

Monographiae Botanicae 109



Dariusz L. Szlachetko

Marta Kolanowska

Natalia Olędrzyńska

Diversity and Taxonomy of *Telipogon*
(Orchidaceae) in Colombia and
Adjacent Areas



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University of Wrocław
Botanical Garden
H. Sienkiewicza 23, 50-335 Wrocław, Poland
tel.: +48 713225957
email: mb@pbsociety.org.pl

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About the Authors

Dariusz L. Szlachetko¹, Marta Kolanowska^{2,3*}, Natalia Olędryńska¹

¹ Department of Plant Taxonomy and Nature Conservation, Faculty of Biology, University of Gdańsk, Gdańsk, Poland

² Department of Geobotany and Plant Ecology, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland

³ Department of Biodiversity Research, Global Change Research Institute AS CR, Brno, Czech Republic

*To whom correspondence should be addressed. Email: martakolanowska@wp.pl

ORCID:

Dariusz L. Szlachetko: <https://orcid.org/0000-0002-3210-7537>

Marta Kolanowska: <https://orcid.org/0000-0001-5347-5403>

Natalia Oldrzyńska: <https://orcid.org/0000-0002-8000-4647>

Abstract

The neotropical orchid genus *Telipogon* Kunth was established in 1815 and currently comprises more than 250 species. Representatives of this genus are generally epiphytic plants lacking pseudobulbs. The stem is either abbreviated or elongate and the leaves are conduplicate. Flowers are usually resupinate with small sepals and petals similar to the lip, but sometimes different. The gynostemium is covered by stiff or soft hairs. This monograph is a presentation of taxonomic diversity of the orchid genus *Telipogon* in Colombia and adjacent areas. Morphological characteristics of a total of 96 *Telipogon* species from Colombia are presented together with information about over 50 taxa found in neighboring countries. A brief discussion of an additional seven taxa described in Colombia, but insufficiently characterized, is also given. Illustrations of perianth segments of almost all national genus representatives are provided. Twenty-five species are described in this paper for the first time – *Telipogon alinae*, *T. bicallosus*, *T. bugalagrandei*, *T. castanedoi*, *T. chimborazoensis*, *T. cocuyensis*, *T. cuatrecasii*, *T. fassetti*, *T. fernandezii*, *T. flabellatus*, *T. garayi*, *T. hirsutus*, *T. huertasii*, *T. idroboi*, *T. killipi*, *T. kraenzlinianus*, *T. orozcoi*, *T. pasquillensis*, *T. schlimii*, *T. spathipetala*, *T. sumapazensis*, *T. tolimensis*, *T. trianae*, *T. trilabiatus*, and *T. verrucosus*. Several morphologically consistent groups are distinguished to facilitate identification of *Telipogon* representatives. Keys for determination of species within each group are provided.

Keywords

biodiversity; Andean region; tropics; forest; species identification

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DLS and MK: research designing; DLS, MK, and NO: conducting experiments and writing the manuscript.

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No competing interests have been declared.

1. INTRODUCTION

Pollinator selection is considered the main factor controlling the origin and maintenance of orchid species diversity (Johnson, 2006; Paulus & Gack, 1990; Schiestl, 2012). Whereas most zoogamic plants attract pollinators by producing nectar, numerous orchid species turn to forms of deception. Many produce flowers that look or smell like those of the nectariferous plants, and are simply misidentified by pollinating insects. However, a group of about 1,000 species has resorted to another, very intriguing way of attracting pollinators – sexual deception (pseudocopulation). Flowers of those orchids resemble female insects in form and often produce scents similar to the sex pheromones of these pollinators (van der Pijl & Dodson, 1966). The males are lured to mate with the flower and during the attempt to do so, the pollinia are attached to the insect body. When repeating the process on another plant of the same species, the pollen masses are transferred on the receptive surface. Apparently unique to orchids, pollination by sexual deception evolved independently in several unrelated taxa (Dressler, 1981; Singer et al., 2004). Typically, the process is highly specific and most often involves only one insect species (Mant et al., 2002).

Sexually deceptive orchids exhibit rapid, pollinator-driven radiation, with many species displaying subtle genetic differentiation, lack of postzygotic reproductive isolation, and significant prezygotic barriers. Recent studies have indicated that the pollinator shifts due to changes in flower morphology may be the main mechanism of speciation in these plants (Godden, 2002; Xu et al., 2012).

Sexually deceptive orchids in the New World belong to the subtribe *Telipogoninae* Schltr. The three genera *Trichoceros* Kunth, *Telipogon* Kunth, and *Stellilabium* Schltr. were categorized into this group based on the presence of four pollinia and a long, tape-like rostellum and tegula. Notably, the pollinia are not superposed in *Telipogoninae* as in almost all other vandoid genera, but laterally flattened as in epidendroid taxa. Particularly striking is the consistent difference in pollinia size depending upon whether they originate from the internal or external thecae. Other notable characteristics of *Telipogoninae* species include a bristled gynostemium and a compact external layer of pollen grains, which breaks away from the internally situated cells, resulting in the formation of a specific sheath round the main pollen mass (Szlachetko, 1995; Szlachetko & Mytnik-Ejsmont, 2009).

The results of genetic research suggest that all species of *Stellilabium* should be lumped in with *Telipogon* (Williams et al., 2005). In the same paper, Williams et al. (2005) indicated that the monospecific genus *Hofmeisterella* Rchb. f., characterized by a glabrous gynostemium with different morphology, should be included in the subtribe. Dressler (1981, 1993) classified this genus in *Telipogoninae*, while Szlachetko (1995) placed it in *Ornithocephalinae* Schltr.

The genus *Telipogon* in Colombia has not been revised. Here, we present the results of morphological studies on this genus. While we focus on species reported to occur in Colombia, we also include descriptions of known species from adjacent areas, including Panama, Ecuador, northern Peru, and Venezuela, as they may also grow in the study area. We hope that our monograph will be a useful tool for all students and scientists interested in taxonomy of orchids and conservation of this plant group.

2. MATERIAL AND METHODS

2.1. Morphological Study

Approximately 400 dried and liquid preserved herbarium specimens deposited or borrowed from AMES, BM, COL, CUVC, FMB, K, MO, NY, P, RENZ, RPSC, and W (Thiers, 2019) were examined according to standard procedures. Every studied specimen was photographed and the data from the label were recorded. The type of stem and leaves, as well as the inflorescence type and flower arrangement, were studied first. The details of inflorescence (form of the floral bracts and ovaries) were observed under a stereomicroscope. The perianth parts and gynostemium morphology were studied after flowers were softened in boiling water. Unfortunately,

the technique for affixion of herbarium material to the sheet prevented the proper examination of some specimens. According to this method, specimens were completely glued to paper. In orchids, numerous taxonomically important characteristics can be seen only after dissection of the flowers. Unfortunately, in such cases, the flower is accessible to study only after partly damaging herbarium sheet. In these cases, we opted against detailed examination of the flowers, leaving this for future students. Additionally, we examined numerous living plants both in situ and ex situ.

The most prognostic characteristics in identification of *Telipogon* species appear to be the following: (i) form of the petals and lip, number of veins, presence of anastomoses, covering of margins and lamina of petals and lip, form and covering of the lip callus; (ii) details of the gynostemium, i.e., presence or absence of protrusion below stigmatic surface, covering by various forms of outgrowths and their distribution patterns along the column part; and (iii) form of stem and characteristics of leaves. We aimed to define each species in this article using combination of the aforementioned characteristics, along with other morphological details.

2.2. Nomenclature

The electronic version of this monograph in Portable Document Format (PDF) represents a published work according to the *International Code of Nomenclature for Algae, Fungi, and Plants* (Turland et al., 2018), and hence the new names presented in the electronic version are effectively published under the *Code* for electronic edition alone. In addition, new names presented in this work that have been issued with identifiers from The International Plant Names Index (IPNI) will eventually be made available in the Global Names Index.

All type materials have been permanently filed into a recognized collection, with accession numbers provided.

2.3. Phylogenetic Reconstruction

Phylogenetic analyses were conducted using a nuclear ribosomal internal transcribed spacer (ITS) and four plastid markers (*matK*, *ycf1*, *trnL-trnF*, *psbA-trnH*). The DNA sequences were obtained from GenBank (<https://www.ncbi.nlm.nih.gov/>; Table 1) and aligned using SeaView v.4 (Gouy et al., 2009). Two separate data matrices were prepared for ITS and combined plastid (*matK*, *ycf1*, *trnL-trnF*, *psbA-trnH*) markers (Figure 1). The data were analyzed using maximum parsimony and Bayesian inference methods. Maximum parsimony analysis was performed in PAUP*4.0b10 (Swofford, 2000) with tree bisection and reconnection (TBR) branch swapping. All characteristics were treated as unrooted and equally weighted. Gaps were coded as “-”, and missing data were coded as “?”. For each analysis, 10,000 trees were computed. To evaluate the internal support of clades, the nonparametric bootstrapping method (Felsenstein, 1985) was used with 1,000 replicates.

Bayesian inference was performed using MrBayes v.3.1.2 (Ronquist & Huelsenbeck, 2003). The evolutionary models for each molecular marker were calculated using the “PhyML 3.0: New algorithms, methods and utilities” website (<http://www.atgc-montpellier.fr/phyml/>; Guindon et al., 2010). Based on the Akaike information criterion (AIC), the general time reversible model of substitution with gamma distribution (GTR + G) was chosen for each matrix. The posterior probabilities (PP) of clades were calculated by sampling trees from the PP distribution using Markov chain Monte Carlo simulations. Four chains were run for 20,000,000 generations. Trees were sampled in every 1,000 generations.

The results are given as 50% majority rule consensus trees. PP and bootstrap (BS) values are shown above the branches as PP/BS. Clades that collapsed in strict consensus are marked with dots.

Table 1 GenBank accession numbers of DNA sequences used in phylogenetic analysis.

Species name	ITS	<i>matK</i>	<i>ycf1</i>	<i>trnL-trnF</i>	<i>psbA-trnH</i>
<i>Hofmeisterella eumicroscopica</i>	DQ315823.1	AF350589.1	FJ563044.1	AF350668.1	FJ564610.1
<i>Telipogon acicularis</i>	DQ315837.1	DQ315896.1	FJ563408.1	DQ315922.1	-
<i>Telipogon ampliflorus</i>	DQ315850.1	FJ564870.1	FJ563490.1	-	FJ564343.1
<i>Telipogon andicola</i>	DQ315851.1	-	-	-	-
<i>Telipogon ariasii</i>	DQ315852.1	DQ315902.1	FJ563491.1	DQ315928.1	FJ564344.1
<i>Telipogon barbozae</i>	DQ315838.1	DQ315897.1	FJ563525.1	DQ315923.1	FJ564377.1
<i>Telipogon biolleyi</i>	DQ315853.1	DQ315903.1	FJ563492.1	DQ315929.1	FJ564345.1
<i>Telipogon boliviensis</i>	DQ315839.1	-	-	-	-
<i>Telipogon bombiformis</i>	DQ315854.1	FJ564866.1	FJ563485.1	FJ562372.1	FJ564338.1
<i>Telipogon bullpenensis</i>	DQ315840.1	DQ315898.1	FJ563526.1	DQ315924.1	FJ564378.1
<i>Telipogon butcheri</i>	DQ315855.1	DQ315904.1	FJ563483.1	DQ315930.1	FJ564336.1
<i>Telipogon caulescens 1</i>	DQ315857.1	FJ564917.1	FJ563551.1	-	FJ564403.1
<i>Telipogon caulescens 2</i>	DQ315856.1	DQ315905.1	FJ563479.1	DQ315931.1	FJ564332.1
<i>Telipogon chiriquensis</i>	DQ315858.1	FJ564864.1	FJ563481.1	-	FJ564334.1
<i>Telipogon chrysocrates</i>	DQ315859	-	-	-	-
<i>Telipogon costaricensis</i>	DQ315860.1	-	-	-	-
<i>Telipogon dalstromii</i>	DQ315861.1	DQ315906.1	-	DQ315932.1	-
<i>Telipogon falcatus</i>	DQ315862.1	-	-	-	-
<i>Telipogon frymirei</i>	DQ315863.1	-	-	-	-
<i>Telipogon glicensteinii</i>	FJ565186.1	FJ564707.1	FJ563135.1	-	FJ563991.1
<i>Telipogon griesbeckii 1</i>	FJ565378.1	FJ564872.1	FJ563494.1	-	-
<i>Telipogon griesbeckii 2</i>	DQ315865.1	-	-	-	FJ564333.1
<i>Telipogon hartwegii</i>	-	FJ565054.1	FJ563721.1	-	FJ564573.1
<i>Telipogon hystrix</i>	DQ315841.1	DQ315899.1	FJ563601.1	DQ315925.1	FJ564452.1
<i>Telipogon klotzscheanus</i>	DQ315866.1	FJ564918.1	FJ563552.1	-	FJ564404.1
<i>Telipogon maduroi</i>	DQ315867.1	FJ564867.1	FJ563486.1	-	-
<i>Telipogon medusae</i>	DQ315868.1	FJ564865.1	FJ563484.1	-	-
<i>Telipogon monteverdensis</i>	DQ315842.1	DQ315900.1	FJ563527.1	DQ31592.1	FJ564379.1
<i>Telipogon monticola</i>	DQ315869.1	FJ564873.1	FJ563495.1	-	-
<i>Telipogon nervosus 1</i>	-	HQ219263.1	-	-	-
<i>Telipogon nervosus 2</i>	DQ315870.1	DQ315907.1	FJ563447.1	DQ315933.1	FJ564299.1
<i>Telipogon obovatus</i>	FJ565603.1	FJ565093.1	FJ563760.1	FJ562404.1	FJ564612.1
<i>Telipogon olmosii</i>	DQ315871.1	FJ564874.1	FJ563496.1	-	FJ564348.1
<i>Telipogon panamensis</i>	DQ315872.1	DQ315908.1	FJ563482.1	DQ315934.1	FJ564335.1
<i>Telipogon parvulus 1</i>	AF350513.1	AF350592.1	-	-	FJ564350.1
<i>Telipogon parvulus 2</i>	AF239393.1	-	FJ563574.1	AF350671.1	-
<i>Telipogon parvulus 3</i>	DQ315873.1	-	-	-	-
<i>Telipogon personatus</i>	DQ315874.1	FJ563947.1	FJ563499.1	-	FJ564351.1
<i>Telipogon pogonostalix 1</i>	AF239392.1	-	-	-	-
<i>Telipogon pogonostalix 2</i>	FJ563197.1	AF350590.1	FJ562506.1	AF350669.1	FJ564058.1
<i>Telipogon pulcher</i>	DQ315875.1	DQ315910.1	FJ563421.1	DQ315936.1	-
<i>Telipogon seibertii</i>	DQ315876.1	DQ315911.1	-	DQ315937.1	-
<i>Telipogon smaragdinus</i>	DQ315844.1	FJ565034.1	FJ563699.1	-	FJ564551.1
<i>Telipogon urceolatus</i>	-	FJ564706.1	-	-	-
<i>Telipogon valenciae</i>	DQ315879.1	-	-	-	-
<i>Telipogon vargasii</i>	DQ315880.1	DQ315912.1	FJ563445.1	DQ315938.1	FJ564297.1
<i>Telipogon venustus 1</i>	FJ565183.1	FJ564703.1	FJ563132.1	-	FJ563988.1
<i>Telipogon venustus 2</i>	DQ315882.1	-	-	-	-
<i>Telipogon venustus 3</i>	DQ315881.1	-	-	-	-
<i>Trichoceros antennifer 1</i>	AF350512.1	AF350591.1	FJ563206.1	AF350670.1	FJ564067.1
<i>Trichoceros antennifer 2</i>	FJ565232.1	FJ564744.1	FJ563236.1	-	FJ564097.1
<i>Trichoceros antennifer 3</i>	DQ315883.1	FJ564953.1	FJ562900.1	-	FJ564561.1
<i>Trichoceros muralis 1</i>	DQ315884.1	-	-	-	-
<i>Trichoceros muralis 2</i>	FJ565468.1	FJ563966.1	FJ563613.1	DQ315939.1	FJ564464.1

3. RESULTS

3.1. Evolution of *Telipogon*

The results of phylogenetic analysis are presented in Figure 1. The topologies of ITS, plastid, and combined trees showed the occurrence of two separated groups within Telipogoninae – the first with *Trichoceros* species only (PP = 1, BS = 100), and the other comprising intermingled *Telipogon* and *Stellilabium* species (PP = 0.57 for ITS; PP = 1, BS = 100 for plastid data). The first group was characterized by the presence of small pseudobulbs with a vestigial leaf on the top, and the second by ebulbous (lacking pseudobulbs) plants. Clade B embraced various species of *Telipogon*, including *T. venustus*, *T. dalstroemii*, *T. falcatus*, and short-stemmed species. Support for this clade was high (PP = 1 and BS = 100) only for ITS analysis BS = 92.

The next large group presented in ITS and plastid dendrograms included the *T. nervosus* group (Clade A), two groups of *Stellilabium*, and Mesoamerican species of *Telipogon*. We did not detect any morphological synapomorphy in either dendrogram. The occurrence of this group was well supported only by the ITS tree (PP = 1, BS = 100); results of plastid analysis showed no BS support (PP = 1). Relationships within this clade were not clear, and incongruence appeared between ITS and plastid data. The ITS analysis showed a close relationship of Mesoamerican species to the genus *Stellilabium*, which was divided into two separate and well-supported (PP = 1, BS = 100) lineages. A sister lineage was seen in Clade A (PP = 1, BS = 100). The plastid tree presented a different topology, where *Stellilabium* representatives were split between Clade A taxa. This topology was not well supported.

We decided to maintain the genus *Telipogon* in its classical sense until more convincing data is published using restriction site-associated DNA sequencing (RADseq) regarding a wider spectrum of species, representing all morphological types.

3.2. Taxonomic Treatment

In this treatment, we counted 103 *Telipogon* species described or reported in Colombia. Seven of these species are insufficiently recognized, mostly known from single flowers or fragments of inflorescence without vegetative parts. We briefly discussed these and provided drawings of their flowers, if any material was available. Herein, Colombian species are numbered with Arabic numerals, and taxa from other countries with Roman numerals.

Poorly known species for which morphological data were obscure and which genetic relationships with other species remain unknown are listed in the section *Incertae sedis*.

3.2.1. *Telipogon* Kunth

in Humboldt, Bonpland & Kunth, Nov. Gen. Sp. 1: 269 (ed. fol.), 335 (ed. quart.). 1815 [1816].
TYPE: *Telipogon nervosus* (L.) Druce [= *Tradescantia nervosa* L.].

Epiphytic (rarely terrestrial), caespitose plants. Pseudobulbs absent. Stem slender, either abbreviated or elongate, new ones arising either from the bases or higher up on the older stems. Leaves 2–15 or more, conduplicate, articulate or deciduous, widest at base or above the middle. Inflorescences one–two, terminal or appearing so, slender, few- to many-flowered, usually one flower produced at a time. Flowers resupinate or occasionally non-resupinate, appearing triangular. Sepals small, somewhat hidden. Petals similar to the lip, or sometimes different. Gynostemium short, erect, relatively robust, swollen just above the base. Column part shorter than the anther, covered by stiff or soft hairs of various lengths. Column foot absent. Anther dorsal, erect, motile, dorsiventrally compressed, elliptic-cordate in outline, two-chambered. Pollinia four in two pairs, unequal in size and form, slightly dorsiventrally compressed, obovoid to obliquely obovoid, relatively soft. Caudicles amorphous, sticky. Apical clinandrium obscure. Stigma large, elliptic, concave. Rostellum elongate,

linear-subulate, more or less uncinata and twisted at the apex. Viscidium single, oblanceolate, thin, lamellate, uncinata and/or slightly twisted. Tegula single, linear with triangular apex, base sometimes twisted, thin, lamellate. Rostellum remnant linear-subulate, canaliculate on the upper surface, acute, rather rigid (Figure 2).

We propose division of the genus into five main morphological groups based on the sepals, petals, and lip morphology, as well as the form of stem and leaves. Most of these groups are further split into subgroups delimited by the venation of the lip and petals (simple vs. cross-venulate), lip callus (presence vs. absence, partial or complete fusion with the lip lamina, etc). Importantly, that these groups are artificial and were created to facilitate determination of species. These alliances do not necessarily reflect phylogenetic relations between species, as we discussed above.

KEY TO THE GROUPS:

1. Stem usually elongate, leaves thin, usually small, inflorescence much exceeding the leaves apex, peduncle sclerenchymatous, floral bracts usually small, inconspicuous 2
- 1* Stem abbreviated, fleshy, leaves thick, fleshy, usually large, inflorescence short, usually slightly exceeding the leaves, peduncle fleshy, floral bracts large, prominent 3
2. Leaves more or less lanceolate, widest below the middle **Subgenus *Telipogon***
- 2* Leaves spatulate to obovate, widest above the middle **Mesoamerican-group**
3. Flowers non-resupinate. Sepals and petals different in form and size. Petals and lip subsimilar **Subgenus *Brevicaules***
- 3* Flowers resupinate. Sepals and petals dissimilar or subsimilar, petals and lip dissimilar 4
4. Sepals and petals dissimilar. Petals transversely elliptic to suborbicular, different than lip. Lip more or less cordate or cordate-ovate, variously covered by different kinds of hairs, hispid, setose or ciliate ***Telipogon amicornum*-group**
- 4* Sepals and petals subsimilar. Lip more or less ovate-lanceolate to elliptic-lanceolate, with more or less cordate base, variously covered by different kinds of hairs, hispid, setose or ciliate ***Telipogon falcatus*-group**

3.2.1.1. Subgenus *Telipogon*

= *Telipogon* sect. *Benedicti* Braas, Orchidee (Hamburg) 36(2): 74. 1985.

= *Telipogon* subsect. *Alatiscapi* Braas, Orchidee (Hamburg) 32(6): 241. 1981, *nom. illeg.*

= *Telipogon* subsect. *Alatiscapi* Senghas & Braas, Orchideen (Schlechter) ed. 3, I/B(30): 1970. 1994. TYPE: *T. benedicti* Rchb. f.

Stem elongate, first creeping, later ascending, with adventitious roots in the lower part. Leaves numerous, not imbricating basally, short, widest near the base, thin or relatively thick, usually small. Peduncle terete, much exceeding the leaves, sometimes branching. Floral bracts short, inconspicuous. Petals and lip usually dissimilar (Figure 3).

Based on the lip details we can divide this group into four morphologically consistent subgroups including ca. 35 species.

KEY TO THE SPECIES GROUPS OF SUBGEN. *TELIPOGON*:

1. Lip with prominent callus at the base of the gynostemium ... ***Karsteae*-subgroup**
- 1* Lip ecallose or inconspicuous thickening at the base of the gynostemium 2
2. Lip as long as wide or longer ***Musaicus*-subgroup**
- 2* Lip wider than long 3
3. Lip sagittate to deltoid, widest at or near the base ***Klotzscheanus*-subgroup**
- 3* Lip transversely elliptic, widest near the middle ***Angustifolius*-subgroup**

KEY TO THE SPECIES OF SUBGEN. *TELIPOGON*:

1. Lip more or less suborbicular to oblong elliptic in outline, as long as wide or longer than wide 2
- 1* Lip obtriangular to transversely elliptic in general outline, usually wider than long 9
2. Lip with well-defined callus at the base, partially free 3
- 2* Lip ecallose or with somewhat thickened lip base, just below gynostemium 5
3. Lip 20 × 18 mm, petals 18 × 16 mm III. *T. karsteae*
- 3* Lip 8–10 mm long and wide, petals 9–10 mm long and similar in width 4
4. Lip with 11 or 13 simple veins, petals with nine or 11 simple veins 30. *T. boissierianus*
- 4* Lip with seven cross-venulate veins, petals with five cross-venulate veins 31. *T. valenciae*
5. Lip veins strongly cross-venulate 6
- 5* Lip veins simple, or scarcely anastomosing 7
6. Gynostemiums' upper lobe pilose with hyaline terminated hairs ac 1 mm long, lower part ciliate with prominent thickening 26. *T. pamplonensis*
- 6* Gynostemiums' upper part setose with ca. 2 mm long hairs, lower part densely villose, prominently protruding just above the base 25. *T. musaicus*
7. Flowers large, lip 23–27 mm long and wide, petals large, 21 × 23 mm 29. *T. bugalagrandei*
- 7* Flowers small, lip 6–9 mm long and similar width, petals 7.5–9 × 5–7.5 mm 8
8. Gynostemium glabrous, basally provided with obtriangular, glabrous callus, free from the lip 27. *T. venustus*
- 8* Gynostemium shortly pubescent on the upper surface, hairs ca. 1 mm long, more or less twisted, the lower part glabrous, part below stigma prominently protruding 28. *T. orozcoi*
9. Lip sagittate to deltoid, or in general outline obtriangular, widest at the base ... 10
- 9* Lip transversely elliptic to transversely rhombic, widest near the middle 21
10. Lip with cross-venulate veins 11
- 10* Lip with simple veins 14
11. Lip with small, V-shaped, thick and papillate callus at the base 2. *T. hastatus*
- 11* Lip ecallose 12
12. Veins of petals simple 10. *T. roseus*
- 12* Veins of petals anastomosing and branching 13
13. Main veins of the lip keeled, prominent 5. *T. ionopogon*
- 13* Main veins of the lip inconspicuous I. *T. sanchezii*
14. Sepals and petals densely furfuraceous, lip and petals veins verrucose 9. *T. verrucosus*
- 14* Sepals and petals not furfuraceous, lip and petals veins smooth 15
15. Lip with prominent, although small callus, cordate in outline and densely pubescent 1. *T. suffusus*
- 15* Lip ecallose or with very obscure callus at the base 16
16. Gynostemium 6–7 mm long 3. *T. klotzscheanus*
- 16* Gynostemium 3–4 mm long 17
17. Flowers large, petals 23–24 × 13–14 mm 4. *T. auritus*
- 17* Flowers medium-sized, petals up to 19 × 14 mm, usually smaller 18
18. Lip as long as wide 19

18* Lip wider than long	20
19. Inflorescence 10–19 cm long, lip 13- to 19-veined, gynostemium with lower margin below stigma much protruding	6. <i>T. trianae</i>
19* Inflorescence very short, ca. 1–3 cm long, lip 11- or 13-veined, gynostemium without any basal protruding	II. <i>T. penningtonii</i>
20. Lip with 7–11 veins, gynostemium densely setose in the upper surface, the lower surface densely hirsute	7. <i>T. bowmanii</i>
20* Lip with 15 veins, gynostemium densely ciliate all over with densely setose apical margin	8. <i>T. ospinae</i>
21. Lip with anastomosing veins	22
21* Lip with simple venations	25
22. Anastomosing veins only at the lip and petals base	12. <i>T. ochraceus</i>
22* Anastomosing veins in the major part of the lip and petals	23
23. Petals furfuraceous	22. <i>T. idroboi</i>
23* Petals glabrous	24
24. Gynostemium 3 mm long, clinandrium three-lobed, hirsute all over, with a bundle of dense setose spines over the anther and below stigma	18. <i>T. maldonadoensis</i>
24* Gynostemium ca. 4–6 mm long, clinandrium obscurely three-lobed, setose on the upper surface, ciliate below, with prominent protruding below stigma	23. <i>T. nervosus</i>
25. Petals furfuraceous	26
25* Petals not furfuraceous	28
26. Sepals glabrous, lip hispid below gynostemium	21. <i>T. gracilis</i>
26* Sepals and lip not as above	27
27. Sepals and lip furfuraceous, lip 21 × 23 mm, 15-veined	13. <i>T. cuatrecasasii</i>
27* Sepals furfuraceous, lip glabrous, 20 × 29 mm, 23-veined	16. <i>T. flabellatus</i>
28. Lip nearly as long as wide, with basal callus, in the form of longitudinal ridge, densely ciliate, papillate above	24. <i>T. fernandezii</i>
28* Lip ecallose, not as above	29
29. Sepals pubescent, petals densely and softly pubescent	14. <i>T. fassetti</i>
29* Sepals and petals glabrous	30
30. Gynostemium densely ciliate all over, with hirsute hairs ca. 1 mm long in the apical half	11. <i>T. angustifolius</i>
30* Gynostemium cover not as above	31
31. Lip with 23 veins	15. <i>T. cocuyensis</i>
31* Lip with (17)19 veins	32
32. Gynostemium upper part pubescent with ca. 2–3 mm long hairs, lower part hirsute-ciliate	17. <i>T. pachensis</i>
32* Gynostemium setose on the upper surface, the lower part densely hispid	33
33. Petals 18 mm long and wide, rhombic-ovate in outline, widest below the middle, symmetric, sessile	19. <i>T. killipi</i>
33* Petals 16–18 × 12–14.5 mm wide, very obliquely rhombic-ovate in outline, widest above the base, basally papillate, otherwise glabrous, basal margins ciliolate-papillate, apex acuminate, strongly asymmetric	20. <i>T. garayi</i>

3.2.1.1.1. *Klotzscheanus*-Subgroup

Lip sagittate to deltoid, widest at or near the base.

KEY TO THE SPECIES OF *KLOTZSCHEANUS*-SUBGROUP:

- 1. Lip with cross-venulate veins 2
- 1* Lip with simple veins 5
- 2. Lip with small, V-shaped, thick and papillate callus at the base 2. *T. hastatus*
- 2* Lip ecallose 3
- 3. Veins of petals simple 10. *T. roseus*
- 3* Veins of petals anastomosing and branching 4
- 4. Main veins of the lip keeled, prominent 5. *T. ionopogon*
- 4* Main veins of the lip inconspicuous I. *T. sanchezii*
- 5. Sepals and petals densely furfuraceous, lip and petals veins verrucose 9. *T. verrucosus*
- 5* Sepals and petals not furfuraceous, lip and petals veins smooth 6
- 6. Lip with prominent, although small callus, cordate in outline and densely pubescent 1. *T. suffusus*
- 6* Lip ecallose or with very obscure callus at the base 7
- 7. Gynostemium 6–7 mm long 3. *T. klotzscheanus*
- 7* Gynostemium 3–4 mm long 8
- 8. Flowers large, petals 23–24 × 13–14 mm 4. *T. auritus*
- 8* Flowers medium-sized, petals up to 19 × 14 mm, usually smaller 9
- 9. Lip as long as wide 10
- 9* Lip wider than long 11
- 10. Inflorescence 10–19 cm long, lip 13- to 19-veined, gynostemium with lower margin below stigma much protruding 6. *T. trianae*
- 10* Inflorescence very short, ca. 1–3 cm long, lip 11- or 13-veined, gynostemium without any basal protruding II. *T. penningtonii*
- 11. Lip with 7–11 veins, gynostemium densely setose in the upper surface, the lower surface densely hirsute 7. *T. bowmanii*
- 11* Lip with 15 veins, gynostemium densely ciliate all over with densely setose apical margin 8. *T. ospinae*

1. *Telipogon suffusus* Rchb. f. ex Kraenzl. (Figure 4, Figure 5)

Ann. Naturhist. Mus. Wien 33: 34. 1920. TYPE: Colombia. *F. C. Lehmann?* 9 (holotype, W-R! 30109; UGDA-DLSz! – drawing).

Stem not preserved in herbarium material, presumably elongate. Leaves 2–2.1 cm long, 0.4 cm wide. Flowers large. Floral bracts 2 mm long. Pedicel and ovary 18 mm long. Sepals similar, keeled abaxial. Dorsal sepal 15–17 mm long, 4–5.5 mm wide, concave, ovate-lanceolate, acute, three- or obscurely five-veined, veins simple. Lateral sepals 14 mm long, 4–5 mm wide, concave, obliquely oblong ovate, acute, three- or five-veined, veins simple. Petals 18–24.5 mm long, 12–18 mm wide, ovate-deltoid in outline, widest near the basal quarter, somewhat oblique, apex acuminate, margins papillate, base papillate and shortly hispid, veins 9–13, simple, basally elevated, occasionally anastomosing. Lip 18–25 mm long, 20.5–28 mm wide, broadly deltoid-obovate or shield-like in outline, widest just above broadly cuneate base, apex subacute, margins in the lower third ciliolate, papillate above, callus rather small, cordate, thick, densely pubescent, lamina papillate above callus, veins (17)23 or 25, simple, elevated in the lower quarter, papillate. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose, hairs ca. 3 mm long.

Ecology: No data.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia.** Ocaña. *F. C. Lehmann?* 9 (W-R!, UGDA-DLSz! – drawing); Sta Fe. *Coll?* 46 (W-R!, UGDA-DLSz! – drawing).

Notes: This species is easy to distinguish from other representatives of this group due to its prominent, but small, callus at the lip base. It may be misidentified as *Telipogon hastatus*, in which a similar callus can be observed, but unlike the latter, its lip and petal veins are simple (vs. cross-venulate).

Telipogon suffusus was considered by Bernal et al. (2016) a synonym of *T. patini*, which is characterized by cordate-ovate petals with 15 veins (vs. ovate-deltoid, 9–13-veined), a cordate-ovate, ecallose lip with 21 cross-venulate veins (vs. broadly deltoid-obovate with a small, cordate callus and 23 or 25 simple veins) and presence of setose hair only in the upper part of the gynostemium.

According to some data bases (e.g., “*Telipogon suffusus*,” 2022) this species is synonymous with *T. polyneuros*, which is characterized and discussed below. In our opinion the two species are different. *Telipogon polyneuros* has cross-venulate petals and lip veins (vs. veins simple in *T. suffusus*, occasionally anastomosing on petals only), lip callus ovate-triangular, centrally concave, rim hispid, margins ciliate in the lower third (vs. callus cordate, thick, densely pubescent) and shorter hairs covering gynostemium (1 mm vs. 3 mm). Based on the leaves' size we presume that *T. suffusus* represents long-stem group. Unfortunately, no trace of stem remained in the type material stored at W. *Telipogon polyneuros* represents species with abbreviated stem. Its leaves are ca. twice larger than in *T. suffusus*.

2. *Telipogon hastatus* Rchb. f. (Figure 6)

Linnaea 41: 69. 1877[1876], TYPE: Colombia. A. Bruchmüller s.n. (holotype, W-R! 30502; UGDA-DLSz! – drawing).

Stem not preserved in herbarium material, most probably elongate. Flowers large. Floral bracts ca. 5 mm long, ovate-lanceolate, acute. Pedicel and ovary 20 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 13 mm long, 3 mm wide, concave, ovate-lanceolate, acuminate, three-veined, veins simple, scarcely anastomosing. Lateral sepals 13 mm long, 3 mm wide, concave, obliquely ovate-lanceolate, acute, three-veined, veins simple. Petals 24 mm long, 9 mm wide, oblong ovate-trullate in outline, widest above basal third, somewhat oblique, apex acuminate, margins hispid in the lower half, base narrowly cuneate, shortly hispid, veins seven, simple, anastomosing. Lip 20 mm long, 19 mm wide, triangular-ovate or shield-like in outline, widest just above broadly cuneate base and here margins hispid, apex acute, papillate above the gynostemium base, callus small, V-shaped, thick, papillate, veins 23, densely anastomosing, elevated in the lower fifth, papillate. Gynostemium not seen.

Ecology: Epiphyte.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Norte de Santander:** Ocaña. A. Bruchmüller s.n. (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon hastatus*, as well as *T. ionopogon* and *T. roseus*, are characterized by cross-venulate lip veins. Unlike the former, *T. ionopogon* and *T. roseus* exhibit ecallose lips.

3. *Telipogon klotzschianus* Rchb. f. (Figure 7–Figure 9)

Linnaea 22: 851–852. 1849 (1850), TYPE: Venezuela. J. W. K. Moritz 1614 (holotype, W-R! 30505; isotypes, AMES!, KI; UGDA-DLSz! – drawing).

Stem elongate, erect, ascending. Leaves numerous, up to 3 cm long and 0.6 cm wide, up to 1.5 cm apart, lanceolate to oblong lanceolate, amplexicaul, acute, coriaceous. Inflorescence – peduncle 10–15 cm long, raceme 10 cm long, laxly up to 10-flowered. Flowers large, sepals green or greenish, petals and lip yellow, yellow-greenish with basal part more or less purple, veins red to maroon-red. Floral bracts 4–5 mm long, ovate, acute. Pedicel and ovary 20 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 17 mm long, up to 4 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 15 mm long, up to 4 mm wide, concave, obliquely ligulate-lanceolate, acute, five-veined, veins simple. Petals 20–24 mm long, 12–14 mm wide, oblong ovate-lanceolate in outline, base

cuneate, apex acute-acuminate, margins ciliolate in the lower third, veins seven, simple. Lip 22 mm long, 15–20 mm wide, deltoid-ovate, somewhat concave, shortly acuminate at the apex, no prominent callus seen, but the gynostemium basal part gradually disappearing on the lip, margins densely hispid longwise, lamina ciliate in the lower third, otherwise glabrous, veins 19, simple. Gynostemium ca. 6–7 mm long, relatively slender, apically hispid, hispid hairs ca. 0.6–1 mm long, basally hispid with hairs ca. 0.2 mm long, basal margin below stigma protruding.

Ecology: Epiphyte in wet montane and cloud forest at the altitude of 1,700–3,600 m. Flowering since February to July.

Distribution: Colombia, Venezuela.

Representative specimens: – COLOMBIA. **Boyacá**: Alt. 1,800–3,600 m. May 9, 1917. *O. Renz 3039* (RENZ!); **Cundinamarca**: N von Monserrate gegen Bogotá. Alt. 1,700–2,800 m. February 16, 1937. *O. Renz 3041* (RENZ!, UGDA-DLSz! – drawing). VENEZUELA. [**Aragua**]: Colonia Tovar. *J. W. K. Moritz 1614* (AMES!, K!, W-R!, UGDA-DLSz! – drawing); **Merida**: Lomo Bonito zwischen Guaraque und Río Negrotal. Alt. 2,000 m. July 19, 1949. *O. Renz 5857* (RENZ!); Chachopo. Alt. 2,300 m. March 15, 1949. *O. Renz 5559* (RENZ!).

Notes: This species is characterized by a long, slender gynostemium, about twice as long as that of other species of this group. As in *Telipogon trianae*, its basal margin below the stigmatic surface is protruding. In *T. trianae*, however, the gynostemium is densely hispid-setose all over (vs. hispid). A notable characteristic observed in *T. klotzscheanus* is a gynostemium with a basal part that disappears gradually on the lip lamina.

In our opinion, *T. klotzscheanus* is a complex taxon that requires further comprehensive study, especially to evaluate the consistency of morphological and genetic variation within the species.

4. *Telipogon auritus* Rchb. f. (Figure 10)

Linnaea 41: 69. 1877[1876], TYPE: Colombia. *A. Bruchmüller s.n.* (holotype, W-R! 30520; UGDA-DLSz! – drawing).

Stem not preserved in herbarium material. Inflorescence three–four-flowered, terete. Flowers large. Floral bracts 5 mm long, cucullate, ovate, acute. Pedicel and ovary 15–20 mm long, non-alate. Sepals subsimilar, keeled abaxial. Dorsal sepal 15–18 mm long, 3.5–4 mm wide, concave, broadly lanceolate, acuminate, three-veined, veins simple. Lateral sepals 15–18 mm long, 4–4.5 mm wide, concave, ovate-lanceolate, long-acuminate, somewhat oblique, three-veined, veins simple. Petals 23–24 mm long, 13–14 mm wide, oblong trullate-ovate in outline, widest above the basal quarter, sessile, acuminate at the apex, veins 10, simple. Lip 20–22 mm long, 18 mm wide, broadly obovate, widest above broadly cuneate base, acute at the apex, callus obscure, papillate, veins 17, simple, slightly keeled and papillate in the lower quarter, margins papillate. Gynostemium about 3–4 mm tall, rather slender, clinandrium obscurely three-lobed, densely ciliate on the lower surface, pubescent on the upper one, hairs ca. 1.5 mm long, with hyaline apex.

Ecology: No data.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Norte de Santander**: Ocaña. *A. Bruchmüller s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: According to some databases (e.g., <https://www.tropicos.org/>) *Telipogon auritus* is conspecific with *T. nervosus*. It has relatively large flowers with petals measuring 23–24 × 13–14 mm and a lip of 20–22 × 18 mm, reminiscent of *T. klotzscheanus*. However, *T. klotzscheanus* has a longer gynostemium with a protruding lower part (6–7 mm vs. 3–4 mm). The flowers of *T. nervosus* are approximately half the size of those of *T. klotzscheanus*, exhibiting a lip and petals with cross-venulate veins (vs. veins simple); the lip is widest just below the middle (vs. widest above a broadly cuneate base).

5. *Telipogon ionopogon* Rchb. f. (Figure 11–Figure 14)

Linnaea 41: 27. 1877[1876]. TYPE: Ecuador. *H. Krause s.n.* (holotype, W-R?).

Stem 8–10 cm long, erect, elongate. Leaves six–eight or more, up to 4 cm long and 1.5 cm wide, elliptic-lanceolate, subacute to subobtusate, apart ca. 0.5–1 cm. Inflorescence – peduncle up to 10 cm long, terete, raceme 2–7 cm long, laxly two–eight-flowered. Flowers 30 mm in diameter, sepals greenish, lip and petals yellow-brownish to dull-greenish, petals with red veins in the lower part, dull green above, lip with dense net of maroon-red to brownish-green veins. Floral bracts 5–7 mm long, cucullate, ovate, acute. Pedicel and ovary 15–25 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 14–15 mm long, 4–7 mm wide, concave, ovate, acute, three- or five-veined, veins simple. Lateral sepals 14–15 mm long, 4–7 mm wide, concave, obliquely ovate-lanceolate, acute, three- or five-veined, veins simple. Petals 15–21 mm long, 10–15 mm wide, broadly ovate in outline, somewhat oblique, base cuneate, apex acute, margins glabrous, veins nine, anastomosing and branching. Lip 13–22 mm long, 15–24 mm wide, broadly obovate-triangular in outline, somewhat concave in the centre, apex obtuse, base hispid, margins in the basal third ciliate, otherwise glabrous, ecallose, veins 15–19, main veins keeled, cross-venulate all over. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose, hairs ca. 1.5 mm long, almost glabrous on the ventral surface.

Ecology: Terrestrial or epiphytic on roadbanks and steep slopes at the altitude of 1,900–2,700 m. Flowering in February, April and September.

Distribution: Ecuador, Colombia, Venezuela.

Representative specimens: – COLOMBIA. *Sine loc.* L. A. Garay 750 (AMES!, UGDA-DLSz! – drawing). ECUADOR. **Loja:** Loja. *H. Krause s.n.* (W-R?); The same loc., *H. Krause 14* (W-R!, UGDA-DLSz! – drawing); Cajanuma. February 1883. *H. Poortmann 516* (P!, UGDA-DLSz! – drawing). VENEZUELA. **Merida:** Las Quebraditas. Alt. 2,700 m. April 28, 1949. *O. Renz 1585* (RENZ!); **Tachira:** Las Delicias. Alt. 1,900 m. September 2, 1951. *O. Renz 7320* (RENZ!).

Notes: Three species in this group, *Telipogon ionopogon*, *T. hastatus*, and *T. roseus*, exhibit lips with cross-venulate veins. *Telipogon ionopogon* and *T. hastatus* have anastomosing petals as well, but in the former, the lip is ecallose.

When describing *T. ionopogon*, Reichenbach cited *Krause s.n.* collection. Therefore, it should be treated as the type specimen. Unfortunately, we were unable to locate it in the herbarium of Reichenbach in Vienna. The only other specimen of *T. ionopogon* certainly examined by Reichenbach and deposited in Vienna is *Krause 14*. We believe that Reichenbach mistakenly missed the number, and in fact the type specimen is *Krause 14*.

I. *Telipogon sanchezii* Dodson & Hirtz (Figure 15)

Nat. Ecuador Orchid. *Aa-Deacula* 5: 1185. 2004. TYPE: Ecuador. A. Hirtz 7081 (holotype, RPSC!).

Stem up to 15 cm long, erect, elongate, branching near the apex. Leaves up to 5 cm long and 1.8 cm wide, elliptic, acute, narrowing basally. Inflorescence – peduncle up to 12 cm long, terete, raceme 6 cm long, laxly up to 10-flowered. Flowers pale yellow with faint red-brown vein-lines on the petals and lip, gynostemium bright pink. Floral bracts 6 mm long, cucullate, ovate-triangular, acute. Pedicel and ovary 20 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 10 mm long, 3 mm wide, concave, ovate, acute, veins simple. Lateral sepals 10 mm long, 3 mm wide, concave, obliquely ovate, acute, veins simple. Petals 15 mm long, 12 mm wide, broadly ovate in outline, somewhat oblique, apex acute, veins nine to 11, anastomosing. Lip 15 mm long, 20 mm wide, broadly obovate-triangular in outline, somewhat concave in the centre, apiculate, ecallose, veins 15 to 21, cross-venulate all over. Gynostemium swollen on the underside, clinandrium prominently three-lobed, with a fringe of setose spines forming a line on each side and a bundle of spines over the anther with an additional tuft of spines at the apex, below stigma.

Ecology: Terrestrial plant growing at the altitudes of 800–1,200 m. Flowering in October.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Morona-Santiago**: Limón. Alt. 1,000 m. October 22, 1999. A. Hirtz 7081 (RPSC!).

Notes: Dodson (2004) described *Telipogon sanchezii* in comparison to the Ecuadorian *T. ionopogon*, and stated that the flowers of the new entity “are much larger, and are brilliant yellow, with red-brown reticulations covering the lip and the base of petals. It lacks distinct vein-line.” In our opinion, however, the flowers of both species are similar in size, and it is difficult to point out grounds for their separation, except for sharpness of the lip and petal veins seen in fresh flowers. The only clear demarcation character observable in dried materials is keeled or missing veins of the lip. Whether or not both species should keep their current status requires further investigation.

6. *Telipogon trianae* Szlach. & Kolan., sp. nov. (Figure 16, Figure 17)

TYPE: Colombia. J. J. Triana 1471 (holotype, AMES! 26091; UGDA-DLSz! – drawing).

Species similar to *Telipogon klotzscheanus*, *distinguished by broadly ovate, seven-veined petals, and deltoid-ovate lip and hispid-setose gynostemium with lower margin of stigma much protruding.*

Stem 13 cm long, erect, elongate, ascending. Leaves numerous, up to 2.7 cm long and 0.6 cm wide, oblong lanceolate, acute. Inflorescence – peduncle 7–12 cm long, raceme 3–7 cm long, four–nine-flowered. Flowers medium-sized. Floral bracts 4–5 mm long, cucullate, ovate, acute. Pedicel and ovary 17–20 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 10–12 mm long, 4 mm wide, concave, oblong ovate, acute, three-veined, veins simple. Lateral sepals 10–12 mm long, 4 mm wide, concave, obliquely oblong ovate, acute, three-veined, veins simple. Petals 14 mm long, 8.5–11 mm wide, broadly ovate in outline, oblique, base cuneate, apex cuspidate, margins glabrous, veins six, simple. Lip 13–14 mm long and wide, broadly obovate-elliptic in outline, widest above basal third, cochleate, apex subacute, margins in the basal third papillate and glabrous above, ecallose, veins 13–19, simple, main veins keeled in the basal third. Gynostemium 3.5 mm long, erect, clinandrium three-lobed, densely hispid-setose all over, lower margin of stigma much protruding.

Etymology: Dedicated to J. J. Triana (1834–1890), an eminent collector of Colombian plants.

Ecology: No data.

Distribution: Colombia.

Representative specimens: – COLOMBIA. *Sine loc.* J. J. Triana 1471 (AMES!, UGDA-DLSz! – drawing); *Sine loc.* 1853. J. J. Triana 1471/71 (P!, UGDA-DLSz! – drawing).

Notes: *Telipogon trianae* resembles *T. klotzscheanus* due to the elongated lower part of the gynostemium (just below stigma). These species can be distinguished by the cover of the gynostemium (hispid-setose in *T. trianae* vs. hispid in *T. klotzscheanus*) and connection between the lip and gynostemium. The other species that appears similar to *T. trianae* is *T. penningtonii* from Ecuador. In both species, the lip is almost as long as it is wide, but the former is characterized by a much longer inflorescence (10–19 cm vs. 1–3 cm), a lip with more veins (13–19 vs. 11–13), and a gynostemium with projections.

7. *Telipogon bowmanii* Rchb. f. (Figure 18)

Linnaea 41: 69. 1877 (1876). TYPE: Colombia [New Granada]. *D. Bowmann s.n.* (holotype, W-R! 30518; UGDA-DLSz! – drawing).

Stem 7–18 cm long, erect, elongate, ascending. Leaves numerous, up to 3.5 cm long, 0.6–1.3 cm wide, elliptic- or ligulate-lanceolate, acute to subobtuse, ca. 1 cm apart. Inflorescence – peduncle 12–35 cm long, terete, raceme up to 7 cm long, laxly two–nine-flowered. Flowers rather large, yellow or yellow-greenish, basally with

purplish haze, petals with purplish net of veins at the base, green above, lip with green or maroon-red main veins with red-maroon anastomoses. Floral bracts 5–6 mm long, cucullate, ovate, acute. Pedicel and ovary 12–22 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 11–16 mm long, 3–5 mm wide, concave, ovate to ligulate-lanceolate, acute, three- or five-veined, veins simple. Lateral sepals 9–16 mm long, 3–5 mm wide, concave, ligulate-lanceolate, acute, somewhat oblique, three- or five-veined, veins simple. Petals 14–19 mm long, 8.5–14 mm wide, ovate-deltoid in outline, widest just above the base, base attenuate towards short claw, acuminate, margins ciliate in the lower fifth or third, veins seven to 11, simple. Lip 13–18 mm long, 14–22 mm wide, transversely elliptic-deltoid, widest above the cuneate base, obtuse at the apex, ecallose, papillate just below the gynostemium, margins ciliate in the lower third, otherwise glabrous or papillate, veins 19 to 25, simple. Gynostemium 4 mm long, densely setose in the upper surface, setose hairs ca. 2 mm long, the lower surface densely hirsute, clinandrium obscurely three-lobed.

Ecology: Epiphyte in premontane and montane forests. Flowering in March and July.

Distribution: Colombia.

Representative specimens: – COLOMBIA. *Sine loc.* *D. Bowmann s.n.* (W-R!, UGDA-DLSz! – drawing). **Cundinamarca:** Near Bogotá. 19 July 1943. *M. Schneider* 6 (AMES!, UGDA-DLSz! – drawing); The same loc. March 5, 1944. *M. Schneider* 6 (AMES!, UGDA-DLSz! – drawing).

Notes: *Telipogon bowmanii* resembles its Colombian congener *T. ospinae*. In the former species, the lip is seven- to 11-veined (vs. 15-veined), and the gynostemium is densely setose in the upper surface, with the lower surface densely hirsute (vs. gynostemium densely ciliate all over with a densely setose apical margin). The species can be distinguished by flower color – *T. bowmanii* flowers are yellow or yellow-greenish with a purplish haze and petals with purplish net of veins at the base and green above. The lip contains green or red-maroon main veins and anastomoses. The flowers of *T. ospinae* have green sepals and green-yellowish petals and lips.

II. *Telipogon penningtonii* Dodson & R. Escobar (Figure 19, Figure 20)

Icon. Pl. Trop. 2(6): pl. 594. 1989. TYPE: Ecuador. *P. J. Grubb & al.* 1256 (holotype, K; isotype, AMES!; UGDA-DLSz! – drawing).

Stem ca. 3–4 cm long, erect, elongate, ascending. Leaves seven in the type specimen, 0.8–2 cm long, 0.6–0.8 cm wide, elliptic-orbicular, coriaceous, acute, ca. 0.3 cm apart. Inflorescence 1–3 cm long, terete, somewhat flattened, laxly two–three-flowered. Flowers 20 cm in diameter, sepals whitish with green stripes, petals yellow with purple stripes, lip yellow with purple red-vine lines, gynostemium purple-brown with purple-brown spines. Floral bracts 3–4 mm long, cucullate, ovate, acute. Pedicel and ovary 12–15 mm long, terete. Sepals subsimilar, keeled abaxial. Dorsal sepal 10 mm long, 3 mm wide, concave, ovate-lanceolate, subacute, three-veined, veins simple. Lateral sepals 10 mm long, 3 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 14 mm long, 7–8 mm wide, broadly ovate in outline, widest above basal third, base cuneate, sparsely hirsute, apex acuminate, margins papillate, veins 5, simple. Lip 13–15 mm long and wide, transversely triangular-obovate to shield-like, widest at the base, papillate in the lower quarter around gynostemium, base truncate, apex subobtuse, ecallose, margins ciliate, veins 11 or 13, simple. Gynostemium 3 mm long, slender, erect, hirsute with some spines 1.5 mm long at the apex of clinandrium and below stigma.

Ecology: Epiphytic in montane wet forest at the altitudes of 1,800–1,900 m.

Flowering in March and December.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Loja:** Above San Pedro, between Loja and Vilcabamba. Alt. 1,800 m. March 16, 1984. *S. Dalström* 788 (Dodson & Dodson, 1989). **Napo:** 1 km NE of Borja. Alt. 1,900 m. December 8, 1960. *P. J. Grubb & al.* 1256 (AMES!, K, UGDA-DLSz! – drawing).

Notes: This species has not been reported in Colombia, but it is known in Ecuador. It appears similar to *Telipogon trianae*, as both exhibit lips more or less as long as they are wide. *T. trianae* has much longer inflorescences (10–19 cm vs. 1–3 cm), more lip veins (13–19 vs. 11–13), and a gynostemium with prominent protrusion below the stigma.

8. *Telipogon ospinae* Dodson & Escobar

Orquideología 18(3): 244–246. 1993. TYPE: Colombia. *M. Ospina* H. 231 (holotype, JAUM).

Stem ca. 12 cm long. Leaves numerous, 1.8 cm long and 0.5 cm wide, oblong to oblong-lanceolate, obtuse, well separated along stem. Inflorescence ca. 30 cm long, terete, laxly few-flowered. Flowers medium-sized, sepals green, petals and lip green-yellowish. Floral bracts 5 mm long, cucullate, ovate, acute. Sepals similar, keeled abaxial. Dorsal sepal 10 mm long, 4 mm wide, concave, ovate-lanceolate, acute, three-veined. Lateral sepals 10 mm long, 4 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three-veined. Petals 15 mm long, 10 mm wide, elliptic-rhombic in outline, somewhat oblique, acute, glabrous but base minutely hirsute, veins 11, simple. Lip 15 mm long, 20 mm wide, rhombic-deltoid, shortly acute at the apex, ecallose, base somewhat thickened and papillate, veins 15, simple. Gynostemium 4 mm long, densely ciliate all over with densely setose apical margin.

Ecology: Terrestrial in montane forest at the altitude of about 2,550 m. Flowering in March.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Mpio. Yarumal. Alto de Ventanas. Alt. 2,550 m. 1968. *M. Ospina* H. 231 (JAUM); El Manicomio. Alt. 2,550 m. March 15, 1989. *S. Dalström & al. sub Escobar 4025* (RPSC).

Notes: *Telipogon ospinae* is similar in habit and flower size to its Ecuadorian congener *T. bowmanii*. Leaves of the former are somewhat smaller (1.8 × 0.5 cm vs. up to 3.5 × 0.6–1.3 cm), and flowers are more colorful (yellow or yellow-greenish with purplish haze and veins vs. yellow-greenish). These species can be distinguished by the number of lip veins (15 vs. 7–11) and cover of the gynostemium. In *T. ospinae*, the gynostemium is densely ciliate all over with a densely setose apical margin, whereas in *T. bowmanii*, it is densely setose on the upper surface, and densely hirsute on the lower surface.

9. *Telipogon verrucosus* Szlach. & Kolan., sp. nov. (Figure 21)

TYPE: Colombia. *R. Jaramillo & al. 7162* (holotype, COL! 281163; UGDA-DLSz! – drawing).

Species similar to Telipogon ospinae, distinguished by densely furfuraceous tepals, petals being verrucose along simple veins, obtriangular lip and densely setose gynostemium.

Stem ca. 25 cm long, erect, elongate, ascending. Leaves numerous, up to 2 cm long and 0.7 cm wide, narrowly lanceolate, aristate. Inflorescence – peduncle 23 cm long, branching, laxly 6–10-flowered. Flowers rather large for the group. Floral bracts 6 mm long, cucullate, ovate, acute. Pedicel and ovary 22 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 15 mm long, 3.5–4 mm wide, concave, lanceolate, acute, densely furfuraceous, three-veined, veins simple. Lateral sepals 13 mm long, 3 mm wide, concave, linear-lanceolate, aristate, somewhat oblique, densely furfuraceous, three-veined, veins simple. Petals 26 mm long, 14 mm wide, obliquely deltoid-ovate in outline, widest above basal third, apex acuminate, densely furfuraceous, veins nine, verrucose along simple veins. Lip 22 mm long, 26 mm wide, obtriangular, widest at the truncate base, apex shortly cuspidate, ecallose, veins 19, verrucose along simple veins, otherwise smooth. Gynostemium 5 mm long, erect, densely setose all over, setae ca. 2.5 mm long.

Etymology: An allusion to the presence of verrucose outgrowths on petals and lip.

Ecology: Growing in the subandean forest dominated by *Mauria* (Anacardiaceae), *Clusia* (Clusiaceae) and Melastomataceae at the altitude of ca. 2,180–2,400 m. Flowering in July and October.

Distribution: Colombia, Venezuela.

Representative specimens: – COLOMBIA. **Cundinamarca**: Mpio. San Bernardo. Cordillera Oriental. Vereda Santa Rita. Hacienda El Placer. Alt. 2,180 m. July 27, 1981. *R. Jaramillo & al. 7162* (COL!, UGDA-DLSz! – drawing). VENEZUELA. Trujillo. Alt. 2,400 m. October 20, 1947. *O. Renz 4416* (RENZ!).

Notes: This species is similar in habit to *Telipogon ospinae*, but its sepals and petals are densely furfuraceous, petals verrucose along simple veins (vs. sepals and petals glabrous), and lip obtriangular and verrucose along veins (vs. glabrous). The gynostemium of this species is densely setose all over (vs. densely ciliate all over with a densely setose apical margin only).

10. *Telipogon roseus* Garay (Figure 22)

Canad. J. Bot. 34: 259. 1956. TYPE: Colombia. *M. L. Grant 9743* (holotype, AMES!; isotype, US! 2106914; UGDA-DLSz! – drawing).

Stem ca. 11 cm long. Leaves 15, up to 1.5 cm long and 0.4 cm wide, ligulate-lanceolate, acute, apart ca. 0.5–1 cm. Inflorescence – peduncle up to 9 cm long, raceme 5 cm long, two–four-flowered. Flowers large, sepals green, petals yellow with maroon net of veins, lip yellow-maroon with prominent maroon net of veins. Floral bracts 5 mm long, cucullate, ovate, acute. Pedicel and ovary 20 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 11 mm long, 3 mm wide, concave, lanceolate, subobtuse, sparsely hispid, three-veined, veins simple. Lateral sepals 10 mm long, 3–4 mm wide, concave, obliquely lanceolate, acute, sparsely hispid, three-veined, veins simple. Petals 16 mm long, 7 mm wide, ovate-deltoid in outline, widest above basal third, somewhat oblique, base shortly pubescent, sparsely hispid above, apex acute, margins glabrous, veins nine, simple. Lip 15 mm long, 20 mm wide, triangular in outline, apex acute, base truncate, papillate, margins ciliate, ecallose, veins 19, cross-venulate in lower third, with numerous, abortive lateral veins in the center. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose on the upper surface, hairs ca. 3 mm long, with numerous setose hairs on the ventral surface.

Ecology: Lithophyte in shrubby hill at the altitude of 2,050 m. Flowering in July.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca**: Riv. Blanco Valley, 8 km W of Gutierrez. Alt. 2,050 m. July 28, 1944. *M. L. Grant 9743* (AMES!, US!, UGDA-DLSz! – drawing).

Notes: *Telipogon roseus* is similar to *T. hastatus*, but its lip is wider than it is long (vs. nearly as long as wide), 19-veined (vs. 23-veined), and ecallose (vs. callus small, V-shaped, thick and papillate), and its sepals are sparsely hispid (vs. glabrous). The other species with anastomosing lip veins is *T. ionopogon*, but this species has cross-venulate veins on petals.

According to the Tropicos database (“*Telipogon roseus*,” 2022), *T. roseus* is conspecific with *T. albertii*, an enigmatic species described by Reichenbach based exclusively on the flowers. We suppose, however, that these represent different taxa. Flowers of *T. roseus* are approximately twice the size of those of *T. albertii*, sepals and petals are hispid (vs. glabrous in *T. albertii*), petals have simple veins (vs. veins anastomosing), and the gynostemium is covered with slightly longer hairs. Without a doubt, the taxonomic status of both taxa requires further study.

3.2.1.1.2. *Angustifolius*-Subgroup

Lip transversely elliptic, widest near the middle.

KEY TO THE SPECIES:

1. Lip with anastomosing veins 2

- 1* Lip with simple venations 5
2. Anastomosing veins only at the lip and petals base 12. *T. ochraceus*
- 2* Anastomosing veins in the major part of the lip and petals 3
3. Petals furfuraceous 22. *T. idroboi*
- 3* Petals glabrous 4
4. Gynostemium 3 mm long, clinandrium three-lobed, hirsute all over, with a bundle of dense setose spines over the anther and below stigma 18. *T. maldonadoensis*
- 4* Gynostemium ca. 4–6 mm long, clinandrium obscurely three-lobed, setose on the upper surface, ciliate below, with prominent protruding below stigma 23. *T. nervosus*
5. Petals furfuraceous 6
- 5* Petals not furfuraceous 8
6. Sepals glabrous, lip hispid below gynostemium 21. *T. gracilis*
- 6* Sepals and lip not as above 7
7. Sepals and lip furfuraceous, lip 21 × 23 mm, 15-veined 13. *T. cuatrecasasii*
- 7* Sepals furfuraceous, lip glabrous, 20 × 29 mm, 23-veined 16. *T. flabellatus*
8. Lip nearly as long as wide, with basal callus, in the form of longitudinal ridge, densely ciliate, papillate above 24. *T. fernandezii*
- 8* Lip ecallose, not as above 9
9. Sepals pubescent, petals densely and softly pubescent 14. *T. fassetti*
- 9* Sepals and petals glabrous 10
10. Gynostemium densely ciliate all over, with hirsute hairs ca. 1 mm long in the apical half 11. *T. angustifolius*
- 10* Gynostemium cover not as above 11
11. Lip with 23 veins 15. *T. cocuyensis*
- 11* Lip with (17)19 veins 12
12. Gynostemium upper part pubescent with ca. 2–3 mm long hairs, lower part hirsute-ciliate 17. *T. pachensis*
- 12* Gynostemium setose on the upper surface, the lower part densely hispid 13
13. Petals 18 mm long and wide, rhombic-ovate in outline, widest below the middle, symmetric, sessile 19. *T. killipi*
- 13* Petals 16–18 × 12–14.5 mm wide, very obliquely rhombic-ovate in outline, widest above the base, basally papillate, otherwise glabrous, basal margins ciliolate-papillate, apex acuminate, strongly asymmetric 20. *T. garayi*

11. *Telipogon angustifolius* Kunth (Figure 23, Figure 24)

Nov. Gen. Sp. (quarto ed.) 1: 336, t. 75. 1816. TYPE: Colombia [New Granada]. *A. Bonpland s.n.* (holotype, P! 00436596; isotypes, P! × 3; UGDA-DLSz! – drawing).

Stem ca. 9–20 cm tall, elongate, ascending, multi-leaved. Leaves 2–3 cm long, 0.3–0.7 cm wide, 0.6 cm apart, oblong-lanceolate to narrowly lanceolate, acuminate. Inflorescence – peduncle 13–16 cm long, triquetrous, raceme ca. 3–8.5 cm long, laxly two–seven-flowered. Flowers medium-sized, sepals green to greenish, petals and lip dull yellow to yellow, whitish towards the base, basal part of petals and lip with purplish haze, with red-maroon veins, and few anastomoses at the base. Floral bracts 5–7 mm long, cucullate, ovate, acute. Pedicel and ovary 15–20 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 10–14 mm long, 4–5 mm wide, concave, oblong ovate to ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 10–14 mm long, 4–5 mm wide, concave, ovate to ovate-lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 15–21 mm long, 12–14 mm wide, trullate to broadly ovate in outline, widest near the basal third, sessile, acute, hirsute at the base, glabrous above, margins papillate, veins 7–11, simple or occasionally

anastomosing. Lip 13–19 mm long, 20–24 mm wide, transversely elliptic, widest near the middle, rounded at the apex, ecallose, margins papillate, veins (17)19, simple, glabrous above basal quarter which is papillate. Gynostemium 4–5.5 mm tall, erect, slender, elongate, clinandrium obscurely three-lobed, densely ciliate all over, with hirsute hairs ca. 1 mm long in the apical half.

Ecology: Plants growing at the altitude of ca. 2,700 m. Flowering in May.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **DC. Bogotá:** Bogotá. Alt. 2,700 m. May 1859. *J. Triana* 509 (P!, UGDA-DLSz! – drawing). *Sine loc. L. A. Garay* 777 (AMES!, UGDA-DLSz! – drawing). [New Granada]. Novogranatensis, juxta Santa Ana et Mariquita. *A. Bonpland s.n.* (P!, UGDA-DLSz! – drawing, Kraenzlin, 1919).

Quindío: Mariquita bei La Ceja. *J. Triana s.n.* (fide Kraenzlin, 1919).

Notes: *Telipogon angustifolius* can be easily distinguished by the gynostemium cover, which is densely ciliate all over with hirsute hairs approximately 1 mm long in the apical half. This characteristic separates it from the similar *T. cocuyensis*.

Telipogon angustifolius is sometimes treated as synonym of *T. nervosus* (“*Telipogon angustifolius*,” 2022). Both are similar, but the flowers of *T. nervosus* are slightly smaller and its floral bracts are shorter. Additionally, the lip of this species is shortly mucronate at the apex and veins are cross-venulate.

12. *Telipogon ochraceus* Garay (Figure 25, Figure 26)

Canad. J. Bot. 34: 259. 1956. TYPE: Colombia. *N. C. Fassett* 25298 (holotype, AMES!; isotype, US! 2106439; UGDA-DLSz! – drawing, copy).

Stem 6–20 cm long, slender, ascending, scarcely branching. Leaves six to numerous, 1.5–3 cm long, 0.8–1.4 cm wide, ovate-lanceolate to oblong lanceolate, acuminate. Inflorescence – peduncle 16–18 cm long, alate, raceme 2–6 cm long, distantly two–six-flowered. Flowers medium-sized, petals dull yellow-brown, with dark yellow veins, gynostemium dark red. Floral bracts 4–6 mm long, cucullate, ovate, acute. Pedicel and ovary 16 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 10–14 mm long, 3–4 mm wide, concave, ovate to ovate-lanceolate, subacute, three-veined, veins simple. Lateral sepals 9–13 mm long, 3–4 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 14–21 mm long, 12–14 mm wide, more or less rhombic or deltoid in outline, somewhat oblique, apex acute to acuminate, base papillate, margins in the lower part ciliolate, glabrous above, slightly undulate, veins seven, simple, with few anastomoses in the lower part. Lip 14–18 mm long, 20–26 mm wide, transversely elliptic-rhombic, widest below the middle, shortly mucronate at the apex, ecallose, basal third papillate, margins ciliate up to midway, veins 17, generally simple, but anastomosing in the basal third. Gynostemium 5 mm long, rather massive, short, clinandrium three-lobed, upper part densely setose with ca. 2.5 mm long hairs, lower part hirtellous.

Ecology: Plants growing at the altitude of about 3,000 m. Flowering in June and October.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Boyacá:** Cliff 5 km SW of Arcabuco. Alt. 3,000 m. June 6, 1944. *N. C. Fassett* 25298 (US!, AMES!, UGDA-DLSz! – drawing, copy); **Cundinamarca:** Bogotá, up from Calle 75. October 12, 1945. *H. Schiefer* 925 (AMES!, US!, UGDA-DLSz! - drawing).

Notes: *Telipogon ochraceus*, along with *T. idroboi*, *T. maldonadoensis*, and *T. nervosus*, forms a group of species with very similar flower color and with anastomosing veins on the lip. Unlike the others, however, anastomoses in this species are confined to the base of the lip and petals only. In all aforementioned species, veins cover the majority of both these floral segments.

According to the Tropicos database (“*Telipogon ochraceus*,” 2022), *T. ochraceus* is conspecific with *T. nervosus*, but has larger flowers with longer floral bracts and simple venation of the petals and lip.

13. *Telipogon cuatrecasii* Szlach. & Kolan., sp. nov. (Figure 27)

TYPE: Colombia. *J. Cuatrecasas 1740* (holotype, US! 1853534; UGDA-DLSz! – drawing, copy).

*This species resembles *Telipogon flabellatus* from which it differs by 15-veined lip which is sparsely furfuraceous above glabrous base.*

Stem ca. 23 cm long, slender, erect, ascending. Leaves numerous, up to 3.5 cm long and 0.7 cm wide, oblong lanceolate, acuminate. Inflorescence – peduncle 19 cm long, raceme 8 cm long, laxly four-flowered. Flowers medium-sized. Floral bracts 5 mm long, cucullate, ovate, acute. Pedicel and ovary 16 mm long, triquetrous. Sepals dissimilar, keeled abaxial. Dorsal sepal 14 mm long, 4–5 mm wide, concave, oblong ovate, subacute, sparsely furfuraceous, three-veined, veins simple. Lateral sepals 15 mm long, 4–5 mm wide, concave, triangular-ovate, acute, oblique, sparsely furfuraceous, three-veined, veins simple. Petals 22 mm long, 14 mm wide, obliquely broadly deltoid in outline, apex acuminate, margins ciliolate in the lower half, glabrous above, furfuraceous, veins nine, simple, basally keeled. Lip 21 mm long, 23 mm wide, transversely elliptic-rhombic, widest near the middle, shortly mucronate at the apex, ecallose, margins ciliate up to midway, sparsely furfuraceous above glabrous base, veins 15, simple, keeled in the basal third. Gynostemium 7 mm long, rather short, clinandrium three-lobed, upper and lateral parts densely setose with ca. 3 mm long hairs, lower part hirtellous, protruding below stigma.

Etymology: Dedicated to Dr. J. Cuatrecasas (1903–1996), an eminent collector of Colombian plants.

Ecology: Plants growing at the altitude of 2,780–3,000 m. Flowering in September.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Boyacá:** Valle del Cocuy, towards SW. Alt. 2,780–3,000 m. September 15, 1938. *J. Cuatrecasas 1740* (US!, UGDA-DLSz! – drawing).

Notes: This species resembles *Telipogon flabellatus*, and both species share furfuraceous sepals and petals. In *T. flabellatus*, the lip is furfuraceous (vs. glabrous) and 15-veined (vs. 23-veined). In *T. gracilis*, petals are furfuraceous as well, but sepals are glabrous and the lip is hispid in the lower part.

Telipogon cuatrecasii is somewhat similar to *T. angustifolius*, but the sepals and lip are sparsely furfuraceous, petals are furfuraceous (vs. glabrous), margins of the petals and lip are ciliate along lower half (vs. papillate), and lip veins are keeled in the basal third (vs. not keeled).

14. *Telipogon fassetti* Szlach. & Kolan., sp. nov. (Figure 28)

TYPE: Colombia. *N. C. Fassett 25564* (holotype, US! 2107346; UGDA-DLSz! – drawing, copy).

*Species similar to *Telipogon cuatrecasii*, distinguished by pubescent tepals and gynostemium ornamentation. The apex of the middle lobe in the new species is ornamented by a tuft of setose hairs with hyaline apex, lower part is densely ciliate, and both lateral parts are glabrous.*

Stem ca. 40 cm long, slender, erect, ascending. Leaves numerous, up to 2 cm long and 0.5 cm wide, obliquely ovate, acuminate. Inflorescence – peduncle 20 cm long, raceme 6 cm long, laxly four-flowered. Flowers small. Floral bracts 3 mm long, cucullate, ovate, acute. Pedicel and ovary 16 mm long, triquetrous. Sepals dissimilar, keeled abaxial. Dorsal sepal 9 mm long, 3 mm wide, concave, ovate, acuminate, pubescent, one-veined, vein simple. Lateral sepals 9 mm long, 3 mm wide, concave, obliquely triangular-ovate, acuminate, pubescent, one-veined, vein simple. Petals 15 mm long, 8 mm wide, ovate in outline, apex acuminate, symmetric, margins ciliolate at the base, glabrous above, very densely and softly pubescent, veins seven, simple, basally keeled. Lip 14–15 mm long, 15 mm wide, transversely elliptic-trullate, widest below the middle, shortly subacute at the apex, ecallose, margins ciliate up to midway, glabrous, veins 15, simple, keeled in the basal quarter. Gynostemium 4 mm long, rather slender, erect, clinandrium three-lobed, apex of the middle lobe with tuft of setose hairs ca. 1.2 mm long with hyaline apex, lower densely ciliate, both lateral parts glabrous.

Etymology: In honor of the collector of the type specimen, N. C. Fassett (1900–1954).

Ecology: Plants growing at the altitude of ca. 2,600 m. Flowering in August.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Santander:** Valley of Quebrada Chima. Mountains W of Chima. Alt. 2,600 m. August 1, 1944. N. C. Fassett 25564 (US!, UGDA-DLSz! – drawing).

Notes: This species is most similar to *Telipogon cuatrecasasii*, but can be easily distinguished by the gynostemium ornamentation. The gynostemium middle lobe is ornamented by a tuft of setose hairs with a hyaline apex (ca. 1.2 mm long). The lower part is densely ciliate, and both lateral parts are glabrous (vs. upper and lateral gynostemium parts densely setose with ca. 3 mm hairs, and lower part hirtellous). Unlike other representatives of this group, sepals and petals of *T. fassetti* are more or less pubescent.

Because *Telipogon* representatives are pollinated via pseudocopulation, it is assumed that particular species rely on single, or very few, specialized pollinators. The ornamentation of floral segments is likely related to adaptation to a specific pollen vector, and even small modifications in tepal and lip morphology can result in emergence of a prepollination reproductive barrier between *Telipogon* species.

15. *Telipogon cocuyensis* Szlach. & Kolan., sp. nov. (Figure 29)

TYPE: Colombia. *J. Cuatrecasas* 1739 (holotype, US! 1853533; UGDA-DLSz! – drawing, copy).

Species similar to *Telipogon cuatrecasasii*, *but with pubescent sepals and petals, glabrous lip with slightly thickened veins, and setose gynostemium.*

Stem ca. 3 cm long, but probably longer. Leaves 10, but probably more, up to 2 cm long and 0.8 cm wide, obliquely ovate-lanceolate, acuminate. Inflorescence – peduncle 4.5 cm long, raceme laxly two-flowered. Flowers medium-sized. Floral bracts 4–5 mm long, cucullate, ovate, acute. Pedicel and ovary 10 mm long. Sepals dissimilar, thickened along veins abaxial. Dorsal sepal 12 mm long, 4–5 mm wide, concave, ovate, subobtuse, pubescent, three-veined, veins simple. Lateral sepals 12 mm long, 4 mm wide, concave, triangular-ovate, subobtuse, pubescent, three-veined, veins simple. Petals 18 mm long, 12 mm wide, deltoid-ovate in outline, apex acuminate, symmetric, margins ciliolate at the base, glabrous above, very densely and softly pubescent, veins seven, simple, slightly thickened, both distal veins branching at the base. Lip 15 mm long, 20 mm wide, transversely elliptic, widest below the middle, obscurely three-lobed, shortly subobtuse at the apex, ecallose, margins papillate up to two-third, veins 23, simple, slightly thickened. Gynostemium 5 mm long, with setose hairs ca. 2 mm long.

Etymology: In reference to the place of origin of the type specimen.

Ecology: Plants growing at the altitude of 2,780–3,000 m. Flowering in September.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Boyacá:** Valle del Cocuy, towards SW. Alt. 2,780–3,000 m. September 15, 1938. *J. Cuatrecasas* 1739 (US!, UGDA-DLSz! – drawing).

Notes: This species appears similar to *Telipogon cuatrecasasii*, but its lip is glabrous with slightly thickened veins (vs. lip sparsely furfuraceous above the glabrous base, veins keeled in the basal third), sepals and petals are pubescent (vs. furfuraceous), and the gynostemium is setose (vs. upper and lateral parts densely setose, lower part hirtellous).

Telipogon cocuyensis differs from similar *T. pachensis*, *T. killipi*, and *T. garayi* in the number of lip veins (23 vs. 17/19).

16. *Telipogon flabellatus* Szlach. & Kolan., sp. nov. (Figure 30)

TYPE: Colombia. *J. Cuatrecasas* 1824 (holotype, US! 1853543; UGDA-DLSz! – drawing, copy).

Species similar to Telipogon cuatrecasii, but with glabrous, 23-veined lip and gynostemium being densely hispid on the dorsal surface, sparsely hispid below stigma, with two protrudings – the first one and smaller just below stigma, and more massive one just above the base.

Stem ca. 45 cm long, elongate, erect, ascending. Leaves numerous, up to 4 cm long and 1 cm wide, obliquely lanceolate, acuminate. Inflorescence – peduncle 30 cm long, raceme 9 cm long, laxly eight-flowered. Flowers large. Floral bracts 3 mm long, cucullate, ovate, acute. Pedicel and ovary 15 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 13 mm long, 5–6 mm wide, concave, broadly ovate, subacute, sparsely furfuraceous, three-veined, veins simple. Lateral sepals 13 mm long, 5 mm wide, concave, obliquely triangular-ovate, subacute, sparsely furfuraceous, three-veined, veins simple. Petals 20 mm long, 15 mm wide, obliquely broadly deltoid-ovate in outline, apex elongate and acuminate, margins hispid at the base, glabrous above, densely furfuraceous, veins seven, simple. Lip 20 mm long, 29 mm wide, transversely elliptic-flabellate, widest near the middle, rounded at the apex, ecallose, margins ciliolate up to the middle, veins 23, simple. Gynostemium 9 mm long, erect, rather massive, with setose hairs ca. 3 mm long around the anther, densely hispid on the dorsal surface, sparsely hispid below stigma, with two protrudings – the first one and smaller just below stigma, and more massive one just above the base.

Etymology: In reference to the lip form.

Ecology: Plants growing in thickets and woods at the altitude of ca. 2,500–3,400 m. Flowering in February and September.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Boyacá:** Valle de la Uvita. Woods and thickets near Uvita. Alt. 2,490–2,560 m. September 16, 1938. *J. Cuatrecasas 1824* (US!, UGDA-DLSz! – drawing); **Norte de Santander:** Between Mutiscua and Pamplona. Alt. 3,400 m. February 23, 1927. *E. P. Killip & A. C. Smith 19717* (AMES!, US!).

Notes: This is another species similar to *Telipogon cuatrecasii*, but with a glabrous 23-veined lip (vs. furfuraceous with 15 veins). The gynostemium is densely hispid on the dorsal surface and sparsely hispid below the stigma, with two protrudings – the first and smaller one just below the stigma, and the other larger one just above the base (vs. upper and lateral parts of the gynostemium densely setose, lower part hirtellous, and single protrusion below stigma).

The other species with furfuraceous petals is *T. gracilis*, which has glabrous sepals and a hispid lip below the gynostemium.

17. *Telipogon pachensis* Rchb. f. (Figure 31–Figure 33)

Linnaea 41: 105. 1877[1876]. TYPE: Colombia [New Granada]. *G. Wallis s.n.* (holotype, W-R! 30519 – lefthand plant; UGDA-DLSz! – drawing).

Stem 7–13 cm long, elongate, erect, ascending. Leaves numerous, 2.5–3 cm long, 0.8–0.9 cm wide, oblong or elliptic-ovate, acute. Inflorescence – peduncle 10 cm long, raceme 5–8 cm long, three–six-flowered. Flowers medium-sized. Floral bracts 3–5 mm long, cucullate, ovate, acute. Pedicel and ovary 17–25 mm long, triquetrous. Sepals dissimilar, keeled abaxial. Dorsal sepal 13–15 mm long, 4–4.5 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 13–15 mm long, 4 mm wide, concave, obliquely ovate-lanceolate, acuminate, oblique, three-veined, veins simple. Petals 18–19 mm long, 12–14 mm wide, more or less rhombic-elliptic or rhombic-ovate in outline, widest below the middle, somewhat oblique, apex acute, base pubescent, margins almost glabrous, slightly undulate, veins 8–11, simple. Lip 16–18 mm long, 18–20 mm wide, elliptic-rhombic, widest just below the middle, shortly acute at the apex, ecallose, basal fifth ciliate, margins ciliate in the basal quarter, veins 19, simple, the median one slightly keeled at the base. Gynostemium 4–4.5 mm long, erect, slender, elongate, upper part pubescent with ca. 2–3 mm long hairs, lower part hirsute-ciliate.

Ecology: Plants growing at the altitude of 2,500–3,300 m. Flowering in January, August, and October.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Hacia San Jeronimo, paraje Boqueron. Alt. 2,500 m. August 16, 1957. *M. Ospina H. 198* (AMES!); **Cundinamarca:** [New Granada]. Pacho & Bogotá. *G. Wallis s.n.* (W-R!, UGDA-DLSz! – drawing); Sabana de Bogotá. Las Palmas, carretera Tenjo-Madrid. Alt. 2,600 m. October 12, 1957. *M. Ospina H. 203* (AMES!, UGDA-DLSz! – drawing); W of Bogotá. *F. C. Lehmann 6874* (AMES!, UGDA-DLSz! – drawing); **Santander:** Vicinity of La Baja. Alt. 3,300 m. January 14–31, 1927. *E. P. Killip & A. C. Smith 18726* (AMES! – fruit).

Notes: *Telipogon pachensis* is similar to the Colombian species *T. killipi* and *T. garayi*, but differs in the gynostemium cover, which is pubescent on the upper part with approximately 2–3 mm hairs, with and hirsute-ciliate on the lower part (vs. gynostemium setose on the upper surface, with the lower part densely hispid). Unlike that of *T. cocuyensis*, the lip of *T. pachensis* is 19-veined (vs. 23-veined).

Telipogon pachensis is sometimes considered a synonym of *T. nervosus* (“*Telipogon pachensis*,” 2022), but the latter species has slightly smaller flowers, cross-venulate venations of the petals and lip, and a low rim surrounding the gynostemium base. Further study will reveal whether these are discriminative characteristics.

18. *Telipogon maldonadoensis* Dodson & R. Escobar

Orquideologia 21(1): 53. 1998. TYPE: Ecuador. *A. Hirtz 5879* (holotype, RPSC!).

Stem ca. 7 cm long, slender, ascending, scarcely branching. Leaves numerous, up to 3.5 cm long and 1.6 cm wide, obovate-oblongate to obovate, acute to acuminate. Inflorescence – peduncle 6 cm long, terete, simple, raceme 4 cm long, distantly five-flowered. Flowers medium-sized, sepals, petals and lip yellow with red-brown veins abundantly reticulated, gynostemium wine-red with wine-red spines. Floral bracts up to 6 mm long, cucullate, ovate, acute. Pedicel and ovary ca. 15 mm long. Dorsal sepal 10 mm long, 4 mm wide, concave, oblong ovate-lanceolate, acute, rather obscurely three-veined, veins simple. Lateral sepals 10 mm long, 4 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, one-veined, vein simple. Petals 15 mm long, 11 mm wide, elliptic-ovate in outline, widest below the middle, symmetric, shortly clawed, apex acute, base with spine-like hairs, veins seven, simple, anastomosing. Lip 13 mm long, 18 mm wide, transversely elliptic-rhombic, widest just below the middle, shortly mucronate at the apex, slightly swollen and short-hirsute at the base, veins 11, heavily anastomosing. Gynostemium 3 mm long, short, erect, clinandrium three-lobed, hirsute all over, with a bundle of dense setose spines over the anther and below stigma.

Ecology: Epiphyte in montane forest at the altitude of 2,000–3,250 m. Flowering throughout the year.

Distribution: Ecuador, Colombia.

Representative specimens: – COLOMBIA. **Boyacá:** Cliff 5 km SW of Arcabuco. Alt. 3,000 m. June 6, 1944. *N. C. Fassett 25298* (RPSC!). **Santander:** Vicinity of Vetas. Open rocky hillsides. Alt. 3,100–3,250 m. January 16–20, 1927. *E. Killip & A. Smith 17325* (AMES!, UGDA-DLSz! – drawing). ECUADOR. **Carchi:** Tulcan to Maldonado. Alt. 2,400 m. September 15, 1993. *A. Hirtz 5879* (RPSC!); El Carmen Cerro Golondrinas. Alt. 2,000–2,400 m. August 18–25, 1994. *M. Tirado & al. 1272* (QCNE!).

Notes: According to the authors, this species is similar to *Telipogon ionopogon*, from which it can be distinguished by the red gynostemium, which is not swollen on the underside; the form of the lip and petals, which are ornamented with spine-like hairs at the base; and reticulation of the veins. The gynostemium of *T. ionopogon* is pink and swollen on the underside, the lip is very broadly ovate, the petals are acuminate with glabrous base, and the veins are simple, without reticulation.

In our opinion, *T. maldonadoensis* is more similar to *T. nervosus* than to *T. ionopogon*, and both species can be easily distinguished by the gynostemium details. The gynostemium of *T. maldonadoensis* is 3 mm long, and the clinandrium is three-lobed and hirsute all over, with a bundle of dense setose spines over the anther and below the stigma. On the other hand, the gynostemium of *T. nervosus* is approximately 4–6 mm long and the clinandrium is obscurely three-lobed, setose on the upper surface and ciliate below, with a prominently protruding lower margin of the stigma.

Notably, the leaf morphology (widest above the middle) of *T. maldonadoensis* is more reminiscent of Central American representatives of the genus, rather than South American taxa.

19. *Telipogon killipi* Szlach. & Kolan., sp. nov. (Figure 34–Figure 36)

TYPE: Colombia. E. P. Killip & A. C. Smith 17325 (holotype, AMES! 47878; UGDA-DLSz! – drawing).

The new species is similar to Telipogon garayi, unlike the latter, however, its petals are symmetric (vs. strongly asymmetric) and as long as wide (18 × 18 mm vs. 16–18 × 12–14.5 mm).

Stem ca. 23 cm long, slender, erect, ascending. Leaves numerous, up to 3 cm long and 1 cm wide, oblong lanceolate, acute to acuminate. Inflorescence – peduncle 17 cm long, raceme 6.5 cm long, three–five-flowered. Flowers medium-sized. Floral bracts up to 5 mm long, cucullate, ovate, acute. Pedicel and ovary ca. 18 mm long. Dorsal sepal 12 mm long, 4 mm wide, concave, oblong ovate, subacute, three-veined, veins simple. Lateral sepals 12 mm long, 4 mm wide, concave, obliquely ovate, subacute, three-veined, veins simple. Petals 18 mm long and wide, rhombic-ovate in outline, widest below the middle, somewhat oblique, sessile, apex acute, veins nine, simple. Lip 15 mm long, 19 mm wide, transversely elliptic-rhombic, widest near the middle, subobtusate at the apex, papillate and hispid below the gynostemium, otherwise glabrous, veins 19, simple. Gynostemium 5 mm long, erect, elongate, clinandrium three-lobed, setose on the upper surface, setae ca. 5 mm long, the lower part shortly hispid.

Etymology: Dedicated to E. P. Killip (1890–1968), an active collector of Colombian plants.

Ecology: Epiphyte in paramo and montane forest at the altitude of ca. 2,000–3,250 m. Flowering throughout the year.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Boyacá:** Mpio. Arcabuco. SW rocky slope of Cerro Volcan, km 3–4 from Arcabuco. Alt. 2,700 m. November 23, 1998. *D. Stancik 1408* (COL!, PRC); Carretera Tunja-Arcabuco. Paramo de Arcabuco. April 7, 1972. *R. Guarín M. & M. Villareal 1379* (COL!); Mpio. Duitama. Finca La Pradera. Via Duitama-Charala a 11 km de la escuela El Carmen. Alt. 2,700 m. March 22, 1994. *O. Rangel & Estud. Contin. 11958* (COL!); Pie del monte llamado El Calvario. En Duitama. January 28, 1944. *M. de Garganta Fabrega 84725* (COL!); Paramo de la Rusia. Carretera a Charala. Alt. 3,000–3,300 m. May 8, 1972. *H. Garcia Barriga & R. Jaramillo 20280* (COL!); Paramo de la Rusia. NW de Duitama. Hoya Rio Surba, por donde la carretera Duitama-Virolin, cruza este Rio. Alt. 3,200 m. May 8, 1972. *A. M. Cleef, H. Garcia Barriga & R. Jaramillo 3563* (COL!); Entre Tunja y Arcabuco. Alt. 2,900 m. June 6, 1961. *H. Schmidt-Mumm 78* (COL!); Entre Duitama y el Paramo de la Rusia. Alt. 3,000 m. April 5, 1963. *L. Uribe Uribe 4237* (COL!); Carretera de Villa de Leyva a Arcabuco. Desvio a Gachantiva. Alt. 2,200–2,400 m. December 12, 1989. *J. L. Fernandez & R. Castillo 8218* (COL!); Entre Moniquira y Gachantiva. May 16, 1996. *O. Rangel & Sist. Veg 13306* (COL!); Sabtuaria Flora y Fauna de Iguaque, alrededores de El Carrizal. Alt. 2,700–2,900 m. June 9, 2001. *M. Bello, T. Stutzel, G. Doria & F. Gonzales MAB220* (COL!); Mpio. Paz de Rio. Canon del Soapaga. July 1, 2009. *J. L. Fernandez & C. Diaz Perez 28337* (COL!); **Cauca:** Past San Jose on towards Popayan incomplete road. Alt. 2,700 m. August 1964. *A. M. Kapuler & V. C. Hascall 135* (COL!); **Cundinamarca:** Macizo de Bogotá. Quebrada de Chico.

Matorral subserial. Alt. 2,640–2,670 m. May 25, 1939. *J. Cuatrecasas* 5015 (US!, UGDA-DLSz! - drawing); Mpio. La Calera. Vereda Represa de San Rafael. Alt. 2,700 m. May 24, 2000. *C. Bernal* & *C. Romero* 680 (COL!); Mpio. La Calera. Via a Mundo Nuevo. Alt. 3,000 m. July 20, 1998. *J. L. Fernandez, J. Aguirre* & *J. Etayo* 16628 (COL!); The same loc. *J. L. Fernandez, J. Aguirre* & *J. Etayo* 16693 (COL!); Mpio. La Calera. Bosque a la izquierda de la carretera a Mundo Nuevo. Alt. 3,000 m. July 19, 1992. *J. L. Fernandez* & *R. Castillo* 10332 (COL!); Near La Calera. Alt. 2,800 m. May 22, 1947. *O. Haught* 5751 (COL!); Mpio. Lenguazaque. Vereda Tibita. 5°17'18.9" N, 73°40'42.5" W. Alt. 2,990 m. November 28, 2003. *M. Cordoba, C. Lopez* & *L. Bernal* 2902 (COL!); Mpio. Nemocon. Quebrada Checua. Alt. 2,600 m. 1996. *T. van der Hammen* 7152 (COL!); Mpio. Suesca. Vereda de Hato Grande. 7.3 km al SE del caserío. Alt. 3,200 m. December 19, 1963. *C. Saravia* & *G. Lozano* 3173 (COL!); Mpio. Suesca-Nemocon. Hacienda Susata. Alt. 2,850–2,950 m. August 23, 2000. *J. L. Fernandez, J. Groenendijk, D. Cortes* & *G. Penalzoza* 19035 (COL!); Mpio. Suesca. Hacienda Susata. Alt. 2,720 m. December 2, 1999. *J. Gronendijk* & *N. Rietman* 1340 (COL!); Mpio. Susa. 5°23'52.4" N, 73°50'43.6" W. Alt. 3,050 m. November 2, 2003. *M. Cordoba, C. Lopez* & *L. Bernal* 2810 (COL!); Cruce carretera Sopo Guasca Timana. Alt. 2,900 m. April 14, 1982. *G. Ruiz* & *C. Alarcon* 423 (COL!); Paramo de Guasca. October 1942. *G. Gutierrez* 399 (COL!); Mpio. Subachoque. Vereda Tobal, finca El Cerro. Alt. 2,950 m. November 11, 2002. *M. Hernandez-Schmidt* 1031 (COL!); A 7 km de Cogua. Alt. 2,750 m. June 23, 1942. *G. Huertas* & *L. Camargo* 1116 (COL!); Carupa. Represa El Hato. Alt. 2,900 m. January 17, 1998. *M. Ospina H.* 1496 (COL!); Cordillera Oriental, vertiente oriental. Entre Une y Fosca. Alt. 3,000–3,200 m. June 14, 1974. *H. Garcia Barriga* & *R. Jaramillo* 20521 (AMES!, COL!); Santandercito. Laguna de Catarnica. Alt. 2,000 m. February 16, 1959. *A. Fernandez* 5607 (COL!); Laguna de Catarnica o Laguan Seca. Al SE de Santandercito. Alt. 2,000 m. April 14, 1961. *A. Fernandez* 5737 (COL!); N of Bogotá. La Caro, along mountain slope. Alt. 2,600 m. July 10, 1963. *D. Soejarto* 225 (AMES!, COL!); Cerro de la Moya, El Chico. A few km N of Bogotá. Alt. 2,700 m. June 29, 1960. *W. Hatheway* 1144 (COL!); Macizo de Bogotá. Quebrada de Chico. Alt. 2,640–2,670 m. May 25, 1939. *J. Cuatrecasas* 5015 (COL!); Quebrada Chico. Bogotá. Alt. 2,700 m. April 22, 1946. *M. Schneider* 6 (COL!); Bogotá, Montes pedregosos. July 1934. *EPA* 1065 (COL!); Bogotá. Laderas al oriente de Chapinero. Alt. 2,700 m. October 1940. *L. Uribe Uribe* 141 (COL!); Bogotá. Zunjuelo. May 1931. *EPA* 1065 (COL!); Sabana de Bogotá. April 5, 1945. *H. Schiefer* 651 (AMES!, COL!); Bogotá DC. Localidad de Usaquen. Torca. Finca Tibabita, bosque a la orilla de la quebrada subiendo hacia las torres. 4°46'45.7" N, 74°1'13.9" W. Alt. 2,777 m. December 18, 2012. *A. Orejuela, C. Vargas* & *J. Valencia* 362 (COL!); The same loc. *J. Valencia, A. Orejuela* & *C. Vargas* 1622 (COL!); Cota. Cerros vecinos de la poblacion. Alt. 2,600 m. June 8, 1965. *G. Huertas* & *L. Camargo* 6178 (COL!); Serrania Chia-Suba. November 9, 1985. *M. Ospina H.* 1152 (COL!); Sutatausa. Vereda El Resguardo. Margen izqueirdo de la Quebrada Aguasal, finca El Molino. Alt. 2,640 m. April 15, 1961. *J. Idrobo* & *P. Pinto* 4597 (COL!); Tenjo. Carretera de Subachoque a Tenjo. Alt. 2,800 m. April 29, 1956. *H. Garcia Barriga* 15500 (COL!); **Santander**: Carretera entre Charala and Duitama. Between 1/3 to 1/2 the distance towards Duitama. Alt. 1,900–2,500 m. July 1964. *A. M. Kapuler* & *V. C. Hascall* 72 (COL!); Carretera entre paramo de Berlin y Pamplona. Abajo de Cuesta Boba. Alt. 3,000 m. August 8, 1968. *L. Mora* 4547 (COL!); Pamplona. Alt. 2,790 m. July 1851. *J. J. Triana* 1471.2 (COL!); Epiphytic in cloud forest W of Velez, road to Landazuri. Alt. 2,150 m. May 4–5, 1984. *C. Luer, J. Luer, R. Escobar* & *E. Valencia* 10126 (MO!, UGDA-DLSz! - drawing); Vicinity of Vetás. Open rocky hillsides. Alt. 3,100–3,250 m. January 16–20, 1927. *E. P. Killip* & *A. C. Smith* 17325 (AMES!, UGDA-DLSz! - drawing).

Notes: *Telipogon killipi* is similar to *T. garayi*. Unlike the latter, however, petals of the former are symmetric (vs. strongly asymmetric) and as long as they are wide (18 × 18 mm vs. 16–18 × 12–14.5 mm). Furthermore, the lip of *T. garayi* is somewhat larger than that of *T. killipi* (17–20 × 19–28 mm vs. 15 × 19 mm).

20. *Telipogon garayi* Szlach. & Kolan., sp. nov. (Figure 37–Figure 39)

TYPE: Colombia. *L. A. Garay* 789 (holotype, AMES!; UGDA-DLSz! - drawing).

Species resembling *Telipogon maldonadoensis* distinguished by strongly asymmetric, obliquely rhombic-ovate petals and gynostemium being setose on the upper surface, and densely hispid on the lower part.

Stem 6–12 cm long, slender, erect, ascending. Leaves usually numerous, 2–2.6 cm long, 0.4–0.6 cm wide, oblong lanceolate, acute to acuminate. Inflorescence – peduncle 7–16 cm long, raceme 7–8 cm long, laxly two–eight-flowered. Flowers medium-sized. Floral bracts up to 5 mm long, cucullate, ovate, acute. Pedicel and ovary 15–24 mm long. Dorsal sepal 13 mm long, 4–5 mm wide, concave, ovate, subacute, usually three-, but occasionally obscurely seven-veined, veins simple. Lateral sepals 13 mm long, 4–5 mm wide, concave, obliquely ovate, subacute, three-, but occasionally obscurely seven-veined, veins simple. Petals 16–18 mm long, 12–14.5 mm wide, rhombic-ovate in outline, strongly asymmetric with the lower part much extended, widest above the base, basally papillate, otherwise glabrous, basal margins ciliolate-papillate, apex acuminate, veins nine, simple or scarcely basally branching. Lip 17–20 mm long, 19–28 mm wide, transversely elliptic-rhombic, widest just below the middle, subobtusate to subacute at the apex, papillate and hispid below the gynostemium, otherwise glabrous, margins ciliolate-papillate, veins 21 or 23, simple. Gynostemium 3.5–6 mm long, erect, short, clinandrium three-lobed, setose on the upper surface, setae ca. 2.5–3 mm long, the lower part densely hispid.

Etmology: In honor of L. A. Garay (1924–2016), distinguished American orchidologist.

Ecology: Plants growing at the altitude of ca. 2,300 m. Flowering in August.

Distribution: Colombia, Venezuela.

Representative specimens: – COLOMBIA. **Cundinamarca:** Bogotá. A. *Schultze* 116 (US! ex B). *Sine loc.* L. A. *Garay* 789 (AMES!, UGDA-DLSz! – drawing).

VENEZUELA. Merida. J. J. *Linden* 621 (P!, UGDA-DLSz! – drawing); Merida. Alt. 2,300 m. August 1846. N. *Funck* & L. J. *Schlim* 851 (P!, UGDA-DLSz! – drawing).

Notes: This species resembles *Telipogon maldonadoensis*, but its petals are strongly asymmetric, very obliquely rhombic-ovate in outline (vs. petals elliptic-ovate in outline, widest below the middle, and symmetric), and the gynostemium is setose on the upper surface and densely hispid on the lower part (vs. gynostemium hirsute all over, with a bundle of dense setose spines over the anther and below the stigma).

The other species similar to this new entity is *T. killipi*, which has symmetric petals (vs. strongly asymmetric), about as long as they are wide (18 × 18 mm vs. 16–18 × 12–14.5 mm).

21. *Telipogon gracilis* Schltr. (Figure 40, Figure 41)

Repert. Spec. Nov. Regni Veg. Beih. 7: 197. 1920. TYPE: Colombia. M. *Madero* s.n. (?).

Stem 7 cm tall, elongate, ascending. Leaves six to numerous, 2.3–3.3 cm long, 0.5–0.9 cm wide, oblong-lanceolate to narrowly lanceolate, acuminate. Inflorescence – peduncle 9–12 cm long, raceme 3.5–5 cm long, laxly three–five-flowered. Flowers medium-sized, sepals greenish, petals and lip white with pinkish suffusion, with deep purple haze towards the base, veins red-maroon. Floral bracts 4–5 mm long, cucullate, ovate, acute. Pedicel and ovary 14–15 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 10–11 mm long, 3.5–4 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 10–11 mm long, 3.5–4 mm wide, concave, ovate-lanceolate, acute, oblique, three-veined, veins simple. Petals 17–18 mm long, 12–13 mm wide, obliquely broadly ovate in outline, widest near the basal third, sessile, acuminate, sparsely furfuraceous on the inner surface except the base and centre, glabrous outside, veins seven or nine, simple. Lip 12–17 mm long, 19–23 mm wide, transversely elliptic-rhombic, widest near the middle, subobtusate at the apex, ecallose, hispid below gynostemium, otherwise glabrous, basal margins ciliolate, veins 15 to 21, simple. Gynostemium 4–5.5 mm tall, erect, slender, elongate, clinandrium obscurely three-lobed, densely setose on the upper surface, setae 3 mm long, hirsute on the lower surface.

Ecology: Epiphyte growing at the altitude of ca. 2,500–3,000 m. Flowering in May, June, and July.

Distribution: Colombia, Venezuela.

Representative specimens: – COLOMBIA. **Antioquia:** Alt. ca. 2,500 m. *M. Madero s.n.* (Schlechter, 1920); **Cundinamarca:** Macizo de Bogotá. Cerro El retiro. Alt. 2,600–2,700 m. May 1, 1946. *R. Schultes 7003* (AMES!, UGDA-DLSz! – drawing); Bei Monserrate. Alt. 3,000 m. *H. Karsten s.n.* (W!, UGDA-DLSz! – drawing); **Putumayo:** Road between Laguna La Cocha and Paramo de Tabano. Alt. 2,800–3,000 m. June 1, 1946. *R. Schultes & M. Villarreal 7835i* (AMES!, UGDA-DLSz! – drawing). Venezuela. **Merida:** Chachopo. Alt. 2,300 m. July 14, 1949. *O. Renz 5748* (RENZ!).

Notes: *Telipogon gracilis*, *T. cuatrecasii*, and *T. flabellatus* share similar petals covered by short, furfuraceous hair. The two latter species, however, are furfuraceous on the sepals, and *T. cuatrecasii* is also furfuraceous on the lip. Unlike that of the aforementioned taxa, the lip of *T. gracilis* is hispid below the gynostemium, and is otherwise glabrous, with basal margins ciliate.

22. *Telipogon idroboi* Szlach. & Kolan., sp. nov. (Figure 42)

TYPE: Colombia. *J. Idrobo 2454* (holotype, COL! 315154; UGDA-DLSz! – drawing).

Species similar to *Telipogon maldonadoensis* and *T. nervosus*, distinguished by exceptionally small leaves, furfuraceous petals, densely cross-venulate petals and lip and gynostemium covered by apically curved setae on the upper surface and ciliate on the lower protruding part.

Stem ca. 20 cm tall, elongate, ascending. Leaves numerous, ca. 0.7 cm long, ca. 0.35 cm wide, oblong-lanceolate to narrowly lanceolate, acuminate. Inflorescence – peduncle up to 10 cm long, raceme ca. 5 cm long, laxly few-flowered. Flowers medium-sized. Floral bracts 2–3 mm long, cucullate, ovate, acute. Pedicel and ovary 12–15 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 9 mm long, 3 mm wide, concave, ovate-triangular, acute, three-veined, veins simple. Lateral sepals 9 mm long, 2.5–3 mm wide, concave, ovate-lanceolate, acute, falcate, three-veined, veins simple. Petals 15 mm long, 10 mm wide, obliquely deltoid in outline, widest near the basal third, sessile, acuminate, furfuraceous on the inner surface, glabrous outside, veins 9, cross-venulate. Lip 13 mm long, 18 mm wide, transversely elliptic-rhombic, widest near the middle, shortly acute at the apex, with narrow rim just below gynostemium, basal margins papillate, veins 21, cross-venulate. Gynostemium 6 mm tall, erect, short, clinandrium obscurely three-lobed, densely covered on the upper surface with apically curved setae, setae up to 3 mm long, lower surface protruding, ciliate.

Etymology: Dedicated to J. Idrobo, a collector of the type specimen.

Ecology: Plants growing at the altitude of ca. 2,600 m. Flowering in April.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Granada. Hacienda El Soche. Alt. 2,620 m. April 19, 1964. *J. Odrobo 2454* (COL!, UGDA-DLSz! – drawing).

Notes: This species is characterized by exceptionally small leaves, furfuraceous petals, densely cross-venulate petals, and a lip and gynostemium covered by apically curved setae on the upper surface and ciliate on the lower protruding part.

23. *Telipogon nervosus* (L.) Druce (Figure 43)

Rep. Bot. Exch. Club 650: 191. 1916. *Tradescantia nervosa* L., Mant. Pl. 2: 223. 1771. TYPE: Habitat in Surat. *D. Mutis s.n.* (not localized).

Stem ca. 15–20 cm long, elongate, slender, erect, multi-leaved. Leaves numerous, 0.7–2 cm long, 0.35–1 cm wide, ca. 0.5 cm apart, ovate-lanceolate to elliptic-lanceolate, acuminate. Inflorescence – peduncle ca. 15–20 cm long, raceme ca. 4–6 cm long, distantly few-flowered. Flowers rather small, sepals greenish, petals and lip whittish at the base and in the centre, distal margins greenish to yellow, veins and anastomoses reddish or brownish with distal parts green, gynostemium and lip calli red. Floral bracts 2.5–5 mm long, ovate-lanceolate, acute. Pedicel and ovary 20–25 mm long, triquetrous. Sepals subsimilar, keeled abaxially. Dorsal sepal 9 mm long, 3 mm wide, concave, ovate-lanceolate to triangular-ovate, acute to acuminate,

three-veined, veins simple. Lateral sepals 9 mm long, 3 mm wide, concave, obliquely ovate-lanceolate, acute to acuminate, three-veined, veins simple. Petals 15 mm long, 10 mm wide, broadly ovate to rhombic-ovate, acuminate, almost symmetric to oblique, more or less hispid all over, nine-veined, veins cross-venulate. Lip 13 mm long, 18 mm wide, transversely elliptic-rhombic, widest just below the middle, shortly mucronate, base cuneate, with low rim surrounding gynostemium base, margins papillate in the basal third, 15-veined, cross-venulate. Gynostemium ca. 4–6 mm long, short, massive, clinandrium obscurely three-lobed, setose on the upper surface, ciliate below, with prominent protruding below stigma.

Ecology: Terrestrial at the altitude of ca. 2,620–2,900 m. Flowering in April and June.

Distribution: Colombia?, Venezuela.

Representative specimen: – VENEZUELA. **Tachira:** Páramo Zumbador. Alt. 2,900 m. June 30, 1951. *O. Renz 7131* (RENZ!).

Notes: *Telipogon nervosus* is one of the most common species of this subgroup of the genus, but is frequently misidentified as other taxa of *Telipogon*. Due to the cross-venulate lip and petals, it resembles *T. ochraceus*, *T. maldonadoensis*, and *T. idroboi*. *Telipogon ochraceus* can be easily distinguished by anastomoses on the basal parts of the lip and petals. *Telipogon idroboi* has furfureaceous petals, and the gynostemium of *T. maldonadoensis* is covered in a different pattern and by different kinds of hair.

24. *Telipogon fernandezii* Szlach. & Kolan., sp. nov. (Figure 44)

TYPE: Colombia. *J. L. Fernandez & Sist. Veg. 14188* (holotype, COL! 375999; UGDA-DLSz! – drawing).

Species similar to *Telipogon fassetti*, distinguished by suborbicular-obovate lip, widest below the middle, with small callus in form of longitudinal ridge below gynostemium, densely ciliate and gynostemium upper and lateral parts densely setose, and lower part glabrous, with protruding lower stigma margin.

Stem ca. 5 cm long, erect, elongate, ascending. Leaves eight in type material, ca. 2 cm long, 0.5 cm wide, ligulate-lanceolate, acuminate. Inflorescence – peduncle 15 cm long, raceme two-flowered. Flowers medium-sized. Floral bracts 5 mm long, cucullate, ovate, acute. Pedicel and ovary 17 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 12 mm long, 4 mm wide, concave, ovate, acuminate, three-veined, veins simple. Lateral sepals 11 mm long, 5 mm wide, concave, obliquely ovate, shortly acute, three-veined, veins simple. Petals 19 mm long, 13 mm wide, broadly ovate in outline, widest above the basal third, somewhat oblique, apex shortly acuminate, base broadly cuneate, glabrous, veins nine, simple. Lip 18–19 mm long and wide, suborbicular-obovate in the outline, widest below the middle, shortly mucronate at the truncate apex, margins papillate, callus small, in the form of longitudinal ridge, densely ciliate, papillate above, distal part glabrous, veins 17, simple. Gynostemium ca. 7 mm long, upper and lateral parts densely setose, setae 2.5 mm long, lower part glabrous, with protruding lower stigma margin.

Etymology: In honor of J. L. Fernandez, a collector of the type specimen.

Ecology: Plants growing at the altitude of ca. 2,600 m. Flowering in May.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Boyacá:** Arcabuco. Via Arcabuco-Ville de Leyva. Bosque a la derecha de la carretera, entre Arcabuco y los Naranjos. Alt. 2,600 m. May 12, 1996. *J. L. Fernandez & Sist. Veg. 14188* (COL!, UGDA-DLSz! – drawing).

Notes: This species can be characterized by suborbicular-obovate lip widest below the middle, a small callus in the form of longitudinal ridge, densely ciliate, papillate above, distal part glabrous, densely setose upper and lateral gynostemium parts, and a glabrous lower gynostemium part with a protruding lower stigma margin.

3.2.1.1.3. *Musaicus*-Subgroup

Lip as long as wide or longer.

KEY TO THE SPECIES:

1. Lip veins strongly cross-venulate 2
- 1* Lip veins simple, or scarcely anastomosing 3
2. Gynostemium upper lobe pilose with hyaline terminated hairs ca. 1 mm long, lower part ciliate with prominent thickening 26. *T. pamplonensis*
- 2* Gynostemium upper part setose with ca. 2 mm long hairs, lower part densely villose, prominently protruding just above the base 25. *T. musaicus*
3. Flowers large, lip 23–27 mm long and wide, petals large, 21 × 23 mm 29. *T. bugalagrandei*
- 3* Flowers small, lip 6–9 mm long and similar width, petals 7.5–9 × 5–7.5 mm ... 4
4. Gynostemium glabrous, basally provided with obtriangular, glabrous callus, free from the lip 27. *T. venustus*
- 4* Gynostemium shortly pubescent on the upper surface, hairs ca. 1 mm long, more or less twisted, the lower part glabrous, part below stigma prominently protruding 28. *T. orozcoi*

25. *Telipogon musaicus* Rchb. f. (Figure 45)

Linnaea 41: 3. 1877[1876]. TYPE: Colombia. *B. Roezl s.n.* (holotype, W-R! 30107; UGDA-DLSz! – drawing).

Stem not preserved in herbarium material. Flowers 20 mm in diameter. Sepals subsimilar, keeled abaxial. Dorsal sepal 10 mm long, 3–4 mm wide, concave, elliptic-lanceolate, acute, three-veined, veins simple. Lateral sepals 10 mm long, 4 mm wide, concave, elliptic-lanceolate, acute, oblique, three-veined, veins simple. Petals 11 mm long, 8–9 mm wide, elliptic-ovate in outline, somewhat oblique, apex subacute, base narrowly cuneate and villose, margins glabrous, slightly undulate, veins seven, with prominently marked abortive vein. Lip 12 mm long, 9 mm wide, broadly obovate or elliptic-obovate, obtuse at the apex, without prominent callus but with column foot gradually disappearing on the lip lamina, base villose, margins glabrous, somewhat undulate, veins nine, cross-venulate, all veins prominently marked. Gynostemium 4 mm long, upper part setose with ca. 2 mm long hairs, lower part densely villose, part below stigma prominently protruding.

Ecology: No data.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Antioquia:** *Sine loc.* *B. Roezl s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon musaicus* resembles *T. pamplonensis*. According to our knowledge, the only discriminative characteristic between these taxa concerns the gynostemium details. The upper gynostemium part of *T. pamplonensis* is pilose with short hairs (ca. 1 mm long) and a hyaline apex. Its lower part is ciliate with prominent projecting just below the stigma. The upper gynostemium part of *T. musaicus* is setose (ca. 2 mm long) and the lower part is densely villose. In addition, the gynostemium of this species is adorned by the basal digitate projection, which is not found in *T. pamplonensis*.

26. *Telipogon pamplonensis* Rchb. f. (Figure 46)

Xenia Orchid. 1: 232. 1856. TYPE: Colombia. *L. J. Schlim 127* (holotype, W-R! 29259; UGDA-DLSz! – drawing).

Stem elongate. Leaves ca. 1 cm long, 0.25 cm wide, linear or linear-ligulate, obtuse. Peduncle 5–7.5 cm long. Flowers reddish. Floral bract ca. 3 mm long. Pedicel and ovary 14 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 8 mm long, 3.5–4 mm wide, concave, ligulate-lanceolate, subacute, three-veined, veins

simple. Lateral sepals 7–8 mm long, 3 mm wide, concave, obliquely ovate-lanceolate, acuminate, three-veined, veins simple. Petals 8 mm long, 7 mm wide, more or less broadly ovate in outline, widest above the basal third, somewhat oblique, apex acuminate, margins almost glabrous, veins seven, simple. Lip 10 mm long and wide, suborbicular-ovate, widest above the middle, rounded at the apex with small apiculus, base papillate, ecallose, margins glabrous, veins nine, slightly keeled at the basal third, cross-venulate. Gynostemium 3 mm long, clinandrium prominently three-lobed, the upper lobe pilose with hyaline terminated hairs ca. 1 mm long, lateral lobes part setose with hairs ca. 2 mm long, with prominent thickening on the ventral surface covered by ciliae.

Ecology: Plants growing at the altitude of ca. 2,800 m.

Distribution: Colombia.

Representative specimen: – COLOMBIA. “Pamplona. Baja.” Alt. 2,800 m. *L. J. Schlim* 127 (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon pamplonensis* is very similar to *T. musaicus*; the differences are discussed above.

27. *Telipogon venustus* Schltr. (Figure 47–Figure 52)

Repert. Spec. Nov. Regni Veg. Beih. 7: 198. 1920. TYPE: Colombia. *M. Madero s.n.* (B†).

Plants 16–40 cm tall, erect, ascending, elongate. Leaves numerous, 1.3–2 cm long, 0.5–0.8 cm wide, oblong ligulate, obtuse, set apart ca. 1 cm. Inflorescence – peduncle up to 22 cm long, terete, raceme up to 8 cm long, laxly 5–20-flowered. Flowers small, sepals dark maroon greenish towards the base, petals yellow, yellow-brown or brown-purple striped, lip callus and gynostemium purple. Floral bract ca. 4–5 mm long, ovate, acute. Pedicellate ovary ca. 8–15 mm long. Sepals more or less keeled on the outer side. Dorsal sepal 5.5–7.5 mm long, 3–3.5 mm wide, ovate, lanceolate-obovate to oblong obovate, obtuse to shortly acuminate, sometimes cucullate, three-veined, veins simple. Lateral sepals 5.5–7 mm long, 2.5–3 mm wide, obliquely lanceolate-obovate to oblong elliptic, shortly acuminate, three-veined, veins simple. Petals 7.5–9 mm long, 5–7 mm wide, elliptic-suborbicular to suborbicular-obovate in outline, oblique, acute to apiculate, 11-veined, veins simple. Lip 6–8.5 mm long, 4.5–5.5 mm wide, ovate to broadly ovate, widest above the middle, shortly mucronate or rounded at the apex, 11-veined, veins simple or scarcely branching at the base. Gynostemium ca. 2 mm long, glabrous, basally provided with obtriangular, glabrous callus, free from the lip.

Ecology: Plants growing at the altitude of ca. 2,500–3,300 m. Flowering in August.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. **Cauca**: Alt. 2,500 m. *M. Madero s.n.* (B†). ECUADOR. **Cuenca**: Alt. 3,300 m. 16 August 1978. *F. C. Lehmann s.n.* (W-R!, UGDA-DLSz! – drawing); Jinajillo, between Cuenca and Nobon. *F. C. Lehmann* 6870 (AMES!, UGDA-DLSz! – drawing).

Notes: This is one of the most common species of this group found in herbaria. *Telipogon venustus* can be readily distinguished from other species by having completely a glabrous gynostemium with an obtriangular, glabrous callus on the basal parts, free from the lip.

28. *Telipogon orozcoi* Szlach. & Kolan., sp. nov. (Figure 53)

TYPE: Colombia. *J. L. Fernandez & al.* 11868 (holotype, COL! 384291; UGDA-DLSz! – drawing).

Species similar to *Telipogon gracilipes* *but with smaller flowers, one-veined sepals, obliquely broadly ovate-suborbicular, five-veined petals, and orbicular lip with seven veins.*

Stem 7 cm tall, elongate, ascending. Leaves numerous, 2 cm long, 0.6 cm wide, ligulate-lanceolate, acuminate. Inflorescence 7 cm long, laxly three-flowered. Flowers small. Floral bracts 4 mm long, cucullate, ovate, acute. Pedicel and ovary 16 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 7–8 mm long,

2–2.5 mm wide, concave, ovate-ligulate, acuminate, one-veined, vein simple. Lateral sepals 7–8 mm long, 2–2.5 mm wide, concave, obliquely ovate-ligulate, acuminate, one-veined, vein simple. Petals 8–9 mm long, 7–7.5 mm wide, obliquely broadly ovate-suborbicular in outline, widest near the basal third, sessile, rounded at the apex, veins five, simple. Lip 9 mm long and wide, orbicular, widest near the middle, rounded at the apex, shortly cuspidate, ecallose, glabrous, veins seven, simple. Gynostemium 2.5 mm tall, erect, short, clinandrium obscurely three-lobed, shortly pubescent on the upper surface, hairs ca. 1 mm long, more or less twisted, the lower part glabrous, part below stigma prominently protruding.

