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A taxonomic revision of the genus *Suessenguthia* Merxm. (Acanthaceae)

ALEXANDER N. SCHMIDT-LEBUHN

ABSTRACT

SCHMIDT-LEBUHN, A. N. (2003). A taxonomic revision of the genus *Suessenguthia* Merxm. (Acanthaceae). *Candollea* 58: 101-128. In English, English and French abstracts.

The genus *Suessenguthia* Merxm. is revised and treated as comprising six species, one of them in two varieties. Three new species, *S. barthleniana* Schmidt-Lebuhn, *S. koessleri* Schmidt-Lebuhn, *S. wenzelii* Schmidt-Lebuhn, and one variety, *S. vargasii* var. *hirsuta* Schmidt-Lebuhn, are described. Two names are placed in synonymy of *S. trochilophila* Merxm.: *S. leucerythra* Leonard & L. B. Sm. and *S. cuscoensis* Wassh. A key to and illustrations of all taxa are provided, as well as available information on their ecology, distribution and variability.

RÉSUMÉ

SCHMIDT-LEBUHN, A. N. (2003). Révision taxonomique du genre *Suessenguthia* Merxm. (Acanthaceae). *Candollea* 58: 101-128. En anglais, résumés anglais et français.

Le genre *Suessenguthia* Merxm. est révisé. Il comprend six espèces dont l'une avec deux variétés. Trois nouvelles espèces ainsi qu'une nouvelle variété sont décrites: *S. barthleniana* Schmidt-Lebuhn, *S. koessleri* Schmidt-Lebuhn, *S. wenzelii* Schmidt-Lebuhn et *S. vargasii* var. *hirsuta* Schmidt-Lebuhn. Deux noms sont mis en synonymie de *S. trochilophila* Merxm.: *S. leucerythra* Leonard & L. B. Sm. et *S. cuscoensis* Wassh. Une clé est fournie ainsi qu'une illustration pour chaque taxon et des données sur leurs écologie, distribution et variabilité.

KEY-WORDS: ACANTHACEAE – *Trichanthereae* – *Suessenguthia* – Bolivia – Peru – Taxonomy – Tropical Andes.

Introduction

The genus *Suessenguthia* Merxm. (Acanthaceae) occurs along the eastern Andean foothills of Bolivia and central and southern Peru, ranging into the adjacent lowlands as far as western Brazil (Acre). It was described with one species by MERXMÜLLER in 1953. Because of properties of its pollen, cystoliths and stamens it can be placed in the *Trichanthereae*, which according to LINDAU (1895) include the genera *Androcentrum* Lem., *Bravaisia* DC., *Gymnacanthus* Nees, *Sanchezia* Ruiz & Pav. (including *Steirosanchezia* Lindau) and *Trichanthera* Kunth but also *Trichosanchezia* Mildbr., which was described in 1926. The *Trichanthereae* are characterized by biporate pollen with typical banded surface structure, slender cystoliths pointed at both ends and a nearly radially symmetric corolla. The *Trichanthereae* include the only arborescent members of the Acanthaceae. *Suessenguthia* itself is a genus mostly of shrubs characterized by conspicuous bracts and an inflorescence of several heads. It differs from the similar, better known genus *Sanchezia* by having four fertile stamens, whereas *Sanchezia* has two fertile stamens and two staminodes, and from *Trichosanchezia* in having basal appendages on the anthers.

After its original description, *Suessenguthia* was next treated by LEONARD & SMITH (1964) who still regarded the genus as monotypic and emphasised its close relationship to

Sanchezia ("characters of *Sanchezia*, but 4 fertile stamens"). Simultaneously they described *Sanchezia leucerythra*, without noticing that its type also has four fertile stamens. The discovery of this mistake led WASSHAUSEN (1970) to produce a synopsis of the genus *Suessenguthia*. With the new combination of *S. leucerythra* and the description of two new species (*S. vargasii*, *S. cuscoensis*) he recognised four species. Nevertheless *Suessenguthia* is still sometimes regarded as monotypic (GENTRY, 1993).

Since Wasshausen's treatment of the genus the amount of herbarium specimens has significantly increased and even before the beginning of the current study D. C. Wasshausen and J. R. I. Wood (pers. comm.) had realized that *Ruellia multiseta* Rusby belonged in *Suessenguthia*. Further, the delimitation and distribution of the species as defined by WASSHAUSEN (1970) had to be reconsidered. The definition of the genus with respect to neighbouring genera also had to be revised, especially with a phylogenetic approach, since the monophyly of *Suessenguthia* appeared doubtful considering its similarity to *Sanchezia*. This paper focuses on the taxonomic results of the study.

Material and methods

Populations of all species of *Suessenguthia* were studied and sampled on a research journey to Bolivia and Peru in July to September 2000. Herbarium specimens were borrowed from M, MO, NY and US (acronyms according to HOLMGREN & al., 1990). In addition, the collections at B, CUZ, LPB, M, USM and USZ were visited. Altogether, herbarium specimens of a total of 122 different collections were studied, presumably representing more than 90% of all existing collections.

The characters examined in the course of the morphological analysis include:

Height of growth, growth form (herb/subshrub, shrub, treelet, scrambling shrub), size and shape of the leaves, differentiation of the leaf margin, number of secondary veins, type of venation, shape, size and abundance of the cystoliths, size and shape of the inner and outer bracts, structure of the inflorescence, size and shape of the calyx segments, shape and size of the corolla tube, shape, size and orientation of the corolla lobes, flower colour, length of the filaments, shape and size of the anthers, length of the style, and type, density and length of the hairs of the leaves, inner and outer bracts, the sepals, on young internodes, especially of the inflorescence, the corolla, the filaments, the anthers and the gynoecium. Pollen of different populations was examined with a scanning electron microscope.

In this work the delimitation of the species was based upon the phylogenetic species concept (NIXON & WHEELER, 1990). Thus, a group of specimens was treated as a species if it is characterized by a unique combination of diagnosable characteristics and shows in these no gradual transition to another group.

Illustrations are supplied for all species of the genus and both varieties of *S. vargasii*. The indumentum is drawn at only one head and its supporting internode (all of the main axis in the case of *S. vargasii* var. *hirsuta*) in order to emphasize the shape of the bracts in the rest of the illustration.

Morphological characters

Growth form

All species of *Suessenguthia* form shrubs (Fig. 1A-B) or sometimes single-stemmed treelets (Fig. 1C) up to 8 m tall. Subshrubs of about 1 m can occasionally be found in *S. trochilophila*, in particular in the southern part of its distribution, whereas specimens of up to 5 m in height are found further north. The taxonomic relevance of these different growth forms is not clear due to the morphological plasticity of this species. In *S. vargasii* and *S. trochilophila* some specimens grow as scrambling shrubs. These plants are supported by surrounding shrubs and would collapse if these were removed. In those cases the growth form may depend on the local conditions.

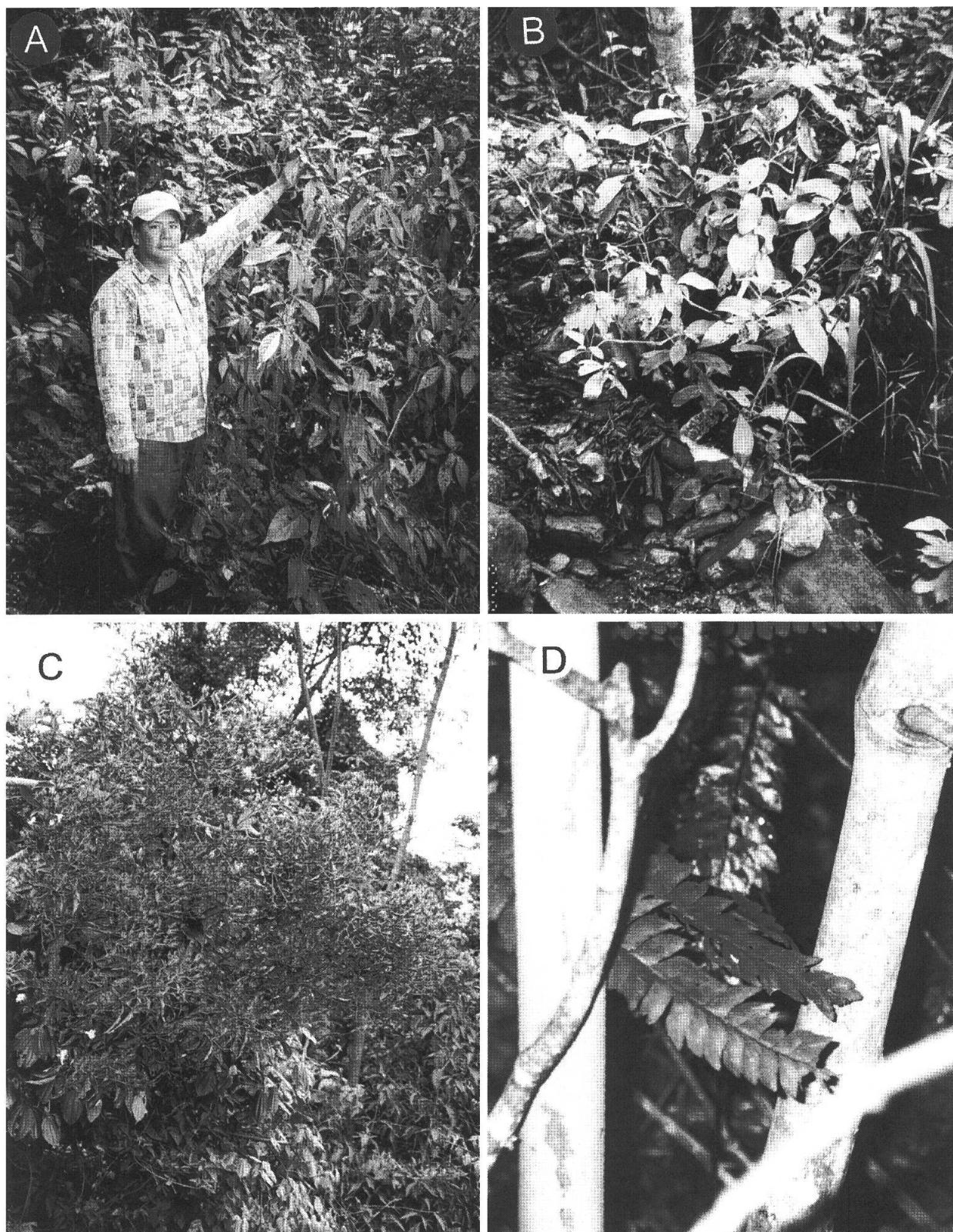


Fig. 1. – Growth forms and bark of *Suessenguthia*. **A** *S. koessleri* growing as a shrub of about 2 m in the Pando, Bolivia [Schmidt-Lebuhn 50]; **B** *S. barthleniana* as a shrub of about 1.50 m, already flowering [Schmidt-Lebuhn 30]; **C** Treelet of *S. multisetosa* in the Chiquitanía [Schmidt-Lebuhn 28]; **D** Stem surface of *S. multisetosa* [Schmidt-Lebuhn 25].

Axis

Young shoots are slightly quadrangular. In all species the bark is smooth and grey (Fig. 1D), exhibiting no differences between species.

Leaves

The leaves are elliptic, rarely slightly ovate or obovate, and petiolate. The apex is attenuate and the base decurrent into the petiole. The leaf margin is mostly entire, but sometimes shallowly to conspicuously wavy dentate. The epidermis of the upper leaf surface contains cystoliths (Fig. 11D) which can very rarely also be seen on the other side of the leaf. The cystoliths are elongated and bipolarly pointed, as in the other *Trichanthereae* (LINDAU, 1895). The secondary veins smoothly arch towards the leaf margin. The secondary veins on the lower leaf side sometimes support sparse to dense, up to 1 mm long, appressed or spreading hairs. The lower leaf surface is sometimes also sparsely hairy. These characteristics vary remarkably in some species; possibly the hairs are lost with age.

Inflorescence

The inflorescences of *Suessenguthia* are basically thyrses consisting of cymes, similar to those found in related *Trichanthera*. In *Suessenguthia* the distal cymes are condensed to few-flowered heads, thus leading to a rich thyrsic or poorly cymose inflorescence consisting of heads (*S. multisetosa*, *S. wenzelii*, *S. vargasii*; Fig. 2A). Sometimes irregularities in the growth of the internodes produce heads originating from the outermost bracts of the terminal head of its relative main axis. This is the regular case in the other species of the genus and in *Sanchezia*, where the inflorescences branch mostly in their basal part and often end in series of seemingly sessile heads arranged one above the other as in a string of pearls. Thus, each head is sympodially produced from one of the outermost bracts of its predecessor (Fig. 2B). In some cases the inflorescences form accessory branches, especially in *S. multisetosa*. Figure 3 gives an impression of the inflorescences produced by the different species. A single head appears as a dense aggregation of bracts and sepals, from which normally only one or two flowers open at a given time. The number of flowers per head varies at least from one to five, but especially in *S. trochilophila* and *S. barthleniana* a higher number may be possible, though it was not observed.

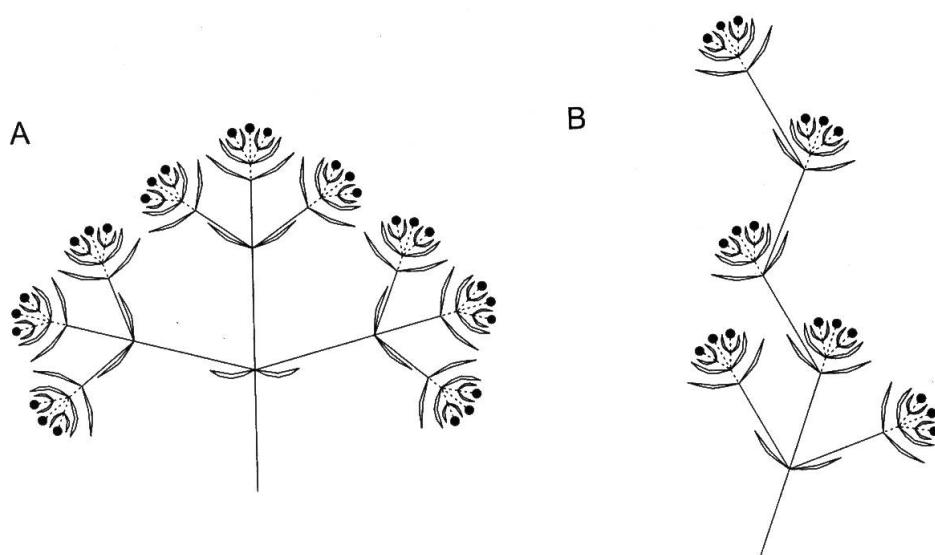


Fig. 2. – Diagram of the inflorescences found in *Suessenguthia*. The black circles represent flowers. **A** Nine heads arranged in cymes as in *S. multisetosa* and *S. wenzelii*. *S. vargasii* has the same inflorescence, but normally fewer heads than *S. multisetosa*. **B** Sympodially arranged heads of *S. trochilophila*, *S. barthleniana* and *S. koessleri*. [Drawing A. N. Schmidt-Lebuhn]

