilis*. These two taxa share a similar seed coat morphology, and in both the flowers are always solitary in the leaf axils. *Siphonoglossa calcarea* differs from *S. sessilis* by its reduced stature and its hirtellous stem pubescence, minor character differences which may have been environmentally induced by the "very dry limestone soil" from which the type specimen was collected. So similar are these two taxa, that I have some reservations in recognizing, at any rank, the material from La Paz. Because there



are slight differences between the two taxa, however, and because *S. calcarea* is outside the known range of *S. sessilis*, I choose to recognize it at the varietal level. By doing so, I hope that the variation of this population will be brought to the attention of botanists and further collections will be encouraged.

*Siphonoglossa sessilis* (Jacq.) Oersted ex Radlk. var. *calcarea* (Leonard) Hilsenbeck, comb. nov.—*Siphonoglossa calcarea* Leonard, Contr. U.S. Natl. Herb. 31:402. 1958.—TYPE: COLOMBIA, Magdalena, on very dry limestone soil at La Paz, 200 m, 14 Jan 1944, O. Haught 3929 (holotype, US!).

*Siphonoglossa sessilis* var. *sessilis* may be distinguished readily from other taxa of *Siphonoglossa* by a combination of the solitary (rarely 2), sessile or very short-peduncled, axillary flowers, the nearly glabrous short bracteoles (1.5–3 mm) and sepals (2.5–3.5 mm), and the nearly glabrous fruits which are 8–10 mm long. *Siphonoglossa sessilis* var. *calcarea* may be distinguished from the typical variety by a combination of the densely hirtellous stems, petioles and bractlets, and the somewhat shorter (7–8 mm long), densely hirtellous capsules. The single collection that represents the holotype is the only known material of this variety.

How Leonard overlooked the similarities between *S. calcarea* and *S. sessilis* may be explained partially by his belief that *S. sessilis* belonged to *Justicia*. Thus, he may have never considered the two taxa in the same light. Leonard (1958) placed *Siphonoglossa* in the Odontonemeae, where Lindau (1894, 1895) had placed it. Henrickson and Hilsenbeck (1979) and Hilsenbeck (1979), however, have shown that *Siphonoglossa* belongs in the Justiciaeae. The generic concept of *Siphonoglossa* and its circumscription relative to *Justicia* will be discussed in a future paper dealing with generic concepts and delimitation in the Justiciaeae.

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## NOTEWORTHY COLLECTIONS

### CALIFORNIA

*POLYGONUM MARINENSE* Martens and Raven (POLYGONACEAE).—Marin Co., Escalle Marsh, ca. 150 m SE of Bon Air Bridge along the SW shore of Corte Madera Creek, T1N R6W sect. 16, NE ¼, in salt marsh with *Distichlis spicata* and *Salicornia virginica*, 15 Jun 1987, *Schierenbeck s.n.* (JEPS). Two populations of about 20 and 25 plants, respectively. Both populations ca. 8 m from the shoreline edge of vegetation. Identification confirmed by J. Hickman.

*Significance.* Rediscovery of population last seen 23 April 1944 by J. Howell, previously thought to have been extirpated. One of two known extant occurrences. This population is threatened by housing development. The other population on Pt. Reyes near the end of Schooner Bay just north of Sir Francis Drake Highway was not found during the last visit in 1984 by R. Fowler.—KRISTINA A. SCHIERENBECK, Department of Botany, Washington State University, Pullman, WA 99164-4230.

### OREGON

*PANICUM RIGIDULUM* Bosc ex Nees (Poaceae).—Douglas Co., Umpqua River, 7 mi [11.3 km] S of Elkton, T23S R7W sect. 30, 40 m, 20 Sep 1988, *Zika 10635* (OSC). Growing with *Leersia oryzoides*, *Eleocharis acicularis*, and *E. palustris* in damp ground on the east riverbank.

*Significance.* First record for Oregon. Previous West Coast reports from California and British Columbia; native from the Great Lakes to the Atlantic, where it is commonly associated with the same taxa.

*P. rigidulum* has long been known as *P. agrostoides* Sprengel, an illegitimate name (Voss, *Rhodora* 68:435–463, 1966). Recent eastern authors (Dore and McNeill, 1980, Grasses of Ontario, Mitchell, 1986, A Checklist of New York State Plants, Kartesz and Kartesz, 1980, A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland, agree that the author of *P. rigidulum* is Bosc ex Nees, and do not recognize the former Fernaldian varieties of *P. agrostoides*.—PETER F. ZIKA, BLM, P.O. Box 10226, Eugene, OR 97440.