Etymology: In honor of C. Orozco, an active collector of Colombian plants.

Ecology: Plants growing at the altitudes of 1,750–3,050 m. Flowering in November.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Norte de Santander:** Via Toledo hacia Vereda Santa Isabel, bajando de el Paramo de Santa Isabel hacia finca Palo Colorado. Alt. 1,750–3,050 m. November 4, 1994. *J. L. Fernandez & al. 11868* (COL!, UGDA-DLSz! – drawing).

Notes: This species is similar to the Costa Rican *Telipogon gracilipes* Schltr., but has slightly smaller flowers. Its lip is orbicular, approximately 9 mm long and wide with seven veins (vs. 12 × 13 mm, 19-veined), petals are 8–9 × 7–7.5 mm, obliquely broadly ovate-suborbicular in outline, widest near the basal third, rounded at the apex, and five-veined (vs. 12 × 4 mm, obliquely ovate-lanceolate, acuminate, nine-veined) with one-veined sepals (vs. three-veined). The lower gynostemium part below stigma is very protruding.

Telipogon orozcoi can be confused with *T. venustus*, with which it shares similar size of the flowers, but its gynostemium is shortly pubescent on the upper surface (vs. glabrous).

29. *Telipogon bugalagrandei* Szlach. & Kolan., sp. nov. (Figure 54)

TYPE: Colombia. *J. Cuatrecasas 20795* (holotype, AMES! 090821; UGDA-DLSz! – drawing).

Species similar to *Telipogon benedicti*, but with much larger flowers, transversely elliptic lip which is wider than long, and gynostemium being densely setose in the upper surface with prominent protruding on the ventral surface well below apex.

Stem ca. 2 cm long (only partially preserved), erect, elongate, ascending. Leaves four, ca. 3.5 cm long, 0.9 cm wide, ovate-lanceolate, acute. Inflorescence 3 cm long, raceme laxly three-flowered. Flowers rather large. Floral bracts 12 mm long, cucullate, ovate, acute. Pedicel and ovary 25 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 18 mm long, 7 mm wide, concave, oblong ovate, acute, three-veined, veins simple. Lateral sepals 18 mm long, 7 mm wide, concave, obliquely oblong ovate, shortly acute, three-veined, veins simple. Petals 21 mm long, 23 mm wide, transversely elliptic in outline, somewhat oblique, apex shortly acuminate, base broadly cuneate, glabrous, veins nine, simple. Lip 23–27 mm long and wide, transversely elliptic, widest near the middle, shortly mucronate at the apex, margins, callus small, more or less cordate, surrounding gynostemium base, ciliate-papillate, free from the lip, veins 11, simple. Gynostemium ca. 6 mm long, upper part densely setose, setae 3 mm long, lower part glabrous.

Etymology: In reference to the place of the origin of the type specimen.

Ecology: Plants growing at the altitude of ca. 3,100 m. Flowering in April.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Valle del Cauca:** Cordillera Central. Veritiente occidental. Hoaya del Rio Bugalagrande. Cuchilla de Barragan, entre Las Azules y Las Violetas. Alt. 3,100 m. April 15, 1946. *J. Cuatrecasas 20795* (AMES!, UGDA-DLSz! – drawing).

Notes: This species is somewhat similar to the Peruvian *Telipogon benedicti*, but has much larger flowers; its lip is 23 × 27 mm (vs. 8 × 7 mm), petals 23 × 21 mm (vs. 8 × 6 mm), and sepals 18 × 7 mm (vs. 7 × 3.5–5 mm). Its lip is wider than it is long

(vs. longer than wide), petals are almost as long as they are wide (vs. longer than wide), and the gynostemium is densely setose on the upper surface with setae approximately 3 mm long (vs. pubescent with hairs ca. 1 mm long) with prominent protrusions on the ventral surface well below apex (vs. no protruding at all).

Telipogon bugalagrandei has the largest flowers in the group, with a lip 23–27 mm long and wide and petals 21 × 23 mm.

3.2.1.1.4. *Karsteae*-Subgroup

Lip with prominent callus at the base of the gynostemium.

KEY TO THE SPECIES:

1. Lip 20 × 18 mm, petals 18 × 16 mm III. *T. karsteae*
 1* Lip 8–10 mm long and wide, petals 9–10 mm long and similar in wide 2
 2. Lip with 11 or 13 simple veins, petals with nine or 11 simple veins
 30. *T. boissierianus*
 2* Lip with seven cross-venulate veins, petals with five cross-venulate veins
 31. *T. valenciae*

III. *Telipogon karsteae* Dodson & E. Sanchez

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1183. 2004. TYPE: Ecuador. *E. Sanchez 17* (holotype, RPSC!).

Stem up to 18 cm long, erect, elongate, ascending. Leaves numerous, up to 2.5 cm long, 0.7 cm wide, ovate-lanceolate, acute, set apart ca. 1 cm. Inflorescence ca. 10 cm long, terete. Flowers medium-sized, sepals dirty green with maroon veins, petals dark yellow with red-maroon veins, lip dull purplish with darker veins net, gynostemium and callus purple-brown. Floral bracts 5 mm long, cucullate, ovate, acute. Sepals similar, keeled abaxial. Dorsal sepal 16 mm long, 5 mm wide, concave, narrowly ovate, acute, three-veined. Lateral sepals 16 mm long, 5 mm wide, concave, obliquely narrowly ovate, acute, three-veined. Petals 18 mm long, 16 mm wide, broadly ovate in outline, somewhat oblique, obtuse at the apex, veins nine or 11, simple. Lip 20 mm long, 18 mm wide, broadly elliptic, obtuse at the apex, callus 4 mm long and wide, cordiform, hirsute, veins 11 or 13. Gynostemium 1 mm long, connate with the lip callus, upper part evenly setose.

Ecology: Terrestrial at the altitude of ca. 3,100 m. Flowering in September.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Loja:** Loja to Cuenca. Above Saraguro. Alt. 3,100 m. September 2001. *E. Sanchez 17* (RPSC!).

Notes: *Telipogon karsteae* has the largest flowers in the group of species with callous lips. Its petals are 18 × 16 mm (vs. 9–10 long and wide in other group representatives), and the lip is 20 × 18 mm (vs. 8–10 mm long and wide in other group representatives).

30. *Telipogon boissierianus* Rchb. f.

Bonplandia 4: 213. 1856. TYPE: Peru. De la Cunta (Cuerta?) de Saria. *Sine coll.* (holotype, Herb. Pavon?).

Stem ca. 20 cm long, erect, elongate, ascending. Leaves numerous, ca. 1 cm long, 0.5 cm wide, ovate-lanceolate, acute, set apart ca. 1 cm. Inflorescence – peduncle ca. 10 cm long, terete, raceme 5–7 cm long, laxly three–four-flowered. Flowers rather small, dark yellow, gynostemium and callus purple. Floral bracts 4 mm long, cucullate, ovate, acute. Pedicel and ovary 20 mm long. Sepals similar, keeled abaxial. Dorsal sepal 7 mm long, 3 mm wide, concave, oblong elliptic, acuminate, three-veined, veins simple. Petals 10 mm long and wide, more or less orbicular in outline, somewhat oblique, apex shortly acute, recurved, base broadly cuneate, veins nine or 11, simple. Lateral sepals 7 mm long, 3 mm wide, concave, obliquely ligulate-elliptic, acuminate, oblique, three-veined, veins simple. Lip 8–9 mm long

and wide, rhombic-orbicular, rounded at the apex, basal fifth ciliate, margins ciliate in the basal quarter, veins 11 or 13, simple. Gynostemium 3 mm long, upper part setose, lower part papillate, callus obtriangular-cordate, densely ciliate, connate with the gynostemium.

Ecology: No records.

Distribution: Colombia, Ecuador, Peru.

Notes: We have not seen materials representing this species. Based on Reichenbach's description and drawing, it appears that *Telipogon boisserianus* has flowers of similar size to those of *T. valenciae*, clearly separating both species from the large-flowered *T. karsteae*. Unlike *T. valenciae*, the lip of *T. boisserianus* is ornamented with 11–13 simple veins (vs. seven cross-venulate veins), and petals have nine or 11 simple veins as well (vs. five cross-venulate veins).

31. *Telipogon valenciae* Dodson & Escobar

Orquideología 18(3): 251–253. 1993. TYPE: Colombia. *R. Escobar & al. 4015* (holotype, JAUM; Isotype: RPSC!).

Stem elongate, up to 20 cm long. Leaves up to 3 cm long and 1 cm wide, oblong, ligulate, subacute. Inflorescence up to 10 cm long, terete, five–seven-flowered. Flowers ca. 20 mm in diameter, sepals yellow with greenish trail along vein, petals and lip yellow with red-maroon veins, lip calli and gynostemium red-purple. Floral bracts 8 mm long, ovate, acute, not carinate. Pedicel and ovary ca. 18 mm long. Sepals similar, keeled abaxial. Dorsal sepal 10–12 mm long, 3–5 mm wide, ovate, concave, subacute, three-veined. Lateral sepals 12 mm long and wide, concave, ovate-lanceolate, acute, oblique, three-veined. Petals 9–10 mm long, 9–11 mm wide, elliptic-obovate, somewhat oblique, apex shortly mucronate, glabrous, veins five, veins cross-venulate. Lip 10 mm long and wide, elliptic-suborbicular, obtuse, shortly mucronate, veins seven, cross-venulate; callus three-lobulate at the base of the gynostemium, densely hirsute. Gynostemium 3 mm long, clinandrium prominently three-lobed, lobes densely setose, otherwise gynostemium minutely ciliate.

Ecology: Epiphyte at the altitude of ca. 2,900–3,000 m. Flowering in April and August.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Caldas:** Termales. Alt. 3,000 m. April 8, 1919. *M. Dawe 773* (K); **Quindío:** Mpio. Calarca. Alto de La Linea. Carretera a antenna de TV en El Campanario. Alt. 3,200 m. *R. Escobar & al. 4015* (JAUM, RPSC!); **Risaralda:** Mpio. Santa Rosa d Cabal. Camino que va desde Termales hasta El Paramillo de Santa Rosa, entre las finas Berlin y El Jardin. Alt. 2,930 m. August 25, 1987. *O. de Wilde 2496* (herbarium de Wilde).

Notes: The most characteristic feature of *Telipogon valenciae* is the triple-lobulate, densely hirsute callus at the base of the gynostemium. The lip callus of *T. boisserianus* is obtriangular-cordate, densely ciliate, and adnate to the gynostemium. Additionally, both species can be separated by the number of veins – the lip of *T. valenciae* is seven-veined, veins are cross-venulate (vs. 11 or 13-veined lip with simple veins), and petals are five-veined with cross-venulate veins (vs. eight or 11 simple veins).

Incertae sedis

32. *Telipogon hoppii* Schltr.

Repert. Spec. Nov. Regni Veg. Beih. 27: 120. 1924. TYPE: Colombia. *W. Hopp 3* (B+?).

Plant erect or ascending, up to 37 cm tall. Rhizome abbreviated. Stem elongate, 5–10 cm long, terete, leafy. Leaves numerous, erect-patent to subpatent, sheathing, blade 2–3 cm long, 0.8 cm wide, narrowly lanceolate, acute to acuminate, margin often recurved. Inflorescence – scape terete, erect, laxly three–five-flowered, peduncle 10–20 cm long, with several sheaths. Floral bracts up to 5.5 mm long, lanceolate, acuminate. Pedicellate ovary 17 mm long. Flowers green with brown veins and dark-purple centre. Dorsal sepal 14 mm long, narrowly lanceolate, acuminate, three-veined. Lateral sepals 14 mm long, obliquely narrowly lanceolate, acuminate,

three-veined. Petals 19 mm long, 12.5 mm wide, obliquely ovate, acuminate, nine-veined. Lip 15 mm long, 17 mm wide, suborbicular, apiculate, 17-veined; disc basally minutely papillose, thickened and glabrous in the centre. Gynostemium short, stout, densely violet-setose.

Ecology: Epiphyte at the altitude of ca. 3,000 m. Flowering in September.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Bei Zipaquira. Alt. 3,000 m. September 1920. *W. Hopp* 3 (Schlechter, 1924).

Notes: In some databases (e.g., Tropicos; “*Telipogon hoppii*,” 2022), this species is synonymous with *T. nervosus*.

3.2.1.2. Subgenus *Brevicaules* (Kraenzlin) Braas

Stem usually abbreviated, short, occasionally elongated. Leaves usually few, basally imbricating, large, widest near or above the middle. Peduncle short, usually hardly exceeding leaves, but occasionally much longer. Floral bracts prominent, large, keeled abaxially. Sepals and petals different in form and size. Petals and lip subsimilar.

This subgenus embraces about 85 species which can be divided into four main morphological groups.

KEY TO THE GROUPS OF SPECIES:

1. Lip ecallose ***Hausmannianus*-subgroup** (2)
- 1* Lip with callus 3
2. Veins on the lip and petals simple, scarcely with anastomoses or branches .. **Key 1**
- 2* Veins on lip and/or petals cross-venulate **Key 2**
3. Lip with narrow rim surrounding gynostemium base ***Salamancae*-subgroup**
- 3* Lip callus prominent, extending towards lip centre 4
4. Callus in the major part free from and much protruding above the lip, only basally connate with the lip and gynostemium ***Stinae*-subgroup**
- 4* Lip callus pad-like, sometimes the basal part of the lip convex, densely pubescent or hirsute ***Bruchmuelleri*-subgroup** (5)
5. Lip veins simple **Key 4**
- 5* Lip veins cross-venulate **Key 5**

KEY TO ALL SPECIES OF THE SUBGENUS *BREVICAULES*:

1. Lip ecallose 2
- 1* Lip with callus 3
2. Veins on the lip and petals simple, scarcely with anastomoses or branches 6
- 2* Veins on lip and/or petals cross-venulate 27
3. Lip with narrow rim surrounding gynostemium base 38
- 3* Lip callus prominent, extending towards lip centre 4
4. Callus in the major part free from and much protruding above the lip, only basally connate with the lip and gynostemium 47
- 4* Lip callus pad-like, sometimes the basal part of the lip convex, densely pubescent or hirsute 5
5. Lip veins simple 63
- 5* Lip veins cross-venulate 78
6. Gynostemium with two large, triangular wings on both sides of the anther
..... 32. ***T. vieirae***
- 6* Gynostemium not as above 7

7. Lip prominently wider than long	21
7* Lip not as above	8
8. Lip ca. twice longer than wide	VI. <i>T. andreetae</i>
8* Lip ca. as long as wide	9
9. Flowers very large, lip ca. 30 mm long	33. <i>T. hercules</i>
9* Flowers smaller, lip usually ca. 20 mm long, occasionally slightly larger	10
10. The bottom margin of the stigma much protruding	35. <i>T. kraenzlinianus</i>
10* The bottom part of the stigma not protruding	11
11. Lip up to 16 mm long	12
11* Lip over 19 mm long	17
12. Lip 19- or more veined	13
12* Lip up to 15-veined	15
13. Petals basally rounded	49. <i>T. pasquillensis</i>
13* Petals basally cuneate	14
14. Lip suborbicular-ovate, widest towards the apex, broadly acute, distal half glabrous, basal half ciliate hispid towards the base	50. <i>T. huertasii</i>
14* Lip transversely elliptic, widest below the middle, apex rounded, basally somewhat swollen and ciliate but without proper callus	45. <i>T. berthae</i>
15. Gynostemium densely tomentose all over	46. <i>T. antioquianus</i>
15* Gynostemium either densely pubescent or hirsute on the lower surface	16
16. Petals rhombic-elliptic in outline, lip papillate in the basal half, 11-veined, gynostemium densely pubescent on the ventral surface	42. <i>T. cundinamarcae</i>
16* Petals suborbicular in outline, lip basal V-shaped area densely hirsute, 15-veined, gynostemium hirsute on the central surface	43. <i>T. caucanus</i>
17. Petals and lip with constantly numerous aborted lateral veins ...	40. <i>T. hartwegii</i>
17* Petals and lip without abortive veins when dried	18
18. Petals and lip with the same number of veins	48. <i>T. rotundilabia</i>
18* The number of veins on the lip and petals different	19
19. Gynostemium glabrous, with three tufts of setae on both sides and at the top of clinandrium	39. <i>T. putumayensis</i>
19* Gynostemium not as above	20
20. Petals subequal in length to the lip, subsessile, base and margins papillate, lip widest just below the middle, the lower part of the gynostemium hirsute	V. <i>T. polyrrhizus</i>
20* Petals shorter than lip, base shortly clawed, puberulent, lip widest well above the middle, the lower surface of the gynostemium puberulent below	36. <i>T. aureus</i>
21. Petals distinctly longer than lip	22
21* Petals shorter or at most as long as lip	23
22. Petals 18–22 mm long and wide, lip up to 18 mm long	34. <i>T. radiatus</i>
22* Petals 30 × 28 mm, lip ca. 24 mm long	47. <i>T. alinae</i>
23. Petals and lip hirsute all over, gynostemium covered by setose hairs with branching hyaline margins	IV. <i>T. hirsutus</i>
23* Petals and lip glabrous, gynostemium covered by simple setose hairs	24
24. Gynostemium with a tuft of setose hairs at the apex, and below lower margin of stigma	44. <i>T. trilabiatus</i>
24* Gynostemium not as above	25
25. Lip and petals ca. 15 mm long	38. <i>T. vollesii</i>
25* Lip and petals over 20 mm long	26

26. Lip 23–26 × 25–36 mm, gynostemiums' lower part glabrous 37. *T. latifolius*
 26* Lip 20–23 × 22–28 mm, gynostemium glabrous 41. *T. hausmannianus*
 27. Lip more or less as long as wide 28
 27* Lip prominently wider than long 30
 28. Lip cordate-ovate in general outline, widest near the base 57. *T. patinii*
 28* Lip transversely elliptic-suborbicular in outline, widest near the middle 29
 29. Petals with 10 simple veins, lip main veins keeled and with some anastomoses at the base, gynostemium lower part velutinoso VII. *T. lehmannii*
 29* Petals with nine cross-venulate veins, lip with numerous abortive branching veins, gynostemium sparsely setose XI. *T. saraguroense*
 30. Gynostemium more or less setose 31
 30* Gynostemium glabrous or almost glabrous, but always without any setae 34
 31. Gynostemium upper part densely covered by stellate hairs XII. *T. sprucei*
 31* Gynostemium setae simple 32
 32. Flowers small, petals 13 × 10 mm, lip 10 × 13 mm 53. *T. spathipetala*
 32* Flowers medium-sized to large, petals 18–26 × 18–22 mm, lip 16–20 × 20–28 mm 33
 33. Gynostemium with elevated rim around the lower part, hirsute, base of petals papillate, base of lip shortly hirsute-papillate VIII. *T. puruantensis*
 33* Gynostemium with prominent chin-like extension on the ventral surface below stigma, covered by hispid hairs, base of petals pubescent, base of lip glabrous X. *T. pachyhybos*
 34. Flowers small, petals 15 × 12 mm 54. *T. esperanzae*
 34* Flowers larger, petals over 20 mm long 35
 35. Flowers very large, lip 30 × 40 mm, petals 30 × 28 mm IX. *T. tachirensis*
 35* Flowers smaller, lip 22–25 × 28–34 mm, petals 20–23 × 20–26 mm 36
 36. Gynostemium papillate at the base only 55. *T. ventaquemadensis*
 36* Gynostemium glabrous or almost glabrous, lip and petals heavily cross-venulate 37
 37. Lip in the basal half and around the base of the gynostemium papillate 52. *T. croesus*
 37* Lip glabrous 56. *T. schlimii*
 38. Lip and petals veins cross-venulate 67. *T. polyneuros*
 38* Lip and petals veins simple 39
 39. Lip up to 16 mm long 40
 39* Lip over 19 mm long 43
 40. Lip callus in the form of a pair of knob-like projections below gynostemium 66. *T. bicallosus*
 40* Lip callus more or less U-shaped just below the gynostemium base 41
 41. Gynostemium lacking any hairs, papillate at the base 60. *T. ramiro-medinae*
 41* Gynostemium setose on the upper and lateral surfaces 42
 42. Gynostemium lower surface papillate, upper and lateral surfaces setose, lip 15 × 18–20 mm, nine-veined, petals veins not thickened, glabrous 59. *T. andinus*
 42* Gynostemium lower and lateral surfaces glabrous, the upper surface setose, lip 13–14 × 14–15 mm, 11-veined, petals veins simple, thickened and ciliate at the base and along basal margins 62. *T. sibundoyensis*
 43. Gynostemium adorned with a pair of knob-like densely ciliate projections just below stigma 65. *T. sumapazensis*
 43* Gynostemium without knob-like projections below stigma 44

44. Petals wider than long	45
44* Petals longer than wide	46
45. Petals with some hispid hairs at the base, lip 19 × 27 mm, callus hispid and ciliate, gynostemium lower part pubescent	58. <i>T. salamancae</i>
45* Petals glabrous, lip 23 × 26 mm, callus densely ciliate, gynostemium lower part glabrous	64. <i>T. tolimensis</i>
46. Gynostemium completely glabrous	63. <i>T. castanedoi</i>
46* Gynostemium densely setose	61. <i>T. heinrichsii</i>
47. Lip callus obovate to obovate-cordate, or so, but never three-lobed	48
47* Lip callus more or less two- or three-lobed	59
48. Lip as long as or longer than wide	49
48* Lip wider than long	51
49. Lip 12 mm long, five-veined, callus glabrous	XXVII. <i>T. dodsonii</i>
49* Lip 18 mm long, 11–15-veined, callus villose or hirsute	50
50. Leaves up to 4 × 0.5 cm, sepals 10 × 5 mm, petals nine-veined, lip callus hirsute	88. <i>T. octavioi</i>
50* Leaves 8 × 1.2 cm, sepals 16 × 6 mm, petals 11-veined, lip callus villose	XXVI. <i>T. tamboense</i>
51. Plants with large flowers, lip 22–25 × 27–29 mm, transversely elliptic or elliptic-ovate in outline	52
51* Plants with smaller flowers	53
52. Petals 26 × 19 mm, oblong obovate, nine-veined, lip 25 × 27 mm, transversely elliptic-ovate, papillate along margins, 15-veined, veins simple	XXIV. <i>T. obovatus</i>
52* Petals 27 × 25 mm, rhombic in outline, broadly elliptic-ovate to transversely elliptic above prominent claw, 11-veined, lip 22 mm × 29 mm wide, transversely elliptic, primarily 17-veined, lateral veins sometimes dichotomous	XXV. <i>T. chimborazoensis</i>
53. Flowers small, petals 12–13 × 7–9 mm, lip 10–13 × 12–13 mm	89. <i>T. guacamayensis</i>
53* Flowers larger, petals up to 21 mm long, lip up to 20 × 27 mm, usually smaller	54
54. Lip callus pubescent/puberulent	55
54* Lip callus hirsute/hispid	57
55. Lip 15 × 16 mm, 19–23-veined, callus ligulate, apex hooked	XXVIII. <i>T. frymirei</i>
55* Lip 18–20 × 24 mm, 17–19-veined, callus cordiform to semicircular	56
56. Petals 15 × 15 mm, apex obtuse, veins reticulate, lip with reticulate veins	XXIII. <i>T. loxensis</i>
56* Petals 20 × 14 mm, apex apiculate, veins simple, lip veins simple	XXII. <i>T. steinii</i>
57. Lip and petals veins simple	90. <i>T. tabanensis</i>
57* Lip and petals cross-venulate	58
58. Petals seven-veined, lip with 11 or 13 veins	91. <i>T. phalaena</i>
58* Petals nine-veined, lip with 17 veins	92. <i>T. dendriticus</i>
59. Lip callus bilobed, apically notched with a pair of finger-like projections	93. <i>T. stinae</i>
59* Lip callus more or less three-lobed	60
60. Lip callus obscurely three-lobed	61
60* Lip callus deeply three-lobed	62

61. Petals sessile, lip with 15, anastomosing veins, callus hirsute . . XXIX. *T. thomasii*
- 61* Petals clawed, lip with 19, simple veins, callus papillate XXX. *T. jimburensis*
62. Leaves up to 6.5 × 1.6 cm, lip 16 × 14 mm XXXI. *T. cuyujensis*
- 62* Leaves up to 8 × 2.5 cm, lip 17 × 18 mm XXXII. *T. hagsateri*
63. Gynostemium covered densely by thick, stiff hairs ca. 3–4 mm long, shortly branching at apex 79. *T. hemimelas*
- 63* Gynostemium with no apically branching hairs 64
64. Petals ca. twice longer than wide 65
- 64* Petals more or less as long as wide 66
65. Petals 20–22 × 10–13 mm, lip 19–20 × 10–13 mm, callus small 68. *T. chrysochrates*
- 65* Petals 10–21 × 6.5–8 mm, lip 9–16 × 9–14 mm, base with prominent pad-like callus 6 × 10 mm 78. *T. bruchmuelleri*
66. Petals wider than long, transversely elliptic-rhombic 67
- 66* Petals not as above 68
67. Petals 13-veined, simple, lip 20 × 29 mm, 25-veined, callus very obscure, papillate XVI. *T. papilio*
- 67* Petals 16-veined, sparsely anastomosing at base, lip 12.5 × 18 mm, 19–21-veined, callus prominent, hirsute XV. *T. sarae*
68. Petals and lip sparsely pubescent 71. *T. sp. 1*
- 68* Petals and lip not pubescent 69
69. Lip callus large, ca. 1/3 of the lip length 70
- 69* Lip callus small, ca. 1/4 or 1/5 of the lip length 73
70. Leaves 6–10 cm long, dorsal sepal 19–20 × 7 mm, petals 19–23 × 12–15 mm, lip 17–18 × 22–25 mm 76. *T. camargoi*
- 70* Leaves 3–4.5 cm long, dorsal sepal up to 17 × 7.5 mm, petals up to 18 × 15 mm, lip up to 18 × 20 mm 71
71. Petals 13–18 × 10–15 mm, lip 11–18 × 13–20 mm 77. *T. wallisii*
- 71* Petals 9–12 × ca. 6–9 mm, lip 6–9 × 8–11 mm 72
72. Petals 8–9 × 6–7 mm, seven-veined, lip 6–7 × 8–9 mm, 11- or 13-veined, callus 2 × 2.5 mm, densely papillose 74. *T. eberhardii*
- 72* Petals 10–12 × 9–9.3 mm, nine-veined, lip 9–9.3 × 10–11 mm, 15-veined, callus 3–4 × 2.5–3 mm, densely ciliate with several setae spread all over . . 75. *T. diabolicus*
73. Lip callus more or less setose 73. *T. cristinae*
- 73* Lip callus ciliate or pubescent, but never setose 74
74. Petals 19–25 × 16–24 mm, lip 17–25 × 22–28 mm, gynostemium lower part pubescent or setose 75
- 74* Petals 10–17 × 8–13 mm, lip 10–13 × 13–19 mm, gynostemium lower part ciliate 77
75. Petals with 13 veins XVII. *T. macroglottis*
- 75* Petals with seven or nine veins 76
76. Leaves 5–6 × 0.8 cm, petals basally sparsely pilose, gynostemium densely setose all over XIV. *T. ecuadorensis*
- 76* Leaves 11–12 × 1.8 cm, petals basally glabrous, gynostemium lower part shortly pubescent 69. *T. pulcher*
77. Petals 10–12 × 8–11 mm, suborbicular-obovate in outline, sessile, glabrous, lip with nine or 11 veins 70. *T. andicola*
- 77* Petals 13–17 × 13 mm, obliquely broadly ovate, basally cuneate and papillate, lip with 17 or 19 veins 72. *T. pastoanus*

78. Lip longer than wide	79
78* Lip as long as wide or wider than long	80
79. Petals nearly as long as wide, 22 × 20 mm, veins simple	85. <i>T. yolandae</i>
79* Petals wider than long, 11 × 15 mm, veins cross-venulate	XX. <i>T. isabelae</i>
80. Lip callus densely pubescent or papillose	81
80* Lip callus hispid or setose, but never pubescent	84
81. Petals with simple veins	87. <i>T. uribei</i>
81* Petals with reticulated veins	82
82. Flowers large, lip 28 × 30 mm	83. <i>T. bota-caucana</i>
82* Flowers much smaller, lip up to 17 × 20 mm	83
83. Peduncle bi-alate, petals 15–18 × 14–17 mm, lip 10–17 × 16–20 mm	81. <i>T. semipictus</i>
83* Peduncle tri-alate, petals 13 × 12 mm, lip 13 × 15 mm	86. <i>T. povedanus</i>
84. Petals seven-veined	XIX. <i>T. tessellatus</i>
84* Petals 9–11-veined	85
85. Flowers very small, lip 5 × 6 mm	84. <i>T. uribevelezii</i>
85* Flowers large, lip 15–25 × 18–34 mm	86
86. Lip callus obovate-cordate, dorsal sepal 11 × 4–5 mm, lateral sepals 11 × ca. 4.5 mm, petals veins simple	80. <i>T. mariae</i>
86* Lip callus V-shaped, apically attenuate, narrow, dorsal sepal 13–18 × 5–8 mm, lateral sepals 13–23 × 6–8 mm, petals with heavily reticulated veins	XVIII. <i>T. asuayanus</i>

3.2.1.2.1. *Hausmannianus*-Subgroup

Lip ecallose, occasionally lip basally slightly thickened but without definite callus, main veins sometimes somewhat thickened or keeled at the base (Figure 55).

Veins on the lip and petals simple, scarcely with anastomoses or branches.

KEY 1:

1. Gynostemium with two large, triangular wings on both sides of the anther	32. <i>T. vieirae</i>
1* Gynostemium not as above	2
2. Lip prominently wider than long	16
2* Lip not as above	3
3. Lip ca. twice longer than wide	VI. <i>T. andreetae</i>
3* Lip ca. as long as wide	4
4. Flowers very large, lip ca. 30 mm long	<i>T. hercules</i>
4* Flowers smaller, lip usually ca. 20 mm long, occasionally slightly larger	5
5. The bottom margin of the stigma much protruding	35. <i>T. kraenzlinianus</i>
5* The bottom part of the stigma not protruding	6
6. Lip up to 16 mm long	7
6* Lip over 19 mm long	12
7. Lip 19- or more veined	8
7* Lip up to 15-veined	10
8. Petals basally rounded	49. <i>T. pasquillensis</i>
8* Petals basally cuneate	9
9. Lip suborbicular-ovate, widest towards the apex, broadly acute, distal half glabrous, basal half ciliate hispid towards the base	50. <i>T. huertasii</i>

- 9* Lip transversely elliptic, widest below the middle, apex rounded, basally somewhat swollen and ciliate but without proper callus 44. *T. berthae*
10. Gynostemium densely tomentose all over 46. *T. antioquianus*
- 10* Gynostemium either densely pubescent or hirsute on the lower surface 11
11. Petals rhombic-elliptic in outline, lip papillate in the basal half, 11-veined, gynostemium densely pubescent on the ventral surface 42. *T. cundinamarcae*
- 11* Petals suborbicular in outline, lip basal V-shaped area densely hirsute, 15-veined, gynostemium hirsute on the central surface 43. *T. caucanus*
12. Petals and lip with constantly numerous aborted (not reaching other veins or margins of floral segment) lateral veins 40. *T. hartwegii*
- 12* Petals and lip without abortive veins when dried 13
13. Petals and lip with the same number of veins 48. *T. rotundilabia*
- 13* The number of veins on the lip and petals different 14
14. Gynostemium glabrous, with three tufts of setae on both sides and at the top of clinandrium 39. *T. putumayensis*
- 14* Gynostemium not as above 15
15. Petals subequal in length to the lip, subsessile, base and margins papillate, lip widest just below the middle, the lower part of the gynostemium hirsute V. *T. polyrrhizus*
- 15* Petals shorter than lip, base shortly clawed, puberulent, lip widest well above the middle, the lower surface of the gynostemium puberulent below 36. *T. aureus*
16. Petals distinctly longer than lip 17
- 16* Petals shorter or at most as long as lip 18
17. Petals 18–22 mm long and wide, lip up to 18 mm long 34. *T. radiatus*
- 17* Petals 30 × 28 mm, lip ca. 24 mm long 47. *T. alinae*
18. Petals and lip hirsute all over, gynostemium covered by setose hairs with branching hyaline margins IV. *T. hirsutus*
- 18* Petals and lip glabrous, gynostemium covered by simple setose hairs 19
19. Gynostemium with a tuft of setose hairs at the apex, and below lower margin of stigma 44. *T. trilabiatus*
- 19* Gynostemium not as above 20
20. Lip and petals ca. 15 mm long 38. *T. vollesii*
- 20* Lip and petals over 20 mm long 21
21. Lip 23–26 × 25–36 mm, gynostemium lower part glabrous 37. *T. latifolius*
- 21* Lip 20–23 × 22–28 mm, gynostemium glabrous 41. *T. hausmannianus*

32. *Telipogon vieirae* Dodson & Escobar (Figure 56)

Orquideología 18(3): 254–258. 1993. TYPE: Colombia. R. Escobar & al. 3378 (holotype, RPSC!).

Plant caespitose. Stem 0.1–0.3 cm long, short. Leaves four, basal, up to 1.5 cm long and 0.3–0.5 cm wide, ligulate, obtuse. Inflorescence up to 1.5 cm long in total, raceme one–four-flowered. Flowers small, but large in relations to the plant size, sepals green-yellowish, translucent, petals and lip green-yellowish, with reddish veins, gynostemium reddish. Floral bracts 2 mm long, ovate-triangular, concave, acute. Pedicellate ovary up to 10 mm long, triquetrous. Dorsal sepal 8 mm long, 2 mm wide, ovate, concave, acute, three-veined. Lateral sepals 8 mm long, 2 mm wide, somewhat obliquely elliptic-ovate, concave, acute, three-veined. Petals 8 mm long, 4 mm wide, ovate, acute, six–nine-veined, sparsely branching. Lip 8 mm long, 10 mm wide, transversely elliptic-deltoid, obtuse, 13–19-veined, sparsely branching, ecallose. Gynostemium 2 mm long, terete, glabrous on the major part, with setose

hairs near the apex only, with two prominent, large, triangular wings on both sides of the anther.

Ecology: Plants growing at the altitudes of 1,800–2,450 m. Flowering in January, March, and August.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Mpio. La Union. 17 km al sur de La Union, en la carretera de La Union a Abejorral. Alt. 2,450 m. August 19, 1984. *R. Escobar & al.* 3378 (RPSC!); Mpio. Guatapé. Rio Nare. Alt. 1,800–2,000 m. J. M. Serna. March 1972. *G. Escobar* 974 (AMES!); **Nariño:** La Planada, 7 km al sur de Ricaurte. Alt. 1,800 m. January 23, 1987. *J. Orejuela s.n.* (RPSC! – photo).

Notes: This small-flowered species can be distinguished from all other genus representatives by its unique gynostemium structure, especially the presence of two large, wing-like projections on both sides of the anther, giving an appearance of an airplane. Notably, the gynostemium is almost glabrous, with some setose hairs on the apex only.

33. *Telipogon hercules* Rchb. f. ex Kraenzl. (Figure 57–Figure 59)

Ann. Naturhist. Hofmus. Wien 33: 27. 1919. TYPE: Peru. *B. Roezl s.n.* (holotype, W-R! 30111 – right hand plant; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves 8–10 cm long, 1.8–2 cm wide, elliptic-oblancheolate, acute. Inflorescence – peduncle 20–33 cm long, alate, raceme 7 cm long, six-flowered. Flowers large, yellow with red venation, central part maroon-red. Floral bracts 12–15 mm long, cucullate, ovate, acute. Pedicel and ovary 40–42 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 25 mm long, 7–8 mm wide, concave, lanceolate, acute, five-veined, veins simple. Lateral sepals 25 mm long, 8 mm wide, concave, obliquely ligulate-lanceolate, acute, five-veined, veins simple. Petals 30 mm long and wide, transversely elliptic-orbicular in outline, widest above the middle, acute, base and margins papillate, somewhat undulate, veins 13, simple. Lip 34 mm long, 36 mm wide, transversely elliptic-orbicular, widest near the middle, shortly acute at the rounded apex, ecallose, base papillate, otherwise glabrous, veins 29, simple. Gynostemium 3–4 mm long, densely setose in the upper surface above anther and along stigma margin, setose hairs ca. 6 mm long, apically branching, but not stellate, the lower surface densely pubescent, clinandrium obscurely three-lobed.

Ecology: No data.

Distribution: Peru, Ecuador?, Colombia.

Representative specimen: – COLOMBIA. Bei Pueblo-Laguna unweit Pasto, aug Gestrach an kleinen Gebirgsbächen. *F. C. Lehmann s.n.* (fide Kraenzlin, 1919).

Notes: To the best of our knowledge, *Telipogon hercules* is one of the largest-flowered genus representatives. Similar flower size can be found in *T. alinae*, but petals of the latter species are seven-veined (vs. 13-veined), the lip is smaller (24 × 29 mm vs. 34 × 36 mm), and the gynostemium is ciliate on the ventral surface (vs. lower part of the gynostemium pubescent). Unlike the other group representatives, *T. hercules* has very long setose hairs, up to 6 mm long, apically branching, more or less triple-dentate, and distributed on the upper surface of the gynostemium and along margins of the receptive surface only.

Telipogon hercules is sometimes considered a synonym of *T. papilio* Rchb. f. & Warsz. (“*Telipogon hercules*,” 2022), but the two species differ in flower size (petals 30 mm long in *T. hercules* vs. 18 mm long in *T. papilio*), petal ornamentation (base and margins papillate in *T. hercules*), and lip form. The lip of *T. papilio* is transversely elliptic in outline (20 × 29 mm), widest near the middle, rounded at the apex, and 25-veined with a very obscure callus.

34. *Telipogon radiatus* Rchb. f. (Figure 60–Figure 62)

Linnaea 41: 70. 1877[1876]. TYPE: Peru. *Davis s.n.* (not localized).

Stem abbreviated, up to 2 cm long. Leaves four–six, 3.5–6 cm long, 0.8–1 cm wide, oblanceolate to linear-oblancheolate, acute, widest above the middle. Inflorescence

5–13 cm long, one–six-flowered. Flowers about 30 mm in diameter. Floral bracts 10–15 mm long, lanceolate-ovate, acute. Pedicel and ovary 23–28 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 15–17 mm long, 5–8 mm wide, concave, ligulate-lanceolate, subacute, five-veined, veins simple. Lateral sepals 14–17 mm long, 5–8 mm wide, concave, ligulate-lanceolate, acute, oblique, five-veined, veins simple. Petals 18–22 mm long, 18–22 mm wide, obovate in outline, somewhat oblique, base subsessile, hirtellous, apex acute or obtuse, margins papillate, veins nine or 11, simple. Lip 16–18 mm long, 20–23 mm wide, transversely elliptic, obtuse at the apex or with short, small mucro, base and margins ciliolate, ecallose, veins 11 to 15, simple. Gynostemium 3–5 mm long, clinandrium prominently three-lobed, the upper part densely setose, hairs ca. 3.5 mm long.

Ecology: Plants growing at the altitude of 2,800–3,300 m. Flowering in April, June, July, and December.

Distribution: Peru, Ecuador?, Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** *C. Patin s.n.* (W-R! 14093, UGDA-DLSz! – drawing); **Cauca:** Pasto. Puruguai. Alt. 2,800 m. July 1833. *J. Triana 1471.1* (COL!, UGDA-DLSz! – drawing); **Tolima:** Cordillera Central. Quindio Pass, on Caldas River. Alt. 3,300 m. December 25, 1944. *M. L. Grant & W. B. Drew 10619* (US!, UGDA-DLSz! – drawing); Fresno. Alt. 3,200 m. April 9, 1956. *O. Renz 8623* (RENZ!). *Sine loc. G. Wallis s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: According to Kraenzlin (1919), the lip of this species is much larger than we observed, and can reach 25 × 37 mm with 21 veins.

Telipogon radiatus shares characteristics with *T. alinae*, including petals much longer than the lip, but *T. radiatus* has shorter petals (18–22 mm vs. 30 mm), smaller lip (16–18 × 20–23 mm vs. 24 × 29 mm) with 11 to 15 veins (vs. a nine-veined lip). *Telipogon radiatus* resembles also *T. seibertii*, but has a shorter stem, and the gynostemium upper part is densely setose with setae approximately 3.5 mm long. In the latter species, the stem can be elongated and setae distributed along the anther base only. Noteworthy, in some Colombian materials (*Patin s.n.*, *Grant & Drew 10619*, *Wallis s.n.*), the petals bases are hispid as well. Otherwise, both species are very similar.

We were not able to locate in W any material cited by Reichenbach (1877) in the protologue, as sample *Davis s.n.* was collected in Peru.

35. *Telipogon kraenzlinianus* Szlach. & Kolan., sp. nov. (Figure 63)

TYPE: Colombia. *F. C. Lehmann 481* (holotype, W-R! 5559; UGDA-DLSz! – drawing).

Species distinguished by the upper surface of the gynostemium ornamented with a few setose, short hairs, pubescent otherwise, and much protruding bottom margin of stigmatic surface.

Stem abbreviated. Leaves three, up to 6 cm long and 1 cm wide, oblanceolate, acute, widest above the middle. Peduncle 6 cm long, alate, raceme 3 cm long, seven-flowered. Flowers medium-sized. Floral bracts 12 mm long, cucullate, ovate, acute. Pedicel and ovary 30 mm long. Sepals similar, keeled abaxial. Dorsal sepal 18 mm long, 6 mm wide, concave, oblong ovate, acute, three-veined. Lateral sepals 18 mm long, 6 mm wide, concave, obliquely oblong ovate, acute, three-veined. Petals 19 mm long, 15 mm wide, suborbicular in outline, somewhat oblique, apex acuminate, margins ciliolate, veins nine, sparsely branching in the distal part. Lip 19 mm long and wide, suborbicular in outline, apex shortly acuminate, margins ciliolate, ecallose, veins 15, basal parts elevated and hispid, distal ones occasionally branching. Gynostemium 3 mm long, clinandrium prominently three-lobed, with few setose hairs ca. 2 mm long on the upper surface, lower part pubescent, bottom margin of stigmatic surface much protruding.

Etymology: Dedicated to F. W. L. Kraenzlin (1847–1934), an author of numerous *Telipogon* species.

Ecology: No data.

Distribution: Colombia.

Representative specimen: – COLOMBIA. Vulkan de Pasto. *F. C. Lehmann* 481 (W-R!, UGDA-DLSz! – drawing).

Notes: This species is very similar to those characterized above based on the cover of the gynostemium. Unlike the aforementioned species, the upper surface has few and relatively short (ca. 2 mm long) setose hairs, whereas the other gynostemium surface is pubescent. The unique characteristic of this taxon is a protruding bottom margin of the stigmatic surface.

36. *Telipogon aureus* Lindl. (Figure 64–Figure 69)

in Pl. Hartw.: 150. 1844. TYPE: Ecuador. *K. T. Hartweg s.n.* (holotype, K!).

Stem abbreviated. Leaves several, up to 8 cm long and 1.5 cm wide, narrowly lanceolate to oblanceolate, acute, widest above the middle. Inflorescence – peduncle up to 15 cm long, alate, raceme 6 cm long, laxly several-flowered. Flowers medium-sized, yellow or sometimes distal half of petals semi-transparent yellow with faint red-brown lines following the veins. Floral bracts 10 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary ca. 20–30 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 15 mm long, 4–5 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 15 mm long, 4–5 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 15–16 mm long, 13 mm wide, rhombic-elliptic in outline, acuminate, base shortly clawed, cuneate, puberulent, veins nine, simple. Lip 20 mm long and wide, broadly rhombic-ovate, rounded at apex, widest well above the middle, ecallose, but somewhat swollen below the gynostemium base, here puberulent, veins 13, simple. Gynostemium about 4 mm tall, clinandrium obscurely three-lobed, covered by long bristles on the upper surface, puberulent below and on both sides.

Ecology: No data.

Distribution: Ecuador, Colombia.

Representative specimen: – COLOMBIA. **Putumayo**: Near the new road from Sibundoy-San Francisco to Mocoa. Alt. 2,700 m. 2018. Cultivated. *J. C. Ordoñez s.n.* (HJPU – Sauleda & al. 2020, UGDA-DLSz! – photo). ECUADOR. In montibus Loxa. *K. T. Hartweg s.n.* (K!, UGDA-DLSz! – copy).

Notes: This Ecuadorian species differs from other genus representatives reported from NW South America, exhibiting a broadly rhombic-ovate lip, rounded at the apex and widest well above the middle. It seems that the most similar species to *Telipogon aureus* is its Ecuadorian-Colombian congener, *T. polyrrhizus*, but these species differ in petal, lip, and gynostemium details. Petals of *T. polyrrhizus* are subequal in length to the lip (vs. shorter than lip) and subsessile (vs. shortly clawed), with papillate bases and margins (vs. base puberulent). The lip is widest just below the middle (vs. lip widest well above the middle), and the lower part of the gynostemium is hirsute (vs. lower surface puberulent).

IV. *Telipogon hirsutus* Szlach. & Kolan., sp. nov. (Figure 70)

TYPE: Ecuador. *F. C. Lehmann s.n.* (holotype, W-R! 5581; UGDA-DLSz! – drawing).

Species similar to Telipogon trilabiatum characterized by sparsely hirsute petals and lip all with basal parts being densely and softly pubescent, and gynostemium densely covered by setose with branching hyaline apex.

Stem abbreviated. Leaves three–four, up to 10 cm long and 1.5 cm wide, linear-oblanceolate, acute. Inflorescence 10 cm long, alate, raceme eight-flowered. Flowers large. Floral bracts 10 mm long, triangular-ovate, acute, concave. Pedicellate ovary 35 mm long, triquetrous. Dorsal sepals 18 mm long, 6 mm wide, ovate-lanceolate, acuminate, five-veined, veins simple. Lateral sepals 19 mm long, 6 mm wide, ovate-lanceolate, acuminate, somewhat oblique, five-veined, veins simple. Petals 21 mm long, 19 mm wide, broadly rhombic-ovate, somewhat oblique, base broadly cuneate, shortly and softly pubescent, sparsely hirsute all over, acuminate at the apex, margins glabrous, slightly undulate, 11-veined, veins simple. Lip 20 mm long, 26 mm wide, transversely elliptic-rhombic, rounded at the apex with short mucro, margins glabrous, base densely and softly pubescent, hirsute

above, 17-veined, veins simple. Gynostemium 4 mm long, erect, densely covered by setose hairs ca. 3 mm long, with branching hyaline apex.

Etymology: In reference to the hirsute petals and lip.

Ecology: No data on habitat.

Distribution: Ecuador.

Representative specimen: – ECUADOR. Loja. August 14, 1878. *F. C. Lehmann s.n.* (W-R! 5581, UGDA-DLSz! – drawing).

Notes: This is the only species of the group with petals and lip sparsely hirsute all over. Basal parts are densely and softly pubescent, and the gynostemium is densely covered by setose hairs approximately 3 mm long, with a branching hyaline apex.

37. *Telipogon latifolius* Kunth (Figure 71, Figure 72)

Nov. Gen. Sp. (quarto ed.) 1: 336. 1816. TYPE: Peru. A. J. A. Bonpland & F. W. H. A. Humboldt s.n. (P!).

Plants caespitose. Stem up to ca. 6 cm long, short, abbreviated. Leaves two–six, basal, up to 8 cm long, 0.8–1.3 cm wide, oblanceolate, acute, widest above the middle. Inflorescence up to 20 cm long, peduncle alate, raceme ca. 7 cm long, laxly ca. three–eight-flowered. Flowers rather large, yellow or lip yellow-white, red-veined. Floral bracts 6–17 mm long, ovate, concave, acute. Pedicellate ovary 30–50 mm long, triquetrous. Dorsal sepal ca. 20–21 mm long, 4–8 mm wide, lanceolate, acuminate, basally somewhat concave, carinate, three- or five-veined. Lateral sepals ca. 18–23 mm long, 4–9 mm wide, somewhat obliquely lanceolate, acuminate, basally somewhat concave, carinate, three-veined. Petals ca. 20–24 mm long, 16–28 mm wide, obliquely subrhombic to suborbicular, apex rounded to shortly acuminate, with 7(11) veins. Lip 23–26 mm long, 25–36 mm wide, transversely elliptic, apiculate, basally cuneate and minutely pilose, with 13 or 15 veins, scarcely branching. Gynostemium ca. 7 mm long, upper part long-setose, the lower part glabrous, setae ca. 5 mm long, with short hyaline apex.

Ecology: Epiphyte in forests at the altitude of 2,500–3,300 m. Flowering February–April.

Distribution: Colombia, Ecuador, Peru.

Representative specimens: – COLOMBIA. **Cundinamarca**: Carretera Guasca-Sueva. Alt. 3,000 m. February 22, 1997. *M. Ospina H. 1470* (COL!, UGDA-DLSz! – drawing); **Magdalena**: Sierra Nevada de Santa Marta. Entre San Pedro y cabeceras del Rio Sevilla. Alt. 2,500 m. January–February 1959. *H. G. Barclay & P. Juajibioy 6532* (MO!, UGDA-DLSz! – drawing). ECUADOR. **Chimborazo**: Chuciam Chimborasso. Alt. 3,160 m. *F. C. Lehmann s.n.* (fide Kraenzlin, 1919); **Loja**: Cajanuma, sendero al mirador. Alt. 2,900 m. April 25, 2002. *B. Merino & T. Delgado E-1356* (LOJA!); **Pichincha**: Quito, ohne genaueren Standort. *F. C. Lehmann s.n.* & *H. Karsten s.n.* (fide Kraenzlin, 1919). PERU. [**Cajamarca**]: Crescit in regione ferventissima Provincia Jaen de Bracamoros, inter pagos Choros et Tomependa, juxta confluentem et Chinchipes fluminis Amazonum. August. *A. J. A. Bonpland & F. W. H. A. von Humboldt s.n.* (P).

Notes: Identification of this species is difficult, as the original description is very laconic. The specimen that serves as a holotype is rather poorly preserved, and the flower is not useful for detailed examination.

Telipogon latifolius is very similar in flower segment morphology to *T. vollesii* and can be distinguished from the latter by its glabrous lower part of the gynostemium (vs. ciliate). Both have completely different patterns of lines on the petals and lip. Kraenzlin (1919) categorized *T. latifolius* as *T. hausmannianus*, but flowers of the latter are smaller (lip 20–23 × 22–28 mm vs. 23–26 × 25–36 mm), with a ciliate lower part of the gynostemium.

38. *Telipogon vollesii* Dodson & Escobar (Figure 73)

Orquideologia 18(3): 258–260. 1993. TYPE: Colombia. *R. Escobar & H. Volles 3727* (holotype, JAUM; isotypes, ANT, COL, MO, NY, PSO, RPSC!).

Plant caespitose. Stem up to 1 cm long, short. Leaves three–six, basal, up to 4 cm long and 0.8 cm wide, lanceolate to oblanceolate, acute, widest near or above the middle. Inflorescence up to 5 cm long in total, peduncle 4 cm long, alate, raceme three–five-flowered. Flowers medium-sized, yellow with brownish suffusion or beige, with red or maroon venation, with more or less abortive cross-venulate veins. Floral bracts 9 mm long, triangular-ovate, concave, acuminate. Pedicellate ovary up to 30 mm long, triquetrous. Dorsal sepal 13 mm long, 6 mm wide, ovate-lanceolate, concave, acuminate, three-veined, carinate outside. Lateral sepals 13 mm long, 6 mm wide, elliptic-ovate, concave, acute, three-veined, carinate outside. Petals 15 mm long and wide, orbicular-elliptic to orbicular-ovate, obtuse to subacute, shortly cuspidate, base ciliate-hirsute, seven–nine-veined, with abortive cross veins. Lip 15 mm long, 18 mm wide, transversely elliptic-rhombic, obtuse, shortly apiculate, base ciliate-hirsute, 9–11-veined, veins simple with abortive branches. Gynostemium 4 mm long, clinandrium prominently three-lobed, each lobe with tuft of setose hairs, ciliate on the lower ones.

Ecology: Plants growing at the altitude of 2,900–3,300 m. Flowering in January.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. **Nariño**: A casi 10 km de Tuquerres en la carretera a El Espino, Hacienda Alsacia, vertiente occidental del Volcan Azufral. Alt. 3,300 m. January 30, 1987. *R. Escobar & H. Volles 3727* (ANT, COL, JAUM, MO, NY, PSO, RPSC!); Cerca a Tuquerres, en finca de Hans Volles. Alt. 2,900 m. January 30, 1987. *C. H. Dodson, R. Escobar & al. 17040* (RPSC).

Notes: This species is morphologically very similar to its Ecuadorian-Colombian congener, *Telipogon latifolius*. Both can be very difficult to distinguish in dried form. The lower part of the gynostemium in *T. vollesii* is ciliate, versus glabrous in *T. latifolius*. When, flowering these species can be separated by the color of the flowers. Moreover, veins of *T. latifolius* are narrow, without any anastomoses, even abortive ones. Veins of *T. vollesii* are followed by relatively broad, dark lines with numerous abortive cross-veins.

Telipogon vollesii can be easily separated from *T. hausmannianus* by distinctly smaller flowers and from *T. trilabiatus* by a lack of setose hairs below the stigma.

39. *Telipogon putumayensis* Dodson & R. Escobar

Orquideología 18(3): 246–248. 1993. TYPE: Colombia. *R. Escobar & al. 3756* (holotype, RPSC).

Plants caespitose. Stem 1 cm long, abbreviated. Leaves three–four, basal, up to 6 cm long and 1 cm wide, oblanceolate to oblong-obovate, acute. Inflorescence 6 cm long in total, peduncle 4 cm long, alate, raceme two–three-flowered. Flowers rather large, yellow with olive-green suffusion, setose of the gynostemium maroon-red. Floral bracts 11 mm long, ovate, concave, acuminate. Pedicellate ovary 20 mm long, triquetrous. Dorsal sepal 17 mm long, 6 mm wide, ovate-lanceolate, concave, apiculate, carinate on the outside. Lateral sepals 17 mm long, 6 mm wide, obliquely ovate, concave, apiculate, carinate on the outside. Petals 17 mm long, 15 mm wide, elliptic, acuminate, veins seven, simple. Lip 20 mm long, 22 mm wide, transversely elliptic-orbicular, obtuse, shortly apiculate, veins 17, simple, ecallose. Gynostemium 4 mm long, almost glabrous with exception of three tufts of setose hairs.

Ecology: Plants growing at the altitude of 2,200 m. Flowering in February.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Putumayo**: Carretera de San Francisco a El Pepino, vertiente oriental, despues del paso mas adelante de la estacion repetidora de TV. Rio Blanco. Alt. 2,200 m. February 1, 1987. *R. Escobar & al. 3756* (RPSC).

Notes: *Telipogon putumayensis* can be identified by its glabrous gynostemium, with three tufts of setae distributed at the top of clinandrium and on both sides of the anther.

V. *Telipogon polyrrhizus* Rchb. f. (Figure 74–Figure 76)

Otia Bot. Hamburg.: 6. 1878. TYPE: Ecuador. *F. C. Lehmann 94* (holotype, W-R! 30100; UGDA-DLSz! – drawing).

Stem ca. 4–6 cm long, abbreviated. Leaves 4.5–7 cm long, up to 1.2 cm wide, elliptic-oblongate, acuminate, widest above the middle. Inflorescence – peduncle 5–8 cm long, alate, raceme 1.5–3 cm long, three–six-flowered. Flowers medium-sized, greenish-yellow with red-maroon abortive anastomosing veins in the lower part of petals and lip. Floral bracts 10 mm long, cucullate, ovate, acute. Pedicel and ovary 20–25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 16–19 mm long, 4–5 mm wide, concave, ligulate-lanceolate, acute, three-veined, veins simple. Lateral sepals 17–18 mm long, 4–6 mm wide, concave, obliquely ligulate-lanceolate, acute, three-veined, veins simple. Petals 21–22 mm long, 15–17 mm wide, rhombic-elliptic in outline, acute, base and margins papillate, somewhat undulate, veins nine, simple. Lip 19–21 mm long, 21–23 mm wide, transversely elliptic-obovate, widest just below the middle, shortly acute at the apex, ecallose, base papillate, otherwise glabrous, margins papillate, veins 15 or 19, simple. Gynostemium 3–4 mm long, densely setose on the upper surface, setose hairs ca. 2.5 mm long, the lower surface densely hirsute, clinandrium obscurely three-lobed.

Ecology: Epiphyte in forest at the altitude of ca. 2,100–3,000 m. Flowering in July and October.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Cotopaxi:** Cantón Sighos, por el Río Escaleras. 00.35.32S 58.50.07W Alt. 2,098 m. July 20, 2003. J. Ramos & al. 6353 (QCNE! ex CUVC); Guayaquil to Quito. Alt. 3,000 m. *F. C. Lehmann 94* (W-R!, UGDA-DLSz! – drawing); Villonaco. Alt. 2,900 m. October 5, 1946. *R. Espinosa 733* (AMES!, UGDA-DLSz! – drawing).

Notes: *Telipogon polyrrhizus* is similar to *T. latifolius* and *T. vollesii* in the form of flower segments. It differs, however, from both latter species by its densely hirsute lower part of the gynostemium (vs. glabrous in *T. latifolius* and ciliate in *T. vollesii*). All aforementioned species have different colors of the flowers.

Another species similar to *T. polyrrhizus*, and maybe conspecific, is *T. aureus*, but in the former, petals are subsessile and subequal in length to the lip, with base and margins papillate. The lip is widest just below the middle, and the lower part of the gynostemium is hirsute. Petals of *T. aureus* are shorter than the lip, the base is shortly clawed and puberulent, the lip is widest well above the middle, and the lower surface of the gynostemium is puberulent below.

40. *Telipogon hartwegii* Rchb. f. (Figure 77–Figure 79)

Otia Bot. Hamburg.: 6. 1878. TYPE: Ecuador. *F. C. Lehmann s.n.* (holotype, W-R! 30078; UGDA-DLSz! – drawing).

Stem abbreviated, ca. 4 cm long. Leaves 3–5, up to 7 cm long and 1.3 cm wide, linear-oblongate, acute. Inflorescence – peduncle 8–14 cm long, alate, raceme 2.5–5 cm long, loosely three–seven-flowered. Flowers large, yellow to whitish, semitransparent, with green veins basally becoming brown. Floral bracts 10–12 mm long, triangular-ovate, acute, concave. Pedicellate ovary 25–40 mm long, triquetrous. Dorsal sepals 15–20 mm long, 4–5 mm wide, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 16–21 mm long, 4–6 mm wide, ovate-lanceolate, acuminate, somewhat oblique, three-veined, veins simple. Petals 23–26 mm long, 15–19 mm wide, broadly rhombic-elliptic to rhombic-elliptic, somewhat oblique, base cuneate, shortly and softly pubescent, acuminate at the apex, margins glabrous, slightly undulate, nine-veined, veins with abortive branches in the basal half. Lip 20–23 mm long, 20–24 mm wide, suborbicular to suborbicular-rhombic, acute to mucronate, margins papillate, somewhat undulate, base shortly and softly pubescent, 11-, 13- or rarely 15-veined, veins somewhat keeled at the base, with numerous abortive branches in the basal half. Gynostemium 3–4 mm long, erect, hirsute below, with a bundle of setose spines ca. 3–4 mm long above the anther.

Ecology: In forest.

Distribution: Colombia, Ecuador. Epiphyte at the altitude of ca. 2,700 m. Flowering in August and November.

Representative specimens: – COLOMBIA. **Antioquia:** *G. Schmidtchen s.n.* (W-R!, UGDA-DLSz! – drawing). ECUADOR. **Chimborazo:** *F. C. Lehmann 88* (W-R! 30117); **Pichincha:** Quito. Am niedrigem Gesträuch. Alt. 9,000'. August 1876. *F. C. Lehmann s.n.* (W!, AMES! – drawing, UGDA-DLSz! – copy); Quito. *H. Karsten s.n.* (W! 0014294); Quito. *F. C. Lehmann s.n.* (W-R! 30078, UGDA-DLSz! – drawing); Quitensian Andes. 1855. *J. Couthouy s.n.* (AMES!, UGDA-DLSz! – copy); Forets entre Guaranda a Bodegas. November 1856. *J. Remy s.n.* (P!, UGDA-DLSz! – drawing).

Notes: This species is somewhat reminiscent of *Telipogon vollesii* when dried. The flowers, however, are a completely different color. The unique characteristic of this species not observed in any other species of this group is the presence of numerous abortive veins on the lip and petals.

VI. *Telipogon andreettae* Dodson & Hirtz (Figure 80)

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1182. 2004. TYPE: Ecuador. *A. Hirtz 3339* (holotype, RPSC!).

Plant up to 17 cm tall. Stem abbreviated, up to 2 cm tall. Leaves up to 5 cm long and 1.5 cm wide, oblong elliptic, acute, thick. Inflorescence – peduncle 6–8 cm long, triquetrous. Flowers medium-sized, sepals yellow-green, petals and lip yellow somewhat semi-transparent with red-brown veins becoming greenish towards the apex, flower center red-maroon. Floral bracts 15 mm long, ovate, acute. Pedicellate ovary up to 17 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 15 mm long, 5 mm wide, concave, ovate, apiculate, five-veined, vein simple. Lateral sepals 15 mm long, 5 mm wide, concave, ovate, apiculate, somewhat oblique, five-veined, vein simple. Petals 11 mm long, 15 mm wide, broadly ovate in outline, somewhat oblique, apex shortly cuspidate, veins nine, simple. Lip 20 mm long, 11 mm wide, transversely elliptic-ovate in outline, shortly cuspidate at the apex, base somewhat swollen and surrounding the gynostemium base, veins 15, simple. Gynostemium 5 mm long, clinandrium prominently three-lobed, setose on the upper surface.

Ecology: Plants growing at the altitude of ca. 2,000 m.

Distribution: Ecuador.

Representative specimen: – ECUADOR. Azuay. Cienca to Pasaje, Santa Isabel. Alt. 2,000 m. *A. Hirtz 3339* (RPSC!).

Notes: *Telipogon andreettae* is the only species of this group with a lip distinctly longer than it is wide. In all other species, the lip is either wider than long or at least as long as wide.

41. *Telipogon hausmannianus* Rchb. f. (Figure 81, Figure 82)

Bonplandia (Hannover) 9: 213. 1861. TYPE: Colombia. *J. J. Linden 1285* (holotype, W-R! 30104; isotype, P! 00436606; UGDA-DLSz! – drawing).

Plant with short stem. Leaves three–five, 5–10 cm long, 0.7–2 cm wide, lanceolate, subacute to shortly acuminate. Inflorescence ca. 10–12 cm long, alate, two–four-flowered. Flowers large, sepals bright yellow, petals and lip white in the center, pink at the base, with red vines. Floral bracts 10–15 mm long, cucullate, ovate, acute. Pedicel and ovary 30–40 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 16–22 mm long, 5–6 mm wide, concave, ovate-lanceolate, acute, three- or five-veined, veins simple. Lateral sepals 17–22 mm long, 5–6 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three- or five-veined, veins simple. Petals 22–23 mm long and wide, broadly rhombic-obovate in outline, cuneate at the base, shortly acute, margins papillate in the lower quarter, glabrous above, veins 11, sometimes basally keeled, simple. Lip 20–23 mm long, 22–28 mm wide, rhombic in outline, shortly mucronate at the apex, ecallose, margins papillate in the lower third, veins 15 or 17, simple, slightly keeled and papillate in the lower

quarter, glabrous above. Gynostemium about 3–4 mm tall, clinandrium obscurely three-lobed, glabrous.

Ecology: Terrestrial or epiphytic in montane forest at the altitude of ca. 3,300 m. Flowering in February.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cauca:** Walder von Quindiu, los Volcanitos. Alt. 3,300 m. February 1843. *J. Linden* 1285 (W-R!, UGDA-DLSz! – drawing), Sierra Nevada. Alt. 3,300 m. *G. Wallis s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: Reichenbach (1861) compared *Telipogon hausmannianus* to *T. latifolius* and *T. hartwegii*. *Telipogon latifolius* resembles *T. hausmannianus* and differs in the size of flowers (e.g., lip 23–26 × 25–36 mm in the former vs. 20–23 × 22–28 mm in the latter).

42. *Telipogon cundinamarcae* Szlach. & Kolan. (Figure 83)

Acta Bot. Fenn. 53(3–4): 152, f. 3A–E. 2016. TYPE: Colombia. *M. Ospina H. 1184* (holotype, COL 306757!; UGDA-DLSz! – drawing).

Plant up to 12 cm tall. Leaves up to 4 cm long and 0.5 cm wide, linear-lanceolate, attenuate towards the base, shortly acuminate. Inflorescence up to 9 cm long, alate, three-flowered. Floral bracts up to 8 mm long, lanceolate-triangular, acute. Pedicel and ovary 35 mm long, triquetrous. Dorsal sepal 16 mm long, 4 mm wide, lanceolate, acute, three-veined, veins simple. Lateral sepals 12 mm long, 3.5–4 mm wide, similar to the dorsal sepal, somewhat oblique, three-veined, veins simple. Petals 18 mm long, 14 mm wide, rhombic-elliptic, widest near the middle, symmetric, cuneate and papillate at the base, cuspidate at the apex, nine-veined, veins branching. Lip 15 mm long and wide, circular, cuspidate and somewhat canaliculate at the apex, ecallose, papillate in the basal half, with 11 veins, with distal ones branching. Gynostemium up to 5 mm long, dorsally densely setose, densely pubescent on the ventral surface, rostellum ca. 1.5 mm long. Anther dorsal.

Ecology: Epiphytic in mossy thicket at the altitude of about 3,000 m. Flowering occurs in January and July.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cundinamarca:** Road Guasca-Sueva. January 20, 1987. *M. Ospina H. 1184* (COL!); Mpio. La Calera, forest on the left side of the road to Mundo Nuevo. Alt. 3,000 m. July 19, 1992. *J. L. Fernandez & R. Castillo* 10333 (COL!, UGDA-DLSz! – drawing).

Notes: This species resembles the Colombian *Telipogon berthae* in habit and flower size, as described by P. Ortiz Valdivieso (1994), based on the material collected in the department of Santander. Both orchids are distinguishable by lip and petal morphology. The lip of *T. cundinamarcae* is circular (transversely elliptic in *T. berthae*), with 11 veins (vs. 23 in *T. berthae*). The petals of the new species are rhombic (vs. broadly elliptic in *T. berthae*), with nine veins (vs. 11–13 in *T. berthae*). Moreover, the lower half of the lip in the new species is papillate; in *T. berthae*, hairs cover only the basal third or less of the lip. *Telipogon cundinamarcae* can be misidentified as *T. caucanus*, but the latter has petals suborbicular in outline, the lip basal V-shaped area is densely hirsute, the lamina is 15-veined, and the gynostemium is hirsute on the central surface.

43. *Telipogon caucanus* Schltr. (Figure 84, Figure 85)

Repert. Spec. Nov. Regni Veg. 7: 196. 1920. TYPE: Colombia. *F. C. Lehmann* 6030 (B†; isotypes, US! 938484, W! 7972; UGDA-DLSz! – drawing).

Plant 10–12 cm tall, stem short, abbreviated. Leaves three–five, up to 4.5 cm long and 0.8 cm wide, oblanceolate, acuminate. Inflorescence – peduncle alate, raceme ca. 1.5 cm long, two-flowered. Flowers medium-sized, sepals yellowish-green, petals and lip yellow with red-brown veins and brown-red basal part. Floral bracts 8 mm long, cucullate, ovate, acute. Pedicel and ovary 27 mm long, triquetrous. Sepals

similar, keeled abaxial. Dorsal sepal 15 mm long, 5 mm wide, concave, ovate-elliptic, acute, three-veined, veins simple. Lateral sepals 13 mm long, 5 mm wide, concave, ovate-elliptic, acute, somewhat oblique, three-veined, veins simple. Petals 17 mm long, 14 mm wide, suborbicular in outline, sessile, shortly acute, hirsute at the base, glabrous above, margins ciliate at the base only, veins nine, simple. Lip 15 mm long, 14 mm wide, transversely elliptic-suborbicular, widest above the middle, shortly acute at the subtruncate apex, ecallose, but the basal V-formed area densely hirsute, margins ciliolate in the basal fifth, veins 15, simple, densely hirsute in the basal quarter, glabrous above. Gynostemium about 4 mm long, clinandrium obscurely three-lobed, densely setose on the upper part, setose hairs ca. 2.5–3 mm long with hyaline apex, hirsute on the ventral surface.

Ecology: Plants growing in paramo at the altitude of ca. 3,000–3,600 m.

Distribution: Colombia.

Representative specimen: – COLOMBIA. Paramo von Guanacas, Central-Andes von Popayan. Alt. 3,000–3,600 m. *F. C. Lehmann 6030* (B†, US!, W!, UGDA-DLSz! – drawing).

Notes: According to Schlechter (1920), this species is similar to *Telipogon andicola*, and the two species were considered synonymous by Dodson and Dodson (1984). According to the original description, *T. caucanus* can be distinguished from *T. andicola* by small flowers, suborbicular petals, and a lip that is only basally hairy, with 21 veins. We examined part of the type collection of this species deposited in US and W, and counted 15 lip veins. The other species similar to Schlechter's *T. caucanus* is *T. cundinamarcae*. The latter has rhombic-elliptic petals, an 11-veined lip that is papillate in the basal half, and a gynostemium densely pubescent on the ventral surface. Petals of *T. caucanus* are suborbicular in outline, the lip is 15-veined, the V-shaped basal area is densely hirsute, and the gynostemium is hirsute on the central surface.

44. *Telipogon trilabiatus* Szlach. & Kolan., sp. nov. (Figure 86)

TYPE: Colombia. W. Vargas 8702 (holotype, COL! 461504; UGDA-DLSz! – drawing).

Species similar to *Telipogon caucanus*, *but with shortly cuspidate, sessile, transversely elliptic-suborbicular petals with rounded apex, and gynostemium with a tuft of setose hairs.*

Stem short, abbreviated. Leaves few, up to 3 cm long and 0.6 cm wide, oblanceolate, acuminate, widest above the middle. Inflorescence 7 cm long, few-flowered. Flowers medium-sized. Floral bracts 12 mm long, cucullate, ovate, acute. Pedicel and ovary 25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 18 mm long, 5–6 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 17 mm long, 6–7 mm wide, concave, ovate-elliptic, acute, somewhat oblique, three-veined, veins simple. Petals 19 mm long and wide, transversely elliptic-suborbicular in outline, sessile, apex rounded, shortly cuspidate, veins nine, simple. Lip 18 mm long, 24 mm wide, transversely elliptic, widest towards subtruncate apex, ecallose, basal V-formed area densely papillate, veins 15, simple, distally occasionally branching. Gynostemium 5 mm long, clinandrium obscurely three-lobed, with a tuft of setose hairs ca. 3 mm long at the apex, and below lower margin of stigma.

Etymology: In reference to the form of petals resembling lip, hence flowers appearing three-labiate.

Ecology: Plants growing at the altitude of ca. 3,500 m. Flowering in December.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Tolima:** Mpio. Cajamarca. Corregimiento de Anaime, paramo de Valles. Alt. 3,500 m. December 2000. *W. Vargas 8702* (COL!, UGDA-DLSz! – drawing).

Notes: This species is somewhat similar to *Telipogon caucanus*, but has transversely elliptic-suborbicular petals, which are sessile and shortly cuspidate, with a rounded apex (vs. suborbicular in outline, sessile, shortly acute). The gynostemium of the new

entity has a tuft of setose hairs approximately 3 mm long at the apex and below lower margin of stigma. The gynostemium of *T. caucanus* is densely setose on the upper part; setose hairs are approximately 2.5–3 mm long with a hyaline apex, and the ventral surface is hirsute.

Telipogon trilabiatus differs from *T. vollesii*, *T. latifolius*, and *T. hausmannianus* by the presence of a setose tuft just below the stigma.

45. *Telipogon berthae* P. Ortiz (Figure 87, Figure 88)

Orquideología 19(3): 13–14. 1994. TYPE: Colombia. *P. Ortiz 1058* (holotype, HPUJ).

Plants small, epiphytic. Stem 2–9 cm long, with several distichous leaves. Leaves up to 10 cm long and 1.5 cm wide, oblong-elliptic to oblanceolate, acute, widest above the middle. Inflorescence terminal, elongate, peduncle up to 11 cm long, raceme triquetrous, two–five-flowered. Flowers medium-sized, deep yellow, petals with brown-purple spots on the basal half and small, dark spots, veins not conspicuous, the base of the lip purple almost black, then covered with a brown-purple spot, the terminal zone yellow, gynostemium almost black. Floral bracts ca. 5–9 mm long, ovate, acute, concave. Pedicellate ovary ca. 20–47 mm long, triquetrous. Dorsal sepal 13–18 mm long, 5–6 mm wide, ovate, concave, acute, the median vein carinate outside, three-veined, veins simple. Lateral sepals 11–18 mm long, 4.5–6 mm wide, ovate, acute, somewhat oblique, three- or four-veined, veins simple. Petals 15–21 mm long, 15–19 mm wide, broadly elliptic to elliptic-orbicular, basally cuneate, apiculate, nine-, 11-, or 13-veined, veins simple. Lip 12–16 mm long, 14–18 mm wide, transversely elliptic, widest below the middle, basally somewhat swollen and covered by hairs but without proper callus, apex rounded, 19- or more-veined, veins simple. Gynostemium short, dorsally and laterally setose, setae ca. 5 mm long, with an apicule under the stigma.

Ecology: Epiphyte at the altitude of 2,000–2,500 m. Flowering in February and April.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Caqueta:** Campoalegre – S. Vicente. Alt. ca. 2,000 m. February 26, 1939. *O. Renz 3040* (RENZ!); **Santander:** Carretera Bucamaranga-El Picacho. Alt. 2,500 m. April 7, 1994. *M. Ospina sub P. Ortiz 1058* (HPUJ). *Sine loc.* *L. A. Garay 736* (AMES!, UGDA-DLSz! – drawing).

Notes: *Telipogon berthae* can be misidentified as *T. huertasii*, but its lip is transversely elliptic and widest below the middle, its apex is rounded, and its base somewhat swollen and ciliate (vs. lip suborbicular-ovate, widest towards the apex, broadly acute, distal half glabrous, basal half ciliate hispid towards the base). Unlike those of *T. paquillensis*, petals of *T. berthae* are cuneate at the base. *Telipogon latifolius* is another species similar to *T. berthae*, but it has larger flowers, with the lip almost twice as large as that of the latter, with 13 or 15 scarcely branching veins.

46. *Telipogon antioquianus* Rchb. f. (Figure 89–Figure 93)

Linnaea 41: 72. 1877 (1876). TYPE: Colombia. *J. Warszewicz s.n.* (holotype, W-R! 30093; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves two–six, up to 6 cm long, 0.4–0.4–0.8 cm wide, spatulate, oblanceolate to narrowly lanceolate, acuminate, widest at or above the middle. Inflorescence – peduncle 7 cm long, triquetrous, raceme ca. 1.5 cm long, two–four-flowered. Flowers medium-sized, sepals and petals yellow-greenish, somewhat semi-transparent, veins red-maroon with some abortive branches in the lower half, yellow above, lip yellow with red-maroon veins and some abortive branches. Floral bracts 9–13 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 18–27 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 11–15 mm long, 4 mm wide, concave, broadly lanceolate, acute, three- or five-veined, veins simple. Lateral sepals 11–14 mm long, 4–5 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, margins papillate, three- or five-veined, veins simple. Petals 11–12 mm long, 8.5–10 mm wide, ovate-deltoid in outline, subsessile, acuminate to acute, margins delicately crenate, veins five or seven(nine), simple. Lip 10–12 mm long, 12–14 mm wide, suborbicular, widest near the middle,

more or less cuspidate at the apex, margins delicately crenate and ciliolate, veins nine, 13, or 15, simple, slightly keeled and ciliolate in the lower half. Gynostemium about 3–4 mm tall, clinandrium obscurely three-lobed, densely setose all over, setose hairs ca. 3 mm long.

Ecology: Epiphytes growing at the altitudes of 1,750–3,100 m. Flowering throughout the year.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** *J. Warszewicz s.n.* (W-R!, UGDA-DLSz! – drawing); **Cundinamarca:** Bogotá DC. Corregimiento Nazareth. Los Rios. Finca San Joaquin. 4°9'5.4" N, 74°9'12.6" W. Alt. 2,909 m. January 15, 2013. *J. Ordonez & al.* 1726 (COL!, UGDA-DLSz! – drawing); Localidad Usaquen. Parcelacion la Floresta Cerro pan de Azucar via a la laguna. 4°48'9.6" N, 74°00'0.5" W. Alt. 3,068 m. December 18, 2012. *J. Ordonez & al.* 1580 (COL!); Mpio. La Calera. Carretera a Mundo Nuevo. Alt. 3,000 m. March 1, 1992. *J. L. Fernandez & R. Castillo* 9453 (COL!); Facatativa. El Dintel. Alt. 2,800–2,900 m. May 25, 1952. *M. Schneider* 220/1 (COL!, UGDA-DLSz! – drawing); The same loc. December 22, 1949. *M. Schneider* 220/3 (COL!); Guasca. Paramo de Guasca, km 55 via Sueva. Alt. 2,900 m. August 25, 1979. *G. Morales* 188 (COL!); San Francisco. Vereda El Vino. Finca La Carbonera. Alt. 2,800 m. July 24, 1990. *E. Linares & al.* 3159 (COL!); **Norte de Santander:** Via Toledo hacia Vereda Santa Isabel. Finca Palo Colorado. Alt. 1,750 m. November 2, 1994. *J. L. Fernandez & al.* 11834 (COL!).

Notes: *Telipogon antioquianus* can be readily distinguished from the similar *T. caucanus* and *T. cundinamarcae* by a densely setose gynostemium all around.

47. *Telipogon alinae* Szlach., sp. nov. (Figure 94)

TYPE: Colombia. *J. Betancur & al.* 1043 (holotype, MO! 5724555; UGDA-DLSz! – drawing).

Species similar to *Telipogon antioquianus*, distinguished by over twice larger flowers, seven-veined petals, transversely elliptic-subcircular lip and gynostemium being ciliate on the ventral surface.

Stem abbreviated. Leaves numerous, up to 11 cm long and 2 cm wide, linear- or ligulate-oblongate, attenuate towards the base, shortly acuminate at the apex, widest above the middle. Inflorescence 13 cm long, alate, subaxly six-flowered. Floral bracts 8 mm long, lanceolate-triangular, acute. Pedicel and ovary 36 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 22 mm long, 6 mm wide, elliptic-ovate, apiculate, concave, five-veined, veins simple. Lateral sepals 22 mm long, 6 mm wide, elliptic-ovate, somewhat oblique, concave, apiculate, five-veined, veins simple. Petals 30 mm long, 28 mm wide, elliptic-obovate, widest above the middle, oblique, basally cuneate and glabrous, cuspidate at the apex, seven-veined, veins simple. Lip 24 mm long, 29 mm wide, transversely elliptic-subcircular, widest near the middle, rounded at the apex, ecallose, basal area ciliolate-pubescent, with nine, simple veins. Gynostemium ca. 7.5 mm long, dorsally and laterally setose, with setae ca. 4 mm long, with hyaline apex, densely ciliate on the ventral surface, rostellum ca. 3 mm long. Anther dorsal.

Etymology: Dedicated to Alina Szlachetko, wife of the senior author of this paper.

Ecology: Plants growing at the altitude of ca. 2,140 m. Flowering in October.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Antioquia:** Mpio. Caramanta. 9.8 km de la carretera de Caramanta hacia Supia, Vereda Hojas Anchas. Cerro Viringa, Cordillera Occidental. 5°31.8' N, 75°40.69' W. Alt. 2,140 m. October 15, 1988. *J. Betancur & al.* 1043 (MO!, UGDA-DLSz! – drawing).

Notes: This species is similar to *Telipogon antioquianus*, but flowers over twice as large. *Telipogon alinae* can be easily distinguished from *T. hercules*, another taxon with similarly large flowers. Petals of *T. alinae* are seven-veined (vs. 13-veined in *T. hercules*), the lip is 24 × 29 mm and nine-veined (vs. 34 × 36 mm, 29-veined *T. hercules*) and the gynostemium is ciliate on the ventral surface (vs. densely

pubescent on the lower surface). Furthermore, the setose hairs covering the upper surface of the gynostemium of *T. hercules* are long and apically branching.

Telipogon alinae resembles *T. radiatus*, but generally has larger flowers. Its petals are 30 × 28 mm (vs. 18–22 mm long and wide) and lip is 24 × 29 mm (vs. 16–18 × 20–23 mm) with nine veins (vs. 11 to 15 veins).

48. *Telipogon rotundilabia* Szlach. & Kolan. (Figure 95)

Acta Bot. Fenn. 53(3–4): 154–155, f. 6A–E. 2016. TYPE: Colombia. *E. Linares & R. Sanchez 2798* (holotype, COL!; UGDA-DLSz! – drawing).

Plant up to about 16 cm tall. Leaves up to 7 cm long and 1.4 cm wide, oblanceolate attenuate towards the base, shortly cuspidate. Inflorescence up to 15 cm long, alate, three–four-flowered. Floral bracts to 10 mm long, lanceolate-triangular, acute. Pedicel and ovary 45 mm long, triquetrous. Dorsal sepal 19 mm long, 4.5 mm wide, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 18 mm long, 6 mm wide, similar to the dorsal sepal, but somewhat oblique, three-veined, veins simple. Petals 24 mm long, 16 mm wide, elliptic-ovate, widest below the middle, strongly asymmetric, cuneate at the base, acute at the apex, 11-veined, veins simple. Lip 20 mm long, 22 mm wide, with simple 11 veins, almost circular in general outline, widest near the middle, subobtusate at the apex, basal third densely covered by hispid hairs ca. 2 mm long. Gynostemium up to 6 mm long, densely hispid all over, rostellum ca. 2.5 mm long. Anther dorsal.

Ecology: Epiphytic in secondary Andean forest at the altitude of about 3,000 m. Flowering occurs in June and September.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cundinamarca:** Guasca, Trail la Corporacion, basin of Tunjo River. Alt. 3,000 m. June 20, 1989. *E. Linares & R. Sanchez 2798* (COL!, UGDA-DLSz! – drawing). **Huila/Cauca:** Road La Plata-Popayán, km 33. Alt. 2,980 m. September 1980. *O. Rangel 2658* (COL!).

Notes: This species is characterized by a circular lip with 11 simple veins and the presence of a rounded area below the gynostemium covered densely by hispid hairs. The lip of its Colombian congener, *Telipogon lehmannii*, is similar in general form (Schlechter, 1920, Figure 9), but has 17 veins connected to the basal part by anastomosing veins. The lip of this species is devoid of a basal hispid area. Moreover, the petals of *T. rotundilabia* are elliptic-ovate and acute, whereas in *T. lehmannii*, they are obliquely elliptic-rhombic and cuspidate. *Telipogon rotundilabia* can be confused with two other species, *T. polyrrhizus* and *T. aureus*, but unlike in these species, the numbers of veins on the lip and on the petals are equal in *T. rotundilabia*.

49. *Telipogon pasquillensis* Szlach. & Kolan., sp. nov. (Figure 96)

TYPE: Colombia. *C. Vargas & al. 2209* (holotype, COL!; UGDA-DLSz! – drawing).

Similar to Telipogon rotundilabia, but with somewhat smaller flowers and different form of petals which are elliptic-ovate, widest below the middle, somewhat oblique, basally rounded, nine-veined, hispid at the base, cuspidate at the apex.

Stem short, up to 3.5 cm long. Leaves 4, up to 4 cm long and 0.9 cm wide, linear-oblanceolate, attenuate towards the base, shortly acuminate at the apex. Inflorescence 12 cm long, alate, four-flowered. Floral bracts 9 mm long, lanceolate-triangular, acute. Pedicel and ovary 37 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 14 mm long, 7 mm wide, ovate, apiculate, concave, three-veined, veins simple. Lateral sepals 15 mm long, 7 mm wide, elliptic-ovate, somewhat oblique, concave, apiculate, three-veined, veins simple. Petals 17 mm long, 13–14 mm wide, elliptic-ovate, widest below the middle, somewhat oblique, basally rounded, hispid at the base, cuspidate at the apex, nine-veined, veins almost simple. Lip 16 mm long and wide, circular, widest near the middle, cuspidate at the apex, ecallose, basal area in the form of V hispid and ciliate, with 21 veins, scarcely branching. Gynostemium ca. 5 mm long, dorsally setose, with setae ca. 7 mm long, densely ciliate on the ventral surface, rostellum ca. 2 mm long. Anther dorsal.

Etymology: In reference to the place of origin of the type material.

Ecology: Plants growing at the altitude of ca. 3,463 m. Flowering in November.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Bogotá. Localidad ciudad Bolívar. Vereda Pasquilla. Páramo cercanos a la laguna el alar. 4°26'23.7" N, 74°10'38.4" W. Alt. 3,463 m. November 20, 2012. C. Vargas, I. Montero & A. Orejuela 2209 (COL!, UGDA-DLSz! – drawing).

Notes: This species is similar to *Telipogon rotundilabia*, but with somewhat smaller flowers and a different form of petals. *Telipogon pasquillensis* resembles *T. berthae* and *T. huertasii* in the presence of relatively small flowers and a multi-veined lip, but is easy to distinguish by petals with very a broad, rounded base. In both latter species, the petal base is cuneate.

50. *Telipogon huertasii* Szlach. & Kolan., sp. nov. (Figure 97)

TYPE: Colombia. G. Huertas 3 (holotype, AMES! 66898; UGDA-DLSz! – drawing).

Species similar to *Telipogon berthae* and *T. rotundilabia*, but with somewhat smaller flowers, papillate, obliquely rhombic-obovate, 11-veined petals which are basally cuneate, suborbicular-ovate, broadly acute lip with distal half glabrous and basal half ciliate, hispid towards the base.

Stem short, ca. 3 cm long. Leaves four, up to 7.5 cm long and 1.2 cm wide, linear-oblongate, attenuate towards the base, shortly acuminate at the apex, widest above the middle. Inflorescence – peduncle 10 cm long, rachis 3 cm long, laxly four-flowered. Flowers rather small. Floral bracts 12 mm long, lanceolate-triangular, acute. Pedicel and ovary 30 mm long, triquetrous. Sepals keeled abaxially, subsimilar. Dorsal sepal 14 mm long, 6 mm wide, triangular-ovate, subobtusate, concave, three-veined, veins simple. Lateral sepals 13 mm long, 6 mm wide, ovate, somewhat oblique, concave, subacute, three-veined, veins simple. Petals 19 mm long, 14–15 mm wide, obliquely rhombic-obovate, widest above the middle, basally cuneate, papillate, subobtusate at the apex, 11-veined, veins simple. Lip 15 mm long and wide, suborbicular-ovate, widest towards the apex, broadly acute at the apex, ecallose, distal half glabrous, basal area ciliate being hispid towards the gynostemium, veins 21, simple. Gynostemium ca. 4 mm long, dorsally setose, with setae ca. 3 mm long with hyaline apex, both sides and below stigma setose, with setae ca. 3 mm long, without hyaline apex.

Etymology: Dedicated to G. Huertas, who collected the type material.

Ecology: Plants growing at the altitude of ca. 3,000 m. Flowering in May.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Zipaquira, La Caldera. Alt. 3,000 m. May 19, 1942. G. Huertas 3 (AMES!, UGDA-DLSz! – drawing).

Notes: This is another species similar to *Telipogon rotundilabia*, but with somewhat smaller flowers and a different form of petals. In the form of petals, *T. huertasii* resembles its Colombian congener, *T. berthae*, from which it can be easily distinguished by the lip details. The lip of *T. huertasii* is suborbicular-ovate, widest towards the apex, and broadly acute, with the distal half glabrous and the basal half ciliate, and hispid towards the base. The lip of *T. berthae* is transversely elliptic, widest below the middle, rounded at apex, and basally somewhat swollen and ciliate, but without a proper callus. Petals of the somewhat similar species *T. pasquillensis* are basally rounded (vs. cuneate).

Incertae sedis

51. *Telipogon cycloglossus* Schltr.

Repert. Spec. Nov. Regni Veg. Beih. 27: 119. 1924. TYPE: Colombia. W. Hopp 205 (B†).

Plant 7–9 cm long, stem abbreviated. Leaves four–six, 3.5–6.5 cm long, 0.9–1.2 cm wide, lanceolate to oblongate, acute, widest above the middle. Inflorescence – peduncle compressed, laxly few-flowered. Flowers medium-sized, greenish-yellow,

lip with purple veins. Pedicel and ovary 18 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 18 mm long, concave, narrowly lanceolate, acuminate, three-veined. Lateral sepals 18 mm long, concave, narrowly lanceolate, acuminate, somewhat oblique, three-veined. Petals 16 mm long and wide, obliquely suborbicular in outline, spiculate, base densely papillose, otherwise sparsely papillose, veins 11, simple. Lip 16 mm long, 18 mm wide, suborbicular, apex apiculate, retuse, callus small below the gynostemium base, puberulent, above sparsely papillose, veins 17, simple. Gynostemium 2.5 mm tall, densely setose.

Ecology: Plants growing at the altitude of ca. 4,000 m. Flowering in May.

Distribution: Colombia.

Representative specimen: – COLOMBIA. Auf Baumen auf dem Vulkan Galeras bei Pasto. Alt. 4,000 m. May 1922. *W. Hopp* 205 (B†).

Notes: Schlechter (1924) compared this new entity to *Telipogon aureus*, from which it differs by shorter plant height, relatively short inflorescence, and a wider lip. According to the Tropicos database (“*Telipogon cycloglossus*,” 2022), this species is conspecific with *T. semipictus*. In fact, both species seem to be very similar. As far as we could observe, the pedicel and ovary of *T. semipictus* are longer than those of *T. cycloglossus*, the lip is transversely elliptic in outline with a truncate apex, and the lip callus is broadly cordate, thick, and densely pubescent. Further study should reveal if these are discriminative characteristics.

Veins on lip and/or petals cross-venulate.

KEY 2:

1. Lip more or less as long as wide 2
- 1* Lip prominently wider than long 4
2. Lip cordate-ovate in general outline, widest near the base 56. *T. patinii*
- 2* Lip transversely elliptic-suborbicular in outline, widest near the middle 3
3. Petals with 10, simple veins, lip main veins keeled and with some anastomoses at the base, gynostemium lower part velutinous VII. *T. lehmannii*
- 3* Petals with nine cross-venulate veins, lip with numerous abortive branching veins, gynostemium sparsely setose XI. *T. saraguroense*
4. Gynostemium more or less setose 5
- 4* Gynostemium glabrous or almost glabrous, but always without any setae 8
5. Gynostemium upper part densely covered by stellate hairs XII. *T. sprucei*
- 5* Gynostemium setae simple 6
6. Flowers small, petals 13 × 10 mm, lip 10 × 13 mm 52. *T. spathipetala*
- 6* Flowers medium-sized to large, petals 18–26 × 18–22 mm, lip 16–20 × 20–28 mm 7
7. Gynostemium with elevated rim around the lower part, hirsute, base of petals papillate, base of lip shortly hirsute-papillate VIII. *T. puruantensis*
- 7* Gynostemium with prominent chin-like extension on the ventral surface below stigma, covered by hispid hairs, base of petals pubescent, base of lip glabrous X. *T. pachyhybos*
8. Flowers small, petals 15 × 12 mm 53. *T. esperanzae*
- 8* Flowers larger, petals over 20 mm long 9
9. Flowers very large, lip 30 × 40 mm, petals 30 × 28 mm IX. *T. tachirensis*
- 9* Flowers smaller, lip 22–25 × 28–34 mm, petals 20–23 × 20–26 mm 10
10. Gynostemium papillate at the base only 54. *T. ventaquemadensis*
- 10* Gynostemium glabrous or almost glabrous, lip and petals heavily cross-venulate 11
11. Lip in the basal half and around the base of the gynostemium papillate 11

.....	51. <i>T. croesus</i>
11* Lip glabrous	55. <i>T. schlimii</i>

VII. *Telipogon lehmannii* Schltr. (Figure 93, Figure 98–Figure 101)

Repert. Spec. Nov. Regni Veg. Beih. 7: 197. 1920. TYPE: Ecuador. *F. C. Lehmann 10006* (B†; isotypes, AMES! 14728, US! 796039; UGDA-DLSz! – drawing).

Stem ca. 1 cm long, abbreviated. Leaves three–five, up to 7 cm long and 0.9 cm wide, linear-oblongate, acute. Inflorescence – peduncle 3–7 cm long, alate, raceme laxly two–five-flowered. Flowers medium-sized, sepals yellowish-green, petals and lip basal parts whitish turning yellow towards apex, or entire lip and petals yellow, veins red-maroon becoming yellow towards apex, the flower centre deep purple. Floral bracts 10 mm long, cucullate, ovate, acute. Pedicel and ovary 20–25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 15 mm long, 4 mm wide, concave, lanceolate, acute, three-veined, veins simple. Lateral sepals 15 mm long, 4 mm wide, concave, lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 16–17 mm long, 14–15 mm wide, elliptic-suborbicular in outline, widest near the middle, somewhat oblique, apex acute, margins glabrous, slightly undulate, veins 10, simple, basally slightly keeled. Lip 17 mm long, 18–19 mm wide, transversely elliptic, widest near the middle, shortly mucronate at the apex, ecallose, basal third part papillate, margins ciliolate, veins 19, basally slightly keeled, with some anastomoses at base. Gynostemium 4 mm long, upper part setose with ca. 3 mm long hairs, lower part velutinous, with hairs ca. 1–1.5 mm long, terminated with hyaline.

Ecology: Epiphyte at the altitude of 2,800–3,000 m.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Loja:** *Sine loc.* Alt. 2,800–3,000 m. *F. C. Lehmann 10006* (AMES!, US!, UGDA-DLSz! – drawing).

Notes: *Telipogon lehmannii*, like *T. saraguroense*, exhibits a transversely elliptic-suborbicular lip in general outline, widest near the middle. In *T. lehmannii*, the main veins are keeled at the base. Anastomosing veins are also found in the lower lip part only. Contrarily, the lip of *T. saraguroense* is adorned with numerous abortive side veins. Petals of *T. lehmannii* have simple veins, whereas *T. saraguroense* exhibits cross-venulate veins.

In the original description of this species, Schlechter provided “Cauca?” as locality of collection for specimen *Lehmann 10006*; however, in the herbarium label in AMES, we found other information about place of collection.

52. *Telipogon croesus* Rchb. f. (Figure 102–Figure 113)

Linnaea 41: 70. 1877[1876]. TYPE: Colombia [New Granada]. *A. Bruchmüller s.n.* (holotype, W-R! 30105; UGDA-DLSz! – drawing).

Plants small. Stem abbreviated. Leaves three, up to 10 cm long and 1.5 cm wide, oblong-oblongate, acuminate, attenuate towards the base, widest above the middle. Inflorescence – peduncle 15 cm long, alate, raceme 7 cm long, seven-flowered. Flowers large, sepals yellowish, petals and lip white except distal margins being yellow, veins and anastomoses red-maroon, with distal parts yellow, flower centre red-maroon. Floral bracts up to 20 mm long, triangular-ovate, acute, concave. Pedicellate ovary 30 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepals 18–22 mm long, 5–7 mm wide, oblong elliptic-ovate, acuminate, three-veined, veins simple. Lateral sepals 18–22 mm long, 6–7 mm wide, oblong-elliptic, acuminate, somewhat oblique, three-veined, veins simple. Petals 20–23 mm long, 20–26 mm wide, broadly obovate to transversely elliptic-obovate, oblique, subsessile, apically shortly cuspidate to subobtuse, basal margins papillate, 7–12-veined, veins heavily cross-venulate. Lip 23–24 mm long, 30–34 mm wide, transversely elliptic-rhombic, widest near the middle, apex truncate, more or less shortly cuspidate, occasionally shallowly three-lobed, margins more or less undulate, in the basal half and lip around the base of the gynostemium papillate, 13- or 15-veined,

veins heavily cross-venulate. Gynostemium 3–3.5 mm long, glabrous or almost glabrous.

Ecology: Epiphytic or terrestrial on embankments in upper montane cloud forest at the altitude of ca. 2,800 m. Flowering in December.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. **Nariño**: Bei Pasto, Pueblo-Laguna. Alt. 3,200 m. *F. C. Lehmann s.n.* (W-R! 5574, UGDA-DLSz! – drawing); The same loc. Alt. 3,150 m. October 17, 1878. *F. C. Lehmann s.n.* (W-R! 5575); **Norte de Santander**: Ocaña. *A. Bruchmüller s.n.* (W-R!, UGDA-DLSz! – drawing); Ocaña. 1844. *J. Goudot s.n.* (P!, UGDA-DLSz! – drawing). ECUADOR. **Napo**: Papallacta. Alt. 2,800 m. December 1982. *A. Hirtz 511* (SEL).

Notes: Flowers of *Telipogon croesus* are similar in size to those of *T. ventaquemadensis*. The most prognostic characteristics allowing separation of both species concern the lip and petals. In *T. croesus*, the lip basal half is papillate (vs. glabrous); the lip and petals are heavily cross-venulate. Additionally, the gynostemium of *T. croesus* is glabrous or almost glabrous (vs. papillate at the base only).

Govaerts (2003) considered *T. croesus* a synonym of *T. hausmannianus*; however, the two species differ in lip and petal venation (veins cross-venulate in *T. croesus* vs. simple in *T. hausmannianus*).

53. *Telipogon spathipetala* Szlach. & Kolan., sp. nov. (Figure 114)

TYPE: Colombia. *G. Huertas & L. A. Camargoi 1103* (holotype, COL! 106638; UGDA-DLSz! – drawing).

Species similar to Telipogon puruantensis and T. pachyhybos, but with distinctly smaller flowers with petals slightly longer than lip (petals 13 × 10 mm, lip 10 × 13 mm) and glabrous lower surface of gynostemium.

Stem ca. 7 cm long. Leaves six, up to 8 cm long and 1.2 cm wide, linear-oblongate, acuminate, widest above the middle. Inflorescence 7 cm long, raceme loosely two–three-flowered. Flowers small. Floral bracts 10 mm long, triangular-ovate, acute, concave. Pedicellate ovary 18 mm long, triquetrous. Dorsal sepals 11 mm long, 3.5–4 mm wide, oblong-lanceolate, acuminate, three-veined, keeled abaxially. Lateral sepals 11 mm long, 3.5–4 mm wide, oblong-lanceolate, acuminate, oblique, three-veined, keeled abaxially. Petals 13 mm long, 10 mm wide, broadly obovate, symmetric, obtuse, 11-veined, distal veins anastomosing. Lip 10 mm long, 13 mm wide, transversely elliptic-obovate, obtuse, widest near the apex, 12- or 15-veined, veins anastomosing and distal ones branching, densely hispid below gynostemium and up to third of the lip length, below surrounded by narrow papillate rim, ecallose. Gynostemium 2.5 mm long, densely setose all over, except the lower surface, which is glabrous.

Etymology: In reference to the form of petals.

Ecology: Plants growing at the altitude of ca. 3,000 m. Flowering in May.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca**: Zipaquira. La Caldera. Alt. 3,000 m. May 19, 1942. *G. Huertas & L. A. Camargo 1103* (COL!, UGDA-DLSz! – drawing).

Notes: The new entity can be compared with the Ecuadorian *Telipogon puruantensis* and *T. pachyhybos*, with which it shares similar simple setae covering the gynostemium. *Telipogon spathipetala* can be distinguished by small flowers with petals slightly longer than the lip (petals 13 × 10 mm, lip 10 × 13 mm). The lower surface of the gynostemium of *T. spathipetala* is glabrous, but is hirsute in *T. puruantensis* and hispid in *T. pachyhybos*.

54. *Telipogon esperanzae* P. Ortiz

Orquideología 26(2): 131. 2009. TYPE: Colombia. *E. Mejia de Moreno sub P. Ortiz 1313* (holotype, HPUJ).

Plants small. Stem abbreviated, ca. 1 cm long. Leaves up to 8 cm long and 1.5 cm wide, oblong-elliptic, acuminate, widest near the middle or above. Inflorescence lateral, peduncle alate, raceme loosely few-flowered. Flowers medium-sized, yellowish-green, veins of petals and lip in the third part reddish-maroon, green in apical third and yellow in the basal one. Floral bracts 15 mm long, triangular-ovate, acute, concave. Pedicellate ovary 20 mm long, triquetrous. Dorsal sepals 15 mm long, 5 mm wide, oblong-elliptic, acuminate, five-veined, keeled abaxially. Lateral sepals 15 mm long, 5 mm wide, oblong-elliptic, acuminate, somewhat oblique, five-veined. Petals 15 mm long, 12 mm wide, broadly obovate, somewhat oblique, obtuse, shortly cuspidate, 13-veined, veins anastomosing. Lip transversely elliptic, obtuse, shortly cuspidate, 21-veined, veins anastomosing, densely ciliate just below gynostemium and here with elliptic, a little raised, pubescent spot. Gynostemium 3 mm long, glabrous.

Ecology: Plants growing at the altitude of ca. 3,000 m. Flowering in July.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Quindío**: Cordillera Central. Salento. Alt. 3,000 m. July 2008. *E. Mejia de Moreno sub P. Ortiz 1313* (HPUJ).

Notes: *Telipogon esperanzae* can be separated from all species with glabrous gynostemium by exhibiting the smallest flowers, with petals reaching 15 mm long.

VIII. *Telipogon puruantensis* Dodson & R. Escobar (Figure 115, Figure 116)

Orquideología 21(1): 56. 1998. TYPE: Ecuador. *A. Hirtz 5117* (holotype, RPSC!).

Stem abbreviated, up to 3 cm long. Leaves six, up to 5 cm long and 0.9 cm wide, oblanceolate, acute, somewhat falcate. Inflorescence lateral or terminal, peduncle up to 2.5 cm long, alate, raceme 2.5 cm long, loosely two–four-flowered. Flowers medium-sized, sepals and petals yellow or yellow-brown, with red-brown net of veins, gynostemium red-veined. Floral bracts 9 mm long, triangular-ovate, acute, concave. Pedicellate ovary 26 mm long. Dorsal sepals 15–18 mm long, 5–8 mm wide, triangular-ovate, obtuse to subobovate, three-veined, veins simple or anastomosing, keeled abaxially. Lateral sepals 15–18 mm long, 6–8 mm wide, triangular-ovate, obtuse to acute, somewhat oblique, three-veined, veins simple or anastomosing. Petals 18–20 mm long, 18–20 mm wide, broadly obovate-elliptic to almost orbicular, somewhat oblique, cuneate and papillate at the base, shortly cuspidate at the apex, nine- or 11-veined, cross-venulate. Lip 16–20 mm long, 20–23 mm wide, transversely elliptic-suborbicular, widest near the middle, rounded at the apex, shortly cuspidate, 11- to 15-veined, cross-venulate, some lateral veins abortive, somewhat swollen and shortly hirsute-papillate at the base. Gynostemium 3 mm long, erect, with elevated rim around the lower part, hirsute, with a bundle of setose spines on the dorsal surface of clinandrium, setae ca. 2 mm long.

Ecology: Plants growing at the altitude of ca. 3,400 m. Flowering in January.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Imbabura**: Mariano Acosta to Puruanta. Alt. 3,400 m. January 2, 1991. *A. Hirtz 5117* (RPSC!); **Loja**: *Sine loc.* *A. Hübsch s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: This species resembles its Ecuadorian congener, *Telipogon pachyhybos*. Both have flowers of similar size and can be separated based mainly on the details of gynostemium. In *T. puruantensis*, the base of gynostemium is surrounded by an elevated hirsute rim. In *T. pachyhybos*, on the other hand, the lower part of the gynostemium below the receptive surface is extended and forms a chin-like projection covered by hispid hairs. Additionally, both species differ somewhat in the cover of the base of the lip and petals.

IX. *Telipogon tachirensis* Szlach. Kolan. & Lipińska (Figure 117)

Wulfenia 25: 26. 2018. TYPE: Venezuela. S. Knapp & J. Mallet 6819 (holotype, US! 3069723; isotype, US!; UGDA-DLSz! – drawing).

Plant with short, abbreviated stem, ca. 2 cm long. Leaves four–five per stem, up to 7 cm long and 1.3 cm wide, elliptic-oblongate, acute. Inflorescence – peduncle ca. 5 cm long, alate, raceme two-flowered. Flowers ca. 4.5 cm in diameter. Floral bracts 10 mm long, cucullate, ovate, acute. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 23 mm long, 7 mm wide, concave, ovate-lanceolate, acute, three-veined. Lateral sepals 23 mm long, 7 mm wide, concave, obliquely ovate-lanceolate, acute, three-veined. Petals 30 mm long, 28 mm wide, transversely rhombic-orbicular in outline, acuminate, lower half of margins papillate, veins seven, apically branching, heavily anastomosing. Lip 30 mm long, 40 mm wide, transversely elliptic, shortly mucronate at the apex, ecallose, base papillate with a tuft of soft hairs, otherwise glabrous, margins papillate in the basal third, veins 15, apically branching, heavily anastomosing. Gynostemium 8 mm long, completely glabrous, rostellum much elongate, ca. 5 mm long.

Ecology: Epiphyte in montane rain forest at the altitude of ca. 2,100–2,400 m. Flowering in October.

Distribution: Venezuela.

Representative specimen: – VENEZUELA. **Táchira:** Haedwaters of Rio Quinimari along Quebrada Agua Negra on trail to Páramo de Judío (Apure border) 5 km S of San Vicente de La Revancha. 15 km S of Providencia. SE of Santa Ana. Montane rain forest. Alt. 2,100–2,400 m. October 23, 1984. S. Knapp & J. Mallet 6819 (US!, UGDA-DLSz! – drawing).

Notes: This species is morphologically similar to *Telipogon hercules*, described from Northern Peru. The most distinguishing characteristic of *T. tachirensis* is a completely glabrous gynostemium, which is densely setose with setae approximately 6 mm long, branching apically. The lip of *T. tachirensis* is larger (30 × 40 mm vs. 34 × 36 mm) than that of *T. hercules* and has a different form. It is transversely elliptic and shortly mucronate at the apex in the new species, but transversely elliptic-orbicular and shortly acute at the apex in *T. hercules*. The lip is adorned with a tuft of soft hairs at the lip base in *T. tachirensis*. The lip base of *T. hercules* is papillate. Both species can be distinguished based on number of lip and petals veins. Petals of *T. tachirensis* have seven veins (vs. 14), and the lip has 15 (vs. 29) veins. Veins are apically branching and heavily anastomosing (vs. simple).

Telipogon tachirensis has very large flowers, approximately 6 cm across, with a lip approximately 30 × 40 mm, and petals 30 × 28 mm.

55. *Telipogon ventaquemadensis* Szlach. Kolan. & Lipińska (Figure 118)

Wulfenia 25: 27. 2018. TYPE: Colombia. L. Uribe Uribe 6752 (holotype, COL! 126155; UGDA-DLSz! – drawing).

Epiphyte. Stem short, about 5.5 cm long. Leaves narrowly oblong-elliptic 9 mm long, 1.5 mm wide. Inflorescence about 25 cm long, including peduncle about 13.5 cm long, raceme about 13-flowered. Flowers golden-yellow with purple lines. Ovary about 14 mm long, triquetrous, pedicel 20 mm long. Floral bracts about 8 mm long, cucullate, ovate, acute. Dorsal sepal 17 mm long, 7 mm wide, oblong-ovate, obtuse, three-veined. Lateral sepals 17 mm long, 7 mm wide, narrowly ovate, obtuse, three-veined. Petals 22 mm long, 24 mm wide, broadly elliptic, acute, seven-veined. Lip 22 mm long, 32 mm wide, transversely-elliptic, rounded at the apex, glabrous, 15-veined, veins anastomosing; disc ecallous. Gynostemium about 7 mm long, lacking any hairs, papillate at the base, rostellum much elongate, ca. 7 mm long.

Ecology: Epiphyte in montane forest at the altitude of ca. 2,900 m. Flowering in December.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Boyacá:** Ventaquemada, bosques al occidente de la carretera Central en el km. 106. Alt. 2,900 m. December 2, 1972. *L. Uribe Uribe 6752* (COL!, UGDA-DLSz! – drawing).

Notes: This species resembles *Telipogon hausmannianus* and *T. croesus*, but unlike those of these orchids, the inflorescence of *T. ventaquemadensis* is very long, and the lip is completely glabrous, not papillate along margins, and without any hairs at the base. Moreover, the lip of *T. hausmannianus* is suborbicular-obovate (25 × 28 mm), and the petals are nine-veined and lateral sepals are five-veined. In *T. croesus*, the lip is 13-veined and petal margins are papillate in the lower quarter.

X. *Telipogon pachyhybos* Schltr. (Figure 119–Figure 121)

Repert. Spec. Nov. Regni Veg., Beih. 8: 104. 1921. TYPE: Ecuador. *R. Spruce 6077* (B†; isotypes, AMES! 76310, K!, P!; UGDA-DLSz! – drawing, copy).

Plant with short stem. Leaves three–four, up to 8 cm long and 1.5 cm wide, oblanceolate to spatulate, subacute. Inflorescence – peduncle ca. 8–10 cm long, alate, raceme 3 cm long, two–four-flowered. Flowers large. Floral bracts 11–14 mm long, cucullate, ovate, acute. Pedicel and ovary 33–35 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 16–18 mm long, 5–7.5 mm wide, concave, elliptic-ovate, acute, three- or five-veined, veins simple. Lateral sepals 16–18 mm long, 6–7.3 mm wide, concave, elliptic-ovate, acute, somewhat oblique, three- or five-veined, veins simple. Petals 20–26 mm long and up to 22 mm wide, subcircular-obovate to transversely elliptic-ovate in outline, widest near the middle, base sessile, pubescent, shortly acute at apex, margins glabrous, veins nine, cross-venulate. Lip 17–20 mm long, 26–28 mm wide, transversely elliptic in outline, widest near the middle, rounded at the apex, margins ciliate in the lower third, veins 13 or 15, heavily cross-venulate. Gynostemium about 5 mm tall, with prominent chin-like extension on the ventral surface below stigma, covered by hispid hairs ca. 1–1.5 mm long, clinandrium obscurely three-lobed, setose on the upper surface, setose hairs ca. 3–3.5 mm long.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. In *Andibus Quitensibus*. 1857. *R. Spruce 6077* (AMES!, K!, P!, UGDA-DLSz! – drawing).

Notes: As mentioned above, *Telipogon pachyhybos* is similar to *T. puruantensis*, but the gynostemium of the former produces a chin-like, hispid projection below the stigma (vs. hirsute rim), the base of petals is pubescent (vs. papillate), and the base of the lip is glabrous (vs. shortly hirsute-papillate).

Dodson and Dodson (1984) considered *T. pachyhybos* conspecific with *T. tessellatus* Lindl., but the same authors (Dodson & Dodson, 1989) later considered it a synonym of *T. obovatus* Lindl. The latter species differs from *T. pachyhybos* by having oblong, obovate, basally attenuated petals with simple veins and a simple-veined lip ornamented with an oblong, cordate, prominent callus. Moreover, the gynostemium of *T. pachyhybos* is covered by hispid hairs (vs. setose in *T. obovatus*) and characterized by presence of a prominent chin-like extension on the ventral surface below the stigma.

XI. *Telipogon saraguroense* Dodson & E. Sanchez (Figure 122)

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1185. 2004. TYPE: Ecuador. *E. Sanchez 2* (holotype, RPSC!).

Plant caespitose. Stem abbreviated, up to 1 cm long. Leaves up to 10 cm long and 2.5 cm wide, linear-oblanceolate, acute. Inflorescence lateral, peduncle – up to 9 cm long, alate, raceme up to 6 cm long. Flowers medium-sized, sepals pale greenish brown, petals yellow with orange venation, the apical two-thirds completely orange, lip pale yellow with orange venations, base and the junction with the gynostemium pink, gynostemium with red-wine spines. Floral bracts 12 mm long, triangular-ovate, acute, concave. Pedicel and ovary 27 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepals 15 mm long, 8 mm wide, ovate, concave, apiculate, three-veined.

Lateral sepals 15 mm long, 8 mm wide, ovate, concave, apiculate, somewhat oblique, three-veined. Petals 20 mm long, 19 mm wide, broadly ovate or elliptic-ovate, somewhat oblique, acute at the apex, nine-veined, cross-venulate. Lip 20 mm long and wide, suborbicula-elliptic, obtuse at the apex, 11-veined, with numerous abortive branching veins. Gynostemium 3 mm long, erect, sparsely setose, setae subulate.

Ecology: Plants growing at the altitude of ca. 3,100 m. Flowering in September.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Loja:** Loja to Cuenca, above Saraguro along old road. Alt. 3,100 m. September 2001 *E. Sanchez 2* (RPSC!).

Notes: It appears that *Telipogon saraguroense* is similar to *T. lehmannii*, although they differ in some characteristics. Petals in the former have nine cross-venulate veins, the lip has numerous abortive branching veins, and the gynostemium is sparsely setose. Petals of *T. lehmannii* have 10 simple veins; the lip main veins are keeled with some anastomoses at the base and the lower gynostemium part is velutinose.

XII. *Telipogon sprucei* Kraenzl. (Figure 123)

Ann. Naturhist. Mus. Wien 33: 23. 1920. TYPE: Ecuador. *R. Spruce 6076* (holotype, W-R! 30084 – left hand plant; UGDA-DLSz! – drawing).

Stem abbreviated, few cm tall. Leaves several, up to 8.5 cm long and 1.3 cm wide, ligulate-lanceolate, acute. Inflorescence – peduncle up to 9 cm long, raceme 3–4 cm long, one–seven–flowered. Flowers 30 mm in diameter. Floral bracts 5–7 mm long, lanceolate-ovate, acute. Pedicel and ovary 20 mm long, terete. Sepals dissimilar, keeled abaxial. Dorsal sepal 14 mm long, 4 mm wide, concave, ovate-lanceolate, acute, three-veined, scarcely branching. Lateral sepals 15 mm long, 4 mm wide, concave, ligulate-lanceolate, acute, oblique, three-veined, scarcely anastomosing. Petals 15 mm long, 11 mm wide, elliptic-ovate in outline, widest near the middle, almost symmetric, apex subacute, margins ciliolate, veins seven, cross-venulate. Lip 14 mm long, 17 mm wide, transversely elliptic-ovate, shortly mucronate at the apex, margins ciliolate, ecallose, veins 15, heavily cross-venulate. Gynostemium 4 mm long, clinandrium prominently three-lobed, the upper part densely covered by stellate hairs ca. 3 mm long, the ventral surface glabrous.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. Andes Quitensis. 1857–59. *R. Spruce 6076* (W-R!, UGDA-DLSz! – drawing).

Notes: The unique characteristic of this species is the presence of stellate setose hairs covering the gynostemium. According to Kraenzlin (1919), the lip of this species is much larger than we examined and can reach 25 × 37 mm with 21 veins.

Govaerts (2003) considered *Telipogon sprucei* a synonym of *T. aureus* Lindl. which is characterized by rhombic-elliptic, shortly clawed petals with nine simple veins (vs. elliptic-ovate, with seven cross-venulate veins) and a broadly rhombic-ovate, equally long and wide lip that is puberulent below the gynostemium base and ornamented with 13 simple veins (vs. lip transversely elliptic-ovate and wider than long, with 15 cross-venulate veins).

56. *Telipogon schlimii* Szlach. & Kolan., sp. nov. (Figure 124)

TYPE: Colombia. *L. J. Schlim s.n.* (holotype, W-R! 30104; UGDA-DLSz! – drawing).

Telipogon schlimii appears to be similar to *T. croesus*, unlike the latter, however, its lip is completely glabrous, somewhat different in form, and inflorescence is much shorter.

Stem abbreviated. Leaves three, up to 6 cm long and 1 cm wide, linear-oblongate, acute. Inflorescence – peduncle up to 8 cm long, raceme 1.5–2.5 cm long, two–four–flowered. Flowers rather large. Floral bracts 15 mm long, lanceolate-ovate, acute. Pedicel and ovary 27 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 21 mm long, 5 mm wide, concave, oblong lanceolate, acute, three-veined, veins simple. Lateral sepals 21 mm long, 5 mm wide, concave, ligulate-lanceolate, acute,

oblique, five-veined, veins simple. Petals 22 mm long, 21 mm wide, elliptic-obovate in outline, widest near the middle, almost symmetric, apex subacute, margins glabrous, veins nine, cross-venulate. Lip 25 mm long, 28 mm wide, transversely elliptic-ovate, widest above the middle, shortly mucronate at the apex, margins papillate, ecallose, veins 15, heavily cross-venulate, main veins somewhat keeled. Gynostemium 4 mm long, clinandrium prominently three-lobed, completely glabrous.

Etymology: Dedicated to L. J. Schlim (1819–1863), an active collector of Neotropical plants.

Ecology: No data.

Distribution: Colombia.

Representative specimen: – COLOMBIA. San Pedro. *L. J. Schlim s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: This species is similar to *Telipogon croesus*, but its lip is completely glabrous and somewhat different in form, and its inflorescence is much shorter.

57. *Telipogon patinii* Rchb. f. (Figure 125)

Linnaea 41: 70. 1877[1876]. TYPE: Colombia [New Granada]. *C. Patin 21* (holotype, W-R! 30101; UGDA-DLSz! – drawing).