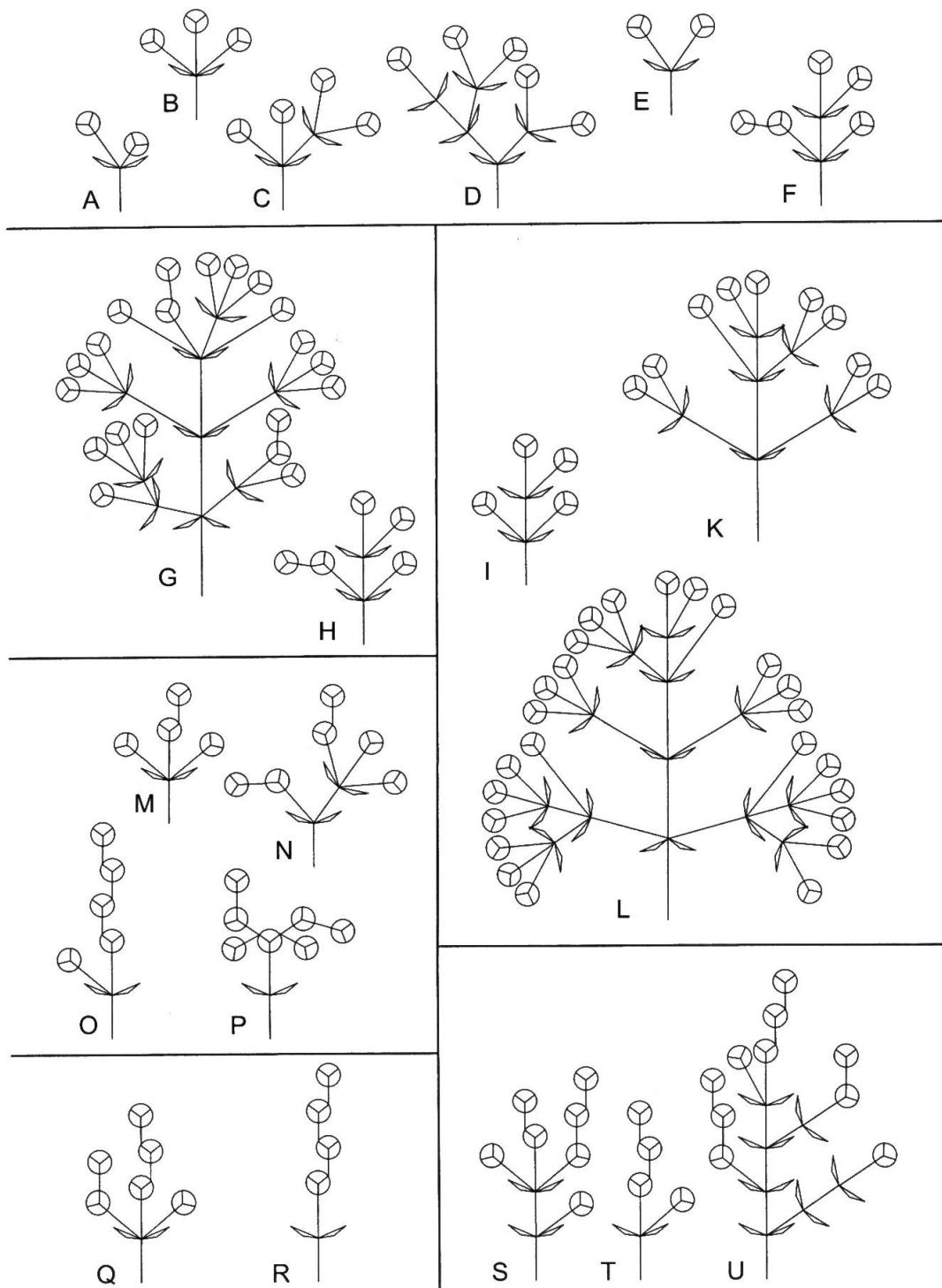


Fig. 3. – Comparison of arrangements of the heads in the different species of *Suessenguthia*. The circles represent heads. **A-D** *S. vargasii* var. *vargasii* [**A-B** Schmidt-Lebuhn 35, **C-D** Wasshausen 585]; **E-F** *S. vargasii* var. *hirsuta* [**E** Reynel & Meneses 5024, **F** Gentry & al. 51566]; **G-H** *S. wenzelii* [**G** Wasshausen & Wood 2157, **H** Schmidt-Lebuhn 64]; **I-L** *S. multisetosa* [**I** Nee 38188, **K** White 547, **L** Schmidt-Lebuhn 89]; **M-P** *S. trochilophila* [**M** Schmidt-Lebuhn 46, **N** Dudley & Knox 10040, **O** Schmidt-Lebuhn 37, **P** Forero & al. 6385]; **Q-R** *S. koessleri* [**Q** Schmidt-Lebuhn 56, **R** Daly & al. 2038]; **S-U** *S. barthleniana* [**S** Schmidt-Lebuhn 29, **T** Bang 2367, **U** Krukoff 10585]. [Drawing A. N. Schmidt-Lebuhn]

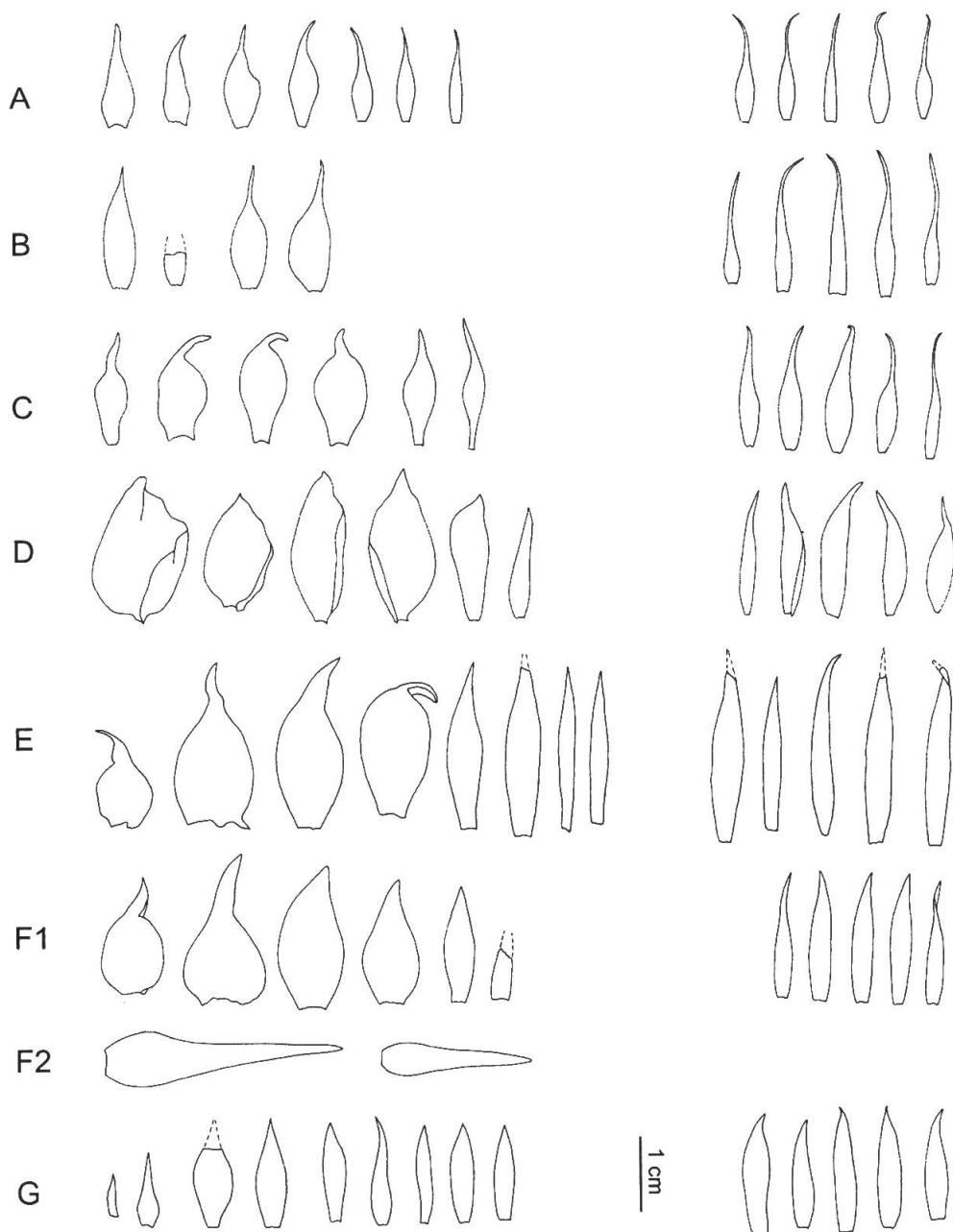


Fig. 4. – Comparison of the bracts and sepals of the species of *Suessenguthia*. The bracts are depicted according to their position in the head from left (outermost) to right (innermost). The last five elements of each line are segments of one calyx. **A** *S. multisetosa* [Schmidt-Lebuhn 67], **B** *S. wenzelii* [Schmidt-Lebuhn 63], **C** *S. vargasii* [Schmidt-Lebuhn 35], **D** *S. barthleniana* [Schmidt-Lebuhn 29], **E** Bolivian *S. trochilophila* [Schmidt-Lebuhn 46], **F1** Apical head, **F2** Outermost bracts of a basal head of a Peruvian specimen of *S. trochilophila* with elongated outermost bracts [Wasshausen & Encarnación 500], **G** *S. koessleri* [Schmidt-Lebuhn 52]. [Drawing A. N. Schmidt-Lebuhn]

Bracts

The plants produce conspicuous, decussate, almost always at least apically colourful bracts, which surround the heads like an involucre. Heads with a relatively high number of flowers normally do not have the expected number of bracts (2 + 2 per flower) since some of them are reduced. “One-flowered heads”, which can sometimes be found in *S. multisetosa* and *S. wenze-*lii**, are always surrounded by four bracts. WASSHAUSEN (1970) gave separately the shape and dimensions of outer (“bracts”) and inner bracts (“bractlets”) and additionally recognized “lower-most bracts”, the leaves at the nodes of the inflorescence below the heads. The latter seem, however, to be extremely variable in shape and size. Therefore, I here only consider the first two types to be true bracts: the terms “outer bracts” or “outermost bracts” refer to the two outermost bracts of a head, “inner bracts” includes all other bracts. Specifications about the shape of the inner bracts (characteristic in *S. multisetosa*, *S. vargasii*) refer only to the two or four outermost ones, because the innermost inner bracts show a gradual transition to the shape of the sepals. A further problem is presented by occasional irregularities in the development of the internodes so that a pair of “originally” inner bracts may become the outermost bracts of a minute head of its own. Therefore the distinction between the different types of bracts presented here is often not very sharp and should not be overemphasized. Only *S. barthleniana* has truly characteristic outermost bracts. In the other species they are quite variable especially with respect to size (see particularly *S. trochilophila*). Figure 4 gives an overview of the transitions between outer and inner bracts as well as sepals and of the differences between the species.

Density and length of the few-celled, white to brownish hairs covering the bracts are quite constant in every species and therefore are useful characters for determination.

Calyx

The sepals are elongate-ovate to elongate-elliptic, apically acute or slightly attenuate and free almost to their base. Like the bracts, whose innermost ones can often be distinguished from the sepals only by their position in the head, they are often apically tinged reddish and also serve to attract pollinators. Own field observations showed that the sepals of *S. koessleri* lignify at maturity of the fruit and spread backwards. By pressing back other sepals and bracts which would otherwise densely enclose the mature capsule, they make room for the explosive dispersal of the seeds (see below).

Corolla

The corolla is differentiated into a tube and five lobes. It can be of a pale or even whitish pink, strongly pink, or red colour. The outside of the corolla of all species except *S. multisetosa* bears white, spreading or appressed, backwards pointing hairs. The corolla lobes are quite equal in size and shape and are always emarginate. Only in *S. koessleri*, whose lobes are the most strongly reduced of all species, irregularly shaped lobes can sometimes be found. The type of *S. trochilophila*, which was mistakenly portrayed with obtuse corolla lobes in the species description (MERXMÜLLER, 1953) does in fact have emarginate lobes. The tube of an open corolla is normally orientated more or less horizontally; the lobes can be slightly spreading forward, spreading at right angles to the tube, struck back or rolled back.

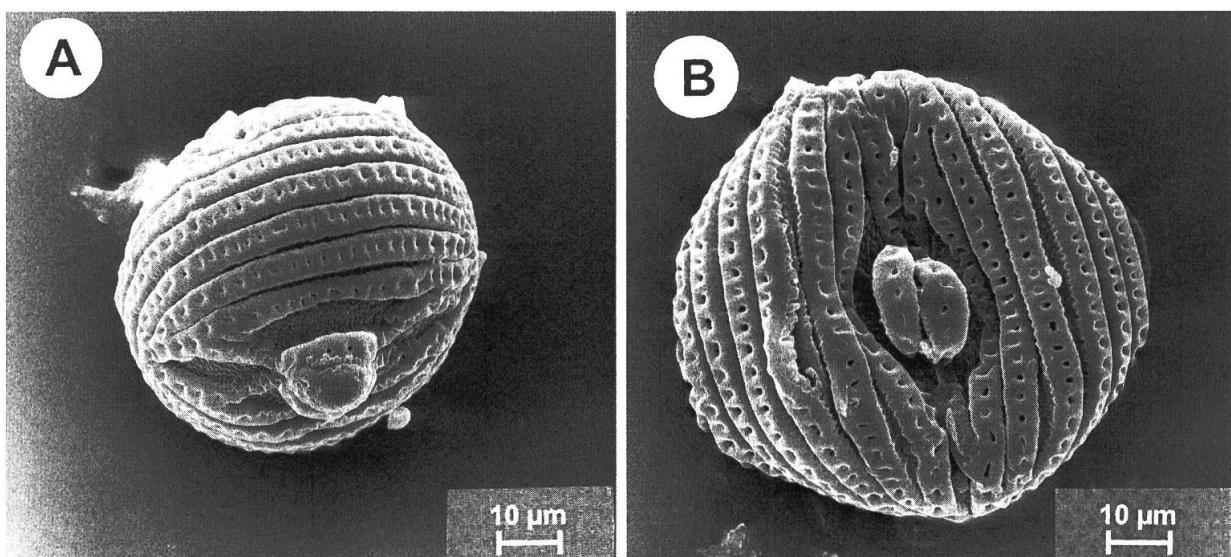
Androeceum

All four stamens are fertile. The anther has two fertile thecae, each of which bears a basal, pointed appendage. In an open flower the stamens are arranged in two pairs. The anther is covered with white hairs about 0,5 mm long, the filament is sparsely to moderately hairy with hairs about 1-1,5 mm long (Fig. 11C). The pollen is bilateral and ornamented with bands. Every side has a pore surrounded by two thickened lips (Fig. 5). These pollen characteristics are typical for *Trichanthereae* (LINDAU, 1895; BREMEKAMP, 1965) and do not differ between the species of *Suessenguthia*.

Gynoecium

The ovary is apically covered by very short (<0.5 mm) white hairs, the style is glabrous. The fruit of *Suessenguthia* is a two-valved, dry capsule (Fig. 6F-G). As in all *Acanthaceae* s. str.,

Fig. 5. – Scanning electron microscope photographs of *Suessenguthia* pollen. **A** *S. multisetosa* [Schmidt-Lebuhn 28], **B** *S. vargasii* [Schmidt-Lebuhn 35].



the seeds are explosively dispersed at maturity. Each locule of the capsule can contain up to 4 seeds. The seeds are round and flattened (Fig. 6H).

Taxonomic treatment

Suessenguthia Merxm. in Mitt. Bot. Staatssamml. München 1: 178. 1953.

Type species: *Suessenguthia trochilophila* Merxm.

Shrubs or treelets, rarely scrambling, up to 8 m high. Young shoots slightly quadrangular. **Leaves** petiolate, elliptic, sometimes slightly ovate or obovate, apically attenuate, the tip itself obtuse, the base decurrent into the petiole. Leaf margin entire or dentate. Secondary veins smoothly arching towards margin. Epidermis of the upper leaf side with many cystoliths, these oblong and pointy at both ends. **Inflorescence** consisting of few-flowered heads appearing to be dense clusters of bracts and calyx segments. The **heads** arranged either in cymes or sympodially one above the other as in a string of pearls. Bracts decussate, conspicuous, nearly always tinged reddish. **Calyx** segments five, free almost to the base, acute or attenuate, apically tinged reddish. **Corolla** pale pink to red, consisting of a tube and lobes, nearly radial. Four fertile stamens, convergent in two pairs, but not connate. The filaments hirsute. Anthers hirsute, with two fertile thecae, these each with a basal appendage. Ovary apically densely hirsute, style glabrous. **Capsule** four- to eight-seeded, seeds flat.