Stem short, abbreviated. Leaves up to 7 cm long and 2 cm wide, elliptic-oblongate, acute. Inflorescence – raceme 7 cm long, three-flowered. Flowers large, sepals greenish-yellow, petals yellow with greenish venation, lip greenish-yellow with pinkish suffusion and red-maroon veins. Floral bracts 5–6 mm long, cucullate, ovate, acute. Pedicel and ovary 25 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 16 mm long, 4 mm wide, concave, broadly lanceolate, acute, five-veined, veins simple. Lateral sepals 16 mm long, 4 mm wide, concave, obliquely broadly lanceolate, acuminate, five-veined, veins simple. Petals 28 mm long, 19 mm wide, more or less cordate-ovate in outline, somewhat oblique, apex acute, base broadly cuneate, margins ciliate in the basal fifth, veins 15, ciliate, with numerous anastomoses and abortive veins. Lip 23 mm long and wide, cordate-ovate in outline, acute at the apex, ecallose, base of veins and margins ciliate, otherwise glabrous, veins 21, cross-venulate. Gynostemium 4 mm long, upper part setose with ca. 1.5 mm long hairs, lower part glabrous.

Ecology: No data on habitat.

Distribution: Colombia.

Representative specimen: – COLOMBIA. [New Granada]. Medellín. August 12, 1876. *C. Patin 21* (W-R!, UGDA-DLSz! – drawing).

Notes: Within the species exhibiting a lip more or less as wide as long, *Telipogon patinii* is the only one with a lip cordate-ovate in general outline and widest at the base. Two other species with such proportion of the lip are *T. lehmanii* and *T. saraguroense*, the lips of which, however, are transversely-elliptic-suborbicular and widest near the middle.

According to Kraenzlin (1919), petals of this species have 13 or 15 veins.

Incertae sedis

XIII. *Telipogon klabochorum* Rchb. f. ex Szlach. & Kolan. (Figure 126)

TYPE: Ecuador. *E. Klabocho s.n.* (holotype, W-R! 30074; UGDA-DLSz! – drawing).

Vegetative parts unknown. Sepals subsimilar, keeled abaxial. Dorsal sepal 26 mm long, 8 mm wide, concave, ovate, obtuse, three-veined, veins simple. Lateral sepals 25 mm long, 8 mm wide, concave, obliquely ovate, obtuse, five-veined, veins simple. Petals 28 mm long, 22 mm wide, elliptic-subrhombic in outline, apex obtuse, seven-veined, veins anastomosing, margins glabrous. Lip 27 mm long, 31 mm wide, transversely elliptic, apex obtuse, margins glabrous, 19-veined, veins anastomosing. Gynostemium with setose hairs ca. 1.5 mm long in the upper part and in the central part of the lower part.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. Guayaquil. 1875. *E. Klabochoch s.n.* (W-R! 30074; UGDA-DLSz! – drawing).

Notes: *Telipogon klabochoch* has never been validly published, although Reichenbach's handwriting on the herbarium sheet (W-R 30074) clearly indicates that it was his intention to do so. This species is similar to *T. puruantensis* and *T. pachyhybos*. It differs from the former by having somewhat larger flowers, with petals 28 × 22 mm and elliptic-subrhombic in outline (vs. 18–20 mm long and wide, broadly obovate-elliptic to almost orbicular), and a 27 × 31 mm, 19-veined lip (vs. 16–20 × 20–23 mm, 11- to 15-veined). *Telipogon pachyhybos* has smaller flowers as well, with a significantly smaller lip ornamented with 13 or 15 veins. Furthermore, its gynostemium has a distinct chin-like extension below the stigma covered by hispid hairs. Setose hairs in *T. pachyhybos* can be found on the upper surface only.

3.2.1.2.2. *Salamancae*-Subgroup

Lip with narrow rim surrounding gynostemium base (Figure 127).

KEY TO THE SPECIES:

1. Lip and petals veins cross-venulate 67. *T. polyneuros*
- 1* Lip and petals veins simple 2
2. Lip up to 16 mm long 3
- 2* Lip over 19 mm long 6
3. Lip callus in the form of a pair of knob-like projections below gynostemium 66. *T. bicallosus*
- 3* Lip callus more or less U-shaped just below the gynostemium base 4
4. Gynostemium lacking any hairs, papillate at the base 60. *T. ramiro-medinae*
- 4* Gynostemium setose on the upper and lateral surfaces 5
5. Gynostemium lower surface papillate, upper and lateral surfaces setose, lip 15 × 18–20 mm, nine-veined, petals veins not thickened, glabrous 59. *T. andinus*
- 5* Gynostemium lower and lateral surfaces glabrous, the upper surface setose, lip 13–14 × 14–15 mm, 11-veined, petals veins simple, thickened and ciliolate at the base and along basal margins 62. *T. sibundoyensis*
6. Gynostemium adorned with a pair of knob-like densely ciliate projections just below stigma 65. *T. sumapazensis*
- 6* Gynostemium without knob-like projections below stigma 7
7. Petals wider than long 8
- 7* Petals longer than wide 9
8. Petals with some hispid hairs at the base, lip 19 × 27 mm, callus hispid and ciliate, gynostemium lower part pubescent 58. *T. salamancae*
- 8* Petals glabrous, lip 23 × 26 mm, callus densely ciliate, gynostemium lower part glabrous 64. *T. tolimensis*
9. Gynostemium completely glabrous 63. *T. castanedoi*
- 9* Gynostemium densely setose 61. *T. heinrichsii*

58. *Telipogon salamancae* Szlach. & Kolan. (Figure 128)

Acta Bot. Fenn. 53(3–4): 153, f. 4A–E. 2016. TYPE: Colombia. *R. Jaramillo & al.* 6380 (holotype, COL!; UGDA-DLSz! – drawing).

Plant up to about 10 cm tall. Stem ca. 3–4 cm long. Leaves up to 6 cm long and 1.2 cm wide, linear-oblongate, attenuate towards the base, shortly cuspidate, widest near or above the middle. Inflorescence up to 6 cm long, alate, two-flowered. Floral bracts up to 14 mm long, lanceolate-triangular, acute. Pedicel and ovary ca. 30 mm long,

triquetrous. Dorsal sepal 18 mm long, 7 mm wide, elliptic-lanceolate, acute, three-veined, veins simple. Lateral sepals 18 mm long, 7 mm wide, lanceolate-ovate, somewhat oblique, acute, three-veined, veins simple. Petals 19 mm long, 22 mm wide, transversely elliptic-rhombic, widest near the middle, symmetric, broadly cuneate at the base and here covered by some hispid hairs, subobtuse at the apex, nine-veined, veins simple. Lip 19 mm long, 27 mm wide, with 17 simple veins, transversely elliptic in general outline, widest near the middle, shortly cuspidate at the apex, with elevated transverse rim just below gynostemium densely covered by hispid and ciliate hairs. Gynostemium up to 6 mm long, dorsally densely setose, setae ca. 3 mm long, ventrally pubescent, rostellum ca. 2.5 mm long.

Ecology: According to the information provided on the herbarium specimens' labels this species was found growing on rocky slopes and in forest with *Citharexylum* (Verbenaceae) and *Hedyosmum* (Chloranthaceae) at the altitude of about 3,300 m. Flowering in February and August.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cauca:** Along path from Veinte de Julio to Machenque at the higher altitude near Veinte de Julio. August 20, 1973. *W. Hoover 127* (COL!); **Tolima:** Mpio. Santa Isabel. Central Cordillera, eastern slope, valley of Toatarito River, left margin. Alt. 3,300 m. February 13, 1980. *R. Jaramillo & al. 6380* (COL!; UGDA-DLSz! – drawing).

Notes: *Telipogon salamancae* and *T. pastoanus* have very similar lip shapes, circular to almost transversely elliptic. At the lip base of the former species and just below the gynostemium is an elevated keel covered by mingled ciliate and hispid hairs. In *T. pastoanus* (Schlechter, 1920), there is somewhat elevated, cordate, papillate pad just below the gynostemium. Both species also differ in petal form. Petals are symmetric, transversely elliptic-rhombic, and subobtuse in *T. salamancae*, but are obliquely subcordate-ovate and acute to acuminate in *T. pastoanus*.

The other species similar to *T. salamancae* is *T. tolimensis*, which has glabrous petals, a 23 × 26 mm lip, a densely ciliate lip callus, and a glabrous lower part of the gynostemium.

59. *Telipogon andinus* Dodson

Icon. Pl. Trop. 10: t. 985. 1984. TYPE: Ecuador. *C. Luer & al. 3330* (holotype, SEL).

Stem ca. 4–6 cm long, abbreviated. Leaves three–four, up to 7 cm long and 1 cm wide, linear-oblancoate, attenuate towards the base, shortly acute, widest above the middle. Inflorescence – peduncle ca. 4–5 cm long, alate, raceme ca. 5 cm long, five-flowered. Floral bracts up to 6 mm long, lanceolate-triangular, acuminate. Pedicel and ovary ca. 32 mm long, triquetrous. Dorsal sepal 12 mm long, 5 mm wide, ovate-lanceolate, acute, one-veined, vein simple. Lateral sepals 12 mm long, 5 mm wide, ovate-lanceolate, somewhat oblique, acute, one-veined, vein simple. Petals 15 mm long, 10 mm wide, elliptic-rhombic, widest near the middle, symmetric, cuneate at the base, subobtuse at the apex, five-veined, veins simple. Lip 15 mm long, 18–20 mm wide, transversely elliptic in general outline, widest near the middle, shortly acute at the apex, with prominent rim just below gynostemium base, densely papillate, nine-veined, simple veins. Gynostemium ca. 4 mm long, densely setose on the upper and lateral surfaces, setae ca. 3 mm long, lower surface papillate, with much protruding lower margin of the stigma.

Ecology: Epiphyte in upper montane cloud forest at the altitude of 2,500–3,000 m. Flowering throughout the year.

Distribution: Ecuador, Colombia, Venezuela.

Representative specimens: – COLOMBIA. **Antioquia:** Alto de Ventanas, Mun. de Jardín. Alt. 2,800 m. May 25, 1983. *R. Escobar 2701* (SEL – Dodson & Dodson, 1984); **Huila:** Páramo de Purace. Alt. 2,850 m. November 14, 1982. *C. Luer & R. Escobar 8395* (SEL – Dodson & Dodson, 1984); **Nariño:** Pasto-La Cocha. Alt. 3,000 m. January 21, 1979. *C. Luer & J. Luer 3731* (SEL – Dodson & Dodson, 1984); **Santander:** Bucaramanga-Berlin. Alt. 2,800 m. April 27, 1982. *C. Luer & al. 7586* (SEL – Dodson & Dodson, 1984). ECUADOR. **Carchi:** Between Maldonado and

Tulcan. Alt. 2,500 m. August 25, 1978. *C. Luer & al.* 3351 (SEL – Dodson & Dodson, 1984); **Imbabura**: San Jose de Minas-Otavalo. Alt. 2,700 m. August 24, 1978. *C. Luer & al.* 3330 (SEL – Dodson & Dodson, 1984).

Notes: This species resembles its Colombian congener, *Telipogon sibundoyensis*, from which it can be distinguished by the papillate lower surface of the gynostemium (vs. glabrous), setose upper and lateral surfaces (vs. the upper surface setose), and a larger lip (15 × 18–20 mm vs. 13–14 × 14–15 mm) with nine veins (vs. 11 veins). The petal veins are thin and glabrous (vs. thickened and ciliolate).

This species was considered conspecific with *T. antioquianus* by several authors (Bernal et al., 2016; Idárraga-Piedrahita et al., 2011); however, the two species differ in lip form and ornamentation. In *T. antioquianus*, the lip is suborbicular (vs. transversely elliptic in *T. andinus*) without a prominent rim just below gynostemium base and slightly ciliolate in the lower half (vs. densely papillate).

60. *Telipogon ramiro-medinae* Szlach., Kolan. & Lipińska (Figure 129, Figure 130)

Wulfenia 25: 28. 2018. TYPE: Colombia. *R. Medina T. S16/39* (holotype, JAUM!; UGDA-DLSz! – drawing).

Stem short, about 2 cm long. Leaves narrowly oblong-ob lanceolate up to 7 cm long, 1.5 cm wide. Inflorescence about 10 cm long, including peduncle about 7.5 cm long, raceme about three–four-flowered. Flowers golden-yellow with purple lines. Pedicel and ovary about 20 mm long, triquetrous. Floral bracts up to 15 mm long, cucullate, ovate, acute. Sepals similar, keeled abaxial. Dorsal sepal 17 mm long, 5.5 mm wide, oblong-ovate, obtuse, three-veined. Petals 18 mm long, 14.5 mm wide, transversely rhombic, acute, seven-veined. Lateral sepals 16 mm long, 5 mm wide, narrowly ovate, acute, one-veined. Lip 15.5 mm long, 18 mm wide, transversely elliptic, acute at the apex, papillate at the base, 15-veined, lateral veins dichotomous, veins not anastomosing; disc ecallous. Gynostemium about 5.5 mm long, lacking any hairs, papillate at the base, rostellum much elongate, ca. 5 mm long.

Ecology: Epiphyte on the tree near the river at the altitude of ca. 2,390 m. Flowering in September.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Putumayo**: Valle de Sibundoy. Near San Francisco. Alt. 2,391 m. September 6, 2014. *R. Medina T. S16/39* (JAUM!, UGDA-DLSz! – drawing).

Notes: This species resembles *Telipogon croesus*, which, however, has a much larger (23 × 34 mm), 13-veined (vs. 15-veined), cross-venulate (vs. not anastomosing), apically truncate (vs. acute) lip. Moreover, petals of *T. croesus* are about 20 mm long and wide (vs. 18 × 14.5) and broadly obovate in outline (vs. transversely rhombic).

61. *Telipogon heinrichsii* O. Pérez & C. Martel (Figure 131–Figure 133)

Phytotaxa 305(4): 263, f. 1A–F, f. 2A–D. 2017. TYPE: Colombia. *O. Pérez & C. Minnig 875* (holotype, VALLE).

Plant epiphytic, sympodial, subcaulescent to 20 cm tall including the inflorescence. Stem to ca. 2 cm long, flattened. Leaves 2.3–3.4 cm long, 0.6–0.95 cm wide, subcoriaceous, distichous, from oblong to sub-ob lanceolate, margins revolute, apex acute, base decurrent. Inflorescence up to 4 by plant, successively two–three-flowered, up to 7.6 cm long, pedunculate; peduncle triquetrous, 1.4–2.5 cm long. Flowers non-resupinate, sepals pale yellowish-green, petals yellow, pale purple at the base, with wide pale brown spots persistent towards the apex, lip bright yellow, base deep purple, gynostemium dark red. Floral bracts 8–9 mm long, ovate, conduplicate, acute. Pedicellate ovary 23 mm long, triquetrous. Sepals keeled outside. Dorsal sepal 15 mm long, 6 mm wide, oblong ovate, acuminate, three-veined, veins simple. Lateral sepals 15 mm long, 6 mm wide, obliquely oblong ovate, acuminate, three-veined, veins simple. Petals 24 mm long, 21 mm wide, transversely elliptic-suborbicular, apex acute, nine-veined, veins scarcely branching. Lip 22 mm long, 24 mm wide, broadly obovate in outline, widest below the middle, acute, 11-veined, veins scarcely branching, callus-like structure U-shaped, densely

pubescent, the trichomes purple, the basal shorter than the apical ones, up to 1 mm long. Gynostemium ca. 5 mm long, subterete, sessile, densely setose; setae up to 1.75 mm long, thin, the apical and lateral ones incurved.

Ecology: Plants of *Telipogon heinrichsii* were recorded growing epiphytically in dwarf forests dominated by *Hesperomeles* Lindl. and *Polylepis* Ruiz & Pav., between 3,200 and 3,600 m of altitude. Flowering in January.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Valle del Cauca:** Mpio de El Cerrito. Corregimiento de Tenerife. Páramo Pan de Azúcar. Alt. 3,600 m. January 6, 2011. O. Pérez & C. Minnig 875 (VALLE).

Notes: This species is similar to *Telipogon puruantensis* and *T. vollesii*, from which it differs by the triquetrous peduncle of the inflorescence (vs. terete and flattened, respectively), the widely ovate lip (vs. elliptic and obovate-elliptic), and the uniformly setose gynostemium (vs. only dorsally setose).

Telipogon heinrichsii resembles also *T. castanDOI*, which has broader leaves, a 21-veined lip widest above the middle, and a primarily glabrous gynostemium.

62. *Telipogon sibundoyensis* Szlach., Kolan. & R. Medina T. (Figure 134, Figure 135)

Phyton 56(2): 203–207, f. 2A–E, 3. 2016. TYPE: Colombia. R. Medina T. 209 (holotype, JAUM!; UGDA-DLSz! – drawing).

Stem 4–6 cm long, abbreviated. Leaves 6.5–7 cm long, 1.2–1.7 cm wide, conduplicate, relatively fleshy, ovate-lanceolate to oblanceolate, attenuate towards the base, subacute. Inflorescence 7–14 cm long, up to seven-flowered, subdense, peduncle triquetrous. Flowers simultaneous, tepals white with yellowish-green veins becoming dark red towards the base, gynostemium and lip callus dark violet-maroon. Floral bracts 6–7 mm long, cucullate, oblong ovate, acute. Pedicel and ovary 15–25 mm long, three-edged. Sepals similar, keeled abaxial. Dorsal sepal 11–15 mm long, 3.5–4.5 mm wide, concave, ovate-elliptic to lanceolate-ovate, acute, three-veined, veins simple. Lateral sepals 11–15 mm long, 3.5–4.5 mm wide, concave, ovate-elliptic, acute, somewhat oblique, three-veined, veins simple. Petals 13.5–17.5 mm long, 9.5–11 mm wide, broadly elliptic in outline, attenuate towards base, somewhat oblique, acute, five- or seven-veined, veins simple, thickened and ciliolate at the base and along basal margins. Lip 13–14 mm long, 14–15 mm wide, transversely elliptic-suborbicular to suborbicular, shortly acuminate at the apex, 11-veined, veins simple, margins papillate becoming somewhat undulate with age; basal callus just below the gynostemium in the form of a thick rim densely covered by glandular ciliae. Gynostemium about 4–4.5 mm tall, clinandrium obscurely three-lobed, covered densely by setose hairs of various length, the longest do not exceed 3 mm, sides and ventral surface of the gynostemium glabrous. Capsule ca. 40 mm long.

Ecology: Populations of this species were found growing epiphytically at the altitudes between 2,400 and 3,150 m. Flowering throughout the year.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cauca:** Cordillera Occidental. an José, San Antonio. Alt. 2,400–2,700 m. June 30, 1922. F. Pennell 7565 (AMES!, UGDA-DLSz! – drawing); Between Coconuco and Paletara. Alt. 2,640–3,000 m. July 29, 1961. L. A. Garay, C. McCleenen & A. Kapuler 310 (AMES!, UGDA-DLSz! – drawing); **Cundinamarca:** La Siberia. Eastern Cordillera. Alt. 2,900 m. January 12, 1946. M. Schneider 220 (AMES!); **Norte de Santander:** Road from Pamplona to Toledo, crossing the divide between Rio La Teja (Maracaibo drainage) and Rio Mesme (Orinoco drainage). Alt. 2,800–3,000 m. February 27–28, 1927. E. Killip & A. Smith 19853 (AMES!); **Putumayo:** Via Santiago-Pasto, between km 36–34. Alt. 3,150 m. R. Medina T. 208 (JAUM!, UGDA-DLSz! – drawing).

Notes: This species resembles *Telipogon andinus*, with which it shares general flower architecture. Both taxa can be recognized by the lip callus and gynostemium cover.

The basal rim of the lip in *T. sibundoyensis* is prominent, thick, densely glandular, and ciliate, whereas in *T. andinus*, the rim is papillate. The gynostemium of *T. sibundoyensis* is covered by setose hairs of various lengths along the clinandrium margins at the back of the anther. The setose hairs of *T. andinus* are equally long and cover the entire upper surface of the column. The other taxa similar to *T. sibundoyensis* are also Peruvian (*T. hutchinsonii* Dodson & Bennett and *T. davidsonii* Bennett & Christenson). In both latter species, the flowers are conspicuously larger and the lip apex is obtuse. The basal lip callus of *T. hutchinsonii* is prominent and densely pubescent, the petals are broadly ovate and widest near the base, and the ventral surface of the gynostemium is setose. Petals of *T. davidsonii* are almost orbicular, nine-veined. These taxa can be distinguished by the lip callus and gynostemium cover. The basal rim of the lip in the new entity is very prominent, thick, densely glandular, and ciliate, whereas in *T. andinus*, the rim is papillate. The gynostemium of *T. sibundoyensis* is covered with setose hairs of various lengths along the clinandrium margins at the back of the anther. The setose hairs of *T. andinus* are equally long and cover the entire upper surface of the column.

63. *Telipogon castanedoi* Szlach. & Kolan., sp. nov. (Figure 136)

TYPE: Colombia. J. Cuatrecasas & R. Romero-Castaneda 24676 (holotype, US! 2325399; UGDA-DLSz! – drawing).

Species similar to *Telipogon urceolatus* from which it is distinguished by smaller flowers, completely glabrous gynostemium, glabrous, obtrullate petals and acute or subacute sepals.

Stem 1 cm long, abbreviated. Leaves four, up 4 cm long and 1.2 cm wide, ovate-lanceolate to ligulate, attenuate towards the base, subacute. Inflorescence – peduncle 1.7 cm long, two-flowered. Flowers ca. 30 mm in diameter. Floral bracts 6 mm long, cucullate, oblong ovate, acute. Pedicel and ovary 17 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 13 mm long, 6–7 mm wide, concave, ovate-elliptic, rounded at apex, subacute, three-veined, veins simple. Lateral sepals 16 mm long, 6 mm wide, concave, ovate-elliptic, acute, oblique, three-veined, veins simple. Petals 22 mm long, 19 mm wide, obtrullate in outline, attenuate towards base, somewhat oblique, acute, glabrous, seven-veined, veins simple. Lip 20 mm long, 26 mm wide, transversely elliptic-ovate, widest above the middle, apex truncate, shortly cuspidate, 21-veined, veins simple, margins glabrous, basal callus just below the gynostemium in the form of rim densely papillate. Gynostemium 6 mm tall, clinandrium obscurely three-lobed, completely glabrous.

Etymology: Dedicated to Romero-Castaneda (1910–1973), an eminent Colombian botanist.

Ecology: Plants growing at the altitude of 3,070–3,100 m. Flowering in October.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Magdalena:** Sierra Nevada de Santa Marta. SE slopes, Hoya del Rio Donachui. Alt. 3,070–3,100 m. October 9, 1959. J. Cuatrecasas & R. Romero-Castaneda 24676 (US!, UGDA-DLSz! – drawing).

Notes: This species is very similar to its Peruvian congener, *Telipogon urceolatus* C. Schweinf., from which it can be easily distinguished by smaller flowers, a completely glabrous gynostemium (vs. gynostemium at the apex and sides with long bristles), petals obtrullate in outline and completely glabrous (vs. petals trapeziform, margins involute and acute, base somewhat thickened and papillate), and acute or subacute sepals (vs. sepals acuminate).

The other species resembling new entity is the Colombian *T. heinrichsii*, described from Valle del Cauca. This species has somewhat narrower leaves (0.6–0.95 cm vs. 1.2 cm), a more orbicular lip (22 × 24 mm vs. 20 × 26 mm), 11-veined lamina (vs. 21-veined), and a densely setose gynostemium (vs. glabrous).

64. *Telipogon tolimensis* Szlach. & Kolan., sp. nov. (Figure 137)

TYPE: Colombia. J. Cuatrecasas & R. Echeverry 27695 (holotype, US! 2581253A; UGDA-DLSz! – drawing).

Species similar to Telipogon urceolatus but with smaller flowers, glabrous, transversely elliptic-suborbicular petals which are broadly cuneate at the base, subobtuse at the apex.

Stem ca. 2 cm long, abbreviated. Leaves three, up to 4 cm long and 1 cm wide, ligulate-oblongate or spatulate, attenuate towards the base, cuspidate, widest above the middle. Inflorescence – peduncle 8 cm long, alate, two-flowered. Flowers medium-sized. Floral bracts 15 mm long, cucullate, oblong ovate, acute. Pedicel and ovary 28 mm long, triquetrous. Sepals subsimilar, keeled abaxial. Dorsal sepal 16 mm long, 5 mm wide, concave, ovate, shortly acuminate at apex, three-veined, veins simple. Lateral sepals 16 mm long, 5 mm wide, concave, obliquely ovate, obtuse, three-veined, veins simple. Petals 21 mm long, 24 mm wide, transversely elliptic-suborbicular in outline, broadly cuneate at the base, subobtuse at the apex, glabrous, 11-veined, veins simple. Lip 23 mm long, 26 mm wide, transversely elliptic-orbicular, widest near the middle, apex shortly cuspidate, 15-veined, veins simple, basal callus just below the gynostemium in the form of densely ciliate, thick hump gradually disappearing towards the lip centre. Gynostemium 8 mm tall, clinandrium obscurely three-lobed, on the dorsal surface densely covered by setose hairs ca. 3 mm long with hyaline apex, lower part glabrous.

Etymology: In reference to Tolima, Colombian department, where the species was originally collected.

Ecology: Plants growing at the altitude of 3,400–3,850 m. Flowering in March.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Tolima:** Cordillera Central, La Linea-cerro El Campanario, bajando. Alt. 3,400–3,850 m. March 4, 1969. *J. Cuatrecasas* & *R. Echeverry* 27695 (US!, UGDA-DLSz! – drawing).

Notes: The new species resembles its Peruvian congener *Telipogon urceolatus* C. Schweinf., but its flowers are distinctly smaller. Unlike those of *T. urceolatus*, petals of *T. tolimensis* are transversely elliptic-suborbicular in outline, broadly cuneate at the base, subobtuse at the apex, and glabrous (vs. petals trapeziform, margins involute, acute, base somewhat thickened and papillate).

Telipogon tolimensis resembles the Colombian *T. salamancae*. In the former, however, petals are glabrous (vs. petals with some hispid hairs), the lip is 23 × 26 mm (vs. 19 × 27 mm), the callus is densely ciliate (vs. hispid and ciliate), and the lower gynostemium part is glabrous (vs. lower part pubescent).

65. *Telipogon sumapazensis* Szlach. & Kolan., sp. nov. (Figure 138)

TYPE: Colombia. *J. Ordonez* & *al.* 1759 (holotype, COL!; UGDA-DLSz! – drawing).

Species similar to Telipogon sibundoyensis, distinguished by suborbicular, nine-veined petals which are broadly cuneate at the base and here hispid, subobtuse at the apex, and lip which is ornamented with a pair of knob-like densely ciliate projections just below stigma on the ventral surface of gynostemium.

Stem 4 cm long, abbreviated. Leaves five, up to 7 cm long and 1.8 cm wide, ligulate-lanceolate, attenuate towards the base, acute, widest near the middle. Inflorescence – peduncle up to 12 cm long, alate, raceme up to 5 cm long, five-flowered. Flowers rather large. Floral bracts 13 mm long, cucullate, oblong ovate, acute. Pedicel and ovary 35 mm long, triquetrous. Sepals dissimilar, keeled abaxial. Dorsal sepal 18 mm long, 8 mm wide, concave, ovate, shortly cuspidate at apex, three-veined, veins simple. Lateral sepals 18 mm long, 6 mm wide, concave, obliquely oblong ovate, acute, three-veined, veins simple. Petals 21 mm long, 20 mm wide, suborbicular in outline, broadly cuneate at the base and here hispid, subobtuse at the apex, nine-veined, veins simple. Lip 21 mm long, 23 mm wide, transversely elliptic-orbicular, widest near the middle, apex shortly cuspidate, 11-veined, veins simple, but some of them basally branching, basal callus just below the gynostemium in the form of densely ciliate rim. Gynostemium 5 mm tall, clinandrium obscurely three-lobed, densely covered by setose hairs ca. 4.5 mm long with hyaline apex, lower part almost glabrous, with a pair of knob-like densely ciliate projections just below stigma on the ventral surface of gynostemium.

Etymology: In reference to National Natural Park Sumapaz, where the type specimen of this species was collected.

Ecology: Plants growing at the altitude of 3,650 m. Flowering in January.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Bogotá DC. Bogotá. Nazareth. Vereda Animas baja hacia Vereda Sopas. Inmediaciones de PNN Sumapaz. 4°8'12.1" N, 74°14'5.3" W. Alt. 3,605 m. January 17, 2013. *J. Ordonez & al. 1759* (COL!, UGDA-DLSz! – drawing).

Notes: The new species is similar to *Telipogon sibundoyensis*, but can be easily distinguished by a pair of knob-like, densely ciliate projections just below the stigma on the ventral surface of the gynostemium. Additionally, petals of the new entity are suborbicular in outline (vs. petals broadly elliptic in outline), broadly cuneate at the base (vs. attenuate towards base), hispid (vs. ciliolate at the base), subobtusate at the apex (vs. acute), and nine-veined (vs. five- or seven-veined).

66. *Telipogon bicallosus* Szlach. & Kolan., sp. nov. (Figure 139)

TYPE: Colombia. *P. Alvaer & al. 309* (holotype, COL! 463210; UGDA-DLSz! – drawing).

Species similar to *Telipogon sumapazensis*, *but with smaller flowers, one-veined sepals, glabrous, obliquely broadly ovate, obtuse petals which are obscurely five-veined, transversely elliptic lip with obtuse apex, seven obscure, simple veins and glabrous margins. Moreover, in new species a pair of knob-like calli are located just below gynostemium.*

Stem 4 cm long, abbreviated. Leaves up to 5 cm long and 1 cm wide, oblanceolate, attenuate towards the base, subacute, widest near or above the middle. Inflorescence – peduncle 3 cm long, one-flowered. Flowers rather small. Floral bracts 6 mm long, cucullate, oblong ovate, acute. Pedicel and ovary 30 mm long, triquetrous. Sepals dissimilar, keeled abaxial. Dorsal sepal 12 mm long, 3.5 mm wide, concave, ovate-lanceolate, subacute at apex, one-veined, vein simple. Lateral sepals 12 mm long, 3 mm wide, concave, narrowly ovate-elliptic, acute, somewhat oblique, one-veined, vein simple. Petals 16 mm long, 11 mm wide, obliquely broadly ovate in outline, obtuse at the apex, glabrous, obscurely five-veined, veins simple. Lip 14 mm long, 16 mm wide, transversely elliptic, widest near the middle, apex obtuse, obscurely seven-veined, veins simple, margins glabrous, basal callus just below the gynostemium in the form of a pair of knob-like projections densely ciliate. Gynostemium 3 mm tall, clinandrium obscurely three-lobed, densely covered by setose hairs ca. 3 mm long with hyaline apex, lower part ciliolate.

Etymology: In reference to the presence of a pair of calli at the lip base.

Ecology: Plants growing at the altitudes of ca. 1,300–2,650 m. Flowering in March and May.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Caldas:** Mpio. Manizales. Vereda La Esperanza. Reserve Torre Cuatro. Parches de bosque en la zona baja, cerca de la quebrada La Siberia. 5°1'41" N, 75°23'10" W. Alt. 2,650–2,750 m. March 28, 1999. *P. Alvaer & al. 309* (COL!, UGDA-DLSz! – drawing); **Santander:** Floridablanca. Encontrada a la altura del PR11 y PR13 via a Cucuta. Alt. 1,300–1,400 m. May 8, 2012. *Y. Gonzalez YGO2068* (COL!).

Notes: This new species is similar to *Telipogon sumapazensis*, but has smaller flowers and one-veined sepals (vs. three-veined). Its petals are obliquely broadly ovate in outline, obtuse at the apex, glabrous, and obscurely five-veined (vs. suborbicular in outline, broadly cuneate at the base and here hispid, subobtusate at the apex, and nine-veined); the lip is transversely elliptic and widest near the middle, with an obtuse apex, seven obscure, simple veins, and glabrous margins. Noteworthy, a pair of knob-like calli are located just below the gynostemium, whereas in *T. sumapazensis*, they are found on the gynostemium, just below the stigma.

67. *Telipogon polyneuros* Rchb. f. (Figure 140–Figure 145)

Linnaea 41: 4. 1877[1876]. TYPE: Colombia. *B. Roetzl s.n.* (holotype, W-R! 30102; UGDA-DLSz! – drawing). *Telipogon polymerus* Rchb. f., sphalm.

Stem short, abbreviated, ca. up to 4 cm long. Leaves few, ca. 4 cm long and 1.5 cm wide, oblong elliptic. Flowers large, yellow transforming into greenish-yellow towards the apex, veins red-maroon becoming greenish-yellow towards distal margins. Sepals similar, keeled abaxial. Dorsal sepal 13–15 mm long, 5 mm wide, concave, ovate-elliptic, acute, five-veined, veins simple. Lateral sepals 13 mm long, 5 mm wide, concave, ovate-triangular, acute, oblique, five-veined, veins simple. Petals 25 mm long, 18 mm wide, broadly ovate in outline, somewhat oblique, apex acute, base cuneate and sparsely hispid, margins glabrous, veins 11, cross-venulate. Lip 21 mm long and wide, suborbicular-obovate in outline, very obscurely three-lobed, base broadly cuneate, apex obtuse, callus ovate-triangular, centrally concave, rim hispid, margins ciliolate in the lower third, veins 21, cross-venulate. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose with hairs ca. 1 mm long.

Ecology: No data.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Bei Medellín. *B. Roetzl s.n.* (W-R!, UGDA-DLSz! – drawing); “Bei Sonsón.” *W. Kalbreyer 1923* (*vide* Kraenzlin, 1919).

Notes: This is the only species in this group with cross-venulate lip and petal veins.

3.2.1.2.3. *Bruchmuelleri*-Subgroup

Lip callus prominent, pad-like, sometimes the basal part of the lip convex, densely pubescent or hirsute (Figure 146).

A group of ca. 25 species.

Lip veins simple.

KEY 4:

1. Gynostemium covered densely by thick, stiff hairs ca. 3–4 mm long, shortly branching at apex 78 *T. hemimelas*
- 1* Gynostemium with no apically branching hairs 2
2. Petals ca. twice longer than wide 3
- 2* Petals more or less as long as wide 4
3. Petals 20–22 × 10–13 mm, lip 19–20 × 10–13 mm, callus small 67. *T. chrysocrates*
- 3* Petals 10–21 × 6.5–8 mm, lip 9–16 × 9–14 mm, base with prominent pad-like callus 6 × 10 mm 77. *T. bruchmuelleri*
4. Petals wider than long, transversely elliptic-rhombic 5
- 4* Petals not as above 6
5. Petals 13-veined, simple, lip 20 × 29 mm, 25-veined, callus very obscure, papillate XVI. *T. papilio*
- 5* Petals 16-veined, sparsely anastomosing at base, lip 12.5 × 18 mm, 19–21-veined, callus prominent, hirsute XV. *T. sarae*
6. Petals and lip sparsely pubescent 70. *T. sp. 1*
- 6* Petals and lip not pubescent 7
7. Lip callus large, ca. 1/3 of the lip length 8
- 7* Lip callus small, ca. 1/4 or 1/5 of the lip length 11
8. Leaves 6–10 cm long, dorsal sepal 19–20 × 7 mm, petals 19–23 × 12–15 mm, lip 17–18 × 22–25 mm 75. *T. camargoi*

- 8* Leaves 3–4.5 cm long, dorsal sepal up to 17 × 7.5 mm, petals up to 18 × 15 mm, lip up to 18 × 20 mm 9
9. Petals 13–18 × 10–15 mm, lip 11–18 × 13–20 mm 76. *T. wallisii*
- 9* Petals 9–12 × ca. 6–9 mm, lip 6–9 × 8–11 mm 10
10. Petals 8–9 × 6–7 mm, seven-veined, lip 6–7 × 8–9 mm, 11- or 13-veined, callus 2 × 2.5 mm, densely papillose 73. *T. eberhardii*
- 10* Petals 10–12 × 9–9.3 mm, nine-veined, lip 9–9.3 × 10–11 mm, 15-veined, callus 3–4 × 2.5–3 mm, densely ciliate with several setae spread all over .. 74. *T. diabolicus*
11. Lip callus more or less setose 72. *T. cristinae*
- 11* Lip callus ciliate or pubescent, but never setose 12
12. Petals 19–25 × 16–24 mm, lip 17–25 × 22–28 mm, gynostemium lower part pubescent or setose 13
- 12* Petals 10–17 × 8–13 mm, lip 10–13 × 13–19 mm, gynostemium lower part ciliate 15
13. Petals with veins 13 XVII. *T. macroglottis*
- 13* Petals with veins seven or nine 14
14. Leaves 5–6 × 0.8 cm, petals basally sparsely pilose, gynostemium densely setose all over XIV. *T. ecuadorensis*
- 14* Leaves 11–12 × 1.8 cm, petals basally glabrous, gynostemium lower part shortly pubescent 68. *T. pulcher*
15. Petals 10–12 × 8–11 mm, suborbicular-obovate in outline, sessile, glabrous, lip with nine or 11 veins 69. *T. andicola*
- 15* Petals 13–17 × 13 mm, obliquely broadly ovate, basally cuneate and papillate, lip with 17 or 19 veins 71. *T. pastoanus*

68. *Telipogon chrysocrates* Rchb. f. (Figure 147)

Linnaea 41: 4. 1877 (1876). TYPE: Colombia [New Granada]. *B. Roez!* s.n. (holotype, W-R! 30116; UGDA-DLSz! – drawing).

Stem and leaves not seen. Inflorescence – peduncle alate, raceme ca. 4–5 cm long, somewhat flexuose, six-flowered. Flowers large. Floral bracts 10 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 20 mm long, 3–4 mm wide, concave, oblong lanceolate, acute, three-veined. Lateral sepals 20 mm long, 3–4 mm wide, concave, oblong lanceolate, acute, somewhat oblique, three-veined. Petals 20–22 mm long, 10–13 mm wide, broadly ovate in outline, sessile, long acuminate, glabrous, veins seven, simple. Lip 19–20 mm long and up to 25 mm wide, suborbicular-ovate in outline, acuminate at the apex, widest below the middle, margins papillate, basal callus small, densely hispid, veins 13, simple, slightly keeled in the lower quarter, glabrous above basal sixth which is papillate. Gynostemium about 4 mm tall, clinandrium obscurely three-lobed, densely setose all over, setose hairs ca. 3–4 mm long, with long, hyaline apex.

Ecology: No data.

Distribution: Colombia.

Representative specimens: – COLOMBIA. [**Antioquia**]: Bei Sonsón. *B. Roez!* s.n. (W-R! 30116; UGDA-DLSz! – drawing), Medellín. *W. Boxall* s.n. (W!).

Notes: This species is somewhat enigmatic. It can be easily confused with *Telipogon pulcher*, as general flower architecture of both species is very similar. *T. chrysocrates* has narrower petals, approximately twice as long as they are wide, and a lip callus much smaller than that of *T. pulcher*. Taxonomic status of both species requires further study. *Telipogon chrysocrates* shares relatively narrow petals with *T. bruchmuelleri*, but in the latter, the lip callus is very large and occupies as much as the basal third of the lip.

XIV. *Telipogon ecuadorensis* Schltr. (Figure 148–Figure 150)

Repert. Spec. Nov. Regni Veg., Beih. 8: 104. 1921. TYPE (Dodson in Jørgensen & León-Yáñez, 1999: 767): Ecuador. A. *Sodiro* 131 (B†; lectotype: QPLS?, isolectotype: BR).

Stem abbreviated. Leaves 6, 5–6 cm long, up to 0.8 cm wide, oblanceolate-ligulate, acuminate, widest above the middle. Inflorescence ca. 10–12 cm long, compressed, raceme subaxially four–six-flowered. Flowers large, yellowish, with purple haze. Floral bracts up to 8 mm long, ovate, acute, carinate. Pedicellate ovary 25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 20 mm long, 4 mm wide, concave, narrowly lanceolate, acute, three-veined, veins simple. Lateral sepals 20 mm long, 4 mm wide, concave, narrowly lanceolate, acute, oblique, three-veined, veins simple. Petals 23 mm long, 20 mm wide, rhombic-suborbicular, acuminate, oblique, basally sparsely pilose, margins papillose-ciliolate, veins nine, simple. Lip 23 mm long, 28 mm wide, suborbicular-rhombic in outline, broadly apiculate, obtuse at the apex, widest near the middle, base with small, pad-like, densely pubescent callus, veins 15, simple. Gynostemium 4 mm long, densely setose all over, clinandrium prominently three-lobed.

Ecology: Epiphyte in montane forest.

Distribution: Ecuador.

Representative specimens: – ECUADOR. Pichincha. A. *Sodiro* 131 (QPLS?).

Notes: Schlechter (1921) described this species in comparison with *Telipogon polyrrhizus*. In our opinion, however, it seems to be more similar to *T. pulcher*, but its petals are sparsely pilose at the base (vs. glabrous), and its gynostemium is densely setose all over (vs. shortly pubescent below).

Dodson and Dodson (1984) considered *T. ecuadorensis* a synonym of *T. andicola*, but the two species are easily distinguished based on flower size, petal form and venation, and lip shape and ornamentation. In *T. andicola*, petals are 10–12 mm long, the lip is 10–11 mm long, petals are suborbicular-obovate and seven-veined, and the lip is transversely elliptic-ovate with small, ovate-cordate callus and nine or 11 veins.

We were not able to locate the *Sodiro* 131 collection in QPLS.

69. *Telipogon pulcher* Rchb. f. (Figure 151, Figure 152)

Linnaea 41: 105. 1877[1876]. TYPE: Colombia [New Granada]. G. *Wallis* 236 (holotype, W-R! 30510; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves 11–12 cm long, up to 1.8 cm wide, densely packed on the stem, oblong to obovate-lanceolate, acute, widest above the middle. Peduncle 12–13 cm long, basally terete, apically compressed, raceme ca. 5 cm long, somewhat fractiflex. Flowers large, greenish, yellowish or yellowish with white centre, veins red-maroon, gynostemium and callus deep red-maroon. Floral bracts 9–12 mm long, ovate, acute, carinate. Pedicellate ovary 35 mm long. Sepals similar, keeled abaxial. Dorsal sepal 15–25 mm long, 6–8 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 15–25 mm long, 6 mm wide, concave, ovate-lanceolate, acute, oblique, three-veined, veins simple. Petals 19–25 mm long, 16–20 mm wide, broadly obovate in outline, attenuate towards base, somewhat oblique, apex acute, margins papillate, veins seven or nine, simple. Lip 17–25 mm long, 22–25 mm wide, suborbicular to transversely elliptic, obtuse at the apex, widest near the middle, base with prominent, pad-like, densely pubescent callus, which is surrounded by papillate area, margins papillate, veins 13 to 17, simple, slightly keeled in the basal quarter. Gynostemium 3 mm long, clinandrium prominently three-lobed, the upper and lateral lobes setose with hairs ca. 3.5 mm long with hyaline margins, lower part of the gynostemium shortly pubescent.

Ecology: No data.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Bei Sonsón. W. *Kalbreyer* 1823 (*vide* Kraenzlin, 1919); Frontino?. G. *Wallis* s.n. (*vide* Kraenzlin, 1919); **Cauca:** Popayán. G. *Schmidtchen* s.n. (W-R! 6863). *Sine loc.* G. *Wallis* s.n. (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon pulcher* resembles *T. macroglossis*, but the petals of the former are broadly obovate in outline, the apex is acute, the margins are papillate and seven- or nine-veined (vs. suborbicular in outline, apex rounded, margins glabrous, veins 13), and the lip is suborbicular to transversely elliptic (vs. broadly ovate-suborbicular). The other species similar to *T. pulcher* is *T. ecuadorensis*, which was discussed above.

70. *Telipogon andicola* Rchb. f. (Figure 153–Figure 160)

Bonplandia (Hannover) 3(17): 239. 1855. TYPE: Ecuador. *W. Jameson 724* (holotype, W-R! 30144; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves up to 10, 3.5–5 cm long, 0.6–1 cm wide, oblanceolate, acuminate. Inflorescence – peduncle 6–7 cm long, triquetrous, raceme ca. 1 cm long, five-flowered. Flowers medium-sized, sepals greenish-yellow, petals and lip yellow to yellow-greenish, veins dull maroon to red-maroon, except distal greenish part, sometimes with aborted branches in the lower half, lip callus and base of petals deep red-maroon. Floral bracts 7–9 mm long, cucullate, ovate, acute. Pedicel and ovary 15 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 9–11 mm long, 2.5–4 mm wide, concave, ovate-lanceolate, acute, five-veined, veins simple. Lateral sepals 9–12 mm long, 3–4 mm wide, concave, ovate-lanceolate, acute, somewhat oblique, three-veined, veins simple. Petals 10–12 mm long, 8–11 mm wide, suborbicular-obovate in outline, sessile, obtuse, glabrous, seven-veined, veins simple. Lip 10–11 mm long, 13 mm wide, transversely elliptic-ovate, rounded at the apex, margins in the basal third ciliate, papillate above, veins nine or 11, simple, glabrous, slightly keeled in the lower parts, callus ca. 2–2.5 mm long and wide, ovate-cordate, densely ciliate. Gynostemium about 4 mm tall, clinandrium three-lobed, densely ciliate, with setose hairs up to 3 mm.

Ecology: Epiphyte at the altitude of 2,800–3,300 m. Flowering in June and August.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. **Cundinamarca**: Alt. 3,000 m. June 13, 1941. *O. Renz 3045* (RENZ!), Oberstes Guaviotal. Alt. 3,000 m. August 17, 1941. *O. Renz 3043* (RENZ!), San Miguel. Alt. 2,800 m. August 10, 1941. *O. Renz 3046* (RENZ!). ECUADOR. **Pichincha**: Western side of Pichincha on trees. Alt. 3,300 m. 1848. *W. Jameson 724* (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon andicola* is characterized by relatively small flowers, similar somewhat to those of *T. pastoanus*. Its petals are 10–12 × 8–11 mm, suborbicular-obovate in outline, sessile, and glabrous (vs. 13–17 × 13 mm, obliquely broadly ovate, basally cuneate, and papillate), and the lip is nine- or 11-veined (vs. 17- or 19-veined).

71. *Telipogon* sp. 1 (unidentified) (Figure 161)

Stem and leaves not seen. Flowers rather small. Sepals dissimilar, keeled abaxial. Dorsal sepal 12 mm long, 4–5 mm wide, concave, ovate-lanceolate, acute, three-veined, veins simple. Lateral sepals 10–11 mm long, 3.5–4 mm wide, concave, elliptic-ovate, acute, oblique, four-veined, veins simple. Petals 16 mm long, 12 mm wide, broadly elliptic-ovate in outline, sessile, acute, basally densely papillate and sparsely pubescent, sparsely pubescent above, seven-veined, veins simple. Lip 14 mm long, 13 mm wide, suborbicular, rounded at the apex, sparsely pubescent all over, margins in the basal half ciliate, glabrous above, veins nine, simple, callus small, obovate-cordate, densely hispid, hairs with long hyaline apex. Gynostemium about 4 mm tall, clinandrium three-lobed, densely ciliate in the lower part, with numerous setose hairs up to 3 mm above and on both sides.

Ecology: No data on habitat. Flowering in July.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Antioquia**: Cordillera Central. July 1872. *G. Schmidtchen s.n.* (W-R!, UGDA-DLSz! – drawing).

Notes: This species is somewhat similar to its Ecuadorian congener, *Telipogon andicola*, but its lip and petals are sparsely pubescent all over. Due to incomplete material, we prefer to postpone a formal description of this taxon.

XV. *Telipogon sarae* Baquero & Fortunato (Figure 162, Figure 163)

Orquideología 29(1): 6. 2012. TYPE: Ecuador. S. Gutiérrez 287 (holotype, QCNE).

Plants caespitose, 12–15 cm tall in total. Stem ca. 5 cm long, abbreviated. Leaves 2.5–5 cm long, 1–2 cm wide, oblanceolate, acuminate. Inflorescence ca. 8 cm long, peduncle ca. 2 cm long, alate, two–four-flowered. Flowers medium-sized, sepals yellow to greenish, petals and lip basically yellowish-green to yellow, with red-maroon veins or haze, margins yellow or greenish, gynostemium and lip calli dark-red to blackish. Floral bracts ca. 7–8 mm long, ovate, concave, acute. Pedicellate ovary 20 mm long, triquetrous. Dorsal sepal 10 mm long, 4 mm wide, elliptic-ovate, concave, acute, keeled abaxially, veins three, simple. Lateral sepals 10 mm long, 4 mm wide, ovate, somewhat oblique, concave, acute, keeled abaxially, three-veined. Petals 13 mm long, 15 mm wide, transversely elliptic-orbicular, broadly cuneate at the base, apex cuspidate, veins 16, sparsely anastomosing at base. Lip 12.5 mm long, 18 mm wide, transversely elliptic, widest near the middle, obtuse, shortly acute, veins 19–21, simple; callus prominent, elliptic-obovate, hirsute, adnate completely to the lip. Gynostemium ca. 6 mm long, clinandrium prominently three-lobed, densely setose, glabrous on the lower surface.

Ecology: Epiphyte in montane forest at the altitude of 2,000 m and in cloud forest between 2,800–3,500 m.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Pichincha**: Cerca de Lloa. September 2, 2008. S. Gutiérrez 287 (QCNE).

Notes: This plant has a very characteristic flower color; the petals and lip are deeply red-maroon with yellow or greenish margins only. In a dried condition, it can be confused with the small-flowered *Telipogon papilio*, but unlike the latter, its lip callus is very prominent and hirsute (vs. obscure, papillate), its petals are 16-veined (vs. 13-veined), and its lip is 12.5 × 18 mm and 19–21-veined (vs. 20 × 29 mm, 25-veined).

XVI. *Telipogon papilio* Rchb. f. & Warsz. (Figure 164–Figure 167)

Bonplandia 2: 101. 1854. TYPE: Ecuador. J. Warszewicz s.n. (holotype, W-R! 30115; UGDA-DLSz! – copy).

Stem abbreviated, ca. 5 cm tall. Leaves several, up to 6.5 cm long and 0.7 cm wide, linear- to oblong lanceolate, acute. Inflorescence 7 cm long, up to seven-flowered. Flowers large, sepals green to yellow-green, petals and lip yellow, turning white towards the base, gynostemium and central part of the flower deep red-maroon, veins red to red-maroon. Floral bracts 11 mm long, ovate-triangular, acute. Pedicellate ovary 30 mm long. Sepals similar, keeled abaxial. Dorsal sepal 17 mm long, 4–5 mm wide, concave, ovate-lanceolate, acuminate, five-veined, veins simple. Lateral sepals 17 mm long, 4–5 mm wide, concave, ovate-lanceolate, acuminate, oblique, five-veined, veins simple. Petals 18 mm long, 20 mm wide, transversely elliptic-rhombic in outline, somewhat oblique, apex acuminate, base and margins glabrous, veins 13, simple. Lip 20 mm long, 29 mm wide, transversely elliptic in outline, widest near the middle, rounded at the apex, callus very obscure, obovate, papillate, margins almost glabrous, veins 25, simple. Gynostemium 4 mm long, clinandrium prominently three-lobed, densely setose on the upper surface and on both sides, setae with hyaline, branching apex, lower surface ciliate.

Ecology: Epiphyte in cloud forest.

Distribution: Ecuador, Peru?.

Representative specimen: – ECUADOR. **Loja**: Sine loc. J. Warszewicz s.n. (W-R!, UGDA-DLSz! – drawing).

Notes: This large-flowered species is the only representative of this group with petals wider than they are long. Somewhat similar is *Telipogon sarae*, described recently from Ecuador. Both species can be easily recognized by the color of the flowers. In *T. papilio*, flowers are predominantly yellow with red-maroon veins, whereas in *T. sarae*, they are mostly dark and the lip is red-maroon hazed or heavily red-maroon

veined. *Telipogon warszewiczii* Rchb. f. is often considered a synonym of *T. papilio*; however, in the former species, petals are five-veined and the lip is nine-veined, according to the original description provided by Reichenbach.

72. *Telipogon pastoanus* Schltr. (Figure 168)

Repert. Spec. Nov. Regni Veg. Beih. 7: 198. 1920. TYPE: Colombia. *F. C. Lehmann 6875* (B†; K!; UGDA-DLSz! – copy).

Stem abbreviated, ca. 2–3 cm long. Leaves three–four, 3–4.5 cm long, 0.5–1.4 cm wide, ligulate to ligulate-spathulate, acute. Inflorescence – peduncle up to 7 cm long, alate, raceme ca. 2–3 cm long, two–five-flowered. Flowers medium-sized, yellow with brownish veins. Floral bracts up to 10 mm long, ovate-lanceolate, acute, keeled abaxially. Pedicellate ovary 20–30 mm long, triquetrous. Dorsal sepal 10–17 mm long, ca. 4–6 mm wide, ovate to lanceolate, acute, concave, three- or five-veined, veins simple, keeled on the outer surface. Lateral sepals 10–17 mm long, 5–6 mm wide, oblong lanceolate to ovate, somewhat oblique, acute, three- or five-veined, veins simple, keeled on the outer surface. Petals 13–17 mm long, 13 mm wide, obliquely broadly ovate, acuminate to obtuse, basally cuneate and papillate, veins nine or 11, simple. Lip 12–13 mm long, 15–19 mm wide, suborbicular to transversely elliptic-suborbicular, rounded at the apex with or without short mucro, veins 17 or 19, simple, callus basal, obtriangular, shortly ciliate. Gynostemium ca. 4–5 mm long, densely setose on the upper surface, ciliate on the lower one.

Ecology: Epiphyte at the altitude of ca. 3,000 m.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cauca:** An Bäumen um Piquifique am Galera bei Pasto. Alt. 3,000 m. *F. C. Lehmann 6875* (B†, K!, UGDA-DLSz! – copy). *Sine loc.* *L. A. Garay 737* (AMES!, UGDA-DLSz! – drawing).

Notes: Schlechter (1920) compared this species to *Telipogon caucanus*, stating that it has smaller flowers, more acute and glabrous petals, and a shorter lip. In our opinion, it resembles *T. andicola*, which has smaller flowers with somewhat different petals (10–12 × 8–11 mm, suborbicular-obovate in outline, sessile, glabrous vs. 13–17 × 13 mm, obliquely and broadly ovate, basally cuneate, and papillate) and lip (nine or 11 veins vs. 17 or 19 veins).

73. *Telipogon cristinae* P. Ortiz (Figure 169)

Orquideología 27(2): 179. 2010[2011]. TYPE: Colombia. *P. Ortiz 1353* (holotype, HPUJ).

Plant tiny. Stem abbreviated. Leaves several, 5.7 cm long, 0.6 cm wide, oblong elliptic, acute. Inflorescence longer than leaves, peduncle alate. Flowers ca. 30 mm in diameter, yellow with purple spots, veins on petals greenish, transverse spots purple. Floral bracts ca. 5 mm long, ovate, cucullate, acute. Pedicellate ovary ca. 20 mm long, triquetrous. Dorsal sepal 15 mm long, 7 mm wide, oblong ovate, acute, dorsally keeled. Lateral sepals 15 mm long, 7 mm wide, oblong ovate, acute, oblique, keeled abaxially. Petals 15 mm long, 14 mm wide, elliptic-obovate or elliptic-rhombic, slightly apiculate, with nine veins. Lip 15 mm long and wide, obovate-circular to suborbicular, slightly apiculate, veins 11, anastomosing, basal callus cordiform, concave in the center, setose. Gynostemium short, clinandrium three-lobed, all lobes densely setose, setae on both sides of the anther longer than those above it, spines black.

Ecology: Epiphyte in permanently cold and humid area at the altitude of ca. 3,050–3,400 m. Flowering in October

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Chingaza National Park. La Calera. Alt. 3,400 m. October 31, 2009. *P. Ortiz 1353* (HPUJ); Parc Nacional Natural Chingaza. Alt. 3,050 m. *C. Uribe-Vélez s.n.* (C. Uribe-Vélez, pers. inf., 2020, UGDA-DLSz! – photo).

Notes: According to the original description, this species is characterized by its small size and conspicuously colored flowers. It is similar to *Telipogon andicola*, but is distinguished by the thick and centrally excavated setose callus.

74. *Telipogon eberhardii* Braas

Die Orchidee 36(2): 78; 1985. TYPE: Colombia. *E. Waldvogel s.n.* (holotype, Brass Herbarium).

Stem ca. 2–2.5 cm long. Leaves 5–6, 3.5–4.5 cm long, up to 1.2 cm wide, oblong lanceolate, acute. Inflorescence – peduncle 5–6 cm long, triquetrous, raceme 0.4–0.4–0.6 cm long, two–three–flowered. Flowers small, whitish translucent with red veins, lip callus and gynostemium purple, setae black. Floral bracts 6–8 mm long, cucullate, ovate, acute. Pedicel and ovary 15–17 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 6.5–7.5 mm long, up to 3 mm wide, concave, oblong ovate to ovate-lanceolate, acute to acuminate, three-veined. Lateral sepals 6.5–7.5 mm long, up to 3 mm wide, concave, oblong ovate to ovate-lanceolate, acute to acuminate, somewhat oblique, three-veined. Petals 8–9 mm long, 6–7 mm wide, broadly elliptic-ovate in outline, base cuneate, somewhat oblique, apex shortly acute, with seven simple veins. Lip 6–7 mm long, 8–9 mm wide, transversely elliptic-ovate, rounded at the apex with short apiculus, widest below the middle, 11- or 13-veined, veins simple, callus 2 × 2.5 mm, obovate in outline, densely papillose. Gynostemium 1.5 mm tall, with setose hairs up to 2–2.5 mm long.

Ecology: Plants growing at the altitude of ca. 2,500 m.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Putumayo**: San Francisco. Alt. ca. 2,500 m. 1982. *E. Waldvogel s.n.* (Braas Herbarium).

Notes: Braas (1985) described his new species in comparison to *Telipogon musaicus* and stated that it differs from the latter in its non-reticulate veins on the lip, and in its form and number of veins. *Telipogon eberhardii* is similar to *T. diabolicus*, but has generally smaller flowers. In our opinion, the most discriminative character is the lip callus, densely papillose and smaller in the former, and densely ciliate with several setae spread all over in the latter. Additionally, in *T. diabolicus*, setae covering the middle lobe of clinandrium are much shorter than those covering both lateral lobes. In *T. eberhardii*, all setae are similar in length.

75. *Telipogon diabolicus* Kolan., Szlach. & Medina Tr. (Figure 170–Figure 175)

PhytoKeys 65: 114–117, 119–120, f. 1A–F, 2A–C. 2016. TYPE: Colombia. *R. Medina T. & al. S15/13* (holotype, JAUM!; isotype, JAUM!; UGDA-DLSz! – drawing).

Stem 5.5–9 cm tall, stem abbreviated. Leaves 2–4.5 cm long, 0.4–1.3 cm wide, conduplicate, relatively fleshy, ovate-lanceolate to oblanceolate, attenuate towards the base, subacute. Inflorescence 6–9 cm long, two–three–flowered, peduncle triquetrous. Flowers simultaneous, tepals translucent pinkish with reddish veins, gynostemium and lip callus dark violet-maroon. Floral bracts 7–9 mm long, cucullate, ovate, acute. Pedicel and ovary 15–20 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 9–9.5 mm long, 4–4.5 mm wide, concave, ovate-elliptic, acute, three-veined. Lateral sepals 9–10 mm long, 3–4 mm wide, concave, ovate-elliptic, acute, somewhat oblique, three-veined. Petals 10–12 mm long, 9–9.3 mm wide, rhombic in outline, broadly elliptic ovate to transversely elliptic above prominent claw, widest near the middle, cuspidate, nine-veined, claw basally thickened and densely ciliate with papillate margins. Lip 9–9.3 mm long, 10–11 mm wide, transversely elliptic, widest below the middle, acute at the apex, 15-veined, margins glandular-ciliate, basal margins with short spines; callus 3–4 mm × 2.5–3 mm, ovate-cordate, densely ciliate with several setae spread all over its surface. Gynostemium about 3 mm tall, clinandrium three-lobed, lateral bundles of setose hairs elongate up to 3 mm long, the dorsal bundle covering the anther much shorter, area around the stigma papillate, with several setae. Capsule 15–20 mm long.

Ecology: It was found growing epiphytically in wet, dwarf forest at the edge of paramo. The population which was observed during the field study consists of about 30 specimens of which only several were adult, flowering plants.

Distribution: So far this species is known exclusively from southern Colombia, on the border between departments Putumayo and Nariño.

Representative specimen: – COLOMBIA. **Putumayo/Nariño:** Páramo de Bordoncillo. Alt. 3,180 m. November 7, 2015. R. Medina et al. S15/13 (JAUM!, UGDA-DLSz! – drawing).

Notes: This species could be misidentified as its Colombian congener, *Telipogon tabanensis*, and with the Ecuadorian *T. guacamayensis*, but both these orchids are characterized by yellow flowers with a dark (wine-red to maroon) gynostemium and callus (vs. flowers almost translucent in *T. diabolicus*). Flowers of both *T. tabanensis* and *T. diabolicus* are resupinate (non-resupinate in *T. guacamayensis*), but those of *T. tabanensis* are much larger – sepals are about 17 mm long (vs. 9–10 mm in *T. diabolicus*) and petals reach 20 mm in length (vs. 12 mm). Petals of the former are densely spinose-hirsute at the base, whereas in *T. diabolicus* and in *T. guacamayensis*, they are glabrous. In both *T. tabanensis* and *T. guacamayensis*, the lip is 17-veined (vs. 15-veined in *T. diabolicus*) and subtrullate (*T. guacamayensis*) or elliptic (*T. tabanensis*). All three species are characterized by the presence of a prominent, more or less cordate, basal lip callus that is approximately 6 mm long in *T. tabanensis* and *T. guacamayensis* (up to 4 mm in *T. diabolicus*). Only in *T. diabolicus*, the basal lip margin is covered with short spines. The additional difference between *T. tabanensis* and the new species is found in the gynostemium ornamentation. In the former species, the gynostemium is covered with equally long setose hairs, whereas in *T. diabolicus* (and *T. guacamayensis*), the lateral bundles of hairs are elongated and longer than the dorsal bundle covering the anther.

Telipogon diabolicus can be misidentified as *T. wallisii*, but has smaller flowers with a different color. The flowers of the latter are yellow or deep yellow, with yellow veins on petals, a lip with a darker basal part, red veins and spots below the gynostemium, and a dark red maroon callus. *Telipogon diabolicus* is also similar to *T. eberhardii* – the differences between these two taxa are discussed above. The distinguishing characteristic of *T. diabolicus* is the presence of prominently clawed petals. *Telipogon diabolicus* somewhat resembles the Ecuadorian *T. ecuadorensis* and *T. bruchmuelleri*, known from Ecuador and Venezuela. In all aforementioned species, the lip is similar in form, more or less transversely elliptic with ovate-cordate basal callus. Unlike in *T. diabolicus*, the gynostemium of *T. bruchmuelleri* and *T. ecuadorensis* is densely covered by setose hairs (vs. setose hairs found only on clinandrium) and petals are sessile (vs. clawed).

XVII. *Telipogon macroglottis* Rchb. f. (Figure 176, Figure 177)

Linnaea 41: 105. 1877[1876]. TYPE: Ecuador. H. Krause s.n. (holotype, W-R! 30090; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves unknown. Raceme ca. 18 cm long, few-flowered. Flowers large, sepals pinkish-orange or pinkish-yellow, petals translucent yellow or white with yellow veins and red or yellow reticulation, lip similar in color, but base pinkish, veins and reticulation red or maroon-red, gynostemium blackish. Floral bracts 13 mm long, ovate, acute, carinate. Pedicellate ovary 35 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 20 mm long, 10 mm wide, concave, elliptic-ovate, acute, five-veined, veins simple. Lateral sepals 20 mm long, 8 mm wide, concave, ovate-lanceolate, acute, oblique, five-veined, veins simple. Petals 24 mm long and wide, suborbicular in outline, widest near the middle, attenuate towards base, somewhat oblique, apex rounded, margins glabrous, veins 13, simple, somewhat keeled near the base. Lip 21 mm long, 26 mm wide, broadly ovate-suborbicular, widest below the middle, rounded at the apex with short mucro, base with prominent, pad-like callus, cordate in outline, prominently concave towards the base, densely pubescent, veins 17, simple, slightly keeled in the basal third. Gynostemium 3 mm long, clinandrium prominently three-lobed, the upper and lateral lobes setose with hairs ca. 3.5 mm long, lower part of the gynostemium shortly pubescent.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. *Sine loc.* H. Krause s.n. (W-R!, UGDA-DLSz! – drawing).

Notes: *Telipogon macroglossis* is very similar to *T. pulcher*, but its petals are suborbicular in outline, the apex is rounded, margins are glabrous, and the lip is broadly ovate-suborbicular (vs. suborbicular to transversely elliptic), with 13 veins (vs. broadly obovate in outline, apex acute, margins papillate, seven or nine veins).

This species was considered by Dodson and Dodson (1989) a synonym of *T. obovatus*, but these taxa can be distinguished based on the petal form (oblong obovate in *T. obovatus*) and venation (petals with nine, lip with 15 simple veins in *T. obovatus*), and by the lip form (transversely elliptic-ovate, callus oblong cordate, densely hispid).

76. *Telipogon camargoi* Szlach. & Kolan. (Figure 178)

Acta Bot. Fenn. 53(3–4): 150–151, f. 1A–E. 2016. TYPE: Colombia. G. Huertas & L. Camargo 6493 (holotype, AMES!; Isotype: COL!).

Plant less than 20 cm tall. Stem up to 7 cm long. Leaves 6–10 cm long, 1–1.4 cm wide, oblanceolate to linear-oblanceolate, attenuate towards the base, shortly acuminate. Inflorescence 8–10 cm long, alate, four–seven-flowered. Floral bracts 10 mm long, lanceolate-triangular, acute. Pedicel and ovary 30–45 mm long, triquetrous. Dorsal sepal 19–20 mm long, 7 mm wide, ovate-lanceolate, acute, three-veined. Lateral sepals 17 mm long, 7–8 mm wide, similar to the dorsal sepal, but somewhat oblique. Petals 19–23 mm long, 12–15 mm wide, oblong-rhombic tp deltoid, widest above the middle, asymmetric, cuneate at the base, subacute at the apex, seven-veined, occasionally distal veins branching. Lip 17–18 mm long, 22–25 mm wide, with 17 or 19 veins, sometimes veins branching, transversely elliptic in general outline, widest near the middle, acute to obtuse at the base, basal part below gynostemium with elliptic-obovate thickened pad densely covered with hispid hairs, surrounded by ciliate rim, lamina papillate below pad. Gynostemium up to 4.5 mm long, dorsally densely setose, rostellum ca. 2 mm long. Anther dorsal.

Ecology: It was found growing in Andean forest with, i.e., *Escallonia* (Escalloniaceae), *Oreopanax* (Araliaceae), and *Lippia* (Verbenaceae) at the altitudes of 800–3,400 m. Flowering throughout the year. Most of the populations are epiphytic; however, according to the note on the herbarium sheet the type specimens were growing terrestrially.

Distribution: So far this species is known exclusively from Colombian Eastern Andean Cordillera.

Representative specimens: – COLOMBIA. **Boyacá:** Road from Guateque to Santa Maria. Between Santa Maria and Piedra Campana. Alt. 800–1,200 m. March 10–12, 1960. H. Garcia Barriga 17221 (COL!); Chicamocha canyon, above Mercedes. Caucasi trail. Alt. 3,400 m. October 4, 1991. A. Etter, L. Baptiste & L. Villa 889 (COL!); **Cundinamarca:** Mpio. La Calera, Road to Mundo Nuevo. Alt. 2,850–3,000 m. July 20, 1998. J. L. Fernandez & al. 16674 (COL!); Mpio. Fomeque, Páramo de Chingaza. Alt. 3,000–3,300 m. January 18, 1965. G. Huertas & L. Camargo 5938 (COL!); Road to La Calera. Alt. 2,800–2,900 m. October 24, 1944. M. Schneider 264 (COL!); *Sine loc.* M. Schneider 330 (AMES!, UGDA-DLSz! – drawing); Mpio. La Calera, Road to Mundo Nuevo. Alt. 3,000 m. March 1, 1992. J. L. Fernandez & R. Castillo 9437 (COL!); Mpio. Fomeque. Páramo de Chingaza. Farms Paraguay and El Cristal. Alt. 3,300–3,350 m. January 31, 1966. G. Huertas & L. Camargo 6493 (AMES!, COL!). **Santander/Boyacá:** Border of the departments of Santander and Boyacá, Corregimiento de Virolin. Farm La Sierra. Alt. 2,500–2,600 m. May 15, 1976. G. Lozano & al. 2546 (COL!).

Notes: *Telipogon camargoi* resembles *T. bruchmuelleri*, which Reichenbach (1877) described based on the material collected in Ocaña, Colombia. The type specimen of this species is deposited in the Herbarium of the Natural History Museum in Vienna (W). The common characteristic of both taxa is a fleshy pad at the lip base that is

densely covered with hispid hairs. The two species can be easily distinguished based on the flower morphology. The lip of *T. camargoi* is conspicuously wider than it is long, almost transversely elliptic, and acute, whereas the lip of *T. bruchmuelleri* is just slightly longer than wide, more or less obovate, and cuspidate at the apex. The lip veins of the latter species are elevated in the lower half; this trait is not observed in the new species. In addition, petals of *T. camargoi* are oblong-rhombic, while in *T. bruchmuelleri*, they are elliptic-lanceolate. Whereas the ventral part of the gynostemium is glabrous in *T. camargoi*, it is densely hispid in *T. bruchmuelleri*.

Telipogon camargoi can be confused with *T. wallisii*, but in general, *T. camargoi* is a larger plant.

77. *Telipogon wallisii* Rchb. f. (Figure 179–Figure 184)

Linnaea 41: 104. 1877[1876]. TYPE: Colombia. *G. Wallis s.n.* (holotype, W-R! 30512; UGDA-DLSz! – drawing).

= *Telipogon schmidtchenii* Rchb. f. ex Kraenzl., Ann. Naturhist. Mus. Wien 33: 20. 1919. TYPE: Colombia. *Schmidtchen s.n.* (not localized).

Leaves few, 3–3.5 cm long, 0.8–1 cm wide, oblong-elliptic or oblong-cuneate, subobtuse to acute. Inflorescence – peduncle 3–4 cm long, alate, raceme 3 cm long, flexuose, laxly four–seven-flowered. Flowers medium-sized, yellow or deep yellow, veins on petals yellow, lip with darker basal part, with red veins and spots below gynostemium, callus dark red-maroon. Floral bracts 7–10 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 22–30 mm long, alate. Sepals subsimilar, keeled abaxial. Dorsal sepal 8–17 mm long, 4–7.5 mm wide, concave, ovate, acute, three- or five-veined, veins simple. Lateral sepals 10–17 mm long, 4–6.5 mm wide, concave, obliquely oblong ovate, acute, three- or five-veined, veins simple. Petals 13–18 mm long, 10–15 mm wide, oblong obovate to elliptic in outline, somewhat oblique, apex acute, margins ciliate, veins nine or 11, simple. Lip 11–18 mm long, 13–20 mm wide, transversely elliptic-ovate in outline, widest above the middle, apex truncate or obtuse, lamina papillate, margins ciliate, callus large, 4.5 mm long and 6.5 mm wide, broadly cordate, thick, pad-like, densely hispid-ciliate, veins 17(19), simple. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose on the upper surface, hairs ca. 2.5–4 mm long, with hyaline apex, lower surface hispid.

Ecology: Epiphyte at the altitudes of 3,300–3,600 m. Flowering in October.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** Pablolito. Alt. 3,300 m. *G. Wallis s.n.* (W-R!, UGDA-DLSz! – drawing), *Sine loc. L. J. Schlim s.n.* (W-R!, UGDA-DLSz! – drawing); **Putumayo:** Tabanel above La Cocha. Alt. 3,600 m. October 31, 1946. *M. & R. Foster 2031* (AMES!, UGDA-DLSz! – drawing). [New Granada]. *B. Ruiz s.n.* (W-R!).

Notes: *Telipogon wallisii* is similar to *T. camargoi*, but has shorter and narrower leaves (3–3.5 × 0.8–1 cm vs. 6–10 × 1–1.4 cm) with somewhat smaller flowers. Petals are 13–18 × 10–15 mm (vs. 19–23 × 12–15 mm) and the lip is 11–18 × 13–20 mm (vs. 17–18 × 22–25 mm). The lip callus of *T. wallisii* is densely hispid-ciliate, whereas that of *T. camargoi* is densely covered with hispid hairs.

Telipogon wallisii can be confused with *T. diabolicus* when dried, but the flowers of the latter are slightly smaller, with petals 10–12 × approximately 9 mm (vs. 13–18 × 10–15 mm) and a lip approximately 9 × 10–11 mm (vs. 11–18 × 13–20 mm). They are readily distinguishable upon flowering, as flowers of *T. wallisii* are yellow with red veins on the lip, and those of *T. diabolicus* are translucent pinkish with reddish veins.

78. *Telipogon bruchmuelleri* Rchb. f. (Figure 185)

Linnaea 41: 28. 1877[1876]. TYPE: Colombia. *A. Bruchmüller s.n.* (holotype, W-R! 30509; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves two–three, 2.5–7 cm long, 0.7–1.5 cm wide, linear-oblongate, acute. Inflorescence – peduncle 5–15 cm long, raceme ca. 2–3.5 cm long, two–six-flowered. Flowers medium-sized to small, sepals

greenish-yellow to yellow, veins yellow to reddish in the lower half, lip pinkish flushed in the center and base, distal margins yellow, veins red, callus blackish. Floral bracts 9–13 mm long, ovate, acute, carinate. Pedicellate ovary 16–25 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 10–15 mm long, 3.5–5 mm wide, concave, lanceolate to ovate, acuminate, three- or five-veined, veins simple. Lateral sepals 10–15 mm long, 3–5 mm wide, concave, lanceolate to ovate, acuminate, oblique, three- or five-veined, veins simple. Petals 10–21 mm long, 6.5–8 mm wide, oblong elliptic in outline, attenuate towards base, somewhat oblique, apex cuspidate, margins papillate, veins six–seven, simple. Lip 9–16 mm long, 9–14 mm wide, ovate to ovate-orbicular in outline, more or less cuspidate at the apex, margins papillate, base with prominent up to 6 mm long and 10 mm wide pad-like callus occupying basal third of the lip, elliptic in outline, densely hispid-pubescent, veins 13 to 17, simple, keeled in the basal half or so, papillate at base only. Gynostemium up to 4.5 mm long, clinandrium prominently three-lobed, the upper and lateral lobes setose with hairs ca. 3–3.5 mm long, lower part of the gynostemium shortly pubescent.

Ecology: Epiphyte in montane forest at the altitude of 2,300–3,000 m. Flowering throughout the year.

Distribution: Colombia, Ecuador, Venezuela.

Representative specimens: – COLOMBIA. **Cundinamarca**: Oberes Guaviotal. Alt. 3,000 m. August 17, 1941. *O. Renz 3043* (RENZ!), Ocaña. *A. Bruchmüller s.n.* (W-R!, UGDA-DLSz! – drawing), San Miguel sudlich am Bogotá. Alt. 2,700 m. January 1, 1940. *O. Renz 3042* (RENZ!), Berghange nordlich Bogotá. Alt. 2,700 m. January 25, 1941. *O. Renz 3049* (RENZ!); [**Cauca**]: Prope Popayán . Alt. 2,800 m. June 4, 1878. *F. C. Lehmann s.n.* (W-R!); [**Valle del Cauca**]: Las Pavas bei Cali. *F. C. Lehmann s.n.* (W-R!, UGDA-DLSz! – drawing). ECUADOR. Wege von Quito nach Andidona. Alt. 2,300 m. January 16, 1880. *F. C. Lehmann 465* (W-R!, UGDA-DLSz! – drawing). VENEZUELA. **Mérida**. Las Quebraditas. Alt. 2,700 m. April 28, 1949. *O. Renz 5593* (RENZ!).

Notes: *Telipogon bruchmuelleri* is rather easily distinguishable by its very large basal lip callus. It can be confused with *T. chrysocrates*, in which we can observe similarly shaped petals, but the lip callus in the latter is much smaller, limited to the basal part of the lip, and no larger than the gynostemium main body.

Idárraga-Piedrahita et al. (2011) and Bernal et al. (2016) considered *T. bruchmuelleri* a synonym of *T. latifolius*. The latter species is distinguished from *T. bruchmuelleri* based on obliquely subrhombic to suborbicular petals (vs. oblong elliptic) and a transversely elliptic lip (vs. ovate-orbicular) lacking a callus (vs. callus pad-like). Moreover, the lower part of the gynostemium of *T. latifolius* is glabrous (vs. shortly pubescent).

79. *Telipogon hemimelas* Rchb. f. (Figure 186–Figure 189)

Linnaea 41: 72. 1877[1876]. TYPE: Colombia. *G. Wallis s.n.* (holotype, W-R! 30513; UGDA-DLSz! – drawing).

= *Telipogon gustavi* Rchb. f., Linnaea 41: 105. 1877[1876]. TYPE: Colombia. *W. Kalbreyer* 17216 (holotype, W?).

Stem 5 cm long. Leaves three–five, up to 9 cm long and 2 cm wide, elliptic-oblongate, shortly acuminate. Inflorescence – peduncle ca. 17–20 cm, raceme three–four-flowered. Flowers medium-sized, sepals white, greenish to yellowish, petals whitish to yellowish or white in the lower part with green distal margins, base reddish flushed, veins and reticulation red-maroon, lip yellow to green red or pinkish flushed, veins red-maroon, flower central part dark red. Floral bracts 12–20 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 28–55 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 14–19 mm long, 6–8.5 mm wide, concave, ovate, elliptic-ovate to oblong ovate, acute to acuminate, three- or five-veined, veins simple. Lateral sepals 14–19 mm long, 7–9.5 mm wide, concave, obliquely ovate-lanceolate, acute, five-veined, veins simple. Petals 16–21 mm long, 12–21 mm wide, broadly obovate in outline, widest above the middle, attenuate

towards base, apex truncate, sometimes with short mucro, margins papillate, veins five or seven, simple, slightly keeled in the lower half. Lip 12–19 mm long, 17–24 mm wide, transversely elliptic-ovate, truncate at the apex, papillate throughout with hispid hairs spread all over or glabrous, callus prominent, ca. 4 mm long and wide, pad-like, fleshy, densely covered by setose hairs ca. 2 mm long, with hyaline apex intermixed with shorter hairs, margins papillate in the lower half, otherwise glabrous, veins 11–12(17), simple, the main one slightly keeled almost to the apex, the other veins keeled in the lower third. Gynostemium 4 mm long, covered densely by thick, stiff hairs ca. 3–4 mm long, shortly branching at apex, clinandrium obscurely three-lobed.

Ecology: Epiphytic in montane forest at the altitudes of 2,900–3,300 m. Flowering in January and May.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Antioquia:** *Sine loc.* *G. Schmidtchen s.n.* (W-R!; UGDA-DLSz! – drawing), Gebiet von Medellín bei Sonsón. *W. Kalbreyer 1721b* (*fide* Kraenzlin, 1919), Gebiet von Medellín bei Sonsón. *W. Kalbreyer 1721* (W-R, AMES! – drawing), Cerro de Boqueron. 2 miles NW of Medellín. Alt. 3,300 m. May 10, 1965. *G. Escobar s.n.* (AMES!); **Cundinamarca:** Bogotá DC. Bogotá. Corregimiento Nazareth. Los Rios. Finca San Joaquin. 4°9'5.4" N, 74°9'12.6" W. Alt. 2,909 m. January 15, 2013. *J. Ordonez & al. 1716* (COL!, UGDA-DLSz! – drawing).

Notes: This is the only species of the group with stiff hairs and a shortly branching apex covering the gynostemium. According to Kraenzlin (1919), the lip of this species has 17 veins. We were not able to locate the *Kalbreyer 17216* collection in the Reichenbach Herbarium.

Incertae sedis

80. *Telipogon lagunae* Schltr.

Repert. Spec. Nov. Regni Veg. Beih. 27: 121. 1924. TYPE: Colombia. *W. Hopp 204* (B†).

Plant 13–14 cm tall, with abbreviated stem. Leaves three–four, up to 7 cm long and 1 cm wide, ligulate-lanceolate, acute. Inflorescence up to 13 cm long, alate, raceme three–six-flowered. Flowers medium-sized, brownish-yellow with purple veins. Floral bracts 13 mm long, cucullate, ovate, acute. Pedicel and ovary 48 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 13 mm long, concave, narrowly lanceolate, acuminate, one-veined. Lateral sepals 13 mm long, concave, narrowly lanceolate, acuminate, somewhat oblique, one-veined. Petals 15 mm long, 10 mm wide, obliquely elliptic in outline, acuminate, subglabrous, seven-veined. Lip 14 mm long, 13 mm wide, suborbicular, broadly acuminate, basal callus small, subglabrous, veins 11. Gynostemium densely setose on the lower part with hairs directed downwards, the upper part glabrous.

Ecology: Plants growing at the altitudes of ca. 2,800 m. Flowering in January.

Distribution: Colombia.

Representative specimen: – COLOMBIA. Bei der Laguna von Pasto. Alt. 2,800 m. January 1922. *W. Hopp 204* (B†).

Notes: According to the protologue (Schlechter, 1924), this species resembles *Telipogon andicola*, from which it differs in the form of the petals, and lip, and gynostemium, the upper part of which is glabrous, a trait unknown elsewhere in the genus.

Lip veins cross-venulate, hairs covering gynostemium simple.

KEY 5:

1. Lip longer than wide 2
- 1* Lip as long as wide or wider than long 3
2. Petals nearly as long as wide, 22 × 20 mm, veins simple 85. *T. yolandae*
- 2* Petals wider than long, 11 × 15 mm, veins cross-venulate XX. *T. isabelae*

3. Lip callus densely pubescent or papillose	4
3* Lip callus hispid or setose, but never pubescent	7
4. Petals with simple veins	87. <i>T. uribei</i>
4* Petals with reticulated veins	5
5. Flowers large, lip 28 × 30 mm	83. <i>T. bota-caucana</i>
5* Flowers much smaller, lip up to 17 × 20 mm	6
6. Peduncle bi-alate, petals 15–18 × 14–17 mm, lip 10–17 × 16–20 mm	81. <i>T. semipictus</i>
6* Peduncle tri-alate, petals 13 × 12 mm, lip 13 × 15 mm	86. <i>T. povedanus</i>
7. Petals seven-veined	XIX. <i>T. tesselatus</i>
7* Petals 9–11-veined	8
8. Flowers very small, lip 5 × 6 mm	84. <i>T. uribevelezii</i>
8* Flowers large, lip 15–25 × 18–34 mm	9
9. Lip callus obovate-cordate, dorsal sepal 11 × 4–5 mm, lateral sepals 11 × ca. 4.5 mm, petals veins simple	80. <i>T. mariae</i>
9* Lip callus V-shaped, apically attenuate, narrow, dorsal sepal 13–18 × 5–8 mm, lateral sepals 13–23 × 6–8 mm, petals with heavily reticulated veins	XVIII. <i>T. asuayanus</i>

81. *Telipogon mariae* P. Ortiz (Figure 190)

Orquideologia 27(2): 180. 2010[2011]. TYPE: Colombia. *P. Ortiz 1378* (holotype, HPUJ).

Plant medium-sized. Stem abbreviated. Leaves up to 6 cm long and 2 cm wide. Inflorescence two per plant, up to 11 cm long, peduncle alate, raceme up to six-flowered. Flowers slightly yellowish-green with longitudinal pale greenish slightly marked veins and numerous transversal brown-purple veins. Sepals dorsally keeled. Dorsal sepal 11 mm long, 4–5 mm wide, concave, ovate, subacute, three-veined, simple. Lateral sepals 11 mm long, ca. 4.5 mm wide, obliquely ovate, acute, three-veined, veins simple. Petals 15 mm long and wide, broadly obovate, acute, 9–11-veined, veins simple. Lip 15 mm long, 18 mm wide, suborbicular, widest near the middle, shortly acute, callus obovate-cordate, shortly setose, the base curved with a raised border, veins 17, cross-venulate. Gynostemium short, sides longly setose, dorsal part shortly setose.

Ecology: Epiphyte in cold and humid areas at the altitude of ca. 1,900 m. Flowering in September.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Valle del Cauca:** Dagua, El Queremal. Alt. 1,900 m. September 2010. *P. Ortiz 1378* (HPUJ).

Notes: This species is similar to both *Telipogon tesselatus* and *T. asuayanus*, and differs from the former in having 9–11-veined petals (vs. seven-veined), and from the latter by the form of lip callus, slightly smaller flowers, and simple-veined petals.

82. *Telipogon semipictus* Rchb. f. ex Kraenzl. (Figure 191)

Ann. Naturhist. Hofmus. Wien 33: 25. 1919. TYPE: Colombia. *H. Karsten s.n.* (holotype, W!; UGDA-DLSz! – drawing).

Stem abbreviated, 3 cm long. Leaves two–four, up to 9 cm long and 1.5 cm wide, oblanceolate, acute. Peduncle 7–12 cm long, alate, raceme 2.5–6 cm long, one–eight-flowered. Flowers medium-sized. Floral bracts 10–13 mm long, cucullate, ovate, acute. Pedicel and ovary 30–35 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 14–15 mm long, 4–7 mm wide, concave, oblong ovate, acute, three-veined, veins simple. Lateral sepals 14–15 mm long, 4–6 mm wide, concave, obliquely oblong ovate, acute, three-veined, veins simple. Petals 15–18 mm long, 14–17 mm wide, broadly obovate to suborbicular in outline, widest at or near the middle, somewhat oblique, apex acute, margins papillate in the lower third, glabrous

above, veins (7)10–11, simple, but cross-venulate in the lower half, somewhat keeled in the lower half. Lip 10–17 mm long, 16–20 mm wide, transversely elliptic in outline, apex truncate, margins in the lower third ciliolate, callus broadly cordate, thick, densely pubescent, veins 13 to 17, simple, but in the lower third cross-venulate, somewhat keeled in the lower half. Gynostemium 3–5 mm long, clinandrium prominently three-lobed, densely setose, hairs ca. 2–3 mm long.

Ecology: Epiphyte at the altitude of ca. 2,800 m. Flowering in August.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. **Cundinamarca**: Bogotá. *H. Karsten s.n.* (W!, UGDA-DLSz! – drawing); **Nariño**: Pasto. Alt. 2,800 m. *J. Triana 619* (P!, UGDA-DLSz! – drawing). ECUADOR. **Bolívar**: San Jacinto de la Union. August 14, 1939. *E. Asplund 8261* (US!, UGDA-DLSz! – drawing).

Notes: *Telipogon semipictus* is very similar to its Colombian congener, described by Ortiz Valdivieso (2011). We believe the only discriminative characteristics separating both species are: the bialate peduncle in *T. semipictus* (vs. trialate in *T. povedanus*), large petals (15–18 × 14–17 mm vs. 13 × 12 mm), and usually large lip (10–17 × 16–20 mm vs. 13 × 15 mm). Further study should reveal if these are conspecific or deserve their current status.

Bernal et al. (2016) considered *T. cycloglossus* Schltr. as synonym of *T. semipictus*. The two species can be distinguished based on lip form, which is suborbicular in the former and transversely elliptic in the latter. Moreover, in the latter species, the lip callus is broadly cordate and pubescent (vs. callus small, puberulent).

83. *Telipogon bota-caucana* Uribe-Vélez & Sauleda (Figure 192, Figure 193)

Nom. Notes 78: 1–2. 2020. TYPE: Colombia. *J. C. Ordoñez s.n.* (holotype, HPUJ; UGDA-DLSz! – photo).

Plants up to 10 cm tall including the inflorescence, to six-leaved. Roots up to 0.3 cm thick, fleshy, white. Leaves up to 5 cm long, 2 cm wide, distichous, coriaceous, oblanceolate, obtuse, minutely acuminate. Inflorescence up to 6 cm tall, from the axils of the leaves, simple, one–three-flowered; peduncle up to 4 cm long, flattened, rachis to 2 cm long, with three–four floral bracts. Flowers to 3.5 cm wide, successively opening. Floral bracts distichous, ovate, acute. Pedicellate ovary up to 40 mm long, slightly arching, triquetrous. Dorsal sepal up to 25 mm long, 10 mm wide, yellow, ovate-triangular, acute, concave. Petals up to 25 mm long, 30 mm wide, oblong to broadly pandurate, widest near the middle, obtuse-rounded, with minute apicule, yellow with reddish-brown tessellations fading towards apical margin, 11-veined, densely anastomosing. Lateral sepals up to 25 mm long, 10 mm wide, yellow, narrowly ovate, slightly oblique, acute, concave. Lip up to 28 mm long, 30 mm wide, entire, sessile, orbicular to elliptic, obtuse-rounded, not acuminate, 15-veined, densely anastomosing; callus to 15 mm wide, kidney-shaped to cordate, mucronate, dark reddish-purple, densely papillose on ventral surface. Gynostemium to 8 mm wide, with prominent reddish-purple rigid hairs on the dorsal surface; clinadrium projected into a narrow filament, apically recurved; stigma apical, suborbicular, concave; anther apical, cordiform, bilocular; pollinarium with four pollinia to 2.5 mm wide, with a Y-shaped caudicle and hooked viscidium.

Ecology: Epiphyte.

Distribution: Colombia. Alt. 2,700 m.

Representative specimen: – COLOMBIA. **Cauca**: From La Bota Caucana, near the headwaters of the Caqueta River. Alt. 2,700 m. 2019. Cultivated. *J. C. Ordoñez s.n.* (HPUJ, UGDA-DLSz! – photo).

Notes: According to the authors (Uribe-Vélez & Sauleda, 2020a), *Telipogon bota-caucana* is similar to *T. octavioi*. It differs in the morphology of the lip, the shape of the sepals and petals, and in the fact that the flowers of *T. bota-caucana* are non-resupinate, whereas the flowers of *T. octavioi* are resupinate. In *T. bota-caucana*, the lip is widest above the middle, the apex is mucronate, and the petals are widest near the middle with an acuminate apex. In *T. octavioi*, the lip is widest towards the

base, the apex is rounded and blunt, and the petals are widest near the base, terminating in a broadly apiculate apex. The callus on the labellum of *T. bota-caucana* is kidney-shaped or broadly cordate, whereas the callus of *T. octavioi* is obovate, longer than it is wide.

This species can be compared with two other Colombian genus representatives, *T. semipictus* and *T. povedanus*, but has distinctly larger flowers, with a lip measuring approximately 28 × 30 mm (vs. 17 × 20 mm).

84. *Telipogon uribevelezii* Sauleda & Szlach. (Figure 194–Figure 196)

Nom. Notes 85: 1–2. 2020. TYPE: Colombia. *J. L. Aguirre Restrepo s.n.* (holotype, HPUJ; UGDA-DLSz! – photo).

Plants epiphytic up to 2.1 cm tall including inflorescence, up to three-leaved. Roots up to 0.3 cm thick, fleshy, white. Leaves up to 0.8 cm long, 0.5 cm wide, distichous, coriaceous, obovate, obtuse. Inflorescence from the axils of the leaves, simple, one–two-flowered; peduncle flattened up to 0.4 cm long, rachis up to 0.2 cm long, with two–three floral bracts. Flowers non-resupinate to 1 cm wide, successively opening. Floral bracts distichous, lanceolate, acute. Pedicellate ovary up to 8 mm long, slightly arching, triquetrous. Dorsal sepal up to 5 mm long, 4 mm wide, ovate-triangular, acute, concave, basally greenish-yellow, with faint reddish-brown stripes apically. Petals up to 5 mm wide, 5 mm long spatulate-ovate, widest near the middle, cuneate at the base, obtuse-rounded, with reddish-brown strips, eight-veined, scarcely anastomosing. Lateral sepals up to 5 mm long, 4 mm wide, obovate, slightly oblique, acute, concave, greenish-yellow, with reddish-brown stripes apically. Lip up to 5 mm long, 6 mm wide, entire, sessile, orbicular to slightly elliptic, obtuse-rounded, not acuminate, ca. 15-veined, lateral veins more or less branched, callus up to 2 mm wide, cordate, dark reddish-purple, with a central ridge, lateral margins with rigid hairs, central ridge with short rigid hairs. Gynostemium to 2 mm long, covered with hairs of different length (longer on the sides, shorter in the center; stigma apical, suborbicular, concave; anther apical, cordiform, bilocular; pollinarium with four pollinia with Y-shaped caudicle and hooked viscidium.

Ecology: No data.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Santander:** Exact locality unknown. *J. L. Aguirre Restrepo s.n.* (HPUJ, UGDA-DLSz! – photo).

Notes: It is worth mentioning that this is the most diminutive species of *Telipogon*. The only other species with comparably small flowers is the Colombian congener *T. alvarezii*. However, this has greenish-yellow sepals, yellow petals and lip with prominent red-maroon veins, and a red-pink gynostemium with acallus.

Telipogon uribevelezii can be compared to *T. octavioi* (Uribe-Vélez et al., 2020). It differs in the shape of the callus. *Telipogon octavioi* has a triangular callus, whereas *T. uribevelezii* has a cordate callus. The callus of *T. octavioi* is smooth, whereas *T. uribevelezii* has rigid hairs on the lateral edges and a central ridge with short, rigid hairs. The tips of the petals in *T. octavioi* are slightly acuminate, whereas those of *T. uribevelezii* are apically rounded. *Telipogon uribevelezii* is also similar to *T. yolandae*, but differs in the hairs on the gynostemium. In *T. uribevelezii*, the hairs are longer on the lateral edges and shorter in the center; in *T. yolandae*, the hairs are all the same length (Uribe-Vélez et al., 2020).

XVIII. *Telipogon asuayanus* Rchb. f. (Figure 197)

Linnaea 41: 71. 1877[1876]. TYPE: Ecuador. *W. Jameson. s.n.* (holotype, K! – photo).

Stem abbreviated, 3 cm long. Leaves two–three, up to 8 cm long and 1.3 cm wide, oblanceolate, acute. Peduncle 6–12 cm long, alate, raceme 1.5–3 cm long, three–seven-flowered. Flowers medium-sized to large, sepals translucent greenish, petals and lip greenish-white, translucent, lip base flushed marron-purple, gynostemium blackish. Floral bracts 12–13 mm long, cucullate, ovate, acute. Pedicel and ovary 20–50 mm long. Sepals similar, keeled abaxial. Dorsal sepal 13–18 mm long, 5–8 mm wide, ovate, concave, acute to subobtuse, three-veined, veins simple.

Lateral sepals 13–23 mm long, 6–8 mm wide, concave, obliquely oblong ovate, acute, three-veined. Petals 15–25 mm long, 15–25 mm wide, suborbicular in outline, widest near the middle, somewhat oblique, apex obtuse to subobtuse, veins nine or 11, heavily cross-venulate. Lip 15–25 mm long, 21–34 mm wide, transversely elliptic-suborbicular in outline, widest near the middle, apex shortly acuminate, callus V-shaped, apically attenuate and narrow, thick, densely hispid, veins 17, heavily cross-venulate. Gynostemium 3 mm long, clinandrium prominently three-lobed, densely setose on the upper surface, hairs ca. 2–4 mm long, with hyaline apex, lower part pubescent.

Ecology: No data.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Guayas:** Guayaquil. *W. Jameson s.n.* (K! – photo), Cuenca. October 11, 1879. *F. C. Lehmann 290* (W-R! 5566, UGDA-DLSz! – drawing). *Sine loc. Sine coll.* (W-R! 30119, UGDA-DLSz! – drawing).

Notes: There is a group of three similar species that are easy to misidentify: *Telipogon asuayanus*, *T. mariae*, and *T. tesselatus*. *Telipogon tesselatus* differs from the other two by having seven-veined petals (vs. 9–11-veined). *Telipogon asuayanus* can be distinguished from *T. mariae* by its V-shaped lip callus, apically attenuate and narrow (vs. callus obovate-cordate) dorsal sepal 13–18 × 5–8 mm (vs. 11 × 4–5 mm), lateral sepals 13–23 × 6–8 mm (vs. 11 × ca. 4.5 mm), and petals with heavily reticulated veins (vs. simple).

XIX. *Telipogon tesselatus* Lindl. (Figure 198)

Pl. Hartw.: 150. 1844. TYPE: Ecuador. *K. T. Hartweg s.n.* (holotype, K! – photo).

= *Telipogon teuscheri* Garay, Bot. Mus. Leaflet 18: 214. 1958. TYPE: Ecuador. *K. T. Hartweg 44* (holotype, K).

Stem abbreviated, 6 cm long. Leaves four–eight, 3–5.5 cm long, 1.2–1.5 cm wide, narrowly oblanceolate, acute. Peduncle 4–8 cm long, alate, raceme one–four-flowered. Flowers medium-sized to large, sepals greenish, petals and lip yellow with maroon-purple net of veins, gynostemium and central part of the flower maroon-red. Floral bracts 8–10 mm long, cucullate, ovate, acute. Pedicel and ovary 20–40 mm long. Sepals similar, keeled abaxial. Dorsal sepal 14–15 mm long, 6–6.5 mm wide, ovate, concave, subobtuse, three- or five-veined, veins simple. Lateral sepals 14–15 mm long, 6–7 mm wide, concave, obliquely ovate, acute, three- or five-veined. Petals 15–16 mm long, 12–15 mm wide, suborbicular to ovate-suborbicular in outline, widest near the middle, somewhat oblique, apex shortly acuminate, base cuneate, margins papillate in the lower half, veins seven, heavily cross-venulate. Lip 14–16 mm long, 21–25 mm wide, transversely elliptic in outline, widest near the middle, apex obtuse to shortly acuminate, callus obovate, thick, densely hispid, veins 15 or 17, heavily cross-venulate. Gynostemium 5 mm long, clinandrium prominently three-lobed, densely setose on the upper and lateral surfaces, hairs ca. 3 mm long, with hyaline apex, lower part hispid.

Ecology: No data on habitat.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Guayas:** Guayaquil. *W. Jameson. S.n.* (K!), Las Juntas. *K. T. Hartweg s.n.* (K! – photo).

Notes: This Ecuadorian species is similar to both *Telipogon mariae* and *T. asuayanus* both in form of flower segments and their color. In our opinion, it can be recognized from both of these species by its seven-veined petals.

85. *Telipogon yolandae* P. Ortiz (Figure 199–Figure 203)

Orquideología 27(2): 187. 2010[2011]. TYPE: Colombia. *P. Ortiz 1354* (holotype, HPUJ).

Plant medium-sized. Stem abbreviated. Leaves several, up to 6.1 cm long, 1.1–1.5 cm wide, narrowly oblanceolate, acuminate. Inflorescence up to 10 cm long, peduncle alate, up to three-flowered. Flowers rather large, sepals greenish with yellow upper part, petals and lip deep yellow with transversal, reddish spots, violet tinted at the

base. Floral bracts 10 mm long, ovate, acute. Sepals dorsally keeled. Dorsal sepal 17 mm long, 6–7 mm wide, oblong ovate, obtuse at the apex. Lateral sepals 17 mm long, 6 mm wide, obliquely oblong ovate, obtuse at the apex. Petals 22 mm long, 20 mm wide, broadly elliptic-rhombic, rounded at the apex, nine-veined, veins simple. Lip 19 mm long, 16 mm wide, broadly elliptic-suborbicular, rounded at the apex, callus cordate-obovate, concave in the center, purple-black, minutely ciliate, veins 13. Gynostemium short, covered by short setose hairs in the dorsal surface and longer setose hairs on both sides.

Ecology: Plants growing at the altitude of ca. 3000 m. Flowering in October.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** La Calera, El Volcan. Alt. 3,000 m. October 2009. *P. Ortiz 1354* (HPUJ); Parc Nacional Natural Chingaza. *C. Uribe-Vélez s.n.* (C. Uribe-Vélez, pers. inf., 2020, UGDA-DLSz! – photo).

Notes: This species can be easily distinguished from others of this group by its lip, which is longer than it is wide. The Ecuadorian *Telipogon isabelae* has a similar ratio of lip length to width. In the latter however, petals are slightly smaller and wider than they are long, with reticulated veins.

86. *Telipogon povedanus* P. Ortiz (Figure 204)

Orquideología 27(2): 183. 2010[2011]. TYPE: Colombia. *P. Ortiz 1355* (holotype, HPUJ).

Plant medium-sized. Stem abbreviated. Leaves several, up to 5 cm long, 1.5 cm wide, lanceolate, acuminate. Inflorescence – peduncle tripartite, two-flowered. Flowers rather small, yellow with reddish spots. Floral bracts 5 mm long, ovate, acute. Sepals dorsally keeled. Dorsal sepal 13 mm long, 8 mm wide, triangular-ovate, obtuse at the apex, three-veined, veins simple. Lateral sepals 13 mm long, 8 mm wide, obliquely triangular-ovate, acute at the apex, three-veined, veins simple. Petals 13 mm long, 12 mm wide, broadly elliptic-rhombic to elliptic-obovate, somewhat oblique, rounded at the apex, mucronate, 11-veined, veins anastomosing. Lip 13 mm long, 15 mm wide, transversely elliptic-suborbicular, rounded at the apex, minutely mucronate at the apex, callus cordate-obovate, minutely pubescent, veins 15–16, anastomosing in the center. Gynostemium short, covered by short setose hairs in the dorsal surface and somewhat longer setose hairs on both sides.

Ecology: Epiphyte at the altitude of ca. 2,800–3,000 m. Flowering in October.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** La Calera, El Volcan. Alt. 3,000 m. October 2009. *P. Ortiz 1355* (HPUJ); La Calera, vereda Mundo Nuevo. Alt. 2,800–3,000 m. *C. Uribe-Vélez s.n.* (C. Uribe-Vélez, pers. inf., 2020, UGDA-DLSz! – photo).

Notes: This species resembles *Telipogon semipictus*, from which it differs by having a tripartite peduncle, somewhat smaller petals, and, usually, a smaller lip. Otherwise, they are very similar and further study should reveal if these characteristics warrant their separation.

87. *Telipogon uribei* P. Ortiz (Figure 205)

Orquideología 27(2): 184. 2010[2011]. TYPE: Colombia. *P. Ortiz 1352* (holotype, HPUJ).

Plant very small, tiny. Stem abbreviated. Leaves several, up to 0.7 cm long and 0.4 cm wide, elliptic-oblong, acuminate. Inflorescence 1.5 cm long, peduncle tripartite, one-flowered. Flower small, sepals greenish-yellow, petals and lip yellow whitish towards the base, veins purplish. Floral bracts 2 mm long, ovate, acute. Sepals dorsally keeled. Dorsal sepal 9 mm long, 4 mm wide, ovate, acuminate at the apex, three-veined. Lateral sepals 9 mm long, 4 mm wide, obliquely ovate, acute at the apex, three-veined. Petals 10 mm long, 8–9 mm wide, broadly elliptic-obovate, somewhat oblique, subacute at the apex, seven-veined, veins simple. Lip ca. 10 mm long and wide, ovate-suborbicular, rounded at the apex, callus cordate-triangular, minutely pubescent, veins 13, simple. Gynostemium short, covered by hispid hairs in the dorsal surface and longer setose hairs on both sides.

Ecology: Epiphyte at the altitude of ca. 3,050–3,400 m. Flowering in October.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca**: La Calera, Chingaza. Alt. 3,400 m. October 31, 2009. *P. Ortiz 1352* (HPUJ); Parc Nacional Natural Chingaza. Alt. 3,050 m. *C. Uribe-Vélez s.n.* (C. Uribe-Vélez, pers. inf., 2020, UGDA-DLSz! – photo).

Notes: *Telipogon uribei* was described from the Colombian Department of Cundinamarca. It belongs to the group of species with a pubescent lip callus, and is somewhat reminiscent of two other species, *T. semipictus* and *T. povedanus*. Unlike these two, the petals of *T. uribei* are simple-veined, without any reticulation.

XX. *Telipogon isabelae* Dodson & Hirtz (Figure 206)

Nat. Ecuador. Orchids. *Rodriguezia-Zygosepalum* 5: 1183. 2004. TYPE: Ecuador. *A. Hirtz 3338* (holotype, RPSC!).

Plant up to 15 cm tall in total. Stem abbreviated, up to 2 cm long. Leaves two–three, 5 cm long, 1.5 cm wide, thick, elliptic-oblong, obtuse at the apex. Inflorescence – peduncle 6–8 cm long, triangular in cross-section. Flowers small, reddish-green, petals covered by a red-brown haze with red-brown veins and reticulations, the lip similar, the gynostemium with dense red-brown spines. Floral bracts 10 mm long, ovate, concave, acute. Ovary 25–30 mm long, triquetrous. Sepals dorsally keeled. Dorsal sepal 10 mm long, 5 mm wide, ovate, concave, apiculate at the apex. Lateral sepals 11 mm long, 6 mm wide, obliquely ovate, concave, apiculate at the apex. Petals 11 mm long, 15 mm wide, ovate, somewhat oblique, nine-veined, cross-venulate. Lip 20 mm long, 11 mm wide, broadly ovate, callus 6 mm long, 5 mm wide, cordiform, covered with short pubescence, veins 17. Gynostemium short, dorsal surface covered with dense, red-brown spines.

Ecology: Epiphyte in submontane forest at the altitude of ca. 2,000 m.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Azuay**: Cuenca to Pasaje, Sta. Isabel. Alt. 2,000 m. *A. Hirtz 3338* (RPSC!).

Notes: According to Dodson and Hirtz (2004) *Telipogon isabelae* is similar to *T. asuayanus*, but differs in the much darker purple-brown color of the flowers, with heavy reticulations between the vein-lines of the lip and the petals. The subulate spines on the dorsum of the column are shorter, extremely dense, and dark red-brown. Notably, descriptions of this species and *T. australis* are very similar.

Telipogon isabelae shares with its Colombian congener, *T. yolandae*, a unique characteristic in this group: a lip longer than it is wide. Both have similar flower size, but can be readily separated by the form of the petals, which are nearly as long as they are wide with simple veins in *T. yolandae*, and wider than they are long with cross-venulate venation in *T. isabelae*.

Incertae sedis

XXI. *Telipogon australis* Dodson & Hirtz (Figure 207)

Nat. Ecuador. Orchids. *Rodriguezia-Zygosepalum* 5: 1182. 2004. TYPE: Ecuador. *A. Hirtz 7177* (holotype, RPSC).

Plant to 15 cm tall in total. Leaves two–three, 5 cm long, 1.5 cm wide, thick, elliptic-oblong, obtuse at the apex. Inflorescence – peduncle 4 cm long, terete. Flowers small, sepals yellow green, petals pale yellow, lip yellow with red-brown venation, base of gynostemium purplish, setae red-brown. Floral bracts 2 mm long, ovate, concave, acute. Ovary 5 mm long, triquetrous. Sepals dorsally keeled. Dorsal sepal 10 mm long, 5 mm wide, ovate, apiculate at the apex. Lateral sepals 11 mm long, 6 mm wide, obliquely ovate, apiculate at the apex. Petals 11 mm long, 15 mm wide, ovate, somewhat oblique, nine-veined. Lip 20 mm long, 11 mm wide, broadly ovate, callus 6 mm long, 5 mm wide, veins 17. Gynostemium short, covered with red-brown bristles on both sides and shorter bristles on the dorsal surface.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Zamora-Chinchi**: *Sine loc.* A. Hirtz 7177 (RPSC).

Notes: According to original description (Dodson & Hirtz, 2004), *Telipogon australis* is similar to *T. andreetae* from which it differs in its

elliptic, 17-veined lip with the vein-line occurring from the mid-point of the lip and extending to the apex, the basal half with the vein-lines replaced with only reticulations. The petals of *T. australis* are trullate. Neither species has a callus at the lip base.

The last sentence is particularly notable, as the author describe a lip callus measuring 6 × 5 mm! In the photograph of the flower of *T. australis*, no prominent callus at the lip base can be seen. The actual status of this species requires further study, especially to determined whetehr its original description is congruent with that of *T. isabelae*.

3.2.1.2.4. *Stinae*-Subgroup

Callus prominent, in the major part free from and much protruding above the lip, only basally connate with the lip and gynostemium (Figure 208).

A group with ca. 17 species.

KEY TO THE SPECIES:

1. Lip callus obovate to obovate-cordate, or so, but never three-lobed 2
- 1* Lip callus more or less 2- or three-lobed 13
2. Lip as long as or longer than wide 3
- 2* Lip wider than long 5
3. Lip 12 mm long, five-veined, callus glabrous XXVII. *T. dodsonii*
- 3* Lip 18 mm long, 11–15-veined, callus villose or hirsute 4
4. Leaves up to 4 × 0.5 cm, sepals 10 × 5 mm, petals nine-veined, lip callus hirsute 88. *T. octavioi*
- 4* Leaves 8 × 1.2 cm, sepals 16 × 6 mm, petals 11-veined, lip callus villose XXVI. *T. tamboense*
5. Plants with large flowers, lip 22–25 × 27–29 mm, transversely elliptic or elliptic-ovate in outline 6
- 5* Plants with smaller flowers 7
6. Petals 26 × 19 mm, oblong obovate, nine-veined, lip 25 × 27 mm, transversely elliptic-ovate, papillate along margins, 15-veined, veins simple . . . XXIV. *T. obovatus*
- 6* Petals 27 × 25 mm, rhombic in outline, broadly elliptic-ovate to transversely elliptic above prominent claw, 11-veined, lip 22 mm × 29 mm wide, transversely elliptic, primarily 17-veined, lateral veins sometimes dichotomous XXV. *T. chimborazoensis*
7. Flowers small, petals 12–13 × 7–9 mm, lip 10–13 × 12–13 mm 89. *T. guacamayensis*
- 7* Flowers larger, petals up to 21 mm long, lip up to 20 × 27 mm, usually smaller . . 8
8. Lip callus pubescent/puberulent 9
- 8* Lip callus hirsute/hispid 11
9. Lip 15 × 16 mm, 19–23-veined, callus ligulate, apex hooked . . XXVIII. *T. frymirei*
- 9* Lip 18–20 × 24 mm, 17–19-veined, callus cordiform to semicircular 10
10. Petals 15 × 15 mm, apex obtuse, veins reticulate, lip with reticulate veins XXIII. *T. loxensis*
- 10* Petals 20 × 14 mm, apex apiculate, veins simple, lip veins simple

- XXII. *T. steinii*
11. Lip and petals veins simple 90. *T. tabanensis*
- 11* Lip and petals cross-venulate 12
12. Petals seven-veined, lip with 11 or 13 veins 91. *T. phalaena*
- 12* Petals nine-veined, lip with 17 veins 92. *T. dendriticus*
13. Lip callus bilobed, apically notched with a pair of finger-like projections
..... 93. *T. stinae*
- 13* Lip callus more or less three-lobed 14
14. Lip callus obscurely three-lobed 15
- 14* Lip callus deeply three-lobed 16
15. Petals sessile, lip with 15, anastomosing veins, callus hirsute .. XXIX. *T. thomasii*
- 15* Petals clawed, lip with 19, simple veins, callus papillate XXX. *T. jimburensis*
16. Leaves up to 6.5 × 1.6 cm, lip 16 × 14 mm XXXI. *T. cuyujensis*
- 16* Leaves up to 8 × 2.5 cm, lip 17 × 18 mm XXXII. *T. hagsateri*

XXII. *Telipogon steinii* Dodson & R. Escobar

Icon. Pl. Trop. 2(6): pl. 596. 1989. TYPE: Ecuador. *B. A. Stein* 2863 (holotype, RPSC!).

Stem abbreviated, 1 cm long. Leaves three, up to 5 cm long and 0.8 cm wide, narrowly spatulate, apiculate. Peduncle up to 7 cm, alate, raceme 2 cm long, three–five-flowered. Flowers medium-large, sepals greenish, lip and petals yellow-white with red-brown veins and some reticulations, gynostemium and callus wine-red. Floral bracts up to 11 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 15 mm long, 7 mm wide, concave, elliptic-ovate, apiculate, three-veined, veins simple. Lateral sepals 15 mm long, 7 mm wide, concave, elliptic-ovate, somewhat oblique, apiculate, three-veined, veins simple. Petals 20 mm long, 14 mm wide, broadly obovate in outline, widest near the middle, base cuneate, apex apiculate, somewhat oblique, veins seven, simple. Lip 20 mm long, 24 mm wide, transversely elliptic-suborbicular, widest just above the base, apex truncate with central mucro, callus large, 7 mm long, 10 mm wide, a raised semi-circular platform, hollow on the underside, pubescent, free from the lip, veins 17, simple. Gynostemium 4 mm long, covered on both sides by setose hairs and shorter spines on the upper part.

Ecology: Epiphyte in montane wet forest at the altitude of ca. 1,850 m. Flowering in May.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Pichincha:** Km 24, Nono to Nanegal. Alt. 1,850 m. May 26, 1985. *B. A. Stein* 2863 (RPSC!).

Notes: *Telipogon steinii* is similar to *T. loxensis*, from which it differs by larger petals (20 × 14 mm vs. 15 × 15 mm), with an apiculate apex and simple veins (vs. obtuse apex, reticulate veins) and a lip with simple veins (vs. reticulate veins). The similar *T. frymirei* has smaller flowers and a completely different form of the lip callus, with an elongate, hooked apex.

88. *Telipogon octavioi* Dodson & R. Escobar (Figure 209)

Orquideología 18(3): 238–240. 1993. TYPE: Colombia. *C. Dodson & al.* 17018 (holotype, RPSC; isotype, JAUM).

Plants caespitose, small. Stem ca. 1 cm long, abbreviated. Leaves two–three, basal, up to 4 cm long and 0.5 cm wide, oblanceolate, apiculate. Inflorescence ca. 6 cm long, peduncle ca. 3 cm long, alate, three–five-flowered. Flower 20 mm in diameter, basically yellowish-green or dull green, with reddish-maroon veins, gynostemium and lip calli vine-red to blackish. Dorsal sepal 10 mm long, 5 mm wide, elliptic-ovate, concave, acute, keeled abaxially, veins three, simple. Lateral sepals 10 mm long, 5 mm wide, ovate, somewhat oblique, concave, acute, keeled abaxially.

Petals 17 mm long, 13 mm wide, orbicular-ovate, broadly cuneate at the base, apex shortly acuminate, veins nine, cross-venulate. Lip 18 mm long, 17 mm wide, orbicular, obtuse, shortly apiculate, veins 11–13, cross-venulate; calli 4 mm long and wide, ligulate, apically free, hirsute. Gynostemium 2 mm long, clinandrium prominently three-lobed, densely setose, minutely papillate on the lower surface.

Ecology: Epiphyte at the altitude of ca. 3,150 m. Flowering in January.

Distribution: Colombia.

Representative specimen: – COLOMBIA. **Putumayo**: Paso entre la Laguna de la Cocha y Sibundoy, km 31. Alt. 3,150 m. January 24, 1987. C. H. Dodson & al. 17018 (JAUM, RPSC).

Notes: *Telipogon octavioi* is similar to *T. dodsonii* and *T. tamboense*. It has larger flowers than the former and differs from both species in the lip callus. In *T. octavioi*, the lip callus is hirsute; in *T. dodsonii* it is glabrous, and in *T. tamboense* villose. Moreover, *T. octavioi* is a smaller plant than *T. tamboense*, with smaller leaves (up to 4 × 0.5 cm vs. 8 × 1.2 cm) and flowers (sepals 10 × 5 mm vs. 16 × 6 mm).

Telipogon frymirei is another species somewhat similar to *T. octavioi*. The former can be characterized by larger sepals and elliptic petals about twice as long as wide, with seven simple veins. Its lip is adorned with 19–23 simple veins and an anther surrounded by hispid hairs.

89. *Telipogon guacamayensis* Dodson & R. Escobar (Figure 210–Figure 213)

Icon. Pl. Trop. 2(6): pl. 589. 1989. TYPE: Ecuador. A. Hirtz 2612 (holotype, RPSC!).

Plants caespitose, small, up to 14 cm tall in total. Stem ca. 3–7 cm long, rather abbreviated. Leaves three–four, basal, up to 7 cm long and 1.2 cm wide, ligulate-oblancolate to narrowly obovate, acute to rounded at the apex. Inflorescence bracts up to 7 mm long, 4 mm wide, ovate. Pedicellate ovary up to 25 mm long. Flower small, basically dull or brownish up to ca. 10 cm long in total, peduncle ca. 5 cm long, two–three-flowered. Flower green, callus deep purple-brown. Dorsal sepal 10–12 mm long, 4–5 mm wide, elliptic-ovate, concave, subacute, keeled abaxially, veins three, simple. Lateral sepals 10–12 mm long, 4–5 mm wide, ovate, oblique, concave, acute, keeled abaxially. Petals 12–13 mm long, 7–9 mm wide, obovate, narrowly cuneate at the base, apex rounded, veins nine, simple. Lip 10–13 mm long, 12–13 mm wide, broadly obovate, obtuse, shortly apiculate, widest above the base, veins 17 or 21, simple; callus ca. 5–6 mm long and wide, forming broadly obovate platform, hirsute. Gynostemium 4 mm long, clinandrium prominently three-lobed, with three tufts of setae at the anther back and sides, setae on both anther sides prominently longer, lower surface glabrous.

Ecology: Epiphyte in wet montane forest at the altitude of ca. 2,400 m. Flowering in July.

Distribution: Ecuador, Colombia.

Representative specimen: – COLOMBIA. **Cauca**: From La Bota Caucana, near the headwaters of the Caqueta River. 2018. Cult. J. L. Aguirre *s.n.* (HPUJ – Uribe-Vélez & al. 2020, UGDA-DLSz! – photo). ECUADOR. **Napo**: Cordillera de Guacamayo, km 22 Baeza to Tena. Alt. 2,400 m. July 1985. B. A. Stein 2863 (RPSC!).

Notes: *Telipogon guacamayensis* can be characterized by relatively small flowers, with petals approximately 13 × 7–8 mm, and a lip 10 × 13 mm.