Key to the species of *Suessenguthia*

1. Flower heads arranged in cymes or rich thyrses (Fig. 2A), never several heads arranged one above the other, only exceptionally single heads seemingly sessile; inner bracts of the heads apically narrowly attenuate 2
- 1a. Inflorescence branched mostly at the base, its upper part normally consisting of series of heads arranged sympodially one above the other (Fig. 2B); inner bracts of the heads acute or slightly attenuate, but not with a long, slender apex 5
2. Inner bracts widest in their lower half, basally acute or obtuse (Fig. 4A-B); corolla glabrous or with hairs of up to 1 mm 3

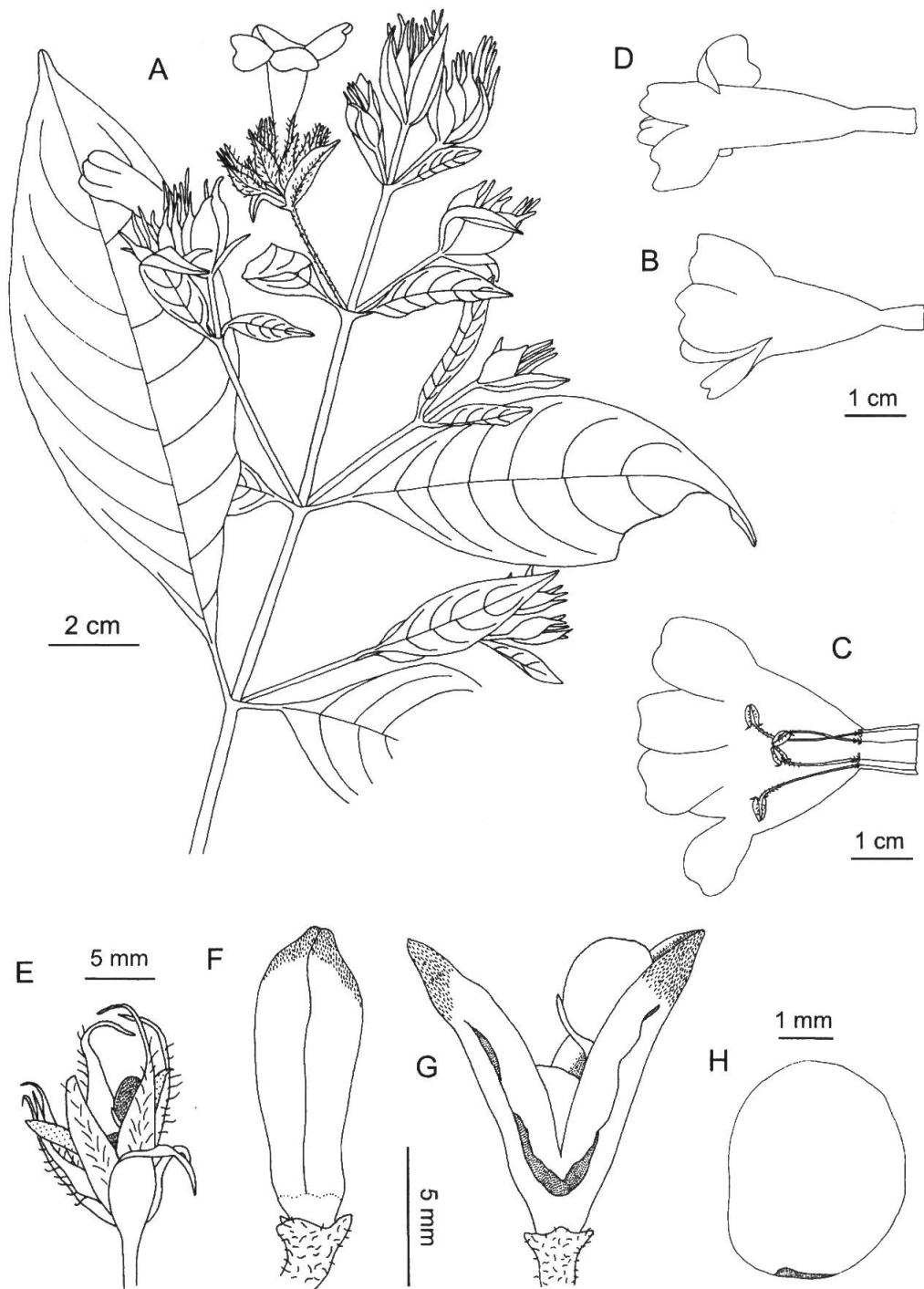


Fig. 6. – *Suessenguthia multiseta*. **A** Inflorescence, **B, C** Corolla of a plant of the Chiquitania [Schmidt-Lebuhn 28]. **D** Corolla of a plant of the Yungas [Schmidt-Lebuhn 67]. **E** Fruiting, one-flowered head, **F, G** Capsule, **H** Seed [Schmidt-Lebuhn 89]. [Drawing A. N. Schmidt-Lebuhn]

2a. Inner bracts widest near the middle or in their upper half, basally decurrent (Fig. 4C); corolla densely hirsute, the hairs 1-2(-3) mm long 4

3. Corolla pale pink, its tube (2-)2,5-3,5 cm long, approximately funnel-shaped, glabrous or rarely with few, scattered hairs, the corolla lobes normally spreading forward *S. multisetosa*

3a. Corolla intensely pink, its tube 3,5-4,5 cm long, tubular, sparsely to densely hirsute; the corolla lobes slightly recurved to spreading at right angles with the tube *S. wenzelii*

4. Internodes of the inflorescence with hairs up to 0,5 mm long; bracts with hairs up to 1 mm long; shrub *S. vargasii* var. *vargasii*

4a. Internodes of the inflorescence densely hirsute, the hairs 1,5-3 mm long; bracts with hairs 1-2 mm long; scrambling shrub with slender branches *S. vargasii* var. *hirsuta*

5. The two outermost bracts of a head glabrous or sparsely hairy, always apically reddish, somewhat concave, slightly shiny and in most cases larger than the inner bracts; all anthers included, rarely one pair slightly exserted *S. barthleniana*

5a. The two outermost bracts of a head densely hairy, often smaller than the nearest inner bracts, dull, flat; if glabrous or only sparsely hairy and larger, the bracts are green and long-ovate, quite like an apetiolate, small leaf; all anthers at least at the mouth of the corolla tube, usually at least one pair exserted 6

6. Heads excluding corollae (2,5-)3-4 cm long; corolla strongly pink, rarely pale white-pinkish, its lobes spreading to recurved *S. trochilophila*

6a. Heads excluding corollae 2-3 cm long; corolla deep red, its lobes tightly struck back or rolled back, reduced *S. koessleri*

1. ***Suessenguthia multisetosa* (Rusby) Wassh. & J. R. I. Wood**, Notes on the genus Ruellia (Acanthaceae) in Bolivia [unpublished] (Fig. 6)
≡ *Ruellia multisetosa* Rusby.

Lectotype (here designated): BOLIVIA. La Paz: Huachi, 1800 feet, 13.VIII.1921, *White* 547 (NY; isolecto-: NY, NY).

Shrub or small treelet 1-8 m high. **Leaves** up to 23 cm long and up to 10,5 cm wide. Leaf margin entire, rarely distantly and shallowly dentate. Leaf apex attenuate, the base gradually decurrent into the petiole. Secondary veins 5-9, rarely up to 12, on each side of the primary vein. The veins on the lower leaf surface glabrous or covered with appressed or spreading hairs of about 1 mm length. The **inflorescence** normally richly and regularly thyrsic, occasionally with accessory shoots, sometimes irregular or cymose with few heads, very rarely reduced to single heads. The **internodes** covered with minute or up to 2 mm long hairs, seldom glabrous, maybe depending on the age of the axis. **Head** excluding corollae (1,5-)2,5(-3,5) cm long. Outer bracts 1-2,5(-3) cm long, ovate, apically attenuate, moderately hairy with hairs 1-2 mm long. Inner bracts 1,5-2,5(-3) cm long, 0,3-0,9(-1,4) cm wide, their widest part in the lower half, the base rounded to acute, the apex slender attenuate, densely covered with hairs 1-2(-4) mm long. **Calyx** segments (1,5-)2-3(-3,5) cm long, 0,2-0,4 cm wide, densely covered with hairs 1-2(-4) mm long. **Corolla** pale pinkish. Corolla tube only basally tubular, in the upper part more or less funnel-shaped, (2-)2,5-3,5 cm long, at its mouth 0,5-1,1 cm wide, glabrous (exceptions are Nee 39049 and Nee 41783 with a few minute hairs). Corolla lobes (0,7-)1-1,4 cm long, (0,5-)0,7-1,1 cm wide, emarginate, slightly spreading forward. The stamens at the most reaching the mouth of the corolla tube.

The specific epithet was presumably chosen due to the conspicuous, long hairs covering the bracts and sepals.

Distribution. – The known distribution consists of two parts: the first lies in the eastern Bolivian lowland of the departamento Santa Cruz between Buena Vista, Perseverancia and the centre

of the provincia Velasco, the second in the eastern Yungas of the Bolivian departamento La Paz, where only a small number of populations is known (Fig. 15).

Ecology. – This species inhabits the driest habitats of any member of the genus. In the eastern lowland of Bolivia it occurs frequently in the Chiquitanía dry forests and in the Yungas it can be found at a well drained place directly above the Puente Rio Yara at Caranavi. Nevertheless, it is also able to live in proximity to water and wetter forests, as shown by a number of the specimen collected in the Parque Nacional Amboró. The species reaches elevations of 700 m in the Yungas, *Rusby* 706 was even collected at an altitude of 1000 m.

In comparison to the other species of the genus, *S. multisetosa* exhibits broad, short, pale pink flowers with the lobes normally spreading forward. The colour and the existence of a “landing platform” suggest bee pollination. *Nee* 47096 from the lowland of Santa Cruz was labelled as being “visited by carpenter bee and smaller bees”. This matches my own observations at Caranavi, where the plants were visited by several bee species, some of them quite large.

Older leaves of *S. multisetosa* of the eastern Bolivian lowland are frequently colonized by epiphyllous lichens.

Common names. – I. G. Vargas wrote onto his specimen 5304 that *S. multisetosa* is colloquially called “pollereta” (skirtlet). This may allude to the funnel-shape of the flowers.

Discussion. – *Suessenguthia multisetosa* is easily separated from the other species of the genus by the long hairs of its bracts and calyx in combination with the glabrous, short corolla. The species was described in 1927 by Rusby as *Ruellia multisetosa*, whereby “White 437” was the only specimen cited. It was not explicitly cited as the type nor was the place specified where the holotype was to be deposited (this was not required at that time). This specimen, however, was neither found in the collections borrowed nor in the herbaria visited in the course of this study. Instead there were three duplicates of an acquisition *White* 547 among the specimens of the New York Botanical Garden whose label data matched the text of the publication of the name (“Huachi, Head of Beni River, Bolivia, 1,800 feet, August 13, 1921”). Two of them bore the note “not a type specimen (type: White 437: see Mem. NY Bot. Gard. 7: [...], 1927) – C. W. Park 1985”, and none of them was marked as a type. On my request, Dr. J. Kallunki of the New York Botanical Garden herbarium assumed that this collection must be the type; the species description obviously cited the wrong number. After having carefully studied the publication, which contains many more species descriptions in addition to that of *Ruellia multisetosa*, I agree with that conclusion. *White* 542 (“August 12, 1921”) and *White* 550 (“August 13, 1921”) are cited in other descriptions, both from the same location as our presumed type. *White* 442 on the other hand was “collected at the cataracts of the Bopi River, ... August 8, 1921”. Therefore it seems logical to presume an error in the publication. As two of the aforementioned specimens were not deposited in the herbarium of the New York Botanical Garden before 1970 (they were placed at College of Pharmacy Herbarium), I designate as lectotype the third specimen.

A few years ago Dr. Dieter Wasshausen and John R. I. Wood (pers. comm.) found that the species had to be combined into *Suessenguthia* and henceforth treated it in that way. Thus it was already listed in FUENTES CLAROS (1998) as “*Suessenguthia multisetosa* (Rusby) Wasshausen & J. R. I. Wood”, even though the new combination has not yet been validly published.

Specimens examined. – **BOLIVIA. La Paz:** Nor Yungas, Caranavi, near the northern end of the puente nuevo, 67°33'W, 15°50'S, 650 m, 12.IX.2000, *Schmidt-Lebuhn* 67 (GOET, LPB, US), *Schmidt-Lebuhn* 68 (GOET), *Schmidt-Lebuhn* 69 (GOET); Sud Yungas, near Sapecho, subiendo a Serrania Marimonas entrando la parcela del ensayo multies-trado, 67°18'W, 15°32'S, 500 m, 03.X.2000, *Schmidt-Lebuhn* 89 (GOET, LPB, US); Sud Yungas, Alto Beni concesion de la cooperativa Sapecho, 550 m, 02.X.1992, *Seidel & Vaguata* 5920 (LPB, US); Cataracts of the Bopi River, 3000 ft., 01.VIII.1921, *Rusby* 706 (NY). **Santa Cruz:** Andrés Ibáñez, 6 km NW of Terevinto, 63°25'W, 17°41'S, 450 m, 30.VIII.1987, *Nee & Coimbra* 35888 (LPB, NY); Andrés Ibáñez, Vic. Estancia Maguey, 7 km NNW of Ayacucho [=Porongo] on road to Terevinto, 17 km west of Santa Cruz, 63°20'W, 17°48'S, 475 m, 25.VIII.1996, *Nee & Saldías* 47049 (NY, USZ); Andrés Ibáñez, El Mague, 25 km WSW de ... Santa Cruz ..., camino hacia la comunidad “El Pacay”, 63°21'W, 17°43'S, 460 m, 12.IX.1993, *Saldías & al.* 3255 (LPB, US, USZ); Guarayos, Reserva de Vida Silvestre Ríos Blanco y Negro, Camp. a 8 km al NE del Río Blanco en la zona de los Tutumos, 63°19'W, 15°04'S, 300 m, 28.IX.-05.X.1993, *Vargas* 2884 (LPB, NY); Guarayos, Reserva de Vida Silvestre Ríos Blanco y Negro, Río San Martín (Concesion Oquiriquia), 3 km al SW del camp., 61°48'W, 15°03'S, 300 m, 04.IX.1993, *Vargas* 2734 (LPB, NY, USZ); Ichilo, 3-4 km de Estancia San Rafael, camino a Río Surutu, 400 m, 29.VII.1987, *Ruiz de Centurión* 362 (USZ); Ichilo, 4 km SW of center of Buena Vista, south side of Río Surutu, Parque Nacional Amboro, 63°41'W, 17°29'S, 315 m, 03.X.1990, *Nee* 39049 (LPB, NY,