XXIII. *Telipogon loxensis* Dodson & Hirtz (Figure 214)

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1184. 2004. TYPE: Ecuador. A. Hirtz 7090 (holotype, RPSC!).

Stem abbreviated, 2 cm long. Leaves two–three, 5 cm long, 1.5 cm wide, elliptic-oblong, obtuse at the apex. Inflorescence – peduncle 6–8 cm long, alate. Flowers medium-sized, sepals reddish green, petals and lip yellow to yellow with orange tint, covered by red-brown haze with red-brown venation, gynostemium with red-brown spines. Floral bracts 10 mm long, ovate, concave, acute. Pedicellate ovary 35 mm long, triquetrous. Sepals dorsally keeled. Dorsal sepal 14 mm long, 7 mm

wide, concave, ovate, apiculate, veins three, simple. Lateral sepals 14 mm long, 7 mm wide, obliquely ovate, concave, apiculate, veins three, simple. Petals 15 mm long, 15 mm wide, suborbicular to obovate, somewhat oblique, base narrowly cuneate, apex obtuse, seven-veined, cross-venulate. Lip 18 mm long, 24 mm wide, broadly elliptic to subreniform, callus cordiform, obtuse at the apex, shortly pubescent, veins 19, cross venulate. Gynostemium short, dorsally covered with short setose hairs.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Loja:** *Sine loc.* A. Hirtz 7090 (RPSC!).

Notes: Flowers of *Telipogon loxensis* are somewhat smaller than those of *T. steinii*, petals are obtuse at the apex, and the lip and petals veins are prominently reticulated. The lip callus is much smaller than that of *T. steinii*. Like *T. frymirei*, it is unique in the genus due to its elongate, digitate callus with a hooked apex.

XXIV. *Telipogon obovatus* Lindl. (Figure 215, Figure 216)

Edwards's Bot. Reg. 33: t. 27. 1847. TYPE: Ecuador. *W. Lobb s.n.* (holotype, K!; UGDA-DLSz! – copy).

Stem abbreviated, 1 cm long. Leaves three–five, 4–6 cm long, 1–1.5 cm wide, elliptic-lanceolate to spathulate, obtuse to subacute. Peduncle 8 cm, raceme 3–5 cm long, three–six-flowered. Flowers large, yellow or greenish-yellow with green veins, gynostemium and spines red-brown, callus maroon-red surrounded by pinkish rim. Floral bracts 15 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 19 mm long, 8 mm wide, concave, elliptic-ovate, acute, five-veined, veins simple. Lateral sepals 19 mm long, 7 mm wide, concave, obliquely ovate-lanceolate, acute, five-veined, veins simple. Petals 26 mm long, 19 mm wide, oblong obovate in outline, attenuate towards base, apex acute, margins papillate in the lower half, veins nine, simple. Lip 25 mm long, 27 mm wide, transversely elliptic-ovate, widest towards the rounded apex and here shortly mucronate, papillate along margins, veins 15, simple, callus prominent, oblong cordate, fleshy, densely hispid, surrounded by glabrous margins. Gynostemium 4 mm long, covered densely by setose hairs ca. 4 mm long, clinandrium obscurely three-lobed.

Ecology: Epiphyte in montane forest at the altitude of 3,000–3,200 m. Flowering in July and November.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Guayas:** Guayaquil. *E. Klaboč* 75 (W-R!; UGDA-DLSz! – drawing), Guayaquil. F. C. Lehmann 93 (W-R!); **Cañar:** *Sine loc.* Alt. 3,200 m. July 10, 1939. *C. W. Penlado & R. H. Summers* 1004 (QCNE!); **Morona-Santiago:** San Miguel de Cuyes. Bosque Protector Tambillo. Alt. 3,000 m. November 2, 1997. *L. Suin & R. Suin* 9286 (QCNE!). *Sine loc.* *W. Lobb s.n.* (K!).

Notes: This species has large flowers, with a lip 25 × 27 mm, transversely elliptic-ovate in outline, widest towards rounded apex, and here shortly mucronate.

XXV. *Telipogon chimborazoensis* Kolan., Z. Štípková & Hirtz, sp. nov. (Figure 217)

TYPE: Ecuador. A. Hirtz & al. E17/49 (holotype, HA!; Isotype: HA! – photos and flowers in alcohol).

Species similar to *Telipogon obovatus*, *distinguished by having petals rhombic in outline which are elliptic-ovate to transversely elliptic above prominent claw, and 11-veined and lip which is wider than long, transversely elliptic, primarily 17-veined.*

Whole plant up to about 20 cm tall. Roots thick, up to 3 mm in diameter. Leaves up to 4.5 cm long, 2.2 cm wide, conduplicate, fleshy, ovate to ovate-elliptic, acute, apex reflexed. Inflorescence three-flowered, peduncle triquetrous. Flowers showy, tepals and lip greenish-yellow with dark red veins, callus and gynostemium very dark violet. Floral bracts 10–12 mm long, cucullate, ovate, acute. Pedicel and ovary 19–25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 19–21 mm long, ca. 10 mm wide, concave, ovate-elliptic, acute, five-veined. Lateral sepals

19–20 mm long, 9–11 mm wide, prominently clawed, concave, ovate-elliptic, acute, oblique, five-veined. Petals 27 mm long, 25 mm wide, rhombic in outline, broadly elliptic-ovate to transversely elliptic above prominent claw, acuminate, 11-veined, claw basally thickened and densely ciliolate with papillate margins. Lip 22 mm long, 29 mm wide, transversely elliptic, mucronate at the apex, primarily 17-veined, lateral veins sometimes dichotomous, margins glabrous; callus 8.4 mm long, 9.3 mm wide, ovate-cordate in outline, densely ciliate, covered with short hairs on the surface. Gynostemium about 7 mm long, clinandrium three-lobed, all lobes with equally long setose hairs, area around the stigma sticky.

Ecology: Epiphytic plants. A population of more than 30 flowering specimens was found in the pasture edge. Flowering in July.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Chimborazo**: Between Chunchi and Llagos. July 8, 2017. A. Hirtz & al. E17/49 (HA!).

Notes: The new species resembles *Telipogon obovatus*, from which it differs by petals that are rhombic in outline (27 × 25 mm), elliptic-ovate to transversely elliptic above a prominent claw, and 11-veined (vs. petals 26 × 19 mm, oblong obovate in outline, attenuate towards base, nine-veined), and a lip that is wider than it is long (22 × 29 mm), transversely elliptic, and primarily 17-veined (vs. 25 × 27 mm, transversely elliptic-ovate, 15-veined).

The new entity resembles also the Colombian *T. diabolicus*. Both species can be easily distinguished by a series of morphological characters. The most distinctive feature of *T. chimborazoensis* is the presence of flowers approximately twice as long as those of *T. diabolicus*. Flowers are greenish-yellow with dark red veins (vs. translucent, with reddish veins); the lip callus and gynostemium are very dark violet, almost black (vs. dark violet-maroon). The tepals and lip of the new species have more veins than those of *T. diabolicus*. Lip margins of *T. chimborazoensis* are glabrous (vs. glandular-ciliate), and its apex is mucronate (vs. acute). The lip callus is densely ciliate and covered with short hairs on the surface (vs. densely ciliate with several setae spread all over its surface). These species can also be separated by the gynostemium structure. The lower stigma margin of the new species is narrow and papillate, such that the stigmatic surface forms a shallow cup. The lower stigma margin of *T. diabolicus* is high and papillate with several setae, and forms a kind of a deep cup. In both species, the clinandrium is triple-lobed, as in most species of the genus, but they can be distinguished by cover; all lobes exhibit equally long setae in *T. chimborazoensis* and lateral bundles have setose hairs up to 3 mm long, whereas the dorsal bundle has much shorter hairs in *T. diabolicus*.

90. *Telipogon tabanensis* Dodson & Escobar

Orquideología 18(3): 250. 1993. TYPE: Colombia. R. Escobar & E. Valencia 3734 (holotype, RPSC).

Stem abbreviated, 2 cm long. Leaves four–five, 6 cm long, 1.5 cm wide, narrowly or linear-oblongate, acute at the apex, apiculate. Inflorescence – peduncle 15 cm long, alate, raceme 2 cm long, three-flowered. Flowers medium-sized, yellow with maroon-red veins. Floral bracts 11 mm long, ovate, concave, acute. Pedicellate ovary 35 mm long, triquetrous. Sepals dorsally keeled. Dorsal sepal 17 mm long, 8 mm wide, lanceolate, concave, acuminate at the apex, three-veined. Lateral sepals 17 mm long, 8 mm wide, obliquely narrowly ovate, acuminate at the apex, three-veined. Petals 20 mm long, 16 mm wide, elliptic-obovate, somewhat oblique, basally cuneate and setose-hirsute, apiculate at the apex, 11-veined, veins simple. Lip 15 mm long, 18 mm wide, elliptic-ovate, obtuse at the apex, shortly acute, callus cordiform, concave at the base, setose-hirsute, veins 17, simple. Gynostemium to 6 mm long, densely setose on the upper and lateral surfaces.

Ecology: Epiphyte in paramo at the altitudes of 2,800–3,250 m. Flowering in November and January.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cauca:** Páramo Las Delicias. Alt. 3,250 m. November 17, 1982. *C. Luer* & *R. Escobar* 8462 (SEL); **Nariño:** Km 15 de Pasto a la Laguna de La Cocha. Alt. 3,000 m. January 21, 1984. *C. Luer* & *J. Luer* 3769 (RPSC); The same loc. January 29, 1987. *C. Dodson* & *al.* 17039 (RPSC), Cerca a la Laguna de La Cocha, vertiente oriental del Páramo El Tabano, en potreros, km 17 de la carretera de Pasto a El Encano. Alt. 2,800 m. January 31, 1987. *R. Escobar* & *E. Valencia* 3734 (RPSC).

Notes: This is the only species with a hirsute/hispid lip callus with simple lip and petal veins. Dodson and Escobar (1993) compared their new entity to *Telipogon guacamayensis*.

91. *Telipogon phalaena* Rchb. f. ex Kraenzl. (Figure 218–Figure 229)

Ann. Naturhist. Mus. Wien 33: 17. 1919. TYPE: Ecuador. *A. Huebsch* 5 (holotype, W-R! 6334; UGDA-DLSz! – drawing).

Stem not preserved in herbarium material. Leaves three, 3 cm long, 0.8 cm wide. Inflorescence four-flowered, raceme 4 cm long. Flowers rather large, sepals yellow with greenish suffusion, lip and petals deep yellow with yellow-greenish margins, main veins green, reticulation red-maroon, callus, spines and gynostemium red or red-maroon. Floral bracts 4–7 mm long, ovate, concave, acute. Pedicel and ovary 24–35 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 16–20 mm long, 6–8 mm wide, concave, ovate-lanceolate, subacute, three- or five-veined. Lateral sepals 18–20 mm long, 5.5–8 mm wide, concave, ovate-lanceolate, acute, oblique, three- or five-veined. Petals 19–25 mm long, 18–23 mm wide, more or less suborbicular-ovate in outline, somewhat oblique, apex obtuse to acuminate, margins glabrous, slightly undulate, veins seven, cross-venulate. Lip 15–20 mm long, 19–27 mm wide, transversely elliptic, widest near the middle, truncate at the apex, margins glabrous, veins 11 or 13, cross-venulate, callus free from the lip, prominent, narrowly obtriangular, apically elongate, densely hirsute. Gynostemium 4–6 mm long, clinandrium middle lobe setose with ca. 2–3 mm long hairs, lower part glabrous.

Ecology: No data.

Distribution: Colombia, Ecuador.

Representative specimens: – COLOMBIA. [New Granada]. Passagana. *F. C. Lehmann* s.n. (W-R! 6334 – in envelope). ECUADOR. **Loja:** Bei Loja. 1888. *A. Huebsch* 5 (W-R! 6334; UGDA-DLSz! – drawing), Loja. November 1848. *Sine coll.* 80 (W-R!, UGDA-DLSz! – drawing). *Sine loc.* *Poortmann* s.n. (P!, UGDA-DLSz! – drawing).

Notes: *Telipogon phalaena* appears to be very similar to *T. dendriticus*, from which it differs in the number of lip and petals veins, as well as slightly a different form of the lip callus. According to Kraenzlin (1919), the lip of this species is 11-veined.

XXVI. *Telipogon tamboense* Dodson & Hirtz (Figure 230, Figure 231)

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1186. 2004. TYPE: Ecuador. *A. Hirtz* 7760 (holotype, RPSC).

Stem abbreviated, 1 cm long. Leaves 8 cm long, 1.2 cm wide, narrowly obovate, acute at the apex, apiculate. Inflorescence – peduncle 4 cm long, alate, raceme 3 cm long, three–five-flowered. Flowers medium-sized, sepals greenish with yellow veins, lip and petals pale cream-yellow with short red-brown reticulation arranged to form a complete circle between the petals and lip, vein lines lacking, callus, gynostemium and spines red-brown. Floral bracts 9 mm long, ovate, concave, acute. Pedicellate ovary 30 mm long, triquetrous. Sepals dorsally keeled. Dorsal sepal 16 mm long, 6 mm wide, narrowly ovate, acute at the apex, apiculate. Lateral sepals 16 mm long, 6 mm wide, obliquely narrowly ovate, acute at the apex apiculate. Petals 15 mm long, 12 mm wide, elliptic-ovate, somewhat oblique, acuminate, 11-veined. Lip 18 mm long, 13 mm wide, broadly elliptic, obtuse at the apex, callus cordiform, small, villose, veins 13 or 15. Gynostemium to 6 mm long, dorsally covered with setose hairs.

Ecology: Epiphyte growing at the altitude of 3,000 m. Flowering in May.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Cañar**: El Tambo. Alt. 3,000 m. May 1, 2000. A. Hirtz 7760 (RPSC).

Notes: *Telipogon tamboense* appears to be similar to *T. octavioi*, which, however, is smaller overall (leaves up to 4 × 0.5 cm vs. 8 × 1.2 cm), with smaller flowers (sepals 10 × 5 mm vs. 16 × 6 mm), nine-veined petals (vs. 11-veined), and a hirsute lip callus (vs. callus villose).

XXVII. *Telipogon dodsonii* Braas (Figure 232–Figure 235)

Die Orchidee 36(2): 77. 1985. TYPE: Ecuador. C. Dodson & al. 10518 (holotype, SEL).

Stem abbreviated, ca. 2 cm long. Leaves four–five, up to 3 cm long and 0.5 cm wide, linear-ligulate, acute. Inflorescence – peduncle abbreviated, raceme very short, one–two-flowered. Flowers 20 mm in diameter, sepals pinkish-green with dull pinkish irregular spots, petals and lip white pink flushed, with pinkish-red spots all over. Floral bracts 5 mm long, lanceolate-ovate, acute. Pedicel and ovary 15 mm long. Sepals dissimilar, keeled abaxial. Dorsal sepal 10 mm long, 4–5 mm wide, concave, elliptic, cuspidate, three-veined, veins simple. Lateral sepals 10 mm long, 3 mm wide, concave, ligulate-lanceolate, acuminate, oblique, three-veined, veins simple. Petals 12 mm long, 8 mm wide, elliptic in outline, widest near the middle, almost symmetric, apex cuspidate, veins nine, simple. Lip 12 mm long, 10 mm wide, transversely elliptic-ovate, widest towards the apex, shortly mucronate at the apex, callus free from the lip, but connate with the gynostemium, elongate, finger-like, upcurved apically, glabrous, veins five. Gynostemium 3 mm long, glabrous.

Ecology: Terrestrial or epiphytic on steep embankments in wet cloud forest at the altitude of 2,600–2,900 m. Flowering in June and September.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Loja**: Parque Nacional Podocarpus, E of Nudo de Cajanuma. Wet montane forest above Centro de Informacion. Alt. 2,900 m. June 16, 1988. B. Øllgaard & J. E. Madsen 74882 (QCNE!); **Zamora-Chinchi**: Between Loja and Zamora Alt. ca. 2,600 m. September 21, 1981. C. H. Dodson & al. 10518 (SEL).

Notes: This species can be readily distinguished from all other genus representatives by the unique color of flowers, with pinkish-green sepals featuring dull, pinkish, irregular spots, and petals and lip pink-flushed white, with pinkish-red spots all over. While dried *Telipogon dodsonii* can be misidentified as *T. octavioi* and *T. tamboense*, *T. dodsonii* has the smallest flowers of the three, and its lip callus is glabrous.

XXVIII. *Telipogon frymirei* Dodson (Figure 236)

Icon. Pl. Trop. 10: t. 991. 1984. TYPE: Ecuador. C. H. Dodson & L. B. Thien 762 (holotype, SEL).

Stem abbreviated. Leaves three, up to 7 cm long and 0.8 cm wide, linear to linear-oblongate, apiculate. Peduncle up to 4 cm, alate, raceme 4 cm long, one–three-flowered. Flowers medium-sized, yellow-brown with brown or red-maroon veins. Floral bracts up to 15 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 18 mm long, 8 mm wide, concave, elliptic, apiculate, three-veined, veins simple. Lateral sepals 15 mm long, 8 mm wide, concave, elliptic-ovate, somewhat oblique, apiculate, three-veined, veins simple. Petals 20 mm long, 10 mm wide, obliquely elliptic in outline, base cuneate, apex apiculate, veins seven, simple. Lip 15 mm long, 16 mm wide, suborbicular-obovate, base subcordate, apex shortly apiculate, callus free from the lip, ligulate, apex somewhat hooked, puberulent, veins 19–23, simple. Gynostemium 1.5 mm long, anther surrounded by hispid hairs.

Ecology: Epiphytic in upper montane cloud forest at the altitudes of 1,400–2,800 m. Flowering in May and September.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Loja:** Km 12–14 near top of pass, Loja-Zamora. Alt. 2,800 m. September 28, 1961. *C. H. Dodson & L. B. Thien* 762 (SEL); Km 12 Loja-Zamora. Alt. 2,700 m. May 10, 1958. *C. H. Dodson & G. Frymire* 403 (SEL); **Zamora-Chinchipe:** Km 42 Loja-Zamora. Alt. 1,400 m. September 29, 1961. *C. H. Dodson & L. B. Thien* 833 (SEL).

Notes: *Telipogon frymirei* is rather readily distinguishable by its relatively small lip with a large number of veins (19–23) and its characteristic ligulate callus with a hooked apex.

XXIX. *Telipogon thomasii* Dodson & R. Escobar (Figure 237, Figure 238)

Icon. Pl. Trop. 2(6): pl. 597. 1989. TYPE: Ecuador. *C. H. Dodson & al.* 15943 (holotype, QCNE; Isotype, RPSC!).

Stem ca. 2 cm long, abbreviated. Leaves up to 7 cm long and 1.8 cm wide, narrowly obovate, acute at the apex, apiculate, widest above the middle. Inflorescence – peduncle 7 cm long, alate, raceme 3 cm long, laxly three–seven-flowered. Flowers medium-sized, sepals greenish to yellow-green, petals and lip tan-yellow to greenish with brownish suffusion, with red-brown veins net, callus, gynostemium and spines purple-brown. Floral bracts 11 mm long, cucullate, ovate, acute. Pedicel and ovary 20–25 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 15 mm long, 8 mm wide, concave, ovate, apiculate, three-veined, veins simple. Lateral sepals 15 mm long, 8 mm wide, concave, ovate, apiculate, somewhat oblique, three-veined, veins simple. Petals 20 mm long and wide, broadly elliptic in outline, oblique, apex apiculate, veins 13, simple. Lip 20 mm long, 30 mm wide, transversely elliptic, widest near the middle, shortly mucronate at the apex, callus cordiform, shallowly three-lobed, apical lobe ovate, hirsute, veins 15, anastomosing. Gynostemium 3 mm long, upper part evenly setose with ca. 3 mm long hairs.

Ecology: Epiphyte in upper montane cloud forest at the altitude of 2,500 m. Flowering in July.

Distribution: Ecuador, Peru?.

Representative specimen: – ECUADOR. **Azuay:** Km 52 Cuenca-Molleturo. Alt. 2,500 m. July 20, 1985. *C. H. Dodson & al.* 15943 (QCNE, RPSC!).

Notes: *Telipogon thomasii* is similar to its Ecuadorian congener *T. jimburensis*, from which it can be recognized by sessile petals (vs. clawed), a lip with 15 veins (vs. 19) that are reticulated (vs. simple), and a hirsute lip callus (vs. papillate). When describing *T. thomasii*, Dodson and Dodson (1989) provided information about an additional specimen of this taxon – a drawing of a Peruvian specimen collected by Bennett 3613.

92. *Telipogon dendriticus* Rchb. f. (Figure 239–Figure 241)

Otia Bot. Hamburg. 1: 6. 1878. TYPE: Ecuador. *F. C. Lehmann* 94 (W!; K!; UGDA-DLSz! – copy).

Stem abbreviated, ca. 3 cm long. Leaves three–five, 3–4 cm long, up to 1.4 cm wide, ligulate-lanceolate to elliptic, subobtusate to obtuse. Inflorescence – peduncle up to 5 cm long, alate, raceme ca. 5 cm long, two–seven-flowered. Flowers large, sepals pale greenish brown, petals pale greenish white to yellowish with green-brown veins and reticulations, lip similar in color but with reddish flush towards the base, gynostemium reddish black. Floral bracts 11 mm long, triangular-ovate, subobtusate, keeled abaxially. Pedicellate ovary 15–20 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 18 mm long, 10 mm wide, concave, ovate-lanceolate, acute, five-veined, veins simple. Lateral sepals 20 mm long, 10 mm wide, ovate-lanceolate, somewhat oblique, acute, five-veined, veins simple. Petals 21 mm long, 18 mm wide, obliquely broadly ovate-suborbicular, widest near the middle, acute, margins papillate in the lower half, basally cuneate and sparsely setose, veins nine, cross-venulate. Lip 17 mm long, 23 mm wide, transversely elliptic-suborbicular, widest above the middle, truncate at the apex, lower margins papillate, callus obovate, rounded at the apex, large, 7 mm long and 8 mm wide, deeply concave at the base, papillate, irregularly hispid all over, veins 17, cross-venulate. Gynostemium

7 mm long, densely setose on the upper surface, ciliate on the lower one, hispid on both sides.

Ecology: Epiphyte in shrubs below paramo and in high-montane vegetation at the altitudes of 2,700–3,250 m. Flowering in September.

Distribution: Ecuador, Colombia.

Representative specimens: – COLOMBIA. **Putumayo/Nariño**: Near Páramo de Bordoncillo. Alt. 3,251 m. September 5, 2016. *R. Medina & al.* S16/23 (UGDA! – spirit; photo!). ECUADOR. **Pichincha**: “Orte Chuchi” (Norte de Chunchi?), near Quito. Alt. 2,700 m. *F. C. Lehmann* 94 (W!; K!; UGDA-DLSz! – copy).

Notes: This species is very similar to another taxon with cross-venulate venation on the lip and petals, *Telipogon phalaena*. Unlike the latter, *T. dendriticus* has nine-veined petals and a 17-veined lip. In *T. phalaena*, petals are seven-veined and the lip 11- or 13-veined. Additionally, the species have somewhat different lip calli; in *T. dendriticus*, the callus is obovate with a rounded apex, whereas in *T. phalaena*, the lip callus is narrower with an elongate apex.

XXX. *Telipogon jimburensis* Dodson & R. Escobar (Figure 242)

Icon. Pl. Trop. 2(6): pl. 591. 1989. TYPE: Ecuador. *A. Hirtz* 2885 (holotype, RPSC!).

Stem ca. 2 cm long, abbreviated. Leaves six, up to 6 cm long and 1.2 cm wide, spatulate, acute at the apex, apiculate. Inflorescence – peduncle 7 cm long, alate, raceme 2 cm long, one–two-flowered. Flowers medium-sized, sepals greenish, petals and lip yellowish to greenish-white, petals with green or dull red venation, lip with red-brown or green-brown veins net, distally yellow to green. Floral bracts 10 mm long, cucullate, ovate, acute. Pedicel and ovary 25–30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 13 mm long, 6 mm wide, concave, narrowly ovate, apiculate, three-veined, veins simple. Lateral sepals 13 mm long, 6 mm wide, concave, narrowly ovate, apiculate, somewhat oblique, three-veined, veins simple. Petals 23 mm long, 20 mm wide, broadly elliptic-orbicular in outline above narrowly cuneate and clawed base, widest near the middle, somewhat oblique, apex apiculate, veins 13, simple. Lip 18 mm long, 30 mm wide, transversely elliptic, widest near the middle, truncate, shortly mucronate at the apex, callus obscurely three-lobed, apical lobe terete, triangular, acute, papillate, veins 19, simple. Gynostemium 5 mm long, upper part evenly setose.

Ecology: Epiphyte in upper montane cloud forest at the altitude of ca. 2,800 m. Flowering from January to June.

Distribution: Ecuador, Peru.

Representative specimens: – ECUADOR. **Zamora-Chinchipe**: Near Jimbura on new road Loja to Sumba. Alt. 2,800 m. March 1986. *A. Hirtz* 2885 (RPSC!). PERU. Piura. Ayaba. Allison 001 (Photo at RPSC – Dodson & Dodson, 1989).

Notes: As stated above, *Telipogon jimburensis* is similar to *T. thomasi*, but has clawed petals with a truncate base, a lip with 19 simple veins, and a papillate lip callus.

XXXI. *Telipogon cuyujensis* Dodson & R. Escobar (Figure 243–Figure 247)

Icon. Pl. Trop. 2(6): pl. 586. 1989. TYPE: Ecuador. *C. H. Dodson & al.* 16236 (holotype, RPSC!).

Plant 3 cm tall. Leaves three–four, up to 6.5 cm long and 1.6 cm wide, narrowly obovate, attenuate towards the base, shortly apiculate at the apex. Inflorescence up to 15 cm long, three-alate, up to seven-flowered. Flowers small, sepals yellow-green, petals and lip yellow to dull yellow with red-brown or green venation, lip with reddish haze towards the base, callus red-black, gynostemium and spines red-brown. Floral bracts up to 11 mm long, ovate, acute. Pedicel and ovary 30 mm long, triquetrous. Dorsal sepal 12 mm long, 8 mm wide, concave, ovate-lanceolate, acute, apiculate, three-veined, veins simple. Lateral sepals 12 mm long, 8 mm wide, similar to the dorsal sepal, somewhat oblique, three-veined, veins simple. Petals 14 mm long, 11 mm wide, broadly obovate-elliptic, somewhat oblique, cuneate at the base, cuspidate at the apex, nine-veined, veins simple. Lip 16 mm long, 14 mm wide,

broadly elliptic to suborbicular, cuspidate at the apex, 15-veined, veins simple, basal callus deeply three-lobed, the middle lobe linear, truncate, lateral lobes obliquely rhombic. Gynostemium up to 2 mm long, short, massive, dorsally with three bundles of densely setose spines.

Ecology: Epiphyte in wet montane forest at the altitude of 2,250–2,300 m. Flowering from November to March.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Napo:** 1 km E of Cuyuja on the road Quito-Baeza. Alt. 2,300 m. November 17, 1985. *C. H. Dodson & al.* 16236 (RPSC!), Parraquia de Baeza. Comunidad de Santa Lucia de Bernejo. Alt. 2,250 m. December 15, 1992. *A. Alvarez & al.* 882 (QCNE).

Notes: There are two described *Telipogon* species with prominently triple-lobed lip calli: *T. cuyujensis* and *T. hagsaterii*. The differences between these species concern rather secondary characteristics, including leaf size (up to 6.5 × 1.6 cm in the former vs. up to 8 × 2.5 cm in the latter) and lip size (16 × 14 mm vs. 17 × 18 mm, respectively). They are easily distinguished during anthesis. The flowers of *T. hagsaterii* have green sepals with a brownish haze and maroon petals and lip, whereas in *T. cuyujensis*, sepals are yellow-green, the petals and lip are yellow to dull yellow with red-brown or green venation, the lip has a reddish haze towards the base, the callus is red-black, and the gynostemium and spines are red-brown. It cannot be excluded that these represent only color variants of the same species.

XXXII. *Telipogon hagsaterii* Dodson & R. Escobar (Figure 248)

Orquideologia 18(3): 303, 307. 1993. TYPE: Ecuador. *C. H. Dodson & al.* 16676 (holotype, RPSC!).

Plants caespitose. Stem ca. 2 cm long, abbreviated. Leaves two–three, up to 8 cm long and 2.5 cm wide, ligulate-lanceolate to elliptic-lanceolate, acute, shortly acuminate. Inflorescence up to 20 cm long in total, peduncle 13 cm long, alate, raceme laxly several-flowered. Flowers medium-sized, sepals green with brownish haze, petals and lip maroon. Floral bracts 15 mm long, ovate, carinate outside, concave, acute. Pedicellate ovary up to 35 mm long, triquetrous. Sepals keeled abaxially, subsimilar. Dorsal sepal 13 mm long, 6 mm wide, ovate, concave, apiculate, three-veined. Lateral sepals 12 mm long, 5 mm wide, obliquely ovate, concave, acuminate, obtuse, three-veined. Petals 15 mm long, 13 mm wide, suborbicular-elliptic, base cuneate, apex shortly acuminate, nine-veined, veins simple. Lip 117 mm long, 18 mm wide, elliptic-obovate in general outline, widest below the middle, with 15, simple veins; callus 6 × 5 mm, prominent, deeply three-lobed, hirsute, all lobes oblong, obtuse, the middle one the longest. Gynostemium 5 mm long in total, with three tufts of setae on both lobes and at apex.

Ecology: Epiphyte in montane forest at the altitude of 2,100–2,500 m. Flowering in June, August, and December.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Imbabura:** Entre Otavalo e Intag. Alt. 2,100 m. December 6, 1986. *C. H. Dodson & al.* 16676 (RPSC!); **Pichincha:** Km 72 de la carretera de Santo Domingo a Quito vía Tandapi. Alt. 2,500 m. June 23, 1986. *C. H. Dodson & A. Hirtz* 16516 (RPSC – Dodson & Escobar, 1993), arriba de Tandapi, carretera de Santo Domingo a Quito. Alt. 2400 m. August 1986. *A. Hirtz* 2995 (RPSC – Dodson & Escobar, 1993).

Notes: The comparison between this species and *Telipogon cuyujensis* is discussed above.

93. *Telipogon stinae* Dodson & Dalström (Figure 249–Figure 252)

Icon. Pl. Trop. 10: t. 994. 1984. TYPE: Ecuador. *S. Dalström & Udd* 78 (holotype, SEL!).

Stem abbreviated. Leaves three, up to 6 cm long and 1.6 cm wide, narrowly oblong elliptic, acute. Peduncle up to 6 cm, tripartite, raceme 4 cm long, two–three-flowered. Flowers large, sepals green, petals and lip yellow with red veins, gynostemium and

callus red. Floral bracts up to 8 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 13 mm long, 10 mm wide, concave, triangular-ovate, apiculate. Lateral sepals 13 mm long, 10 mm wide, concave, obliquely triangular-ovate, apiculate. Petals 15 mm long, 18 mm wide, broadly ovate in outline, apex apiculate, veins 11 or 13. Lip 23 mm long, 20 mm wide, suborbicular, apiculate at the apex, callus plate-like, apically notched with two finger-like projections, pubescent, free from both the gynostemium and lip, veins 17 or 19. Gynostemium 4 mm long, covered densely by setose hairs.

Ecology: Epiphyte in upper montane cloud forest at the latitude of ca. 2,400 m. Flowering from December to April.

Distribution: Colombia, Ecuador.

Representative specimen: – COLOMBIA. **Cauca:** From La Bota Caucana, near the headwaters of the Caqueta River. Cultivated. 2018. *J. L. Aguirre s. n.* (HPUJ – Uribe-Vélez & Saulea, 2020b, UGDA-DLSz! – photo). ECUADOR. **Loja:** Above Vilcabamba. Alt. 2,400 m. February 13, 1983. *S. Dalström & Udd 78* (SEL!).

Notes: *Telipogon stinae* is an easily recognizable species by its peculiar lip callus. This is the only described species with a bilobed callus, which is deeply notched in the centre with two finger-like projections.

3.2.1.2.5. *Telipogon amicorum*-Group

Stem short, abbreviated, leaves few, widest near or above the middle. Flowers resupinate. Sepals and petals dissimilar. Petals transversely elliptic to suborbicular, different than lip. Lip more or less cordate or cordate-ovate, variously covered by different kinds of hairs, hispid, setose or ciliate (Figure 253).

This group embraces six species.

KEY TO THE SPECIES:

1. Petals ca. twice longer than lip 2
- 1* Petals and lip subequal in length or petals smaller than lip 4
2. Petals nine-veined 3
- 2* Petals 12-veined XXXIV. *T. fritillum*
3. Lateral sepals 17 × 8 mm, three-veined XXXVI. *T. szmitii*
- 3* Lateral sepals 8 × 5 mm, five-veined XXXVII. *T. dalstromii*
4. Lip much longer than wide, oblong-ovate XXXVIII. *T. amicorum*
- 4* Lip about equally long and wide, suborbicular-ovate to broadly elliptic 5
5. Flowers medium-sized, sepals and petals 16–27 mm long, lip 24 × 20 mm, 21-veined, callus cordate XXXIII. *T. hirtzii*
- 5* Flowers small, sepals and petals ca. 5 mm long, lip 5.5 × 6 mm, 15–17-veined, acutely deflexed at midpoint, sparsely covered with trichomes XXXV. *T. vulcanicus*

XXXIII. *Telipogon hirtzii* Dodson & R. Escobar (Figure 254, Figure 255)

Icon. Pl. Trop. 2(6): pl. 266. 1989. TYPE: Ecuador. *A. Hirtz & C. Luer 2543* (holotype, RPSC!).

Stem abbreviated, 2 cm long. Leaves three, up to 6 cm long and 1.2 cm wide, narrowly spatulate, apiculate. Peduncle up to 12 cm, alate, raceme 6 cm long, up to seven-flowered. Flowers medium-large, sepals greenish to yellowish, lip and petals yellow-brown to dull red with yellowish margins, with vine-red or maroon veins, gynostemium vine-red. Floral bracts up to 12 mm long, cucullate, ovate, acute, carinate. Pedicel and ovary 30 mm long, triquetrous. Sepals similar, keeled abaxial. Dorsal sepal 19 mm long, 12 mm wide, concave, elliptic-ovate, acute, five-veined, veins simple. Lateral sepals 16 mm long, 10 mm wide, concave, elliptic-ovate, somewhat oblique, acute, five-veined, veins simple. Petals 27 mm long, 18 mm wide, broadly ovate in outline, base cuneate, apex apiculate, somewhat oblique, veins 15, simple. Lip 24 mm long, 20 mm wide, suborbicular-ovate, apex acuminate, callus

large, 10 mm long and wide, cordate, produced by an extension of the lip base, puberulent, veins 21, simple. Gynostemium 5 mm long, covered on both sides by setose hairs ca. 5 mm long, and shorter spines to 2 mm long on the upper part.

Ecology: Epiphyte in wet premontane and montane forest at the altitude of 1,800–1,900 m. Flowering in March and September.

Distribution: Ecuador.

Representative specimens: – ECUADOR. **Napo:** Km 16 road from Baeza to Tena, near Cosanga. Alt. 1,800 m. April 15, 1985. A. Hirtz & C. Luer 2543 (RPSC!), Canto El Chaco. Márgen derecha del Río Quijos. Finca “La Ave Brava” de Segundo Pacheco. Bosque pluvial premontano. Alt. 1,800–1,900 m. September 7–10, 1990. W. Palacios 5359 (QCNE).

Notes: This species is similar to *Telipogon vulcanicus*, and is distinguished by much larger flowers (petals 27 mm vs. 5 mm long), 15-veined petals (vs. seven-veined), and a suborbicular-ovate lip (vs. elliptic) with 21 veins (vs. 15–17 veins).

XXXIV. *Telipogon fritillum* Rchb. f. & Warsz. (Figure 256, Figure 257)

Bonplandia 2: 101. 1854. TYPE: Peru?. J. Warszewicz s.n. (holotype, W-R! 30526; UGDA-DLSz! – drawing).

Plant very small. Leaves up to 4 cm long and 0.6 cm wide, oblong-elliptic, acute. Inflorescence ca. 3 cm long, one–three-flowered. Flowers medium-sized, sepals greenish with maroon veins, petals yellowish-green with red-brown veins net, lip dirty red with darker veins. Floral bracts 10 mm long, triangular-lanceolate, acuminate. Pedicel and ovary 35 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 15 mm long, 6 mm wide, elliptic-ovate, concave, acuminate, veins three or five, scarcely anastomosing. Lateral sepals 15 mm long, 5–6 mm wide, elliptic-ovate, concave, oblique, acuminate, veins five. Petals 20 mm long, 17–18 mm wide, rhombic-ovate, acute, base cuneate, papillate with some hispid hairs, 12-veined, scarcely anastomosing. Lip 11 mm long and wide, elliptic-cordate in outline, acute at the apex, margins ciliate, lamina papillate with numerous hispid hairs all over, veins 21, simple, the middle one somewhat keeled. Gynostemium 3–4 mm long, short, dorsally covered with numerous, stiff setae ca. 3.5 mm long. Anther dorsal.

Ecology: No data.

Distribution: Ecuador.

Representative specimen: – PERU?. J. Warszewicz s.n. (W-R! 30526, UGDA-DLSz! – drawing).

Notes: This species is similar to *Telipogon szmitii*, but is distinguished by five-veined petals (vs. nine-veined) and a lip with 21 veins (vs. nine veins). Moreover, the gynostemium of *T. fritillum* is dorsally covered with numerous stiff setae (vs. gynostemium dorsally and laterally densely setose).

XXXV. *Telipogon vulcanicus* Dodson & Hirtz (Figure 258)

Nat. Ecuador. Orchids. *Aa–Dracula* 5: 1181. 2004. TYPE: Ecuador. A. Hirtz & al. 6002 (holotype, RPSC).

Leaves two–three, up to 5 cm long and 1.5 cm wide, oblong-elliptic, thick, obtuse at the apex. Inflorescence – peduncle 3–4 cm long, alate. Flowers small, sepals pinkish green to greenish, petals green with red-brown veins, lip bright purple-red, gynostemium setae blackish. Floral bracts 10 mm long, triangular-lanceolate, acuminate. Pedicel and ovary 15–20 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 5 mm long, 3 mm wide, oblong ovate, acuminate. Lateral sepals 5 mm long, 3 mm wide, oblong ovate, oblique, acuminate. Petals 5 mm long, 3.5 mm wide, obovate, apiculate, seven-veined. Lip 5.5 mm long, 6 mm wide, elliptic when spread, surrounding the gynostemium at base, acutely deflexed at midpoint, sparsely covered with trichomes, veins 15–17. Gynostemium short, dorsally covered with vine-red setae. Anther dorsal.

Ecology: Terrestrial in montane forest at the altitude of 2,600 m. Flowering in January.

Distribution: Ecuador.

Representative specimen: – ECUADOR. Tungurahua. Volcan Tungurahua. Alt. 2,600 m. January 1994. *A. Hirtz & al. 6002* (RPSC).

Notes: cf. *Telipogon hirtzii*.

XXXVI. *Telipogon szmitii* Szlach., Mytnik & Baranow (Figure 259)

Biodivers. Res. Cons. 15: 10–12, f. 1a–e, 2, 3. 2009. TYPE: Ecuador. *D. L. Szlachetko & al. 8538* (holotype, UGDA!).

Plants rather small. Stem ca. 4–6 cm long, few-leaved. Leaves 3.5–5 cm long, 1.5–2.5 cm wide, oblong-elliptic to ligulate, acute, relatively thick. Inflorescence up to 12 cm long, three-flowered; peduncle alate. Floral bracts 5–12 mm long, triangular-lanceolate, acuminate. Pedicel and ovary ca. 26 mm long, triquetrous. Flowers dirty yellow to yellow-suffused with reddish, lip darker. Sepals keeled abaxially. Dorsal sepal 17 mm long, 8 mm wide, oblong ovate, shortly mucronate at the apex, concave, five-veined, veins simple. Lateral sepals 17 mm long, 8 mm wide, ovate-elliptic, oblique, subacute, three-veined, veins simple. Petals 19 mm long, 16 mm wide, suborbicular-ovate above narrowly cuneate base, rounded at the apex, basally glabrous, nine-veined, veins branching. Lip 9 mm long and wide, broadly cordate in general outline, shallowly cordate at the base, obtuse at the apex, sparsely covered with spines all over, margins ciliate-hispid, veins nine, sparsely branching. Gynostemium 4 mm long, dorsally and laterally densely setose, setae 4 mm long, rostellum ca. 2 mm long. Anther dorsal.

Ecology: Terrestrial in secondary montane forest along a river, in full sun and in stony soil. Flowering in August.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Zamora-Chinchipec**: Along a road between Zumba and Amaluza. August 2008. *D. Szlachetko & al. 8538* (UGDA!, UGDA-DLSz! – drawing).

Notes: *Telipogon szmitii* resembles *T. dalstromii*. Both share similar overall flower morphology, but the former has much larger flowers. The lip of *T. szmitii* is sparsely covered with spines all over, with ciliate-hispid margins. The lip of *T. dalstromii* is sparsely covered with spines as well, but they are pustulate at the base, and the margins of the lip are glabrous. The petals of the former species have branching veins, especially in their distal parts, whereas in the second species, veins of petals are predominantly anastomosing.

XXXVII. *Telipogon dalstromii* Dodson (Figure 260–Figure 262)

Icon. Pl. Trop. 10: t. 990. 1984. TYPE: Ecuador. *S. Dalström 294* (holotype, SEL).

Leaves three–five, up to 6.5 cm long and 2.4 cm wide, narrowly oblanceolate to linear-oblanceolate, attenuate towards the base, shortly acuminate. Inflorescence up to 12 cm long, one–five-flowered; peduncle alate. Flowers dirty white to dull greenish, translucent, with maroon-purple veins and spots on sepals and petals, lip deep purple to blackish. Floral bracts 4 mm long, triangular-lanceolate, acuminate. Pedicel and ovary ca. 15 mm long, triquetrous. Sepals keeled abaxially. Dorsal sepal 10 mm long, 6 mm wide, oblong elliptic, acute, slightly concave, five-veined, veins simple. Lateral sepals 8 mm long, 5 mm wide, ovate-elliptic, somewhat oblique, shortly acuminate, five-veined, veins simple. Petals 10 mm long, 9 mm wide, suborbicular above cuneate base, apiculate at the apex, basally glabrous, nine-veined, veins anastomosing. Lip 5 mm long, 6 mm wide, broadly obovate in general outline, shallowly cordate at the base, more or less acute at the apex, sparsely covered with spines which are pustulate at the base. Gynostemium 3–4 mm long, dorsally and laterally densely setose, rostellum ca. 1.5 mm long. Anther dorsal.

Ecology: Epiphyte in montane cloud forest at the altitudes of 2,000–2,200 m. Flowering probably throughout the year.

Distribution: Ecuador, Peru.

Representative specimens: – ECUADOR. **Loja:** South of Yangana on road to Valladolid. Alt. 2,000 m. November 22, 1982. *S. Dalström* 294 (SEL). PERU. Piura. Huancabamba: Alto Río Tabaconas. Alt. 2,200 m. Purchased from Manuel Arias. August 30, 1987. *D. Bennett* 4022 (MO).

Notes: The differences between this species and *Telipogon szmitii* are discussed above.

XXXVIII. *Telipogon amicorum* (Szlach. & Marg.) J. M. H. Shaw

Orchid Review 122(1308): 78. 2014. ≡ *Stellilabium amicorum* Szlach. & Marg., Orchidee (Hamburg) 57: 322. 2006. TYPE: Ecuador. *T. Kubala & al. s.n.* (holotype, UGDA!).

Leaves few, gathered in a basal rosette, up to 2 cm long, 0.3–0.6 cm wide, linear-lanceolate, acuminate. Inflorescence up to 3 cm long, with up to 10 flowers, peduncle terete with a single sheath. Floral bracts 3 mm long, narrowly triangular, acute. Pedicel and ovary 8 mm long. Flowers two–three open at time, resupinate, tepals green or green with dull reddish tinge, lip purple-brown with blackish central pad. Dorsal sepal 3 mm long, 2.2 mm wide, elliptic-ovate, cochleate, semi-cucullate, subacute, three-veined. Lateral sepals 3.2 mm long, 2.5 mm wide, obliquely elliptic-ovate, cochleate, subacute, three-veined. Petals 2.6 mm long, 1.8 mm wide, elliptic-spathulate to elliptic-obovate, acute to acuminate, three-veined, margins minutely ciliate. Lip 4 mm long, 2.5 mm wide, oblong-ovate with sagittate base, subobtusate with a large pad similar in shape to the lip but smaller, pad covered by stiff, erect hairs which towards the base transfer into short ciliae, lip margins minutely ciliate. Gynostemium short, with long, slightly arched, firm hairs.

Ecology: This small branch epiphyte was found growing 1–3 m above the ground in small relict forest in pasture at the altitude of 1,800–2,000 m. Flowering in October.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Zamora-Chinchipe:** Between Valladolid and Palanda, ca. 1.5 km E of the road. Alt. 1,800–2,000 m. October 2004. *T. Kubala & al. s.n.* (UGDA!).

Notes: This species is similar to *Telipogon vulcanicus*, but is distinguished by much smaller petals (2.6 mm vs. 5 mm long), triple-veined petals (vs. seven-veined), and an oblong-ovate lip (vs. elliptic).

3.2.1.2.6. *Telipogon falcatus*-Group

Stem short, abbreviated, leaves few, relatively large, widest near or above the middle. Flowers resupinate. Sepals and petals subsimilar. Lip more or less ovate-lanceolate to elliptic-lanceolate, with more or less cordate base, variously covered by different kinds of hairs, hispid, setose or ciliate (Figure 263).

KEY TO THE SPECIES:

- 1. Peduncle and ovary terete XXXIX. *T. tungurahuae*
- 1* Peduncle alate, ovary triquetrous 2
- 2. Lip central part covered by hispid hairs, surrounded by minutely ciliate rim
- 94. *T. falcatus*
- 2* Lip densely covered by hispid hairs, also along margins 95. *T. schneideri*

94. *Telipogon falcatus* Linden & Rchb. f. (Figure 264, Figure 265)

Bonplandia (Hannover) 2: 280. 1854; TYPE: Colombia. *L. J. Schlim* 1192 (lectotype, here designated, W-R! 30508; UGDA-DLSz! – drawing, copy).

Plant rather small. Leaves several, up to 5.5 cm long, 0.5–0.9 cm wide, oblanceolate to linear-oblanceolate, attenuate towards the base, shortly acuminate. Inflorescence up to 17 cm long, 2–10-flowered; peduncle alate. Flowers rather small, sepals and petals dirty greenish to brownish, lip dark brown. Floral bracts ca. 5 mm long, triangular-lanceolate, acuminate. Pedicel and ovary ca. 20–35 mm long, triquetrous. Dorsal sepal 13–18 mm long, 4–5.5 mm wide, ovate-lanceolate, acute, slightly

concave, three-veined. Petals 12–18 mm long, 3–4.3 mm wide, ligulate-lanceolate, falcate to somewhat sigmoid, cuneate at the base, acute at the apex, basally glabrous, three- or five-veined, veins anastomosing. Lateral sepals 14–16 mm long, 5–7 mm wide, ovate-lanceolate to elliptic-lanceolate, somewhat oblique, shortly acuminate, three-veined, veins simple. Lip 10–16 mm long, 10–12 mm wide, elliptic-obovate in general outline, shallowly cordate at the base, more or less apiculate at the apex, central part covered by hispid hairs, surrounded by minutely ciliolate rim. Gynostemium up to 5 mm long, dorsally densely setose, rostellum ca. 2 mm long. Anther dorsal.

Ecology: Epiphyte at the altitude of 2,900–3,100 m. Flowering in January and July.

Distribution: Colombia.

Representative specimens: – COLOMBIA. **Cundinamarca**: Usaquen. Alt. 2,900 m. July 12, 1941. *O. Renz 3050* (RENZ!); the same loc. Alt. 3,100 m. August 15, 1941. *O. Renz 3051* (RENZ!); Provinz Pamplona bei La Baja. Alt. 3,000 m. January. *L. J. Schlim 1192* (W-R! 30508; UGDA-DLSz! – drawing).

Notes: *Telipogon falcatus* appears to be a Colombian endemic species. It is similar in many respects to the Ecuadorian *T. tungurahue* and Peruvian *Telipogon jucusbambae*. The former differs from *T. falcatus* in its terete peduncle (vs. alate peduncle), terete ovary (vs. triquetrous ovary), single-veined petals wider than sepals (vs. three-veined petals narrower than sepals), and short-pubescent lip (vs. lip hispid surrounded by minutely ciliolate rim). Unlike those of *T. falcatus*, petals of *T. jucusbambae* are approximately twice as wide as the sepals, and according to the original description, exhibit as many as 23 veins. The lips in both species are fairly similar in form, but in the latter species, the lip is acute (vs. more or less apiculate) and the rim is glabrous (vs. minutely ciliolate). The other species possible to misidentify as *T. falcatus* is the recently described *T. schneideri*, which we discuss below.

According to Kraenzlin (1919), this species can have up to 10-flowered inflorescences.

XXXIX. *Telipogon tungurahuae* Dodson & R. Ecsobar

Orquideología 21(1): 58. 1998. TYPE: Ecuador. *A. Hirtz 5942* (holotype, RPSC!).

Leaves several, up to 3 cm long and 1.5 cm wide, lanceolate to ligulate-lanceolate, attenuate towards the base, acute at the apex. Inflorescence up to 10 cm long, few-flowered; peduncle terete. Floral bracts ca. 6 mm long, ovate, acute. Pedicel and ovary ca. 30 mm long, terete. Sepals green-brown, petals lip and spines brown. Dorsal sepal 11 mm long, 5 mm wide, ovate-lanceolate, acute, slightly concave, one-veined. Petals 15 mm long, 5 mm wide, ovate-lanceolate, almost symmetric, cuneate at the base, acute-acuminate at the apex, basally hairy, one-veined, vein simple. Lateral sepals 12 mm long, 5 mm wide, ovate-lanceolate, almost symmetric, acute, one-veined, vein simple. Lip 10–16 mm long, 10–12 mm wide, broadly obovate in general outline, shallowly cordate at the base, acute at the apex, short pubescent throughout. Gynostemium up to 4 mm long, densely setose, rostellum ca. 2 mm long. Anther dorsal.

Ecology: Epiphyte at the altitude of ca. 2,200 m. Flowering in September.

Distribution: Ecuador.

Representative specimen: – ECUADOR. **Tungurahua**: Mt Tungurahua. Alt. 2,200 m. September 15, 1993. *A. Hirtz 5942* (RPSC!).

Notes: According to the original description (Dodson, 1998), this species is similar to the Peruvian *Telipogon jucusbambae* Dodson & R. Escobar, but can be distinguished by its smaller flowers and lip, with no callus occupying the central part of the lip in the latter species. The species are further distinguished by the terete peduncle in *T. tungurahuae* (vs. alate peduncle in *T. jucusbambae*), single-veined petals (vs. 23-veined petals), and a lip that is shortly pubescent throughout (vs. lip densely spiny with glabrous margins).

95. *Telipogon schneideri* Szlach. & Kolan. (Figure 266–Figure 270)

Syst. Bot. 41(4): 940–942. 2016. TYPE: Colombia. *M. Schneider* 290 (holotype, AMES!; UGDA-DLSz! – drawing).

Plant rather small. Stem ca. 3 cm long. Leaves three–four, up to 5 cm long and 1.2 cm wide, oblanceolate to linear-oblanceolate, attenuate towards the base, shortly acuminate. Inflorescence up to 11 cm long, alate, one–four-flowered. Sepals brown-green or greenish, petals green, purple or brownish, lip dark, brownish or purple with greenish margins. Floral bracts to 6 mm long, lanceolate-triangular, acute. Pedicel and ovary 20–30 mm long, triquetrous. Dorsal sepal 16–17 mm long, 7 mm wide, ovate-lanceolate, acute, three-veined. Petals 17.5–18 mm long, 4 mm wide, lanceolate, symmetric, cuneate at the base, subacute to subobtusate at the apex, one- or three-veined, basally covered by numerous hispid and some setose hairs. Lateral sepals 14–15 mm long, 6 mm wide, similar to the dorsal sepal, but somewhat oblique. Lip 13–17 mm long, 8–10 mm wide, with nine or 11 veins, elliptic-obovate in general outline, cordate at the base, acuminate at the apex, basal part below gynostemium up to 1/3 of the total lip length covered by 3–4 mm long setose hairs, other surface of the lip lamina, including margins, densely covered by hispid hairs with hyaline apex. Gynostemium up to 5 mm long, dorsally densely setose, rostellum ca. 1.5 mm long. Anther dorsal.

Ecology: Epiphytic in humid, dense forest, but it was also found in shrubs. One population was found growing on *Macleania* sp. (Ericaceae). Flowering in January, February, October, and December.

Distribution: Known exclusively from Colombian Eastern Andean Cordillera where it was found growing at the altitude of 2,700–3,000 m.

Representative specimens: – COLOMBIA. **Cundinamarca:** Carretera Guasca-Sueva. January 20, 1987. *M. Ospina* H. 1183 (COL!), Carretera Guasca-Sueva. Alt. 3,000 m. February 22, 1997. *M. Ospina* H. 1478 (COL!, UGDA-DLSz! – drawing), Fomeque, Páramo de Chingaza, Abajo de La Laja. Alt. 2,800 m. January 25, 1963. *G. Huertas & L. Camargo* 5561 (COL!), Chipaque. Alt. 2,800 m. December 31, 1945. *M. Schneider* 290/1 (COL!), Usaquén. Alt. 2,700–2,800 m. October 12, 1951. *M. Schneider* 290/2 (COL!), Chipaque, near Bogotá. E slope of Eastern Cordillera. Alt. 2,800 m. December 31, 1945. *M. Schneider* 290 (AMES!, UGDA-DLSz!).

Notes: *Telipogon schneideri* is similar to *T. falcatus*, described from Colombia by J. J. Linden and H. G. Reichenbach based on collection of *Schlim* 1192 deposited in W. These species can be easily distinguished by series of floral characteristics. The petals of the new species are lanceolate, with a cuneate base. They are almost symmetric, not falcate, and longer than sepals; three veins are simple, not branching. Petals of *T. falcatus* are equal in length to sepals, linear-lanceolate, falcate, acuminate at the apex, and glabrous; three veins are prominently anastomosing. The form of the lip in both species is similar. In both species, the basal lip part below the gynostemium is adorned with long, rather stiff, setose hairs. In *T. schneideri*, the lip lamina is densely covered by hispid hairs, which are found also along margins. In *T. falcatus*, only the central lip part is covered by hispid hairs, and along its margin is a minutely ciliolate rim.

3.2.1.2.7. Mesoamerican-Group

Stem usually elongate, first creeping, later ascending, often reduced, short, with numerous adventitious roots. Leaves arranged along stem, usually basally imbricating, thin, spatulate to linear-oblanceolate to obovate-oblanceolate, acute to shortly mucronate, thin, rather delicate. Inflorescence much exceeding the leaves, with few sterile bracts. Flowers often very small, usually produced in a few-flowered raceme. Floral bracts small, much shorter than pedicellate ovary (Figure 271).

A group of ca. 20 species confined in distribution to Mesomerica, especially Costa Rica and Panama.

KEY TO THE SPECIES:

1. Lip ecallose or with basal part somewhat convex, hispid or papillate, but without definite callus 2
- 1* Lip with prominent callus of various size and form 5
2. Flowers small, petals 10–12 × 5–8 mm, lip 10 × 12–14 mm 3
- 2* Flowers larger, petals 12–27 × 12–26 mm, lip 15–23 × 19–36 mm 4
3. Leaves 0.7 cm wide, inflorescence up to 25 cm long, 5–12-flowered, gynostemium scarcely hispid on the upper surface and on both sides, otherwise ciliolate XL. *T. chiriquensis*
- 3* Leaves very narrow, 0.3–0.4 cm wide, inflorescence up to 4 cm long, one-flowered, gynostemium setose along apical margins, lower surface papillate .. XLI. *T. butcheri*
4. Leaves up to 2 × 0.5 cm, inflorescence up to 6 cm, pedicellate ovary up to 10 mm, petals 12–25 × 12–15 mm XLII. *T. panamensis*
- 4* Leaves up to 6 × 1.3 cm, inflorescence up to 9(20) cm, pedicellate ovary up to 35 mm, petals 25–27 × 21–26 mm XLIII. *T. seibertii*
5. Lip veins simple 6
- 5* Lip veins cross-venulate 9
6. Gynostemium combined with prominent callus, free from the lip 7
- 6* Gynostemium free from the basal lip callus 8
7. Petals and lip five-veined 96. *T. alvarezii*
- 7* Petals nine-veined, lip 14-veined LVII. *T. parvulus*
8. Flowers yellow, petals 10–13 × 8.5–10 mm, lip 8–9 × 10–11 mm, 13-veined XLIV. *T. olmosii*
- 8* Petals yellow to greenish-yellow, lip and petals basally with dark red or almost black veins, lip flushed with purple, petals 17–18 × 6.5–9 mm, lip 14–15 × 16–17 mm, 18–20-veined XLV. *T. personatus*
9. Stem elongate, over 5 cm long 10
- 9* Stem much shorter, up to 5 cm long, usually less 15
10. Petals with 9–10 simple veins XLVI. *T. caulescens*
- 10* Petals with 7–10 veins, cross-venulate 11
11. Lip 21–23-veined L. *T. nunnezii*
- 11* Lip 12–17-veined 12
12. Lip basal part 2 mm thick, back and sides with silky hairs, apex muricate-papillate LV. *T. monticola*
- 12* Lip basal part convex, surrounding gynostemium base, minutely ciliolate to hispid 13
13. Gynostemium without dorsal bristles, basally hispid XLVII. *T. fractus*
- 13* Gynostemium with bristles in the dorsal surface ca. 3–4 mm long 14
14. Lip and petals veins scarcely anastomosing *T. griesbeckii*
- 14* Lip and petals veins cross-venulate XLVIII. *T. nobilis*
15. Peduncle 17–30 cm long, flowers small, lip 6–6.5 × 5.5–7 mm ... LI. *T. medusae*
- 15* Peduncle up to 17 cm long, usually much less, flowers medium-sized, lip 11–23 × 16–28 mm 16
16. Basal part of the lip convex forming a frame below gynostemium XLIX. *T. reticulatus*
- 16* Lip callus very large, prominent, much thickened 17
17. Lip 13–23 × 17–22 mm, transversely elliptic-rhombic, basal callus 6–7 × 13 mm LII. *T. bombiformis*
- 17* Lip 11–16 × 16–20 mm, broadly rhombic, basal callus 4–6 × 4–6 mm 18

18. Petals 14–15.5 × 9–14.5 mm, gynostemium with bristles throughout, dorsal bristles 2–3 mm long LIII. *T. maduroi*

18* Petals 18 × 9 mm, gynostemium densely setose on the upper surface, with setae up to 3 mm long, pubescent below LVI. *T. biolleyi*

XI. *Telipogon chiriquensis* Dodson & R. Escobar

Orquideología 18(3): 281. 1993. TYPE: Panama. *R. J. Hampshire & C. Whiteford 620* (holotype, K).

Plant very small, tiny. Stem abbreviated, up to 4 cm tall. Leaves two–three, up to 3 cm long and 0.7 cm wide, linear-lanceolate to oblong ligulate, acute. Inflorescence up to 25 cm long, terete, more or less fractiflex, occasionally branching, 5–12-flowered. Flowers small, sepals yellow with purple, petals and lip yellow tinged purple, veins purple, reticulation purple. Sepals similar, keeled abaxial. Dorsal sepal 9 mm long, 3 mm wide, concave, lanceolate, acuminate, one-veined, vein simple. Lateral sepals 9 mm long, 3 mm wide, concave, lanceolate, acuminate, somewhat oblique, one-veined, vein simple. Petals 10 mm long, 5 mm wide, broadly ovate in outline, somewhat oblique, apex long-acuminate, base hirsute, veins nine, simple. Lip 10 mm long, 12 mm wide, broadly elliptic-ovate in outline, apiculate at the apex, base somewhat thickened, but without definite callus, veins 13, simple. Gynostemium 2 mm long, clinandrium prominently three-lobed, scarcely hispid on the upper surface and on both sides, otherwise ciliolate.

Ecology: Plants growing at the altitude of ca. 2,000 m. Flowering in March.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Arriba de Guadalupe. Alt. 2,000 m. March 15, 1985. *E. Woodson & al. 961* (K).

Notes: This species can be easily distinguished from other taxa potentially occurring in Colombia by its single-veined sepals, broadly ovate, long-acuminate petals, and ciliolate gynostemium with some hispid hairs on the upper surface and on both sides. *Telipogon chiriquensis* differs from the two other species with an ecallose lip by its small flowers, with petals approximately 10 × 5 mm (vs. over 12 × 12 mm) and a lip 10 × 12 mm (vs. over 15 × 19 mm). *Telipogon chiriquensis* resembles *T. butcheri*. Differences between these two species concern mostly vegetative parts; therefore, in our opinion they could represent variants of the same species.

XLI. *Telipogon butcheri* Dodson & R. Escobar

Orquideología 18(3): 278. 1993. TYPE: Panama. *H. P. Butcher s.n.* (holotype, RPSC!).

Stem abbreviated, ca. 0.5 cm tall. Leaves five, up to 2 cm long and 0.3–0.4 cm wide, linear-ligulate to oblong lanceolate, rounded at the apex, widest near the middle. Inflorescence up to 4 cm long, terete, one-flowered. Flowers small, but large in relation to the plant size, sepals greenish, sepals yellow-green to yellowish with green to red-maroon veins, lip similar in color with red-maroon venation. Floral bracts 1 mm long, ovate-triangular, acute. Pedicellate ovary ca. 20 mm long. Sepals similar, keeled abaxial. Dorsal sepal 8 mm long, 3 mm wide, concave, lanceolate, acuminate, one-veined, vein simple. Lateral sepals 8 mm long, 3 mm wide, concave, lanceolate, long-acuminate, oblique, one-veined, vein simple. Petals 12 mm long, 8 mm wide, broadly ovate in outline, apex elongate, acuminate, veins nine, simple. Lip 10 mm long, 13–14 mm wide, transversely elliptic in outline, widest below the middle, rounded at the apex with short mucro, ecallose, basal part around the gynostemium base slightly convex, papillate, veins 13, simple. Gynostemium 4 mm long, clinandrium prominently three-lobed, densely setose along apical margins, around the anther base, lower surface papillate.

Ecology: Epiphytes growing at the altitude of ca. 1,500 m. Flowering in October.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cordillera, unas 4 millas al. este del volcan. Alt. ca. 1,500 m. October 2, 1960. *H. P. Butcher s.n.* (RPSC!).

Notes: *Telipogon butcheri* is very similar to the previously characterized *T. chiriquensis*, but has narrower leaves (0.3–0.4 cm vs. 0.7 cm), shorter inflorescence (up to 4 cm long vs. up to 25 cm long) with only single flower (vs. 5–12 flowers), and a slightly different cover of the gynostemium (setose along apical margins, lower surface papillate vs. scarcely hispid on the upper surface and on both sides, otherwise ciliolate). The possibility cannot be excluded that these are conspecific.

XLII. *Telipogon panamensis* Dodson & T. Escobar (Figure 272)

Orquideología 18(3): 284. 1993. TYPE: Panama. *R. Woodson & R. Shery 694* (holotype, MO!).

Plant very small. Stem abbreviated, up to 3 cm long. Leaves five, up to 2 cm long and 0.5 cm wide, linear-oblongate, acute, somewhat falcate, widest above the middle. Inflorescence lateral or terminal, up to 6 cm long, terete, raceme one–two–flowered. Flowers medium-sized, sepals and petals brownish-yellow in the lower half, yellow above, red-brown venation on the lip or in the lower part of the lip and petals, above becoming greenish, gynostemium red-veined. Floral bracts 3 mm long, triangular-ovate, acute, concave. Pedicel and ovary ca. 10 mm long. Dorsal sepals 10 mm long, 3 mm wide, lanceolate, acuminate, one-veined, vein simple. Lateral sepals 10 mm long, 3 mm wide, lanceolate, acuminate, somewhat oblique, one-veined, vein simple. Petals 12–25 mm long, 12–15 mm wide, broadly ovate, somewhat oblique, acuminate at the apex, nine- or 11-veined, veins simple. Lip 15–22 mm long, 19–24 mm wide, transversely elliptic-rhombic, obtusely mucronate, 15 or 19-veined, cross-venulate, somewhat swollen and shortly hirsute at the base, but without definite callus. Gynostemium 3 mm long, erect, with a bundle of setose spines at the apex of the middle lobe of clinandrium and just below stigma.

Ecology: Epiphytes growing at the altitude of 1,900–2,400 m. Flowering in July and September.

Distribution: Panama, Costa Rica.

Representative specimens: – PANAMA. **Chiriquí:** Bajo Choro. Alt. 1,900 m. July 20, 1940. *R. Woodson & R. Shery 694* (MO!). COSTA RICA. Cordillera de Talamanca, vertiente del Atlántico. Valle del Silencio, junto al río Terbi, 5–11.5 km al oeste de la frontera entre Costa Rica y Panama. Alt. 2,300–2,400 m. September 9, 1984. *G. Davidse & al. 28786* (MO).

Notes: *Telipogon panamensis* is somewhat similar to *T. seibertii*, but is a smaller plant in all respects. Its leaves are up to 2 × 0.5 cm (up to 6 × 1.3 cm in *T. seibertii*), its inflorescence is up to 6 cm long (vs. up to 20 cm), its pedicellate ovary is up to 10 mm long (vs. up to 35 mm), and its petals are 12–25 × 12–15 mm (vs. 25–27 × 21–26 mm). Additionally, its lip veins are prominently anastomosing (cross-venulate). Lip veins in *T. seibertii* are simple, without any branches or anastomoses.

XLIII. *Telipogon seibertii* Dodson & R. Escobar (Figure 273)

Orquideología 18(3): 288. 1993. TYPE: Panama. *R. E. Woodson & al. 961* (holotype, MO!; UGDA-DLSz! – copy).

Stem usually abbreviated, up to 3.5 cm tall, occasionally longer up to 13 cm. Leaves five, up to 6 cm long and 1.3 cm wide, ligulate- to oblong lanceolate, acute, widest near the middle or above. Inflorescence up to 9(20) cm long, terete, two–seven–flowered. Flowers large, yellow-white with red-maroon veins on the lip and greenish veins on the petals turning red-maroon towards the base, central part of the flower red-maroon. Floral bracts 3–5 mm long, ovate-triangular, acute. Pedicellate ovary up to 35 mm long. Sepals similar, keeled abaxial. Dorsal sepal 13–15 mm long, 4–5 mm wide, concave, ovate-elliptic, acuminate, three-veined, veins simple. Lateral sepals 14–15 mm long, 4 mm wide, concave, ovate-elliptic, acuminate, oblique, three-veined, veins simple. Petals 25–27 mm long, 21–26 mm wide, broadly ovate in outline, somewhat oblique, apex acuminate, base hirsute, veins seven or nine, simple. Lip 22–23 mm long, 27–36 mm wide, transversely elliptic in outline, widest near the middle, apiculate to rounded at the apex, ecallose, basal obovate-cordate part slightly convex, hispid, veins 15, simple. Gynostemium

4 mm long, clinandrium prominently three-lobed, densely setose on the upper surface and on both sides, around the anther base, lower surface ciliolate.

Ecology: Plant growing in high montane forest at the altitudes 1,500–3,200 m. Flowering since June to August.

Distribution: Panama, Costa Rica.

Representative specimens: – PANAMA. **Chiriquí**: Casita Alta. Volcan de Chiriqui. Alt. 1,500–2,000 m. June 28 –July 2, 1938. *R. E. Woodson & al. 961* (MO!, UGDA-DLSz! – copy). COSTA RICA. **San José**: Along the trail from Canaan to Chirripo via Los Angeles, above (N of) the Rio Talari. Alt. 3,100–3,200 m. August 24, 1971. *W. Burger 8353* (COL!, UGDA-DLSz! – drawing).

Notes: *Telipogon seibertii* is a larger plant than both *T. panamensis* and *T. chiriquensis*. It has the largest flowers of the three, with petals 25–27 × 21–26 mm and a lip as large as 22–23 × 27–36 mm. Unlike those of *T. panamensis*, the lip veins of *T. seibertii* are simple, without any anastomoses or branches, somewhat reminiscent of *T. chiriquensis*. The lip of the latter, however, is 2–3 times smaller.

We examined a plant from Costa Rica (*W. Burger 8353*), which agreed well with the description of *T. seibertii*, except with a much longer stem and larger lip. Otherwise, it seems to represent this species.

XLIV. *Telipogon olmosii* Dressler

J. Orchideenfreund 13(3): 212–214. 2006. TYPE: Panama. *A. Maduro & E. Olmos 213* (holotype, MO!; Isotype: PMA).

Plants small, 4–5 cm tall in total, epiphytic. Leaves three–four, 3–4 cm long, 0.4–0.4–0.6 cm wide, linear-lanceolate, acute, widest near the middle. Inflorescence 2.5–10 cm long, terminal, branching, laxly two–four-flowered. Flowers small, yellow, petals with yellow venation, lip base and veins marron in the basal half, then yellow. Floral bracts 2 mm long, triangular-ovate, acute, concave. Pedicellate ovary 6–10 mm long. Dorsal sepal 6–7 mm long, 2.5 mm wide, lanceolate-ovate, concave, acute. Lateral sepals 6–7 mm long, 2.5 mm wide, lanceolate-ovate, acute, somewhat oblique. Petals 10–13 mm long, 8.5–10 mm wide, broadly ovate, apiculate, somewhat oblique, basal part papillate-pubescent, seven-veined, veins simple. Lip 8–9 mm long, 10–11 mm wide, transversely elliptic-obovate, acute, 13-veined, veins simple, basal callus orbicular, somewhat convex, hispid. Gynostemium 2 mm long, covered by setose hairs.

Ecology: Plants growing at the altitude of 1,500–1,750 m. Flowering in July.

Distribution: Panama.

Representative specimen: – PANAMA. Bocas del Toro. Sierra Madre. Alt. 1,500–1,750 m. July 23, 2001. *A. Maduro & E. Olmos 213* (MO!, PMA).

Notes: Dressler (2006) described this species in comparison to Panamanian congener *Telipogon chiriqueinsis*, noting that it has yellow petals, a lip without reticulations, and straight bristles on the gynostemium.

In our opinion, this species can be mistaken for *T. personatus* in its dried condition. *Telipogon olmosii*, however, exhibits smaller flowers with shorter, wider petals and a smaller lip with 13 simple veins.

XLV. *Telipogon personatus* Dressler

J. Orchideenfreund 13(3): 214–216. 2006. TYPE: Panama. *A. Maduro & E. Olmos 214* (holotype, MO!; isotype, PMA).

Plant 5–6 cm tall. Leaves several, 2.5–4 cm long, 0.3–0.5 cm wide, narrowly oblanceolate, acute. Inflorescence – peduncle 11.5 cm long, raceme 3 cm long, few-flowered. Flowers small, petals yellow to greenish-yellow, base flushed purple, lip and petals basally with dark red or almost black veins, lip flushed with purple, margins yellow. Sepals similar, keeled abaxial. Dorsal sepal 10–12 mm long, 4.5–5 mm wide, concave, lanceolate, acuminate. Lateral sepals 10–12 mm long, 4.5–5 mm wide, concave, lanceolate, somewhat oblique, acuminate. Petals

17–18 mm long, 6.5–9 mm wide, lanceolate-ovate in outline, somewhat oblique, apex acuminate, basally hispid, veins five, simple. Lip 14–15 mm long, 16–17 mm wide, broadly rhombic-obovate in outline, apiculate at the apex, callus rather small, obovate, centrally concave, hispid, veins 18–20, simple. Gynostemium 3 mm long, dorsal bristles 2–3 mm long, stigma with chin-like projection.

Ecology: Epiphyte growing at the altitude of 2,100–2,200 m. Flowering in July.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cerro Punta, arriba de Guadalupe. Alt. 2,100–2,200 m. July 23, 2001. A. *Maduro* & E. *Olmos* 214 (MO!, PMA).

Notes: *Telipogon personatus* is characterized by dull-colored flowers, with petals yellow to greenish-yellow, base flushed purple, lip and petals basally with dark red or almost black veins, lip flushed with purple, margins yellow. In contrast, *T. olmosii* has homogenous yellow flowers (except the basal callus). Additionally, flowers of *T. personatus* are somewhat larger, with petals 17–18 × 6.5–9 mm (vs. 10–13 × 8.5–10 mm), and a lip 14–15 × 16–17 mm (vs. 8–9 × 10–11 mm). The lip of *T. personatus* is 18–20-veined, whereas that of *T. olmosii* is 13-veined.

XLVI. *Telipogon caulescens* Dressler

Orchids (West Palm Beach) 72(2): 114–115, photo. 2003. TYPE: Panama. A. *Maduro* & E. *Olmos* 168 (holotype, MO!; Isotype: PMA; UGDA-DLSz! – copy).

Stem 5–16 cm long, elongate. Leaves 10–12, 1.4–5 cm long, 0.9–1.4 cm wide, oblanceolate to oblong ligulate, acute, widest above the middle. Inflorescence – peduncle 2–11 cm long, raceme 6–10 cm long, two–four-flowered. Flowers medium-sized, sepals yellow, petals yellow with greenish venation, occasionally basal veins red-brown, lip yellow with very prominent red-brown reticulation, sometimes with green veins and reticulation. Floral bracts 2.5–4 mm long, oblong ovate, acute. Pedicellate ovary 12–17 mm long. Sepals similar, keeled abaxial. Dorsal sepal 12–13 mm long, 4–5 mm wide, concave, ovate-lanceolate, acuminate. Lateral sepals 12–13 mm long, 4–5 mm wide, concave, ovate-lanceolate, acuminate, somewhat oblique. Petals 19–20 mm long, 14–15 mm wide, broadly ovate in outline, somewhat oblique, apex acuminate, veins 9–10, simple. Lip 14–25 mm long, 16–19 mm wide, broadly obovate or transversely elliptic in outline, acute at the apex, basal callus hispid, veins 14–18, cross-venulate. Gynostemium 5–6 mm long, clinandrium prominently three-lobed, dorsal bristles 3 mm long.

Ecology: Epiphytic in forest at the altitude of ca. 2,000 m. Flowering in June.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Bosquete, por la frontera con Bocas del Toro. Alt. 2,000 m. June 30, 2000. A. *Maduro* & E. *Olmos* 168 (MO!, PMA, UGDA-DLSz! – copy).

Notes: *Telipogon caulescens* is characterized by a long stem, up to 16 cm, with numerous prominent leaves. In this respect, it can be confused with *T. cristobalensis* and especially with *T. costaricensis*, both from Costa Rica, but not reported so far from Panama. In the former species, flowers are usually smaller (petals are 16 × 11 mm, lip 14 × 17 mm) and the gynostemium has a prominent, ciliate protrusion below the stigma. Setae are found at the back of the anther only. Otherwise, the gynostemium is glabrous. Flowers of *T. costaricensis* are similar in size to those of *T. caulescens*. According to the drawing of the type of *T. costaricensis* kept at AMES and made under Schlechter's supervision, there is an obtriangular callus in the lip base. In the material we examined, however, we were not able to locate such callus, and instead found prominently thickened or keeled veins at the base and on petals. It is very hard to point out discriminative characteristics to distinguish *T. costaricensis* and *T. caulescens*. The taxonomic status of both species requires further study.

XLVII. *Telipogon fractus* Dressler

Orchideen J. 14(1): 12, 13. 2007. TYPE: Panama. A. *Maduro* & E. *Olmos* 243 (holotype, MO!; Isotype: PMA).

Stem 4–9 cm long, elongate. Leaves several, 3.5–4 cm long, 0.8–1.8 cm wide, oblong elliptic, acute. Inflorescence – peduncle 12–15 cm long, raceme 5–6 cm long, ca. five-flowered. Flowers ca. 20 mm in diameter, yellow with prominent red-brown veining, petals and lip with reticulation, center dark red. Floral bracts 2–3 mm long, oblong ovate, acuminate. Pedicellate ovary 18–20 mm long. Sepals similar, keeled abaxial. Dorsal sepal 10–11 mm long, 3.5–4 mm wide, concave, ovate-lanceolate, acute. Lateral sepals 10–11 mm long, 3.5–4 mm wide, concave, ovate-lanceolate, acute, somewhat oblique. Petals 20–22 mm long, 13–13.5 mm wide, broadly ovate in outline, somewhat oblique, apex acuminate, veins seven–nine, cross-venulate. Lip 16–18.5 mm long, 16–20 mm wide, broadly obovate, acute or apiculate at the apex, basal part convex surrounding gynostemium base, minutely ciliolate, veins 12–14, with numerous aborted anastomoses. Gynostemium 3 mm long, clinandrium prominently three-lobed, without dorsal bristles, basally hispid.

Ecology: Plants growing at the altitude of 2,000–2,300 m. Flowering in September.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Bocas del Toro, oberhalb Guadelupe. Alt. 2,000–2,300 m. September 10, 2001. A. *Maduro* & E. *Olmos* 243 (MO!, PMA).

Notes: According to Dressler (2007), *Telipogon fractus* is similar to *T. caulescens* and *T. gracilipes*, but “the gynostemium of *T. fractus* is much shorter than that of *T. caulescens* and the species is quite distinctive in the consistently interrupted reticulations.” In our opinion, *T. fractus* is very similar to *T. monticola*. Unlike the latter, however, its lip callus is not so prominent and is minutely ciliolate (vs. callus back and sides with silky hairs, and apex muricate-papillate). *Telipogon fractus* can be distinguished from the similar *T. griesbeckii* by the gynostemium details. In *T. fractus*, the dorsal surface of the gynostemium lacks any dorsal bristles, but is basally hispid. In *T. griesbeckii*, the gynostemium dorsal part is covered with 3–4 mm long bristles.

XLVIII. *Telipogon nobilis* Dressler

Orchideen J. 14(1): 12, 13. 2007. TYPE: Panama. A. *Maduro* & E. *Olmos* 305 (holotype, PMA).

Stem over 10 cm long, elongate. Leaves 2.3–4.8 cm long, 1.3–1.6 cm wide, oblong ovate, subacute, carinate beneath, keel decurrent on sheath. Inflorescence – peduncle over 4 cm long. Flowers ca. 30 mm in diameter, yellow flushed with pink, with yellow margins, veins greenish, reticulation red-brown. Pedicellate ovary 36 mm long. Sepals similar, keeled abaxial. Dorsal sepal 14 mm long, 6 mm wide, concave, lanceolate, acute. Lateral sepals 14 mm long, 6 mm wide, concave, lanceolate, acute, somewhat oblique. Petals 18–20 mm long, 20–22 mm wide, broadly ovate in outline, somewhat oblique, apex apiculate, veins eight–nine, cross-venulate. Lip 17–18 mm long, 28 mm wide, very broadly obovate, base truncate, acute at the apex, widest at the base, basal callus convex surrounding gynostemium base, slightly thickened, hispid, veins 16–17, cross-venulate. Gynostemium 4 mm long, densely setose, with protruding lower margin of stigma.

Ecology: No data on habitat. Flowering in April.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cerro Punta, Las Nubes, Parque Internacional La Amistad. April 3, 2003. A. *Maduro* & E. *Olmos* 305 (PMA).

Notes: According to Dressler (2007), this species is characterized by a definite, solid callus on the lip base. Lip and petal veins in *Telipogon nobilis* are cross-venulate, whereas in the very similar *T. griesbeckii*, they are scarcely anastomosing. Otherwise, both species are very similar, and the possibility cannot be excluded that they are conspecific.

XLIX. *Telipogon reticulatus* Dressler

Orchideen J. 14(1): 14–16. 2007. TYPE: Panama. A. *Maduro* & E. *Olmos* 310 (holotype, MO!; Isotype: PMA).

Stem ca. 5 cm long, elongate. Leaves four–five, 1.3–5 cm long, 0.2–0.2–0.35 cm wide, narrowly elliptic, acute. Inflorescence – peduncle 1.5–3.5 cm long, raceme 6–10 cm long, two–four-flowered. Flowers medium-sized, greenish-yellow with extensive red-brown veins and reticulation on petals and lip, center pinkish-red, bristles red. Floral bracts 3.5 mm long, oblong ovate, acuminate. Pedicellate ovary 12–13 mm long. Sepals similar, keeled abaxial. Dorsal sepal 8.5 mm long, 3.5 mm wide, concave, lanceolate, acute. Lateral sepals 8.5 mm long, 3.5 mm wide, concave, lanceolate, acute, somewhat oblique. Petals 14–17 mm long, 13–14 mm wide, rhombic-ovate in outline, somewhat oblique, apex acuminate, veins 8–12, cross-venulate. Lip 11–13 mm long, 18–19 mm wide, transversely elliptic-obovate, subacute at the apex, widest above the base, basal part convex surrounding gynostemium base, hispid, veins 14–18, anastomosing. Gynostemium 3 mm long, clinandrium prominently three-lobed, with dorsal bristles 3 mm long and several bristles below stigma.

Ecology: Plants growing at the altitude of 2,000–2,300 m. Flowering in September.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Bocas del Toro, oberhalb Guadelupe. Alt. 2,000–2,300 m. September 2002. *A. Maduro & E. Olmos 310* (MO!, PMA).

Notes: This species can be characterized by a cross-venulate lip, what makes it similar to *Telipogon bombiformis*, *T. maduroi*, and *T. biolleyi*. Unlike that of these species, the basal part of its lip is convex, forming a kind of frame below the gynostemium. In all aforementioned taxa, the lip callus is very large, prominent, and much thickened.

L. *Telipogon nunnezzii* Dressler

Orchideen J. 14(1): 14, 15. 2007. TYPE: Panama. *A. Maduro & J. Nunez 249* (holotype, PMA).

Stem 3–3.5 cm long, elongate. Leaves several, 1.4–5 cm long, 0.9–2 cm wide, broadly oblong elliptic, acute. Inflorescence – peduncle 8 cm long, raceme 6–10 cm long, several-flowered. Flowers ca. 25 mm in diameter, petals yellow with green veining, basally red-brown colored, lip yellow with red-brown veins and reticulation, callus red-brown. Floral bracts 3 mm long, oblong ovate, acuminate. Pedicellate ovary 18–30 mm long. Sepals similar, keeled abaxial. Dorsal sepal 12 mm long, 5 mm wide, concave, lanceolate, acute. Lateral sepals 12 mm long, 5 mm wide, concave, lanceolate, acute, somewhat oblique. Petals 17–24 mm long, 20 mm wide, broadly ovate in outline, somewhat oblique, apex acuminate, veins 13, cross-venulate. Lip 19–21 mm long, 26–28 mm wide, very broadly obovate, acute at the apex, callus somewhat convex, with sparse dorsal hairs, veins 21–23, with numerous anastomoses. Gynostemium 3 mm long, clinandrium prominently three-lobed, hispid along margins.

Ecology: Plants growing at the altitudes of 1,400–2,000 m. Flowering in August and September.

Distribution: Panama.

Representative specimens: – PANAMA. **Chiriquí:** San Felix, Cerro Colorado, prensado de cultivo. September 11, 2001. *A. Maduro & J. Nuñez 249* (PMA); **Veraguas:** Cerro Colorado. Alt. 1,400 m. *R. Dressler 5083* (MO).

Notes: Dressler (2007) stated that this species is similar to *Telipogon fractus* and *T. caulescens*. It is distinct from the former species “in the continuous reticulations and unusual in the rather cupped flowers, rather than open and nearly flat.”

Telipogon nunnezzii can be easily distinguished from *T. fractus* and *T. monticola* by its 21–23-veined lip (vs. 12–17-veined).

LI. *Telipogon medusae* Dressler

J. Orchideenfreund. 13(3): 211–213. 2006. TYPE: Panama. *A. Maduro & E. Olmos 209* (holotypes, MO!; isotypes, PMA, FLAS, SEL; UGDA-DLSz! – copy).

Stem abbreviated, ca. 2–2.5 cm long. Leaves 3–10, 2–4.5 cm long, 0.3–0.9 cm wide, oblanceolate to oblong oblanceolate, acuminate. Inflorescence – peduncle 17–30 cm long, raceme 6–16 cm long, few- to many-flowered. Flowers small, greenish-yellow

with red-brown veins and reticulations on the lip, some veins red-brown basally on petals, callus pink. Floral bracts 1.5–2 mm long, ovate, acute. Pedicellate ovary 15–25 mm long. Sepals dorsally keeled. Dorsal sepal 6–7 mm long, 2.5–3 mm wide, ovate-lanceolate, acute at the apex. Lateral sepals 6–7 mm long, 2.5–3 mm wide, obliquely ovate-lanceolate, acute at the apex. Petals 9–12.5 mm long, 4.6–5 mm wide, oblong elliptic-lanceolate, somewhat oblique, acute at the apex, six–seven-veined, veins cross-venulate. Lip 6–6.5 mm long, 5.5–7 mm wide, ovate or elliptic-ovate in outline, acute at the apex, callus cordate-ovate, with short pink bristles, veins 13, cross-venulate. Gynostemium 4 mm long, short, covered with dark red bristles 1.5–2 mm long.

Ecology: Epiphytic plants growing at the altitudes of 2,000–2,200 m. Flowering in July.

Distribution: Panama.

Representative specimens: – PANAMA. **Chiriquí:** Cerro Punta, arriba de Guadalupe. Alt. 2,000–2,200 m. July 19, 2001. *A. Maduro & E. Olmos 209* (MO!, PMA, FLAS, SEL; UGDA-DLSz! – copy).

Notes: *Telipogon medusae* differs from other species with prominent, well-defined calli in the presence of a very long, slender peduncle that can reach up to 30 cm in length, and small flowers with a lip 6–6.5 × 5.5–7 mm. In other species, the lip is 2–3 times larger (11–23 × 16–22 mm).

LII. *Telipogon bombiformis* Dressler

Orchids (West Palm Beach) 72(2): 114. 2003. TYPE: Panama. *A. Maduro & E. Olmos s.n.* (holotype, MO).

Stem short, less than 0.5 cm long. Leaves two–three, 2–5.5 cm long, 0.4–1.1 cm wide, elliptic to oblong elliptic, acute, attenuate basally. Inflorescence – peduncle 2.5–8.5 cm long, one–three-flowered. Flowers medium-sized, apices of petals and lip yellow, rest with dark red veins and reticulations, flushed with red, callus and gynostemium dark red. Floral bracts 2.5–4 mm long, ovate, acuminate. Pedicellate ovary 17–40 mm long. Sepals keeled in the outside. Dorsal sepal 10–14 mm long, 1.5–2.5 mm wide, lanceolate, acute. Lateral sepals 10–14 mm long, 1.5–2.5 mm wide, lanceolate, somewhat oblique, acute. Petals 20–21 mm long, 11.5–14 mm wide, subunguiculate, rhombic, oblique, acuminate. Lip 13–23 mm long, 17–22 mm wide, transversely elliptic-rhombic, apiculate, basal callus 6–7 mm long, 13 mm wide, hollow, transversely elliptic, hispid, basally long-hispid, cross-venulate. Gynostemium 3 mm long, long-hispid.

Ecology: Epiphytic plants growing at the altitude of ca. 2,300 m. Flowering in December.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cerro Punta, Bajo Grande. Alt. 2,300 m. December 10, 2001. *A. Maduro & E. Olmos s.n.* (MO).

Notes: *Telipogon bombiformis* resembles *T. maduroi* and *T. biolleyi*. With both species, it shares a prominent, well-defined convex callus at the lip base, but in *T. bombiformis*, this is very large, transversely elliptic, and can occupy almost half of the lip. In *T. maduroi* and *T. biolleyi*, the lip callus is almost subquadrate and much smaller.

LIII. *Telipogon maduroi* Dressler

Orchids (West Palm Beach) 72(2): 116–117. 2003. TYPE: Panama. *A. Maduro & E. Olmos 190* (holotype, MO!).

Stem abbreviated, 2.5–5 cm tall. Leaves up to about 10, 1.5–4.5 cm long, 0.6–1.3 cm wide, elliptic or elliptic-oblong, acute, widest above the middle. Inflorescence – peduncle 2.5–17 cm long, raceme ca. 1–5 cm long, several-flowered. Flowers medium-sized, but large in relation to the plant size, petals and lip translucent white, main veins greenish-yellow, reticulations red-brown, gynostemium and bristles very dark red. Floral bracts 2–4 mm long, cucullate, ovate, acute, carinate. Pedicel and

ovary 9–14 mm long. Sepals subsimilar, keeled abaxial. Dorsal sepal 9–11 mm long, 3–6 mm wide, concave, ovate-lanceolate, acute. Lateral sepals 9–11 mm long, 3–6 mm wide, concave, ovate-lanceolate, acute, somewhat oblique. Petals 14–15.5 mm long, 9–14.5 mm wide, rhombic-ovate in outline, base cuneate, apex acuminate, veins six–seven. Lip 11–16 mm long, 16–20 mm wide, broadly rhombic, apiculate, callus 4 mm long and wide, low, rounded beneath, papillose with fine bristles, veins 8–13, cross-venulate. Gynostemium about 5 mm tall, clinandrium obscurely three-lobed, with bristles throughout, dorsal bristles 2–3 mm long.

Ecology: Epiphytic plants growing at the altitudes of 2,000–2,500 m. Flowering in July.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cerro Punta. Altos de Respingo. Alt. 2,000–2,500 m. July 6, 2001. A. *Maduro* & E. *Olmos* 190 (MO!).

Notes: *Telipogon maduroi* is similar to *T. biolleyi*, from which it can be distinguished by wider leaves, wider petals, and its gynostemium surface. In *T. maduroi*, the gynostemium is covered throughout with bristles, whereas in *T. biolleyi*, it is densely setose only on the upper surface, but pubescent below.

LIV. *Telipogon griesbeckii* Dressler (Figure 274)

Orchids (West Palm Beach) 72(2): 115–116. 2003. TYPE: Panama. A. *Maduro* 169 (holotype, MO!; Isotype: PMA).

Plant caespitose, stem 6–7 cm tall. Leaves 8–10, 1.5–5.5 cm long, 0.6–1.3 cm wide, elliptic to elliptic-oblongate, acute, widest near the middle or above. Inflorescence – peduncle 4.5–12 cm long, raceme 2–6 cm long, several-flowered. Flowers medium-sized, sepals greenish, petals and lip light yellow with red-purple veins and wide yellow margins, gynostemium and callus dark red. Floral bracts 4–5 mm long, cucullate, ovate, acuminate. Pedicel and ovary 15–27 mm long. Sepals subsimilar, keeled abaxially. Dorsal sepal 12–13 mm long, 4–5 mm wide, concave, lanceolate to narrowly ovate, acuminate, three-veined. Lateral sepals 12–13 mm long, 4–5 mm wide, concave, narrowly ovate to lanceolate, acuminate, somewhat oblique, three-veined. Petals 19–23 mm long, 10–19.5 mm wide, ovate to rhombic-ovate in outline, basally hispid, apex acuminate, veins 8–10, scarcely anastomosing. Lip 12–17 mm long, 19–25 mm wide, very broadly rhombic-obovate, acuminate, basal part convex, somewhat thickened, densely hispid, veins 13–17, scarcely anastomosing. Gynostemium about 3 mm tall, clinandrium obscurely three-lobed, with bristles in the dorsal surface ca. 3–4 mm long.

Ecology: Epiphytic plants growing at the altitude of ca. 2,100–2,200 m. Flowering in August.

Distribution: Panama.

Representative specimen: – PANAMA. **Chiriquí:** Cerro Punta, Entre Rios. Alt. 2,100–2,200 m. August 1993. A. *Maduro* 169 (MO!, PMA).

Notes: *Telipogon griesbeckii* resembles *T. fractus*. The best discriminative characterizing facilitating separation of the species seems to be the cover of the gynostemium, which has 3–4 mm long bristles on the dorsal surface in the former, and it lacks dorsal bristles in the latter, which additionally is basally hispid. *Telipogon griesbeckii* is also very similar to another Panamanian species, *T. nobilis*. To the best of our knowledge, the veins of the lip and petals of the former are only scarcely anastomosing, whereas in *T. nobilis*, they are cross-venulate.

LV. *Telipogon monticola* C. Schweinf. (Figure 275)

Fieldiana, Bot. 32(12): 202–204, f. 4. 1970. TYPE: Costa Rica. W. *Burger* & R. *Stolze* 5993 (holotype, F – photo!; isotype, US!).

Stem elongated, 8–40 cm tall, creeping, apically ascending. Leaves several, 2.5–4 cm long, 0.7–1.5 cm wide, elliptic, elliptic-lanceolate to obovate, apiculate, acute, widest near the middle or above. Inflorescence up to 30 cm long, laxly one–five-flowered. Flowers medium-sized, sepals greenish-yellow, petals and lip deep yellow, purplish

in the basal half. Floral bracts 3 mm long, cucullate, ovate, acuminate. Pedicel and ovary 20 mm long. Sepals subsimilar. Dorsal sepal 10–16 mm long, 4–8 mm wide, concave, lanceolate to narrowly ovate, acuminate, one-veined, vein with some branches. Lateral sepals 10–15 mm long, 4–7 mm wide, concave, narrowly ovate to lanceolate, acuminate, somewhat oblique, one-veined, vein branching. Petals 13–24 mm long, 10–19 mm wide, broadly ovate in outline, base cuneate, papillate and with a few silky hairs, apex acute to acuminate, veins seven–nine, main veins keeled in the lower part, cross-venulate. Lip 13 mm long, 15 mm wide, subreniform-orbicular, short acuminate, callus 5 mm long, 2 mm high, the back and sides with silky hairs, apex muricate-papillate, veins 15–17, cross-venulate. Gynostemium about 3 mm tall, clinandrium obscurely three-lobed, with bristles in the dorsal surface ca. 1–2 mm long.

Ecology: Epiphytic plants growing at the altitude of ca. 3,100 m. Flowering in June.

Distribution: Panama, Costa Rica.

Representative specimen: – COSTA RICA. Cordillera de Talamanca. Near Villa Mills at km 97 (5 km SE of summit). Alt. 3,100 m. June 19, 1968. *W. Burger & R. Stolze* 5993 (F – photo, US!).

Notes: *Telipogon monticola* is similar to *T. bombiformis* and *T. biolleyi*, from both of which it can be easily distinguished by its elongated, apically ascending stem. A somewhat similar habit can be found in *T. caulescens*, but its lip callus is less obvious. Two other species as which *T. monticola* can be misidentified are *T. nunnezzii* and *T. fractus*. The first one can be easily distinguished by its 21–23-veined lip, and the latter by a less obvious basal lip callus that is not as strongly thickened as in *T. monticola*.

LVI. *Telipogon biolleyi* Schltr. (Figure 276, Figure 277)

Repert. Spec. Nov. Regni Veg. 9(214–216): 293. 1911. TYPE (designated by Dodson & Escobar 1987: 37): Costa Rica. *P. Biolley 1340* (B†; lectotype: US! 577067; UGDA-DLSz! – drawing).

Stem abbreviated. Leaves three–four, 2.5–3.5 cm long, 0.5–0.7 cm wide, elliptic-lanceolate, acute or acuminate, attenuate basally. Inflorescence – peduncle 4–7 cm long, raceme up to 1.5 cm long, one–three-flowered. Flowers medium-sized. Floral bracts 2.5–4 mm long, ovate, concave, acuminate. Pedicellate ovary 25 mm long. Sepals keeled in the outside. Dorsal sepal 8–13 mm long, 5 mm wide, ovate, concave, acuminate, three- or five-veined, veins branching. Lateral sepals 10–13 mm long, 5 mm wide, obliquely ovate, concave, acute, vein one to five, simple to branching. Petals 18 mm long, 9 mm wide, subunguiculate, broadly ovate, oblique, acuminate, margins ciliolate, veins seven, branching and anastomosing, main veins basally keeled, papillate. Lip 12.5–15 mm long, 18–20 mm wide, transversely elliptic, base truncate, apex rounded, with short mucro, callus 5–6 mm long and wide, pentagonal, or rectangular, hispid, lamina papillate around callus, veins 11 to 19, cross-venulate, main veins basally keeled. Gynostemium 7 mm long, densely setose on the upper surface, with setae up to 3 mm long, pubescent below.

Ecology: Epiphytic plant growing in montane forest. Flowering in August.

Distribution: Costa Rica, Panama (Dressler, 2003).

Representative specimens: – COSTA RICA. In den Wäldern des Vulkan Barba. August 1889. *P. Biolley 1340* (US!, UGDA-DLSz! – drawing). *Sine loc. Hübsch s.n.* (W-R!). *Sine loc. A. Endres s.n.* (W-R!).

Notes: *Telipogon biolleyi* is characterized by narrow leaves (0.5–0.7 cm wide vs. 0.6–1.3 cm wide in *T. maduroi*), petals approximately twice as long as they are wide (vs. almost as long as wide), and a gynostemium that is setose on the upper surface and pubescent below (vs. setose throughout). The lip base of *T. maduroi* is broadly cuneate, whereas in *T. biolleyi*, it is truncate.

96. *Telipogon alvarezii* P. Ortiz

Orquideología 25(2): 125–126. 2008. TYPE: Colombia. *A. Alvarez sub P. Ortiz 1287* (holotype, HPUJ).

Plants small, 3–4 cm tall. Leaves five, basal, 2.4 cm long, 0.8 cm wide, oblong-elliptic, acute, widest near the middle. Inflorescence flexuose, alate, one–two-flowered. Flowers small, sepals greenish-yellow, petals and lip yellow with prominent red-maroon veins, gynostemium and callus red-pink. Floral bracts 5 mm long, ovate, concave, acute. Pedicellate ovary ca. 20 mm long, triquetrous. Dorsal sepal 4 mm long, 2 mm wide, oblong ovate, acute, one-veined. Lateral sepals 4 mm long, 2 mm wide, oblong ovate, acute, somewhat oblique, one-veined. Petals 6 mm long, 4 mm wide, suborbicular-obovate, acute, five-veined, veins simple, reddish. Lip 6 mm long, 5 mm wide, transversely elliptic-deltoid, acute, callus prominent combined with the gynostemium forming a large, central structure, five-veined, veins simple, except the median one which is scarcely branching. Gynostemium reddish, clinandrium prominently three-lobed, minutely ciliate on the upper surface, the middle lobe subquadrate, both lateral lobes trapezoid.

Ecology: Epiphyte at the altitude of 2,400 m. Flowering in September.

Distribution: Endemic to Colombia.

Representative specimen: – COLOMBIA. **Cundinamarca:** Fomeque. Alt. 2,400 m. September 23, 2007. A. Alvarez sub P. Ortiz 1287 (HPUJ).

Notes: *Telipogon alvarezii* is the only representative of this group of species reported from Colombia. It is a tiny plant with very small flowers. The unique characteristic of this species is its callus, which is overgrown into the gynostemium, forming a kind of quadri-lobed short tube, contrastingly colored from the perianth segments. The upper lobe of this tube corresponds to the middle clinandrium lobe, both lateral lobes correspond to lateral clinandrium lobes, and the lower lobe corresponds to the callus combined with a protrusion below the stigma. A similar structure can be found in the closely related Costa Rican *T. parvulus*, in which the lower lobe is more thickened and chin-like. Flowers of *T. alvarezii* are yellow with prominent red-maroon veins.

LVII. *Telipogon parvulus* C. Schweinf.

Bot. Mus. Leaf., Harvard Univ. 4(7): 123. 1937. TYPE: Costa Rica. J. Valerio 971 (holotype, F! – photo).

Plants small, about 7 cm tall in total. Leaves basal, 1.5 cm long, 0.2 cm wide, oblong-linear to linear, rounded at the apex with short apiculus. Inflorescence – peduncle 3.2 cm long, raceme laxly five–seven-flowered. Flowers small. Floral bracts 2 mm long, ovate, concave, acute. Pedicellate ovary ca. 11 mm long. Sepals obscurely keeled abaxially. Dorsal sepal 7 mm long, 3 mm wide, lanceolate, concave, acute, one-veined. Lateral sepals 6.7 mm long, 3 mm wide, oblong ovate, acute, concave, somewhat oblique, one-veined. Petals 10 mm long, 7 mm wide, elliptic-ovate, acute, somewhat oblique, base minutely papillose, minutely ciliate above, nine-veined, veins simple. Lip 7.2 mm long, 9.8 mm wide, rhombic-obovate, rounded to subacute at the apex, base papillose, minutely ciliate above, 14-veined, veins simple, callus prominent combined with the gynostemium forming a large, central structure, velutinous. Gynostemium - clinandrium prominently three-lobed, long-setose on both lateral lobes.

Ecology: Epiphyte. Flowering in September.

Distribution: Costa Rica, Panama.

Representative specimen: – COSTA RICA. **San José:** Near La Holanda. September 29, 1934. J. Valerio 971 (F! – photo, UGDA-DLSz! – photo, drawings).

Notes: As stated above, *Telipogon parvulus* appears to be related to its Colombian congener *T. alvarezii*, with which it shares a similar gynostemium combined with the callus. Both species can be easily distinguished by the number of veins in the lip (14 in *T. parvulus* vs. five in *T. alvarezii*) and petals (five vs. nine, respectively). Additionally, flowers of *T. parvulus* are larger than in *T. alvarezii*, although leaves are smaller and very narrow. The lip of the former species is wider than it is long (vs. slightly longer than wide).

3.2.1.3. Insufficiently Known Species

The following species have been described mostly by Reichenbach based on flowers only, without description of vegetative parts. Therefore, we are not able to classify them into any group described above. Moreover, despite repeated searches, we were not able to locate their type specimens in the Vienna Herbarium.

***Telipogon albertii* Rchb. f. (Figure 278)**

Linnaea 41(1): 27. 1876. TYPE: [Colombia]. A. Bruchmüller *s.n.* (holotype, W!).

Inflorescence two-flowered, delicate. Floral bracts ca. 5 mm long, triangular, carinate, ovate. Pedicel and ovary 14 mm long. Dorsal sepal 9 mm long, lanceolate, subacute, three-veined. Lateral sepals 8 mm long, lanceolate, three-veined. Petals 9 mm long, 6.5 mm wide, ovate, apiculate, obtuse, nine-veined, veins anastomosing. Lip 8 mm long, 11 mm wide, transversely elliptic, basally concave and here ciliate along margins, with a short, obtuse apiculus at the apex, 17-veined, veins anastomosing, basal margin ciliate. Gynostemium with long, setose hairs 1.8 mm long.

Representative specimen: – [Colombia]. Ocaña. A. Bruchmüller *s.n.* (W).

***Telipogon dubius* Rchb. f.**

Linnaea 41: 104. 1876. TYPE: [Colombia] N. Granada. G. Wallis *s.n.* (not localized).

Sepals linear-triangular, three-veined. Petals oblong-triangular, acute, 15-veined. Lip basally broadly triangular, acute, 23-veined.

Representative specimen: – [Colombia]. N. Granada. G. Wallis *s.n.* (not localized).

***Telipogon felinus* Rchb. f.**

Linnaea 41: 4. 1877. TYPE: [Colombia]. B. Roetzl *s.n.* (W).

Floral bracts 11 mm long, triangular, carinate. Dorsal sepal 20 mm long, 6 mm wide, ligulate, subacute, five-veined, veins simple. Lateral sepals 18 mm long, 7 mm wide, oblong-ovate, subobtuse, five-veined, veins simple. Petals 26 mm long, 20 mm wide, rhombic, rounded at the apex, base ciliate, 11–13-veined, veins simple. Lip 20 mm long, 29 mm wide, transversely elliptic, apex rounded, minutely incised, margin glabrous, base with ciliate rim, disc papillate in the basal half, otherwise glabrous, veins 21 or 23, simple. Gynostemium with short hairs.

Representative specimens: – [COLOMBIA]. Sierra Nevada. B. Roetzl *s.n.* (W), The same loc. B. Roetzl 7 (W-R!).

***Telipogon kalbreyerianus* Kraenzl.**

Ann. K. K. Naturhist. Hofmus. 33: 36. 1920. TYPE: Colombia. W. Kalbreyer 1721C (holotype, W; Isotype: HBG).

Only apical part of the plant preserved in herbarium material. Leaves three (present in the herbarium material), basally cuneate, sheathing, blade up to 4 cm long, 2 cm wide, oblong, obtuse, minutely apiculate. Peduncles elongate, up to 25 cm long, few-flowered (ca. six), flowers distant. Floral bracts 4 mm long, triangular, acute, apex reflexed. Pedicellate ovary up to 20 mm long. Sepals 15 mm long, 3.5 mm wide, ovate-triangular, acuminate, three-veined. Petals 20 mm long, 12 mm wide, broadly oblong, acute, 13-veined, veins basally reticulate. Lip 20 mm long, 18 mm wide, broadly ovate, subcordate, acute, 21-veined, margin glabrous. Gynostemium dorsally with white-bristled.

Representative specimen: – COLOMBIA. **Antioquia:** Bei Frontino. Alt. 2,300 m. August. W. Kalbreyer 1721C (HBG, W).

***Telipogon nitens* Rchb. f.**

Linnaea 41: 4. 1877[1876]. TYPE: Colombia. B. Roetzl *s.n.* (W?).

Peduncle narrowly fractiflex, few-flowered, flowers distant. Floral bracts carinate. Pedicellate ovary much longer than bracts. Sepals narrowly triangular, three-veined. Petals 11-veined. Lip broadly ovate, 17-veined, veins reticulate.

Representative specimen: – COLOMBIA. *B. Roezl s.n.* (W?).

***Telipogon roezlii* Rchb. f. (Figure 279)**

Linnaea 41: 4. 1877[1876]. TYPE: Colombia. S. Nevada. *B. Roezl s.n.* (W?).

Dorsal sepal 23 mm long, 7 mm wide, ovate, obtuse, three-veined. Lateral sepals 24 mm long, 8 mm wide, obliquely ovate, obtuse, three-veined. Petals 25 mm long, 27 mm wide, transversely elliptic, subacute, nine- or 11-veined, veins simple. Lip 25 mm long, 35 mm wide, transversely elliptic-subrhombic, apex with small, obtuse apiculus, 17(21)-veined, veins simple.

Representative specimen: – COLOMBIA. S. Nevada. *B. Roezl s.n.* (W?).

***Telipogon zephyrinus* Rchb. f. (Figure 280)**

Linnaea 41: 71. 1877[1876]. TYPE: [Colombia]. *A. Bruchmüller s.n.* (W).

Pedicel with ovary 30 mm long. Dorsal sepal 18 mm long, 6 mm wide, ovate, obtuse. Lateral sepals 19 mm long, 5 mm wide, obliquely ovate, obtuse, three-veined. Petals 20 mm long, 16 mm wide, subrhombic, obtuse, (two–three)seven-veined, veins simple, margin ciliolate. Lip 18 mm long, 22 mm wide, suborbicular-ovate, acute, base papillate, lip margin ciliolate, basal margin thickened and papillate, apiculate, seven-veined.

Representative specimen: – COLOMBIA. Ocaña. *A. Bruchmüller s.n.* (W).

4. DISCUSSION

The most comprehensive phylogenetic study of *Telipogon* and related genera was published by Neubig et al. (2012). The authors analyzed sequences of ITS nrDNA and several plastid regions (*matK* exon, *trnH-psbA* intergenic spacer and two portions of *ycf1* exon) of 34 identified species and eight unnamed taxa of Telipogoninae. This study describes approximately 15% of all known species of this group. In their analyses, about 50% of samples represented Mesoamerican species.

Results of their investigations were very interesting and unexpected. Neubig et al. (2012) demonstrated the polyphyletic character of *Stellilabium* and its nesting in the *Telipogon* clade. *Hofmeisterella* was placed at the base of the *Telipogon* core as a sister to *Trichoceros*, and both *Hofmeisterella* and *Trichoceros* were considered sisters to the *Telipogon-Stellilabium* group.

A well supported group of *Telipogon* s. str. comprise Mesoamerican species. In terms of morphology, they can be characterized by the following set of characteristics: a relatively long stem with numerous leaves; rather large leaves, oblanceolate to oblong obovate, widest below the apex, and relatively thin; an elongate, slender scape, usually much exceeding the stem and terminated with few flowers; relatively small, resuspinate flowers, usually with a prominent basal lip callus derived at the lip base by its convexity. There are, of course exceptions, to the above descriptions, but we can suppose they are secondarily-derived characteristics.

The other monophyletic group of *Telipogon* s. str. appears to comprise *T. nervosus*-related species (only four taken into consideration in this analysis). They have elongate, ascending stems covered by numerous small leaves that usually are widest at the base and relatively thick, with an acute/apiculate apex, and an elongate, much exceeding scape with a few medium-sized flowers at the top. They are relatively diversified in lip and callus morphology. Interestingly, *T. nervosus* and its congeners are sisters to *Stellilabium*.

The third monophyletic group of *Telipogon* s. str. comprises species related to *T. pulcher*. These taxa can be characterized by short, erect stems with few, rather fleshy leaves that are usually oblanceolate to oblong obovate and most often widest above the middle, a relatively short scape hardly exceeding the leaves and bearing

some, usually large and showy, non-resupinate flowers with variously developed basal lip calli. Notably, *T. venustus*, which appears to be morphologically similar to *T. nervosus*, is a sister to this clade.

It is not uncommon for results of molecular analysis to be in conflict with those of morphological approaches. A situation analogous to the *Stellilabium-Telipogon* pair is known in some other orchid genera. Probably one of the best examined examples is a pair of Palaeartctic genera, *Nigritella-Gymnadenia* (Brandrud et al., 2019). Species of both taxa are obviously morphologically different; some markers however, place species in intermixed groups. Species of *Nigritella* have dense, subglobose inflorescence with non-resupinate, usually dark-colored flowers producing short, sac-like spurs, whereas *Gymnadenia* species have elongate inflorescences with resupinate, brightly colored flowers and thin, long spurs. Therefore, these genera can be easily separated morphologically. All ITS-based analyses published so far (Bateman et al., 2003, 2006; Pridgeon et al., 1997; Stark et al., 2011) have shown *Nigritella* to be embedded within *Gymnadenia*. Additionally, phylogenetic analyses combining ITS with other sequence data have also shown such a pattern (Inda et al., 2012; Sun et al., 2015). Because of its high variability, the ITS region has been used extensively to analyze species delimitations and relationships in many groups of flowering plants (Álvarez & Wendel, 2003; Baldwin et al., 1995). Several genetic mechanisms are known to contribute to the molecular evolution of ITS regions and should be kept in mind in any critical analyses (Brandrud et al., 2019). These mechanisms result in sequence divergence, incomplete lineage sorting, and homogenization. For these reasons, analysis of ITS sequence data may not necessarily reflect organismal phylogeny (Álvarez & Wendel, 2003), which is often ignored.

Brandrud et al. (2019) revealed a sister group relationship between *Gymnadenia* and *Nigritella* supported by RADseq. Restricted gene flow between the two genera may explain why specific gene trees are discordant with the species tree topology.

5. CONCLUSIONS

The diversity of *Telipogon* s. str. in Colombia was previously poorly recognized. The type material of numerous species described in the past was found to be poorly preserved and/or incomplete. This monograph is the first attempt at revealing the actual variation of genus representatives in the study area. In the future, this monograph will support more detailed biogeographical and molecular analyses. The lack of comprehensive research on morphology of *Telipogon* species and lack of regional identification keys have resulted in frequently incorrect identification of plants belonging to this genus, which we noted in numerous herbaria (based on previous herbarium labels).

The diagnostic characteristics in delimitation of *Telipogon* species are related mostly to the morphology of petals and lips, as well as gynostemium details. Based on flower morphology, 25 new species are described in this work.

We believe that, by facilitating identification of *Telipogon*, this study will be especially helpful for local botanists. The correct determination of plants is crucial for establishment of comprehensive and reliable conservation plans, which are urgently needed in the highly biodiverse tropical regions of the world.

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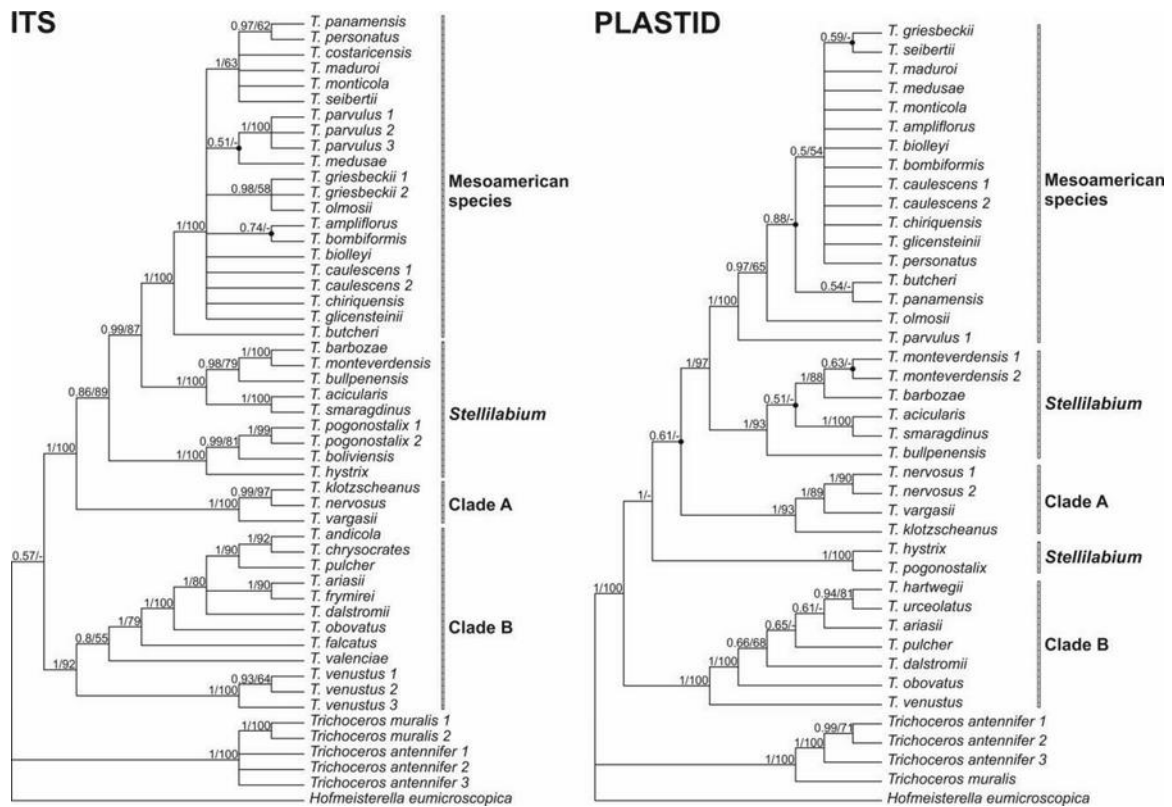


Figure 1 Phylogeny of *Telipogon* reconstructed based on ITS and plastid (*matK*, *ycf1*, *trnL-trnF*, *psbA-trnH*) markers.

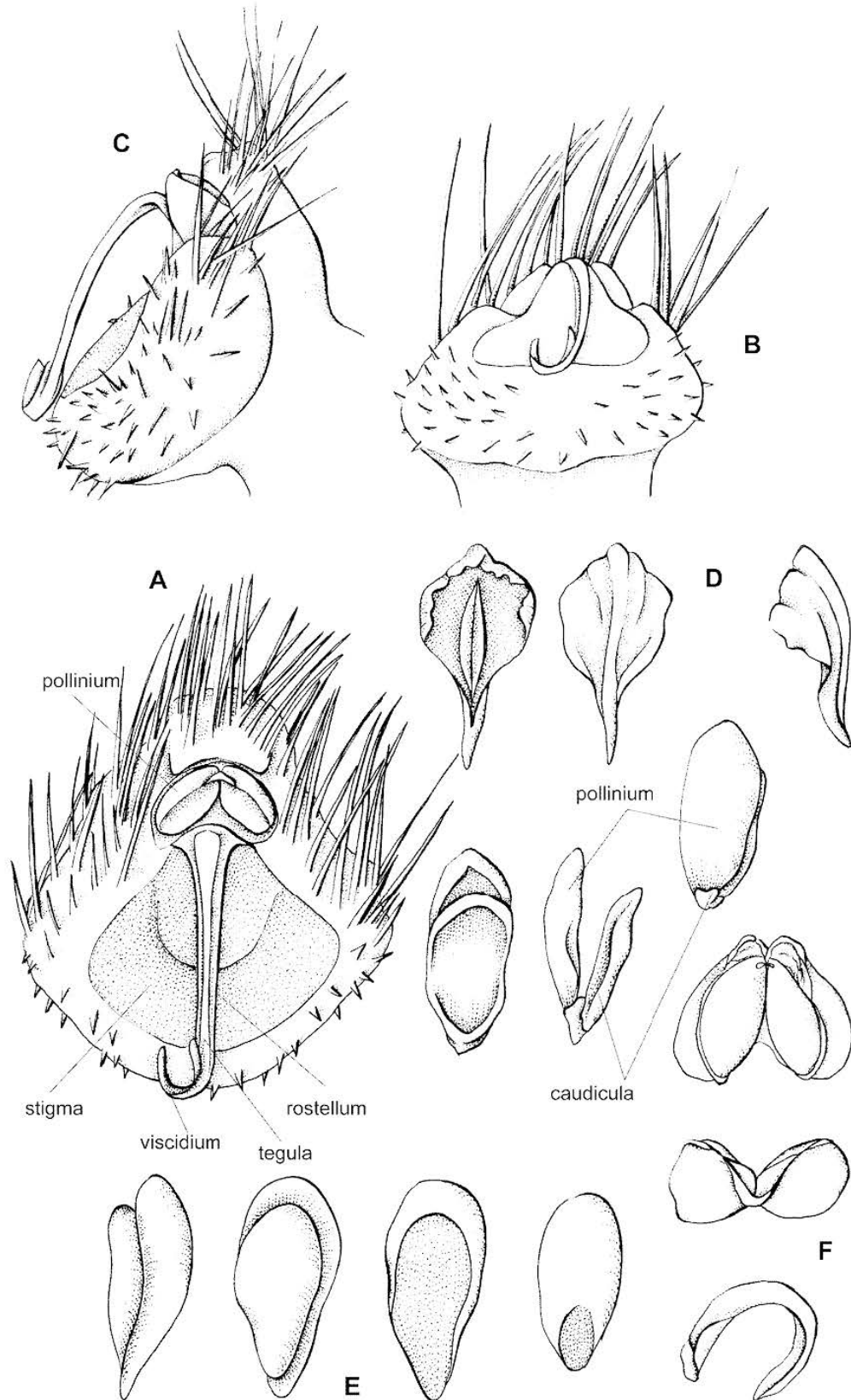


Figure 2 Gynostemium of *Telipogon*. *Telipogon bidleyi* Schltr. (A,B) Gynostemium, bottom view, (C) gynostemium, side view, (D) anther, (E) pollinia, various views, (F) viscidium, side view (*Jenny Vo-414*, DLSz). *Telipogon* sp. (G) pollinia, various views (Szlachetko & Mytnik-Ejmont, 2009).

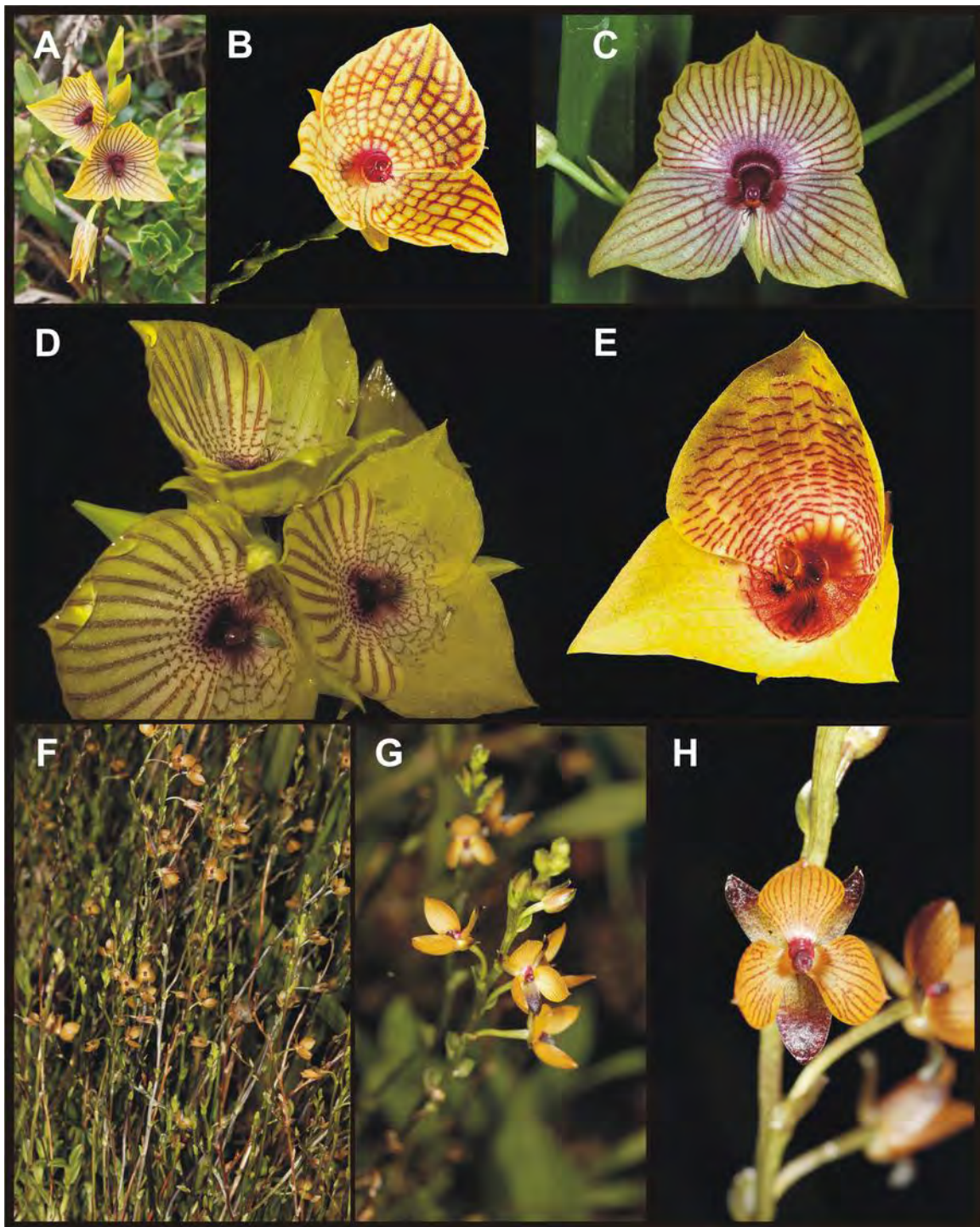


Figure 3 Representatives of *Telipogon* subgenus *Telipogon*. (A) *Telipogon nervosus* (photo: L. C. Piña & M. L. Hincapié), (B) *T. ionopogon* (photo: A. Hirtz), (C) *T. klotzscheanus* (photo: T. Kusibab), (D) aff. *T. penningtoni* (photo: E. Santiago Ayala), (E) *T. sanchezii* (photo: A. Hirtz), (F–H) *T. venustus* (photo: T. Kusibab).

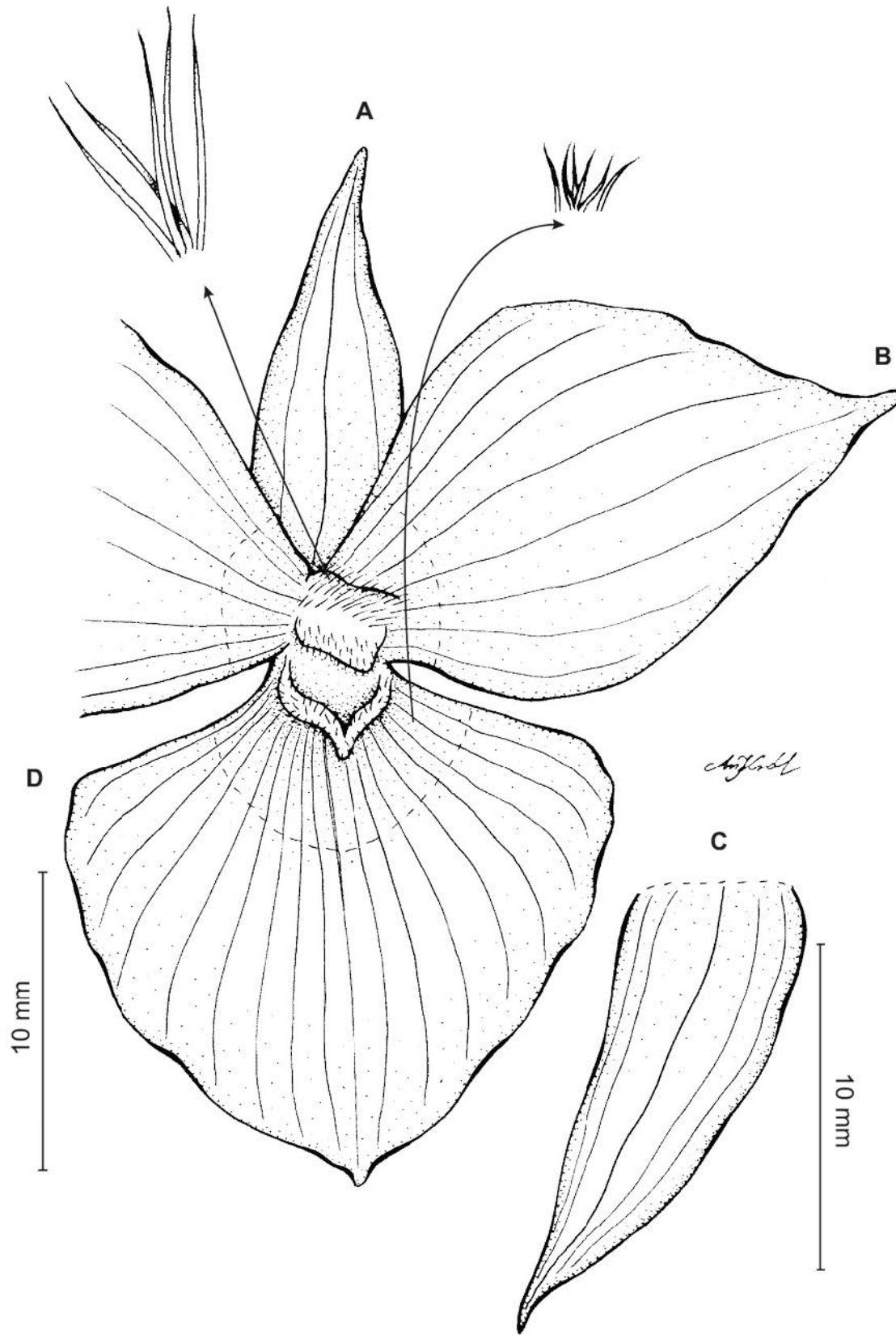


Figure 4 *Telipogon suffusus* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip. Drawn by A. Król from *Sine coll.* 46 (W-R).

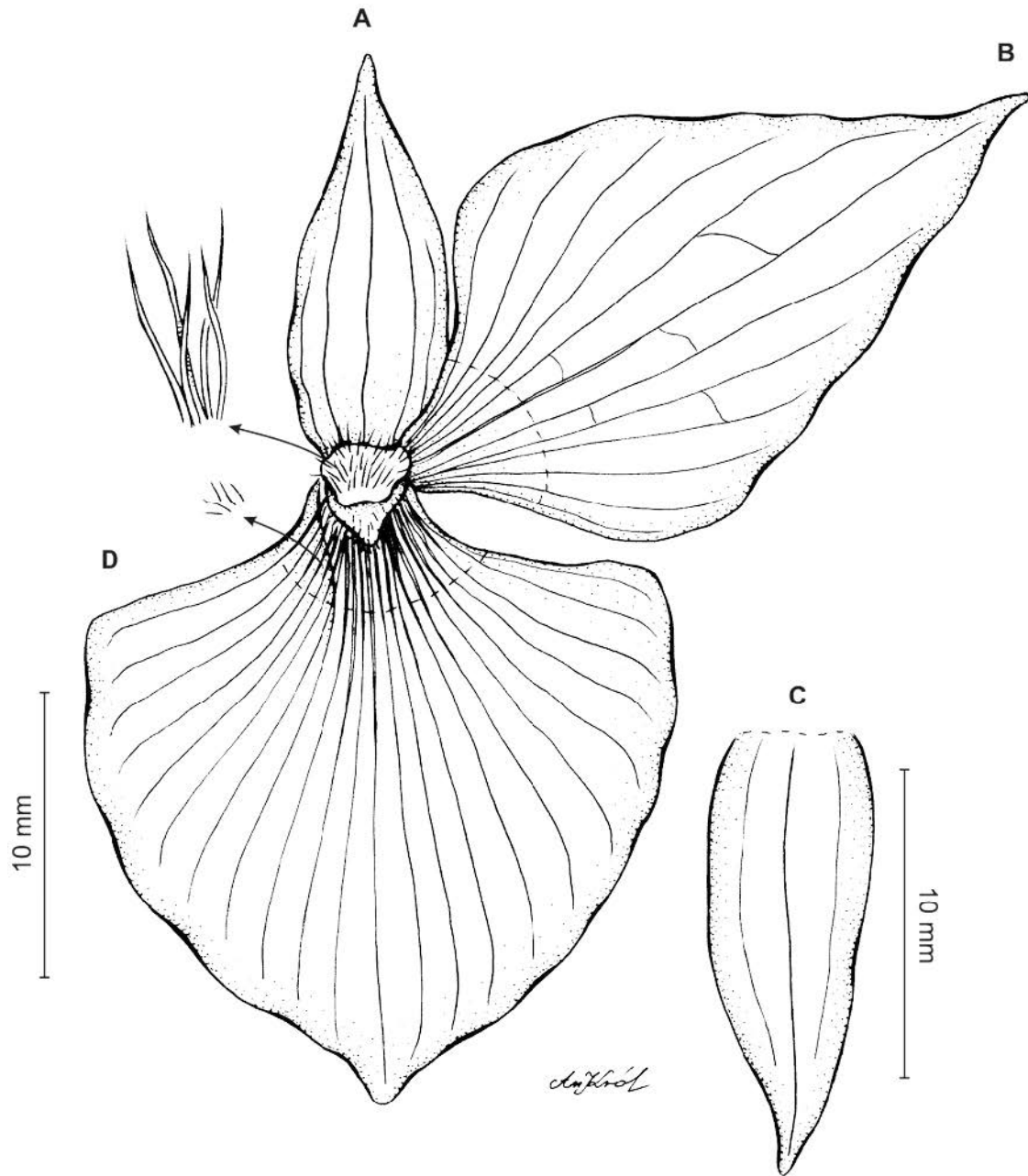


Figure 5 *Telipogon suffusus* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Lehmann 9 (WR 30109).

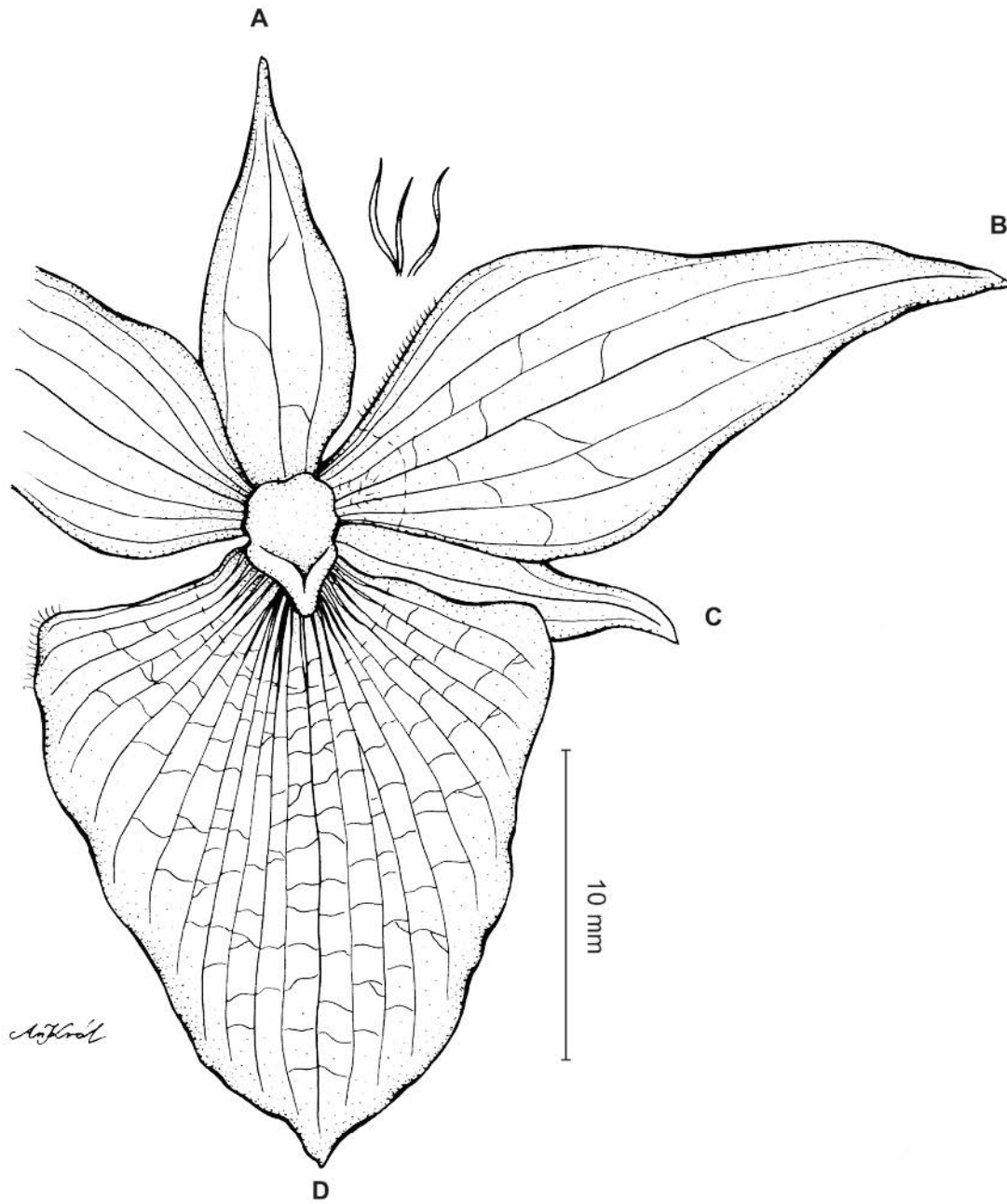


Figure 6 *Telipogon hastatus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Bruchmüller s.n. (W-R).

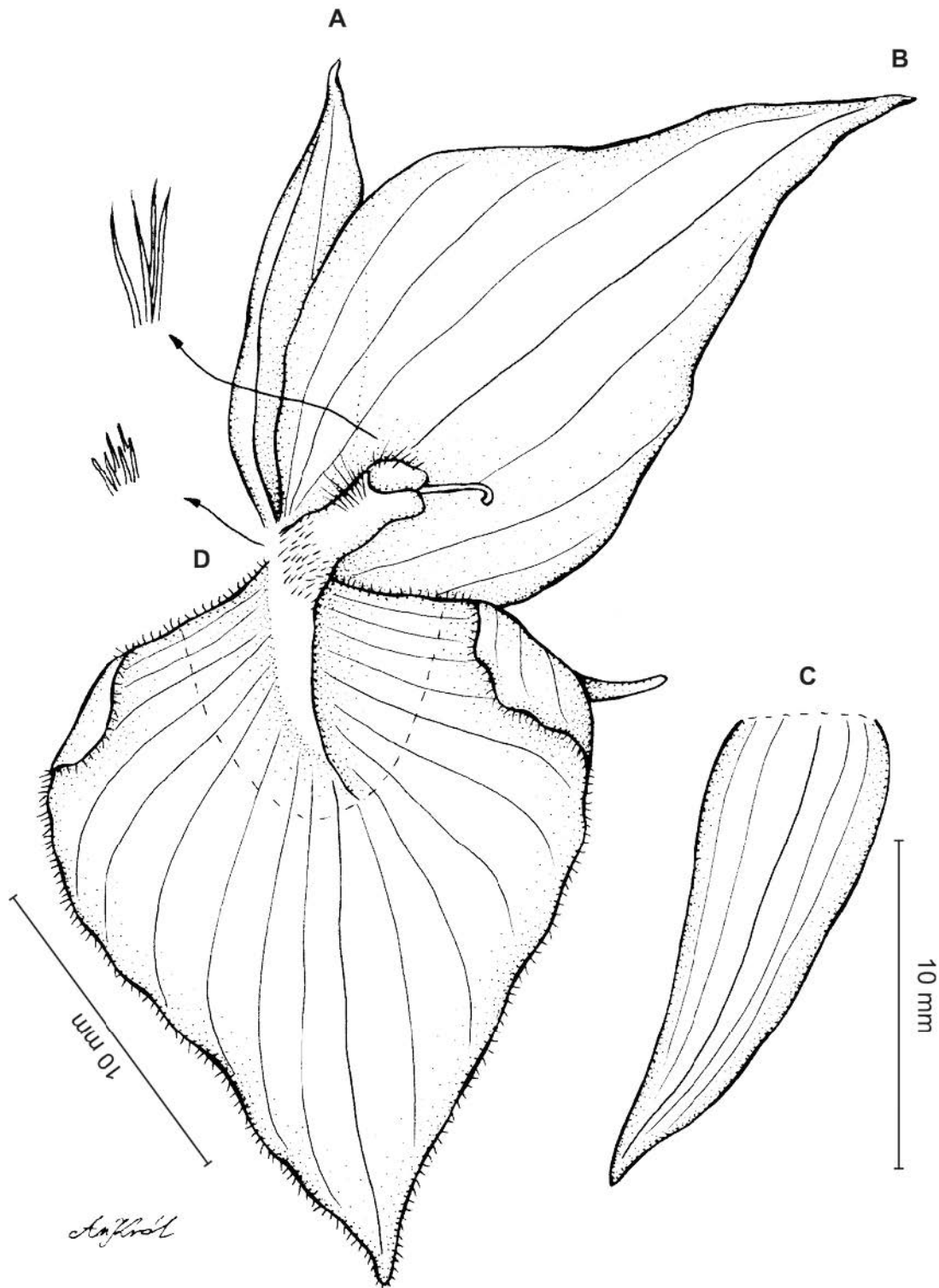


Figure 7 *Telipogon klotzscheanus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Moritz 1614 (W-R).



Figure 8 *Telipogon klotzscheanus* (photo: T. Kubala).



Figure 9 *Telipogon klotzscheanus* (photo: T. Kusibab).

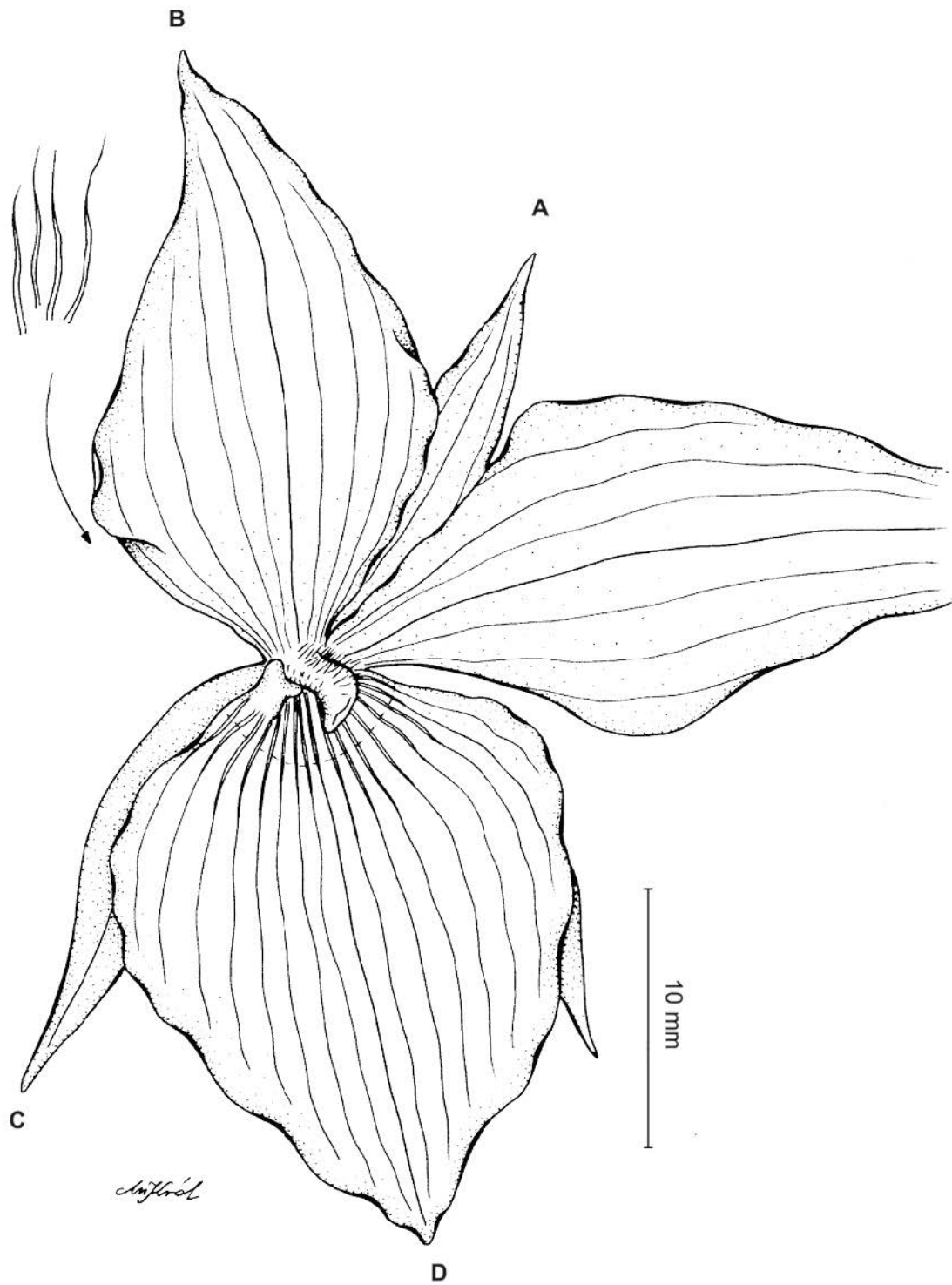


Figure 10 *Telipogon auritus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Bruchmüller s.n. (WR 30520).

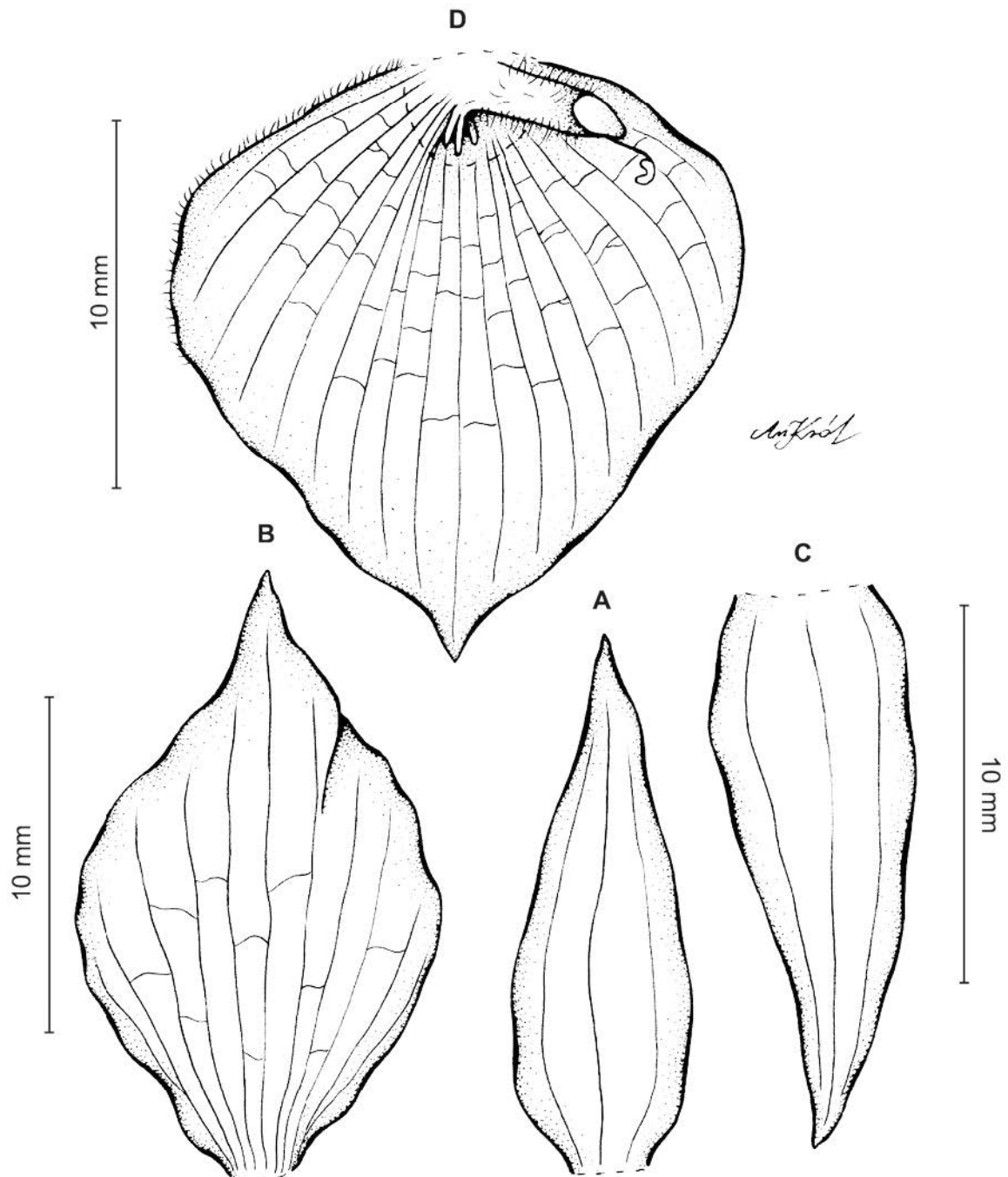


Figure 11 *Telipogon ionopogon* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Poortmann 516 (P).

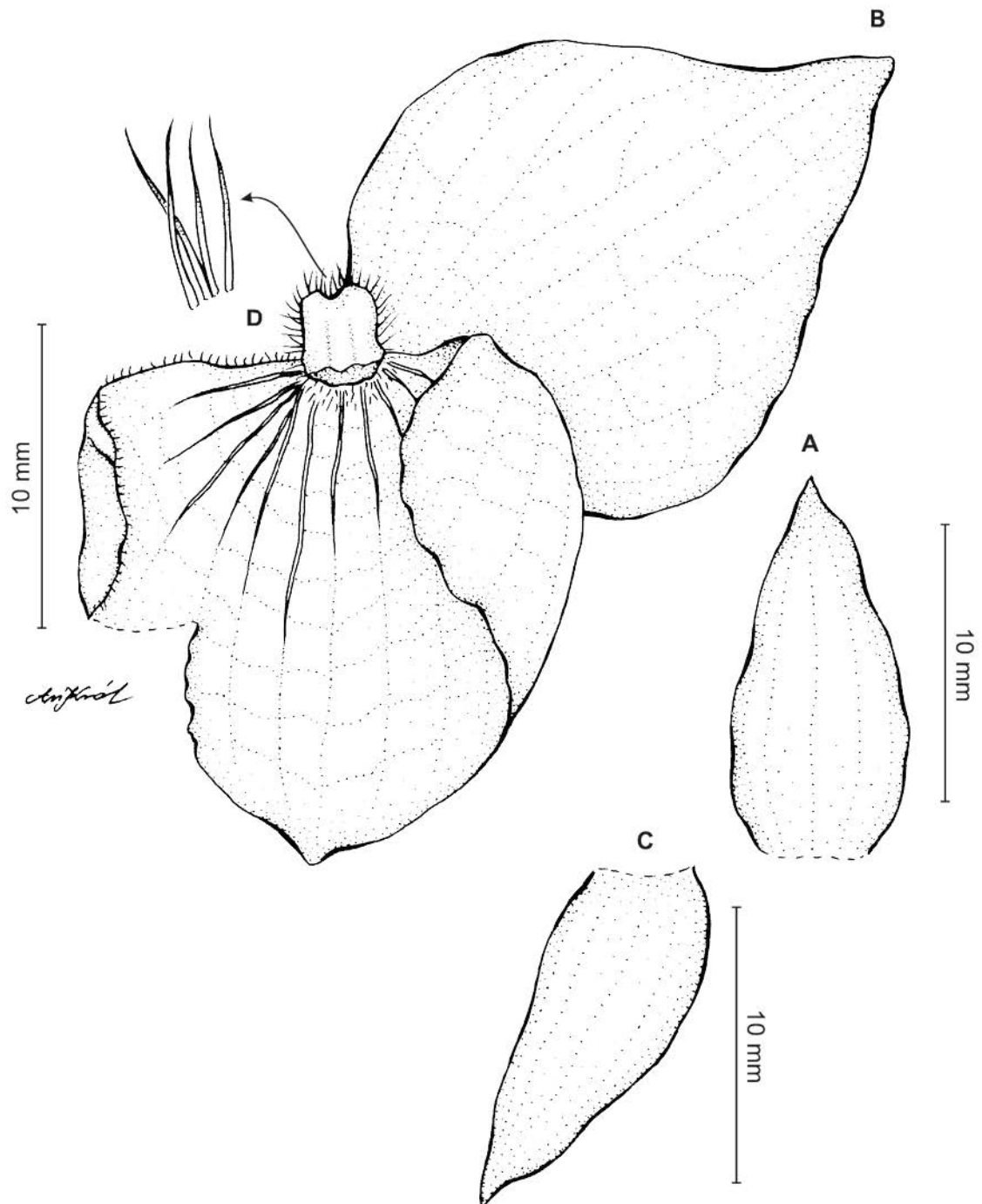


Figure 12 *Telipogon ionopogon* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Krause 14 (W-R).

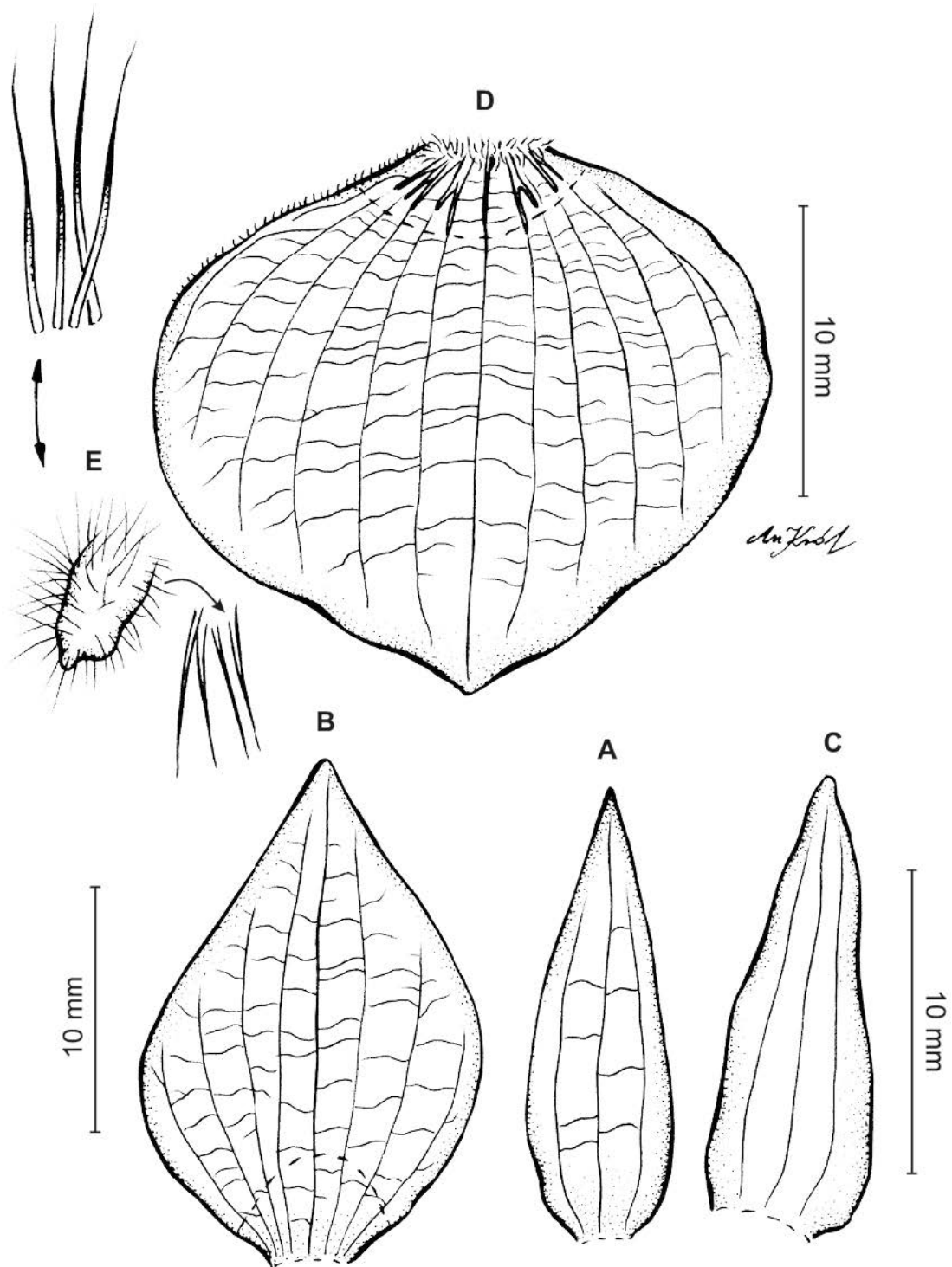


Figure 13 *Telipogon ionopogon* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Garay 750 (AMES).



Figure 14 *Telipogon ionopogon* (photo: A. Hirtz).



Figure 15 *Telipogon sanchezii* (photo: A. Hirtz).

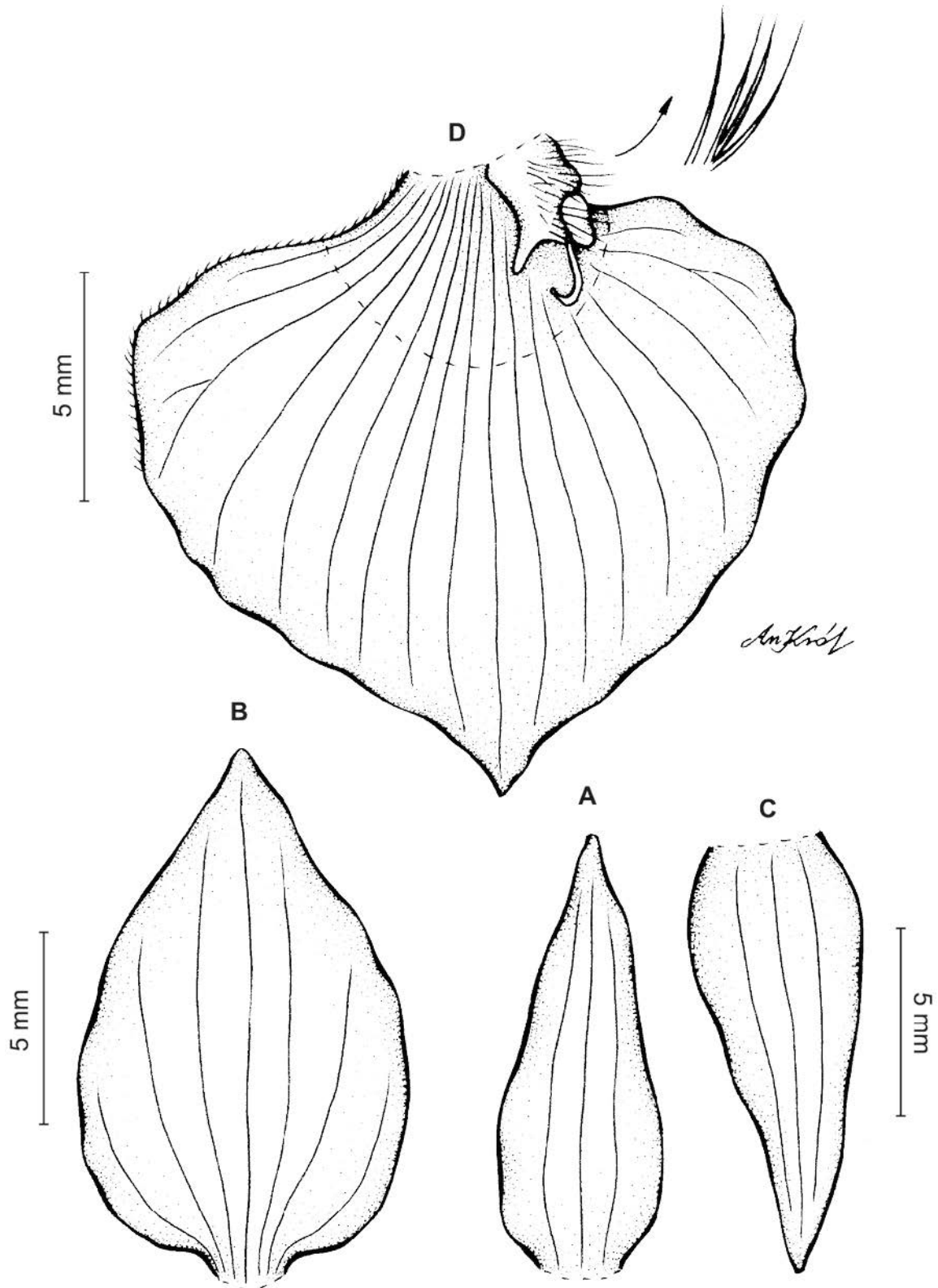


Figure 16 *Telipogon trianae* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Triana 1471.71* (P).

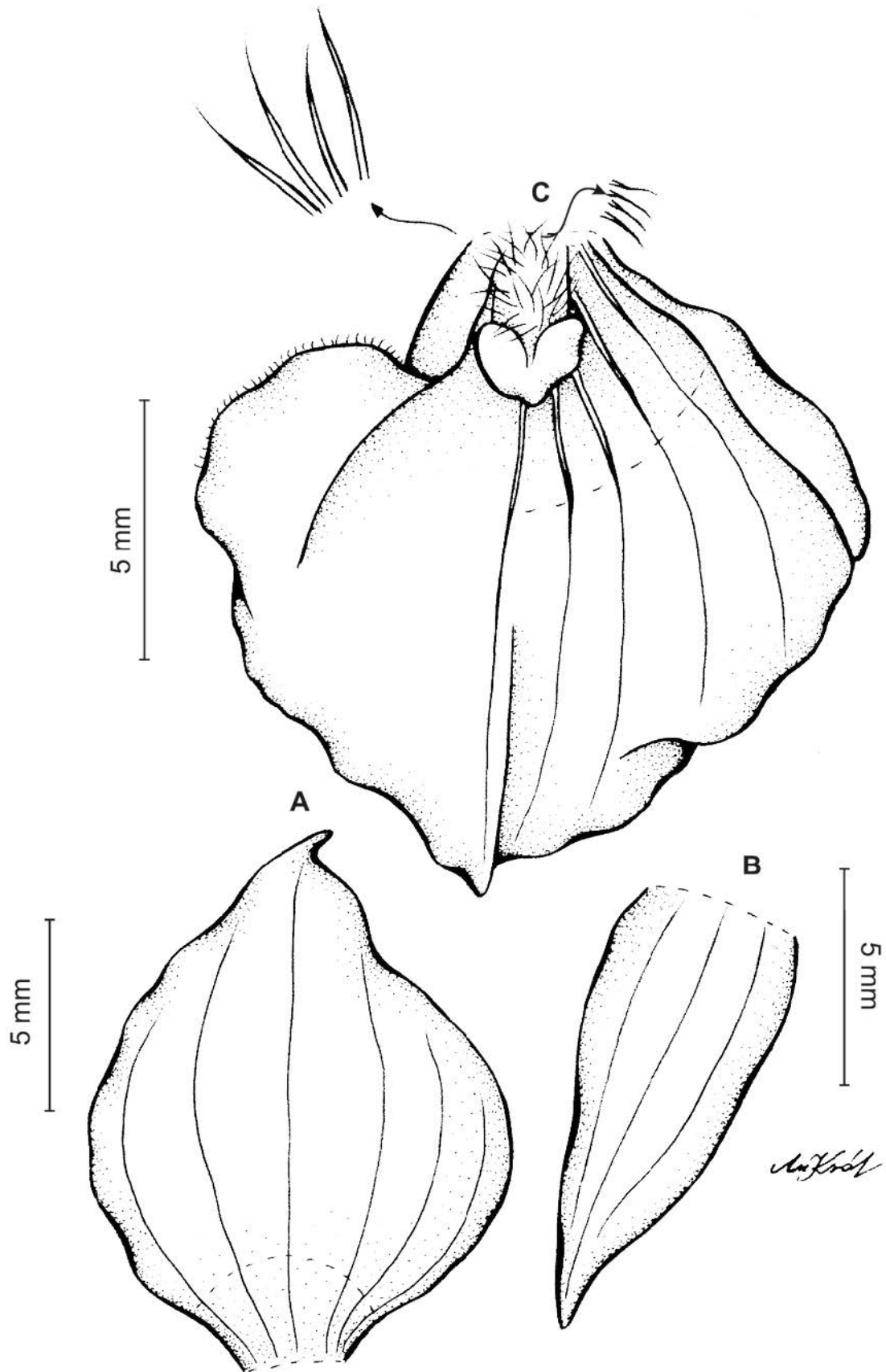


Figure 17 *Telipogon trianae* Szlach. & Kolan. (A) Dorsal sepal, (B) lateral sepal, (C) lip and gynostemium. Drawn by A. Król from *Triana 1471* (AMES).

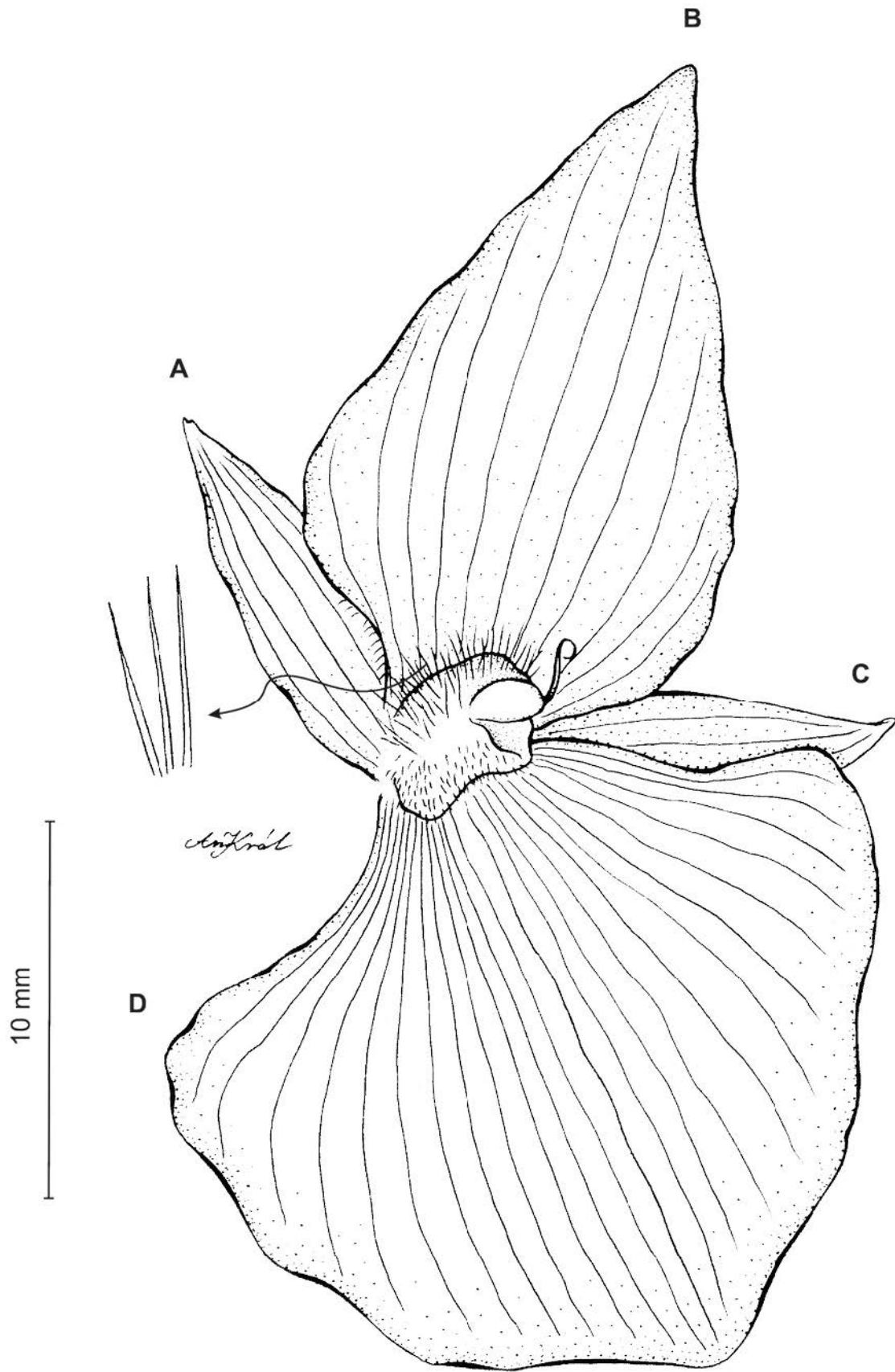


Figure 18 *Telipogon bowmanii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Bowman *s.n.* (W-R).

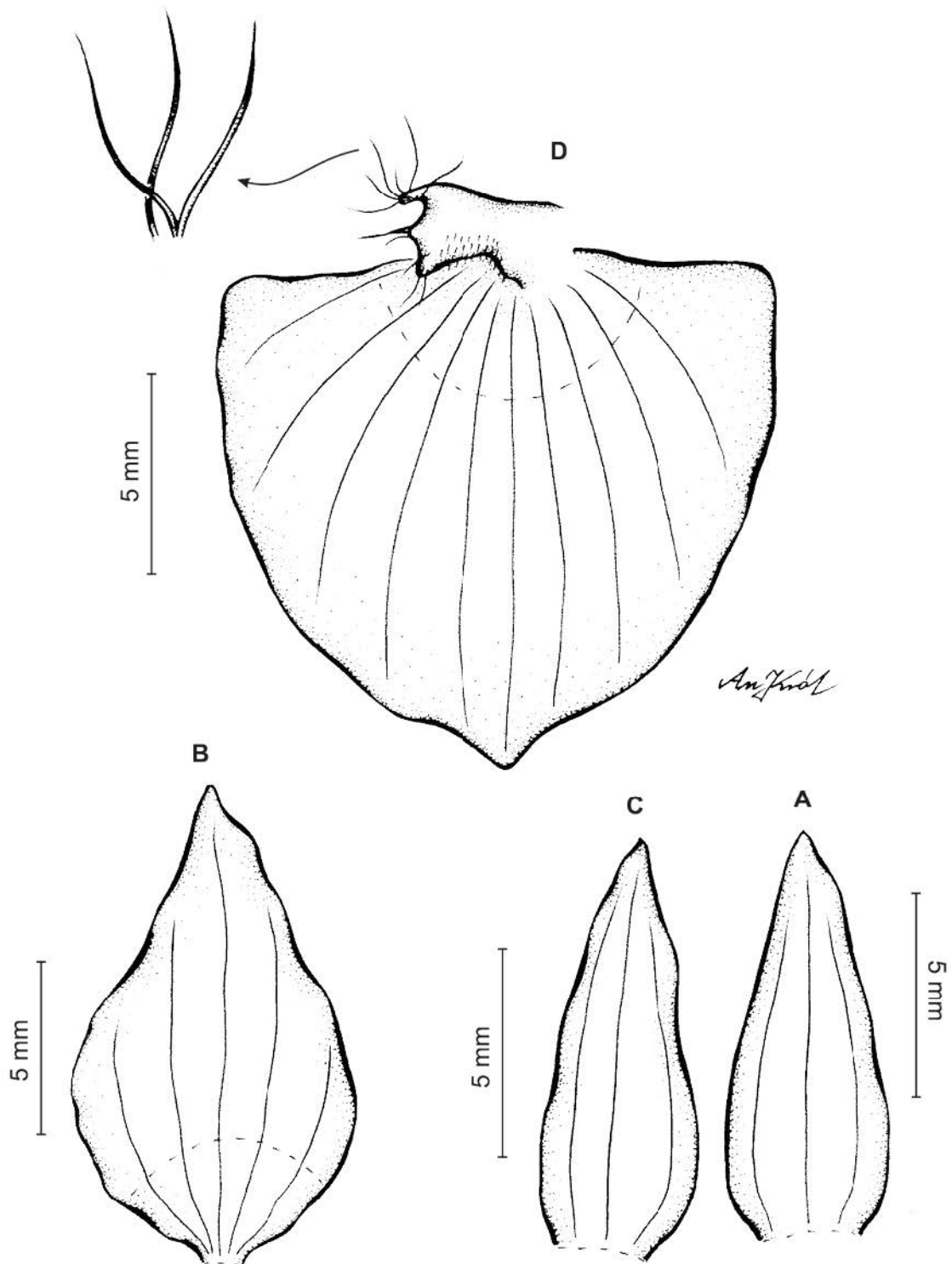


Figure 19 *Telipogon penningtonii* Dodson & R. Escobar. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Grubb & al. 1256 (AMES).



Figure 20 *Telipogon* aff. *penningtoni* (photo: E. S. Ayala).

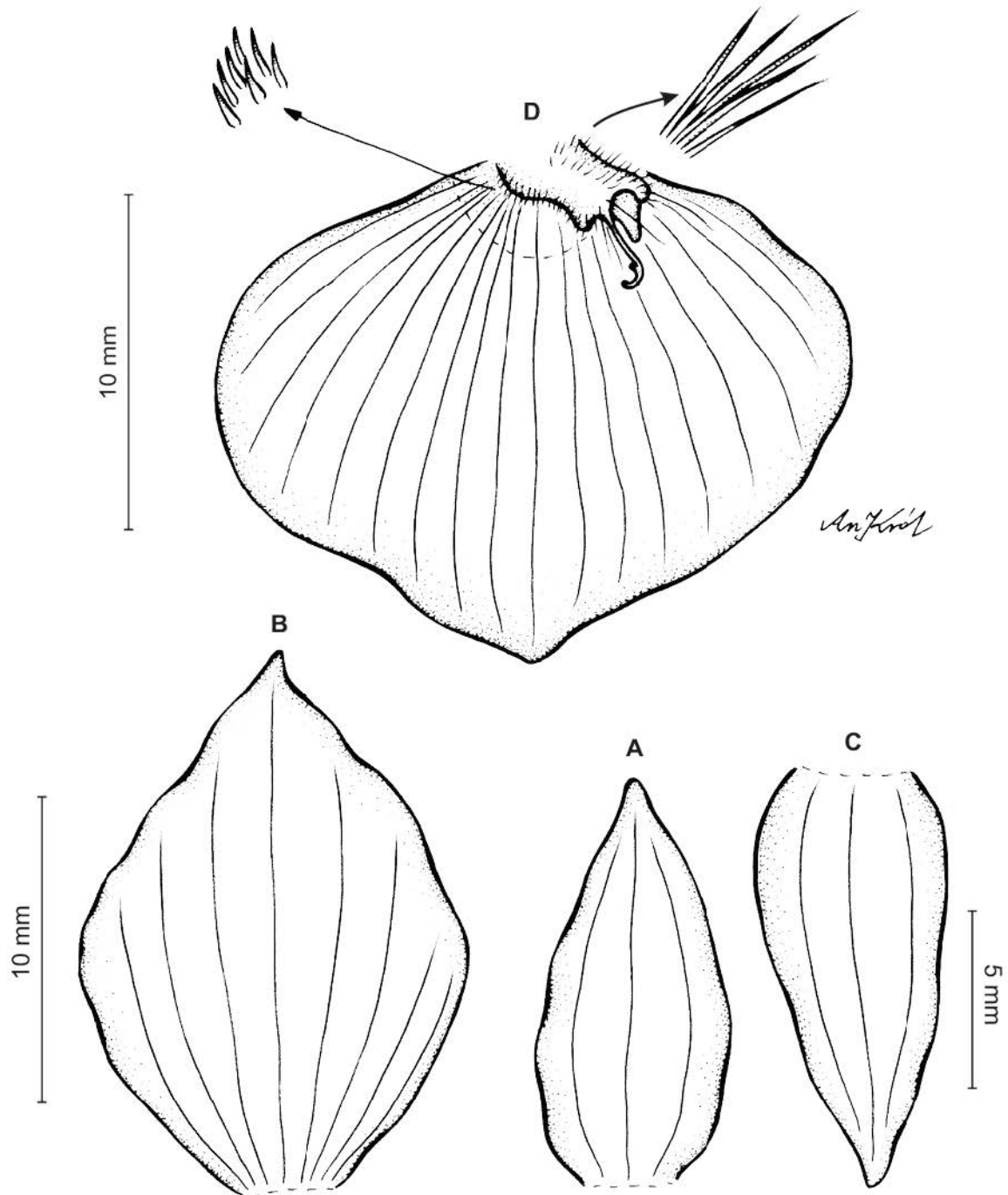


Figure 21 *Telipogon verrucosus* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Jaramillo & al. 7162 (COL).

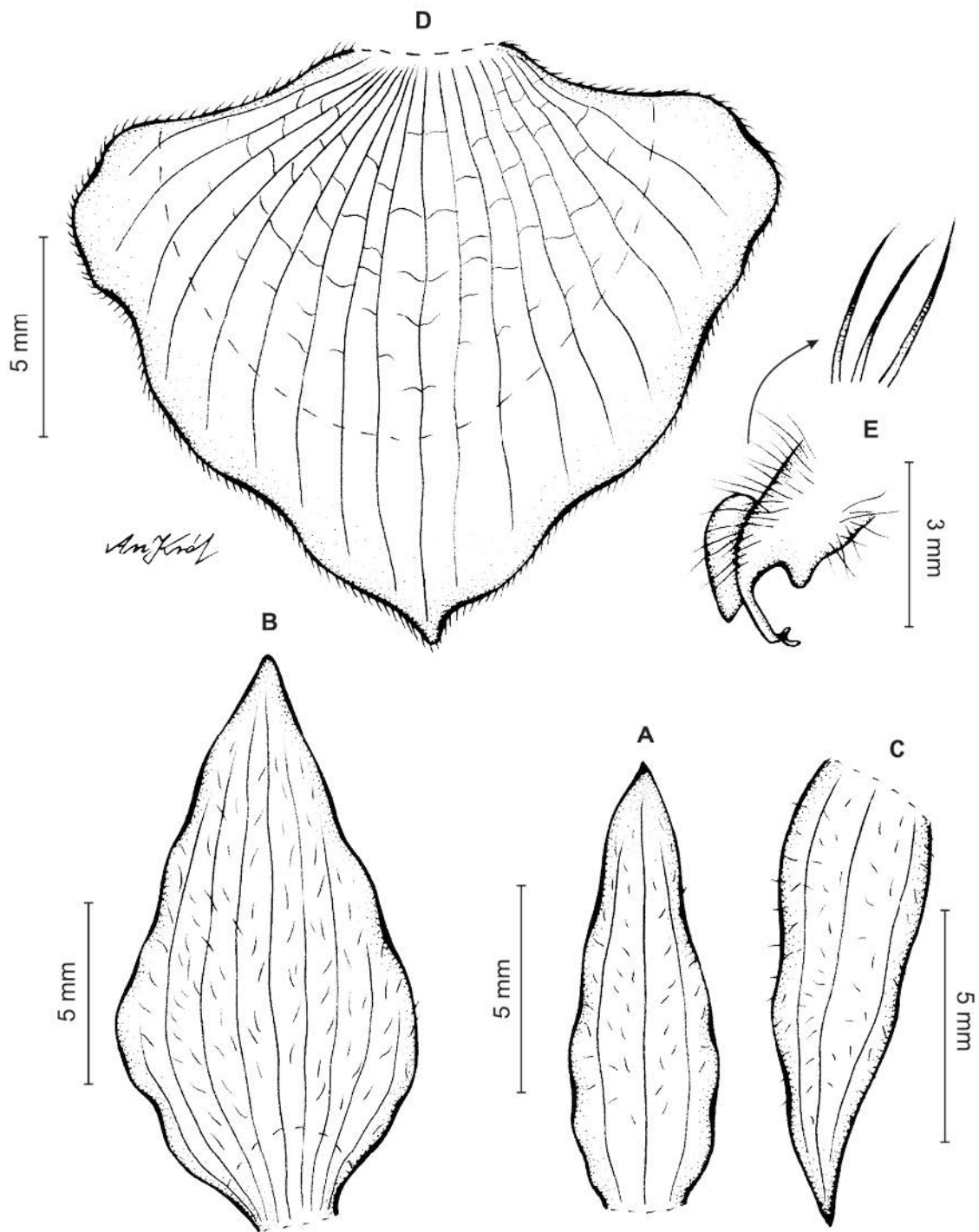


Figure 22 *Telipogon roseus* Garay. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Grant 9743 (US).

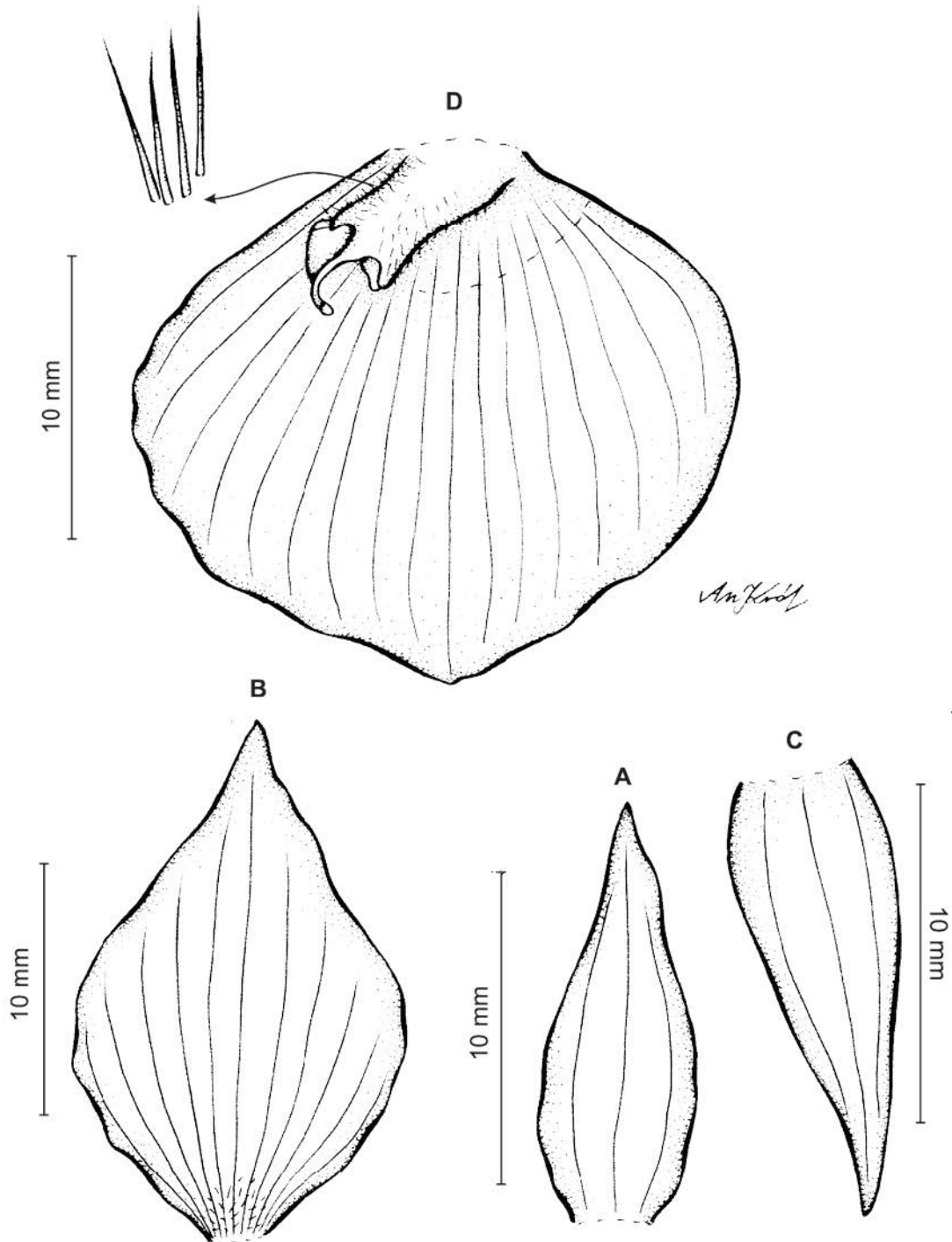


Figure 23 *Telipogon angustifolius* Kunth. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Bonpland s.n.* (P 00436596).

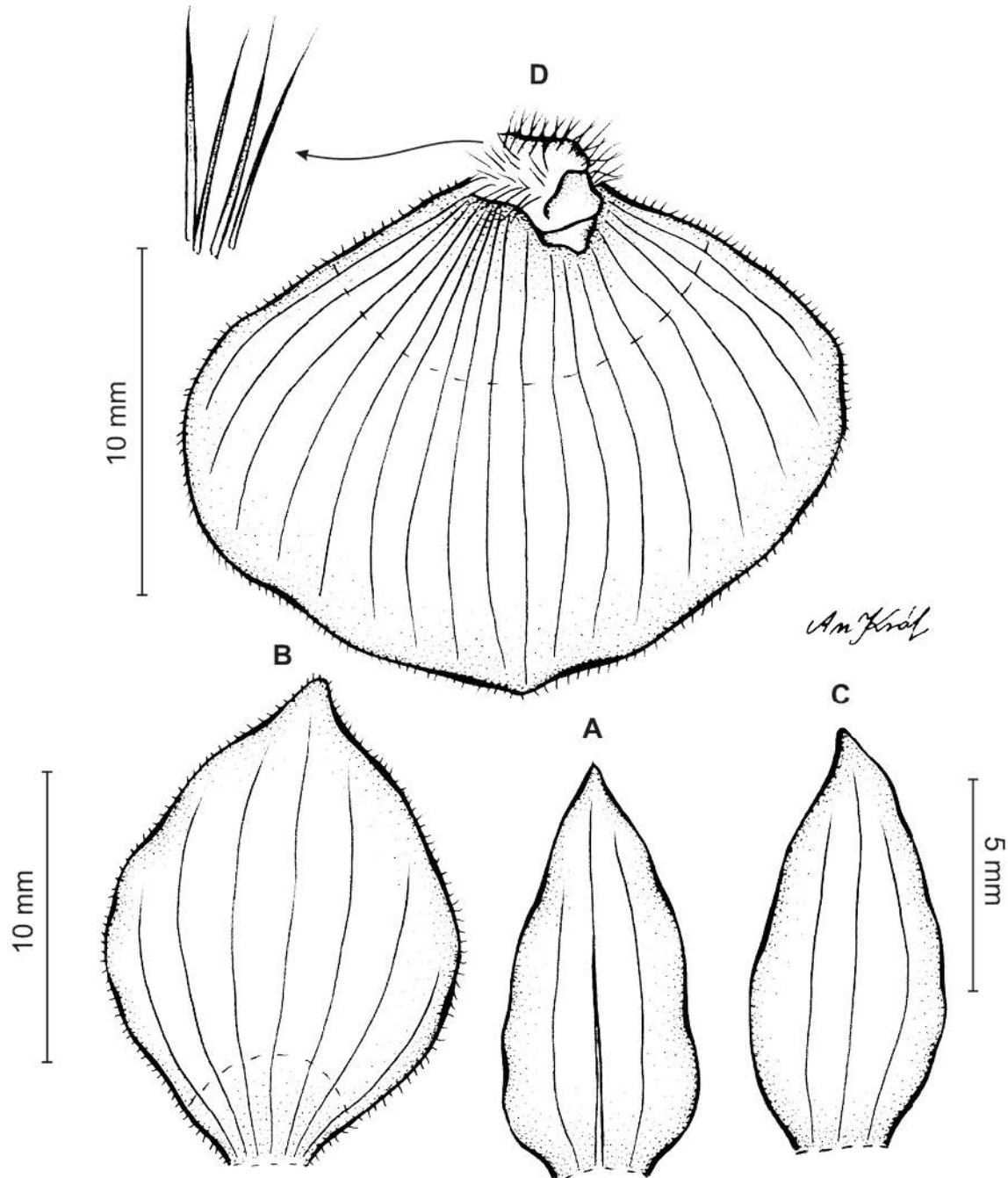


Figure 24 *Telipogon angustifolius* Kunth. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Garay 777 (AMES).

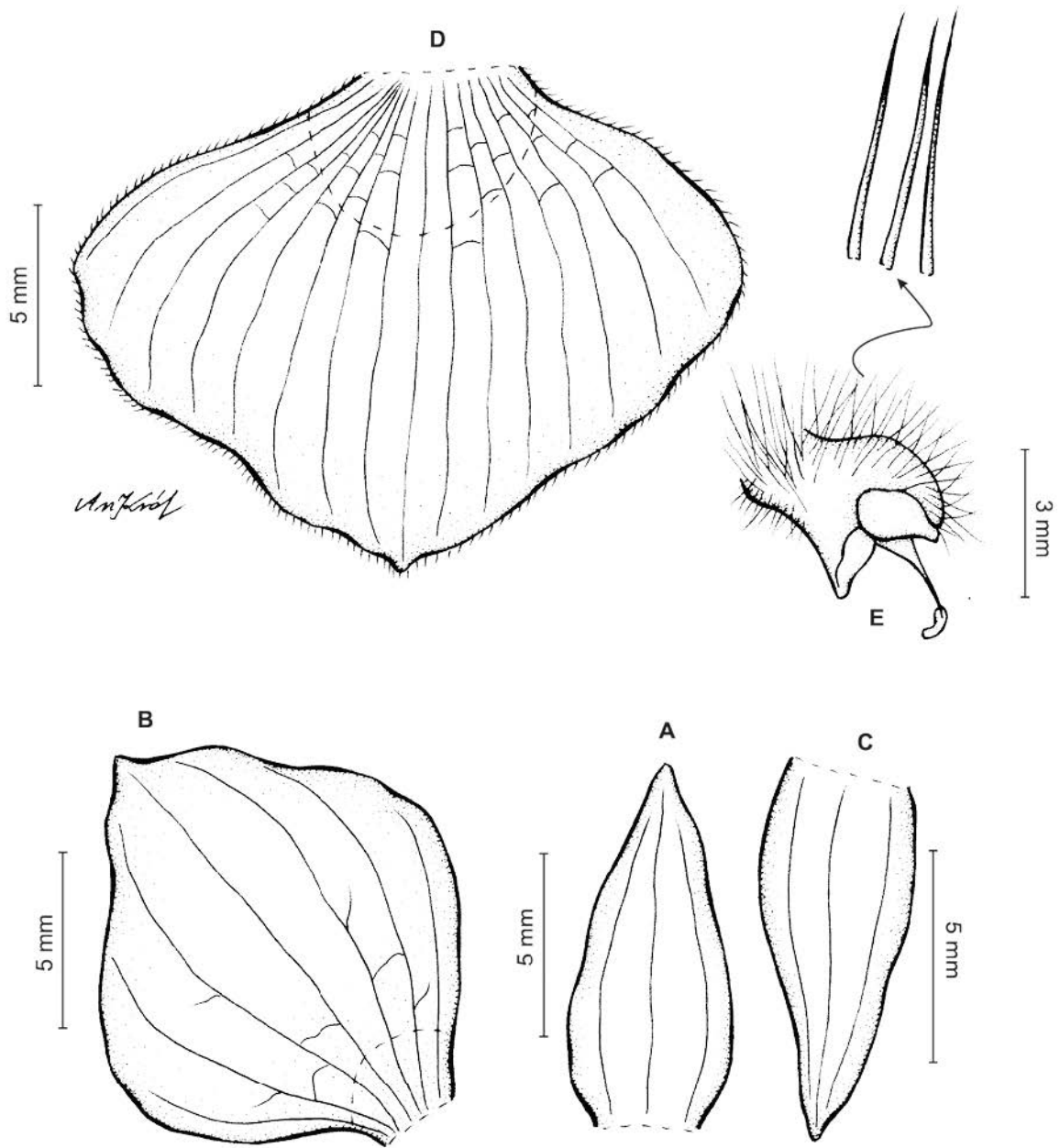


Figure 25 *Telipogon ochraceus* Garay. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Fassett 25298 (US).

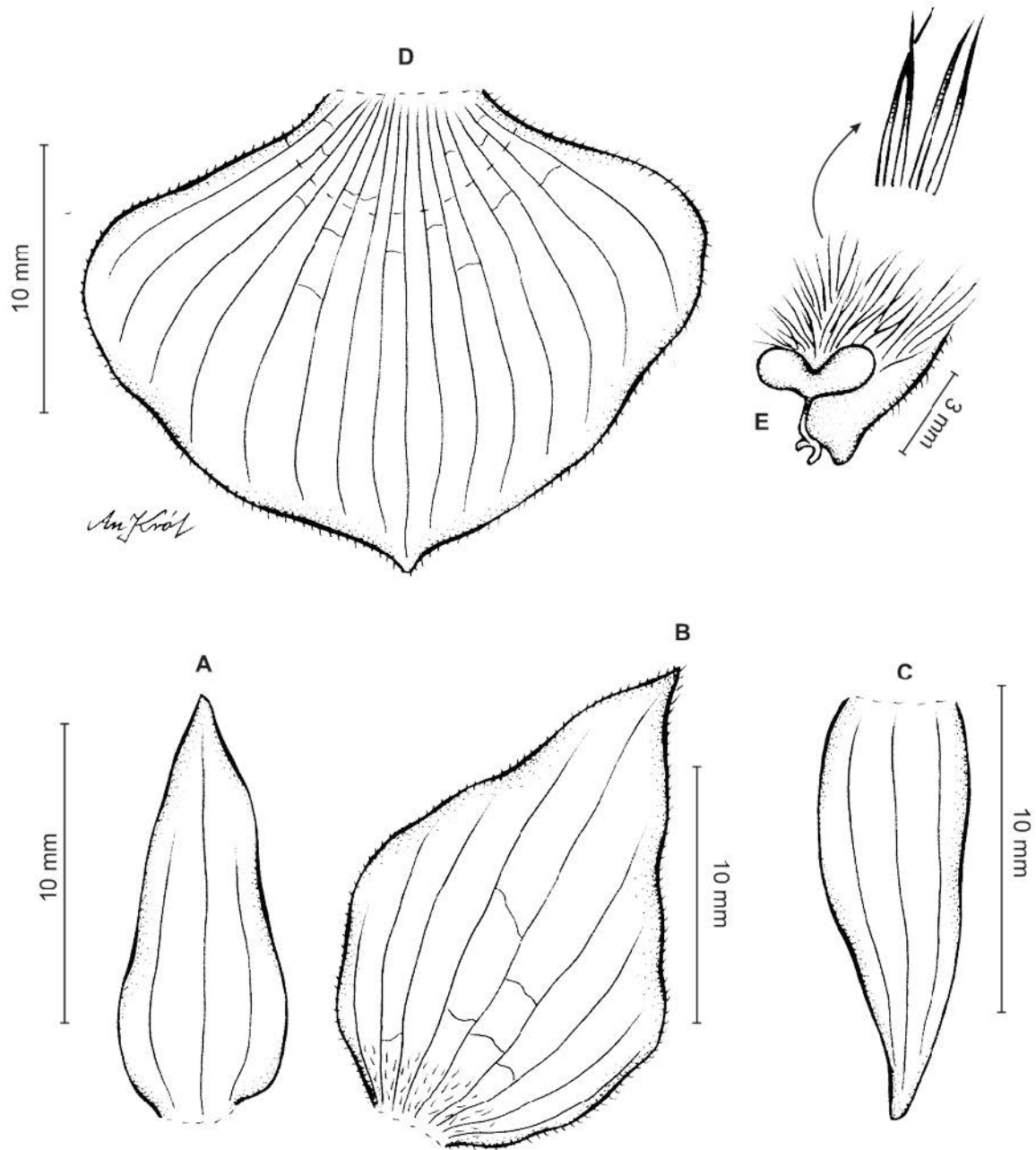


Figure 26 *Telipogon ochraceus* Garay. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Schiefer 925 (US).

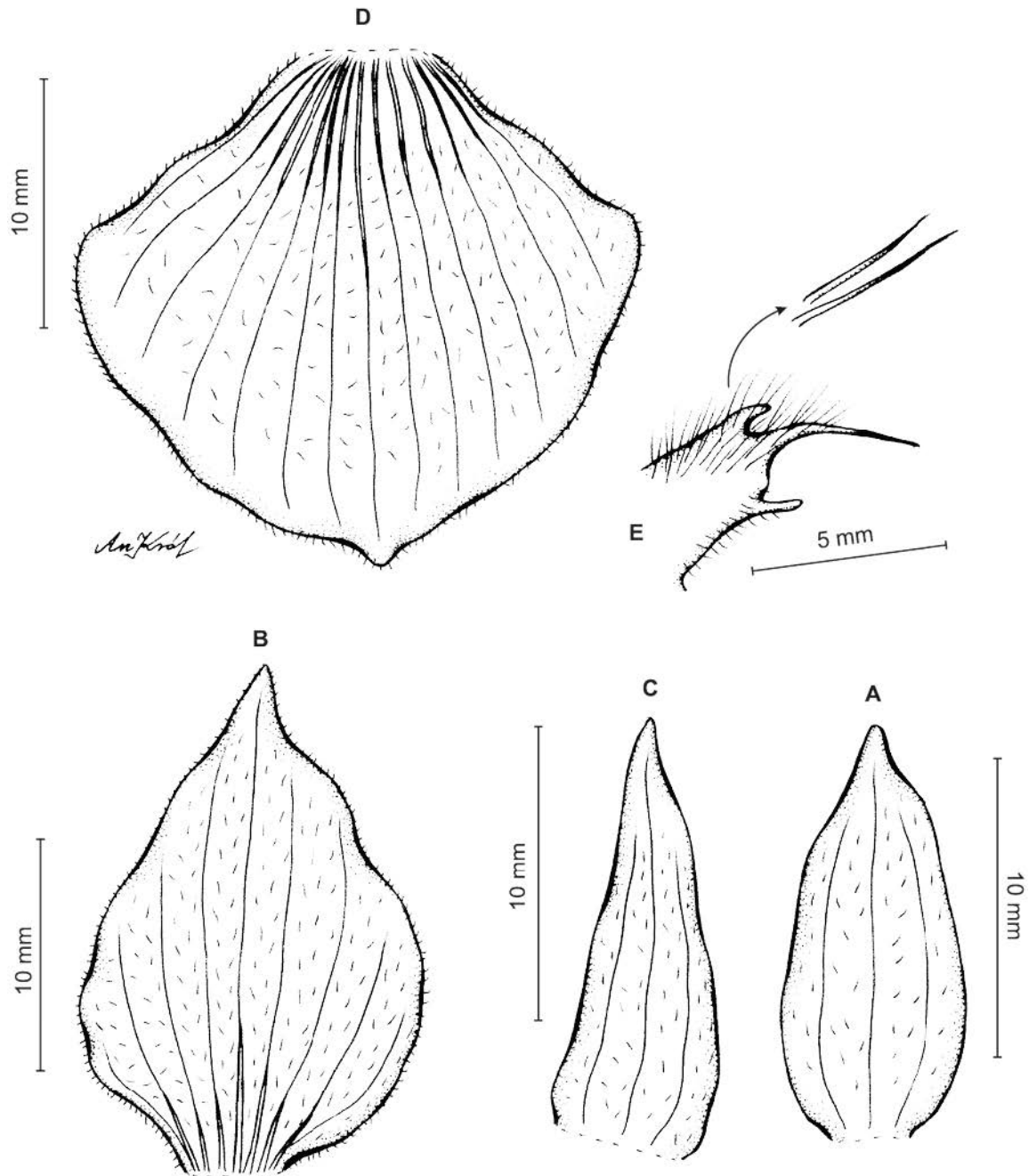


Figure 27 *Telipogon cuatrecasii* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Cuatrecasas 1740* (US).

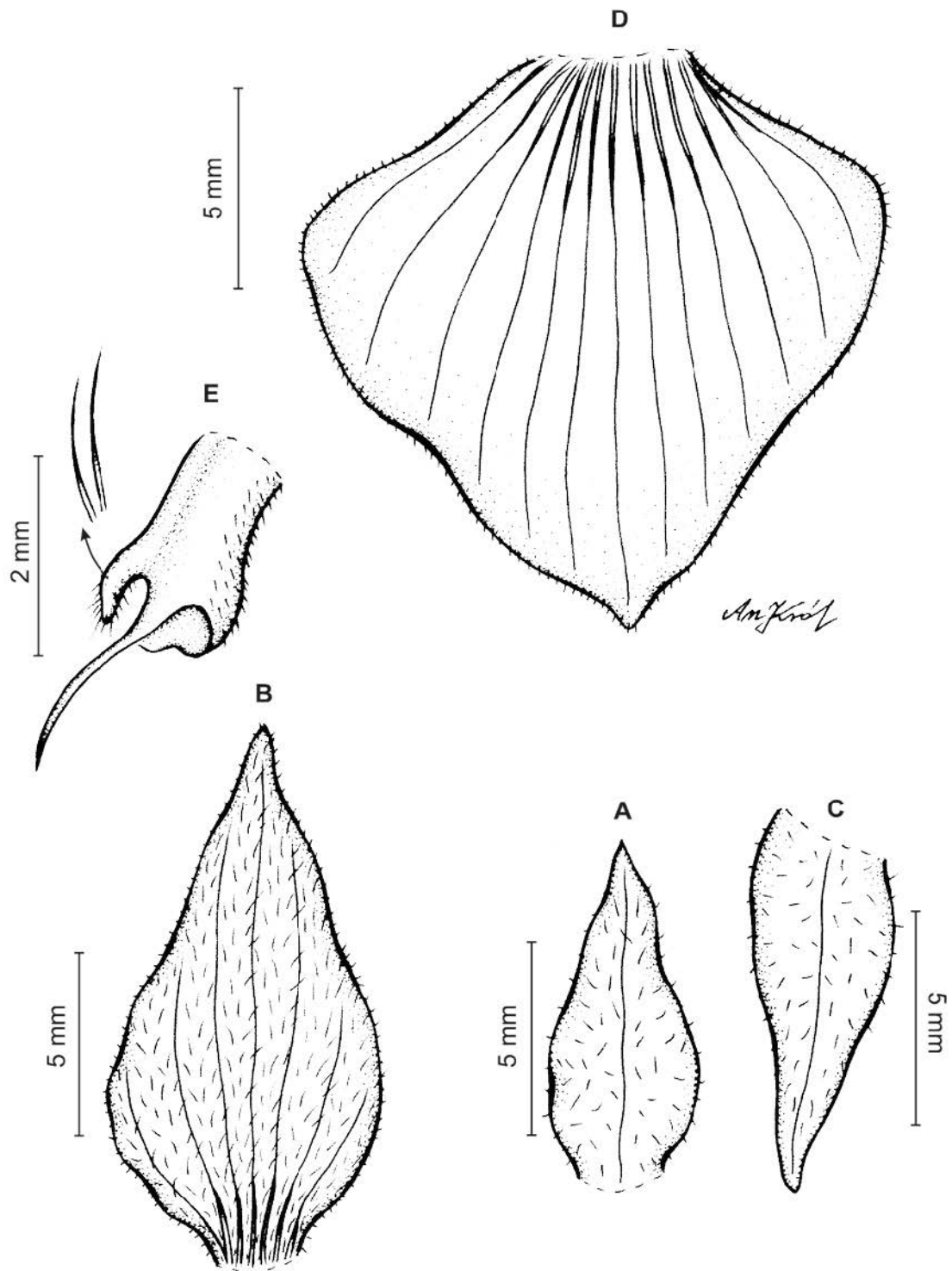


Figure 28 *Telipogon fassetti* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Fassett 25564 (US).

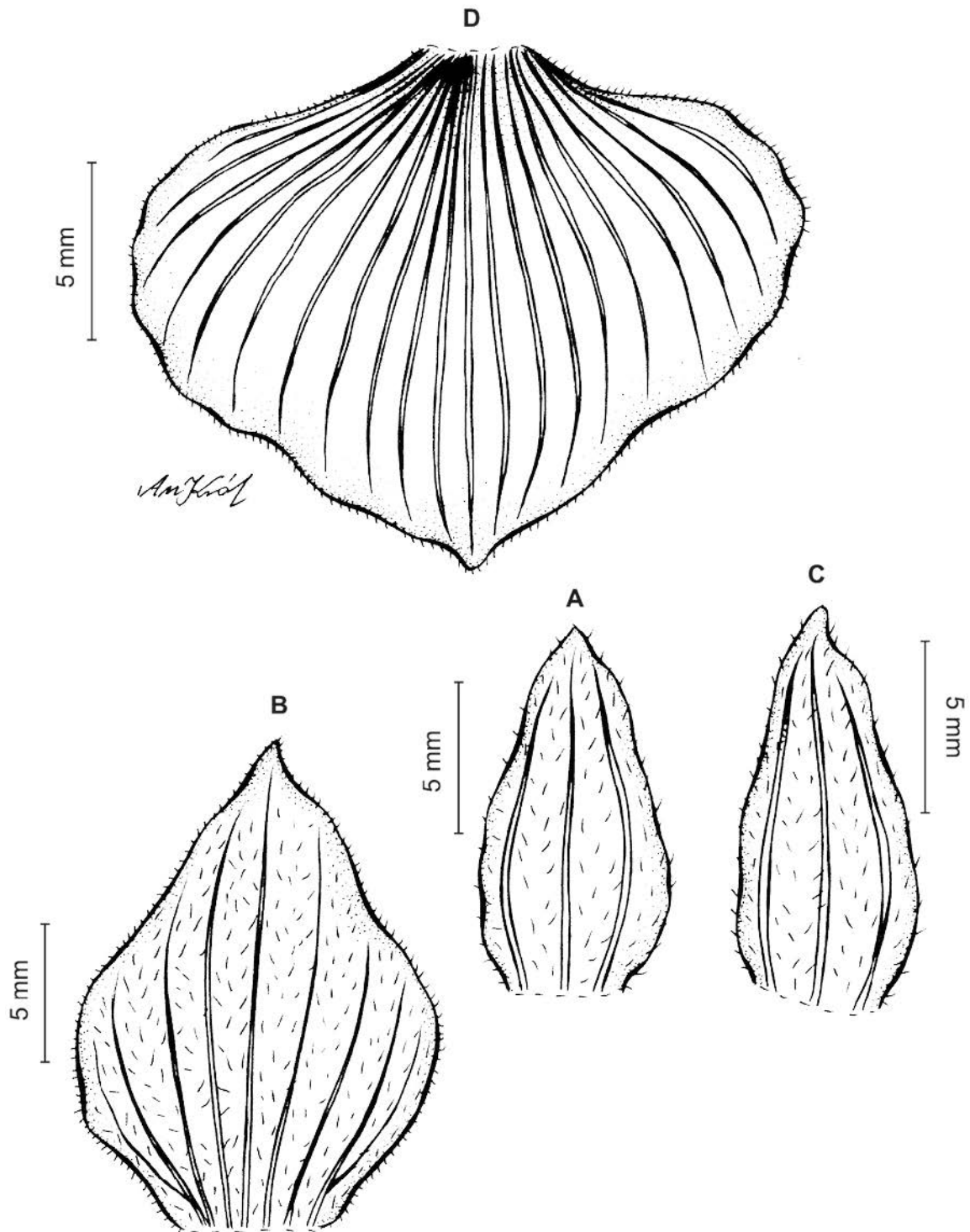


Figure 29 *Telipogon cocuyensis* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip. Drawn by A. Król from Cuatrecasas 1739 (US).

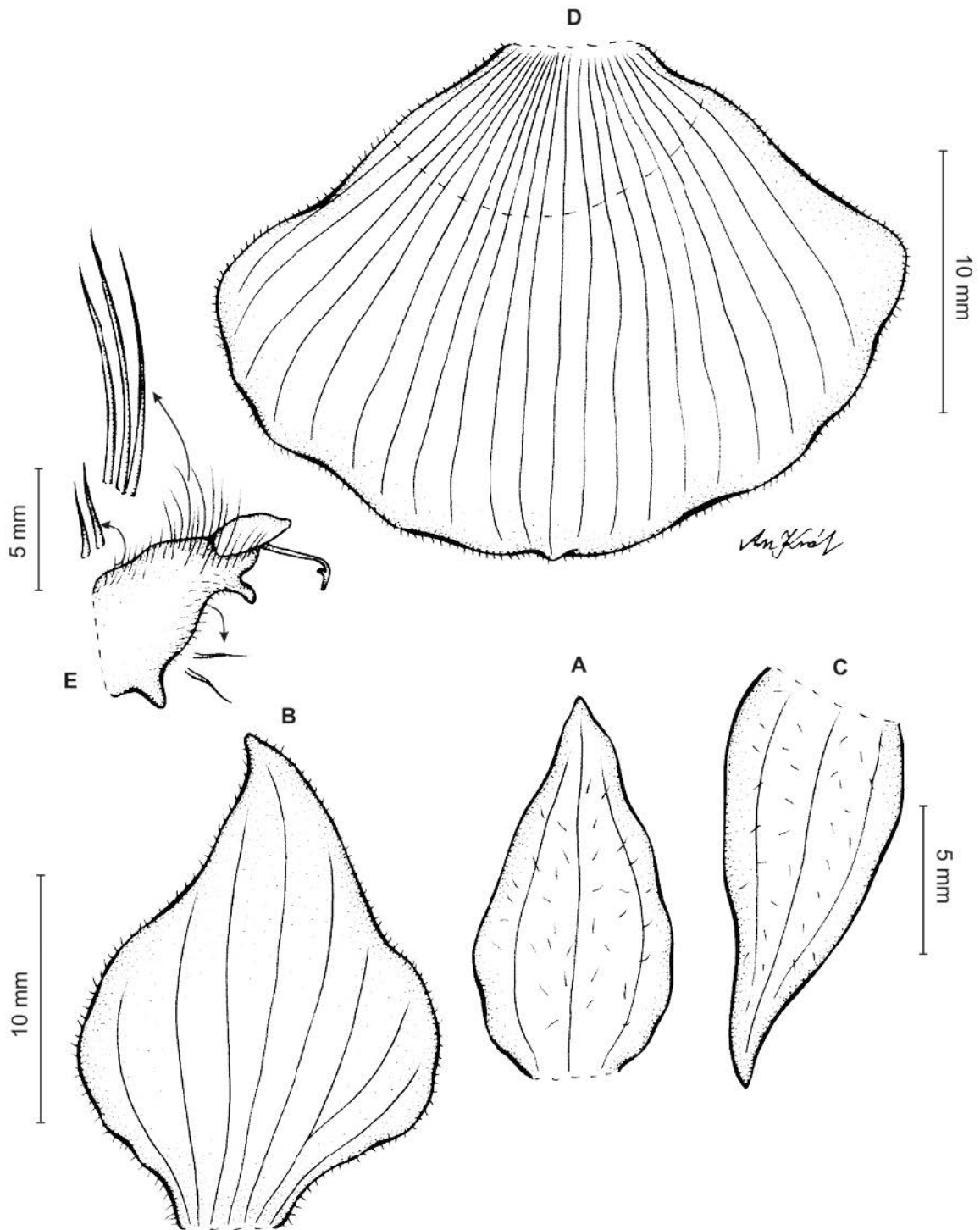


Figure 30 *Telipogon flabellatus* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Cuatrecasas 1824* (US).

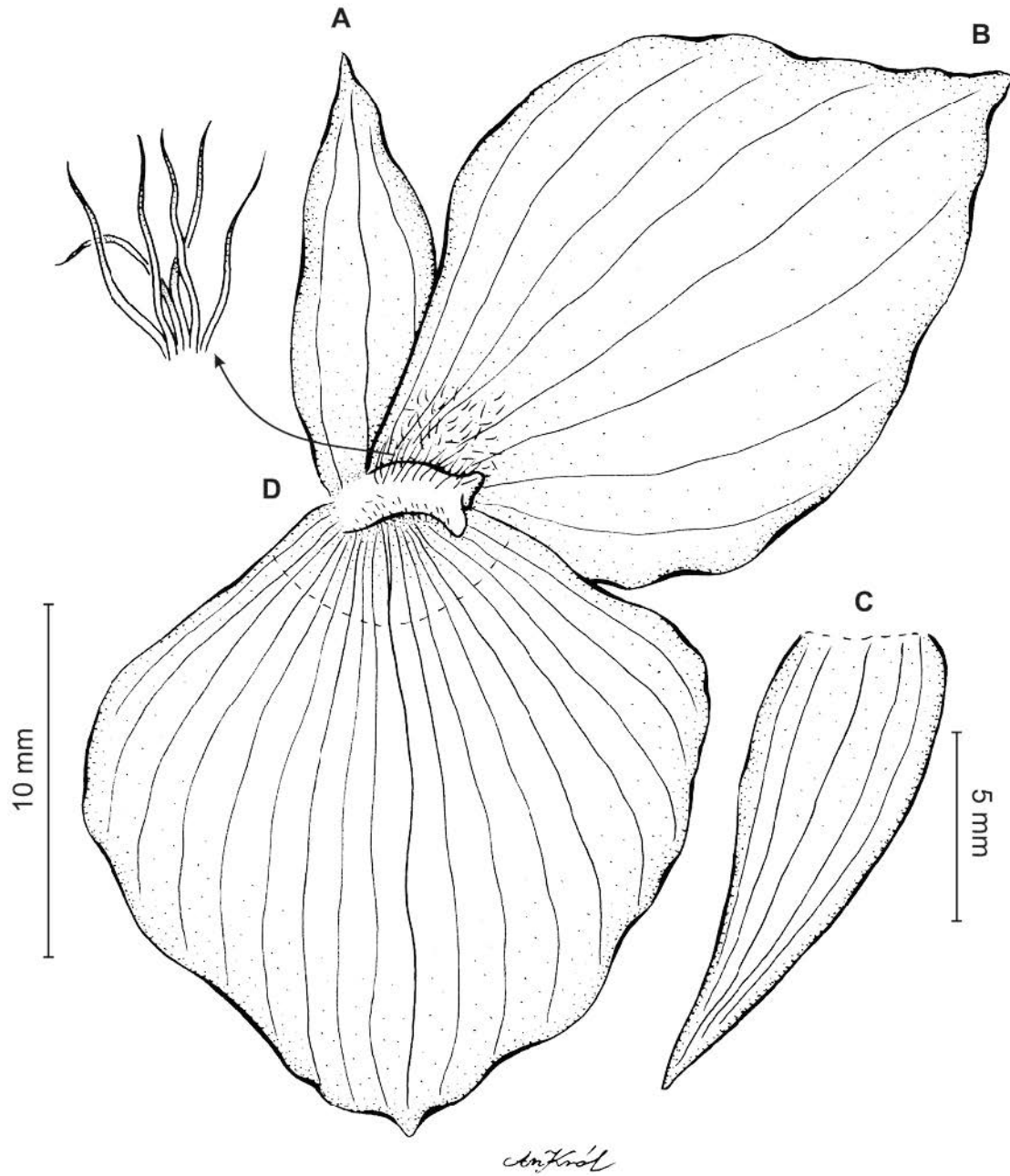


Figure 31 *Telipogon pachensis* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Wallis s.n. (W-R).

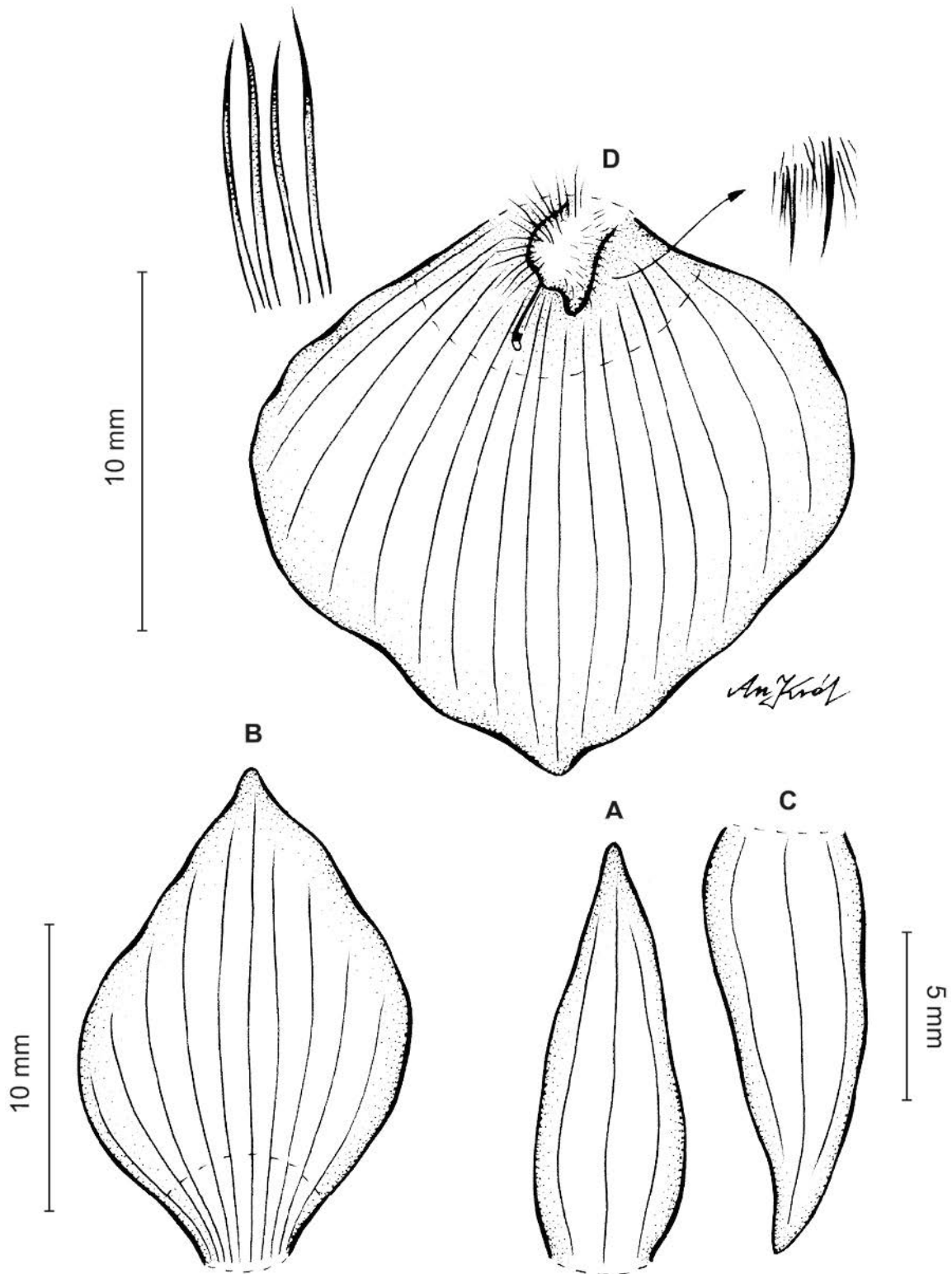


Figure 32 *Telipogon pachensis* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Lehmann 6874* (AMES).

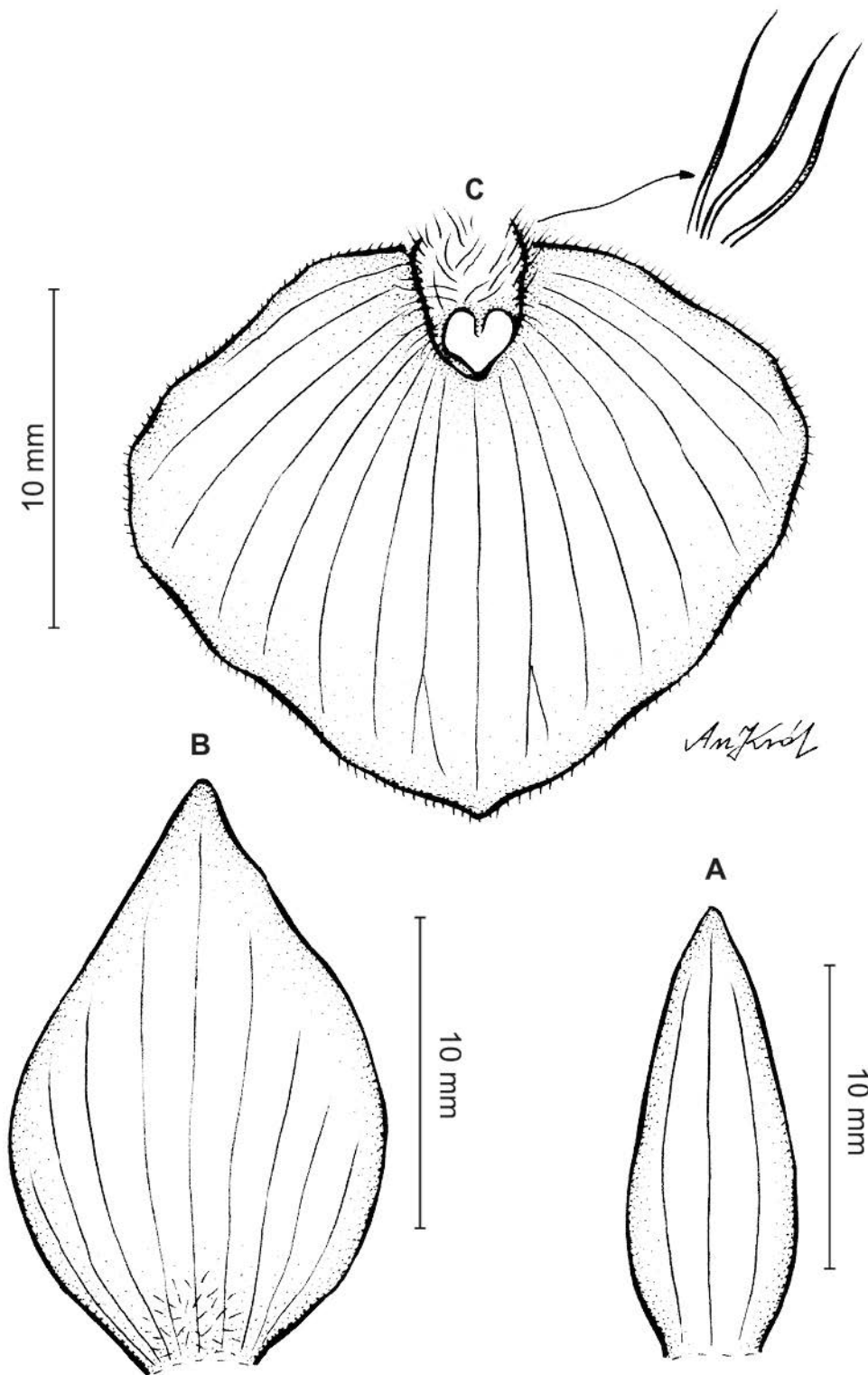


Figure 33 *Telipogon pachensis* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lip and gynostemium. Drawn by A. Król from *Ospina 203* (AMES).

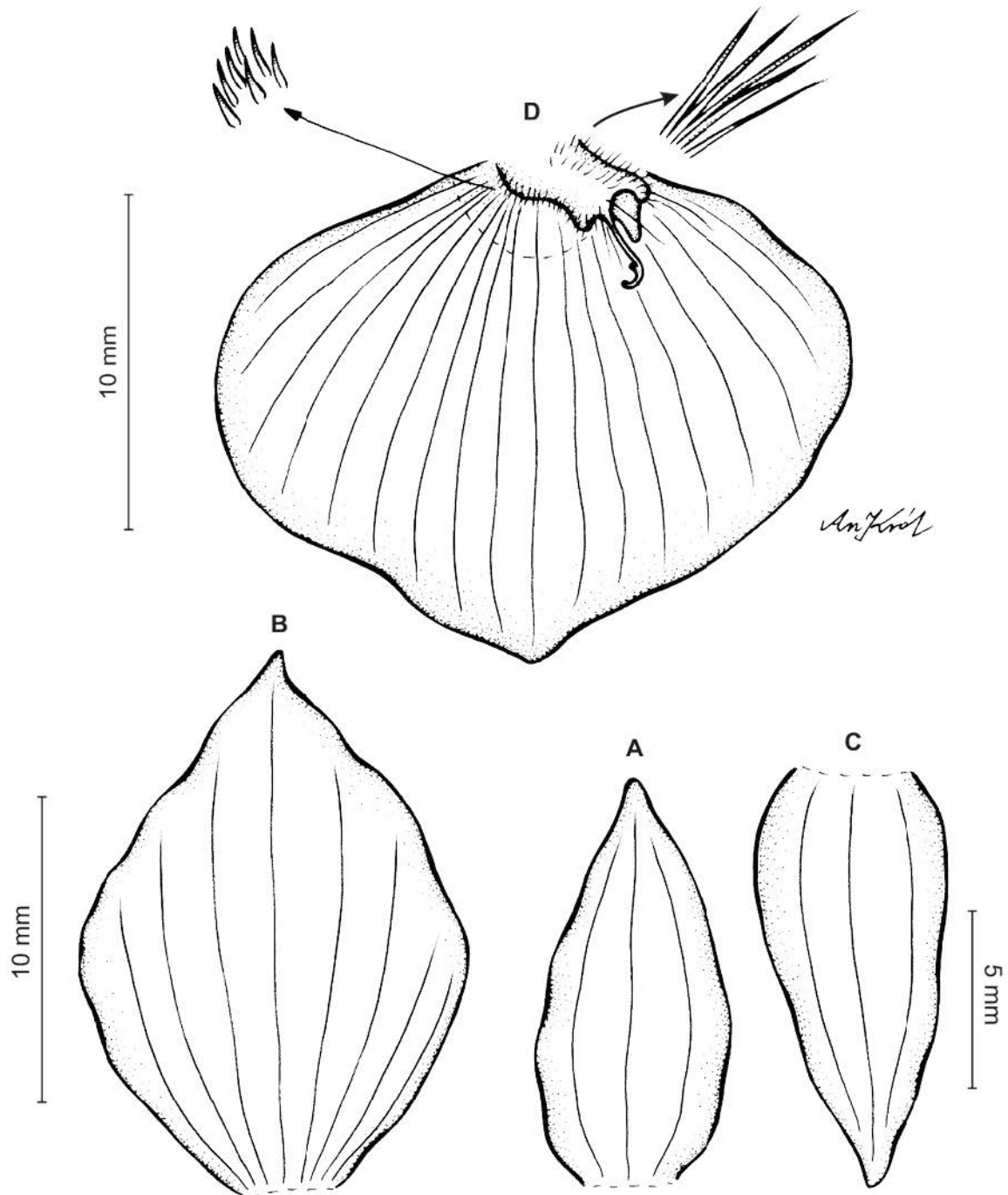


Figure 34 *Telipogon killipi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Killip & Smith 17325 (AMES).

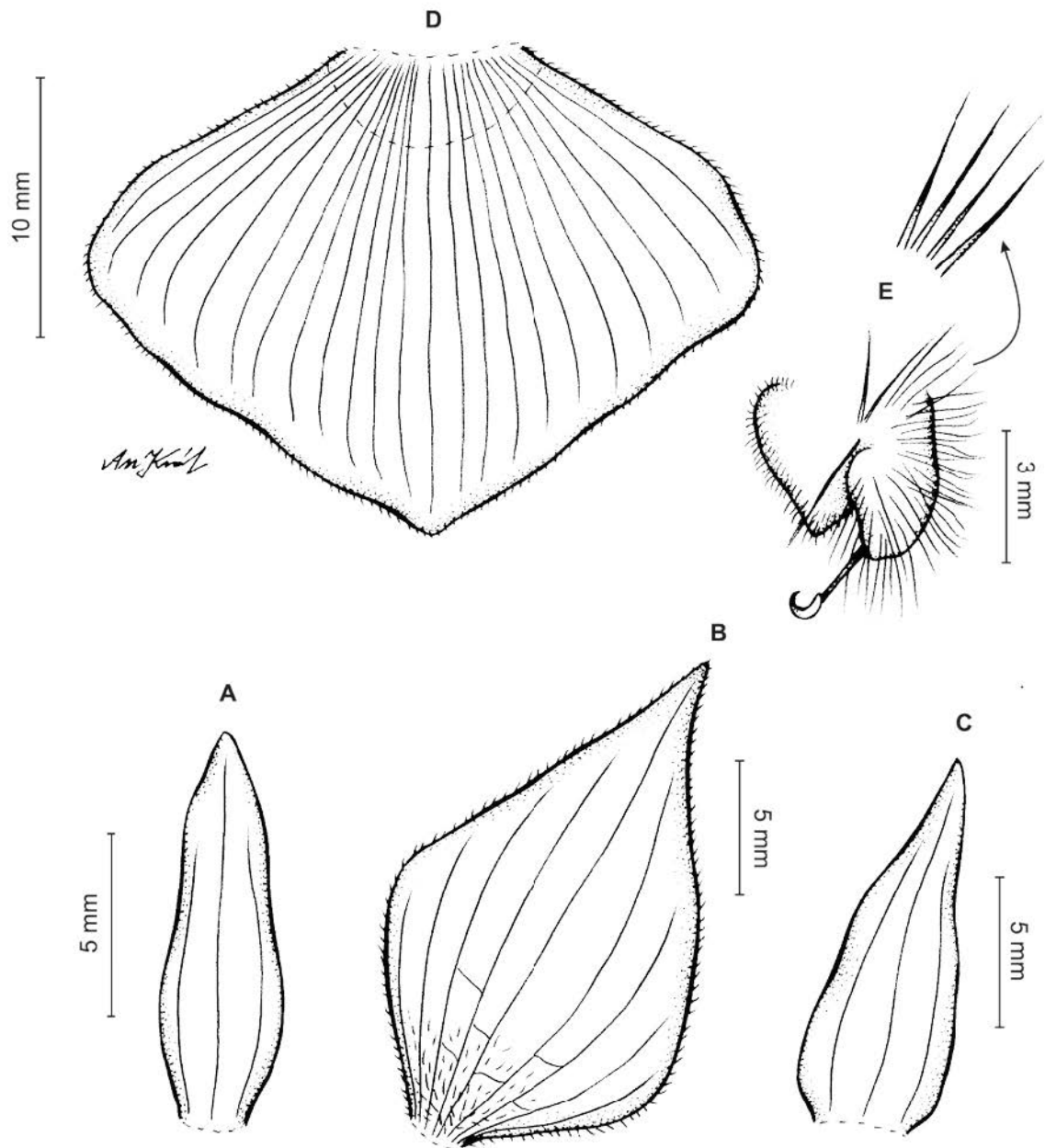


Figure 35 *Telipogon killipi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Cuatrecasas* 5015 (US).

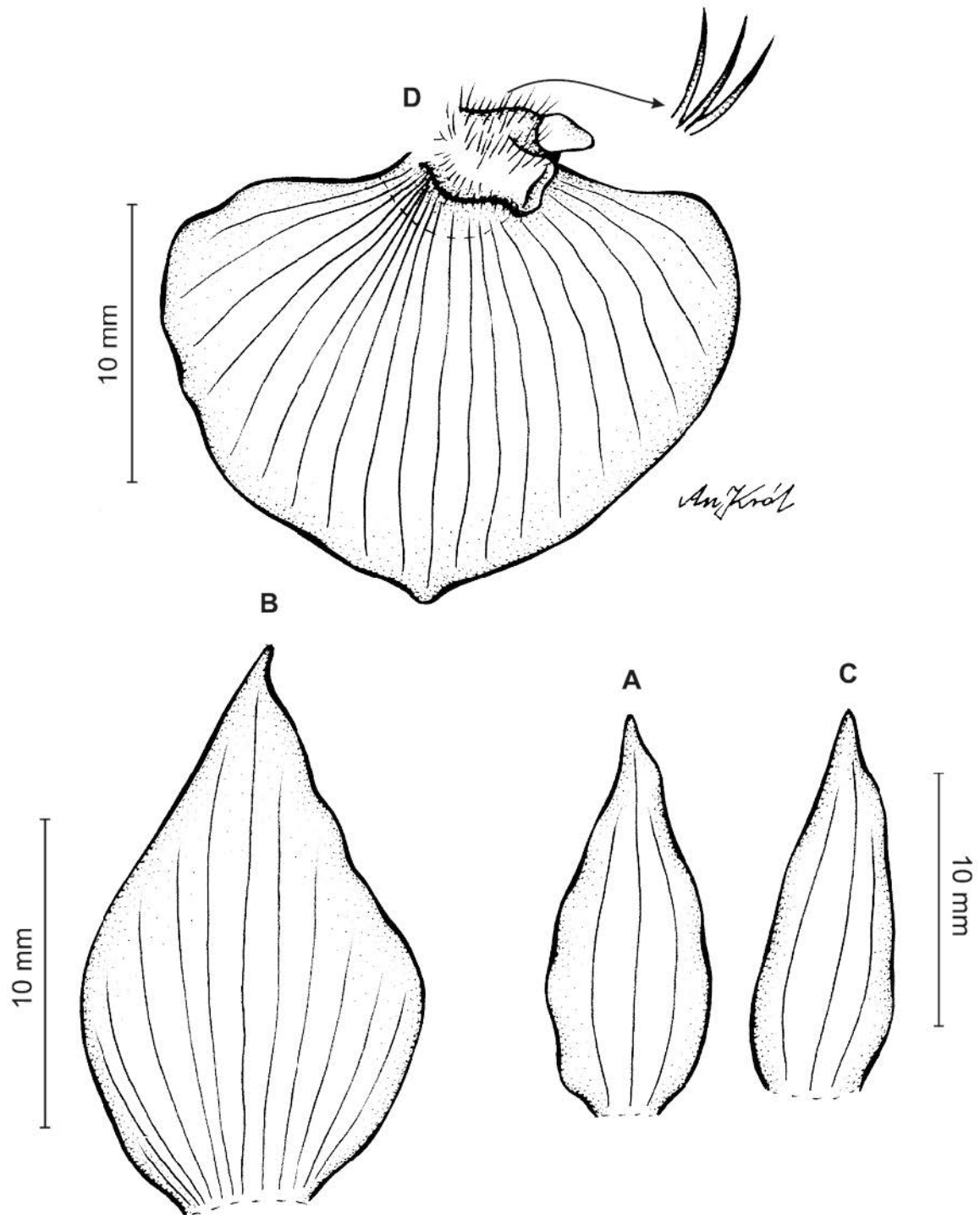


Figure 36 *Telipogon killipi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Schneider 6* (AMES).

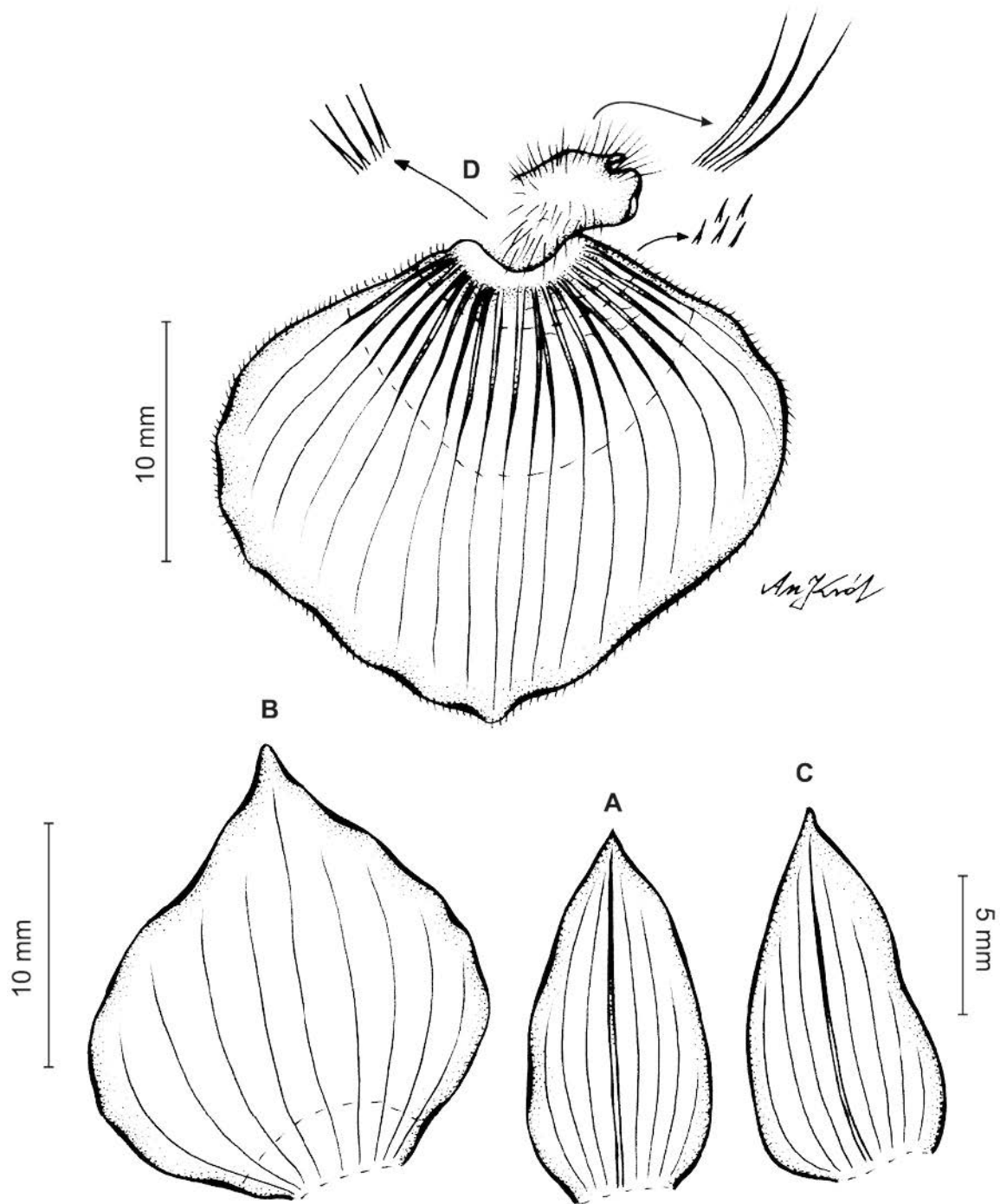


Figure 37 *Telipogon garayi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Garay 789 (AMES).