US); Ichilo, along small creek 4 km SE of Buena Vista, 1 km E of road from B. V. to Huaytu, 63°39'W, 17°30'S, 360 m, 18.VII.1994, *Nee* 45251 (NY, USZ); Ichilo, El Carmen (8 km al SSW de Buena Vista), tramo de 3-4 km al NW de la comunidad a la cooperativa 16 de Julio, 63°43'W, 17°32'S, 450 m, 05.X.1996, *Vargas* 5399 (LPB, NY, US, USZ); Ichilo, localidad Potrero San Rafael a 5 km al sur de Buena Vista, 63°39'W, 17°29'S, 360 m, 01.X.1996, *Balcazar & Moreno* 1018 (LPB, NY, US, USZ); Ichilo, near "El Terminal" area of Huaytu, 14 km (by air) SSE of Buena Vista, 63°38'W, 17°35'S, 360 m, 02.VIII.1987, *Nee* 35499 (LPB, NY, US); Ichilo, Parque "Amboro", Rio Sguayo, 12 km SW (linea recta) de Huaytu, 63°48'W, 17°40'S, 450 m, 31.VII.1988, *Saldias* 378 (LPB, NY, USZ); Ichilo, Parque Nacional Amboro, 1-2 km NE of El Carmen on trail to crossing of Rio Surutu, 63°41'W, 17°31'S, 350 m, 21.VII.1991, *Nee* 41783 (LPB, MO, NY); Ichilo, Parque Nacional Amboro, 2-3 km SW of El Carmen along trail to the Rio Saguayo, 63°42'W, 17°33'S, 375 m, 14.XII.1989, *Nee* 38188 (LPB, NY, US); Ichilo, Parque Nacional Amboro, 9 km SW of Buena Vista, 2 km SW of Rio Surutu crossing, 63°44'W, 17°30'S, 400 m, 21.X.1990, *Nee* 39401 (LPB, NY); Ichilo, Parque Nacional Amboro, along Rio Isama ("Rio Pitasama" on topographic map), 63°37'W, 17°42'S, 475 m, 11.X.1990, *Nee* 39250 (LPB, NY, US); Ichilo, Parque Nacional Amboro, ca. 1 hour by trail along Rio Cheyo opposite Est. Huaytu, 63°40'W, 17°37'S, 400 m, 24.VIII.1985, *Solomon* 14002 (LPB, MO, NY, US); Ichilo, Parque Nacional Amboro, ca. 15 km SE up the Rio Pitasama from the Rio Surutu, 63°40'W, 17°44'S, 700 m, 26.VIII.1985, *Solomon & Ucrullo* 14053 (LPB, MO, US); Ichilo, Parque Nacional Amboro, gorge of Rio Saguayo, first Andean foothills, 63°43'W, 17°40'S, 425 m, 22.IX.1990, *Nee* 38877 (MO, NY, US); Ichilo, Parque Nacional Amboro, the road from Yapacani to Mataracu 63°52'W, 17°27'S, 250 m, 22.IX.1996, *Nur Ritter & Wood* 3692 (US); Ichilo, Potrero San Rafael 5 km al S de Buena Vista, por el camino a Huaytu, 63°39'W, 17°30'S, 400 m, 02.X.1996, *Vargas* 5304 (LPB, NY, US, USZ); Nuflo de Chavez, Nucleo 38, 64 km N of San Julian, 14.VIII.1982, *Balick & al.* 1427 (LPB, US); Nuflo de Chavez?, ca. 20 miles south of Ascencion de los Guarayos, 13.VIII.1982, *Balick & al.* 1416 (LPB, US); Nuflo de Chavez, Ascencion de Guarayos 23 km hacia La Chonta via rio Blanco, direccion este, 30.VIII.1985, *Beck* 12255 (LPB, MO); Nuflo de Chavez, Al lado de camino, cerca de las fuentes de agua caliente, despues de las cabañas de Totaitu, 03.IX.1996, *Bourdy* 1850 (LPB); Nuflo de Chavez, 6-12 km due east of Ascencion de los Guarayos on road Aseradero La Chonta on Rio Blanco, 63°01'W, 15°45'S, 10.VIII.1983, *Hopkins* 160 (LPB, US); Nuflo de Chavez, San Javier a 50 km al noroeste del pueblo Cabanas Selvaticas Motacú, 62°22'W, 15°57'S, 250 m, 23.IX.1995, *Ortiz* 184 (LPB, NY, US, USZ); Nuflo de Chavez, 8 km east of San Javier on the road to Concepcion, 62°25'W, 16°17'S, 500 m, 03.VIII.2000, *Schmidt-Lebuhn* 25 (GOET, LPB, US), *Schmidt-Lebuhn* 26 (GOET), *Schmidt-Lebuhn* 28 (GOET, LPB); Nuflo de Chavez, ca 15 km N of Ascencion de los Guayaros towards Perseverancia, 63°10'W, 15°45'S, 300 m, 19.VII.1995, *Wood* 10000 (US); Nuflo de Chavez, Chiquitos ca 3 km (-15 km) E of San Javier on road to Concepcion, 62°22'W, 16°18'S, 500 m, 24.VII.1995, *Wood* 10066 (US); Santiesteban, 15.5 km by road N of Mineros, then 2.2 km E on dirt road, 1.3 km E of Rio Chane, 63°12'W, 16°59'S, 225 m, 28.VIII.1996, *Nee* 47096 (NY, USZ); Santiesteban, Buena Vista?, Rey del G?uendal?, 250 m, 01.IX.1915, *Steinbach* 1594 (US); Velasco, 99 km de Santa Rosa de la Roca en la direccion a Florida, 60°57'W, 15°30'S, 250 m, 02.VIII.2000, *Schmidt-Lebuhn* 24 (GOET, LPB, US).

2. *Suessenguthia wenzelii* Schmidt-Lebuhn, spec. nova (Fig. 7)

Holotype: BOLIVIA. Beni: Ballivian, Puente Rio Quiquibey, 400 m del puente en la dirección a Yucumo, al borde de la carretera, 67°07'W, 15°23'S, 700 m, 10.IX.2000, *Schmidt-Lebuhn* 63 (GOET; iso-: LPB, US).

Suessenguthiae multisetosae similis inflorescentia bracteisque sed Suessenguthiae trochilophilae similis corolla. Frutex vel arbor parva ad 4 m alta. Folia ad 12 cm longa et 3,5 cm lata, inferiores probabiliter maiores, elliptica, acuminata, ad basim in petiolum decurrentia. Margo foliorum integer, folia nervis lateralibus utroque latere 5-9. Inflorescentia furcata (raro capitulum singulare), saepe irregularis videtur. Indumentum internodii densum, pili 1 mm longi. Capitulum corollis exceptis 2-3,5 cm longum. Bracteae exteriores 0,9-2,3 cm longae, ovatae, acuminatae, pilis 1-3 mm longis instructae. Bracteae interiores (1,5-)2,5(-3,5) cm longae, 0,5-0,7(-1,2) cm latae, ovatae, longiacuminatae, pilis 1-3 mm longis densiter ornatae. Calycis segmenta 2,5-3,5 cm longa, 0,2-0,4 cm lata, pilis 1-3 mm longis densiter instructa. Corolla intense rosea, corollae tubus cylindricus, 4-4,5 cm longus, 0,5-0,9 cm latus, ad apicem vel admodum pilis ad 1 mm longis densiter instructus. Lobi corollae 1,3-1,9 cm longi, 0,7-1,1 cm lati, emarginati, patentes vel paulum recurvati.

Shrub or small treelet up to 4 m high. **Leaves** up to 12 cm long and up to 3,5 cm wide, the lower leaves presumably much larger. Leaf margin entire. Leaf apex attenuate, the base gradually decurrent into the petiole. Secondary veins 5-9 on each side of the primary vein. The veins on the lower leaf surface sometimes sparsely hairy. **Inflorescence** a thyrsse, sometimes with accessory shoots, seldom reduced to a single head, often irregularly branched. The **internodes** densely hairy, the hairs spreading, about 1 mm long. **Head** excluding corollae 2-3,5 cm long. Outer bracts 0,9-2,3 cm long, ovate, apically attenuate, moderately hairy with hairs 1-3 mm long. Inner bracts (1,5-)2,5(-3,5) cm long, 0,5-0,7(-1,2) cm wide, its widest part in the lower half, the base rounded to acute, the apex slender attenuate, densely hairy with hairs 1-3 mm long. **Calyx** segments 2,5-3,5 cm long, 0,2-0,4 cm wide, densely hairy with hairs 1-3 mm long. **Corolla** strongly pink.

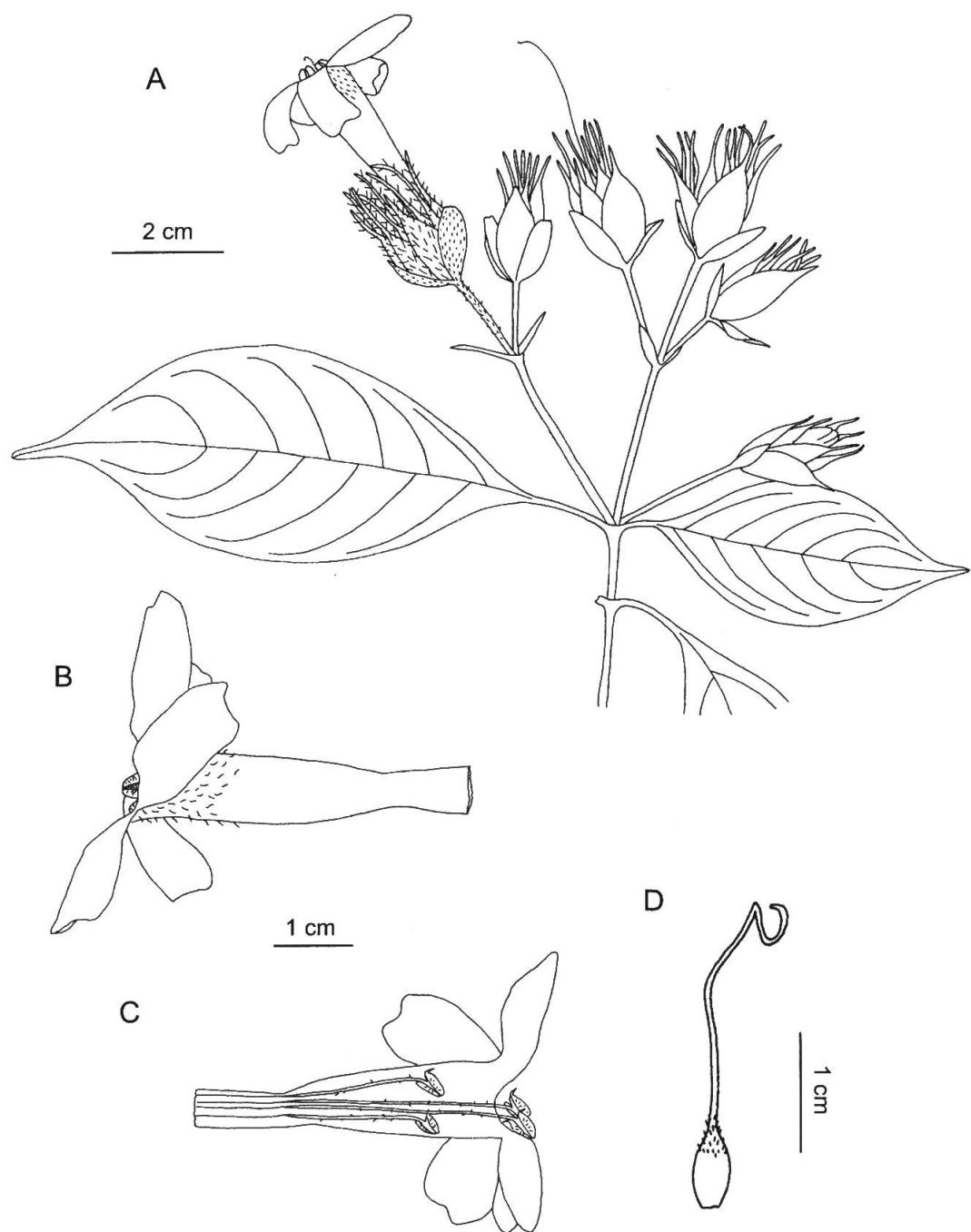


Fig. 7. – *Suessenguthia wenzelii*. **A** Inflorescence, **B, C** Corolla, **D** Gynoecium [Schmidt-Lebuhn 63]. [Drawing A. N. Schmidt-Lebuhn]

Corolla tube tubular, 4-4,5 cm long, 0,5-0,9 cm wide, either at its apex or on the entire length sparsely or densely hairy. Corolla lobes 1,3-1,9 cm long, 0,7-1,1 cm wide, emarginate, spreading or slightly recurved.

The name is dedicated to Mr. Wenzel Schieche from Stabigt (former Austria-Hungary), fallen in 1916 in World War I.

Distribution. – This species is mainly known from a population directly north of the Puente Rio Quiquibey in the Bolivian departamento of Beni. Another single specimen has been found near Ixiamas (Fig. 15).

Ecology. – The plants studied in the field grow along a wet ditch besides the road at an altitude of about 700 m.

Common Names. – G. Bourdy mentions on his specimen 1502 that the Tacana call this plant (and several others) “tudha”.

Discussion. – Without an examination of the corolla this species cannot be distinguished from *S. multisetosa* though it more frequently produces sessile heads in its inflorescences which therefore have quite an “untidy” appearance. Shape, colour and the quite variable indumentum of the corolla however differ significantly from that of *S. multisetosa* and are strongly reminiscent of *S. trochilophila*. Thus the species has no exclusive characteristics but is rather defined by a unique combination of characteristics. It is probably of hybrid origin. The population at puente Río Quiquibey, which consists of about a dozen individuals and appears to be genetically stable, is situated at the northern edge of the Bolivian Yungas. The most probable second ancestor species, *S. trochilophila*, might have migrated into that area through the river valleys along the hills between Rurrenabaque and Yucumo. The single specimen collected near Ixiamas, in an area where *S. multisetosa* is not known to occur, either suggests that this rare species has already spread westwards from the place of its origin or could be explained by a greater distribution of *S. multisetosa* in former, drier times.

Specimens examined. – **BOLIVIA. Beni:** Ballivian, Puente Rio Quiquibey, 400 m del puente en la direccion a Yucumo, al borde de la carretera, 67°07'W, 15°23'S, 700 m, 10.IX.2000, Schmidt-Lebuhn 64 (GOET, LPB); Puente Rio Quiquibey, 100 m from the bridge towards Yucumo, moist area along roadside, 67°07'W, 15°23'S, 700 m, 10.IX.2000, Schmidt-Lebuhn 65 (GOET), Schmidt-Lebuhn 66 (GOET); Puente Rio Quiquibey, 0,5 km from puente towards San Borja, 700 m, 28.VII.1998, Wasshausen & Wood 2157 (GOET, LPB). **La Paz:** Abel Iturralde, camino Ixiamas – Sta. Fé, al borde de la pampa y de la selva, 07.VII.1995, Bourdy 1502 (LPB).

3a. *Suessenguthia vargasii* Wassh. in Rhodora 72: 121. 1970, var. *vargasii* (Fig. 8)

Holotype: PERU. Cusco: Provincia de Quispicanchis, forest, between Quince Mil and San Lorenzo, 700 m, 25.VII.1957, Vargas 11732 (US; iso-: CUZ).

Shrub or small treelet 2-6 m high. **Leaves** up to 22 cm long (normally up to 14 cm) and up to 6,5 cm wide, slender-elliptic to slightly ovate. Leaf margin entire. The leaf apically slightly attenuate, the base gradually decurrent into the petiole. Secondary veins 5-8 on each side of the primary vein, on the lower leaf surface glabrous or sparsely hairy with minute hairs. The **inflorescence** thyrsse, normally only few-headed cymes, sometimes reduced to a single head. The **internodes** moderately hairy with appressed hairs up to 0,5 mm long. **Head** excluding corollae (2,5)-3-4 cm long. Outer bracts 1-3 cm long, mostly smaller than the inner bracts, densely hairy with appressed hairs up to 0,5(-1) mm long. Inner bracts 2-3(-4) cm long, 0,4-1,1(-1,5) cm wide, the base decurrent, apically attenuate, their widest part near the middle or above, densely hairy with hairs up to 1 mm long. **Calyx** segments (2)-2,5-3,5(-4) cm long, 0,3-0,4 cm wide, densely hairy with hairs up to 1(-1,5) mm long. **Corolla** strongly pink. Corolla tube 3,2-5 cm long, 0,4-0,6(-1) cm wide, on the outside at least in the upper two thirds densely hairy with spreading hairs 1-3 mm long. Corolla lobes 1-1,5 cm long, 0,5-1 cm wide, emarginate, spreading or slightly recurved. At least one pair of stamens excluded.

The name of the species refers to the collector of the type specimen.

Distribution. – The center of the range of *S. vargasii* are the wet lowland forests of south-eastern Peru. To the south it climbs into the valleys of the Andes, to the east it reaches Bolivian

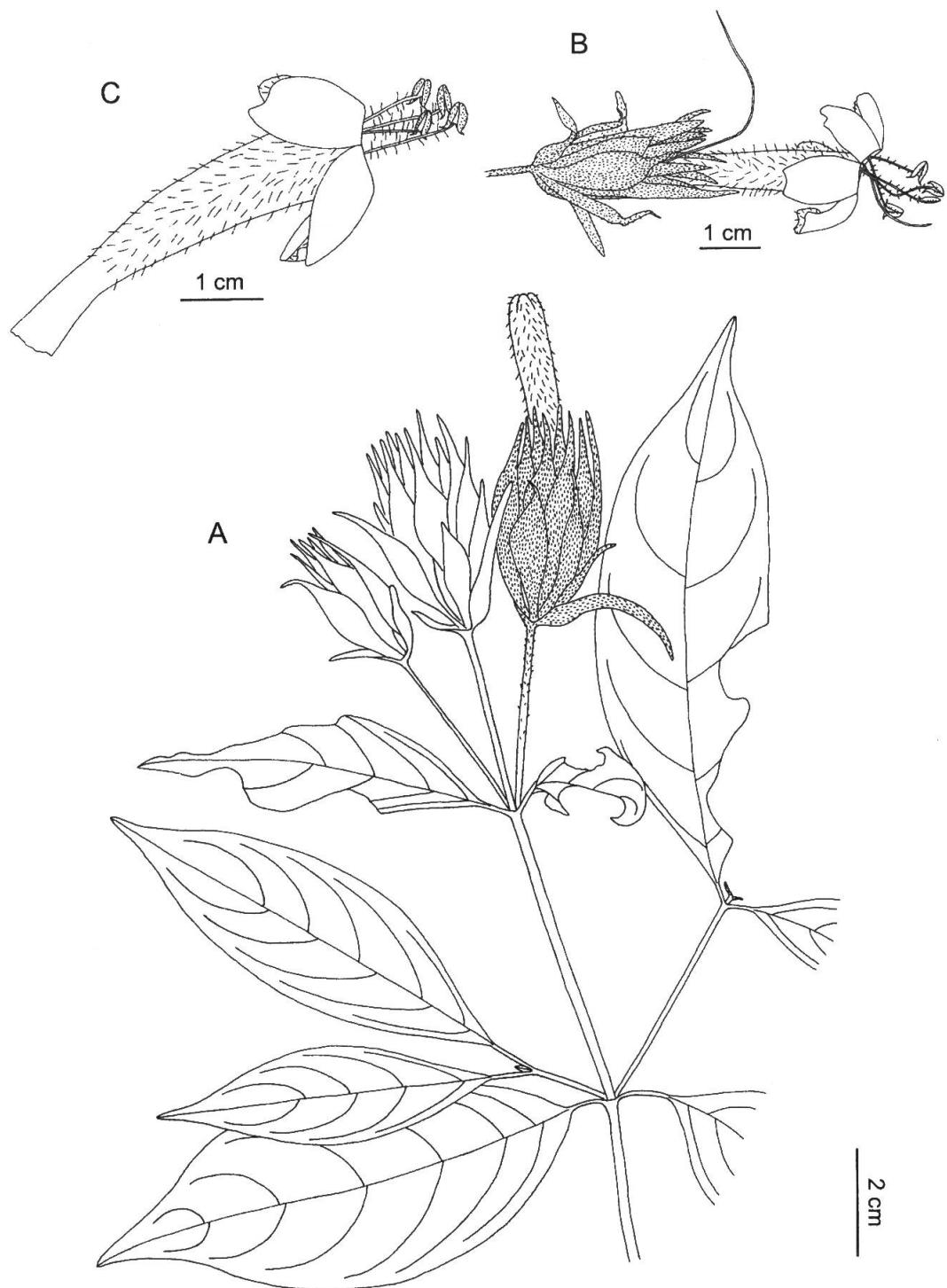


Fig. 8. – *Suessenguthia vargasii* var. *vargasii*. **A** Inflorescence [Foster 3024], **B** Head, **C** Corolla [Schmidt-Lebuhn 35]. [Drawing A. N. Schmidt-Lebuhn]

territory in the lowland of the departamentos La Paz and Pando, following the Río Madre de Dios (Fig. 15).

Ecology. – *Suessenguthia vargasii* grows up to an elevation of about 700 m. Specimen data mentions humid forests, often disturbed, in cases under influence of inundations or at least near water bodies as habitat. The only specimen encountered in the course of the field work (Schmidt-Lebuhn 35) grew quite a distance uphill of the closest river, but in an environment constantly well supplied with water. It was part of a relatively young secondary vegetation. The pollinator is unknown, but the shape of the corolla tube, the orientation of the lobes and the excluded anthers suggest ornithophily.

Discussion. – The species is quite variable with regard to the size of the floral heads and the bracts, but the shape of the latter is unmistakable. In addition, *S. vargasii* is unique in the length of the hairs on its corolla tube.

Specimens examined. – **BOLIVIA. La Paz:** Iturralde, Rio Madre de Dios, frente a Humaitá, 140 m, 30.VIII.1985, Moraes 392 (LPB, NY). **Pando:** Manuripi, Palma Real, “Pando x2” area de perforación antigua, 67°44'15.9"W, 11°38'12"S, 152 m, 11.VIII.1995, Jardim & Destré 2303 (US, USZ).

PERU. Cuzco: Paucartambo, Atalaya, hillside and riverbank near junction of Rio Carbon with Rio Alto Madre de Dios, 27.VIII.1973, Foster 2724 (NY); Paucartambo, Atalaya, hillside and riverbank near junction of Rio Carbon with Rio Alto Madre de Dios, 06.-07.VIII.1974, Foster & al. 3024 (US, USM); Paucartambo, directly behind and W of Pilcopata, district Kosnipata, 580 m, 26.VI.1975, Wasshausen & Encarnación 585 (NY, USM); Paucartambo, Kosnipata, Pilcopata-Atalaya, 450-550 m, 05.VIII.1956, Vargas 11289 (US, CUZ); Paucartambo, Atalaya-Carbon, 700 m, 01.X.1960, Vargas 13424 (CUZ); Paucartambo, on the right side of the road from Pilcopata to Shintuya just before Atalaya, 71°21'W, 12°54"S, 650 m, 12.VIII.2000, Schmidt-Lebuhn 35 (GOET, US); Quispicanchi, district Camanti, Maniri, 8 km oeste de Quincemil, a los margenes de la quebrada Garrote, 70°48'W, 13°17"S, 720 m, 20.VII.1990, Timana & Astete 657 (MO, US, USM). **Madre de Dios:** Manu, “Syniuya” (Shintuya?), 400 m, 06.X.1966, Vargas 17831 (US, CUZ); Tambopata, Rio Tambopata, comunidad nativa de Infierro – hermosa chica – centro Nape, 69°17'W, 12°50"S, 260 m, 06.VIII.1991, Pesha Baca 214 (US, USM); Manu, Parque Nacional Manu, a 6 km de la Estación de Cocha-Cashu, camino a la colpa Quebrada con riacluelo, 71°23'W 11°53"S, 350 m, Beltrán 152 (USM); Tambopata, Las Piedras, Cusco Amazonico, Inventario Permanente, Plantas colectadas en trocha B., 69°03'W, 12°29"S, 200 m, 01.IX.1991, Timana & Rubio 2164 (MO); Parque Nacional del Manu, Cocha Cashu Station, 71°22'W, 11°52"S, 350 m, 01.X.1991, Burnham 685 (US, USM); Parque Nacional del Manu, Rio Manu, Cocha Cashu Station, 350 m, 01.VII.1978, Terborgh & Foster 6515 (NY, USM); Manu, Pakitzá, 350 m, IX.1989, Tupayachi 1253 (CUZ). **Puno:** Carabaya, Ollachea-San Gaban road. Arica., 20.VIII.1980, Boeke & Boeke 3146 (NY, US).

3b. *Suessenguthia vargasii* var. *hirsuta* Schmidt-Lebuhn, var. nova (Fig. 9)

Holotype: PERU. **Madre de Dios:** Tambopata, Explorer's Inn Tourist Camp at junction of Rios La Torre and Tambopata, “Ants Trail”, 69°43'W, 12°49"S, 29.VII.1985, Gentry & al. 51566 (MO; iso.: NY).

*Frutex 1-6 m, probabiliter scandens. A Suessenguthia vargasii var. vargasii differens indu-*mento internodii bractarumque: internodia juvenilia pilis 1,5-3 mm longis dense instructa, brac-*teae pilis ad 2 mm longis ornatae.*

Shrub, presumably scrambling, 1-6 m high. **Leaves** up to 17 cm long and up to at least 4 cm wide, elliptic. Leaf margin entire. Leaf apex slightly attenuate, the base gradually decurrent into the petiole. Secondary veins 6-7 on each side of the primary vein, on the lower leaf side moderately hairy. The **inflorescence** a thyrsse, normally only few-headed cymes, sometimes reduced to a single head. The **internodes** densely tomentose with 1,5-3 mm long, spreading hairs. **Head** excluding corollae 3-4 cm long. Outer bracts 2-4 cm long, moderately hairy with hairs up to 2 mm long. Inner bracts 2-3,5 cm long, 0,5-1 cm wide, the base decurrent, apically attenuate, their widest part near the middle, densely hairy with hairs up to 2 mm long. **Calyx** segments 2,5-3,8 cm long, 0,3-0,4 cm wide, densely hairy with appressed hairs up to 1 mm long. **Corolla** strongly reddish-pink. Corolla tube 3,8-4,5 cm long, 0,4-0,6 cm wide, on the outside densely hairy with spreading 1(-2) mm long hairs. Corolla lobes 1,3-1,5 cm long, 0,5-0,8 cm wide, emarginate, spreading.

The name was chosen to reflect the character in which this variety differs significantly from *S. vargasii* var. *vargasii*, the indumentum.

Distribution. – Only known from the vicinity of Tambopata in the lowlands of south-eastern Peru.

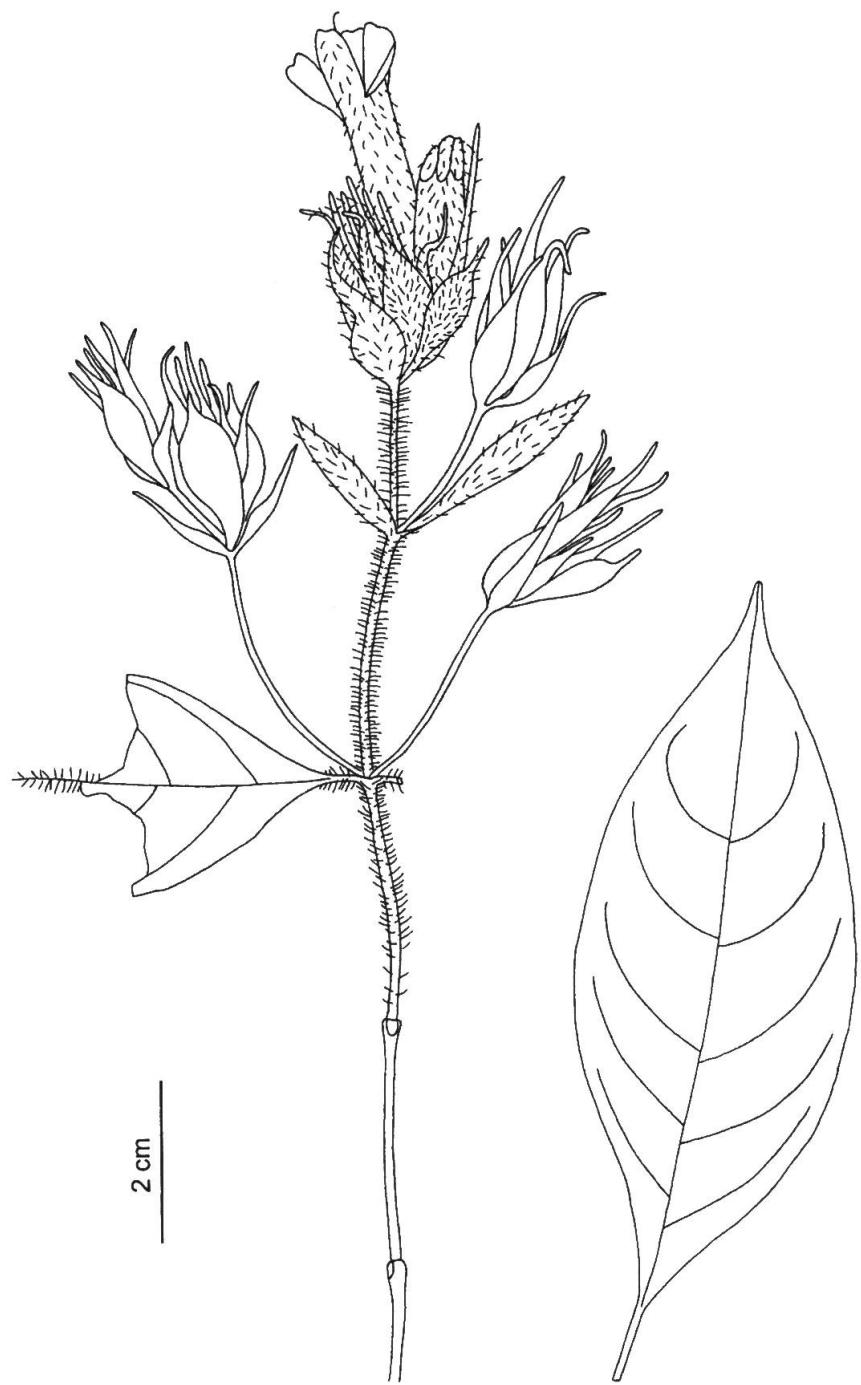


Fig. 9. – *Suessenguthia vargasii* var. *hirsuta*. The indumentum is only shown for the main axis and its terminating head [Gentry, Diaz & Jaramillo 51566]. [Drawing A. N. Schmidt-Lebuhn]

Ecology. — Plant of the lowland forests. The locality of the three known collections is a dense, 30-40 m high, periodically inundated forest with scattered treefall openings (M. Kessler, pers. comm.).

Discussion. — *Suessenguthia vargasii* var. *hirsuta* differs from var. *vargasii* in the tomentose, dense, long, spreading hairs of its internodes and bracts. According to the specimen labels these plants might be viny, whereas var. *vargasii* typically grows as an erect shrub. As this divergent form is only known from three collections at a single site at the edge of the distribution of *S. vargasii* and shares important characters with the typical variety, it seems premature to treat it as a separate species. Nevertheless the strikingly divergent indumentum should not go unnoticed, and so I have chosen to describe a new variety. Only after the acquisition of additional material and field observations (e. g. about the notes of Reynel & Meneses according to which the plant is an “arbusto lianescente”) will it be possible to reach a reliable decision about the status of this taxon.

Specimens examined. — **PERU. Madre de Dios:** Zona reservada de Tambopata, 09.IX.1986, *Phillips & Willein TII* (USM); Tambopata, Zona reservada de Tambopata, trocha del arbol grande, a 10 m del inicio, 69°18'W, 12°49'S, 280 m, 10.VIII.1990, *Reynel & Meneses 5024* (MO).

4. *Suessenguthia barthleniana* Schmidt-Lebuhn, spec. nova (Fig. 10)

— *Suessenguthia trochilophila* auct., non Merxm. quoad typum.

Holotype: BOLIVIA. La Paz: Nor Yungas, de Yolosa caminando 15 min. en la carretera a Caranavi, entrando a un arroyo a la derecha, 67°45'W, 16°13'S, 1100 m, 07.VIII.2000, *Schmidt-Lebuhn 29* (GOET; iso-: LPB, US).

Frutex 0,8-4,5 m altus. Folia ad 24 cm longa (saepe 16-20 cm) et ad 9 cm lata (saepe 5-7 cm), elliptica vel paulum obovata, acuminata, ad basim in petiolum decurrentia. Margo foliorum dentatus, folia nervis lateralibus utroque latere 7-12. Inflorescentia solum basaliter furcata, capitulis superioribus quasi seriatim dispositis. Indumentum internodii exiguum, pili ad 0,5(1) mm longi. Capitulum corollis exceptis 2,5-3,5(-4) cm longum. Bracteae exteriores 1,7-3,5 cm longae, 1-2,8 cm latae, ovatae, concavae, coriaceae, apice rubrae, glabrae vel sparse pilis ad 1 mm longis instructae. Bracteae interiores (2-)2,5-3,0(-3,5) cm longae, 0,5-1,7 cm latae, ellipticae vel ovatae, apice rubrae, sparse pilis ad 1 mm longis instructae. Calyxis segmenta 2,5-3 cm longa, 0,2-0,5 cm lata, pilis ad 2 mm longis sparse vel dense instructae. Corolla pallidirosea, corollae tubus 3,5-4,7 cm longus, 0,7-1 cm latus, apice pilis ad 0,5 mm longis sparse vel dense instructus. Lobi corollae 1-1,4 cm longi, 0,5-0,8 cm lati, emarginati, patentes vel paulum recurvati.