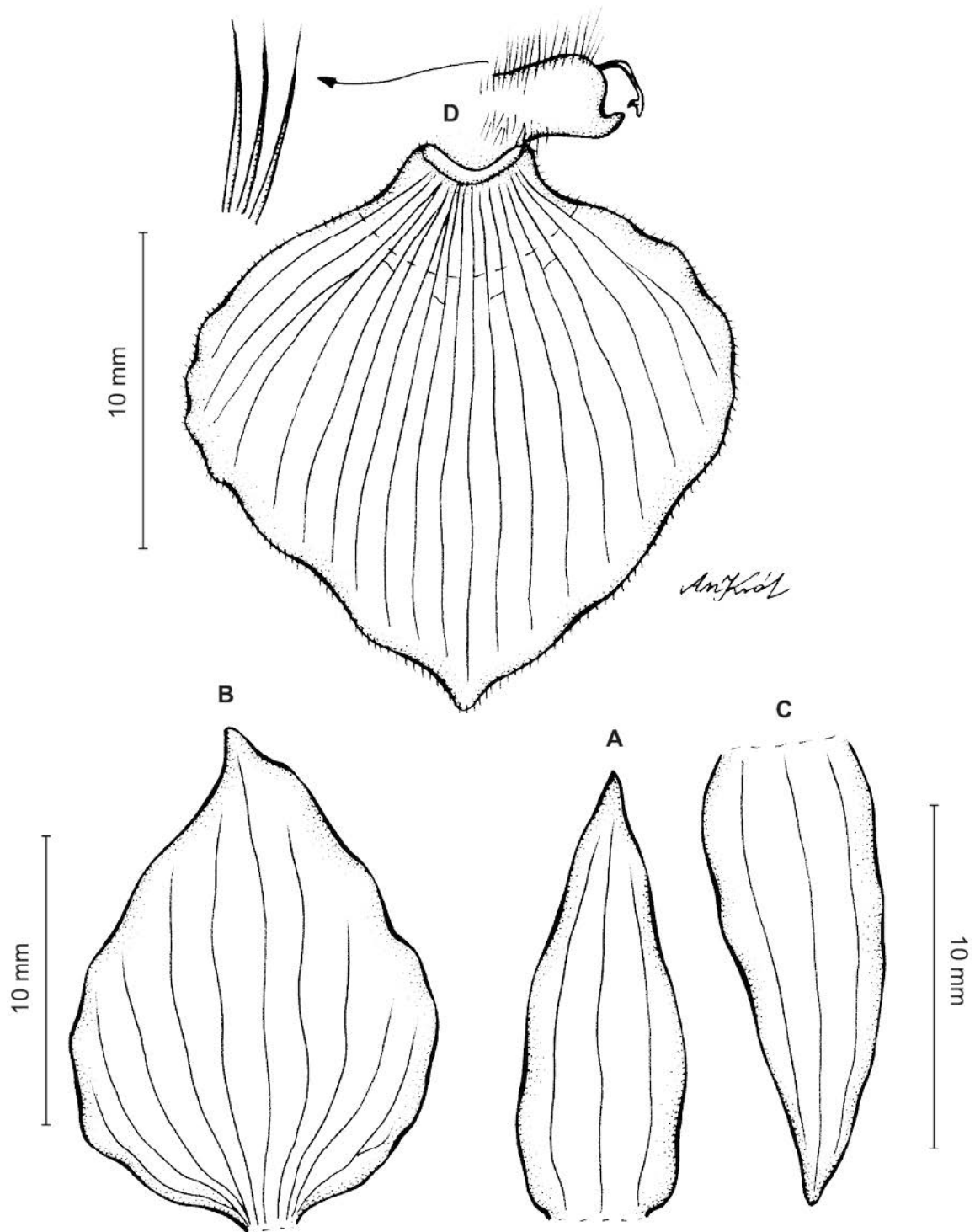


Figure 38 *Telipogon garayi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Funck & Schlim* 851 (P).

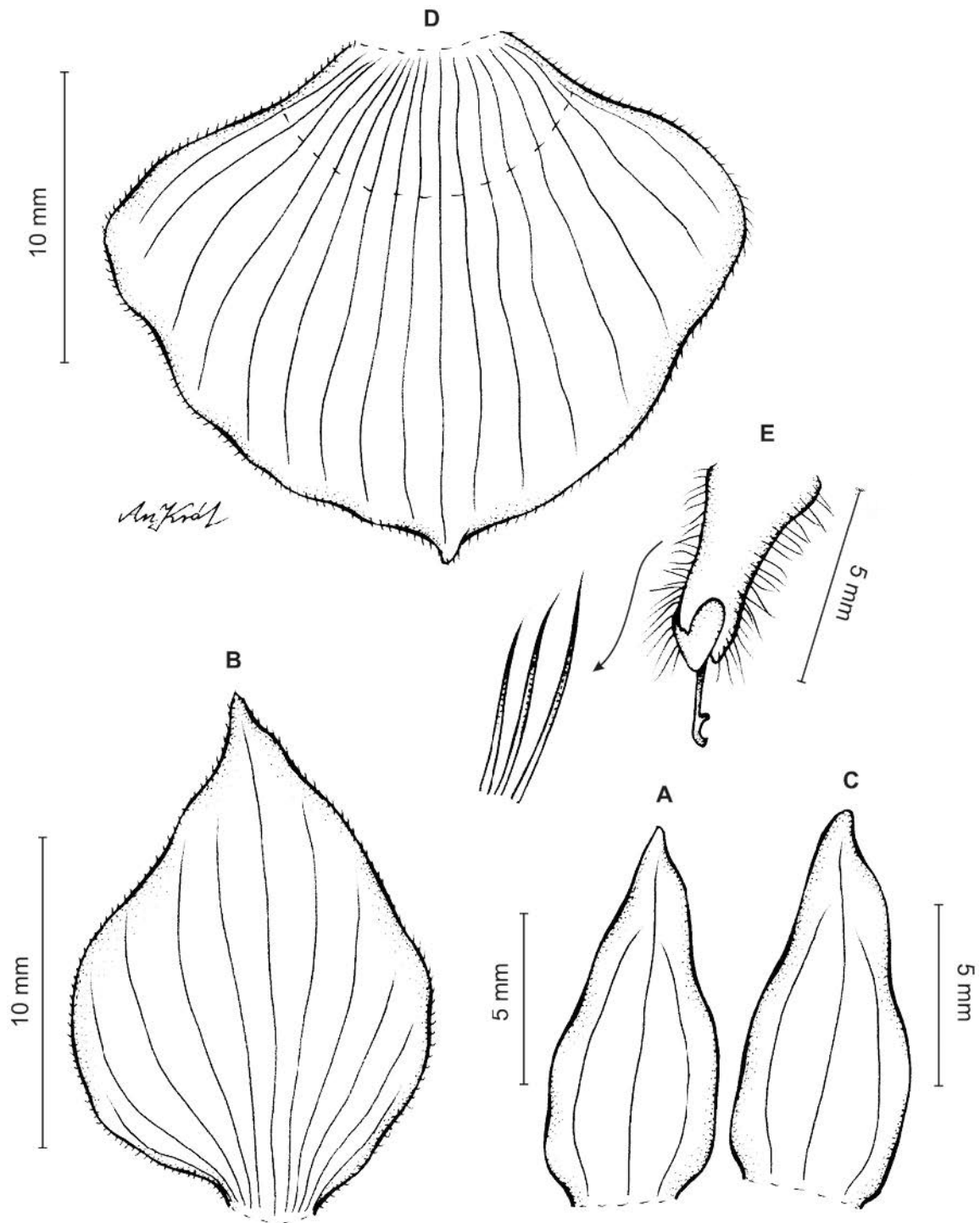


Figure 39 *Telipogon garayi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Schultze 116* (US).

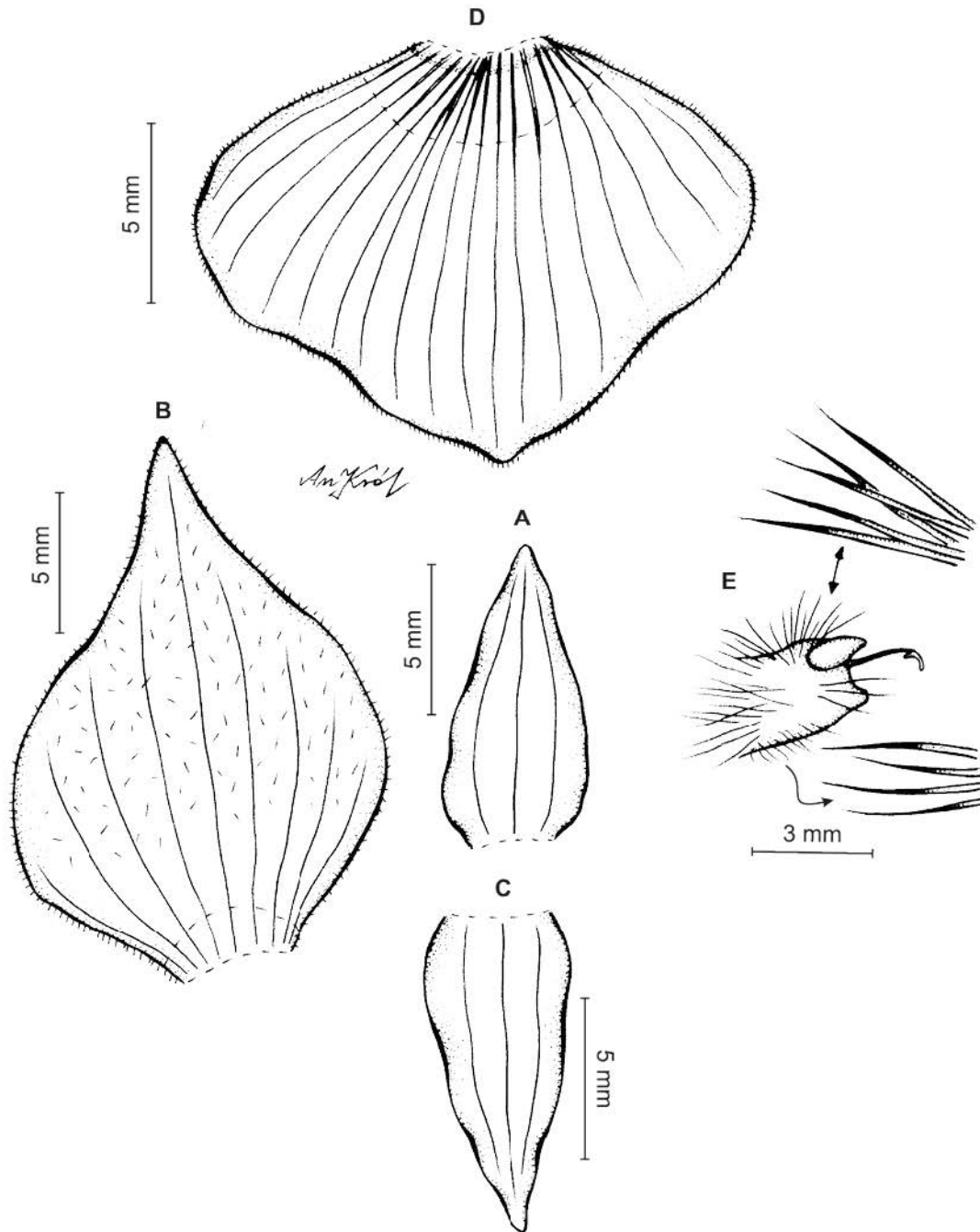


Figure 40 *Telipogon gracilis* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Schultes 7003 (AMES).

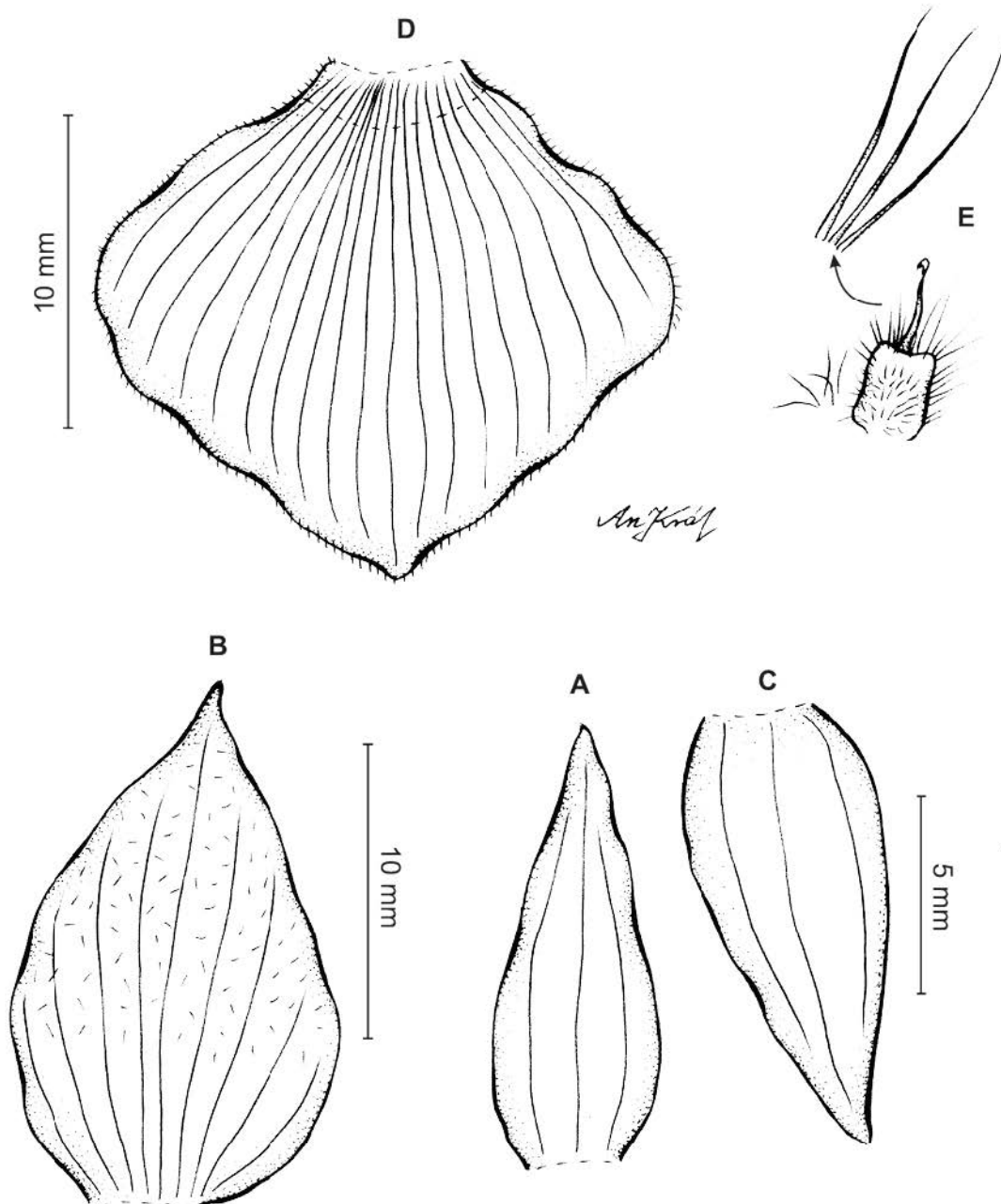


Figure 41 *Telipogon gracilis* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Schultes & Villarreal 7835i (AMES).

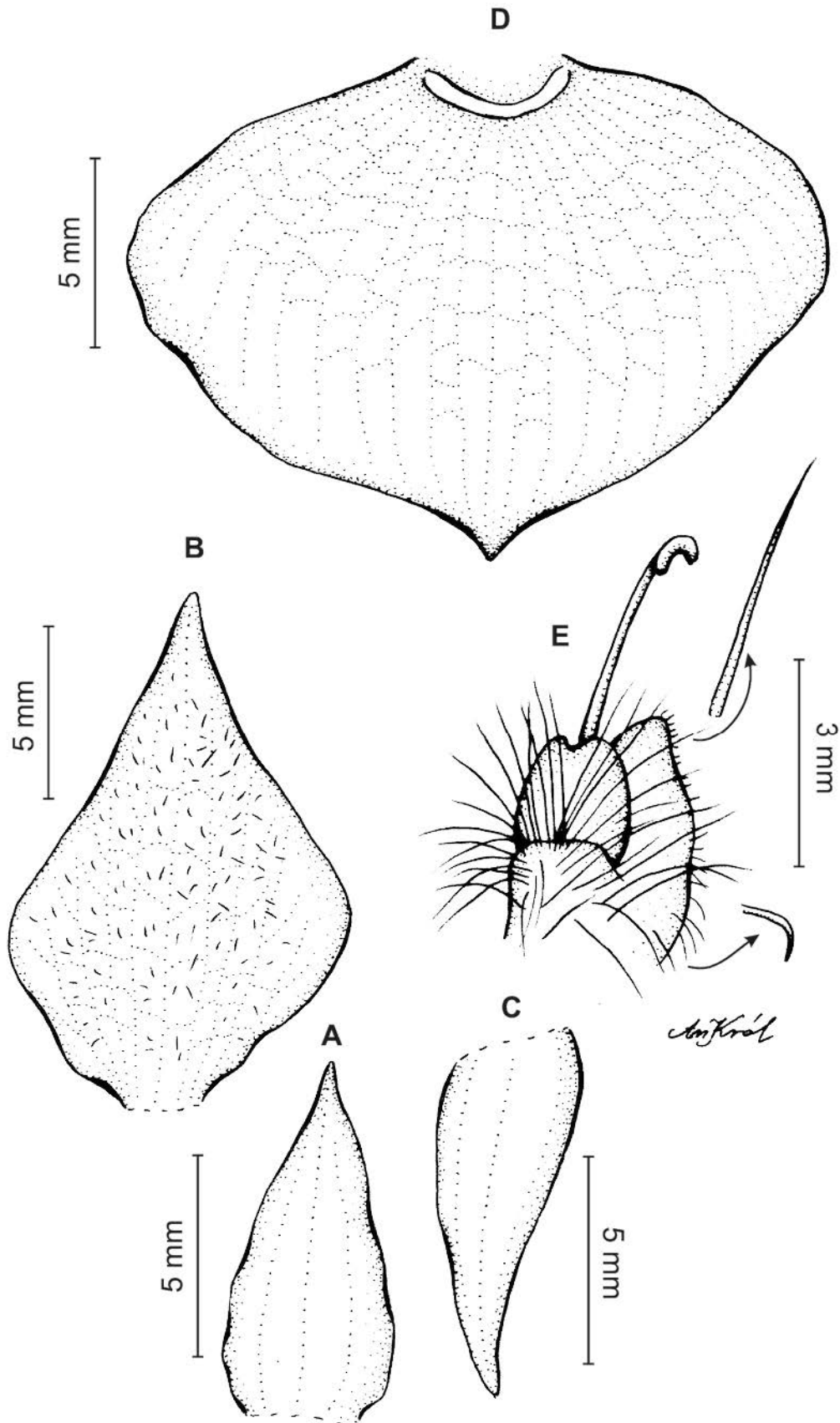


Figure 42 *Telipogon idroboi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Idrobo* 2454 (COL).



Figure 43 *Telipogon nervosus* (photo: L. C. Piña and M. L. Hincapie).

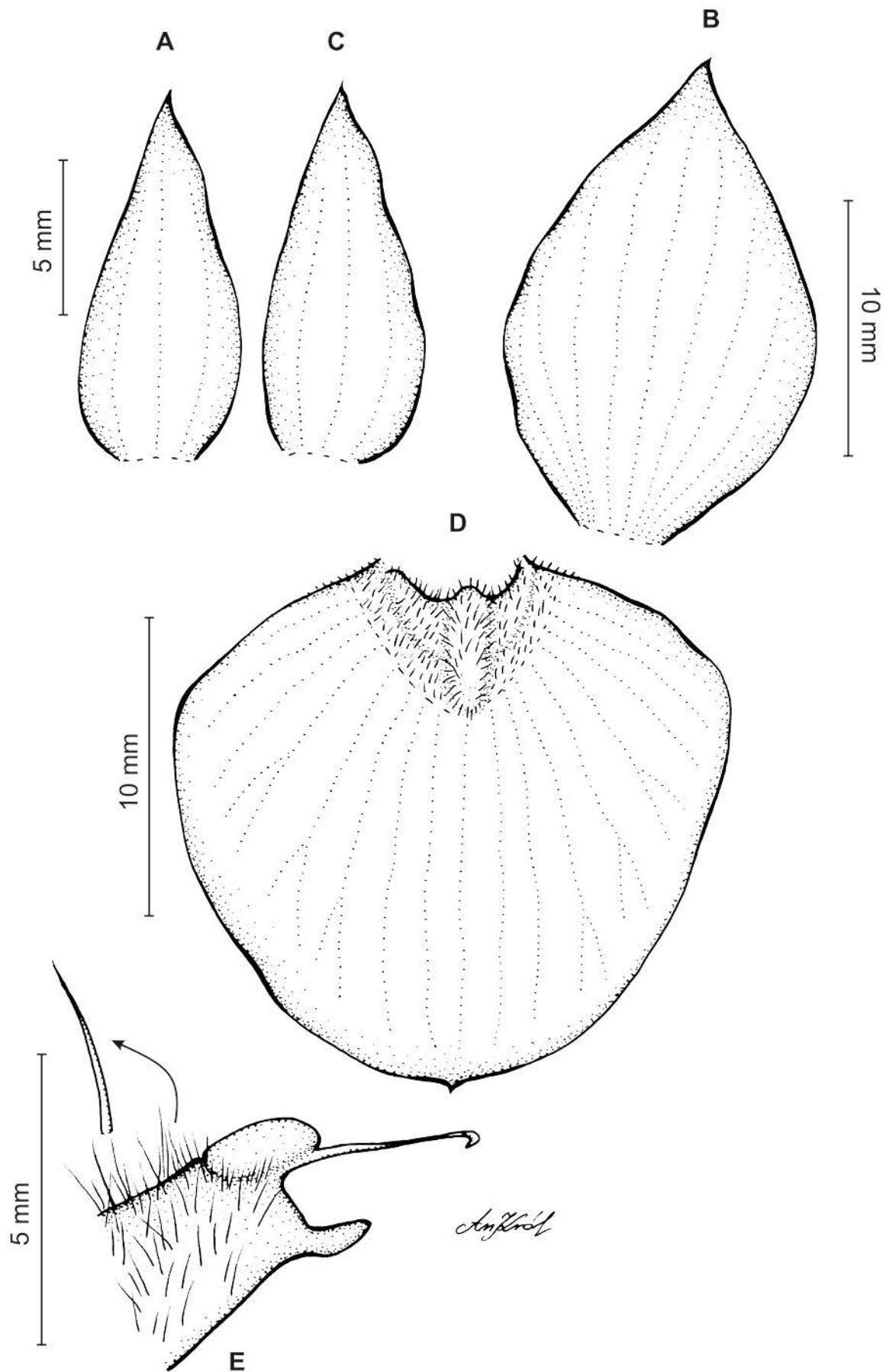


Figure 44 *Telipogon fernandezii* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Fernandez 14188* (COL).

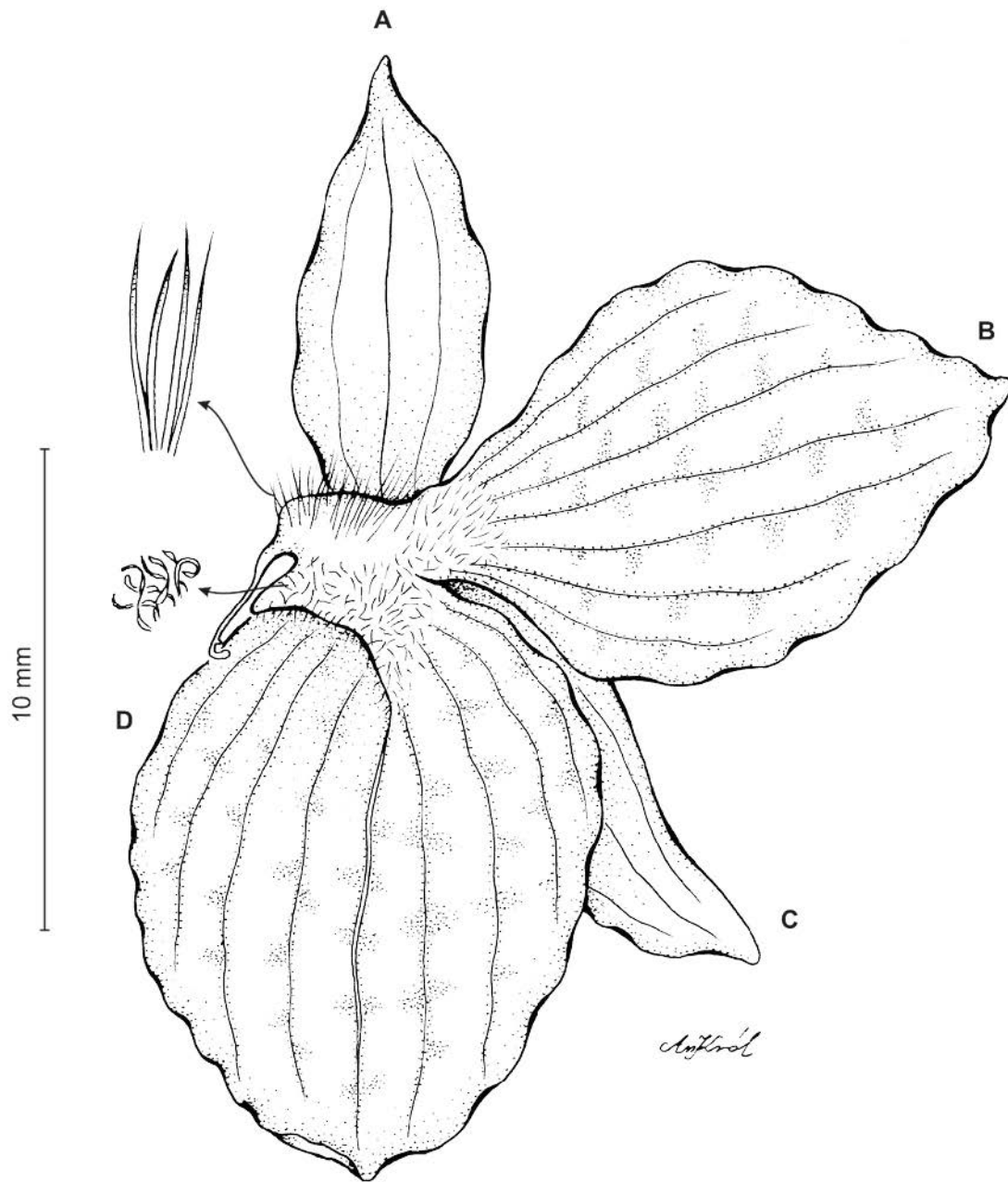


Figure 45 *Telipogon musaicus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Roehl s.n. (W-R).



Figure 46 *Telipogon pamplonensis* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from 127 (W-R).

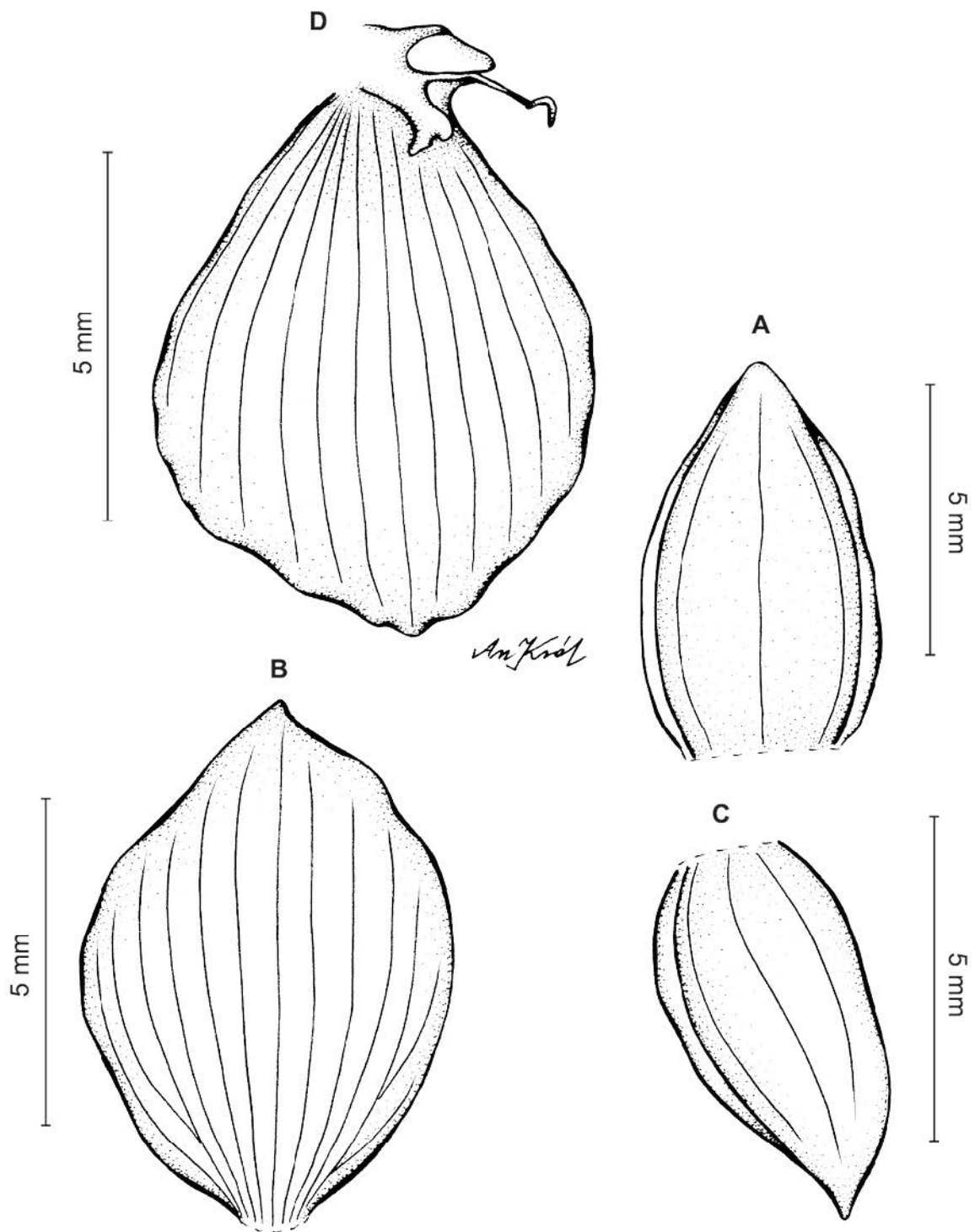


Figure 47 *Telipogon venustus* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Lehmann 6870 (AMES).

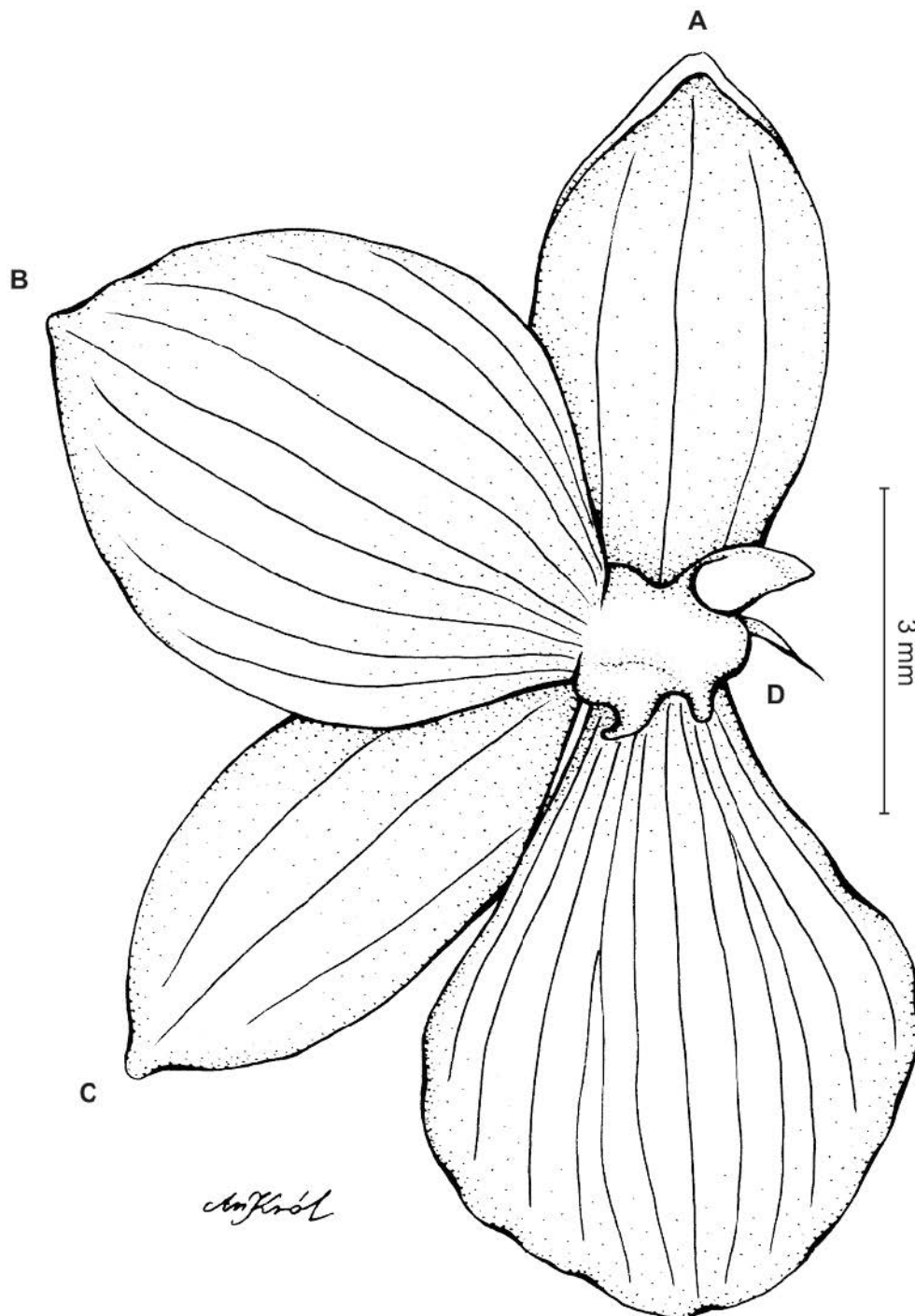


Figure 48 *Telipogon venustus* Schltr. (A) dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Lehmann s.n.* (W-R).



Figure 49 *Telipogon venustus* (photo: T. Kusibab).



Figure 50 *Telipogon venustus* (photo: T. Kusibab).



Figure 51 *Telipogon venustus* (photo: T. Kusibab).



Figure 52 *Telipogon venustus* (photo: T. Kusibab).

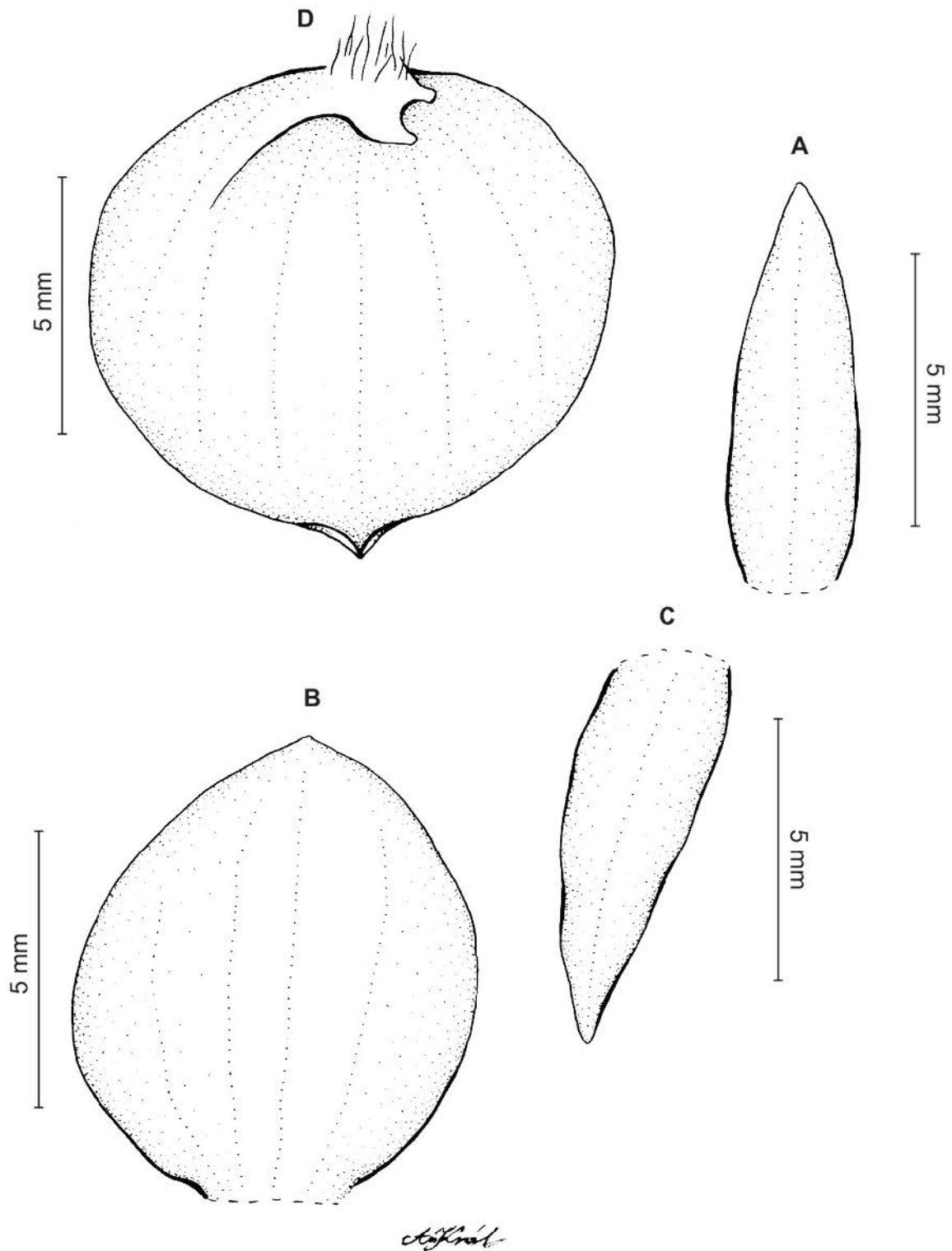


Figure 53 *Telipogon orozcoi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Fernandez & al. 11868* (COL).

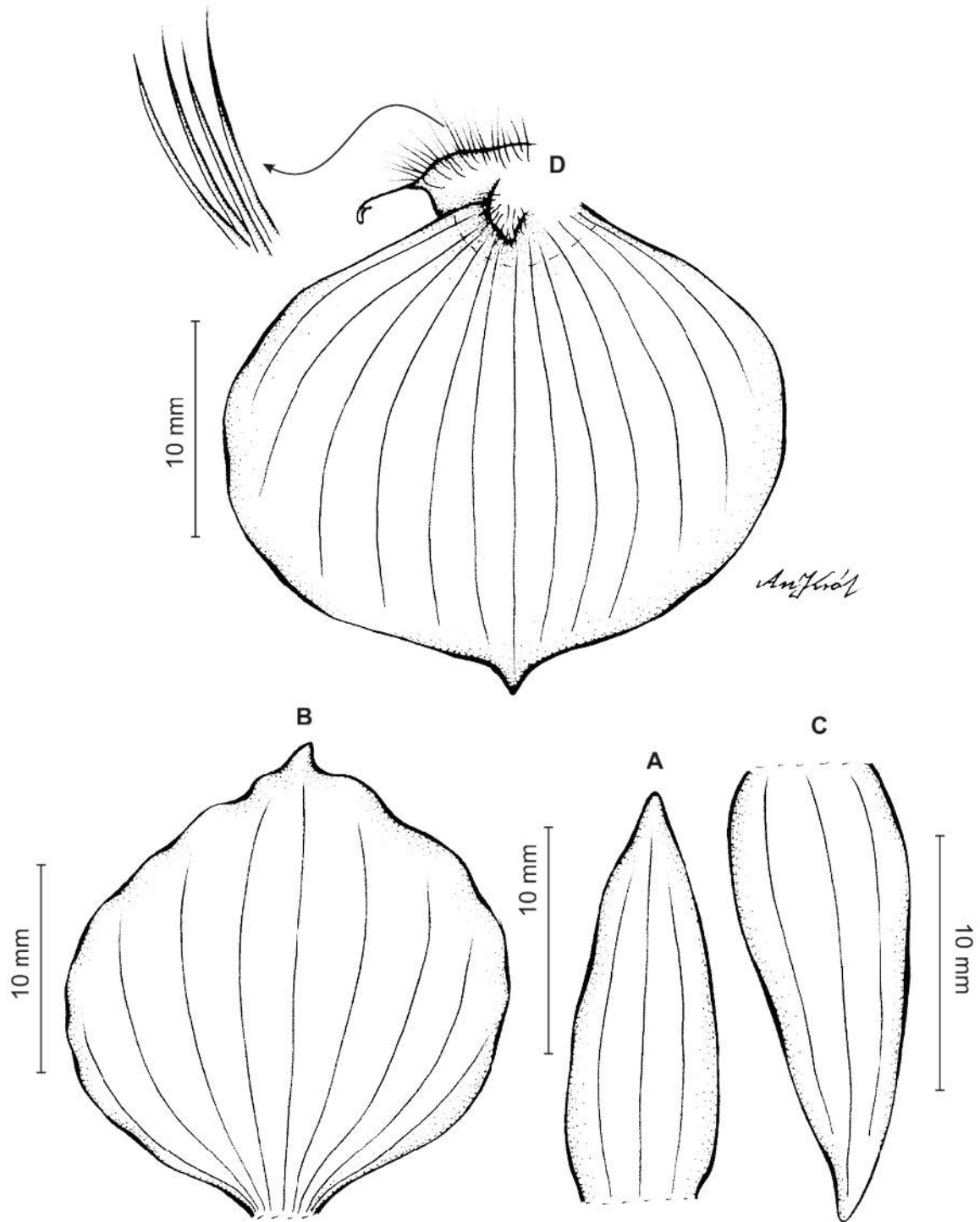


Figure 54 *Telipogon bugalagrandei* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Cuatrecasas* 20795 (AMES).

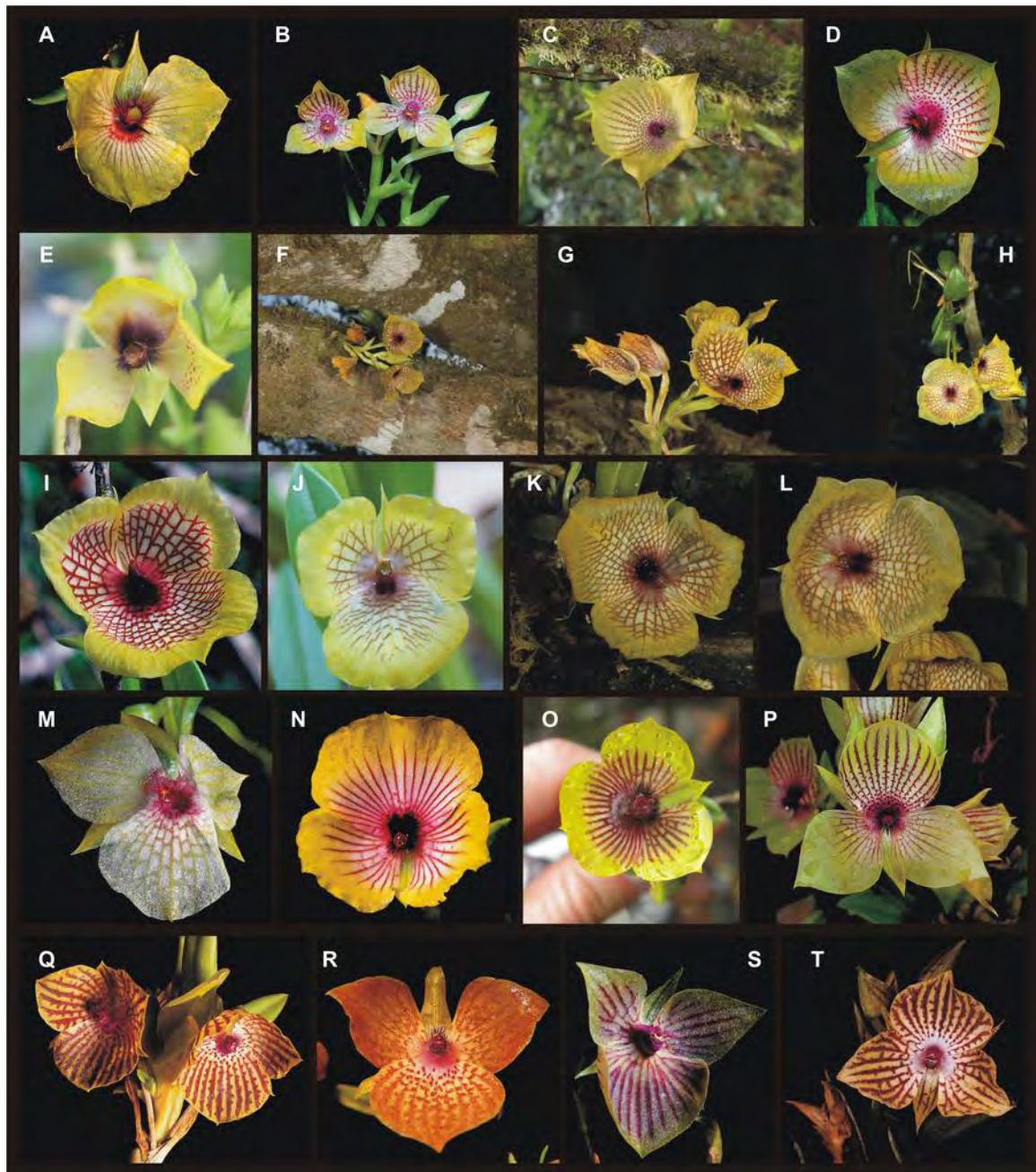


Figure 55 Representatives of *Telipogon* subgenus *Brevicaules*, *Hausmannianus*-subgroup. (A) *Telipogon andreettae* (photo: A. Hirtz), (B) *T. antioquianus* (photo: A. Hirtz), (C) *T. aureus* (photo: M. Kolanowska), (D) *T. aureus* (photo: A. Hirtz), (E) *T. berthae* (photo: L. C. Piña and M. L. Hincapié), (F-H) *T. croesus* (photo: T. Kusibab), (I) *T. croesus* (photo: A. Hirtz), (J) *T. croesus* (photo: L. C. Piña and M. L. Hincapié), (K,L) *T. croesus* (photo: T. Kusibab), (M) cf. *T. hartwegii* (photo: A. Hirtz), (N) *T. lehmannii* (photo: A. Hirtz), (O) cf. *T. lehmannii* (photo: M. Kolanowska), (P) *T. polyrrhizus* (photo: A. Hirtz), (Q) *T. puruantensis* (photo: A. Hirtz), (R) *T. saraguroense* (photo: A. Hirtz), (S) *T. vieirae* (photo: A. Hirtz), (T) *T. vollesii* (photo: A. Hirtz).

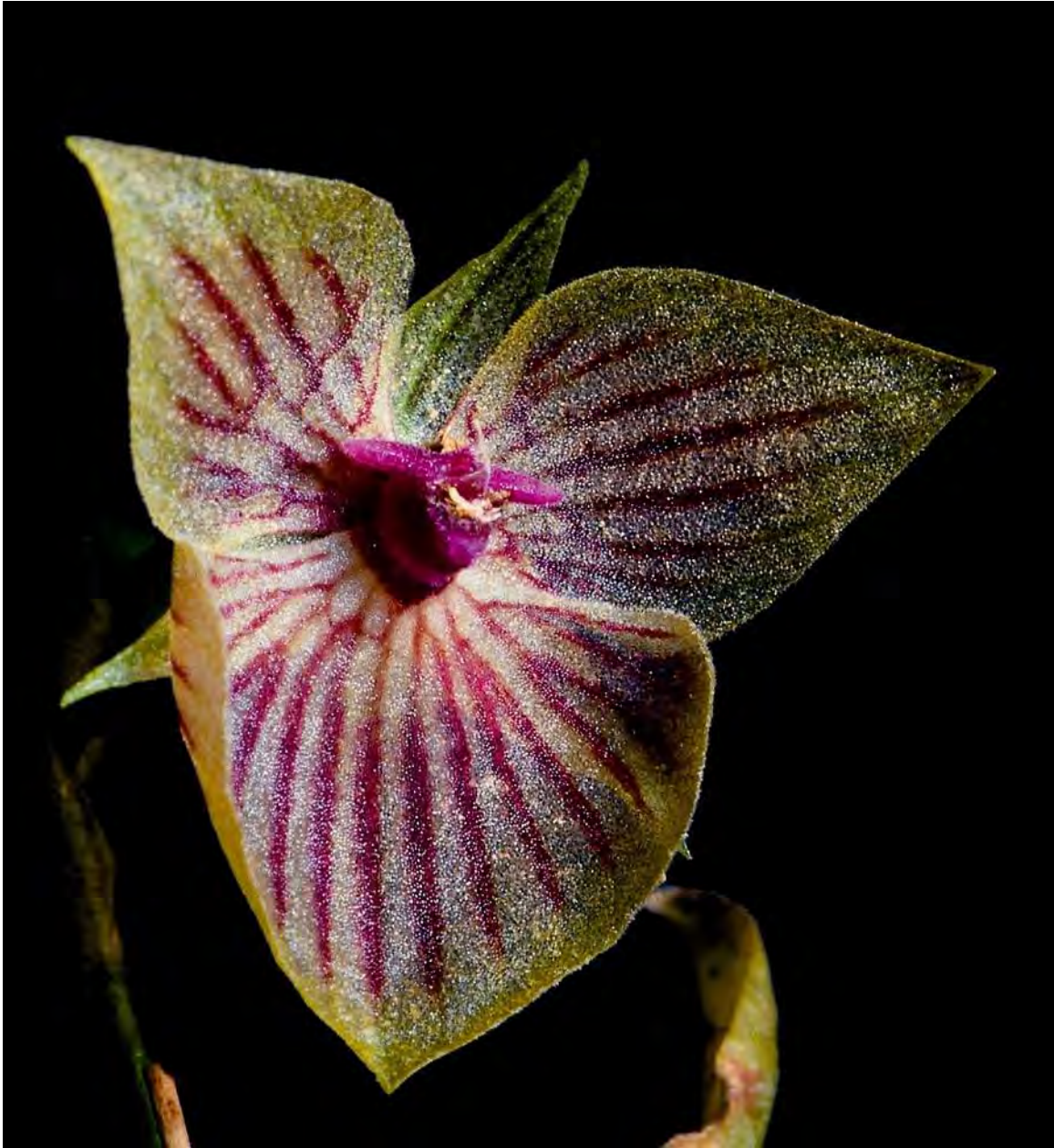


Figure 56 *Telipogon vieirae* (photo: A. Hirtz).

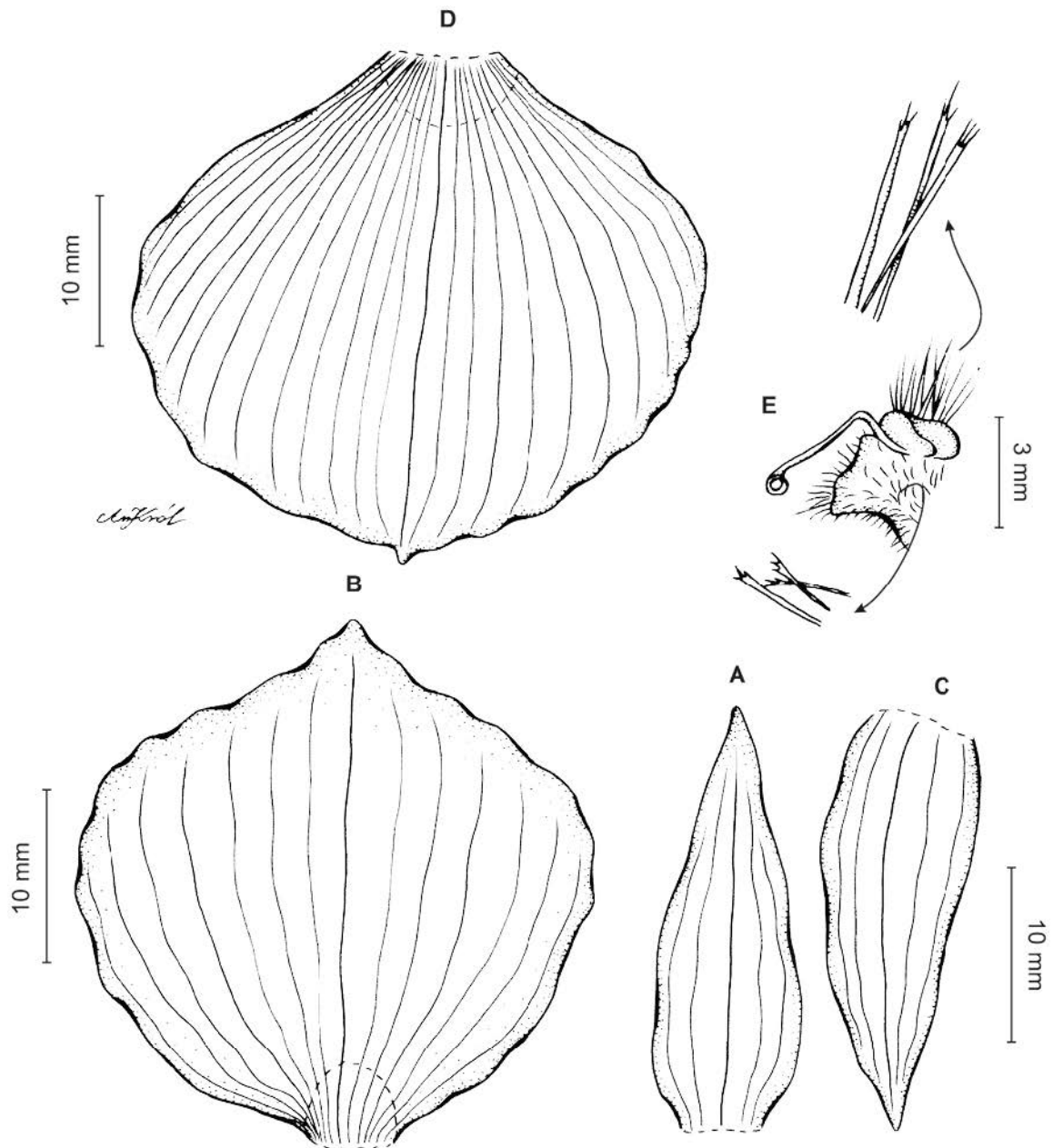


Figure 57 *Telipogon hercules* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Roeszl s.n. (W-R).



Figure 58 *Telipogon hercules* (photo: C. Uribe-Vélez).

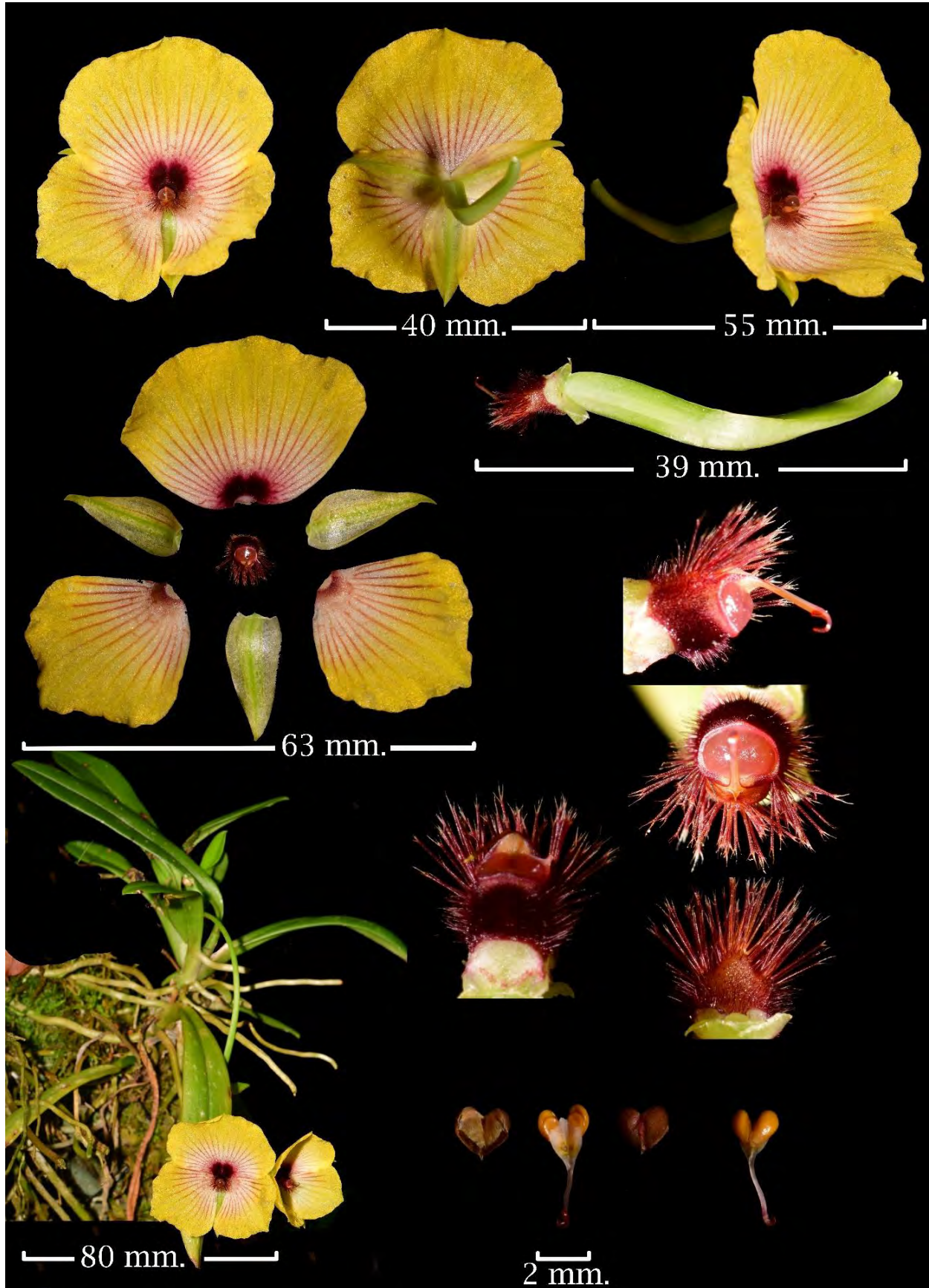


Figure 59 *Telipogon hercules* (photo: C. Uribe-Vélez).

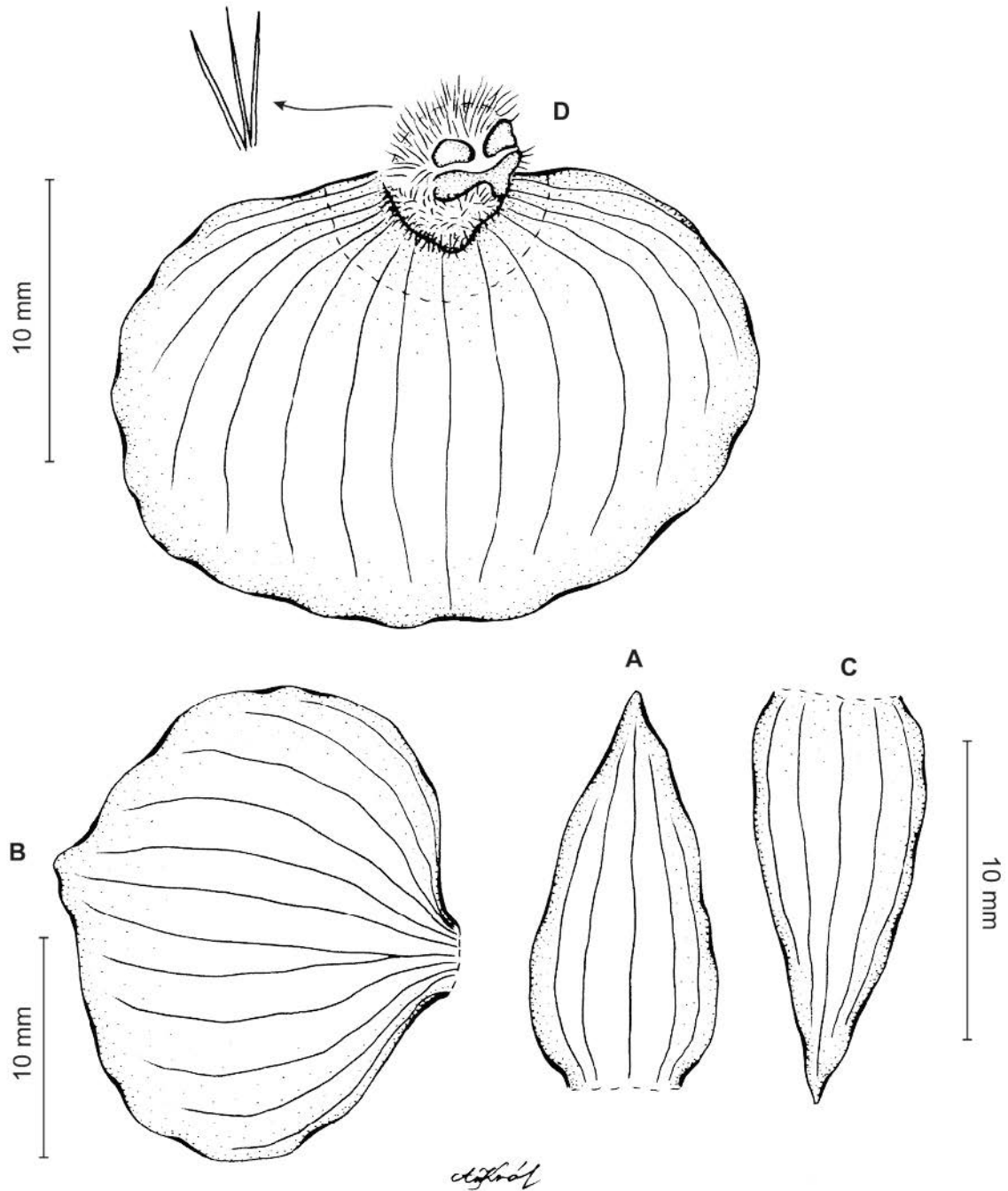


Figure 60 *Telipogon radiatus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, and gynostemium. Drawn by A. Król from Wallis s.n. (W-R).

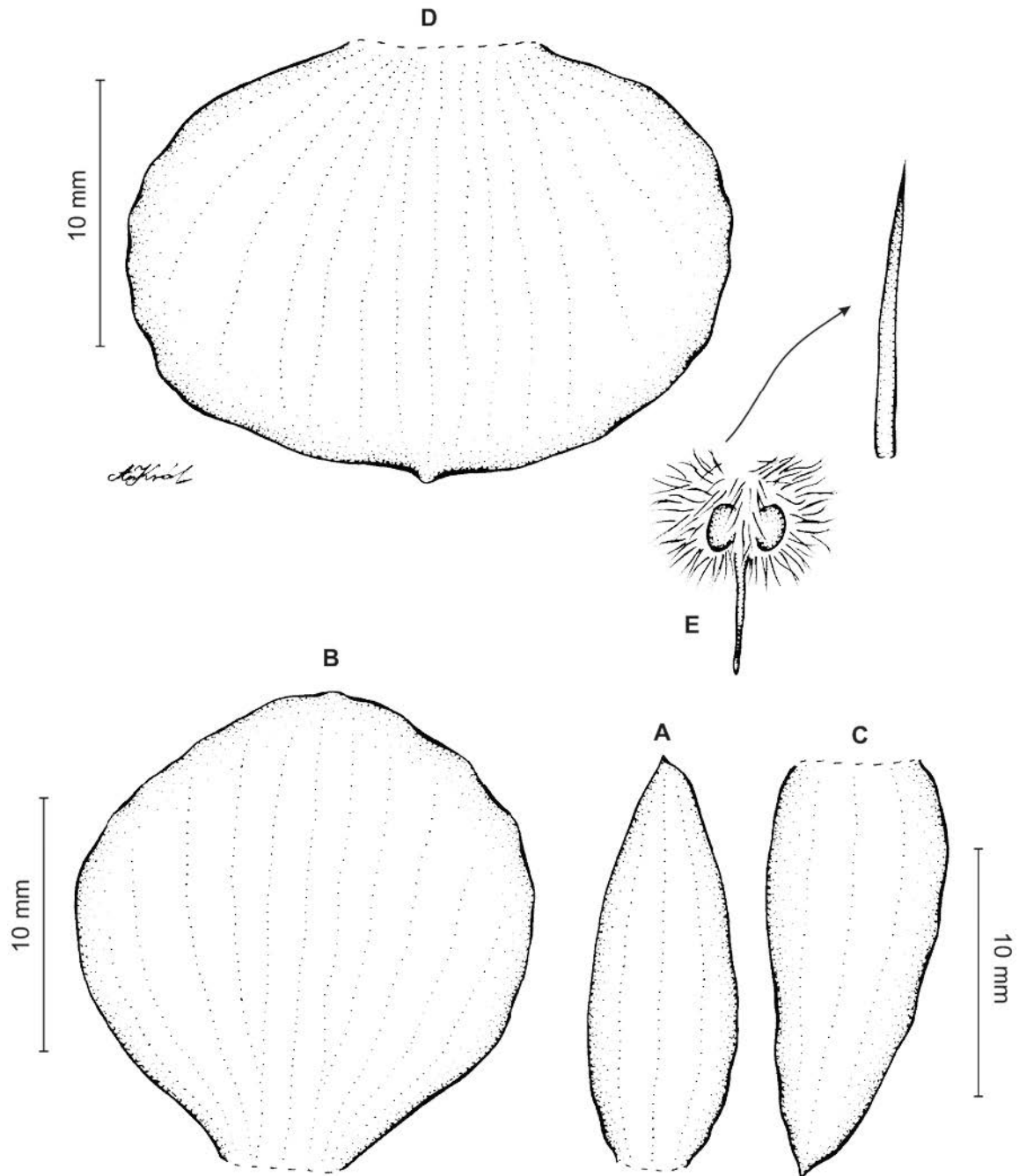


Figure 61 *Telipogon radiatus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Triana 1471 (COL).

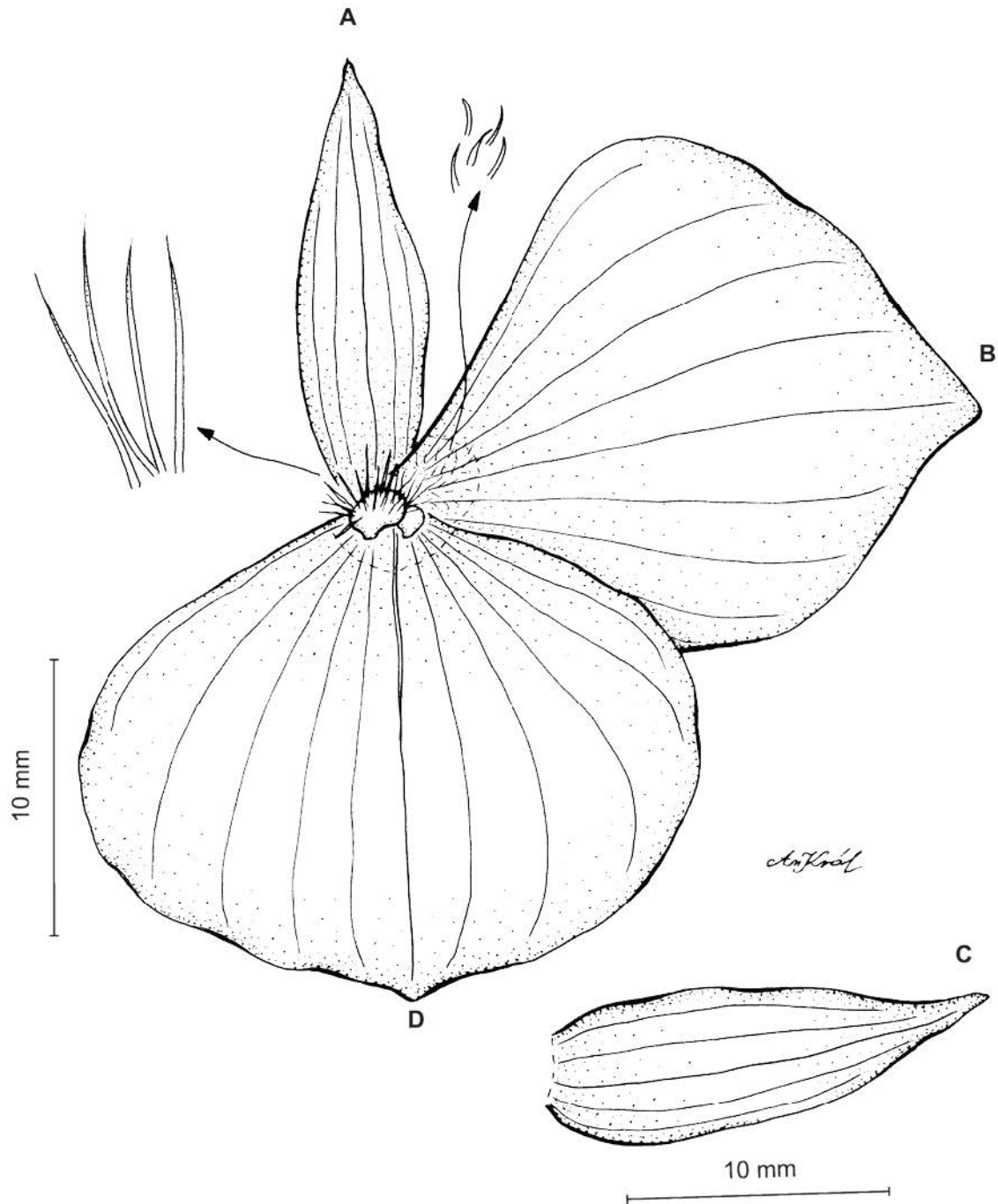


Figure 62 *Telipogon radiatus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, and gynostemium. Drawn by A. Król from *Patin s.n.* (W-R).

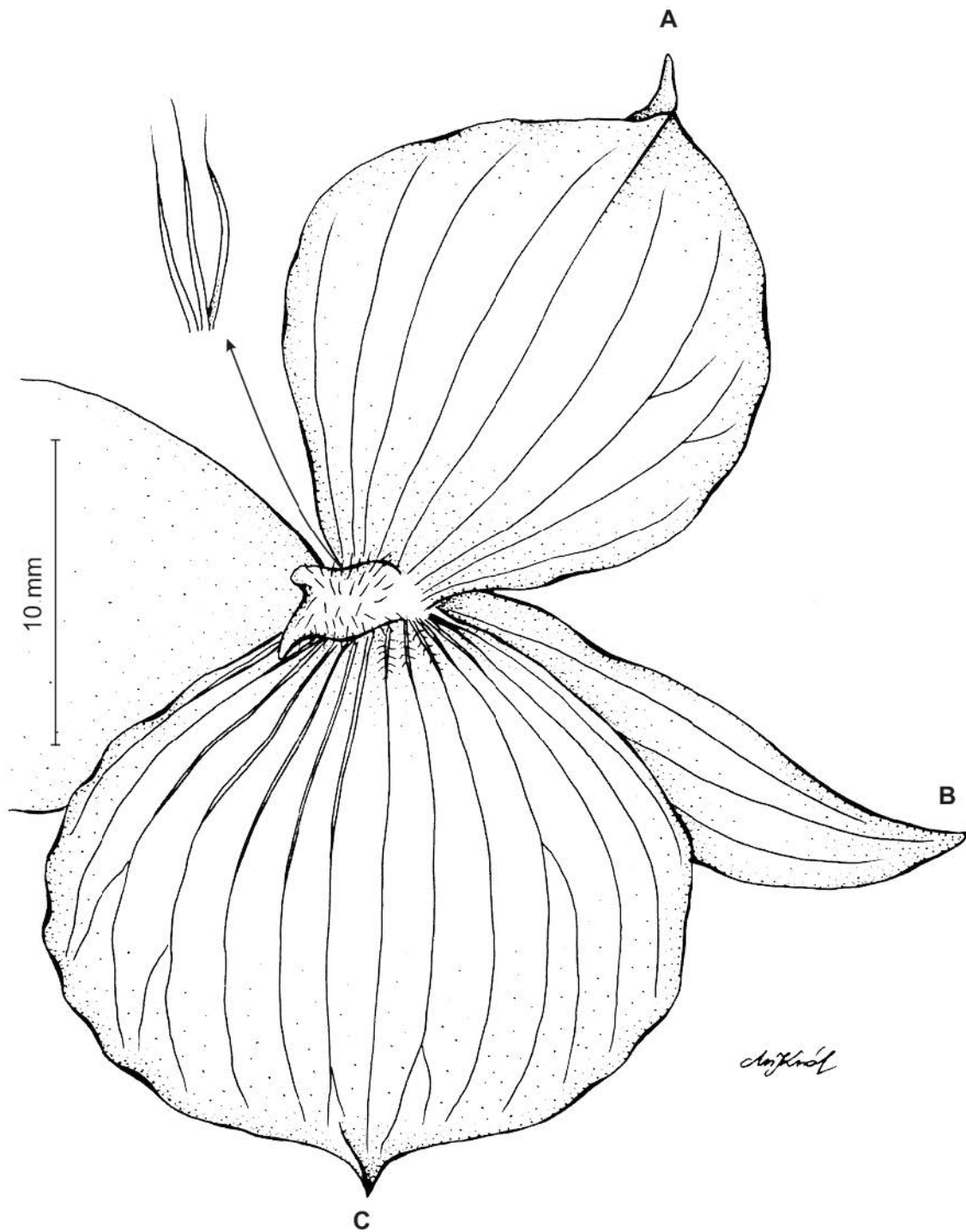


Figure 63 *Telipogon kraenzlinianus* Szlach. & Kolan. (A) Petal, (B) lateral sepal, (C) lip, and gynostemium. Drawn by A. Król from Lehmann 481 (W-R).



Figure 64 *Telipogon aureus* (photo: M. Kolanowska).



Figure 65 *Telipogon aureus* (photo: M. Kolanowska).



Figure 66 *Telipogon aureus* (photo: M. Kolanowska).



Figure 67 *Telipogon aureus* (photo: M. Kolanowska).



Figure 68 *Telipogon aureus* (photo: A. Hirtz).

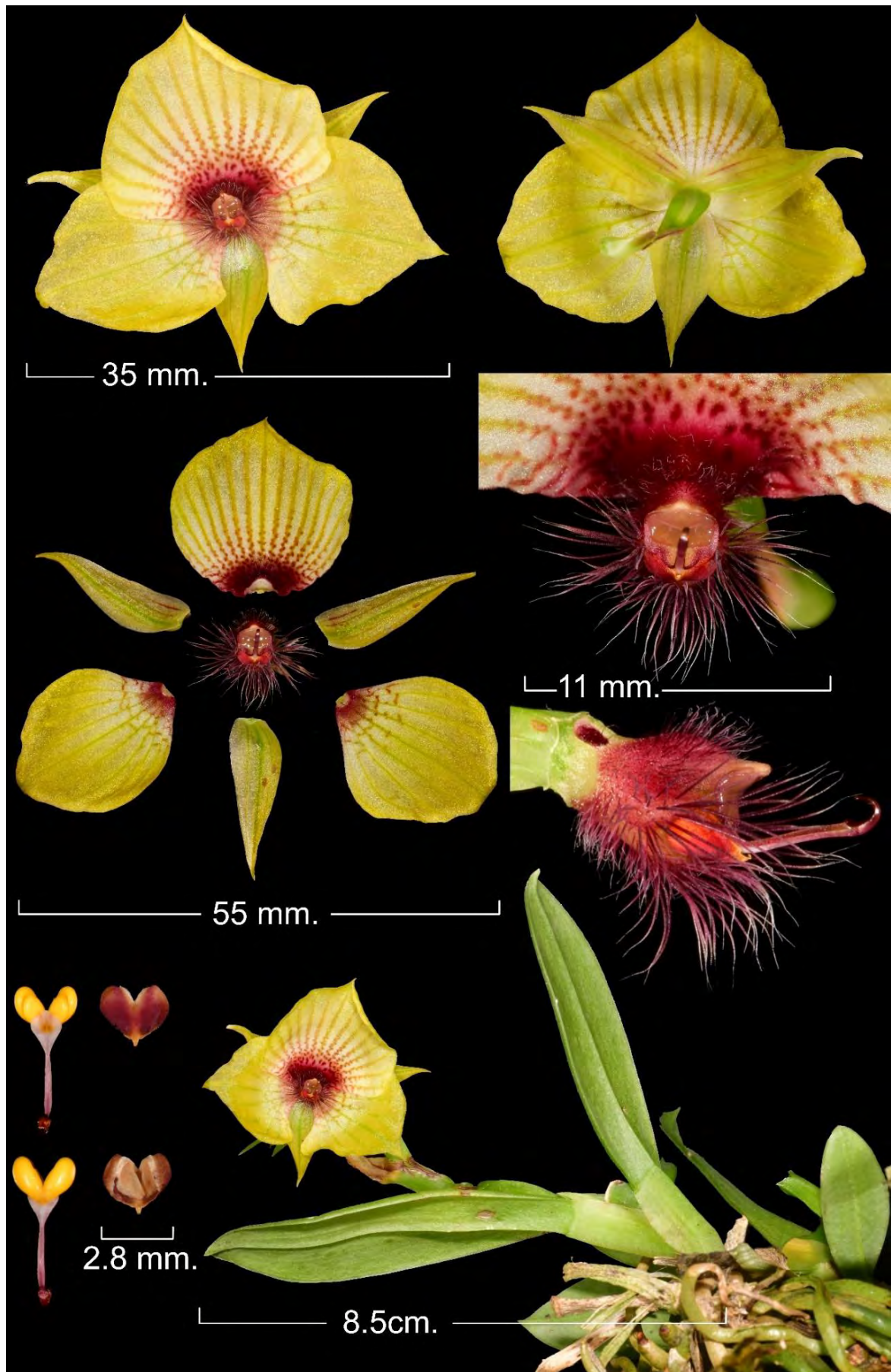


Figure 69 *Telipogon aureus* (photo: C. Uribe-Vélez).

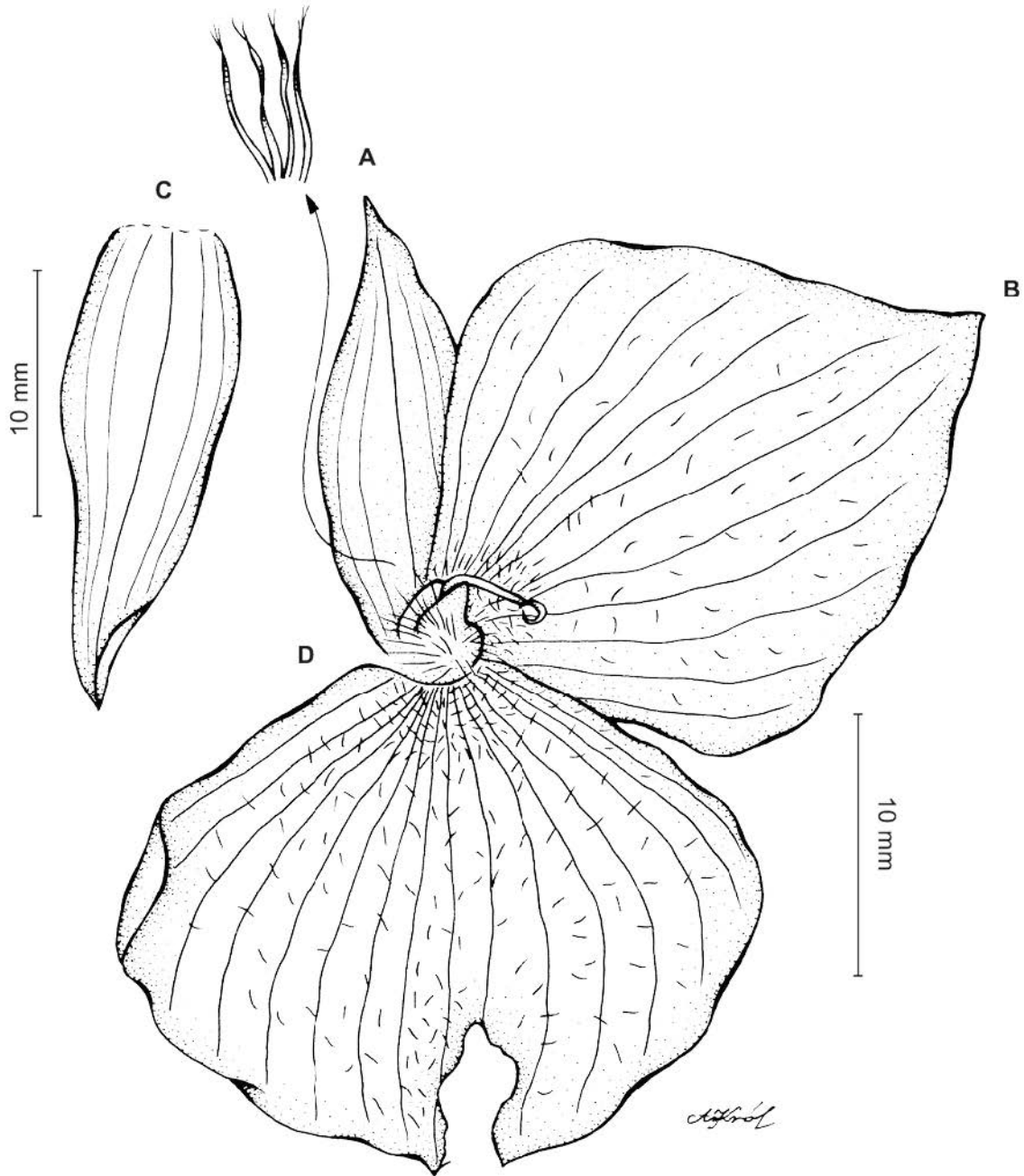


Figure 70 *Telipogon hirsutus* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Lehmann s.n.* (W-R).

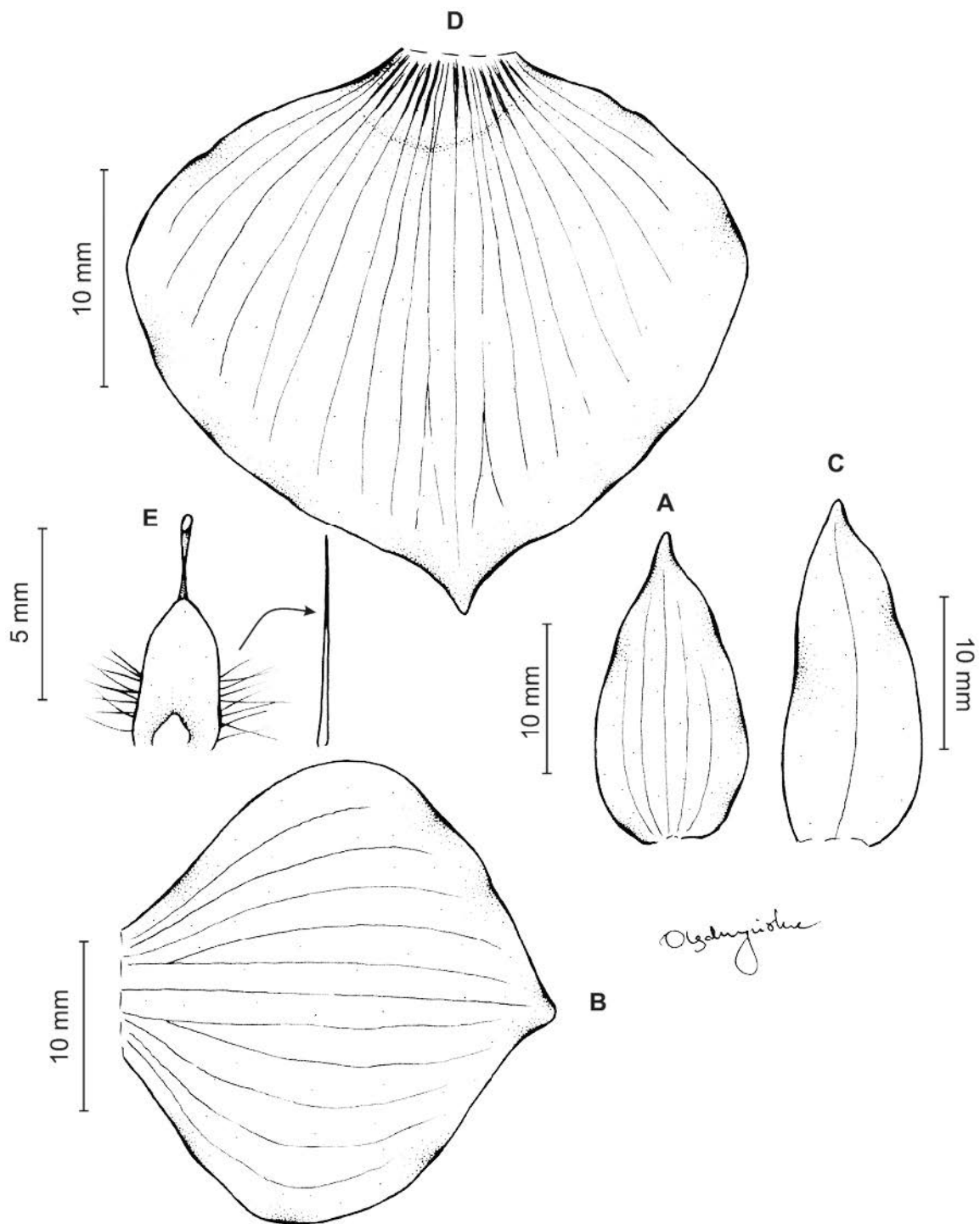


Figure 71 *Telipogon latifolius* Kunth. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Olędrzyńska from *Barclay & Juajibioy* 6532 (MO 3248433).

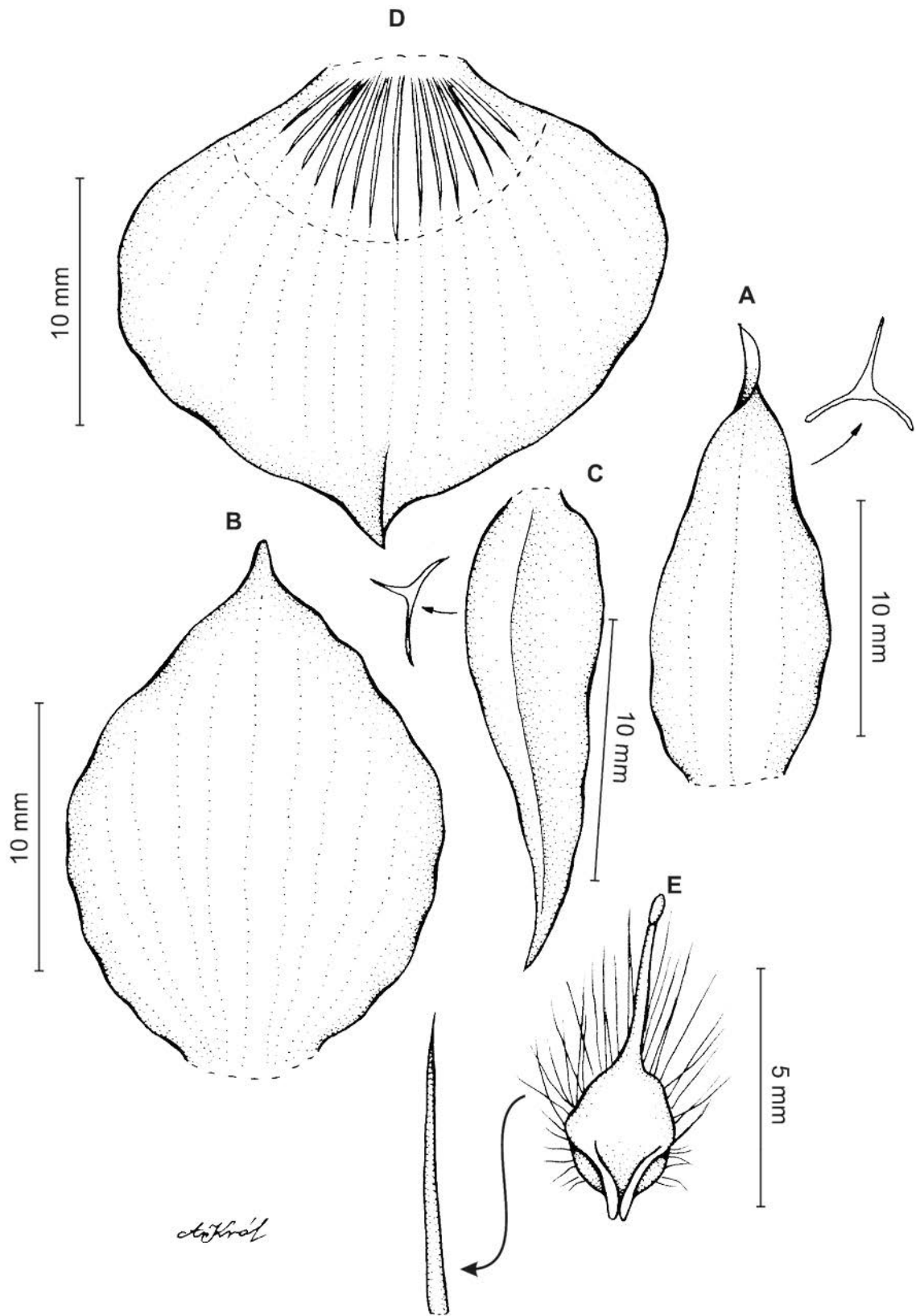


Figure 72 *Telipogon latifolius* Kunth. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Ospina 1470 (COL).



Figure 73 *Telipogon vollesii* (photo: A. Hirtz).

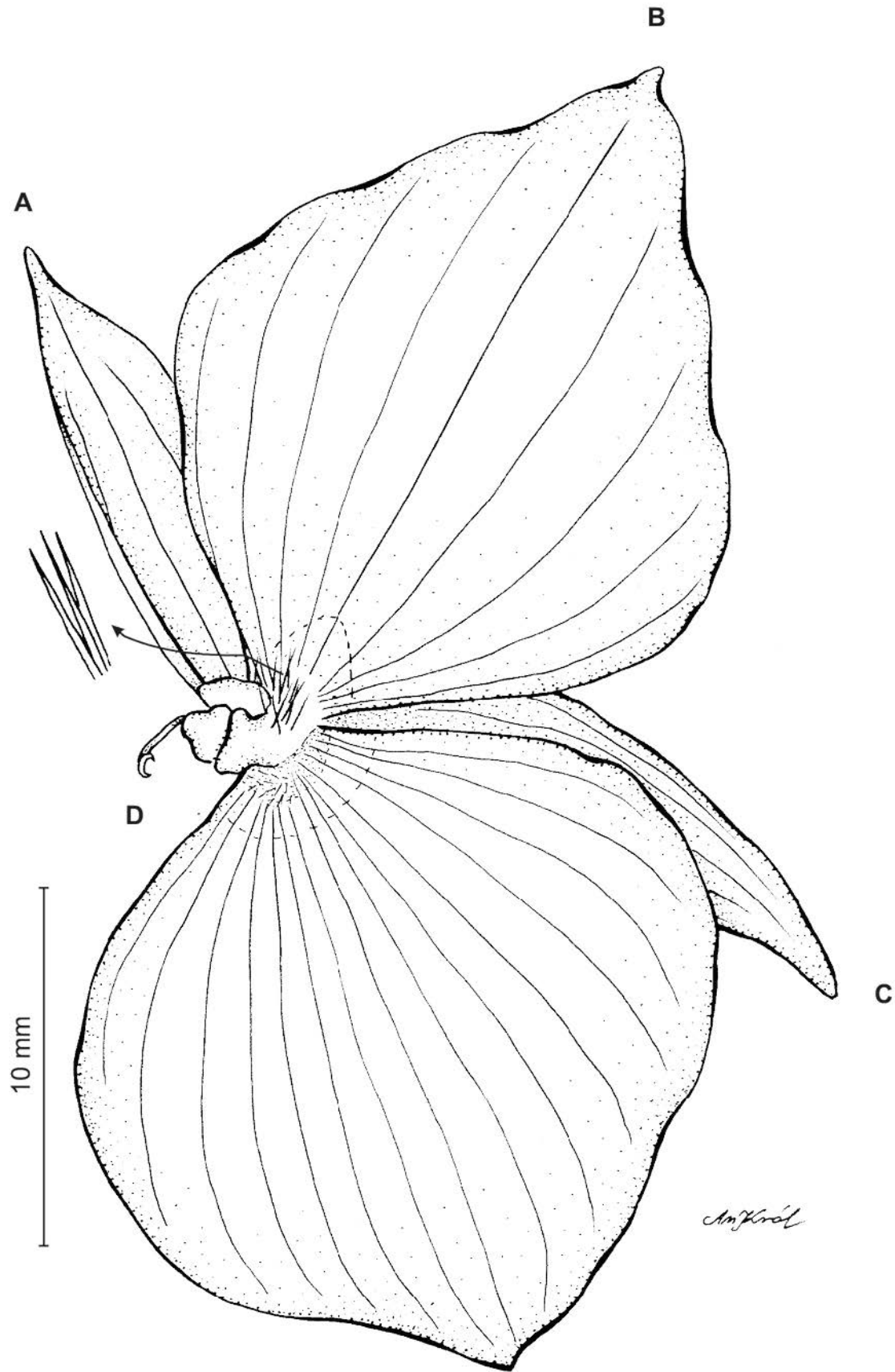


Figure 74 *Telipogon polyrrhizus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Lehmann 94 (W-R).

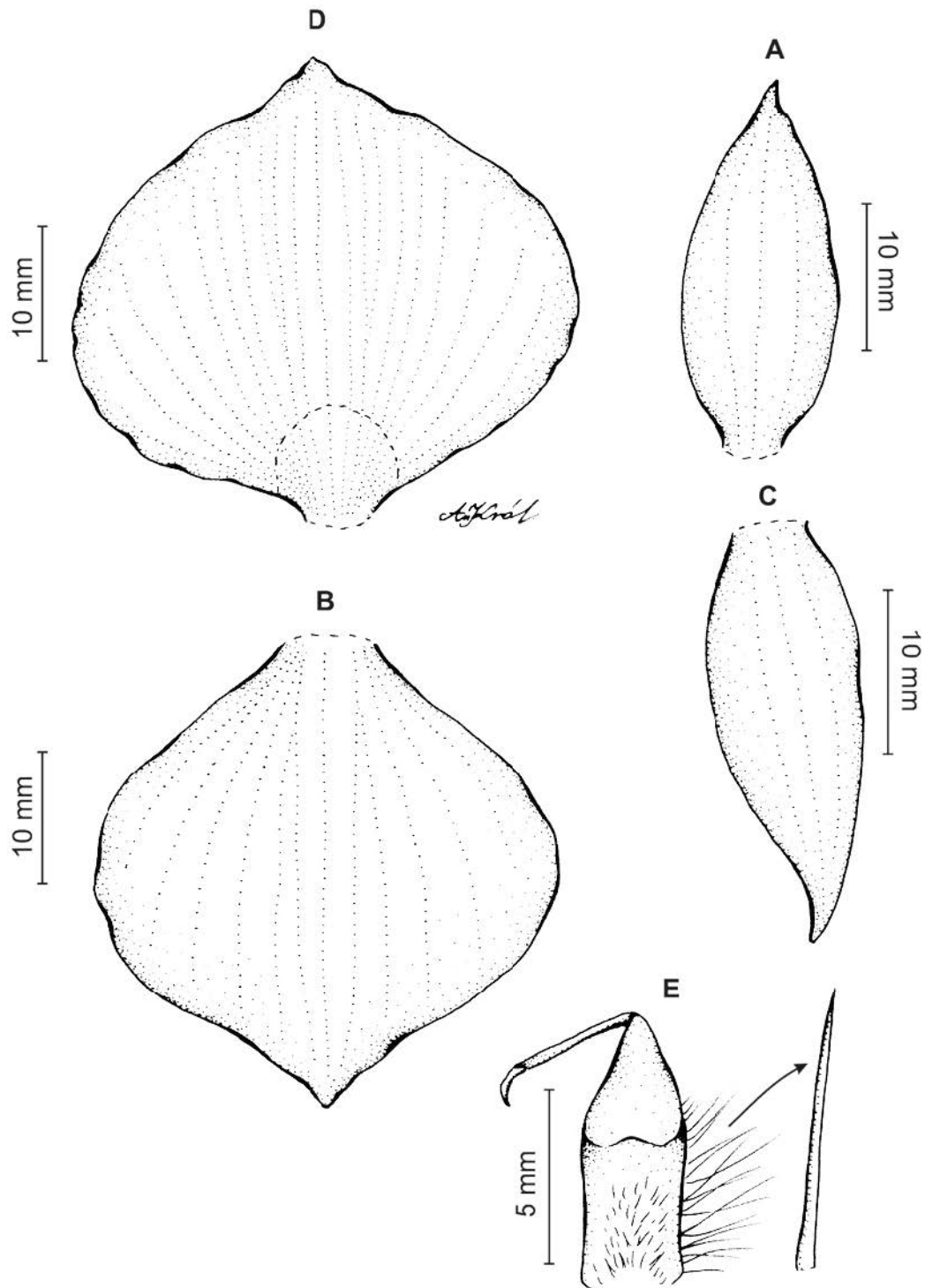


Figure 75 *Telipogon polyrrhizus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Romero-Castaneda 4591 (COL).



Figure 76 *Telipogon polyrrhizus* (photo: A. Hirtz).

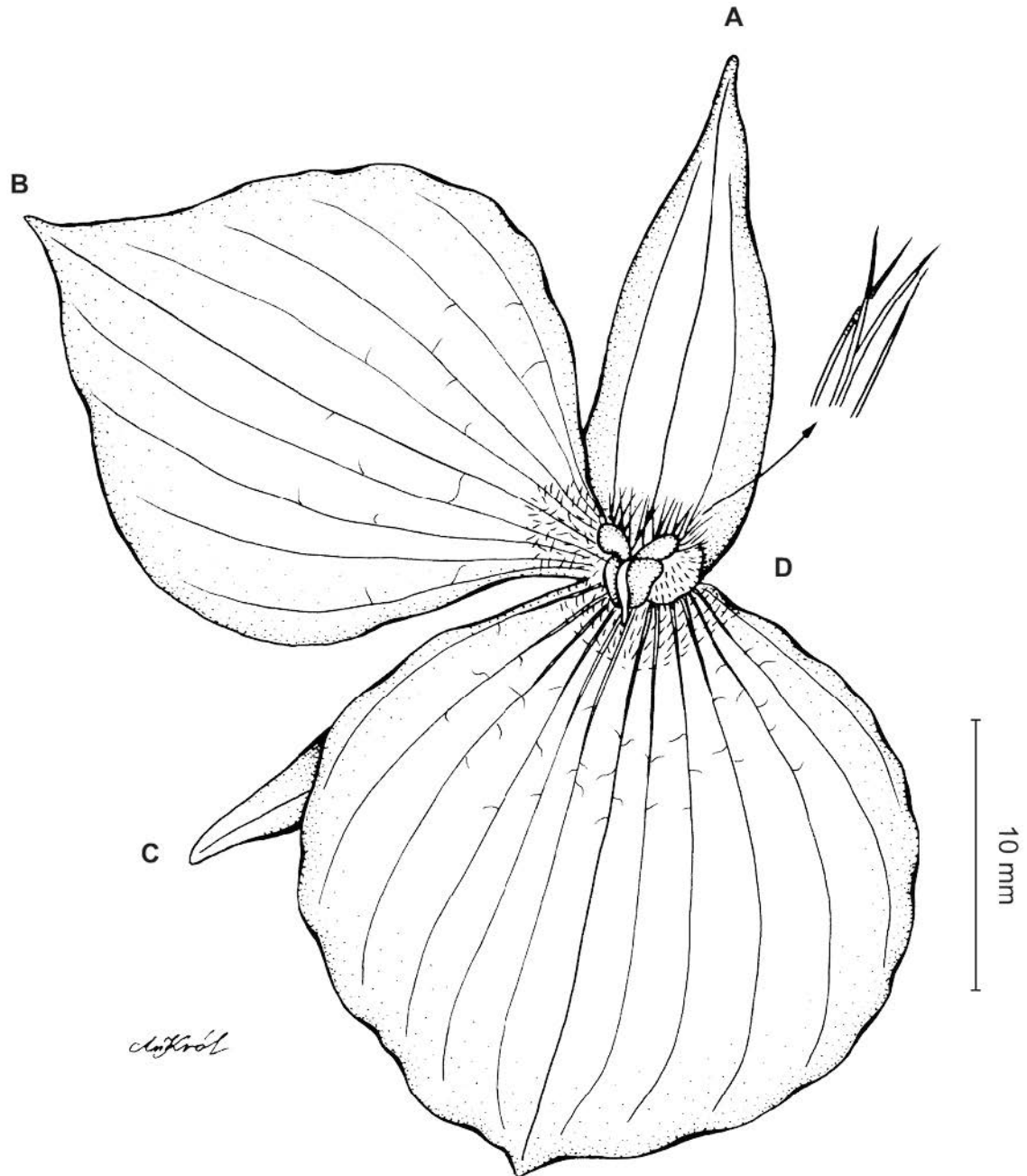


Figure 77 *Telipogon hartwegii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Lehmann s.n. (W-R).

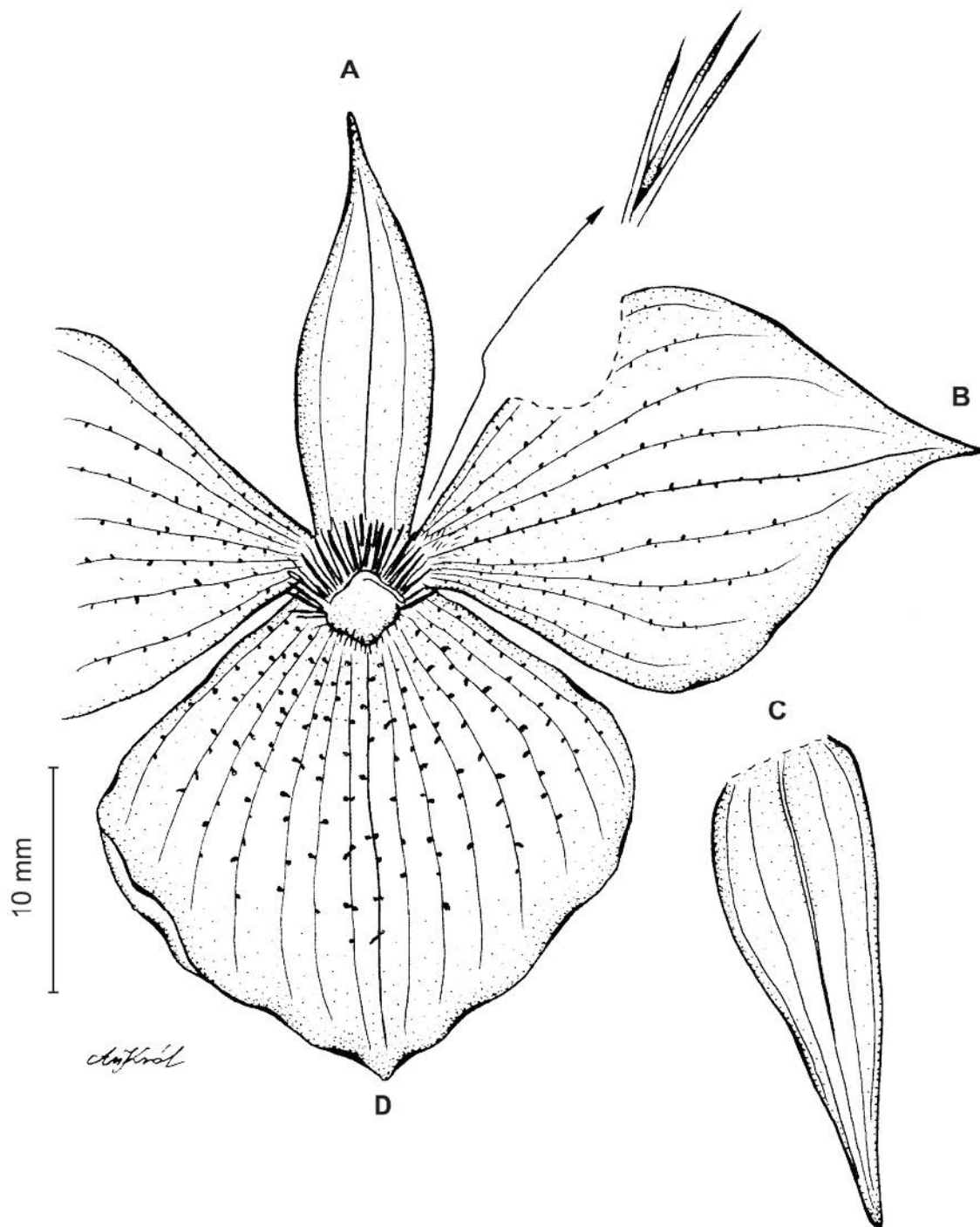


Figure 78 *Telipogon hartwegii* Rchb. f. (A) dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Schmidtchen s.n. (W-R).



Figure 79 *Telipogon* cf. *hartwegii* (photo: A. Hirtz).



Figure 80 *Telipogon andreettae* (photo: A. Hirtz).

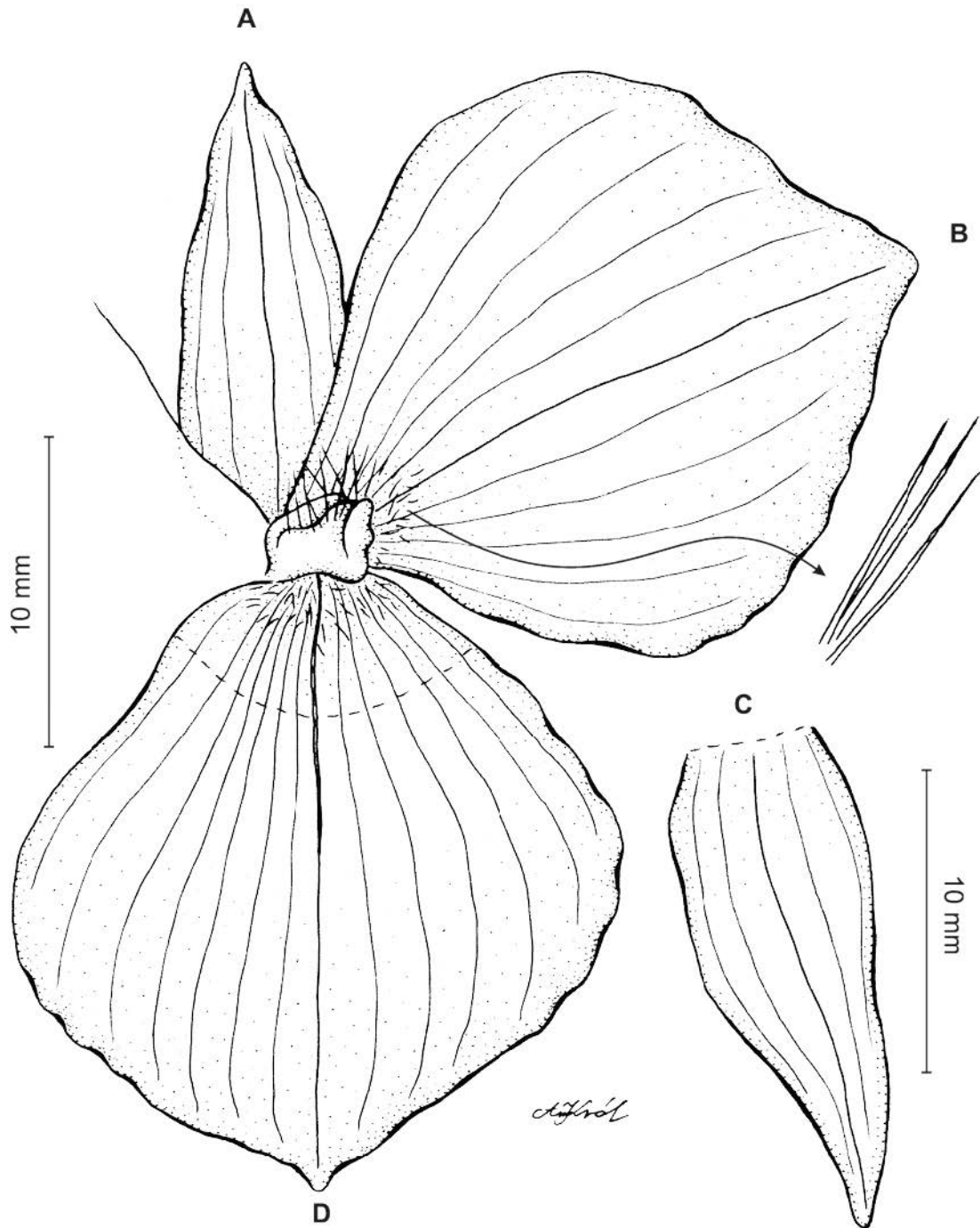


Figure 81 *Telipogon hausmannianus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Linden 1285 (W-R).

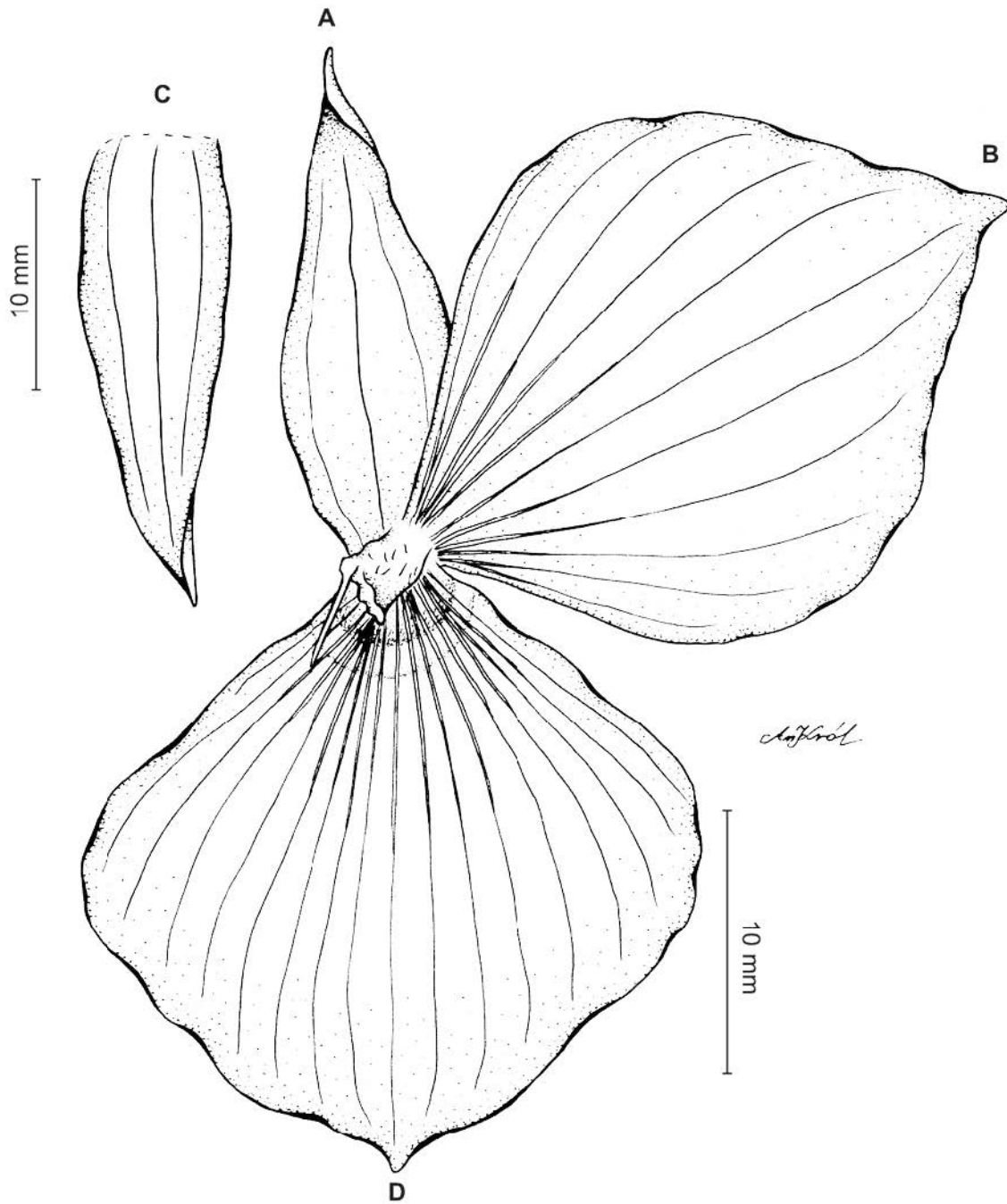


Figure 82 *Telipogon hausmannianus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Wallis s.n. (W-R).

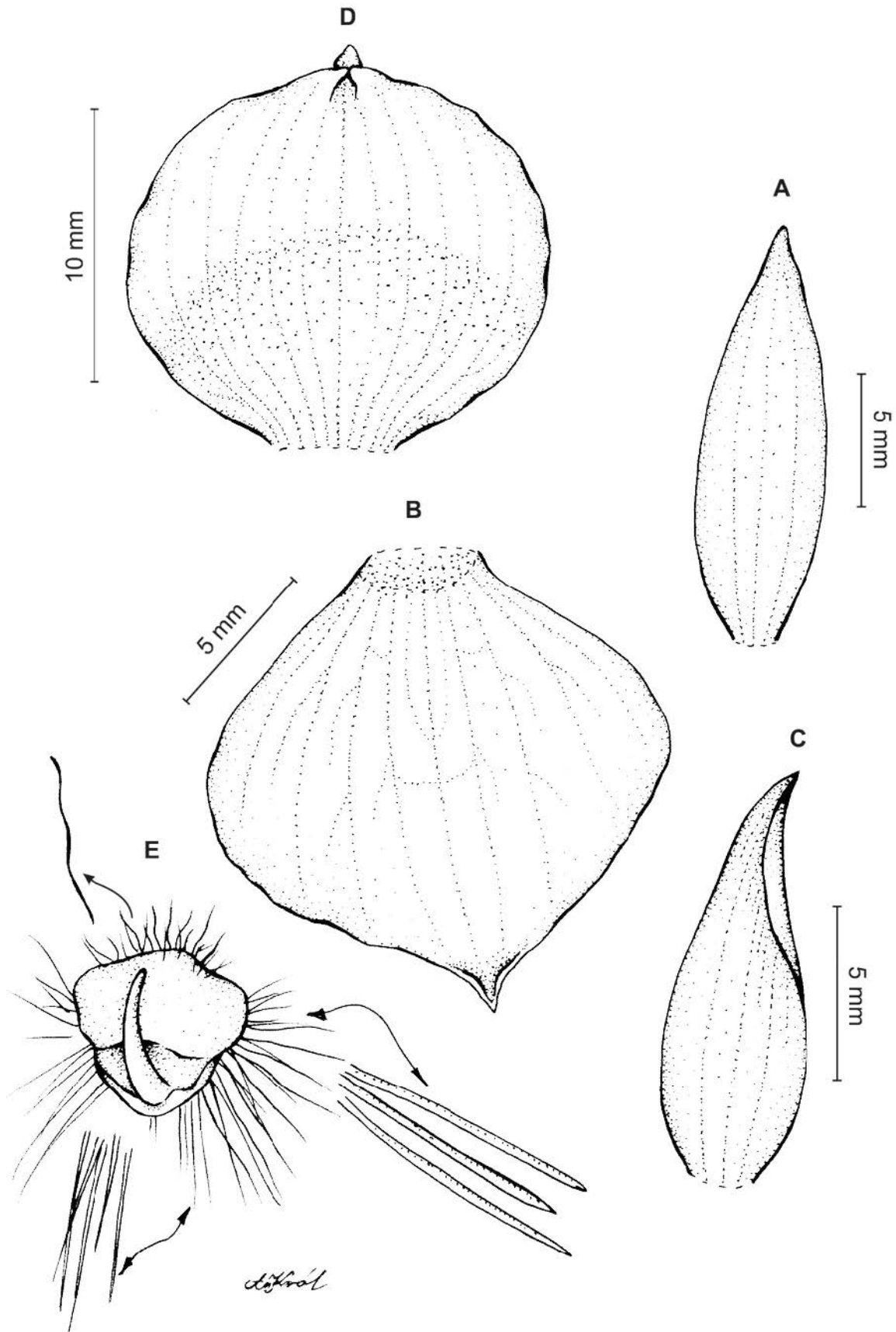


Figure 83 *Telipogon cundinamarcae* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Ospina 1184 (COL).