Shrub, 0,8-4,5 m high. **Leaves** up to 24 cm long (normally 16-20 cm) and up to 9 cm wide (normally 5-7 cm), elliptic to slightly obovate. Leaf margin slightly to conspicuously roundly dentate. Leaf apex slightly attenuate, the base gradually decurrent into the petiole. Secondary veins 7-12 on each side of the primary vein, glabrous on the lower side of the leaf. The **inflorescence** branched mostly basally, in the upper part with sympodially arranged heads as in a string of pearls. The **internodes** sparsely to moderately hairy with minute or rarely up to 1 mm long hairs. **Head** excluding corollae 2,5-3,5(-4) cm long. Outer bracts 1,7-3,5 cm long, 1-2,8 cm wide, slightly heart-shaped, leathery, concave, tinted red at the apex, glabrous or very sparsely hairy with hairs up to 1 mm long. Inner bracts (2-)2,5-3,0(-3,5) cm long, 0,5-1,7 cm wide, apically tinted red, sparsely hairy with hairs up to 1 mm long. **Calyx** segments 2,5-3 cm long, 0,2-0,5 cm wide, sparsely to moderately hairy with hairs up to 2 mm long. **Corolla** pale pinkish. Corolla tube 3,5-4,7 cm long, 0,7-1 cm wide, on the outside in its upper half sparsely to moderately hairy with hairs of about 0,5 mm length. Corolla lobes 1-1,4 cm long, 0,5-0,8 cm wide, emarginate, slightly recurved. The anthers normally included, rarely just exserted.

The name honours Dr. Ursula Barthlen from Dusslingen, Germany.

Distribution. — The species inhabits the valleys of the eastern Andean slopes west of the upper Rio Tambopata at the eastern border of Peru to the provincia Sud Yungas of the Bolivian departamento La Paz in the east (Fig. 16).

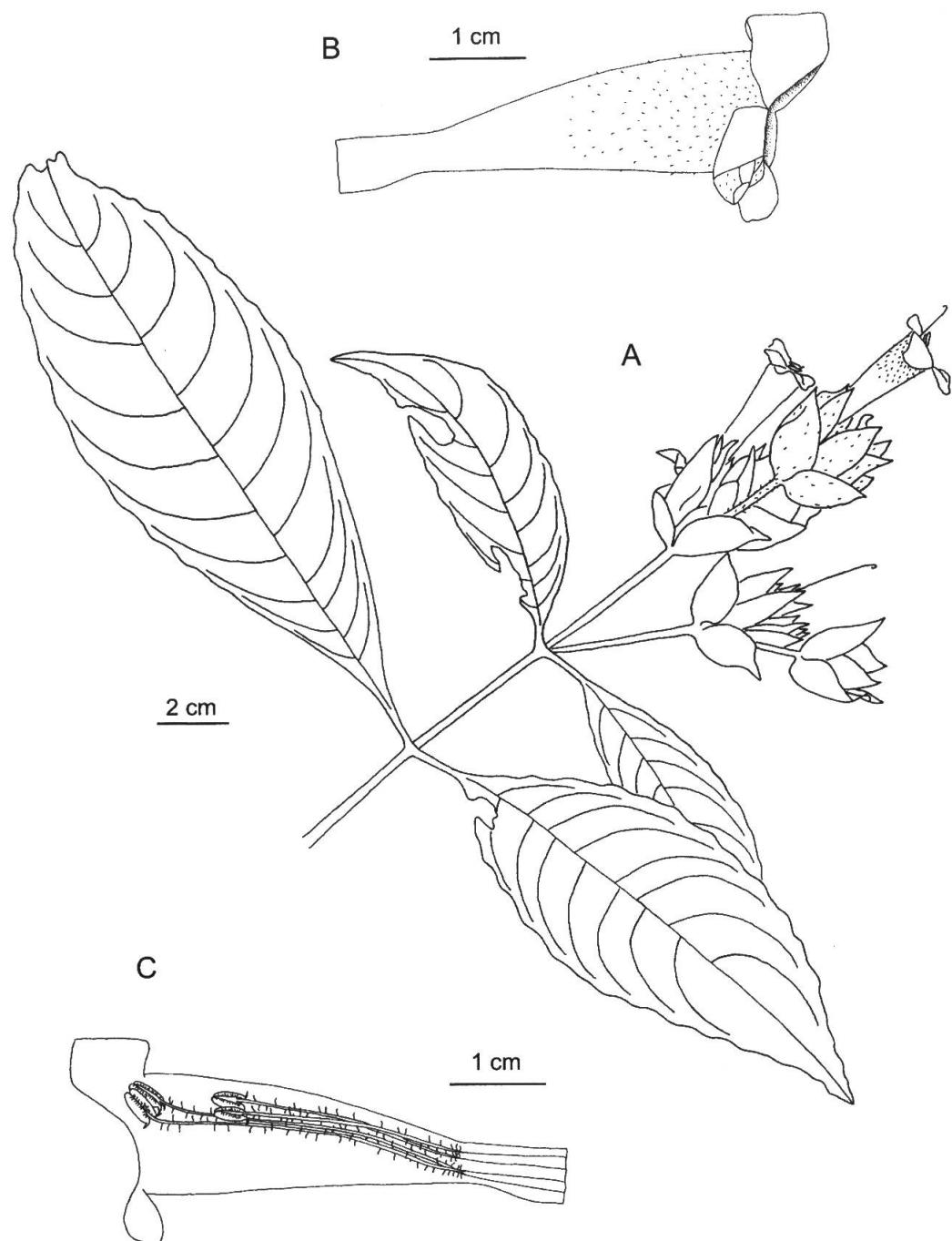


Fig. 10. – *Suessenguthia barthleniana*. A Inflorescence, B, C Corolla [Schmidt-Lebuhn 29]. [Drawing A. N. Schmidt-Lebuhn]

Ecology. – *Suessenguthia barthleniana* is found along rocky brooks and at riversides at elevations of 680 m to 1350 m and thus is the species of the genus to inhabit the highest elevations. Beck 4734 was even collected at 1700 m. It frequently inhabits evergreen gallery forests in semiarid valley systems with seasonally deciduous forests (KESSLER & HELMÉ, 1999; KESSLER & al., 2000). The pollinator is unknown.

Discussion. – *Suessenguthia barthleniana* is characterized by its outer bracts, especially their lacking or sparse hairs. This easily recognizable and not very variable species was treated by WASSHAUSEN (1970) as *S. trochilophila* Merxm. (see discussion of that species).

Specimens examined. – **BOLIVIA.** La Paz: Franz Tamayo, Chaquey Mayo-Tuichi trail ca 20 km NW of Apolo, disturbed dry forest along Rio Machariapo, 68°28'W, 14°34'S, 1000 m, 12.VI.1990, Gentry & Foster 71144 (LPB, US); Franz Tamayo, en la senda entre Buena Vista y Ubito, 68°28'W, 14°26'S, 1350 m, 10.IX.1993, Helme 77 (US); Larecaja, San Carlos, Mapiri, 700 m, 01.VIII.1907, Buchtien 1403 (US); Larecaja, Sarampiuni (?): Mapiri, 500 m, 07.VII.1927, Troll 2710 (M); Nor Yungas, near Coroico Yungas, 02.VIII.1894?, Bang 2367 (M, MO, US); Nor Yungas, de Chuspipata bajando 14 km hacia Yolosa y entrando 5 km hacia el Río Huarinillas, 1150 m, 06.VIII.1988, Beck 13898 (LPB); Nor Yungas, de Yolosa caminando 15 min. en la carretera a Caranavi, entrando a un arroyo a la derecha, 67°45'W, 16°13'S, 1100 m, 07.VIII.2000, Schmidt-Lebuhn 30 (GOET), Schmidt-Lebuhn 31 (GOET); Nor Yungas, de Yolosa caminando 15 min. en la carretera a Caranavi, entrando a un arroyo a la derecha, 67°45'W, 16°13'S, 1100 m, 17.IX.2000, Schmidt-Lebuhn 70 (GOET, LPB, US); Sud Yungas, Chulumani 15 km hacia Irupana, ladera rocosa al borde del río Solacama, 1700 m, 04.VII.1981, Beck 4734 (LPB, US); Sud Yungas, Basin of Río Bopi, Asunta (near Evenay), 690-750 m, 27.-31.VII.1939, Krukoff 10585 (LPB, MO, US); Sud Yungas, outskirts of Caranavi, 680 m, 27.VII.1998, Wasshausen & Wood 2140 (GOET, LPB).

PERU. Puno: Sandia, along Río Tambopata between San Juan del Oro and San Ignacio, 1100 m, 07.VI.1982, Wasshausen & Salas 1213 (MO, NY, US).

5. *Suessenguthia trochilophila* Merxm. in Mitt. Bot. Staatssamml. München 1: 178. 1953 (Figs. 11, 12)

Holotype: BOLIVIA, at the foot of the Andes near Rurrenabaque, on the right bank of the Río Beni, 23.IX.1951, Niethammer 208 (M).

- = *Suessenguthia leucerythra* (Leonard & L. B. Sm.) Wassh. in Rhodora 72: 120. 1970.
- ≡ *Sanchezia leucerythra* Leonard & L. B. Sm. in Rhodora 66: 318. 1964. **Holotype:** PERU. Junin: Killip & Smith 25271 (NY; iso-: US).
- = *Suessenguthia cuscoensis* Wassh. in Rhodora 72: 122. 1970. **Holotype:** PERU. Cuzco: Vargas 11288 (US; iso-: CUZ).

Shrub of up to 5 m height, sometimes a subshrub 0,8-2 m high or scrambling. **Leaves** up to 32 cm long and up to 8,5 cm wide, elliptic to slightly obovate. Leaf margin entire, distantly and shallowly dentate or conspicuously and roundly dentate. Leaf apex slightly attenuate, the base gradually decurrent into the petiole. Secondary veins (5-)6-9(-10) on each side of the primary veins, on the lower leaf side normally moderately hairy with hairs of less than 1 mm of length. The **inflorescence** branched mostly basally, in the upper part with sympodially arranged heads as in a string of pearls, sometimes reduced to a few heads or a single head. The **internodes** densely hairy with minute hairs (rarely up to 1 mm long). **Head** excluding corollae (2,5-)3-4 cm long. Outer bracts 1,5-4 cm long, 0,5-1,8 cm wide, ovate, acute or slightly broadly attenuate, broadly attached, apically tinted red, covered with hairs 0,5-1 mm long. Outer bracts especially of the lower heads of some Peruvian specimen may be up to 9 cm long and up to 2,4 cm wide, green, resembling apetiolate, small leaves and less hairy. Inner bracts (2-)2,5-4 cm long, 0,4-1,7 cm wide, apically tinted red, densely hairy with hairs up to 1(-2) mm long, ovate to elliptic, acute or slightly broadly attenuate. **Calyx** segments 2,3-4 cm long, 0,3-0,4 cm wide, densely hairy with appressed hairs up to 1 mm long. **Corolla** strongly pink, rarely whitish/pale pink. Corolla tube (3,5-)4-4,5 cm long, 0,6-1 cm wide, on the outside in its upper half or upper three quarters densely hairy with hairs up to 1 mm long. Corolla lobes 0,8-1,5 cm long, 0,4-1 cm wide, emarginate, spreading to recurved. Normally at least two, often all anthers exserted.

The name of the species translates “hummingbird-loving”. *Suessenguthia trochilophila* owes its name to the pollination by hummingbirds (see discussion). Sperling & King 6582 bears the remark “observed visited by *Phaethornis* hummingbird”, and Prance & al. 14672 is labeled as “visited much by humming-birds”.

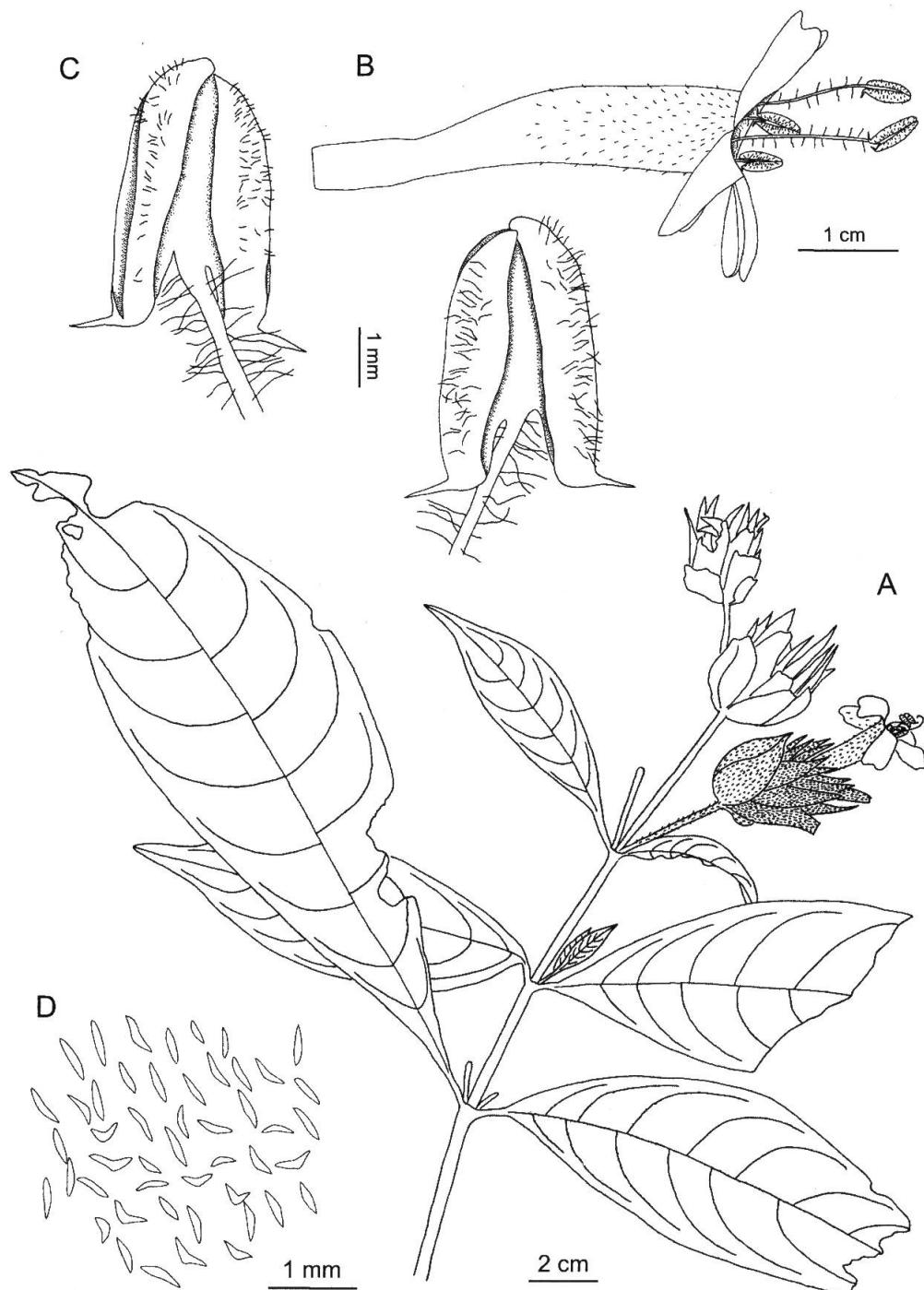


Fig. 11. – *Suessenguthia trochilophila* of Bolivia. **A** Inflorescence [Schmidt-Lebuhn 46], **B** Corolla, **C** Anther from both sides, **D** Cystoliths of the upper leaf side [Schmidt-Lebuhn 61]. [Drawing A. N. Schmidt-Lebuhn]