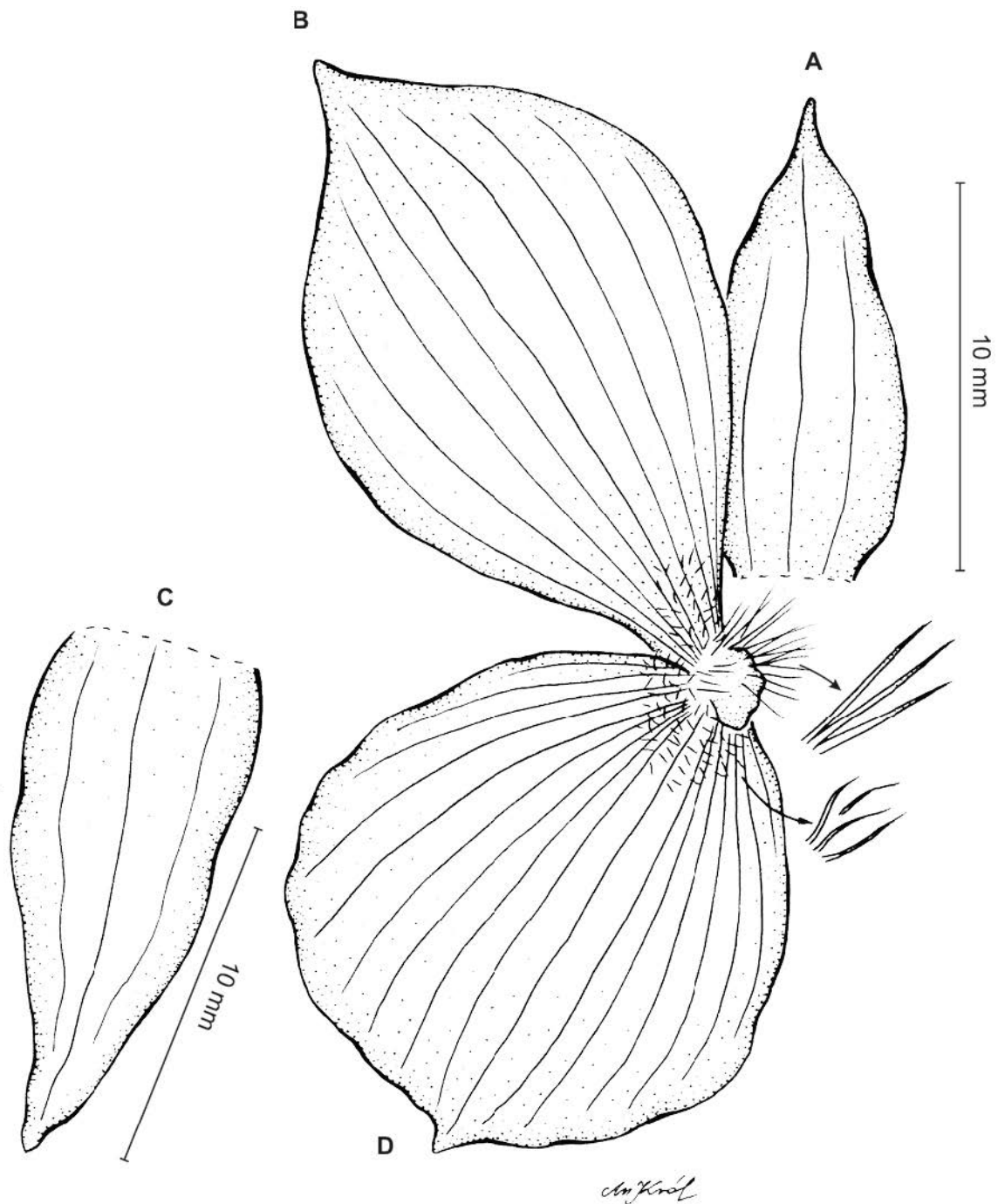


Figure 84 *Telipogon caucanus* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Lehmann 6030* (W-R).

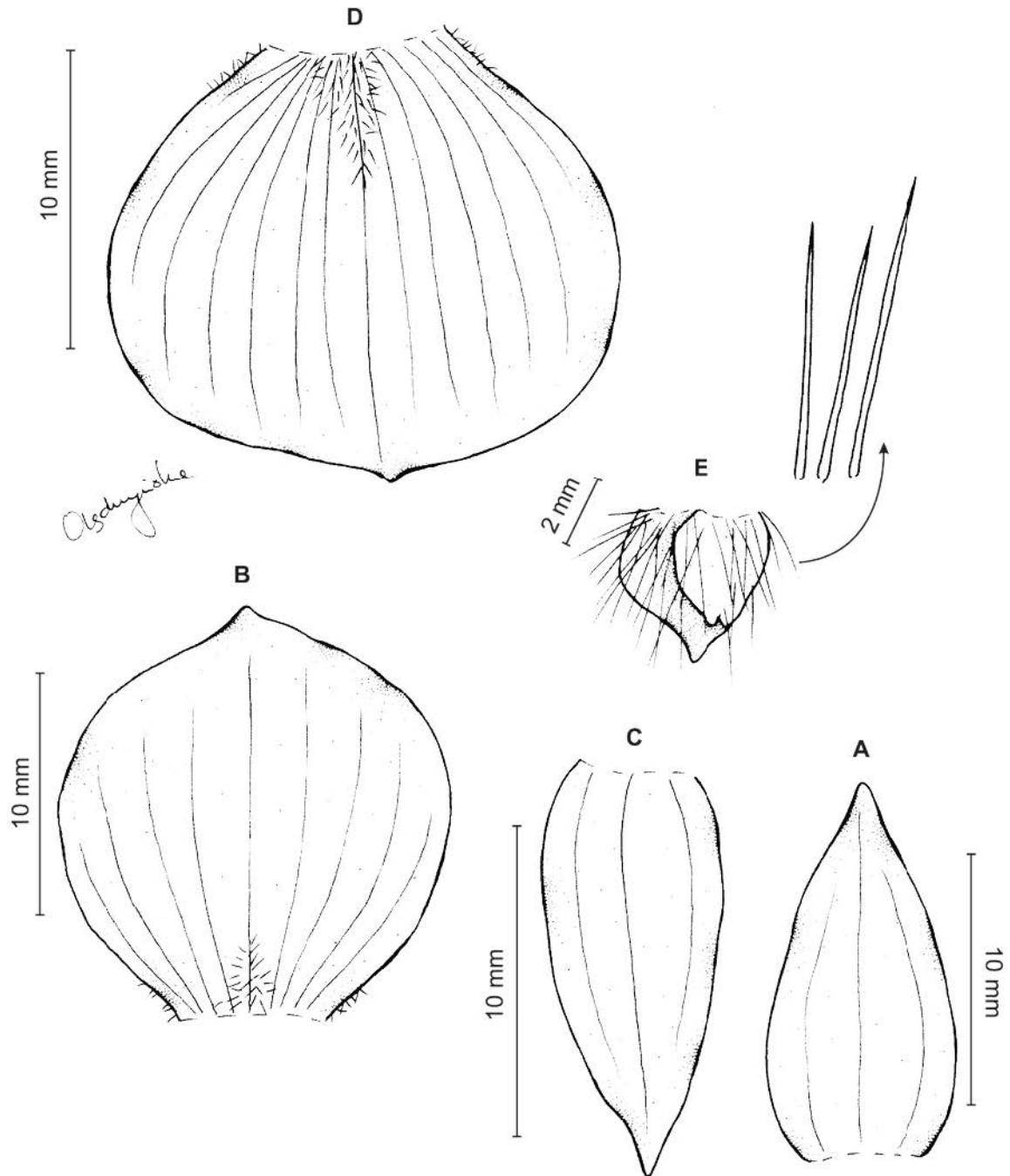


Figure 85 *Telipogon caucanus* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Olschynjaka from Lehmann 6030 (US).

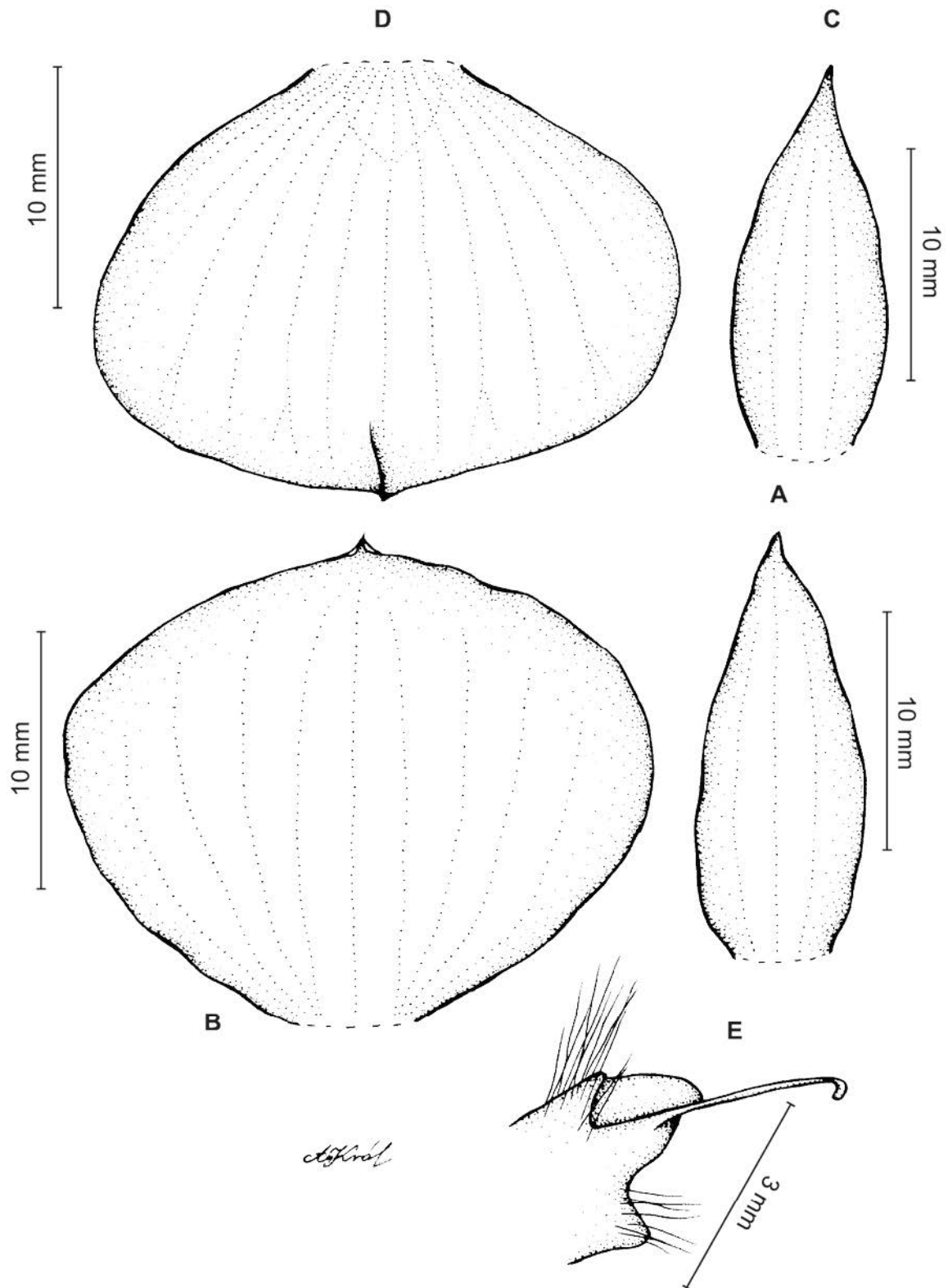


Figure 86 *Telipogon trilabiatus* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Vargas 8702 (COL).

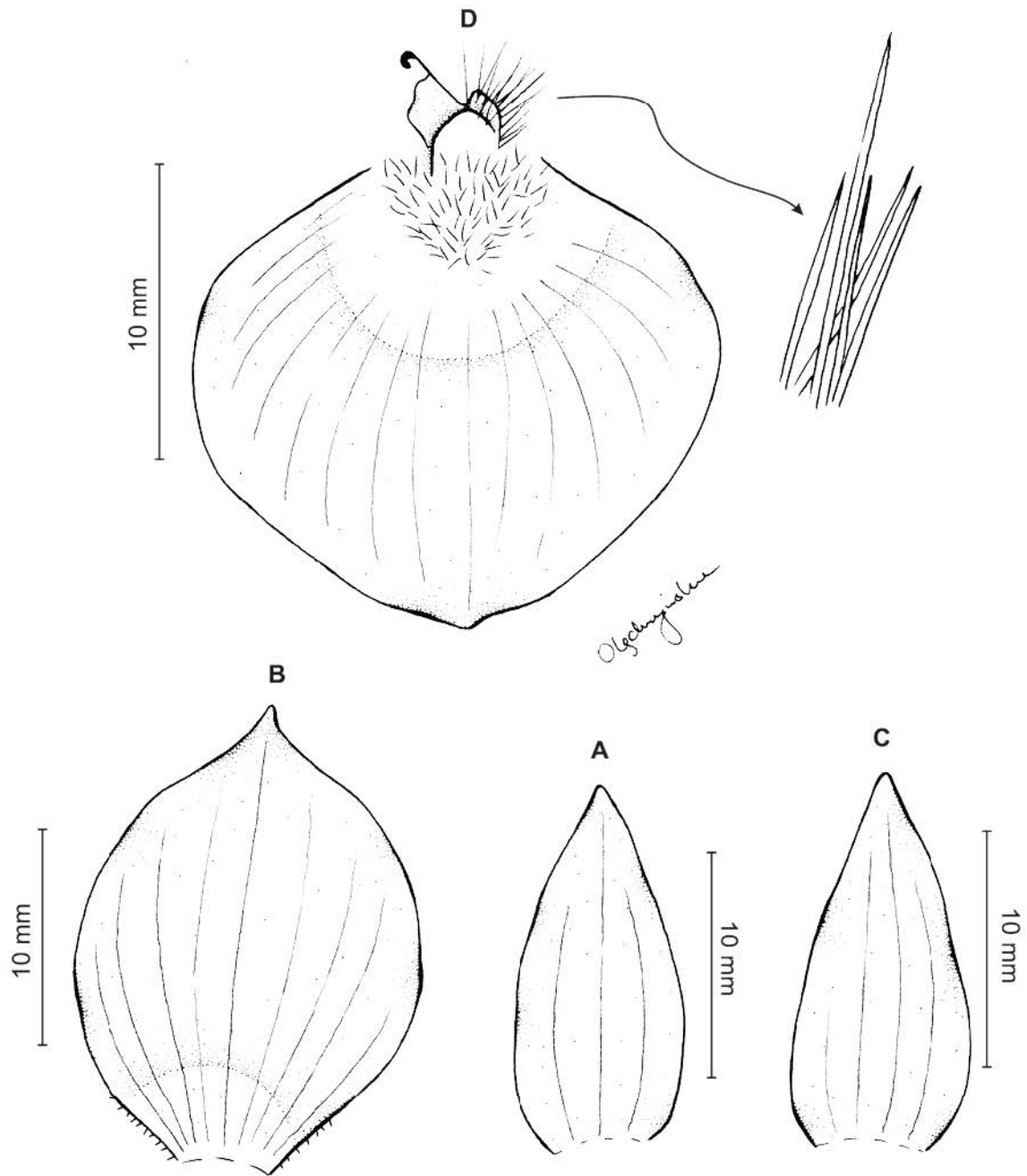


Figure 87 *Telipogon berthae* P. Ortiz. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Olędrzyńska from *Garay 736* (AMES).



Figure 88 *Telipogon berthae* (photo: L. C. Piña and M. L. Hincapie).

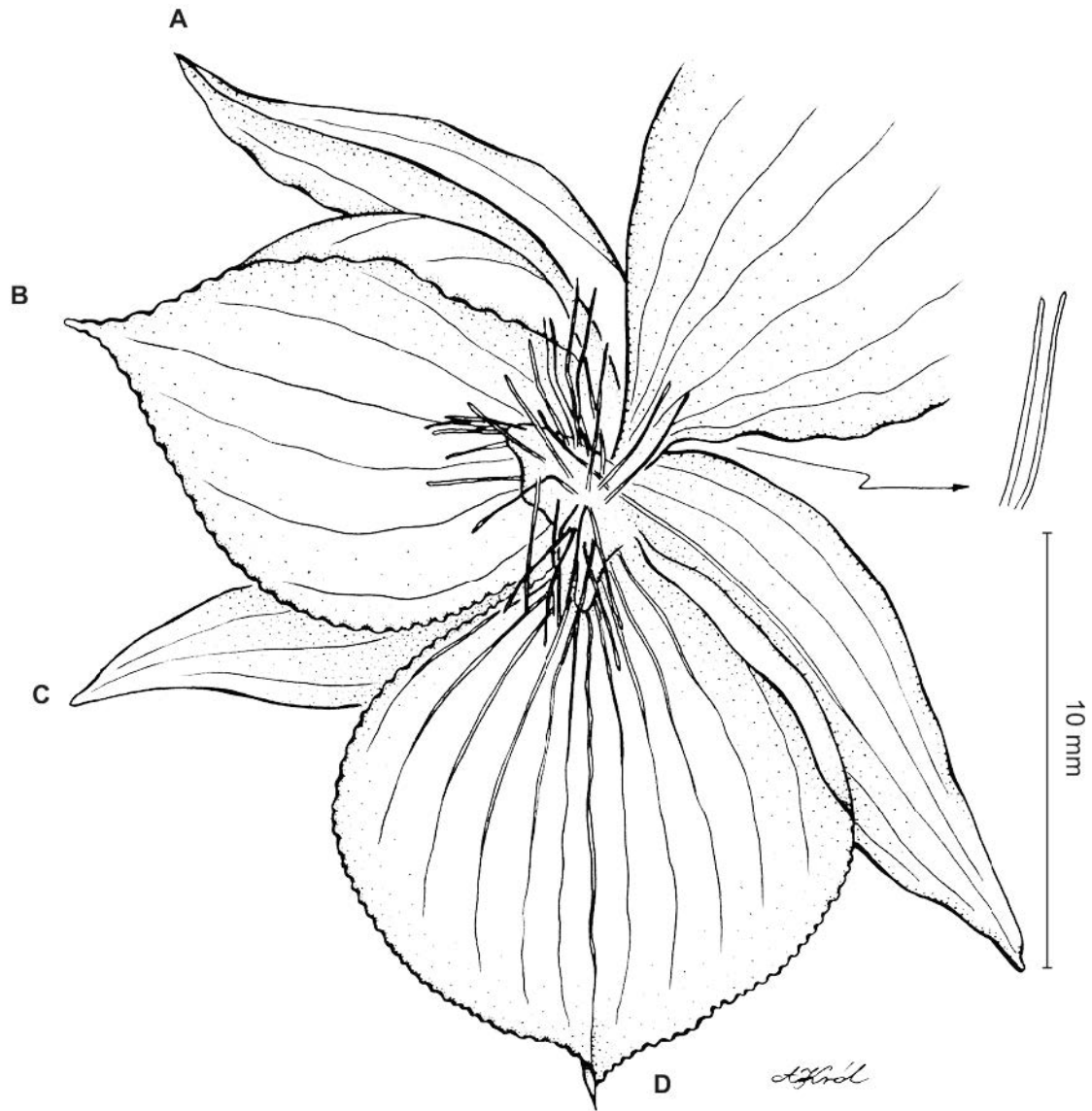


Figure 89 *Telipogon antioquianus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Warszewicz s.n. (WR 30093).

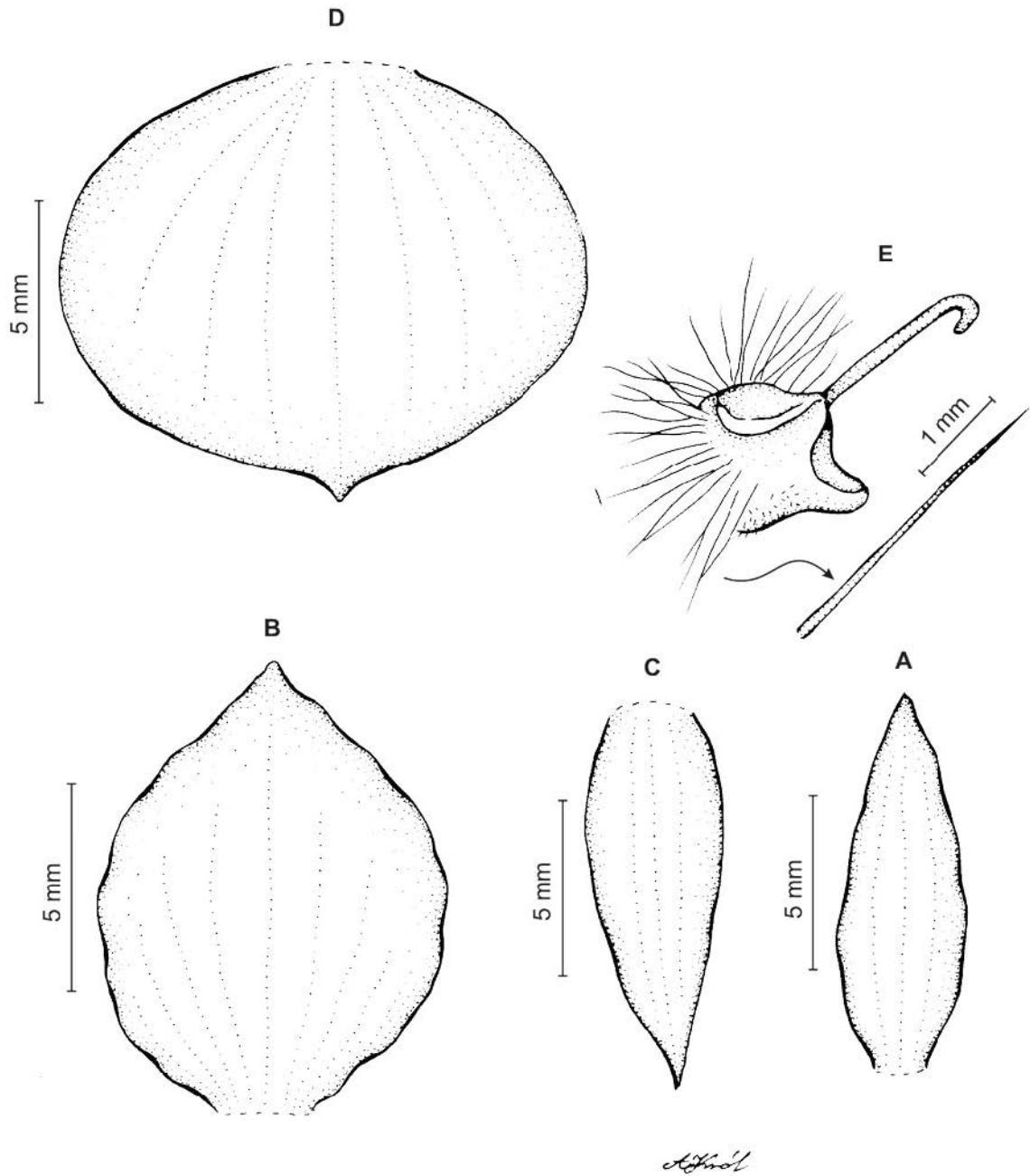


Figure 90 *Telipogon antioquianus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Schneider 220.1* (COL).

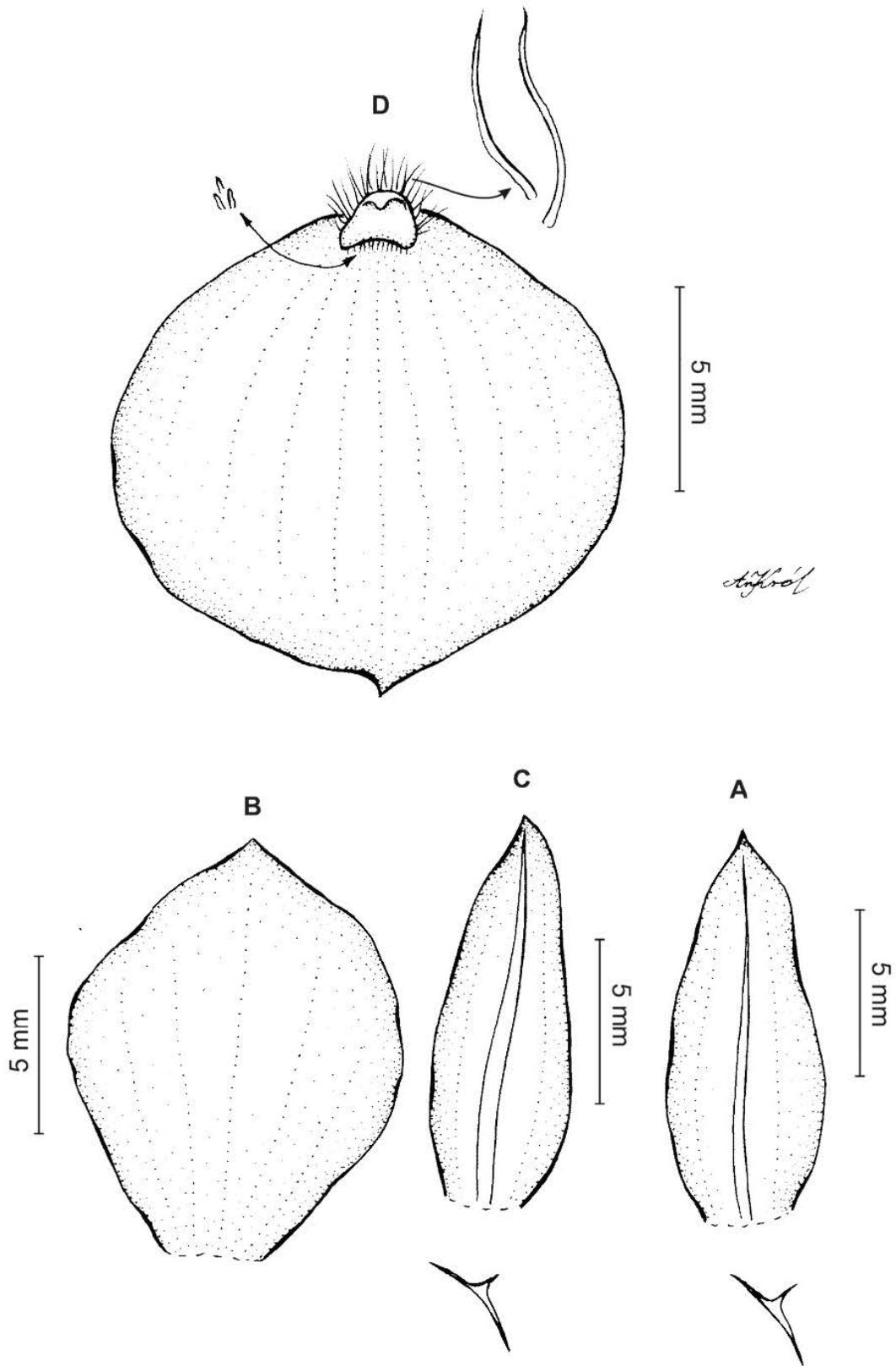


Figure 91 *Telipogon antioquianus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Ordóñez & al. 1726 (COL).



Figure 92 *Telipogon antioquianus* (photo: A. Hirtz).



Figure 93 *Telipogon antioquianus* (photo: C. Uribe-Vélez).

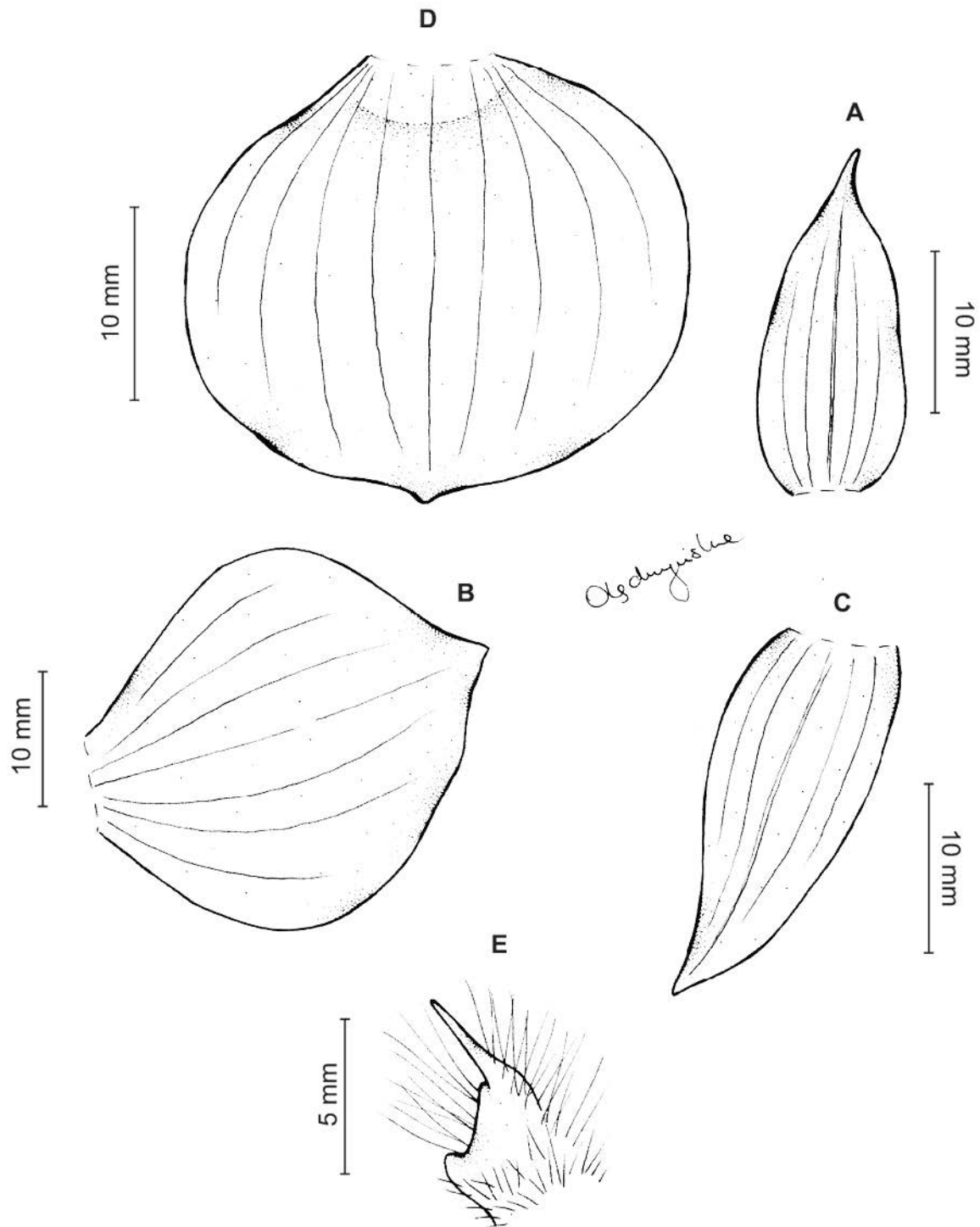


Figure 94 *Telipogon alinae* Szlach. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Oleđrzyńska from Betancur & al. 1043 (MO).

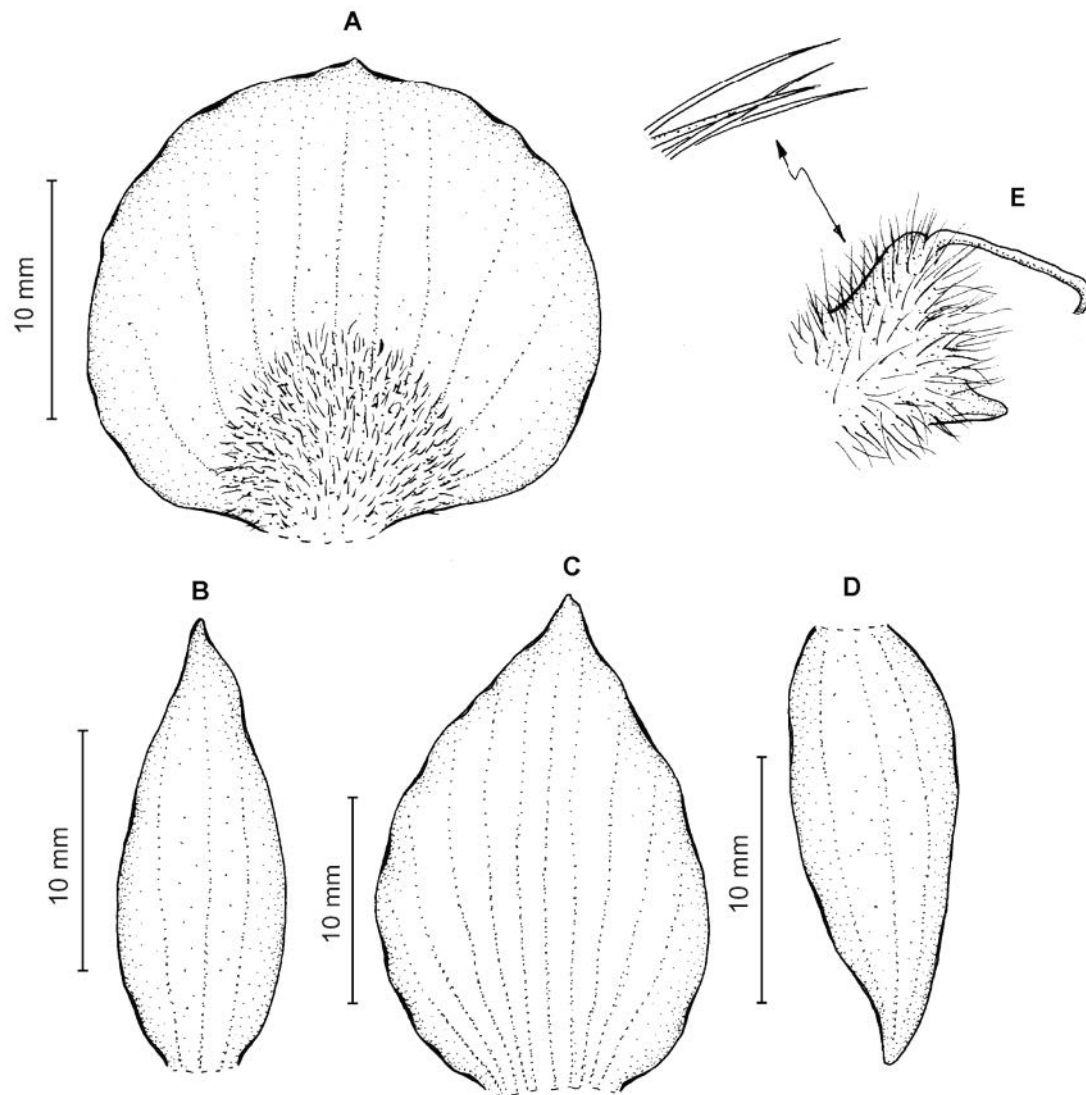


Figure 95 *Telipogon rotundilabia* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Linares & Sanchez 2798 (COL).

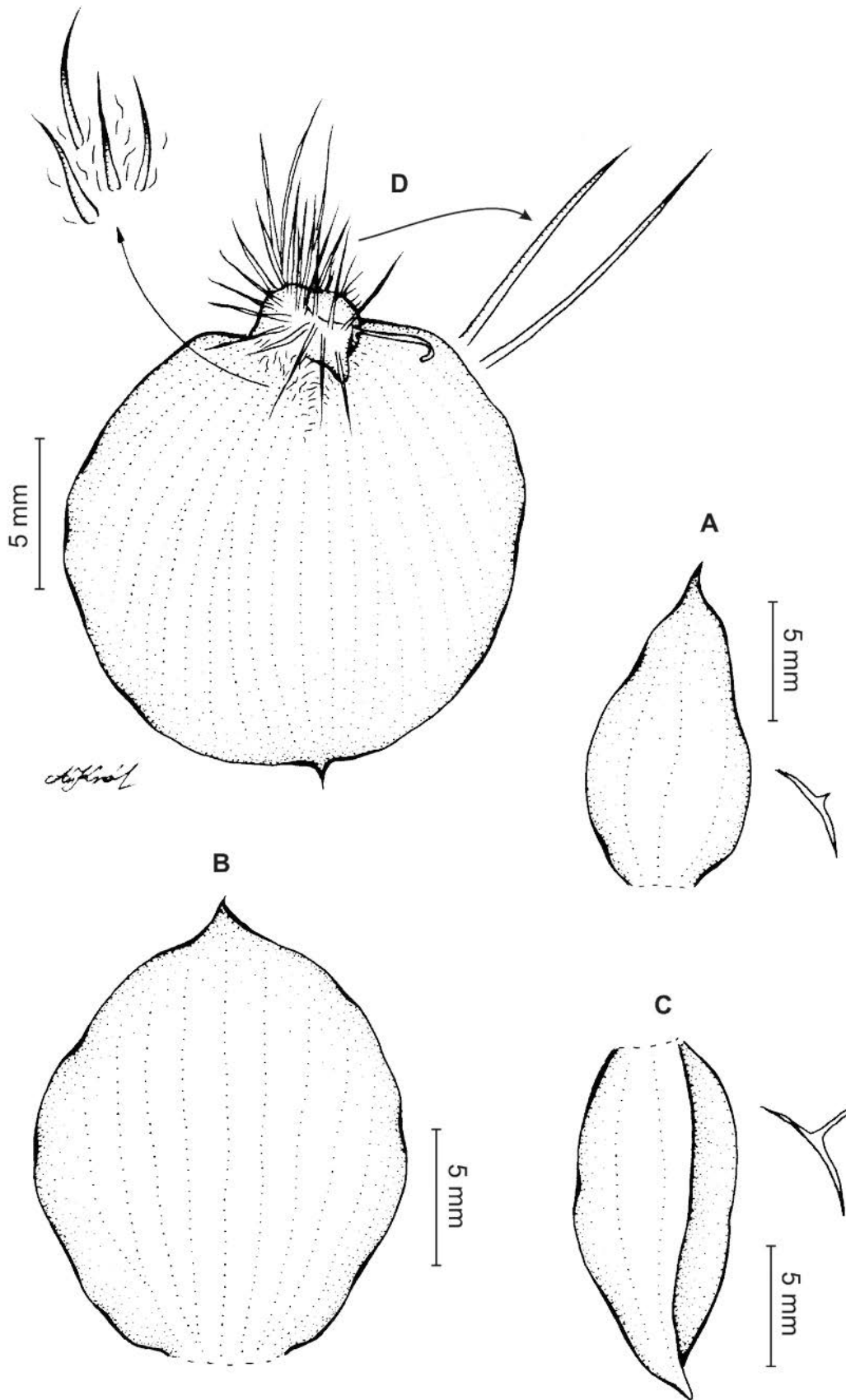


Figure 96 *Telipogon pasquillensis* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Vargas & al. 2209 (COL).

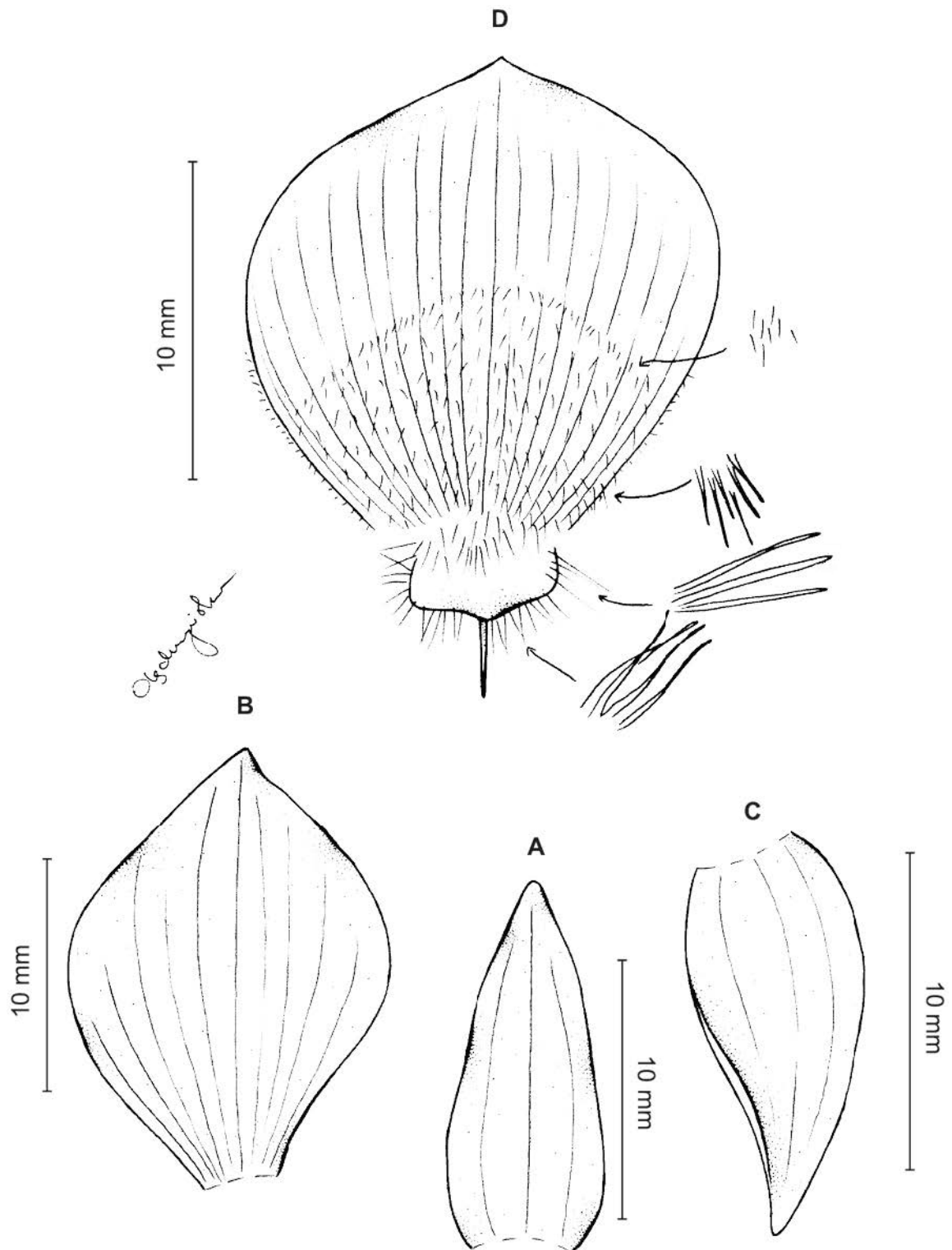


Figure 97 *Telipogon huertasii* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Ołędryńska from *Huertas 3* (AMES).

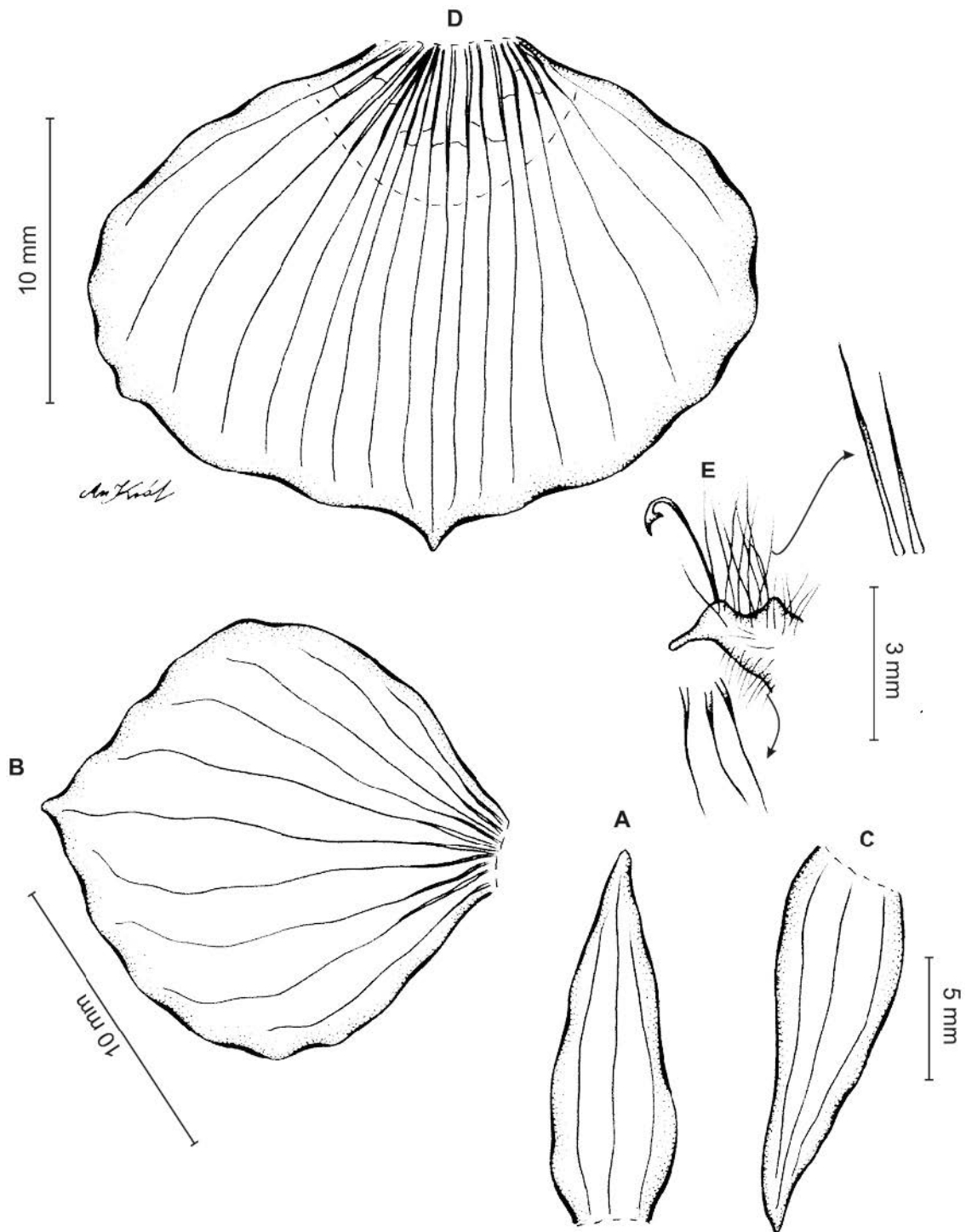


Figure 98 *Telipogon lehmannii* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Lehmann 10006* (US).



Figure 99 *Telipogon lehmannii* (photo: A. Hirtz).



Figure 100 *Telipogon cf. lehmannii* (photo: M. Kolanowska).



Figure 101 *Telipogon cf. lehmannii* (photo: M. Kolanowska).

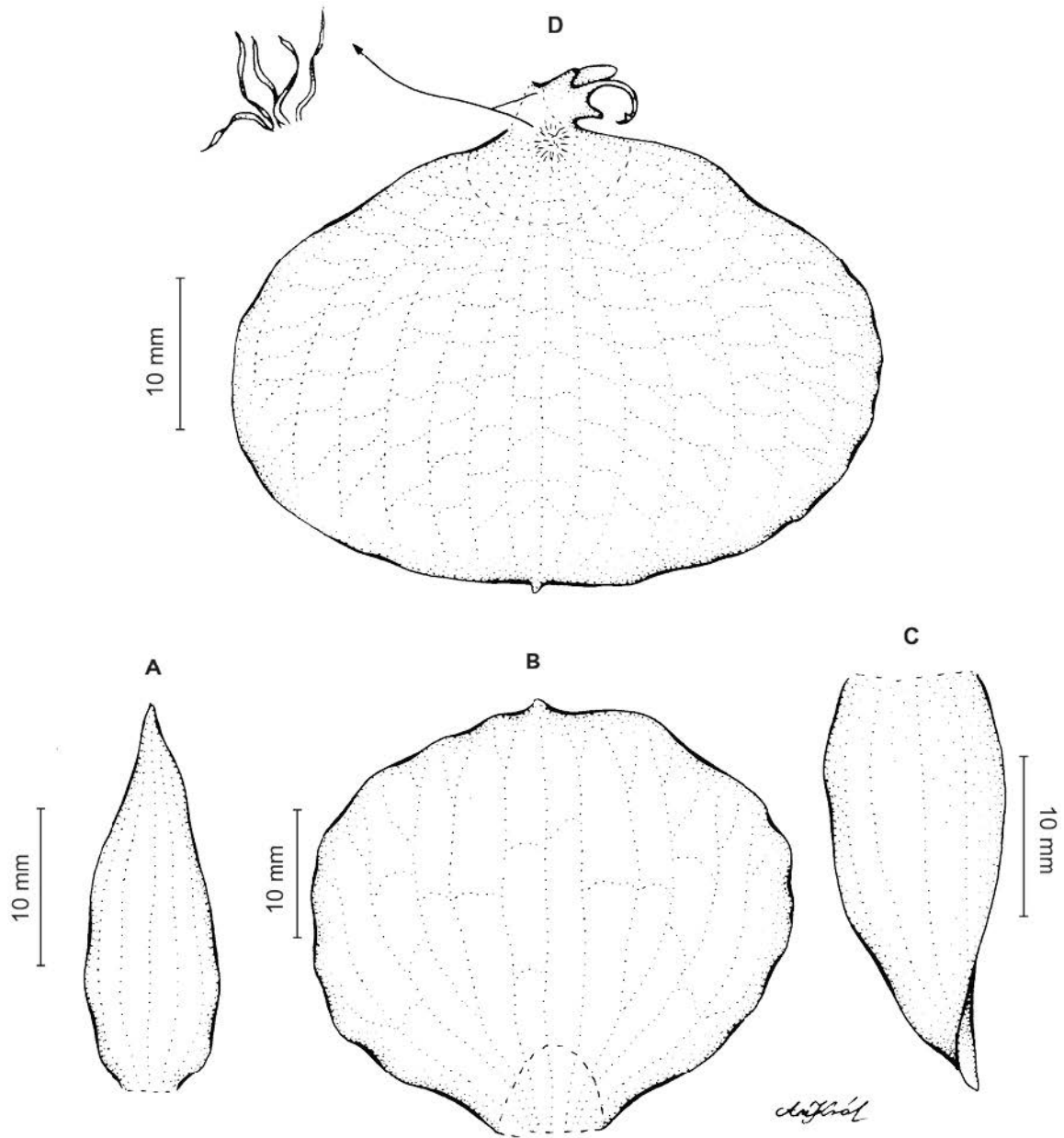


Figure 102 *Telipogon croesus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Lehmann s.n.* (W-R).

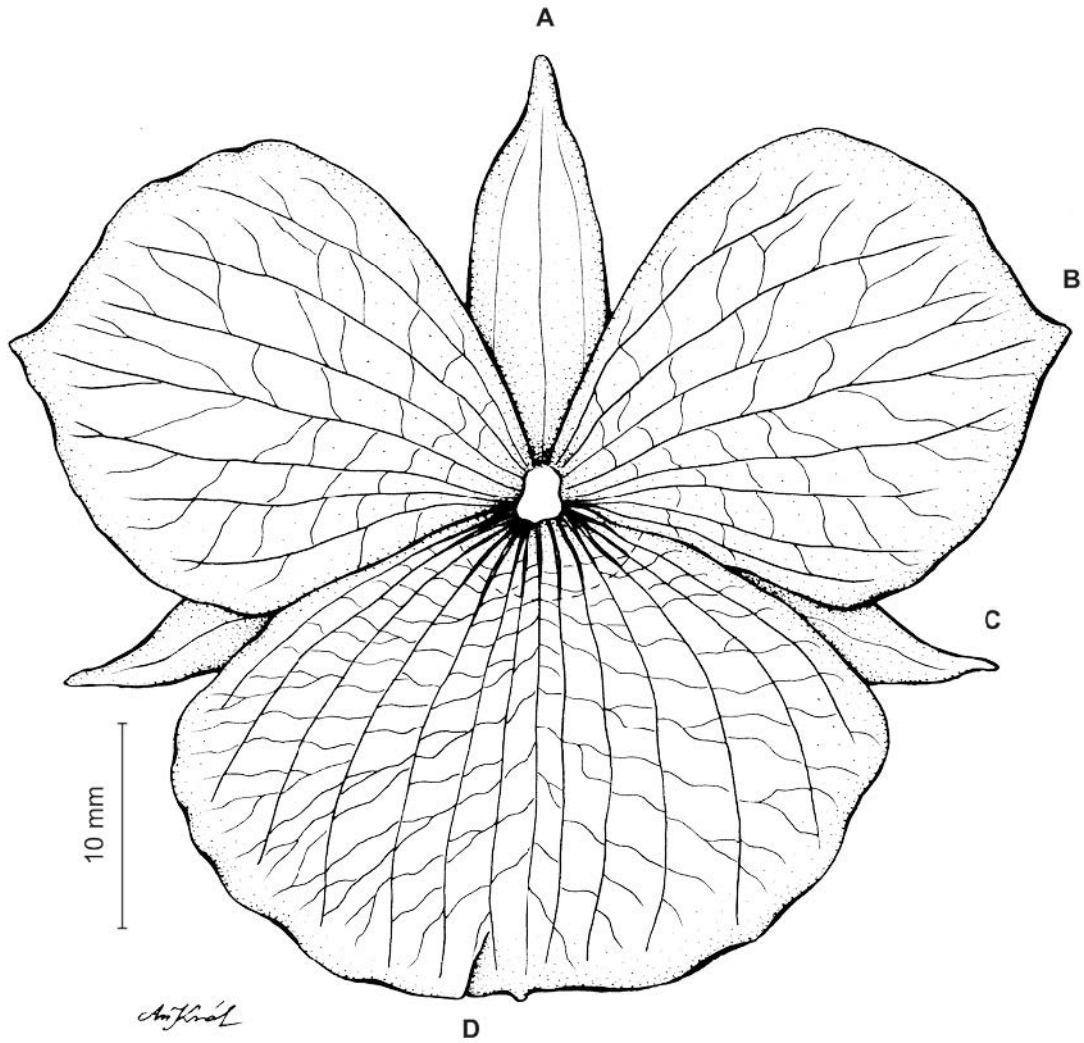


Figure 103 *Telipogon croesus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip. Drawn by A. Król from *Bruchmüller s.n.* (W-R).



Figure 104 *Telipogon croesus* (photo: A. Hirtz).



Figure 105 *Telipogon croesus* (photo: T. Kusibab).



Figure 106 *Telipogon croesus* (photo: T. Kusibab).



Figure 107 *Telipogon croesus* (photo: T. Kusibab).

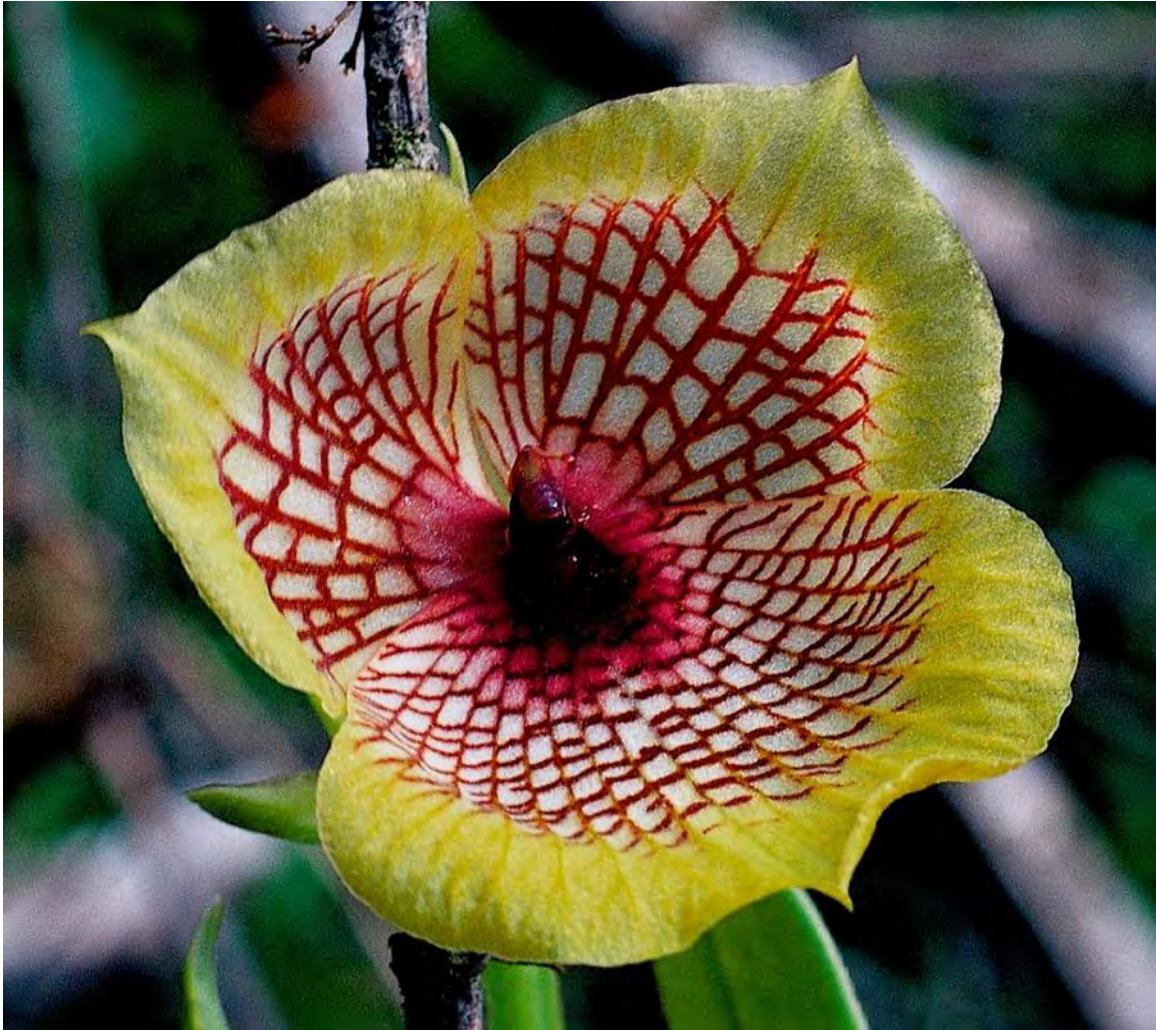


Figure 108 *Telipogon croesus* (photo: A. Hirtz).



Figure 109 *Telipogon croesus* (photo: L. C. Piña and M. L. Hincapie).



Figure 110 *Telipogon croesus* (photo: T. Kusibab).



Figure 111 *Telipogon croesus* (photo: T. Kusibab).



Figure 112 *Telipogon* aff. *croesus* (photo: A. Hirtz).



Figure 113 *Telipogon* aff. *croesus* (photo: T. Kusibab).

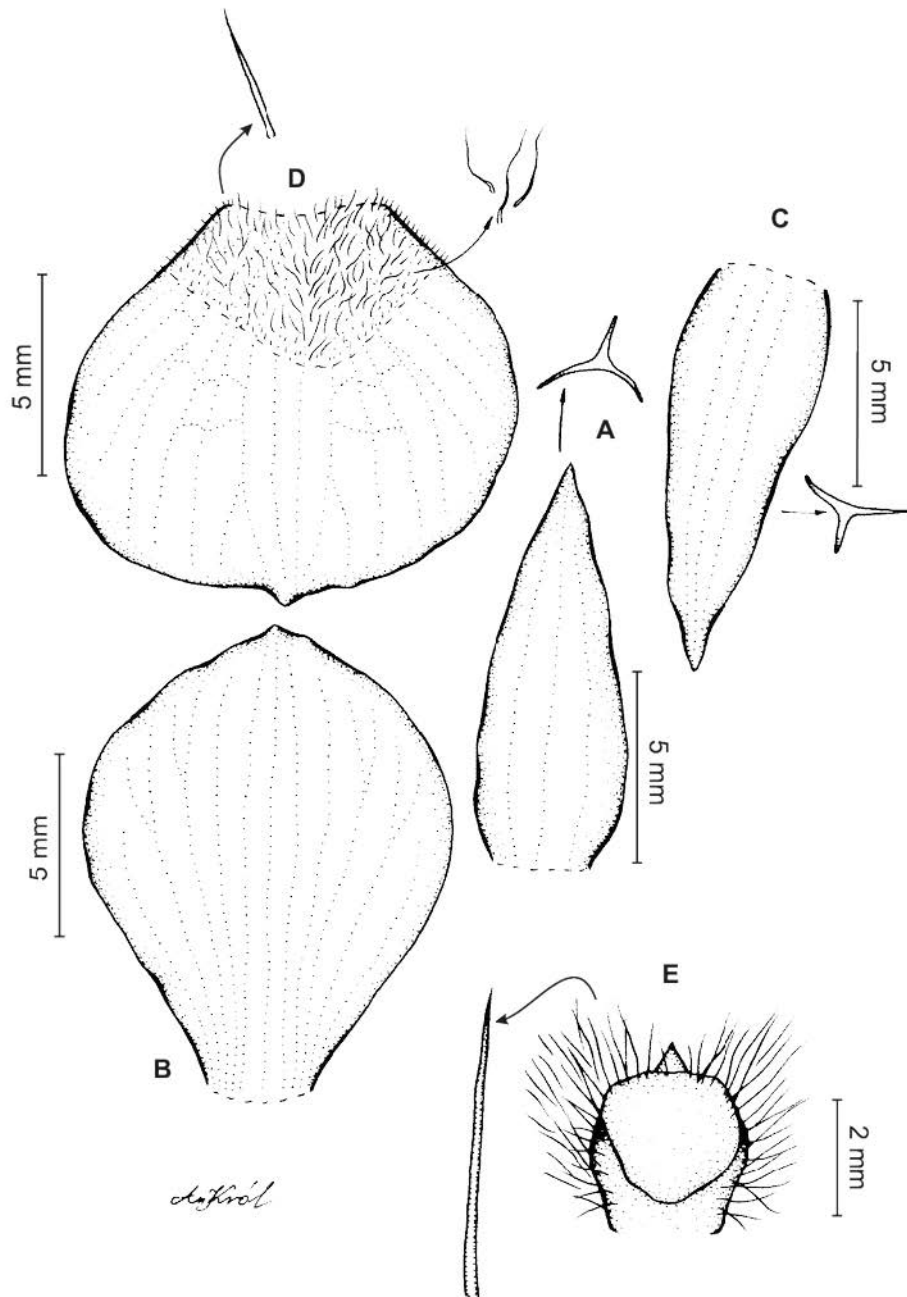


Figure 114 *Telipogon spathipetala* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Huertas & Camargo 1103 (COL).

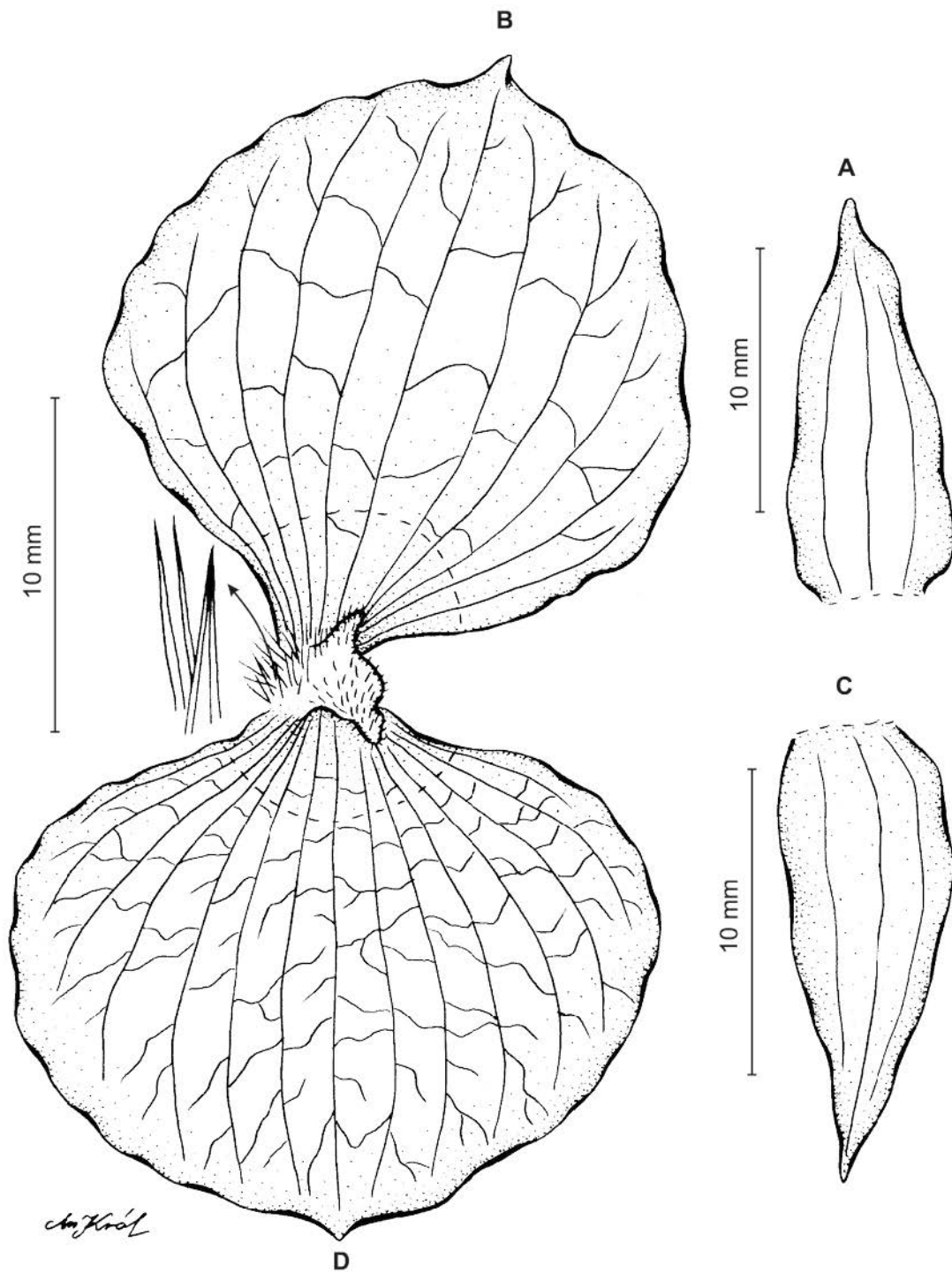


Figure 115 *Telipogon puruantensis* Dodson & R. Escobar. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Hubsch s.n.* (W-R).



Figure 116 *Telipogon puruantensis* (photo: A. Hirtz).

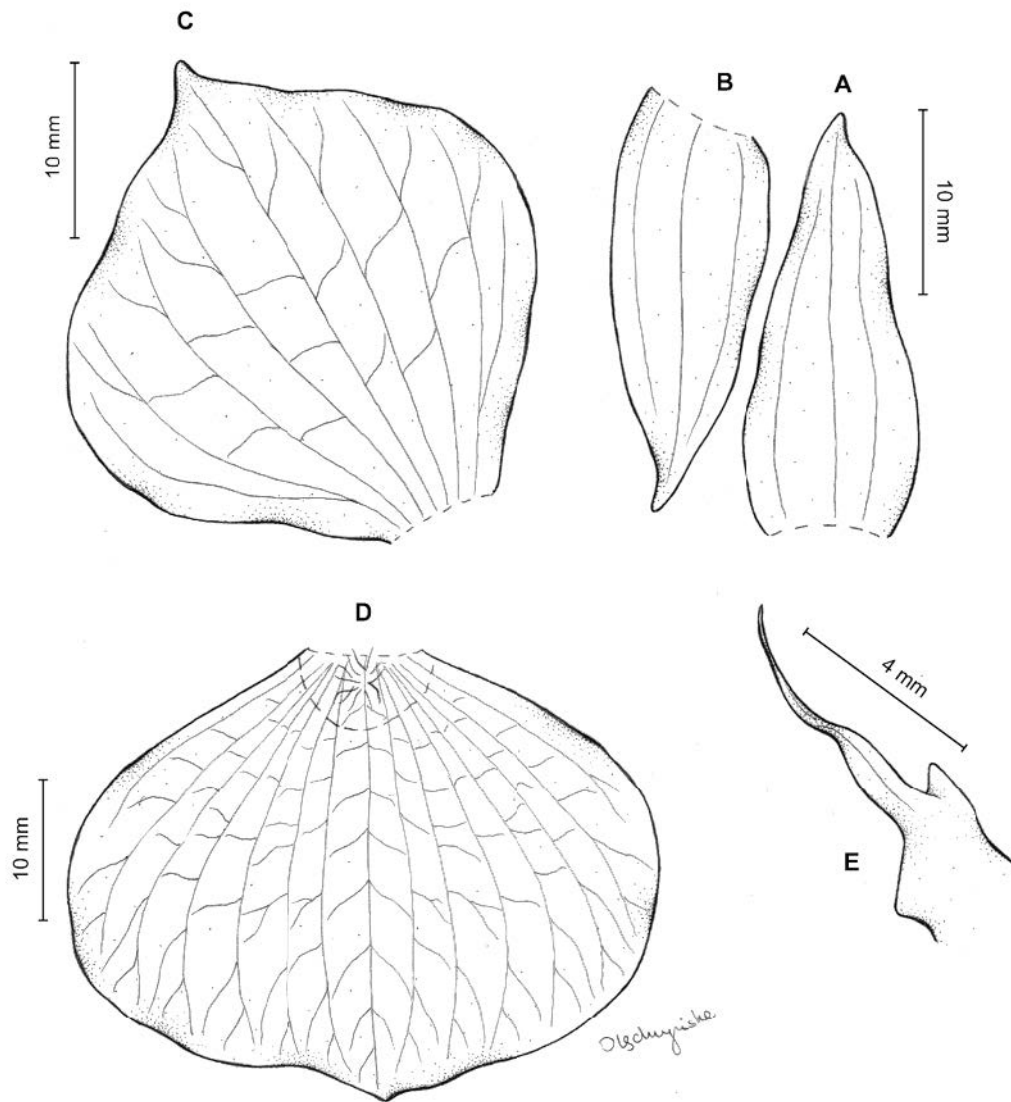


Figure 117 *Telipogon tachirensis* Szlach., Kolan. & Lipińska. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Olędrzyńska from Knapp & Mallet 6819 (US).

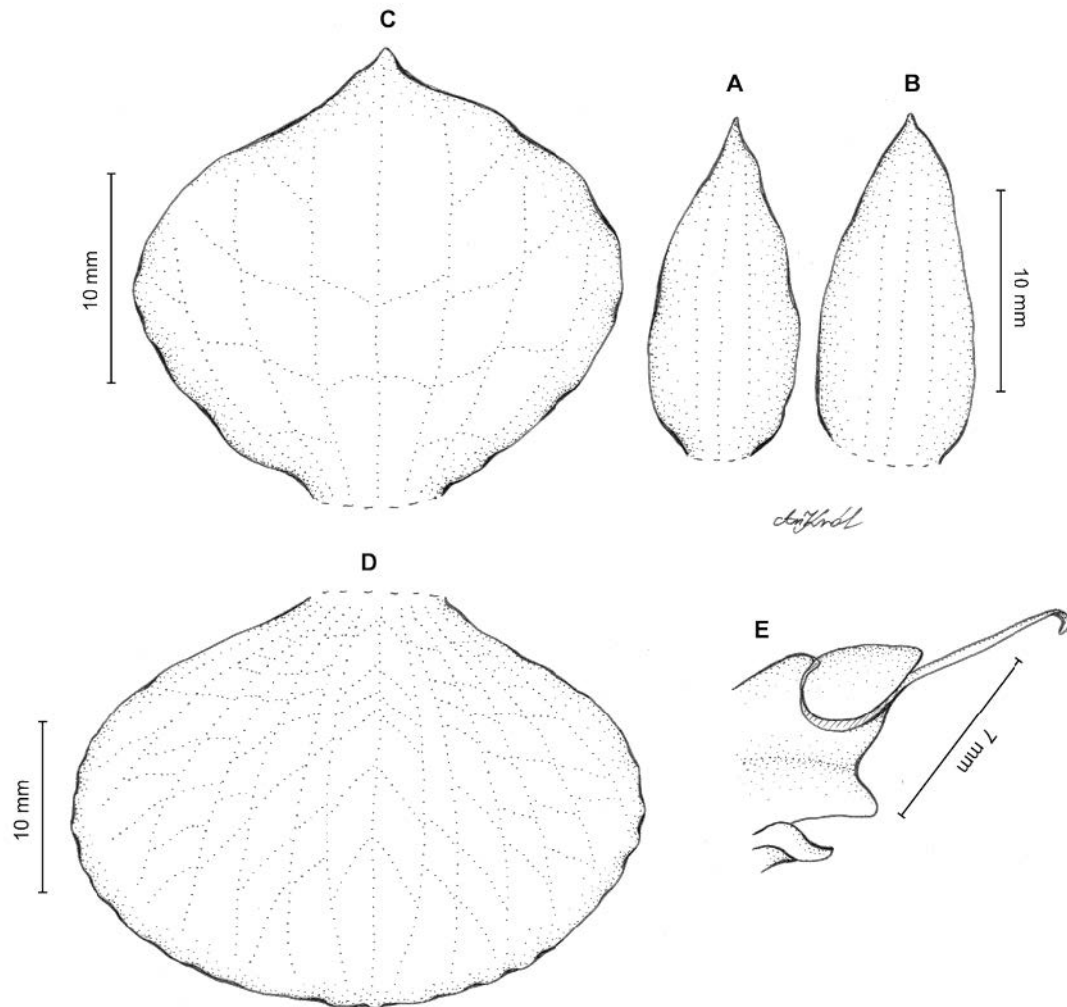


Figure 118 *Telipogon ventaquemadensis* Szlach., Kolan. & Lipińska. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Uribe Uribe 6752* (COL).

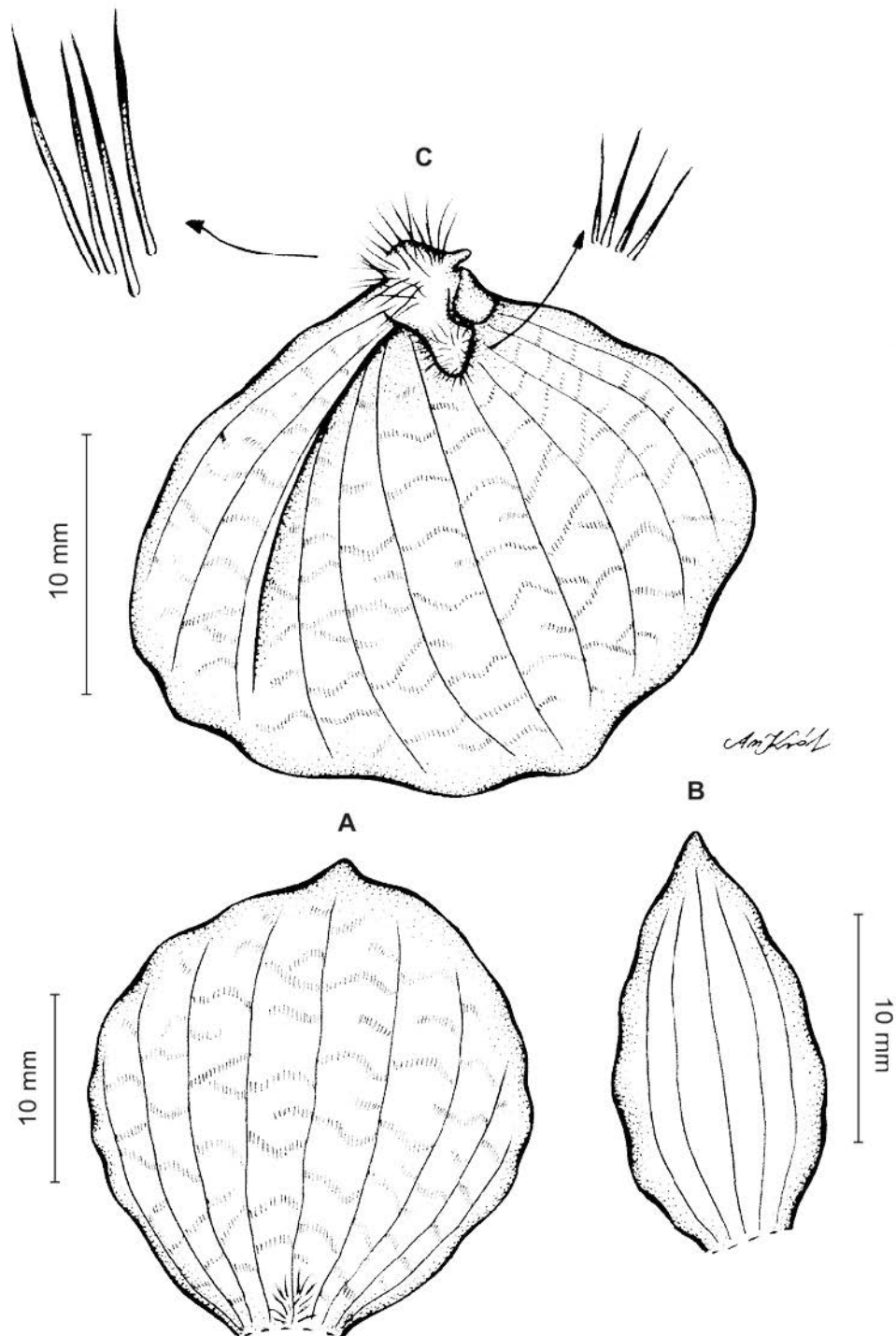


Figure 119 *Telipogon pachyhybos* Schltr. (A) Petal, (B) lateral sepal, (C) lip and gynostemium. Drawn by A. Król from Spruce 6077 (AMES).

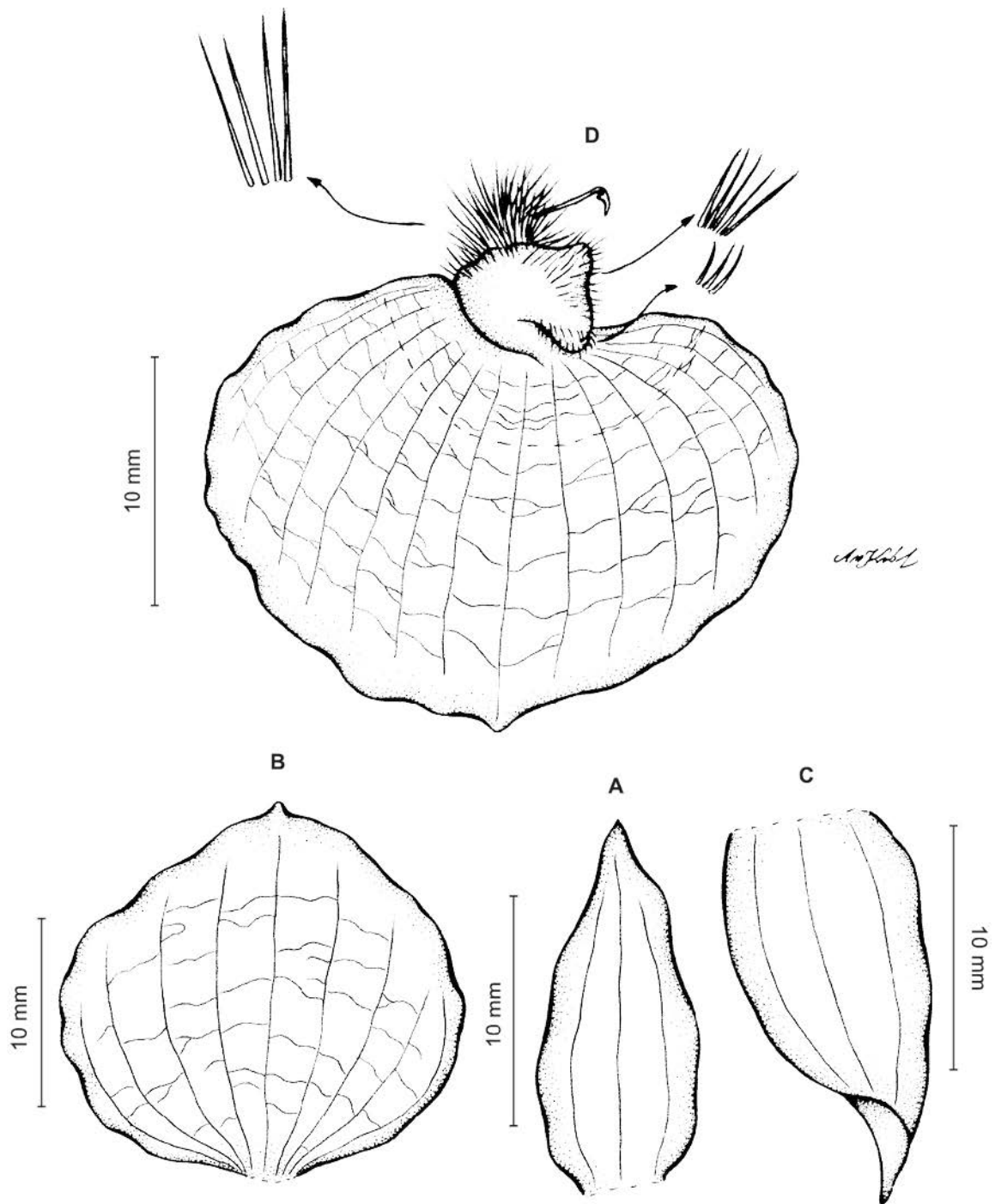


Figure 120 *Telipogon pachyhybos* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Spruce 6077 (P).

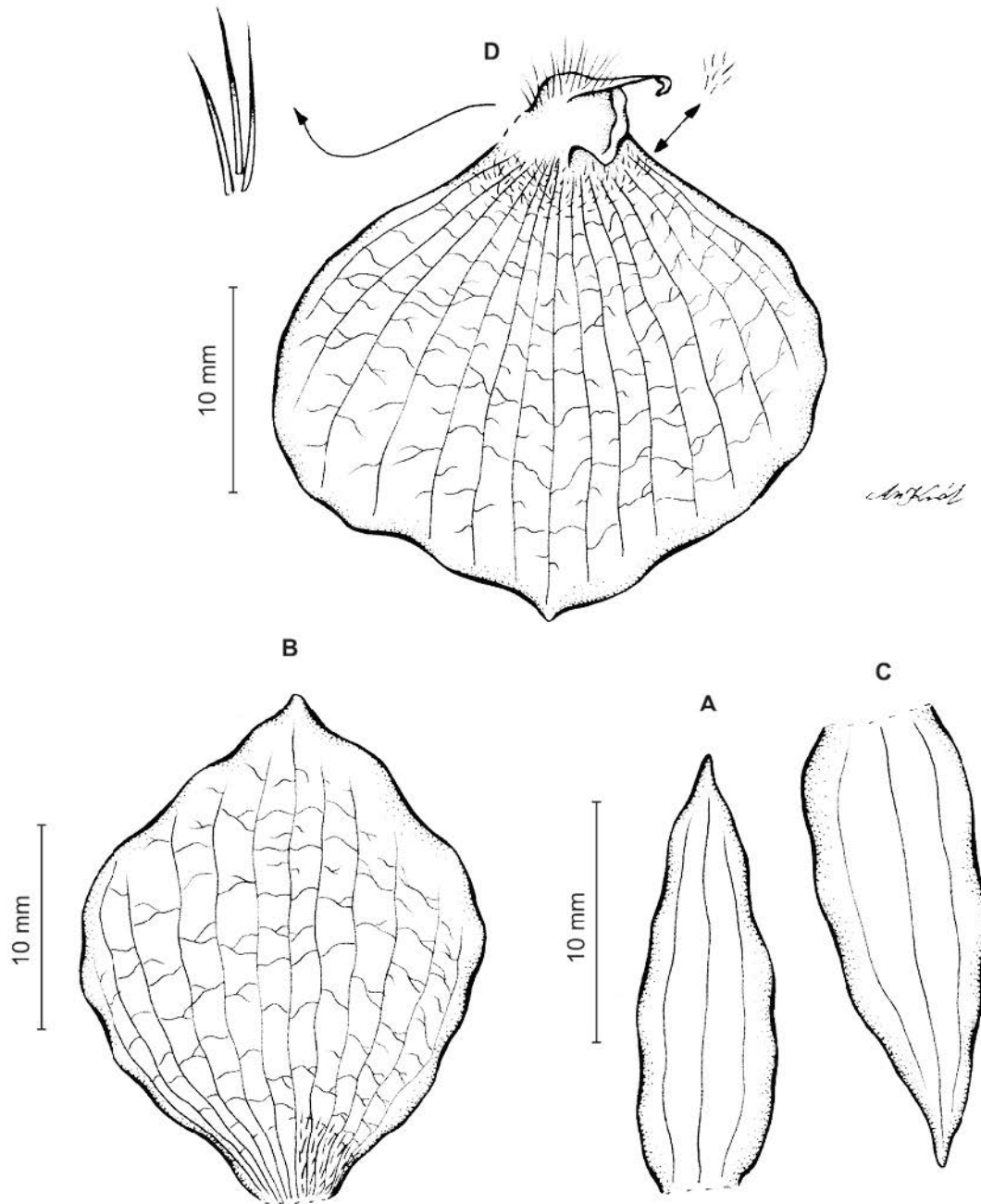


Figure 121 *Telipogon pachyhybos* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Jameson 338 p.p (P).



Figure 122 *Telipogon saraguroënsis* (photo: A. Hirtz).

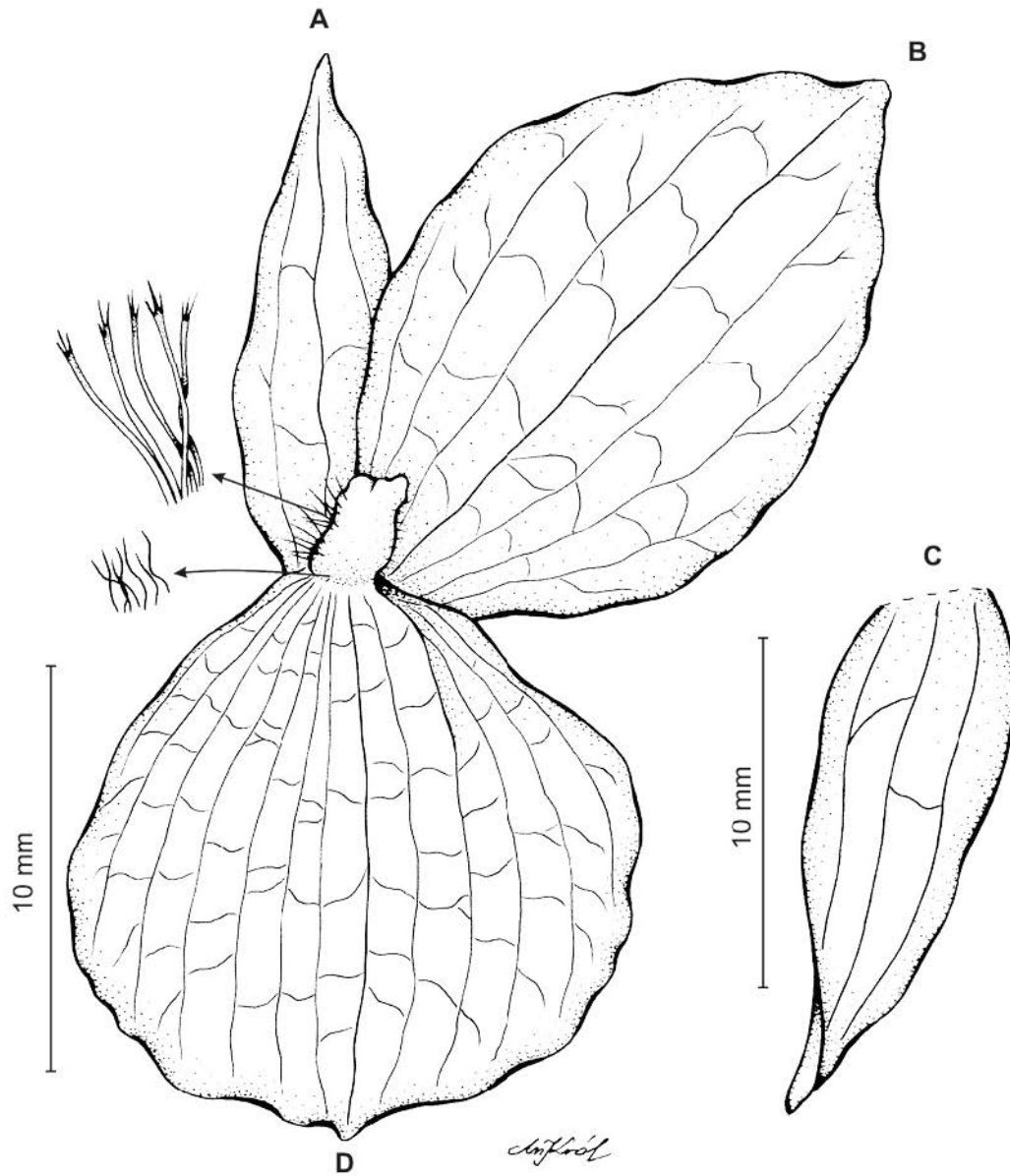


Figure 123 *Telipogon sprucei* Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Spruce 6076* (W-R).

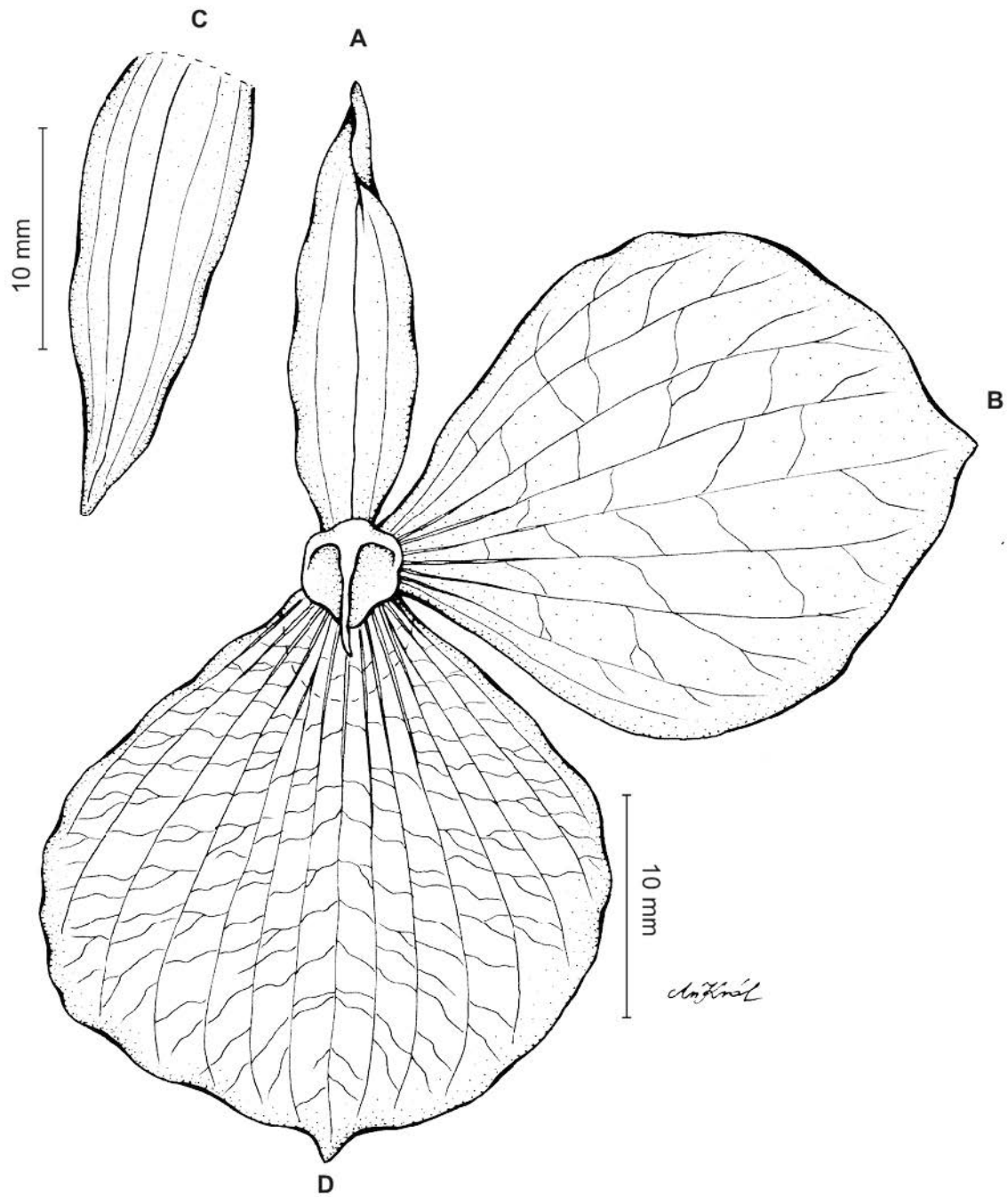


Figure 124 *Telipogon schlimii* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Schlim s.n.* (W-R).

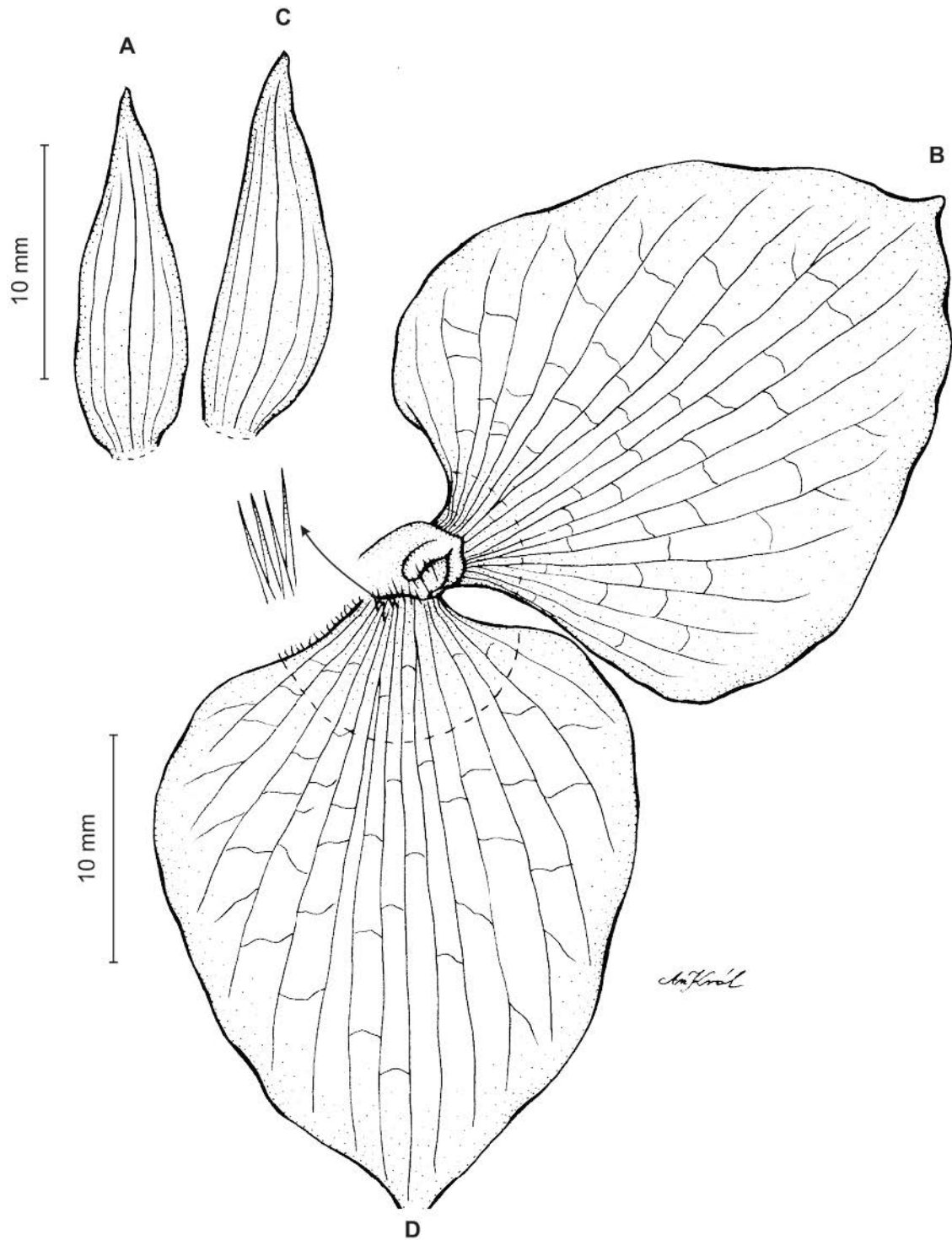


Figure 125 *Telipogon patinii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Patin 21* (W-R).

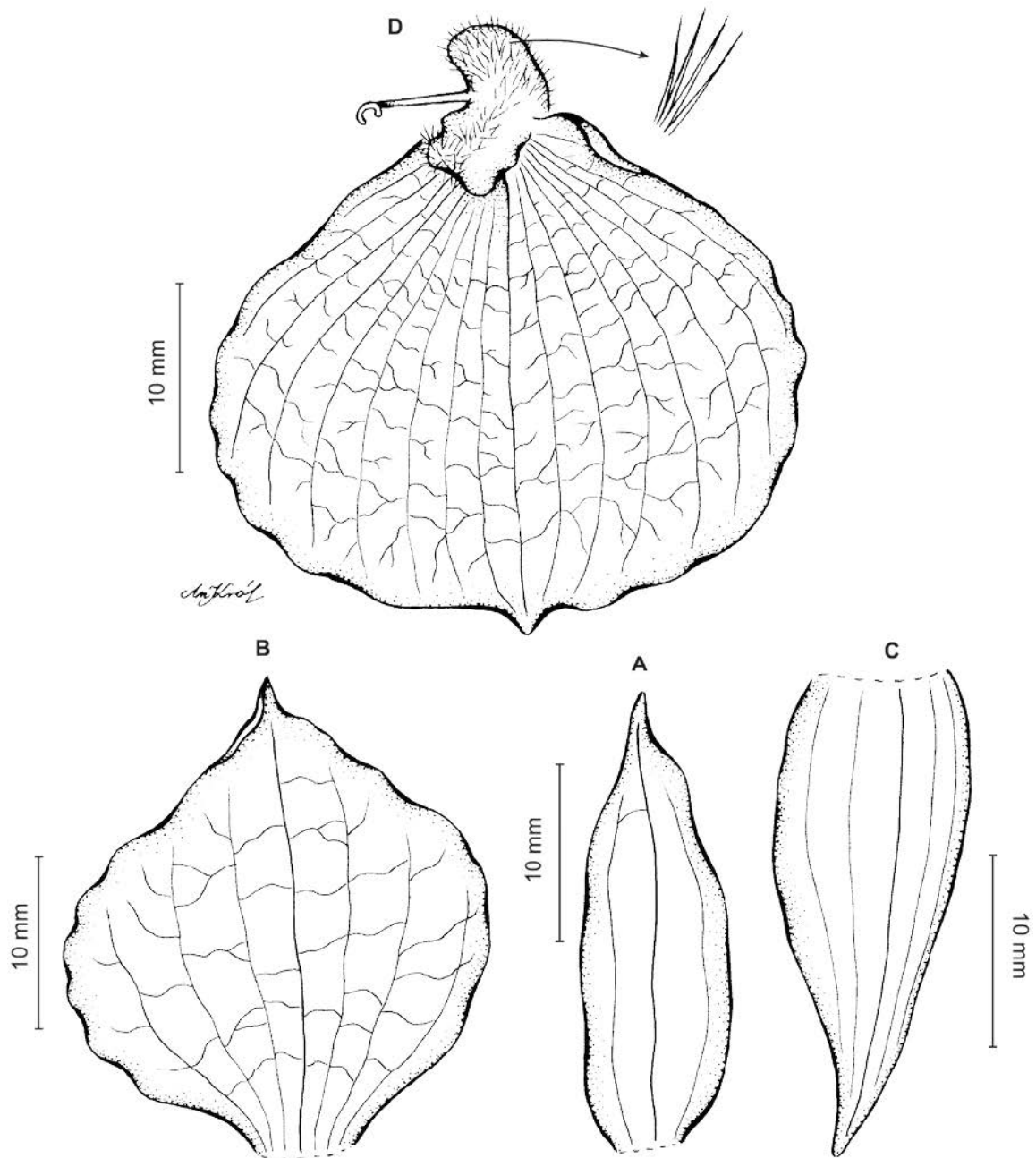


Figure 126 *Telipogon klabochorum* Rchb. f. ex Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Klaboch s.n.* (W-R).

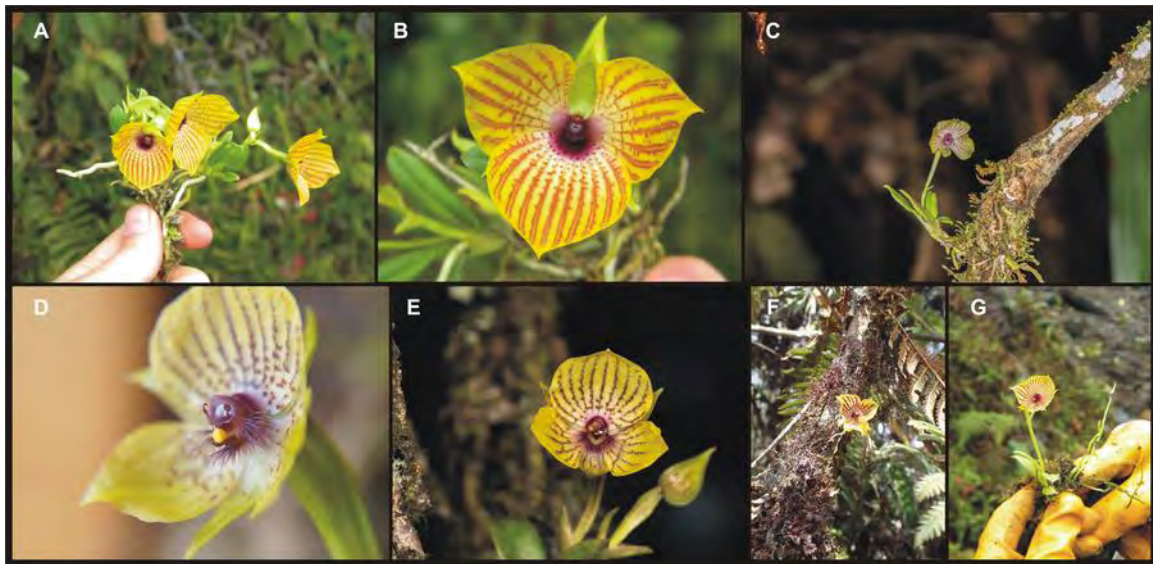


Figure 127 Representatives of *Telipogon* subgenus *Brevicaules*, *Salamancae*-subgroup. (A,B) *Telipogon heinrichsii* (photo: M. Kolanowska), (C) *T. polyneuros* (photo: L. Pérez Arcila), (D) *T. polyneuros* (photo: L. C. Piña and M. L. Hincapié), (E) cf. *T. polyneuros* (photo: L. Pérez Arcila), (F) *T. polyneuros* cf. (photo: M. Kolanowska), (G) *T. ramiro-medinae* (photo: M. Kolanowska).

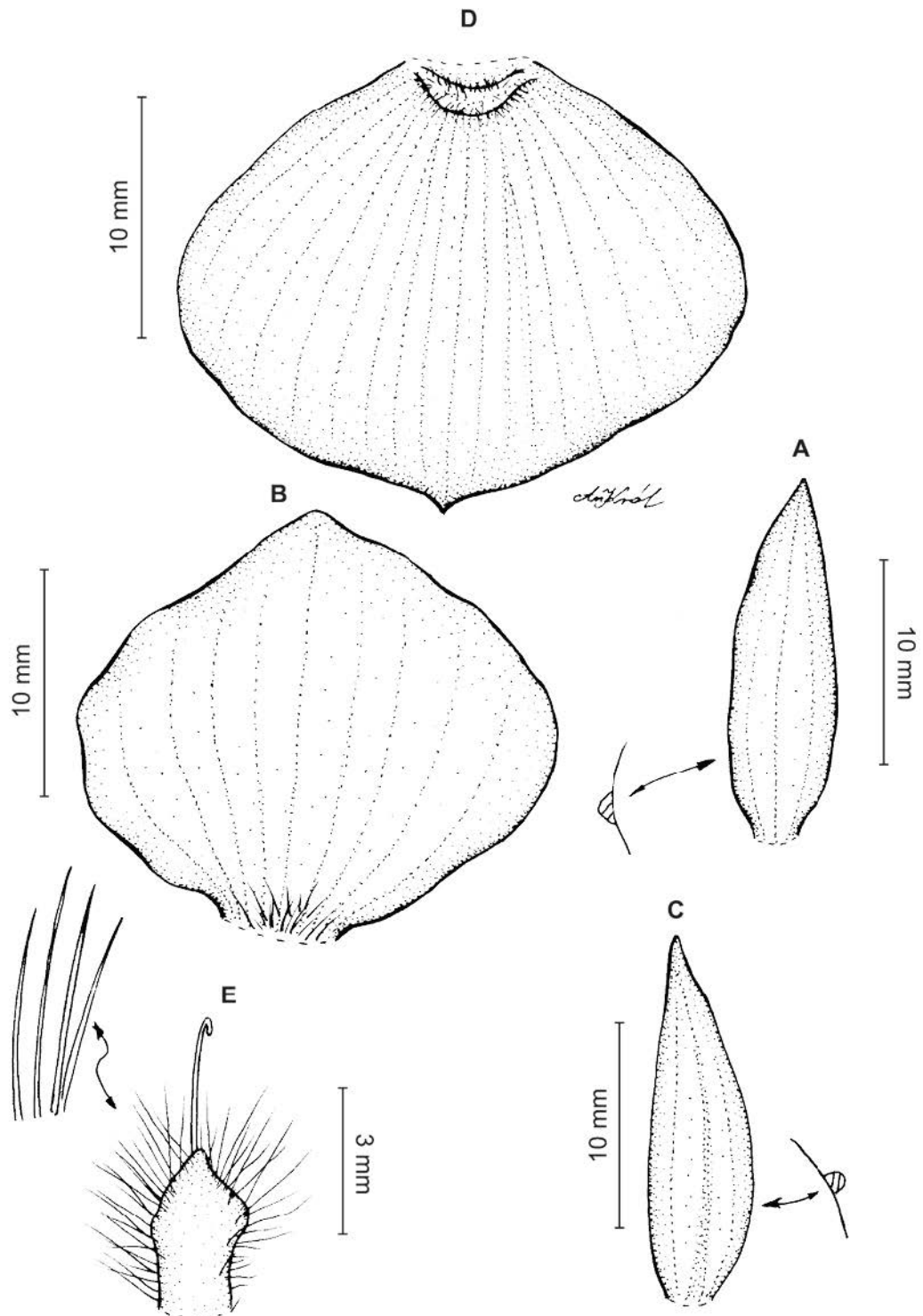


Figure 128 *Telipogon salamancae* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Jaramillo & al. 6380 (COL).

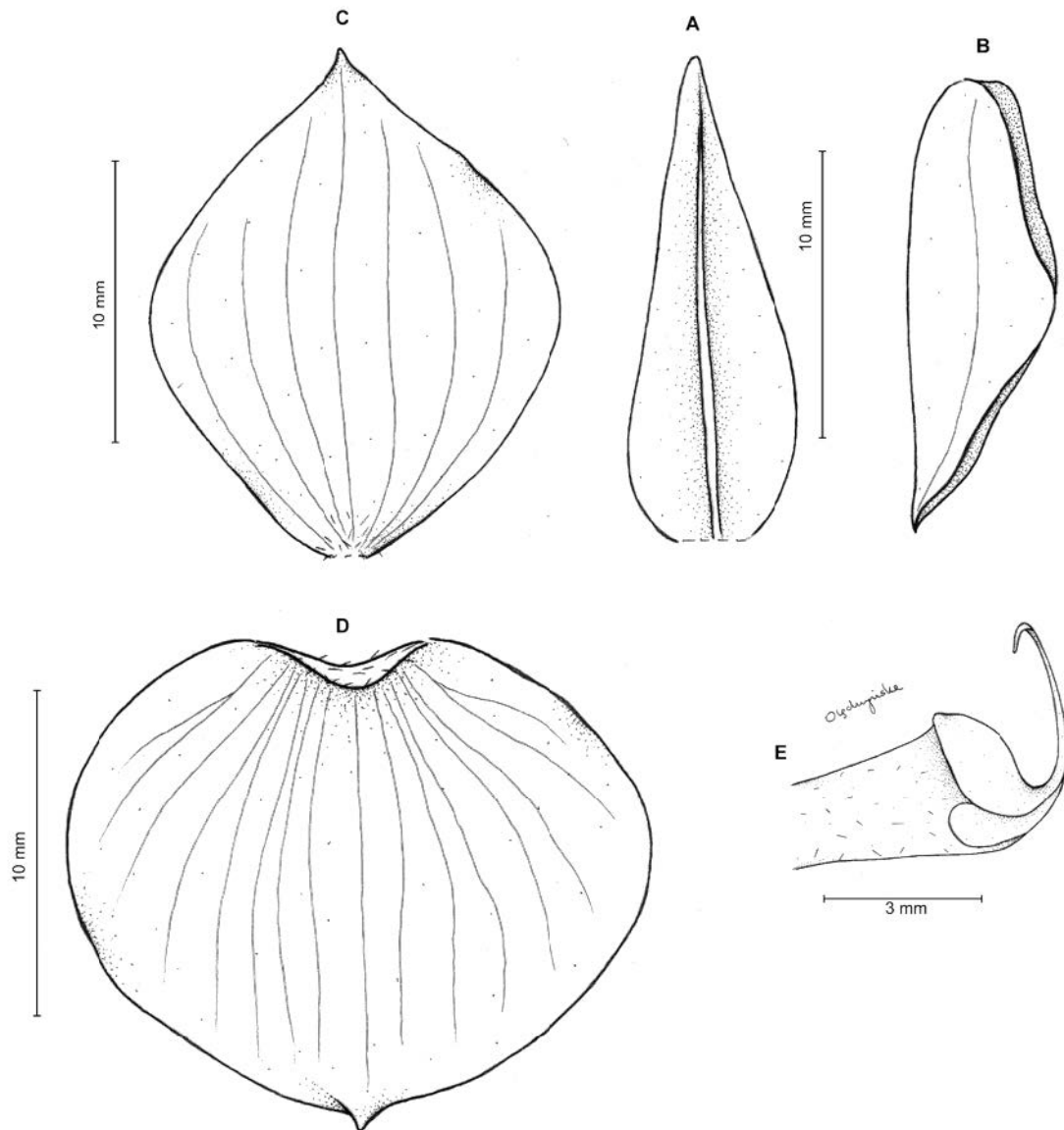


Figure 129 *Telipogon ramiro-medinae* Szlach., Kolan. & Lipińska. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Ołędryńska from *R. Medina T. S16/39* (JAUM).



Figure 130 *Telipogon ramiro-medinae* (photo: M. Kolanowska).



Figure 131 *Telipogon heinrichsii* (photo: M. Kolanowska).



Figure 132 *Telipogon heinrichsii* (photo: M. Kolanowska).



Figure 133 *Telipogon heinrichsii* (photo: M. Kolanowska).

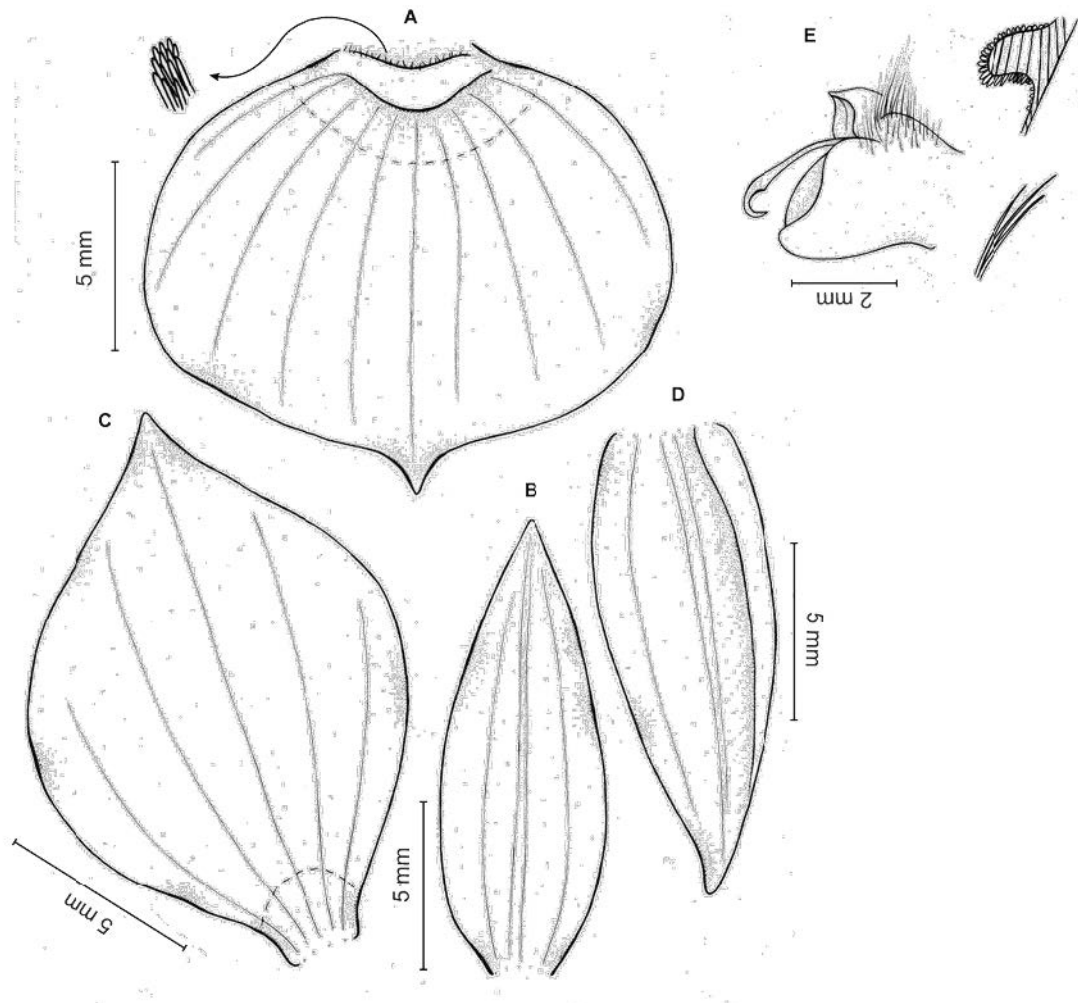


Figure 134 *Telipogon sibundoyensis* Szlach., Kolan. & R. Medina T. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Olędrzyńska from R. Medina T. 209 (JAUM).

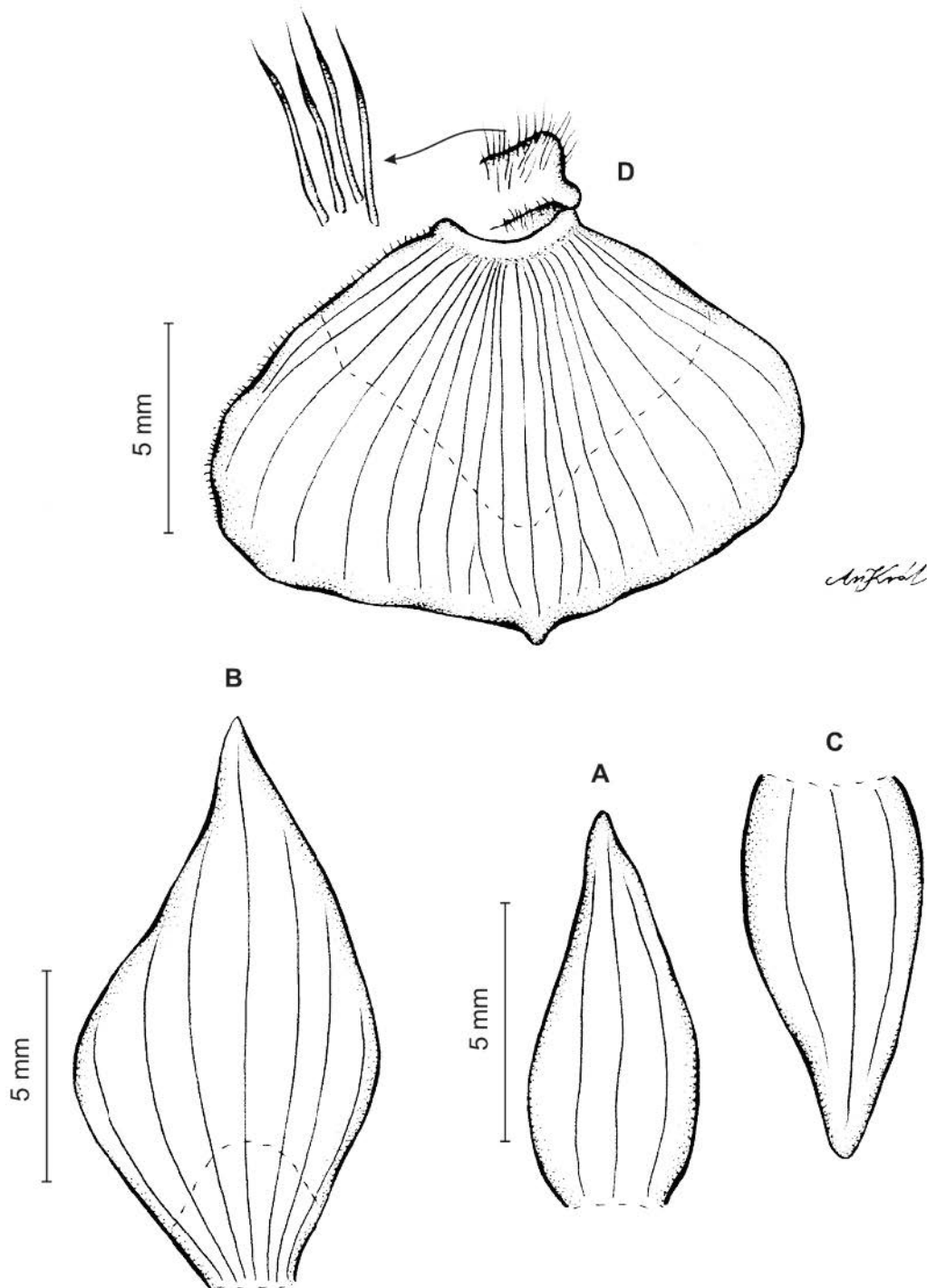


Figure 135 *Telipogon* aff. *sibundoyensis* Szlach., Kolan. & R. Medina T. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Garay142* (AMES).