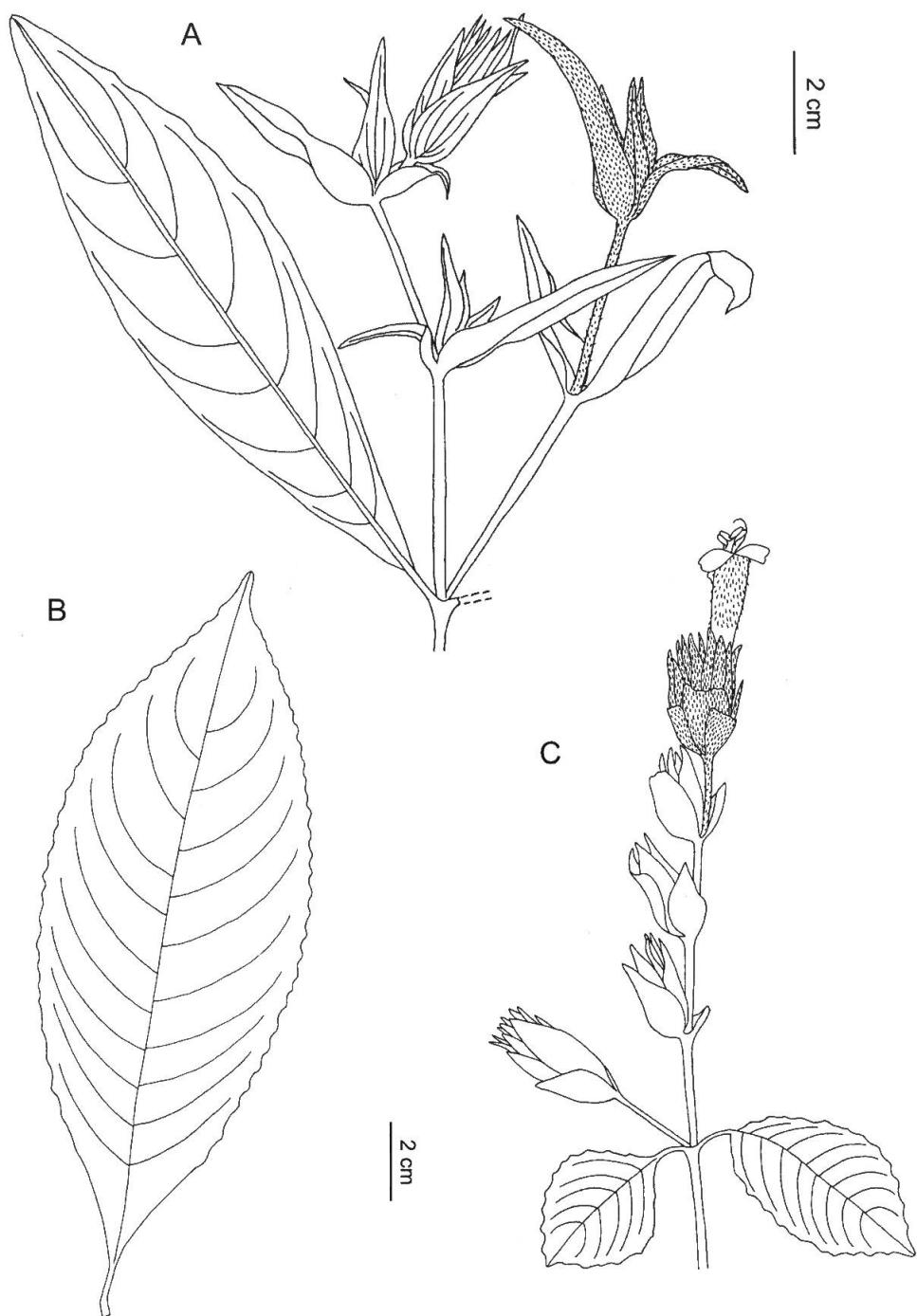


Fig. 12. – *Suessenguthia trochilophila* of Peru. A Inflorescence of a specimen with conspicuously elongated outermost bracts [Wasshausen & Encarnación 500], B Leaf and C Inflorescence of a specimen with wavyly dentate leaf margin [Schmidt-Lebuhn 37]. [Drawing A. N. Schmidt-Lebuhn]

Distribution. – The species can be found in the valleys of the eastern slopes of the Peruvian Andes in the departamentos Ayacucho, Cuzco, Junin and Pasco, in the wet lowlands of the Peruvian departamento Madre de Dios and the Bolivian departamentos La Paz, Beni and Pando, and in the Brazilian states of Acre and Amazonas (Fig. 16).

Ecology. – The elevational distribution of this species ranges from the lowlands up to about 1000 m. It grows mostly close to brooks and rivers. For example, Schmidt-Lebuhn 46, 47, 61 and 62 were collected near the upper rainseason water limit of a stream and a river, respectively. For some Peruvian specimen only “rainforest” or “edge of rainforest” were mentioned as habitat.

Discussion. – *Suessenguthia trochilophila* is the morphologically (and supposedly also genetically) most variable species of the genus. The length of the head excluding corollae ranges from sometimes only 2,5 cm in a few Peruvian specimen to slightly more than 4 cm in some Brazilian plants. Even though *S. trochilophila* is normally a shrub of 2 m to 5 m height, Bolivian specimens in the departamentos of Beni and La Paz tend to be smaller (field observations of the author). They rarely exceed 2 m, sometimes they only grow as subshrubs of about 1 m (e.g., Schmidt-Lebuhn 61). The morphological variability of the species is greatest in Peru, probably due to the fact that these plants occur in scattered populations along river valleys isolated from each other by mountain ranges up to 4000 m high. Some Peruvian specimens exhibit unusually long, slender, occasionally leaflike outermost bracts (Figs. 4F, 12A). In addition, the leaf margin of the plants can be entire (Fig. 11A) to conspicuously dentate (Fig. 12B). Another hint at the heterogeneity of the species is the fact that the three populations genetically sampled in the course of this research are located in two different places in a phylogenetic tree based on AFLP data (Schmidt-Lebuhn, unpublished data). Nevertheless, no correlation of characteristics leading to a satisfactory division of this complex into single species can be found, probably due to the relative paucity of collections (30 at present). Figure 13 demonstrates this based on two of the

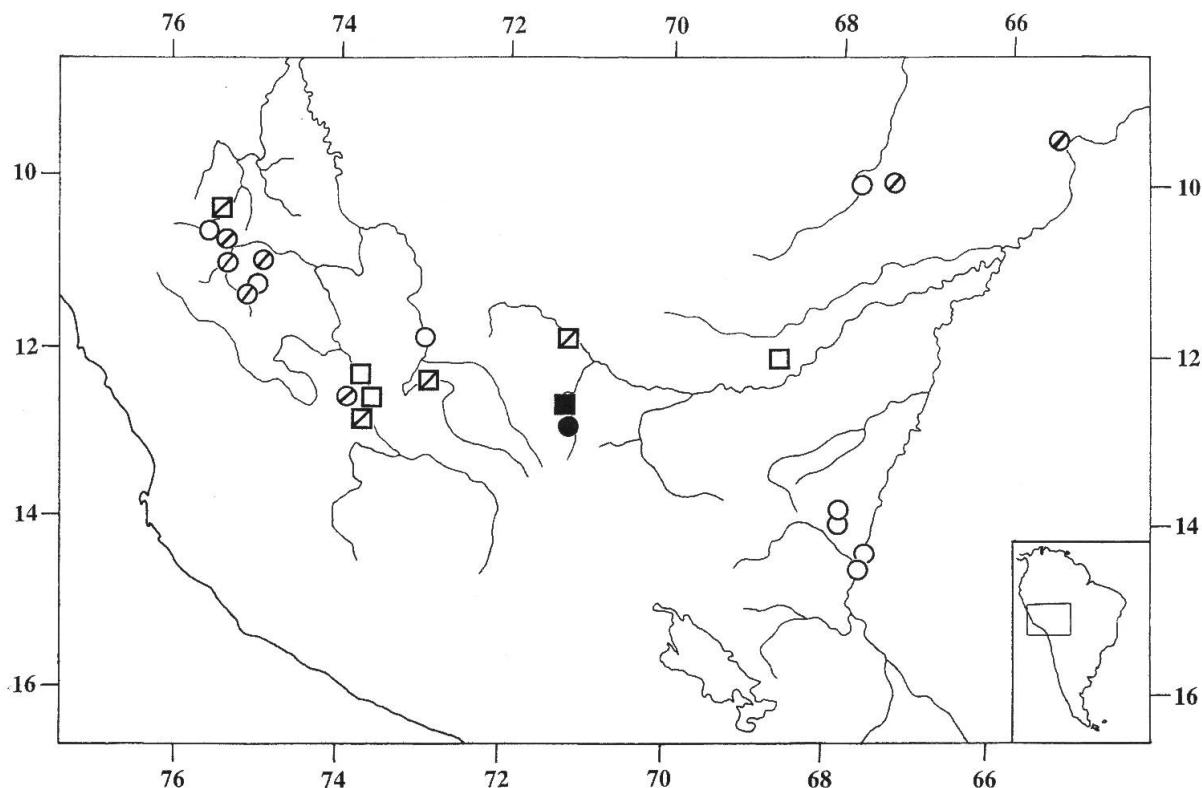


Fig. 13. – Geographic distribution of two variable characters in *Suessenguthia trochilophila*. Elongated outermost bracts are represented by squares, those of normal length by circles. White symbols represent entire, dashed symbols distantly toothed and black symbols strongly dentate leaf margins.

characters discussed above. It therefore seems advisable to recognize only one species until the group can be studied in more detail.

The Bolivian populations of the departamentos La Paz and Beni form a group of little variability with entire leaf margin, large heads, strongly pink corolla and never elongated outer bracts (Fig. 11). Among them is the type of *S. trochilophila*. *Suessenguthia leucerythra* was first described as a *Sanchezia*. The Peruvian type *Killip & Smith* 25271 (holotype NY; iso-: US) shows no characteristics conspicuously differing from those of *S. trochilophila*. When Wasshausen transferred *Sanchezia leucerythra* to *Suessenguthia* because of the number of fertile stamens, he found it to have an inflorescence of a single head, as indeed does the holotype ("inflorescence capitate"), and described *S. cuscoensis* (holotype: *Vargas* 11288, US; iso-: CUZ) with the heads arranged sympodially one above the other ("spicae terminales et axillares"). However, the isotype of *S. leucerythra* at US exhibits the same inflorescence and the holotype appears to be an atypical specimen. On the other hand, *Vargas* 11288 differs from typical Bolivian specimens of *S. trochilophila* in its strongly dentate leaf margin as well as the elongated-leaflike outer bracts.

When MERXMÜLLER described *Suessenguthia trochilophila* in 1953, three collections were available: *Niethammer* 208, *Bang* 2367 and *Troll* 2710. The ornithologist Niethammer had apparently collected this specimen only because the plant unknown to him was visited by hummingbirds. We found no duplicates, so that this collection deposited at Munich (M) seems unique. The other two collections cited on the other hand are represented as duplicates in other important herbaria, at least *Bang* 2367, in the United States (MO, US). Today it seems somehow unintelligible on why Merxmüller decided to choose *Niethammer* 208 as the type. However, we have to bear in mind that *Bang* 2367 was likely to shape American botanists' picture of *S. trochilophila* as the type in M was hardly available to them. It should be added that a leaf of one of the paratypes was depicted next to the inflorescence of the holotype in the figure presented in the species description. In his species description Merxmüller already mentions some differences between the plants available to him in the characteristics of the leaf and indumentum, but decided "[es] muß die Entscheidung, die vielleicht sogar eine spezifische Trennung bedingen könnte, auf eine spätere Zeit, bis zum Eintreffen größerer Materialien vertagt werden" ("the decision, which may well lead to the distinction of separate species, has to be postponed to a time when more material is available"). On the basis of the abundant material available for this study and after a visit to M, where it could be studied, *Niethammer* 208 was indeed found to belong to a different species than *Bang* 2367 and *Troll* 2710.

According to the species delimitation used in this study the type of *S. trochilophila* has – due to the characteristics of its bracts, its few-veined leaves and entire leaf margins – to be placed together with the types of *S. leucerythra* and *S. cuscoensis*. These last names are therefore regarded as synonyms. Accordingly, *Bang* 2367 and *Troll* 2710 are named *S. barthleniana* (see under this name).

Specimens examined. – **BOLIVIA. Beni:** Ballivian, 30 min. arriba de Rurrenabaque en Rio Beni, Localidad Carmen Florida, 67°31'W, 14°29'S, 320 m, 09.IX.2000, Schmidt-Lebuhn 61 (GOET, LPB, US); Ballivian, comunidad Carmen Florida, upstream the Beni from Rurrenabaque, directly at the border of the Beni, 67°31'W, 14°29'S, 320 m, 09.IX.2000, Schmidt-Lebuhn 62 (GOET); Ballivian, Carmen Florida, Rio Beni, 7 km upstream from Rurrenabaque, Tacana Indian village, 67°30'W, 14°30'S, 320 m, 15.IX.1989, Williams 991 (US, USZ). **La Paz:** Iturralde, Comunidad Buena Vista, 67°33'W, 14°22'S, 05.IX.1997, Roca 457 (LPB); Iturralde, al suroeste de Tumupasa, primero arroyo en la carretera a San Buenaventura, 67°52'W, 14°10'S, 350 m, 31.VIII.2000, Schmidt-Lebuhn 46 (GOET, LPB, US); Iturralde, beside the first stream crossing the road from Tumupasa to San Buenaventura, 67°52'W, 14°10'S, 350 m, 31.VIII.2000, Schmidt-Lebuhn 47 (GOET); Iturralde, Tumupasa, Localidad Napashe, San Silvestre camino al rio Enadere, 67°52'W, 14°06'S, 19.VIII.1992, *Vargas* 1115 (US); Iturralde, Serrania Mamuque, 5 km SE of Tumupasa towards Rurrenaque, 350 m, 31.VII.1998, Wasshausen & Wood 2174 (GOET, LPB). **Pando:** Manuripi, ca. 20 km south of Rio Manuripi on the road to Chivé, 68°35'W, 11°58'S, 12.VIII.1982, Sperling & King 6582 (LPB, MO, NY, US).

BRASILIA. Acre: Highway Abuna to Rio Branco; km 242-246, vicinity of Campinas, 19.VII.1968, Forero, Coelho & Farias 6385 (NY, US); Perto de Rio Branco, 11.VII.1965, Pires 10077 (NY, US). **Amazonas:** Rio Purus, Rio Itaxi, Namorado Novo, watershed between Rio Curuquete & Rio Madeira at Abuna. Capoeira., 30.VII.1971, Prance & al. 14672 (M, NY).

PERU. Ayacucho: La Mer, Hacienda Luisiana, 73°44'W, 12°39'S, 585 m, 10.VI.1968, Dudley & Knox 10040 (US); La Mer, along Rio Catute, 2 km NW of Santa Rosa, 680 m, 03.VI.1975, Wasshausen & Encarnación 505 (US, USM). **Cuzco:** Convencion, District Echarati Las Malvinas, ca Chokoriari, Lower Urubamba River, 72°57'W, 11°51'S, 400 m, 18.IX.1997, Nunez & al. 20861 (GOET, USM); Convencion, subiendo a Ichiguato, Alto Urubamba, 850 m,

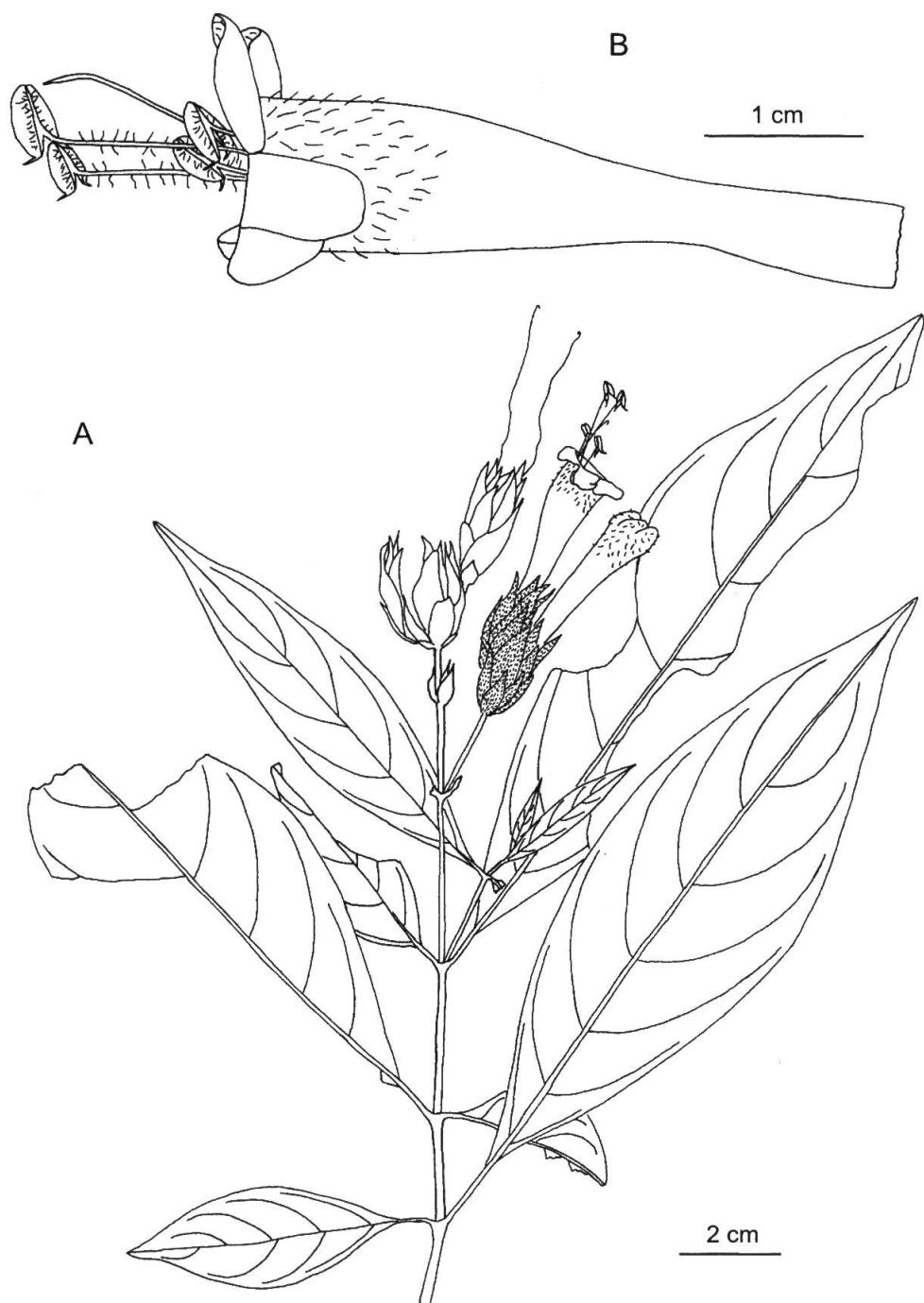


Fig. 14. – *Suessenguthia koessleri*. **A** Inflorescence [Schmidt-Lebuhn 52], **B** Corolla [Schmidt-Lebuhn 50]. [Drawing A. N. Schmidt-Lebuhn]

16.IV.1966, *Vargas* 17235 (US, CUZ); Convencion, along Rio Quimairi, a tributary of the Rio Apurimac, opposite and 4 km E of San Francisco de Apurimac, 750 m, 06.VI.1975, *Wasshausen & Encarnación* 520 (US); Convencion, along Rio Apurimac, opposite Hacienda Luisiana, 520 m, 02.VI.1975, *Wasshausen & Encarnación* 500 (NY, MO, US); Paucartambo, on the right side of the path from Pilcopata to the comunidad nativa Huacaria, 71°25'W, 12°53'S, 600 m, 13.VIII.2000, *Schmidt-Lebuhn* 37 (GOET, US); Paucartambo, Kosnipata: Pilcopata-Atalaya, 450-550 m, 05.VIII.1956, *Vargas* 11288 (US, CUZ). **Junin:** Satipo, Jauja, VIII.1940, *Ridoutt* s. n. (USM); Satipo, 20 km SW of Satipo, on road to Concepcion, 1000 m, 25.V.1979, *Wasshausen & Encarnación* 1100 (MO, US, USM); Satipo, 16 km SW of Satipo, on road to Concepcion, 850 m, 25.V.1979, *Wasshausen & Encarnación* 1097 (MO, US, USM); Province unknown, Rio Paucartambo Valley, near Perene Bridge, 700 m, 19.VI.1929, *Killip & Smith* 25271 (NY, US); Province unknown, Rio Negro, 800 m, 14.VIII.1960, *Woytkowski* 5794 (MO, NY, US, USM); Province unknown, La Merced, ca. 2000 ft., 10-24.VIII.1923, *Macbride* 5253 (US); Province unknown, Zentralperu, Ostseite der Anden, San Luis de Shuaro, Chancha-mayo, 750 m, 05.VI.1959, *Diers* 1231 (US). **Madre de Dios:** Manu National Park, Cocha Cashu Biological Station, 71°22'W, 11°52'S, 400 m, 19.VIII.1983, *Gentry* 43698 (NY, USM). **Pasco:** Oxapampa, Trail between Pozuzo and Yanahuanca, 75°33'W, 10°03'S, 820-1050 m, 14.III.1984, *Smith & al.* 6306 (US).

6. *Suessenguthia koessleri* Schmidt-Lebuhn, spec. nova (Fig. 14)

Holotype: **BOLIVIA. Pando:** Madre de Dios, cerca de Riberalta, 5 min abajo de Agua Dulce al borde de Rio Madre de Dios, 66°13'W, 11°00'S, 140 m, 05.IX.2000, *Schmidt-Lebuhn* 50 (GOET; iso-: LPB, US).

Frutex 1,5-4 m altus. Folia ad 23 cm longa (saepe 14-18 cm) et ad 7 cm lata (saepe 4-6 cm), elliptica vel paulum obovata, acuminata, ad basim in petiolum decurrentia. Margo foliorum integer, folia nervis lateralibus utroque latere (3-)5-8(-9). Inflorescentia solum basali-ter furcata, capitulis superioribus quasi seriatim dispositis. Internodia glabra. Capitulum corollis exceptis 2-3(-3,3) cm longum. Bracteae exteriore 0,8-2,5 cm longae, 0,3-0,5 cm latae, ovatae, apice rubrae, pilis ad 0,6 mm longis dense instructae. Bracteae interiores 1,7-3,0 cm longae, 0,4-0,7 cm latae, ellipticae vel ovatae, apice rubrae, dense pilis ad 0,6 mm longis instructae. Calycis segmenta (1,7-)2-2,2(-2,6) cm longa, 0,3-0,5 cm lata, margine membranaceo, pilis ad 0,6(-1,0) mm longis densiter instructae. Corolla rubra, corollae tubus 3,5-4,5 cm longus, 0,4-0,7(-0,9) cm latus, apice pilis ad 1 mm longis instructus. Lobi corollae 0,5-0,8 cm longi, 0,3-0,7 cm lati, recurvati. Margo loborum saepe irregularis.

Shrub, 1,5-4 m high. **Leaves** to 23 cm long (commonly 14-18 cm) and to 7 cm wide (commonly 4-6 cm), elliptic or slightly obovate. Leaf margin entire. Leaf apex slightly attenuate, the base gradually decurrent into the petiole. Primary veins (3-)5-8(-9) per side, in rare cases sparsely hairy on the lower side. **Inflorescence** branching mostly basally, in the upper portion bearing heads sympodially arranged one above the other, sometimes reduced to a single head. **Head** excluding corollae 2-3(-3,3) cm long. Outer bracts 0,8-2,5 cm long, 0,3-0,5 cm wide, apically tainted red, densely covered with appressed hairs up to 0,6 mm long; very rarely to 4,5 cm long, glabrous and resembling a tiny, apetiolate leaf. Inner bracts 1,7-3,0 cm long, 0,4-0,7 cm wide, ovate or elliptic, acute, apically tainted red, densely covered with appressed hairs up to 0,6 mm long. **Calyx:** sepals (1,7-)2-2,2(-2,6) cm long, 0,3-0,5 cm wide, with hyaline margin, densely covered with appressed hairs up to 0,6(-1,0) mm long. **Corolla** deep red, the tube 3,5-4,5 cm long, 0,4-0,7(-0,9) cm wide, apically moderately densely covered with hairs up to 1 mm long. Corolla lobes 0,5-0,8 cm long, 0,3-0,7 cm wide, the margin sometimes irregular, sometimes slightly emarginate, struck back or rolled back.

The name honours the biologist Dr. rer. nat. habil. Franz Kössler from Berlin on the occasion of his 70th birthday.

Distribution. – The known distribution is limited to the Bolivian departamento of Pando, where the species has been collected near Riberalta along the Río Madre de Dios and at one other place near the Río Madeira (Fig. 16).

Ecology. – *Suessenguthia koessleri* is a plant of the lowland rain forest and grows in the vicinity of rivers. The strong red colour and the reduced corolla lobes clearly indicate pollination by hummingbirds.

Discussion. – *Suessenguthia koessleri* is particularly well distinguished from the other species by its specialized corolla. Specimens of this species have until now mostly been determined as *S. leucerythra*. It does resemble *S. trochilophila* in the shape of the bracts, indumentum and

structure of the inflorescence, but differs in the size of the bracts (and therefore of the heads), floral colour and the reduced corolla lobes.

Specimens examined. – **BOLIVIA.** Pando: Madre de Dios, 5 min. downstream from Agua Dulce near the Rio Madre de Dios, $66^{\circ}13'W$, $11^{\circ}00'S$, 150 m, 05.IX.2000, Schmidt-Lebuhn 52 (GOET), Schmidt-Lebuhn 53 (GOET), Schmidt-Lebuhn 54 (GOET); Manuripi, from Riberalta 45 min. upstream the Rio Madre de Dios (in a very slow boat), $66^{\circ}05'W$, $10^{\circ}58'S$, 150 m, 06.IX.2000, Schmidt-Lebuhn 55 (GOET, LPB, US), Schmidt-Lebuhn 56 (GOET); Manuripi, Barranco de agua dulce (puerto), $66^{\circ}12'W$, $11^{\circ}00'S$, 140 m, 17.VIII.1985, Moraes 205 (LPB, NY); Manuripi, Rio Madre de Dios, approx. 20 min. by motorboat upstream from Riberalta, $66^{\circ}08'W$, $10^{\circ}55'S$, 220 m, 01.VIII.1982, Daly & al. 2038 (LPB, NY); Province unknown, W. bank of Rio Madeira, between Cachoeiras Misericordia and Madeira, 29.VII.1968, Prance & al. 6593 (NY).

Doubtful Specimens

Bolivia. Beni: Ballivian, Rurrenabaque, 1000ft., 1921, Rusby 850 (NY)

This plant shows some similarity to *S. multiseta*, a species one would not expect at this locality. It cannot, however, be decided whether it is a *Suessenguthia* at all because the specimen is in poor condition and corollas are lacking.

Bolivia. La Paz: Iturralde, El Porvenir a 32km cerca de San Buenaventura, $14^{\circ}16'55"S$ $67^{\circ}37'10"W$, 270 msnm, 06.IX.2000, Cahuaya & Gonzales 89 (LPB)

A peculiar specimen combining a general resemblance to *S. trochilophila* with small heads (cf. *S. koessleri*) and a regular thyrsoid inflorescence. At the moment no decision about its affiliations can be made.

Bolivia. La Paz: Larecaja, Guanai, 2000 ft., 01.V.1886, Rusby 1119 (US)

This may be a specimen of *S. barthleniana*, which would also fit the locality of collection. The inflorescence is very undeveloped and corollas are lacking.

Brasil. Estado do Pará: Monte Alegre, Colonia Japonesa, Mata do Assaizal, terreno argiloso à beira de igarapé, 22.IX.1953, Fróes 30316 (US)

This specimen labeled “*Sanchezia*” also does not contain corollas. In every other character it resembles *S. trochilophila*. Should it really be a member of that species, then this would be a considerable range extension for that taxon.

Fig. 15. – Distribution of *Suessenguthia multiseta* (□), *S. wenzelii* (★) and *S. vargasii* (●).

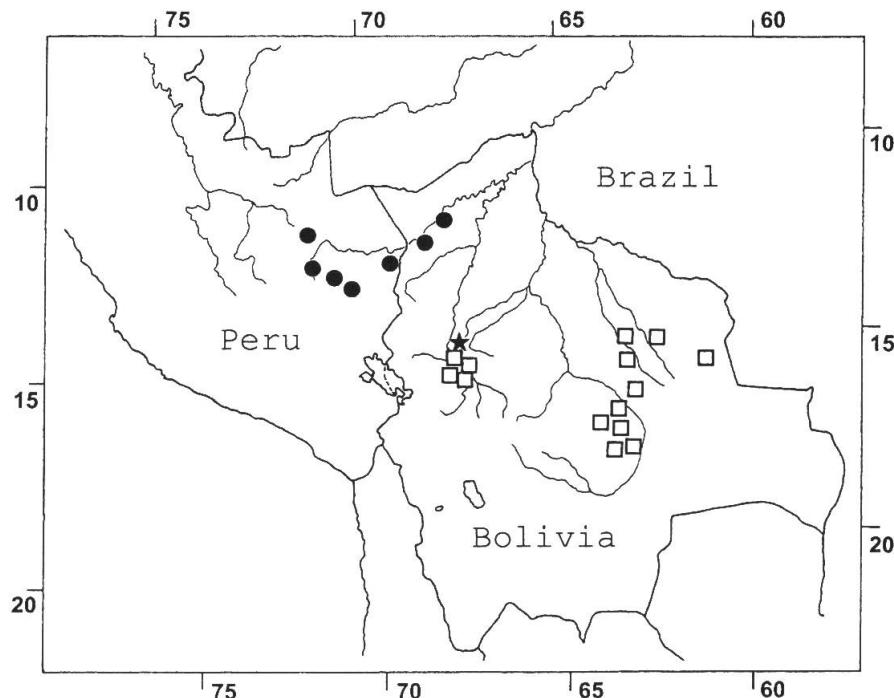
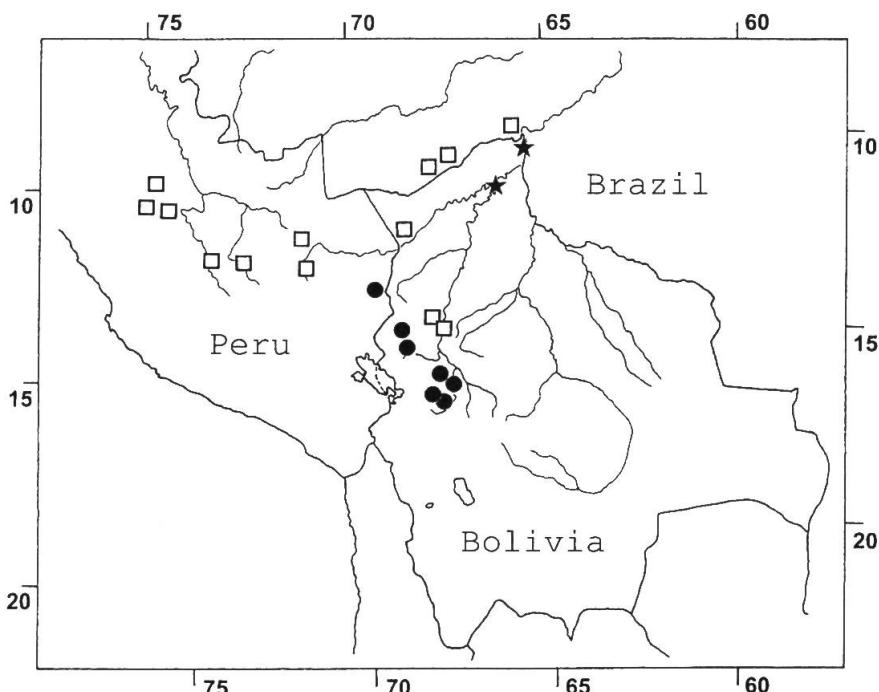


Fig. 16. – Distribution of *Suessenguthia trochilophila* (□), *S. koessleri* (★) and *S. barthleniana* (●).



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