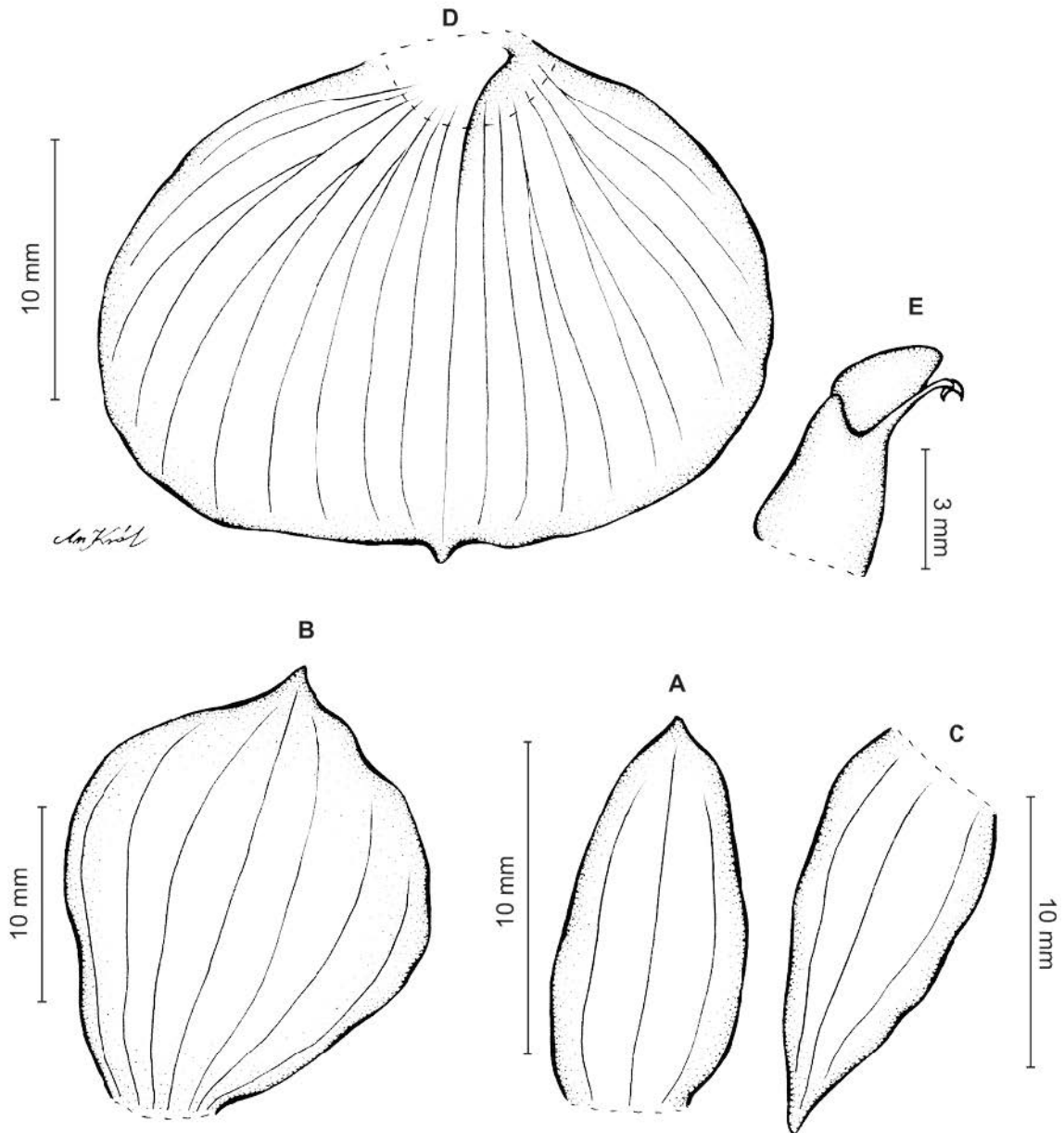


Figure 136 *Telipogon castanedoi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Cuatrecasas & Castanedo 24676 (US).

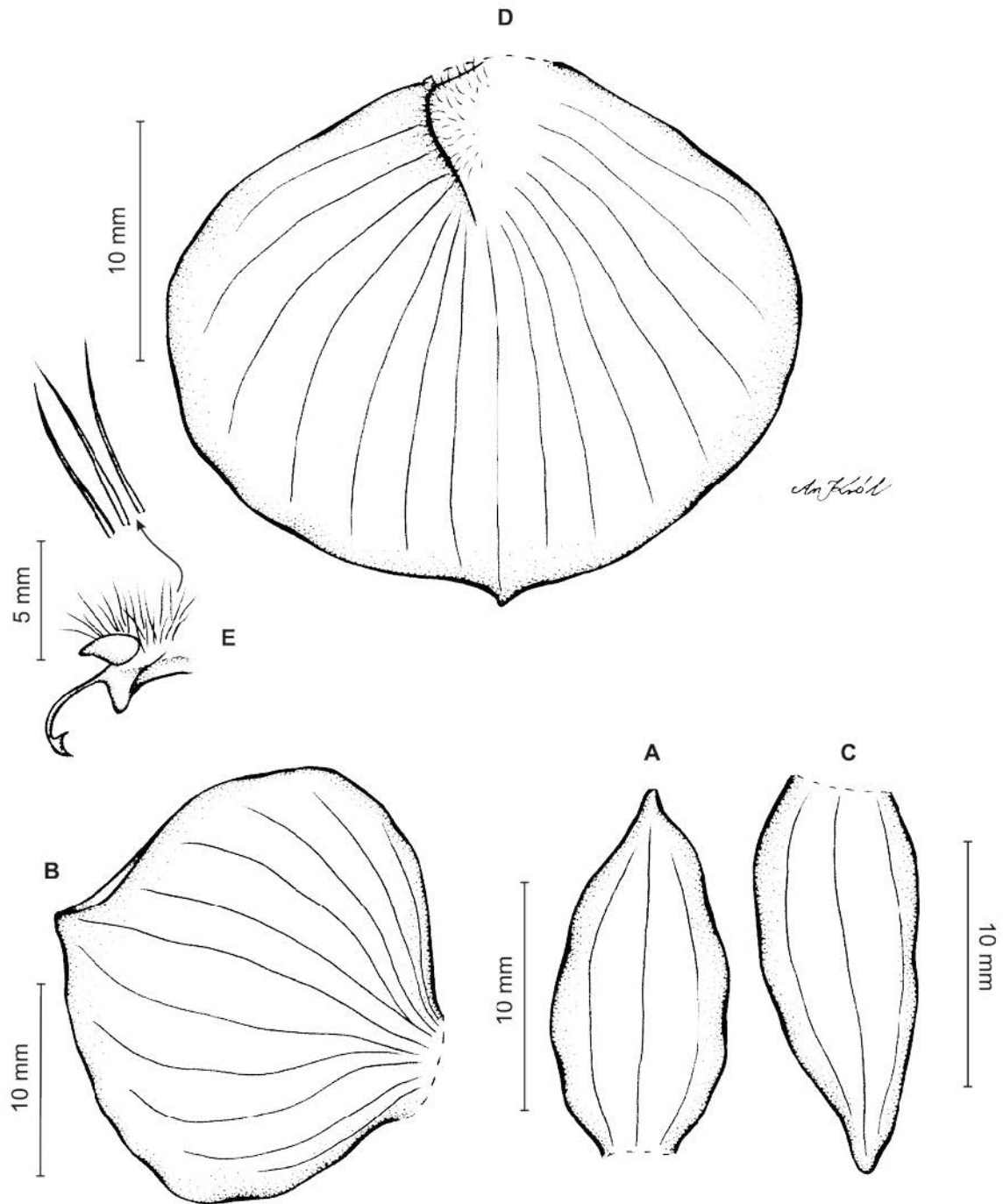


Figure 137 *Telipogon tolimensis* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Cuatrecasas & R. Echeverry 27695 (US).

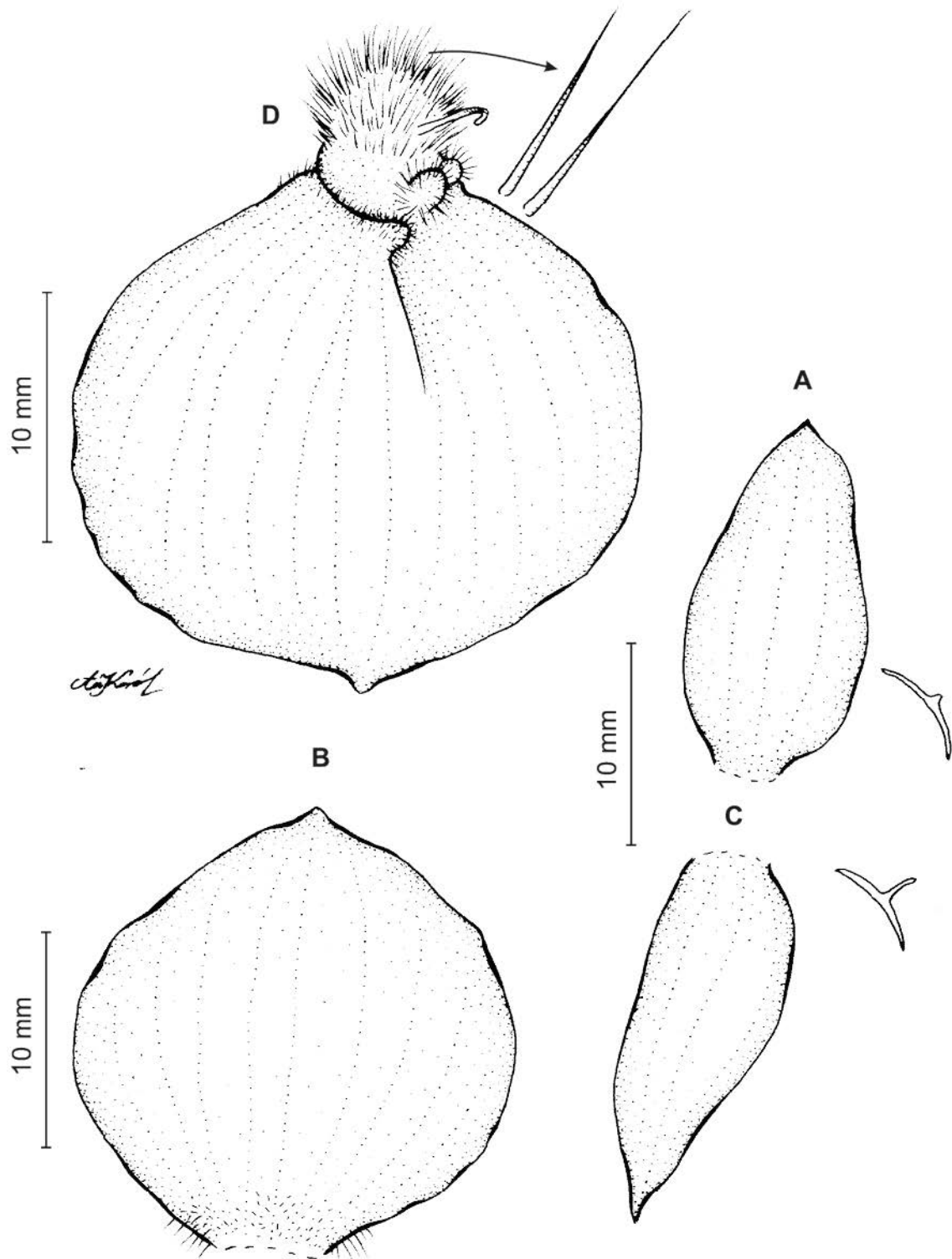


Figure 138 *Telipogon sumapazensis* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Ordonez & al. 1758 (COL).

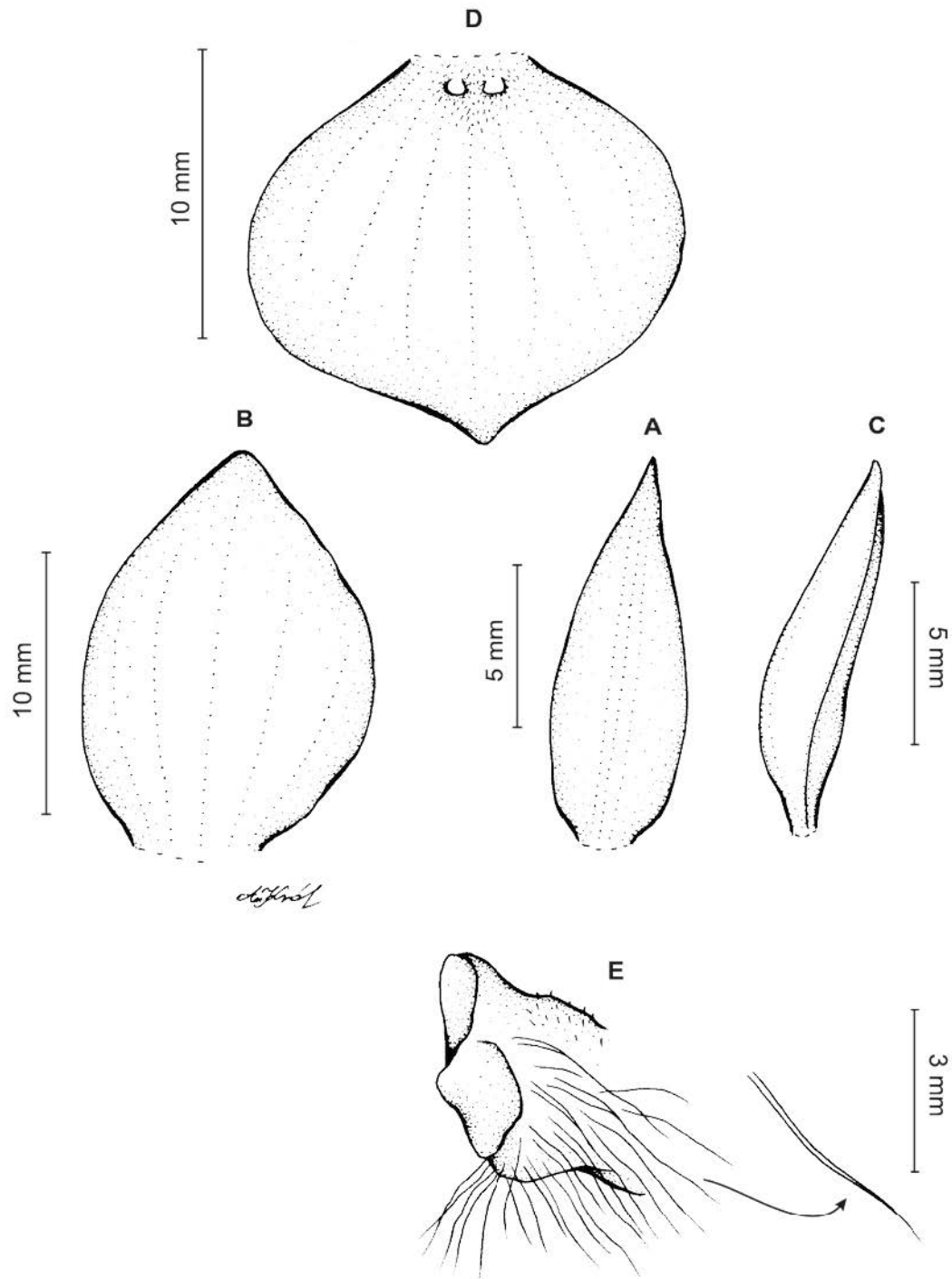


Figure 139 *Telipogon bicallusos* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Alvaer & al. 309 (COL).

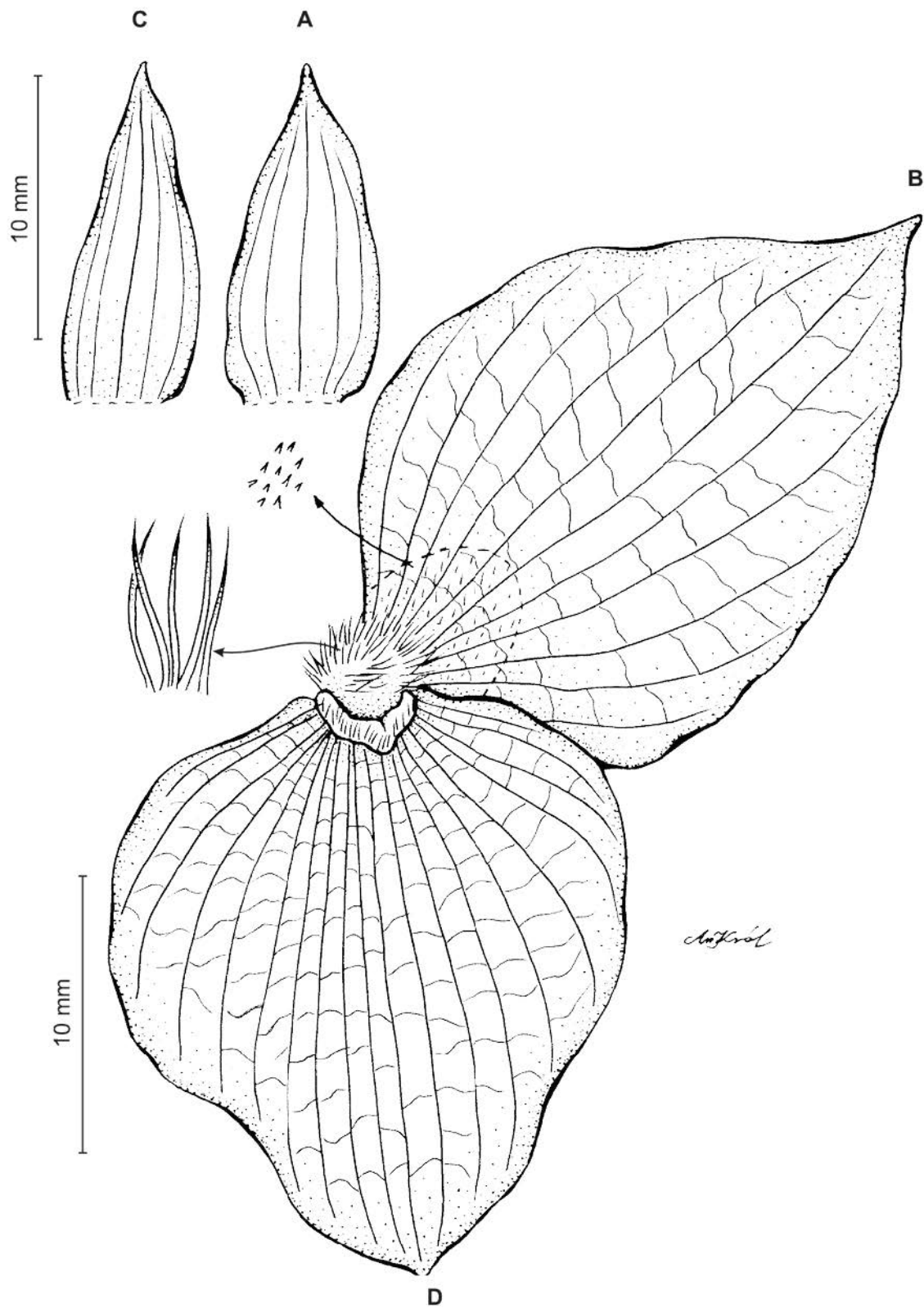


Figure 140 *Telipogon polyneuros* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Roetzl s.n. (W-R).



Figure 141 *Telipogon polyneuros* (photo: L. Perez).



Figure 142 *Telipogon polyneuros* (photo: L. C. Piña and M. L. Hincapie).



Figure 143 *Telipogon cf. polyneuros* (photo: L. Perez).



Figure 144 *Telipogon cf. polyneuros* (photo: M. Kolanowska).



Figure 145 *Telipogon cf. polyneuros* (photo: M. Kolanowska).



Figure 146 Representatives of *Telipogon* subgenus *Brevicaules*, *Bruchmuelleri*-subgroup. (A) *Telipogon andicola* (photo: T. Kusibab), (B) *T. andicola* (photo: A. Hirtz), (C,D) cf. *T. andicola* (photo: E. Santiago Ayala), (E,F) *T. diabolicus* (photo: M. Kolanowska), (G,H) *T. ecuadorensis* (photo: A. Hirtz), (I) *T. ecuadorensis* (photo: T. Kusibab), (J) *T. hemimelus* (photo: A. Hirtz), (K,L) *T. hemimelus* (photo: L. Pérez Arcila), (M) *T. isabelae* (photo: A. Hirtz), (N) *T. macroglossis* (photo: A. Hirtz), (O,P) *T. papilio* (photo: A. Hirtz), (Q) *T. papilio* (photo: L. Pérez Arcila), (R) *T. pulcher* (photo: A. Hirtz), (S,T) *T. sarae* (photo: A. Hirtz), (U–Y) cf. *T. yolandae* (photo: E. Santiago Ayala).

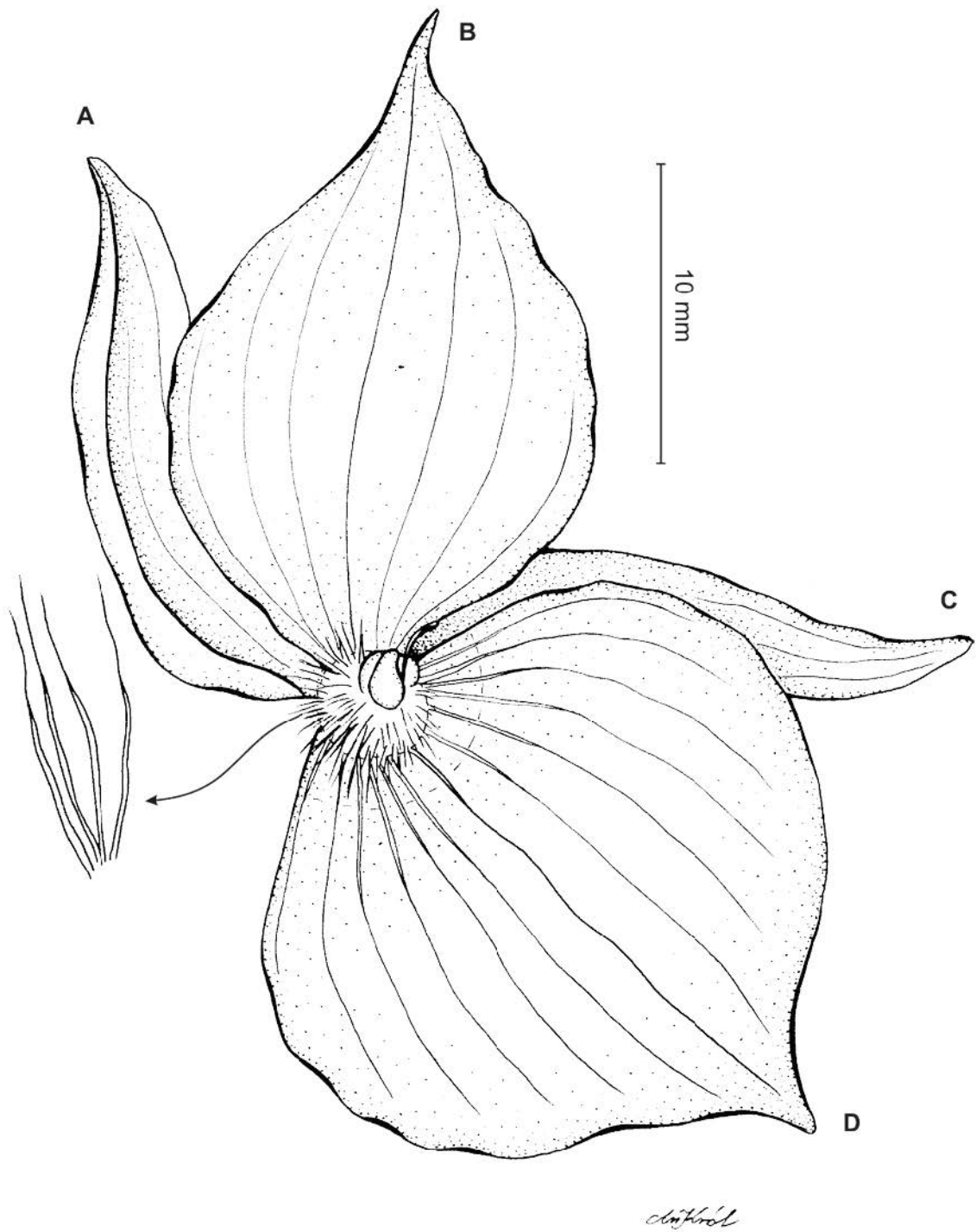


Figure 147 *Telipogon chrysocrates* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Roehl s.n. (W-R).



Figure 148 *Telipogon ecuadorensis* (photo: A. Hirtz).



Figure 149 *Telipogon ecuadorensis* (photo: T. Kusibab).



Figure 150 *Telipogon ecuadorensis* (photo: T. Kusibab).

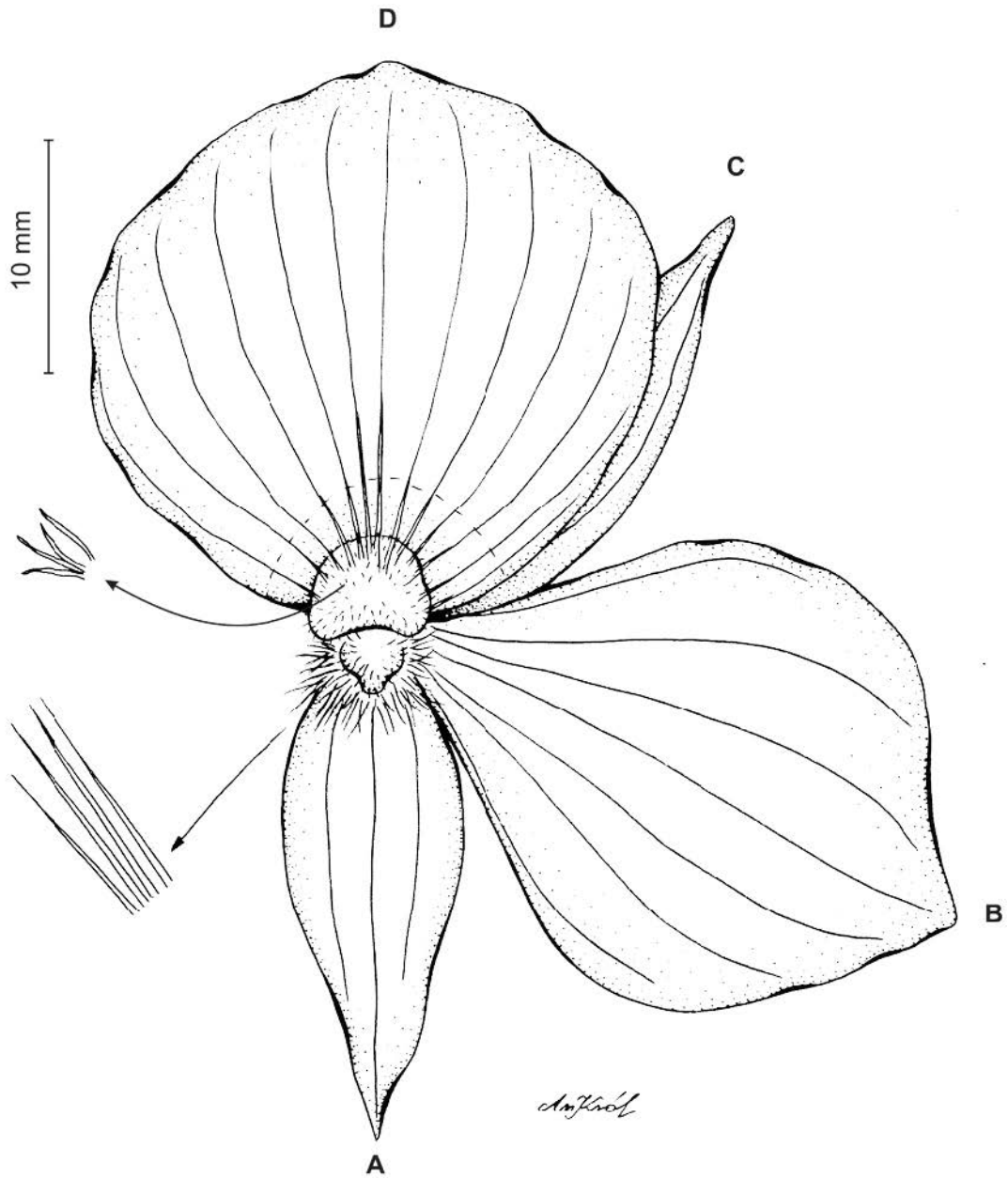


Figure 151 *Telipogon pulcher* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Wallis 236 (W-R).



Figure 152 *Telipogon pulcher* (photo: A. Hirtz).

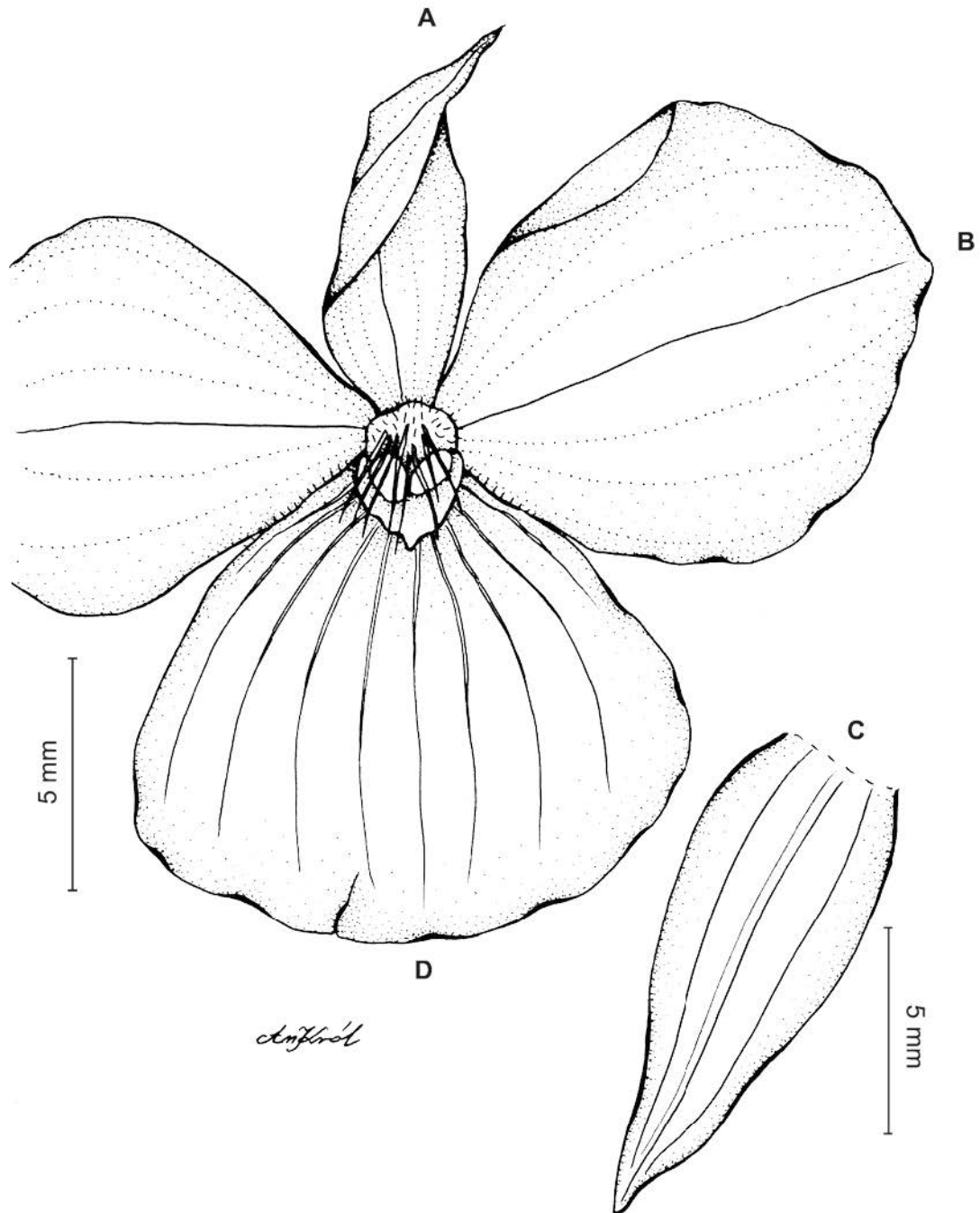


Figure 153 *Telipogon andicola* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Jameson 724 (W-R).



Figure 154 *Telipogon andicola* (photo: T. Kusibab).



Figure 155 *Telipogon andicola* (photo: T. Kusibab).



Figure 156 *Telipogon andicola* (photo: T. Kusibab).



Figure 157 *Telipogon andicola* (photo: A. Hirtz).



Figure 158 *Telipogon cf. andicola* (photo: E. S. Ayala).



Figure 159 *Telipogon cf. andicola* (photo: E. S. Ayala).



Figure 160 *Telipogon cf. andicola* (photo: E. S. Ayala).

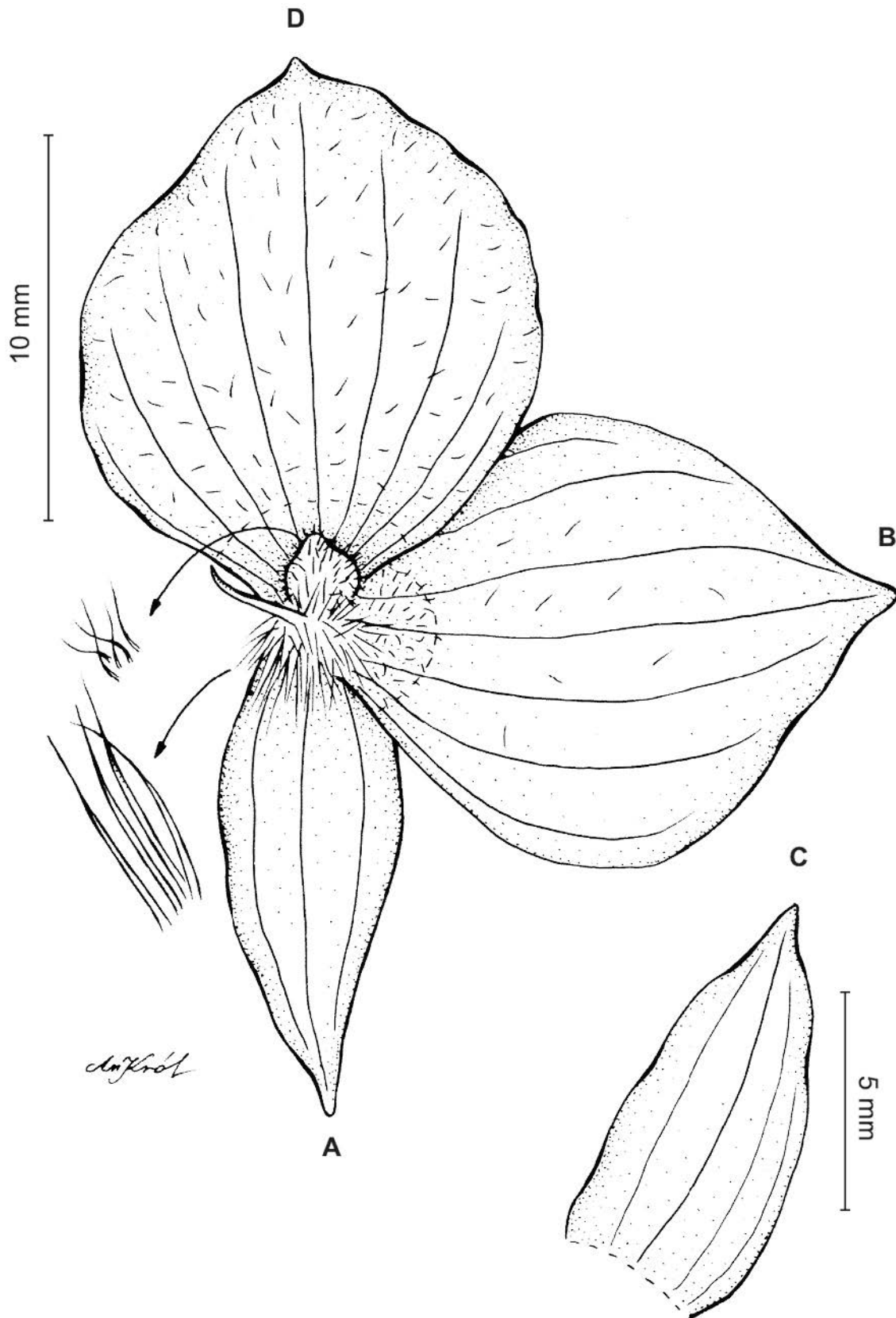


Figure 161 *Telipogon* sp. 1. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Schmidtchen s.n. (W-R).



Figure 162 *Telipogon sarae* (photo: A. Hirtz).



Figure 163 *Telipogon sarae* (photo: A. Hirtz).

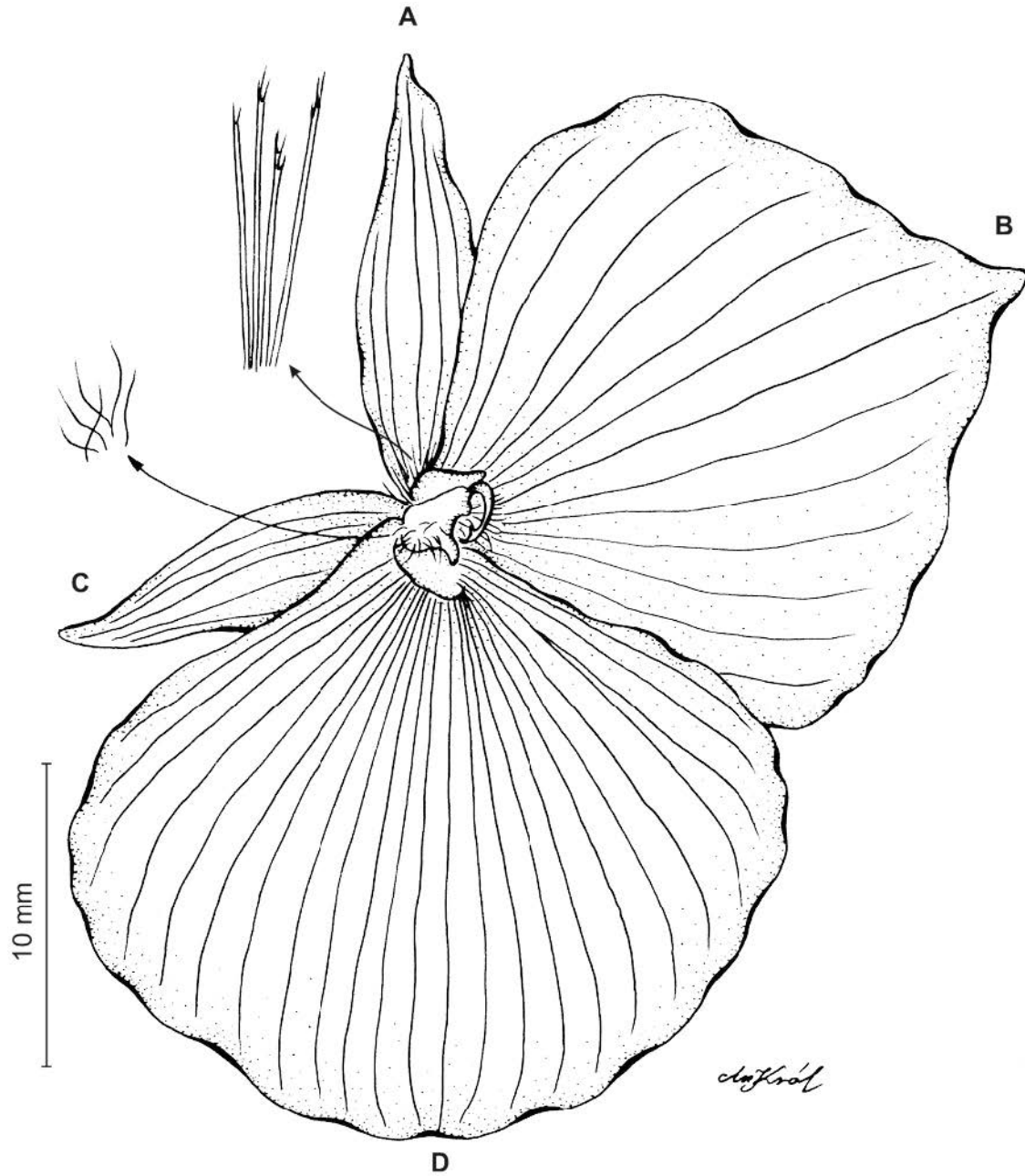


Figure 164 *Telipogon papilio* Rchb. f. & Warsz. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Warszewicz s.n. (W-R).



Figure 165 *Telipogon papilio* (photo: A. Hirtz).



Figure 166 *Telipogon papilio* (photo: A. Hirtz).



Figure 167 *Telipogon papilio* (photo: L. Pérez).

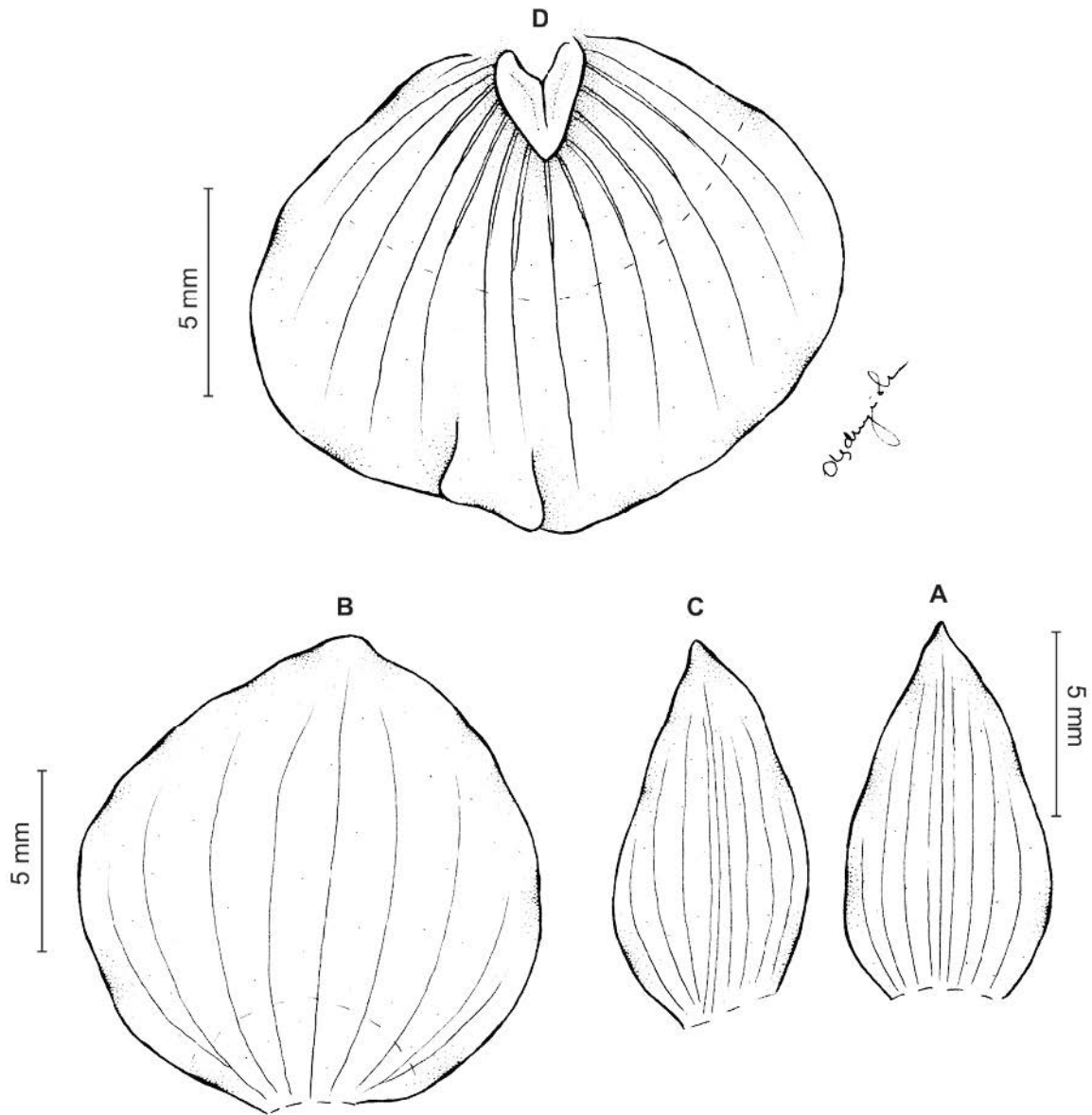


Figure 168 *Telipogon pastoanus* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip. Drawn by N. Ołędzińska from Garay 737 (AMES).



Figure 169 *Telipogon cristinae* (photo: C. Uribe-Vélez).

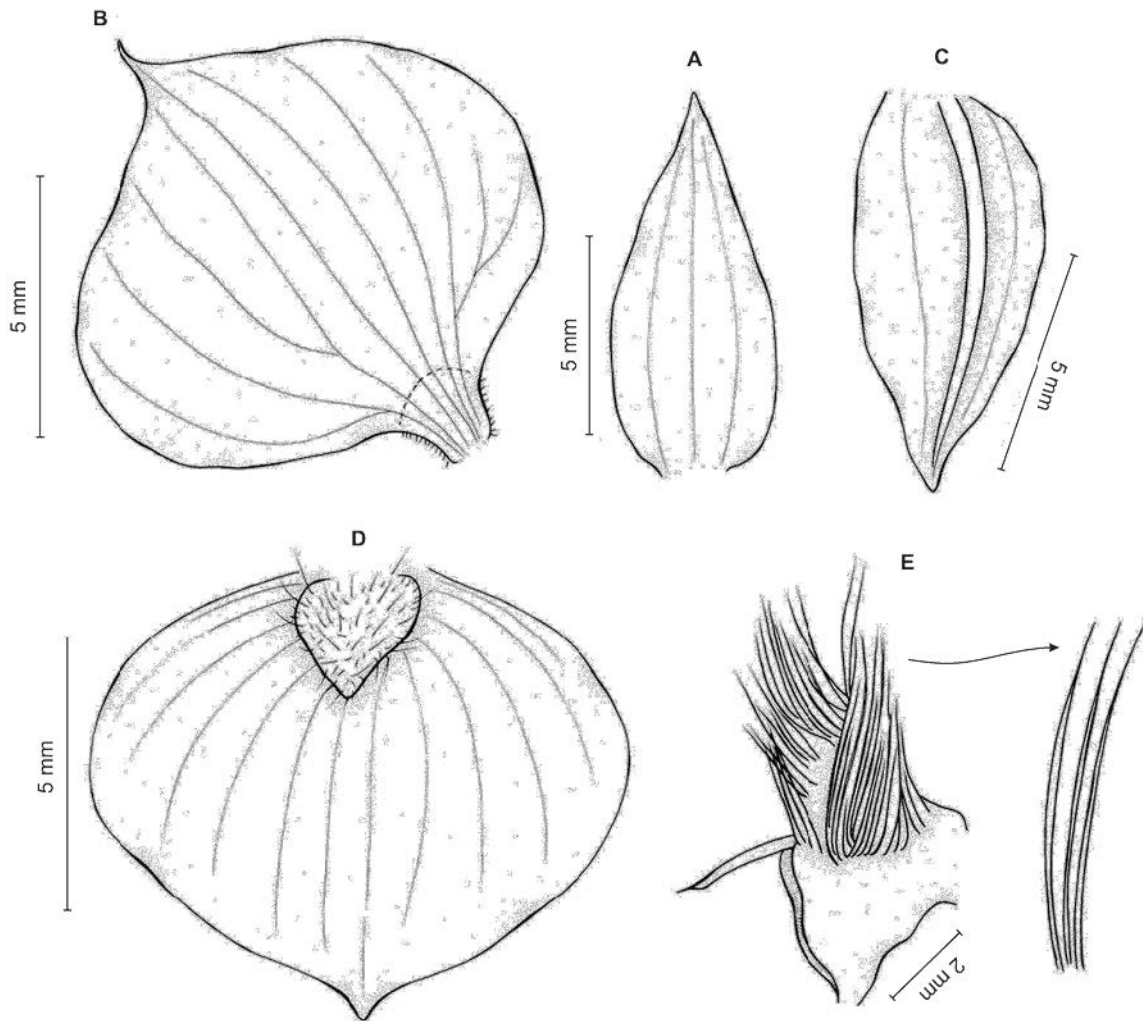


Figure 170 *Telipogon diabolicus* Kolan., Szlach. & Medina Tr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Olędrzyńska from R. Medina T. & al. S15/13 (JAUM).



Figure 171 *Telipogon diabolicus* (photo: C. Uribe-Vélez).



Figure 172 *Telipogon diabolicus* (photo: M. Kolanowska).



Figure 173 *Telipogon diabolicus* (photo: M. Kolanowska).



Figure 174 *Telipogon diabolicus* (photo: M. Kolanowska).



Figure 175 *Telipogon diabolicus* (photo: C. Uribe-Vélez).

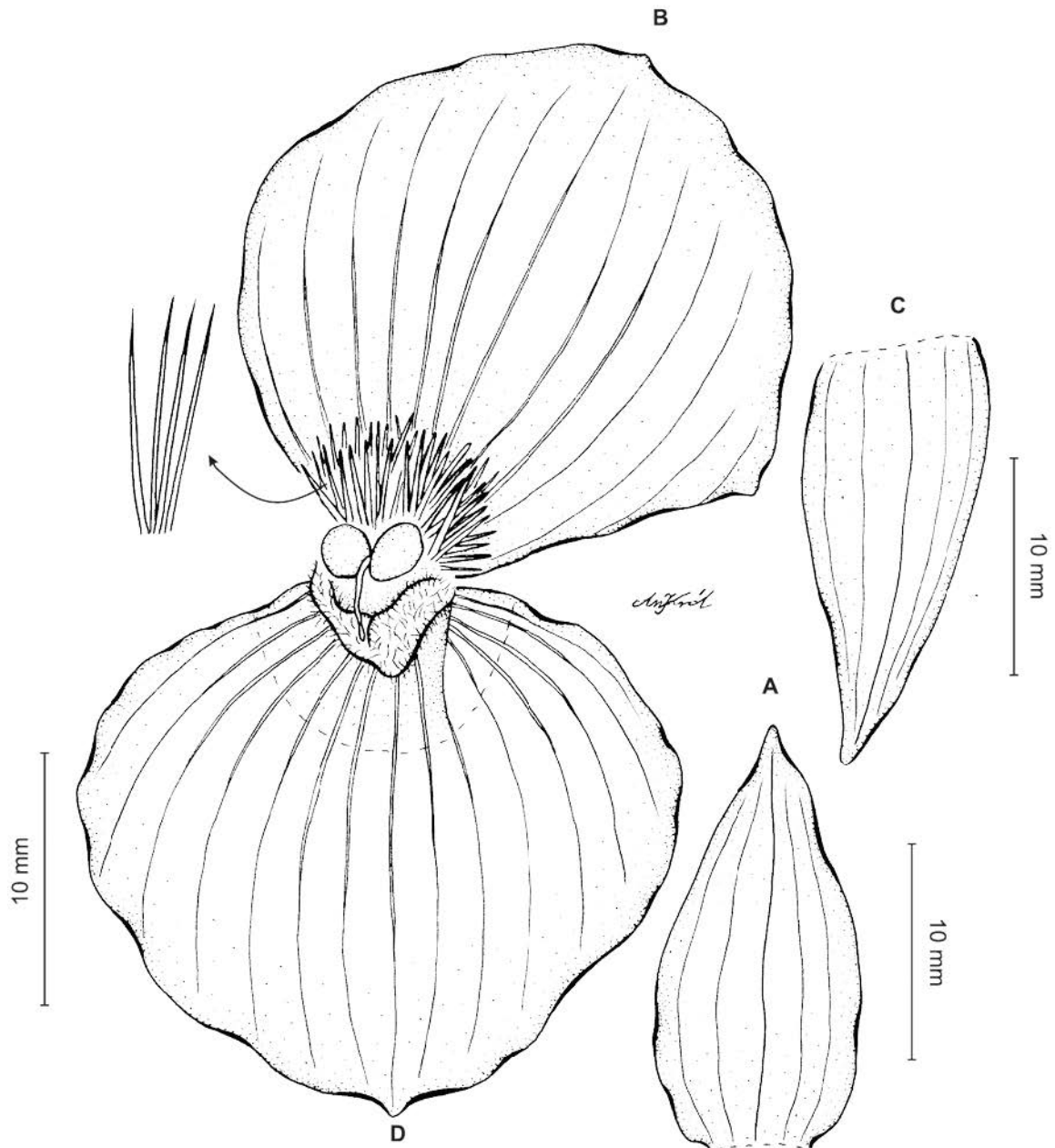


Figure 176 *Telipogon macroglottis* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Krause s.n. (W-R).



Figure 177 *Telipogon macroglottis* (photo: A. Hirtz).

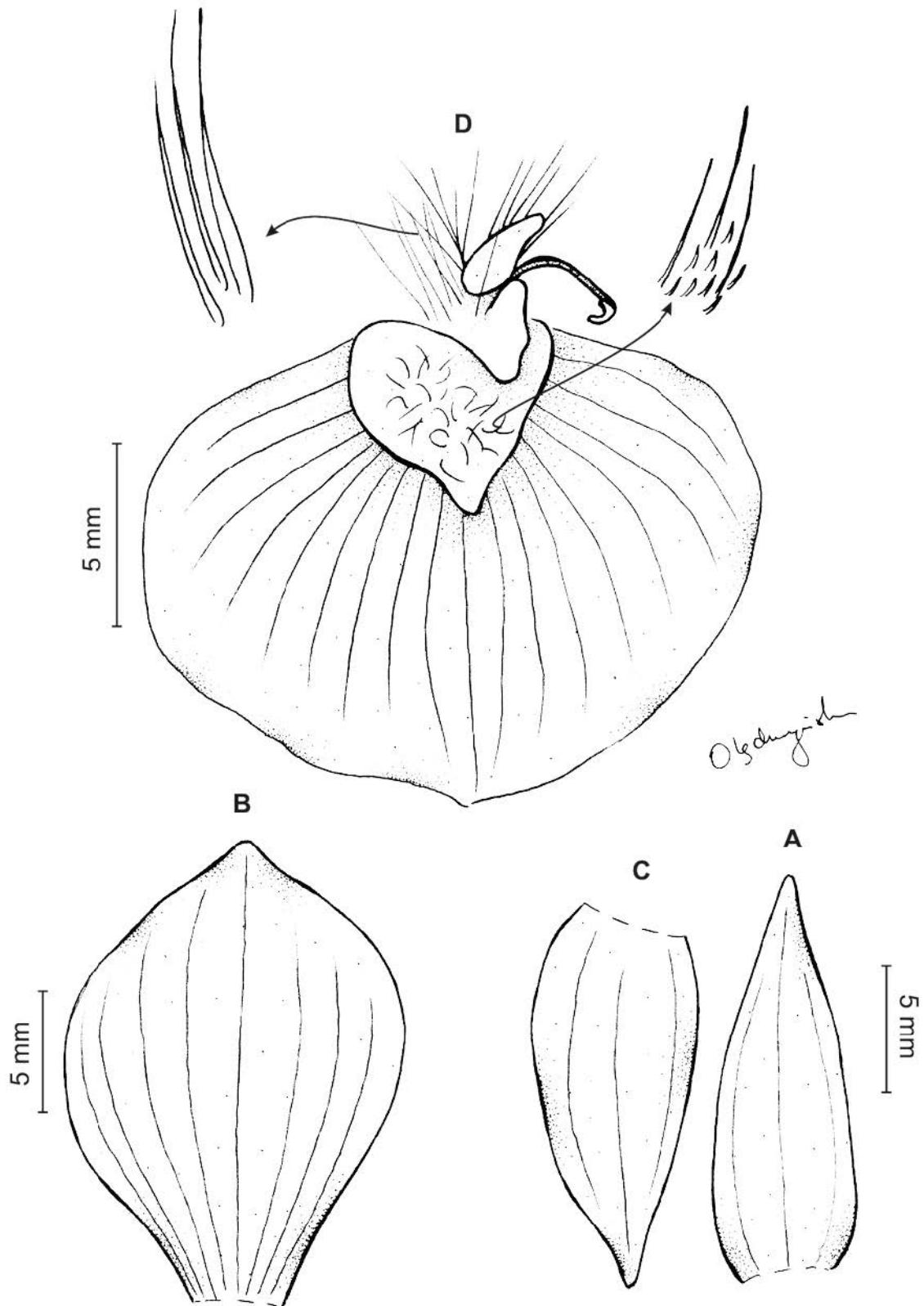


Figure 178 *Telipogon camargoi* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Olędzzyńska from *Schneider 330* (AMES).

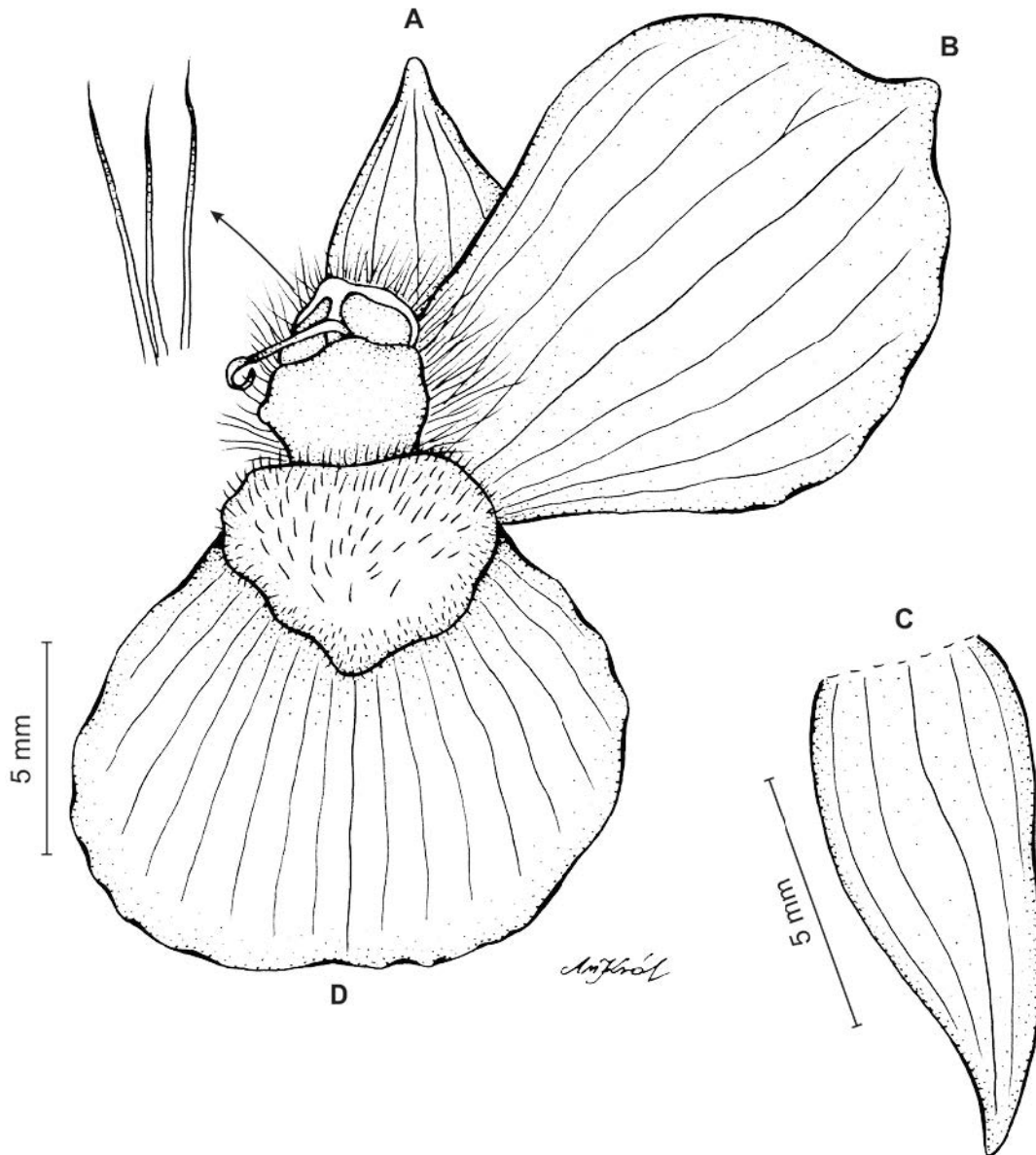


Figure 179 *Telipogon wallisii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Wallis s.n.* (W-R).



Figure 180 *Telipogon wallisii* (photo: L. Perez).



Figure 181 *Telipogon wallisii* (photo: L. Perez).



Figure 182 *Telipogon wallisii* (photo: E. S. Ayala).



Figure 183 *Telipogon wallisii* (photo: E. S. Ayala).



Figure 184 *Telipogon* cf. *wallisii* (photo: E. S. Ayala).

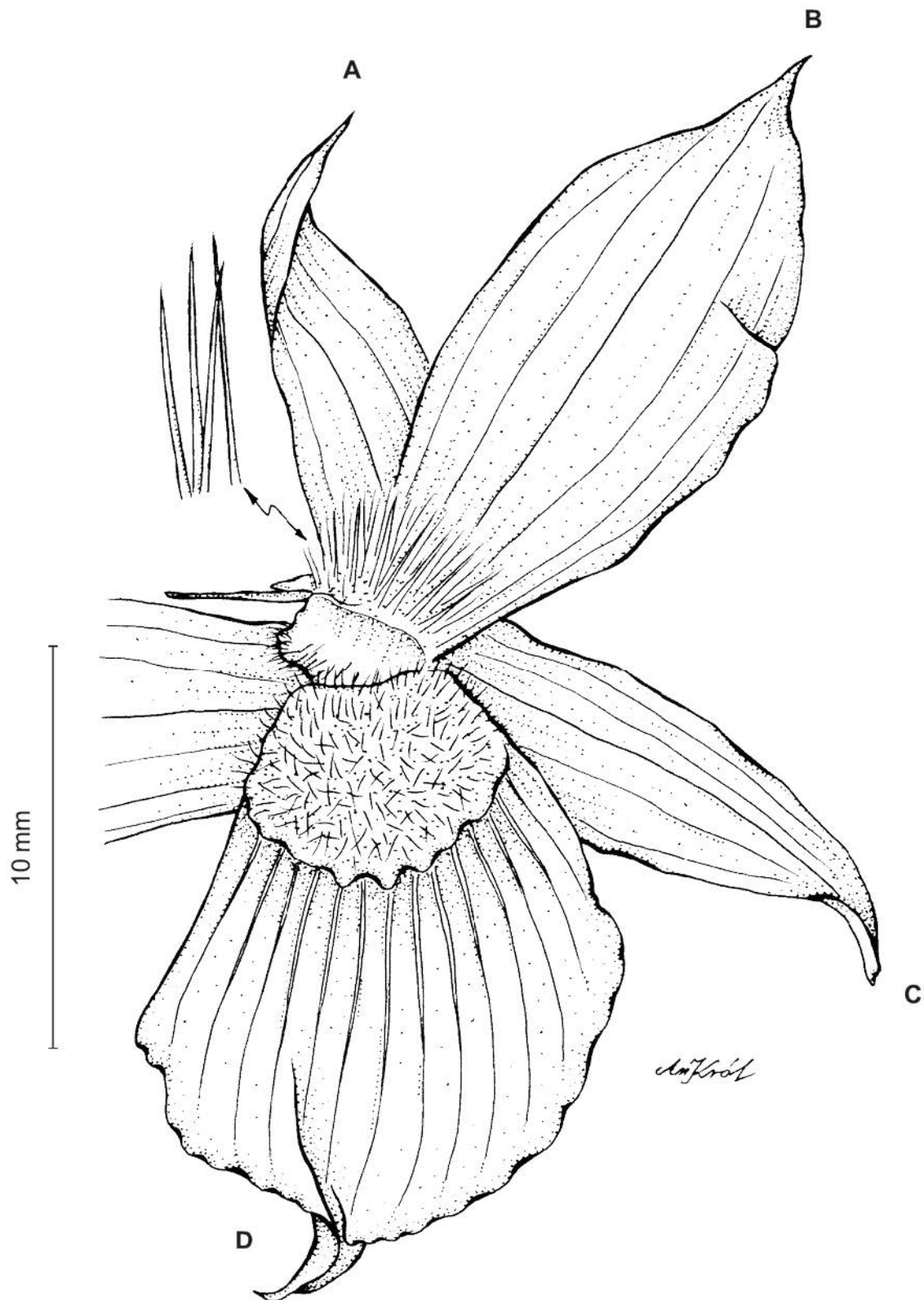


Figure 185 *Telipogon bruchmuelleri* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Bruchmüller s.n.* (W-R).

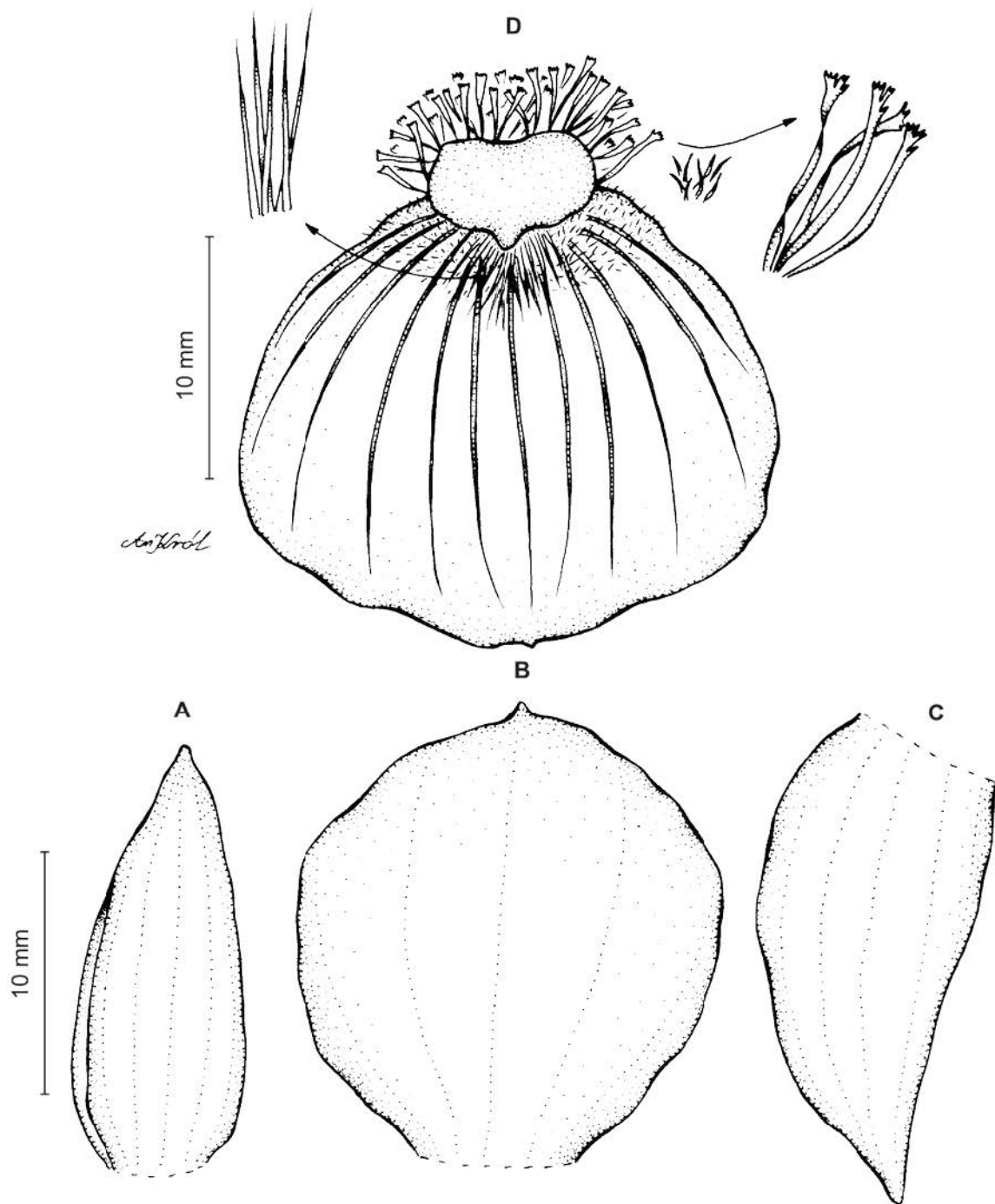


Figure 186 *Telipogon hemimelas* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Wallis s.n. (W-R).



Figure 187 *Telipogon hemimelus* (photo: A. Hirtz).



Figure 188 *Telipogon hemimelus* (photo: L. Perez).



Figure 189 *Telipogon hemimelus* (photo: L. Perez).



Figure 190 *Telipogon mariae* (photo: C. Uribe-Vélez).

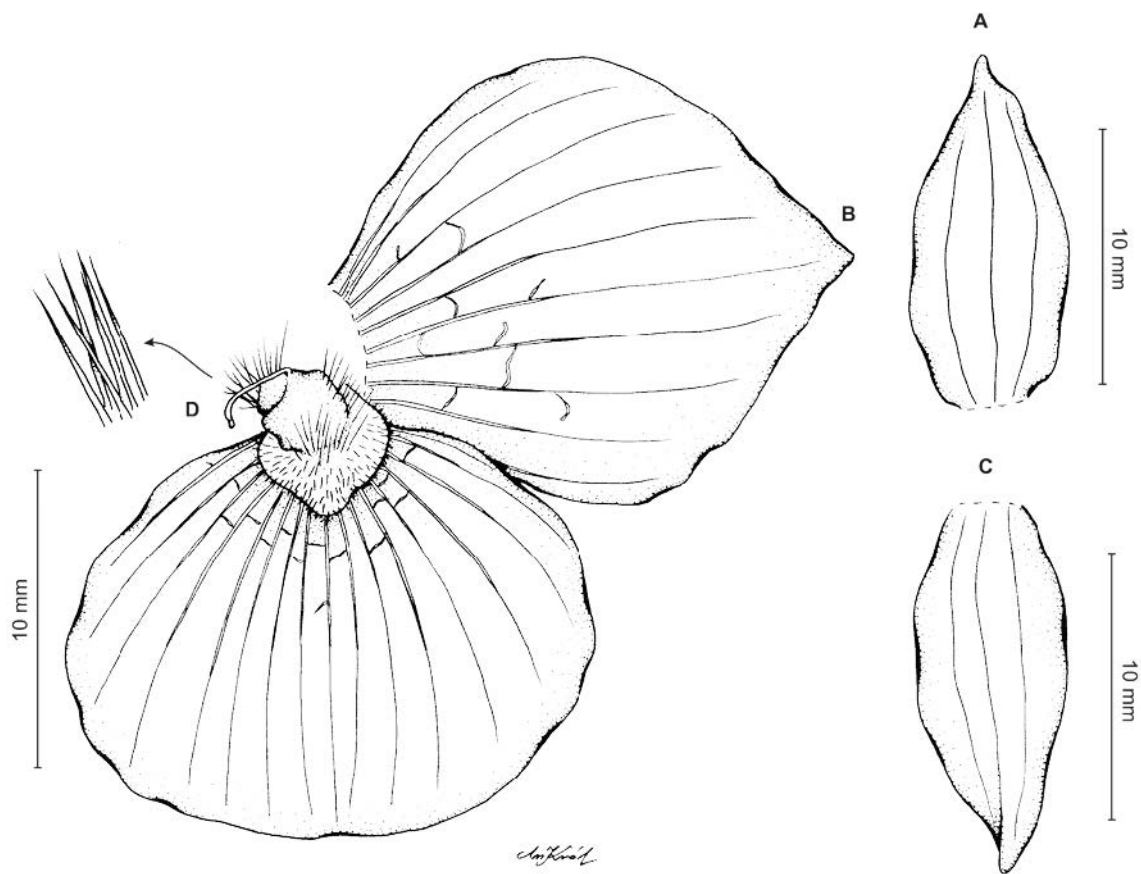


Figure 191 *Telipogon semipictus* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Karsten s.n. (W-R).



Figure 192 *Telipogon bota-caucana* (photo: C. Uribe-Vélez).

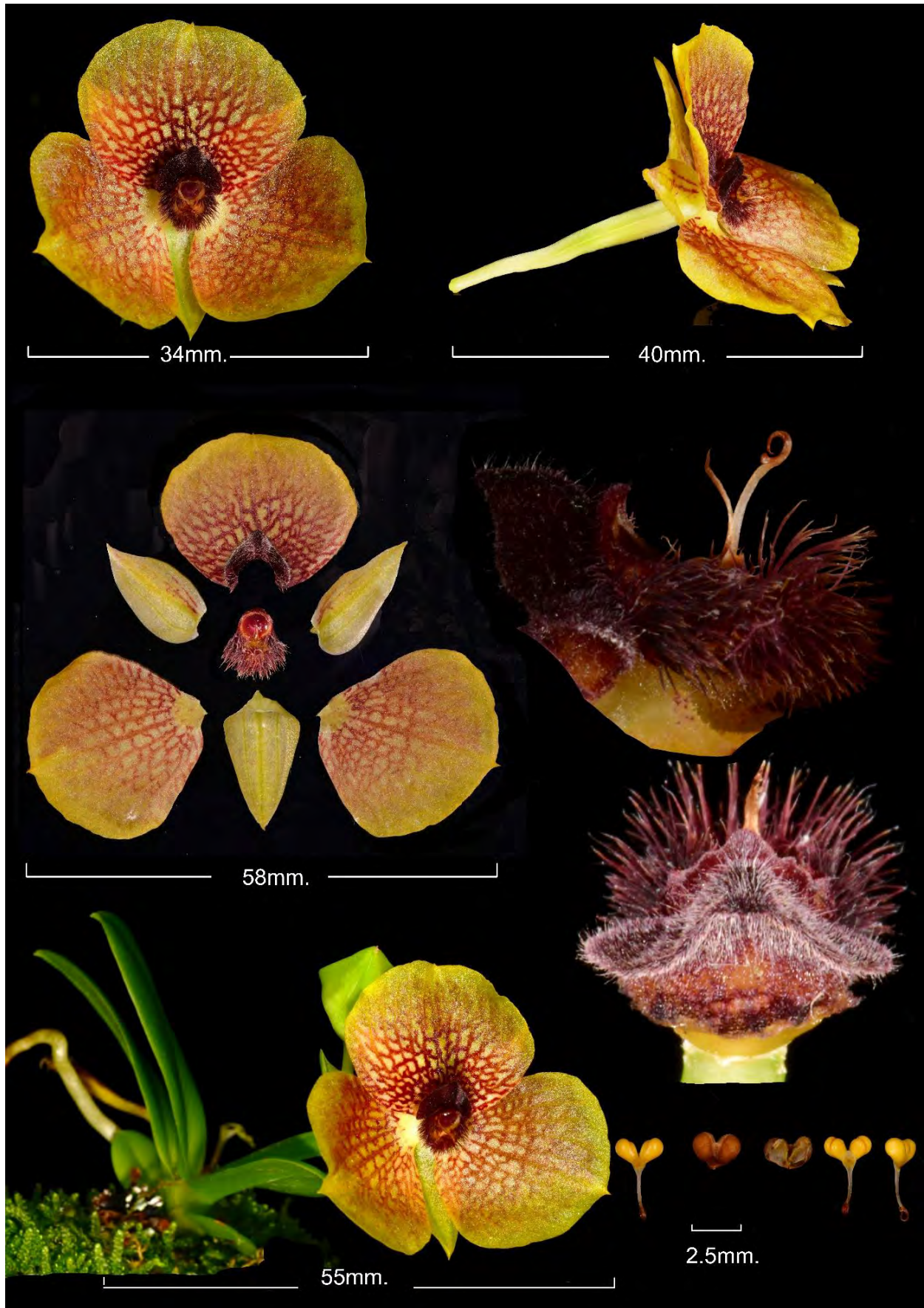


Figure 193 *Telipogon bota-caucana* (photo: C. Uribe-Vélez).



Figure 194 *Telipogon uribevelezi* (photo: C. Uribe-Vélez).



Figure 195 *Telipogon uribevelezi* (photo: C. Uribe-Vélez).

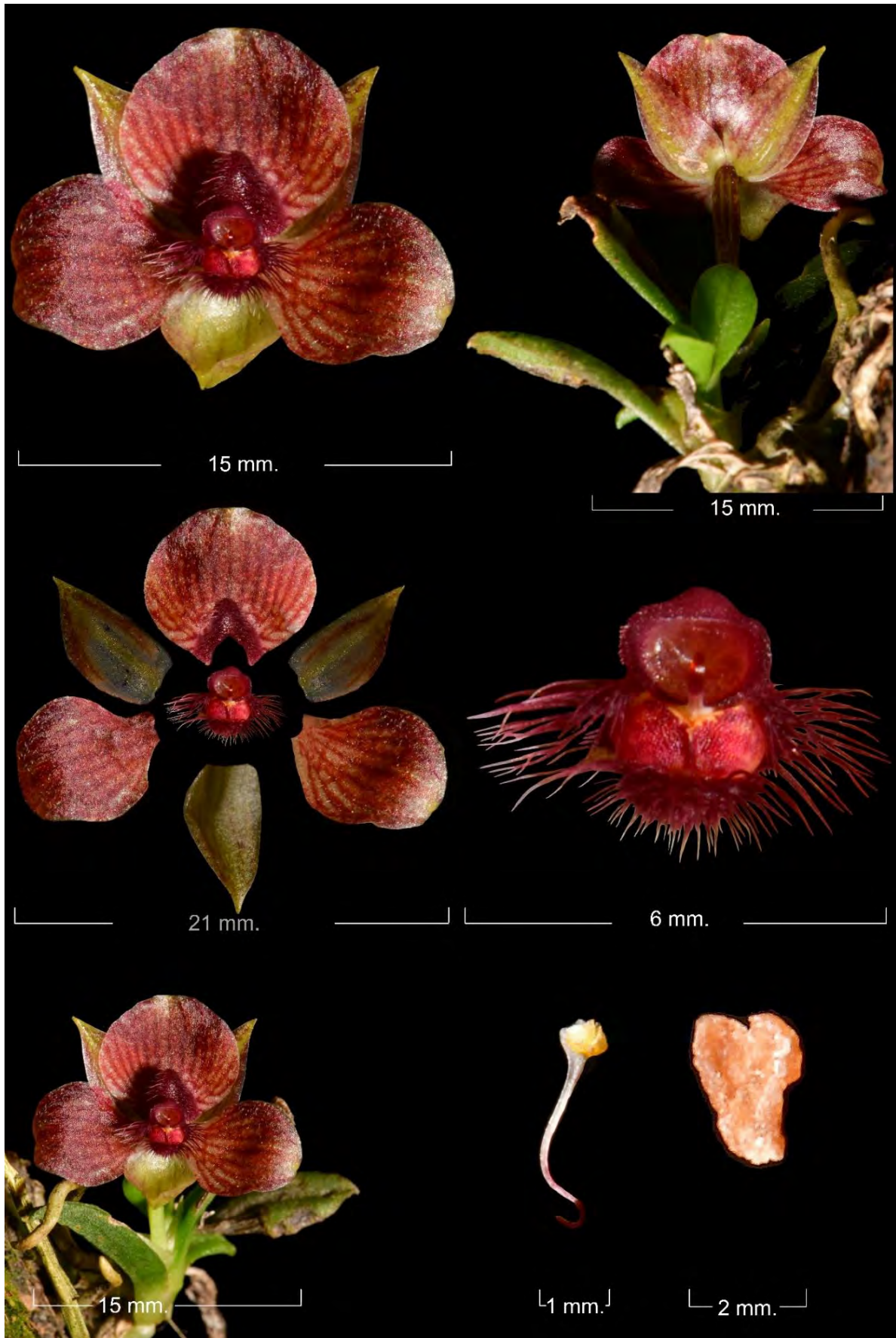


Figure 196 *Telipogon uribevelezi* (photo: C. Uribe-Vélez).

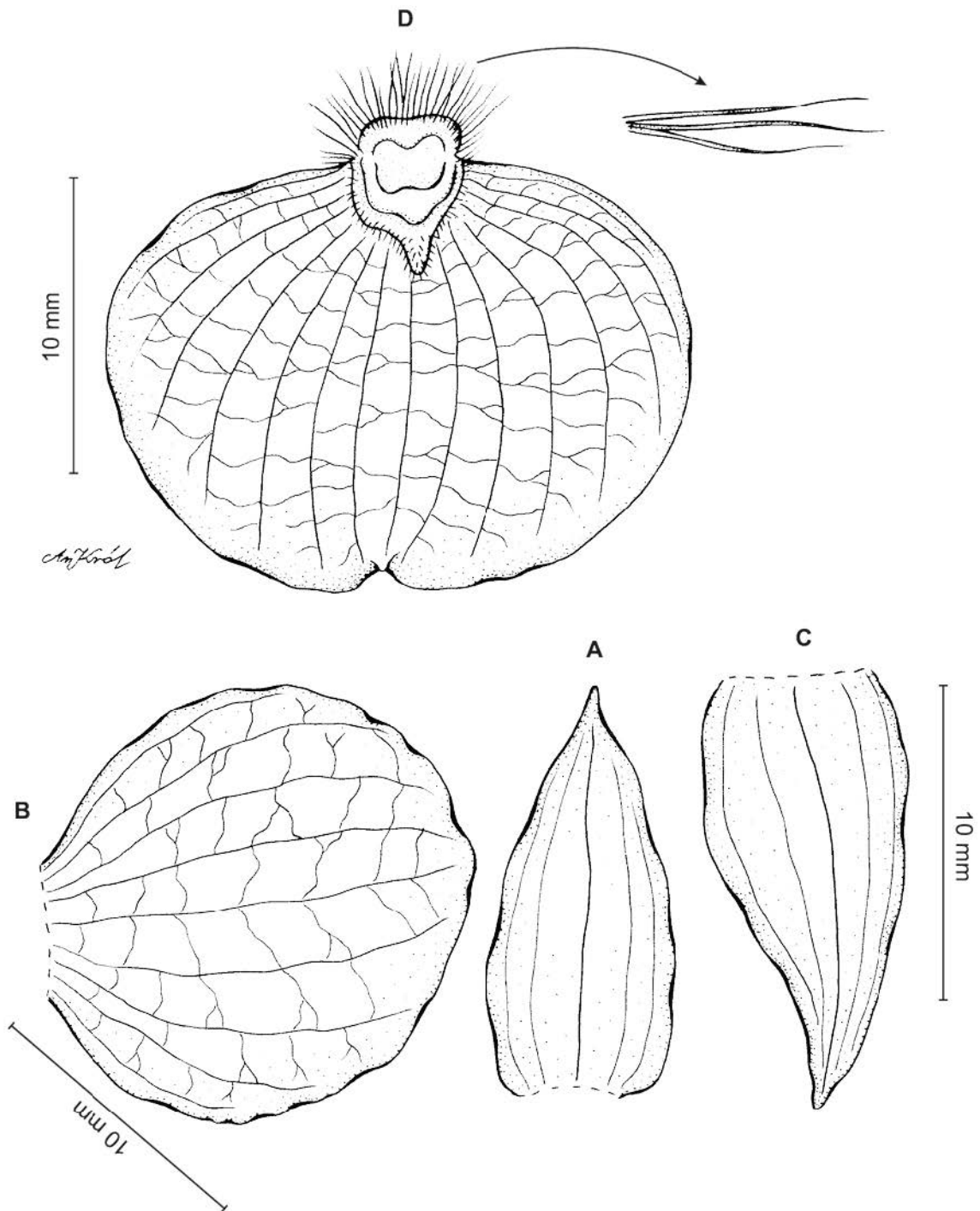


Figure 197 *Telipogon asuayanus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Lehmann 290 (W-R).

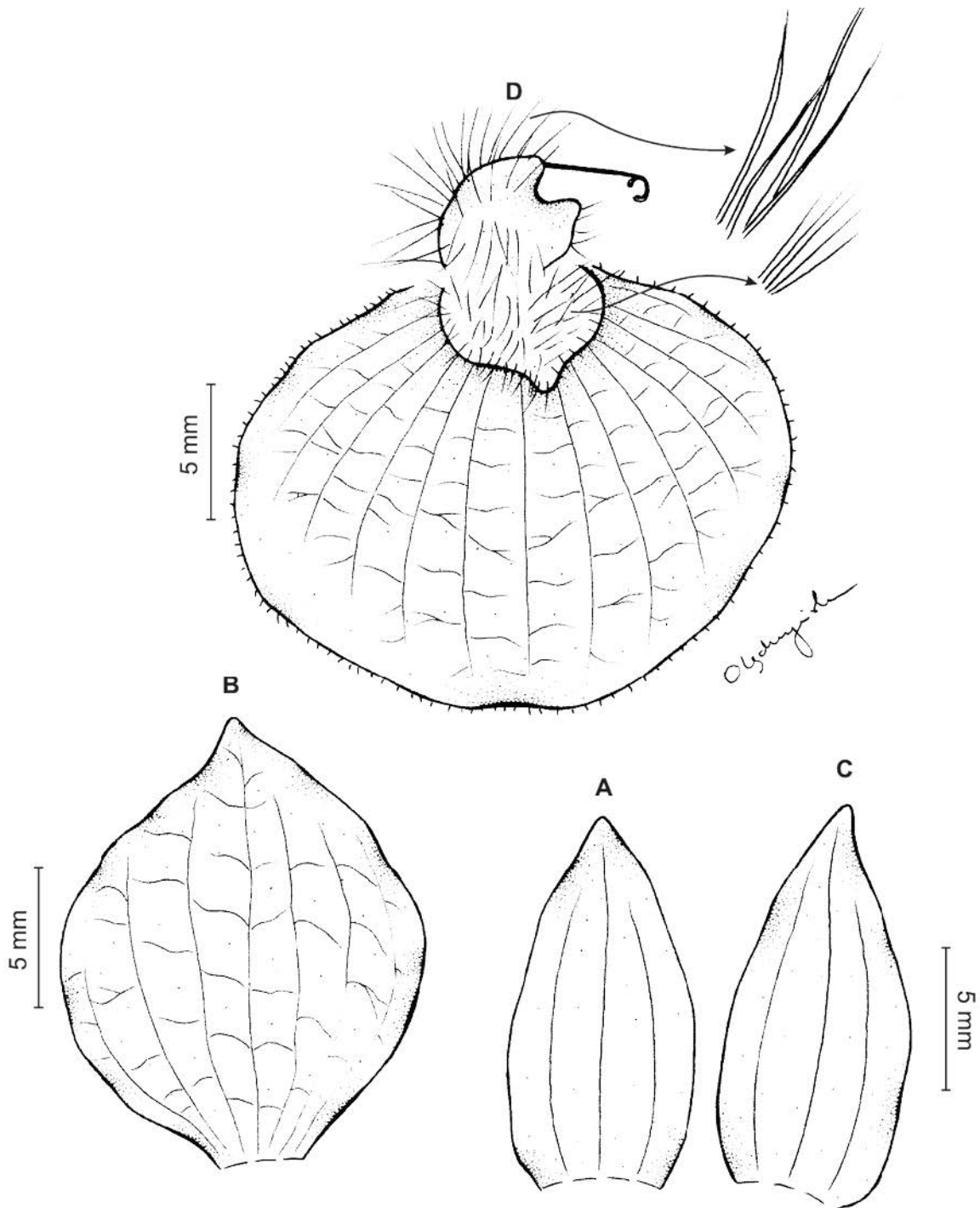


Figure 198 *Telipogon tessellatus* Lindl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Oleđrzyńska from *Espinoza 761* (AMES).



Figure 199 *Telipogon cf. yolandae* (photo: E. S. Ayala).



Figure 200 *Telipogon yolandae* (photo: C. Uribe-Vélez).



Figure 201 *Telipogon cf. yolandae* (photo: E. S. Ayala).



Figure 202 *Telipogon cf. yolandae* (photo: E. S. Ayala).



Figure 203 *Telipogon cf. yolandae* (photo: E. S. Ayala).



Figure 204 *Telipogon povedanus* (photo: C. Uribe-Vélez).



Figure 205 *Telipogon uribei* (photo: C. Uribe-Vélez).



Figure 206 *Telipogon isabelae* (photo: A. Hirtz).



Figure 207 *Telipogon australis* (photo: A. Hirtz).

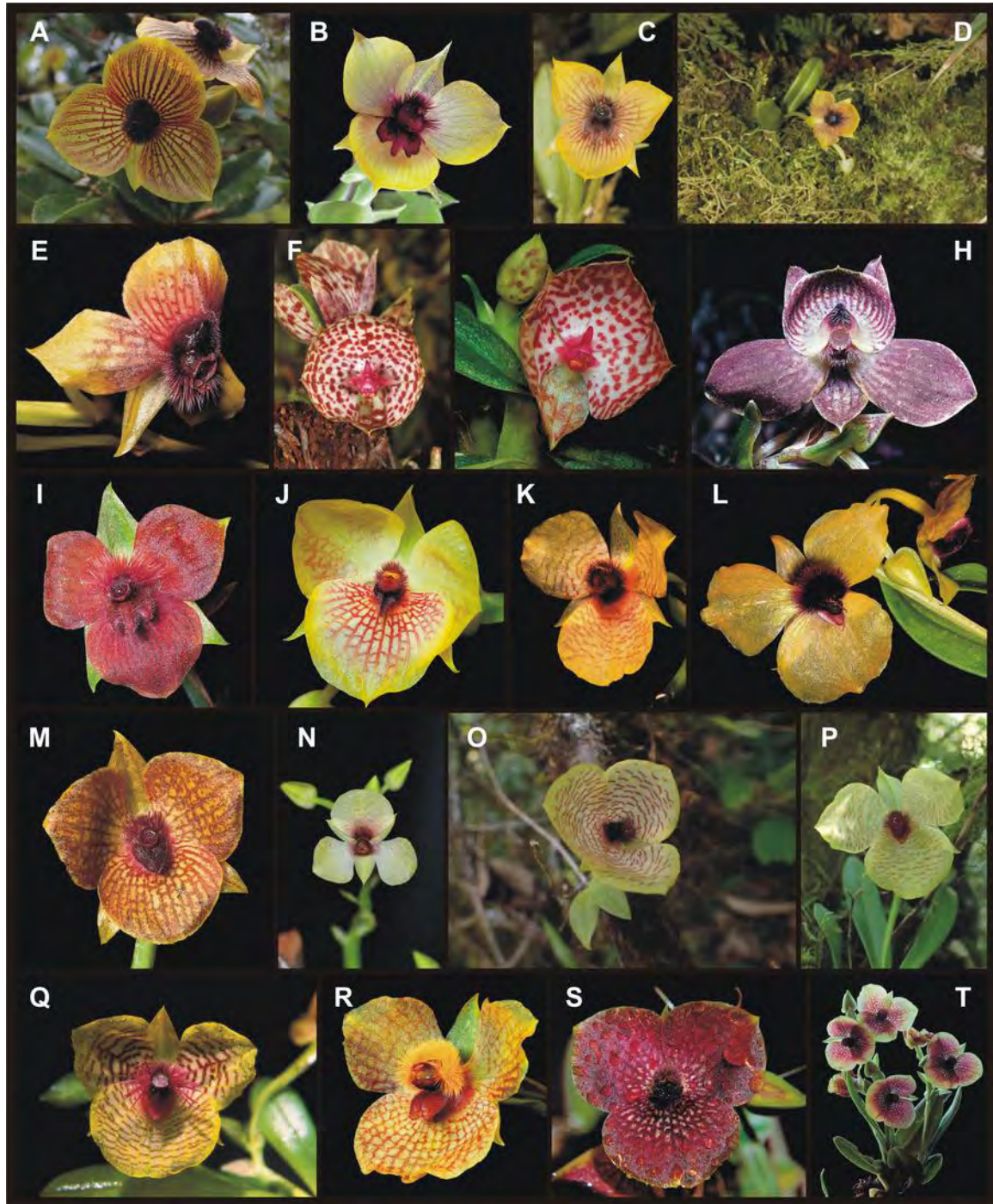


Figure 208 Representatives of *Telipogon* subgenus *Brevicaules*, *Stinae*-subgroup. (A) *Telipogon chimborazoensis* (photo: M. Kolanowska), (B) *T. cuyujensis* (photo: A. Hirtz), (C,D) *T. cuyujensis* (photo: T. Kusibab), (E) *T. dendriticus* (photo: A. Hirtz), (F) *T. dodsoni* (photo: T. Kusibab), (G) *T. dodsonii* (photo: A. Hirtz), (H) *T. frymirei* (photo: A. Hirtz), (I) *T. hagsateri* (photo: A. Hirtz), (J) *T. jimburensis* (photo: A. Hirtz), (K) *T. loxense* (photo: A. Hirtz), (L) *T. obovatus* (photo: A. Hirtz), (M) *T. octavioi* (photo: A. Hirtz), (N) *T. phalaena* (photo: T. Kusibab), (O,P) cf. *T. phalaena* (photo: M. Kolanowska), (Q) *T. phalaena* (photo: A. Hirtz), (R) *T. stinae* (photo: A. Hirtz), (S,T) *T. thomasii* (photo: A. Hirtz).



Figure 209 *Telipogon octavioi* (photo: A. Hirtz).



Figure 210 *Telipogon guacamayoensis* (photo: C. Uribe-Vélez).



Figure 211 *Telipogon guacamayoensis* (photo: C. Uribe-Vélez).



Figure 212 *Telipogon guacamayoensis* (photo: A. Hirtz).

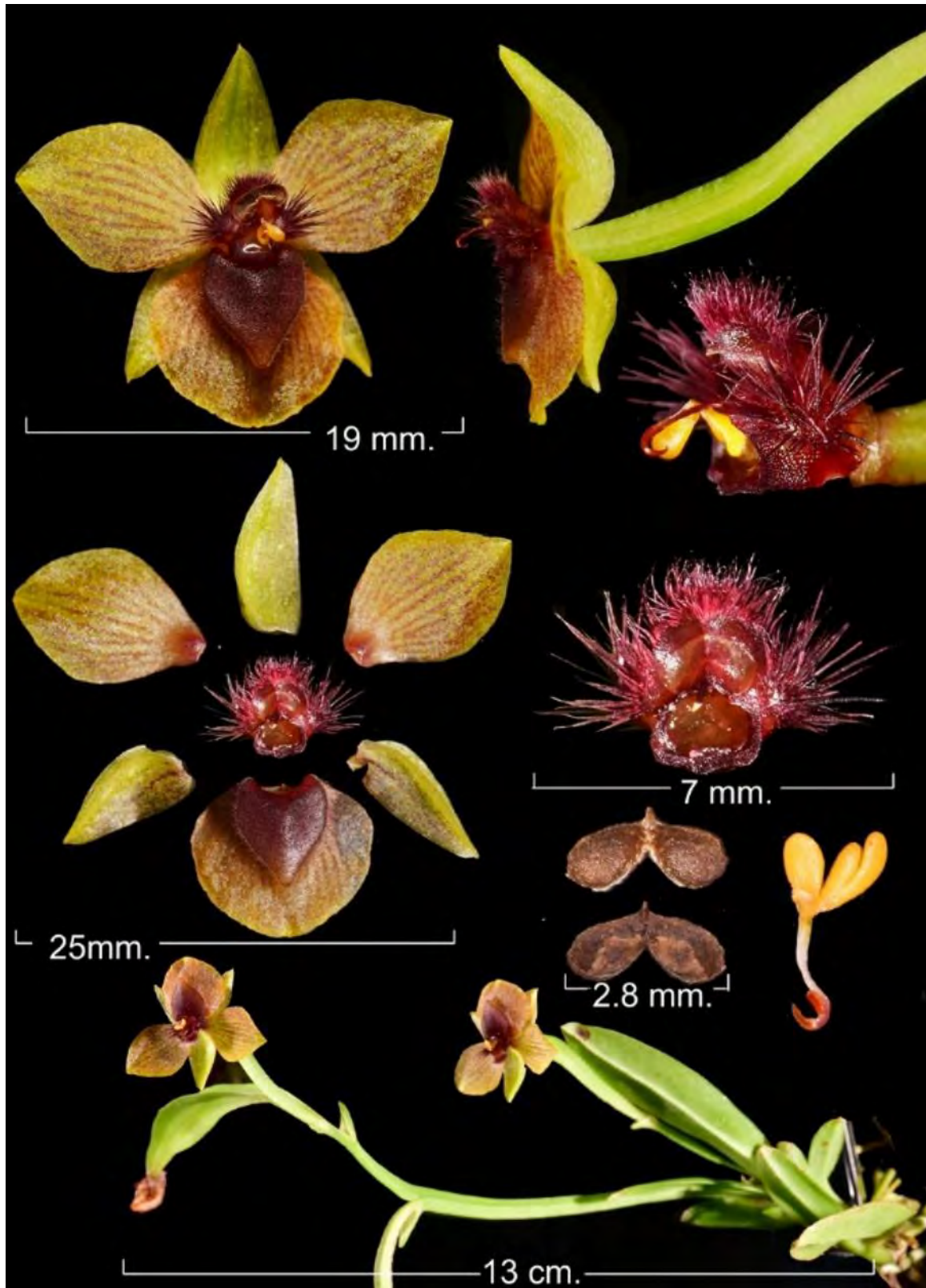


Figure 213 *Telipogon guacamayoensis* (photo: C. Uribe-Vélez).



Figure 214 *Telipogon loxense* (photo: A. Hirtz).

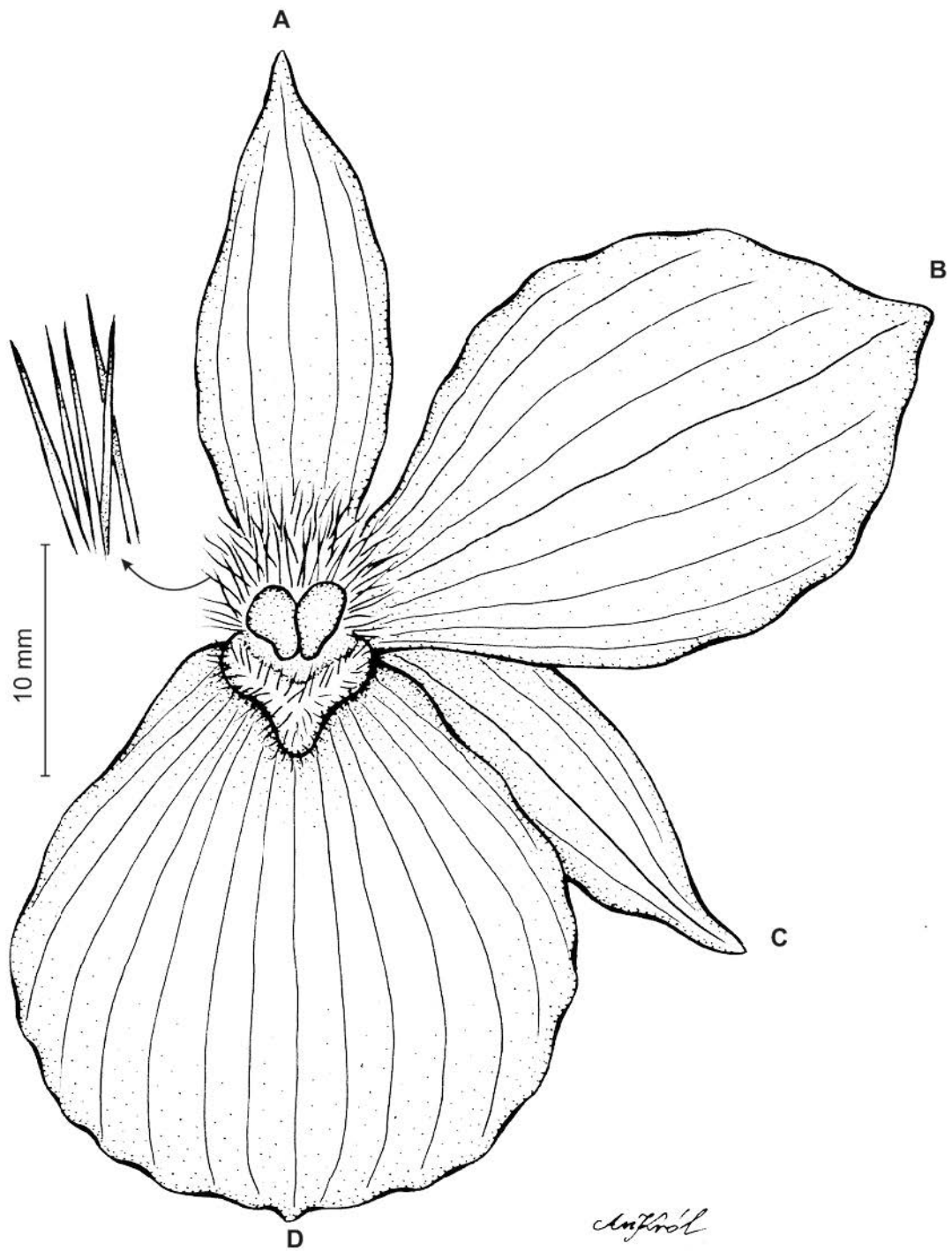


Figure 215 *Telipogon obovatus* Lindl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Klaboch 75 (W-R).



Figure 216 *Telipogon obovatus* (photo: A. Hirtz).

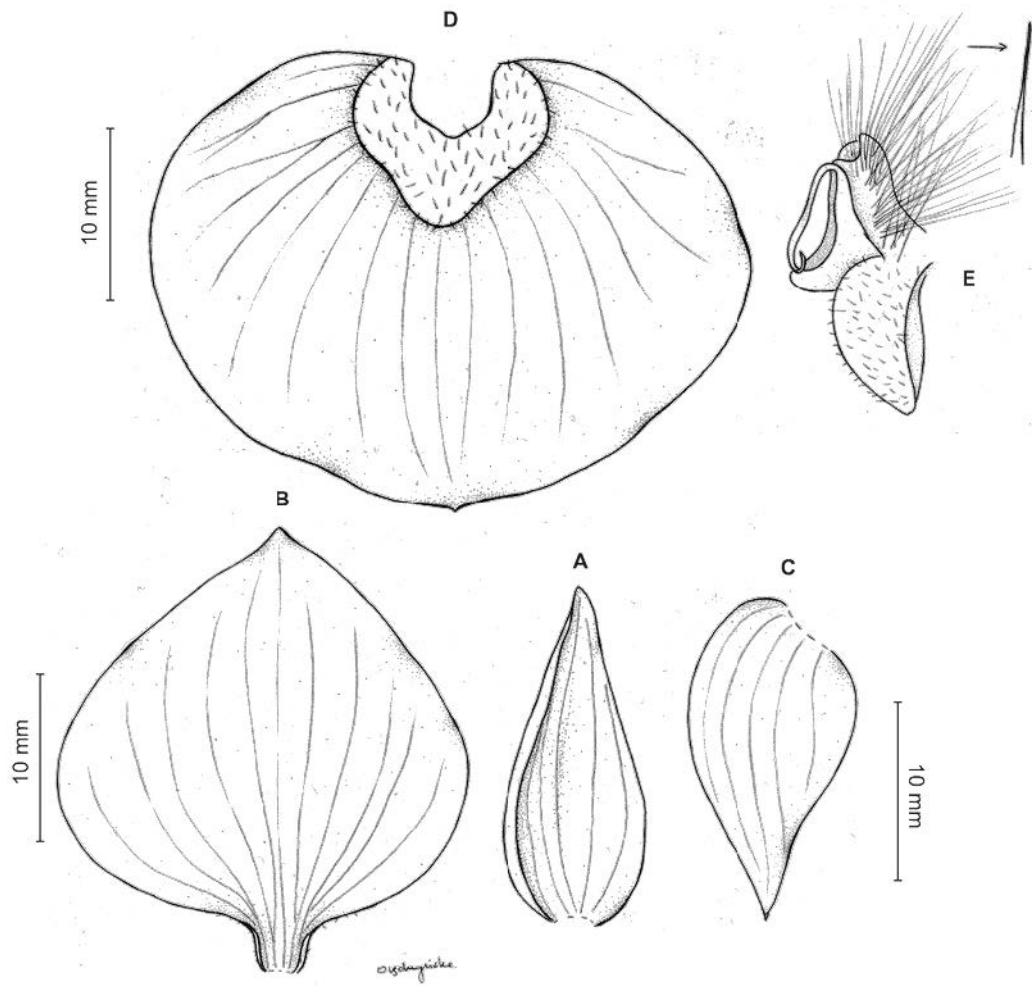


Figure 217 *Telipogon chimborazoensis* Kolan., Z. Štípková & Hirtz. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium and lip callus. Drawn by N. Olędrzyńska from A. Hirtz & al. E17/49 (HA)

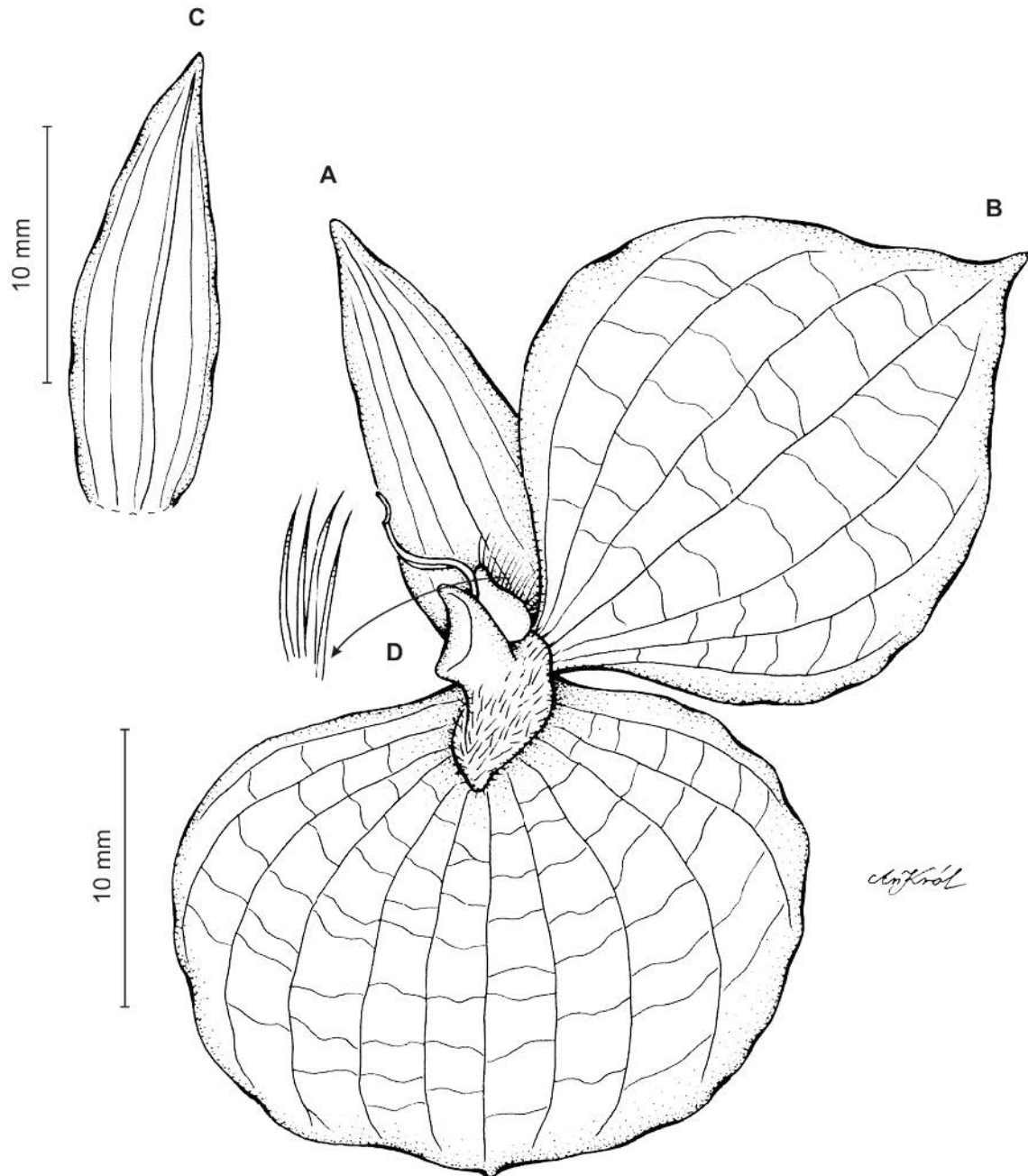


Figure 218 *Telipogon phalaena* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Hubsch 5* (W-R).

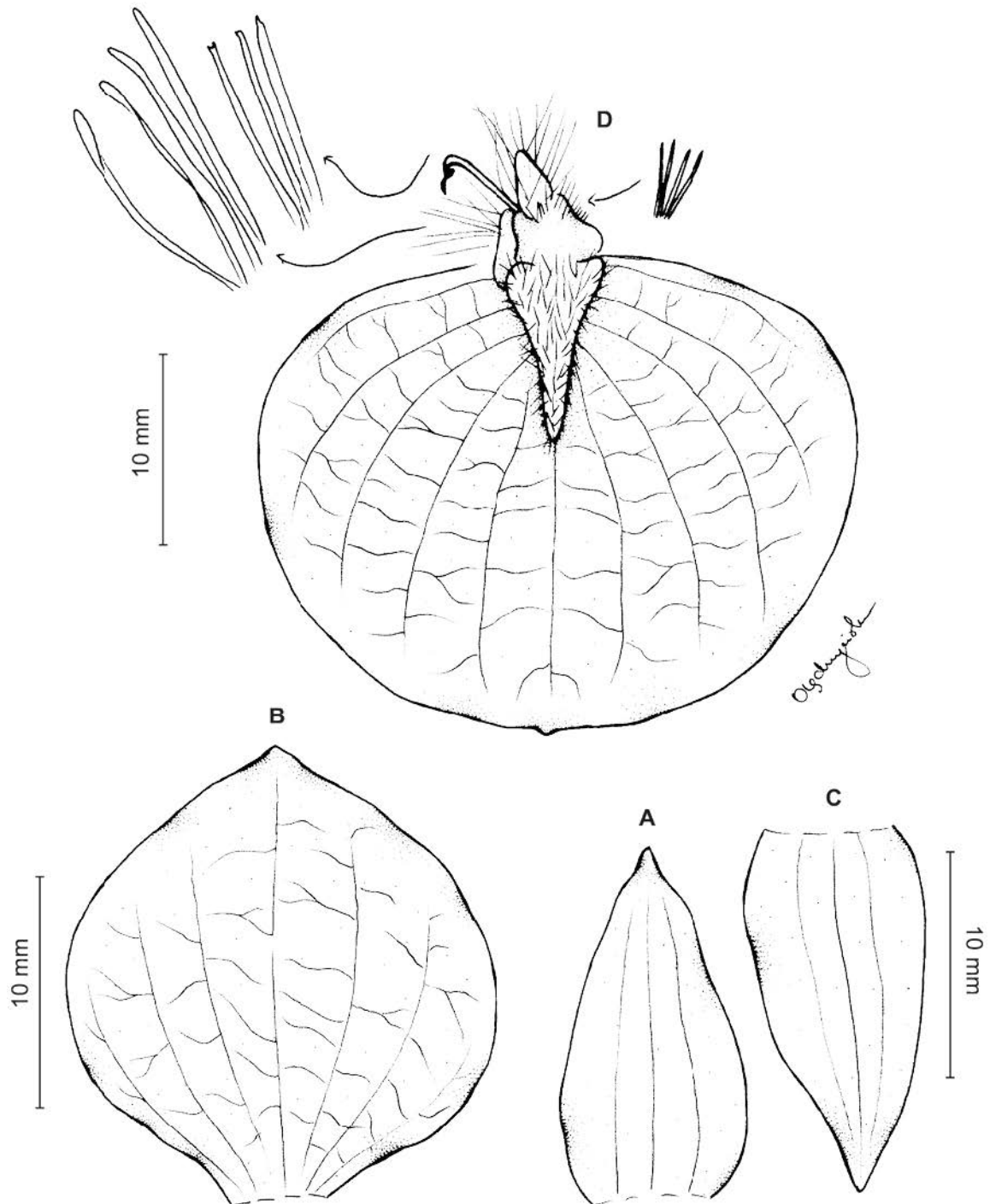


Figure 219 *Telipogon phalaena* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Olszowyńska from Poortman s.n. (P).

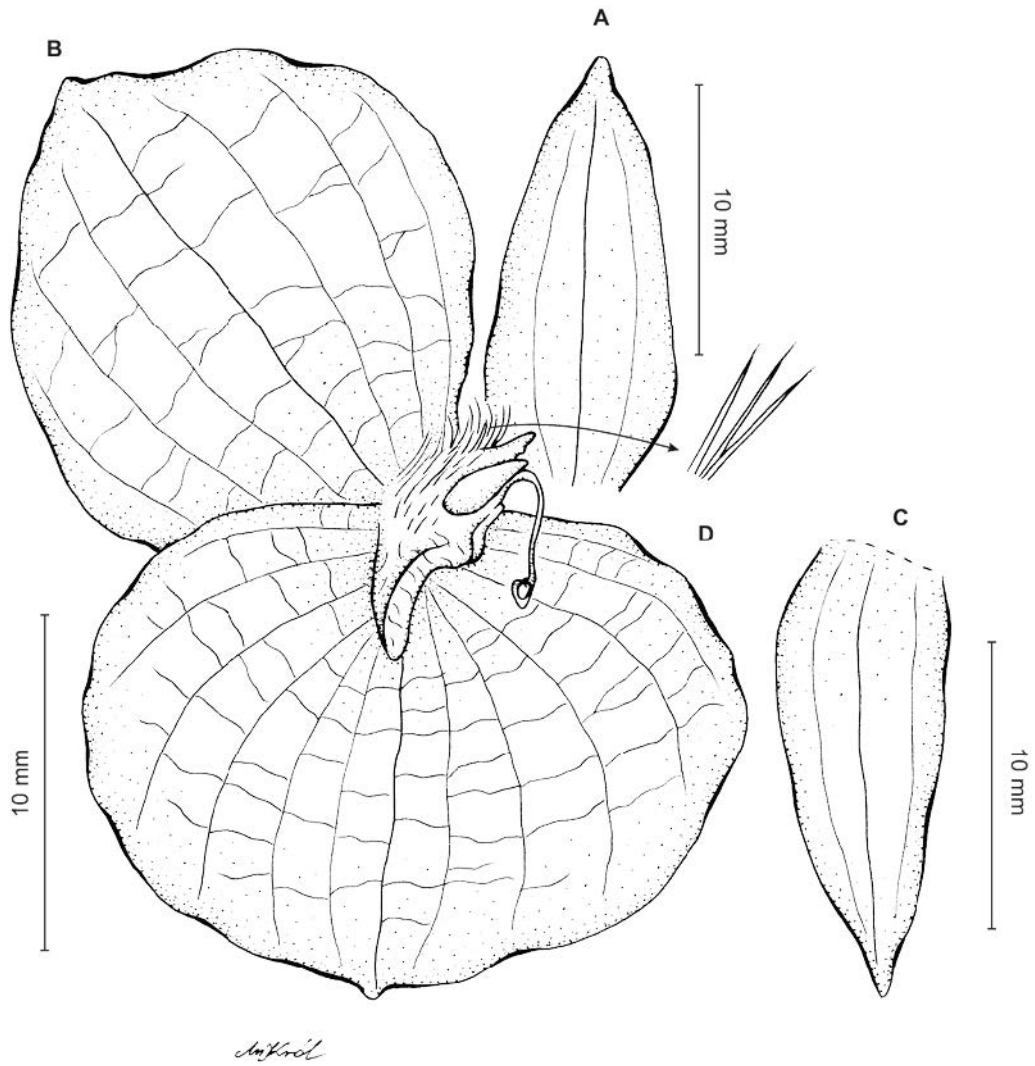


Figure 220 *Telipogon phalaena* Rchb. f. ex Kraenzl. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Sine coll.* (W-R).



Figure 221 *Telipogon phalaena* (photo: A. Hirtz).



Figure 222 *Telipogon* cf. *phalaena* (photo: M. Kolanowska).



Figure 223 *Telipogon cf. phalaena* (photo: M. Kolanowska).



Figure 224 *Telipogon cf. phalaena* (photo: M. Kolanowska).



Figure 225 *Telipogon cf. phalaena* (photo: M. Kolanowska).



Figure 226 *Telipogon* cf. *phalaena* (photo: M. Kolanowska).



Figure 227 *Telipogon phalaena* (photo: T. Kusibab).



Figure 228 *Telipogon phalaena* (photo: T. Kusibab).



Figure 229 *Telipogon phalaena* (photo: T. Kusibab).



Figure 230 *Telipogon tamboensis* (photo: A. Hirtz).



Figure 231 *Telipogon tamboënsis* (photo: A. Hirtz).



Figure 232 *Telipogon dodsoni* (photo: T. Kusibab).



Figure 233 *Telipogon dodsoni* (photo: T. Kusibab).



Figure 234 *Telipogon dodsoni* (photo: T. Kusibab).



Figure 235 *Telipogon dodsonii* (photo: A. Hirtz).



Figure 236 *Telipogon frymirei* (photo: A. Hirtz).



Figure 237 *Telipogon thomasii* (photo: A. Hirtz).



Figure 238 *Telipogon thomasii* (photo: A. Hirtz).

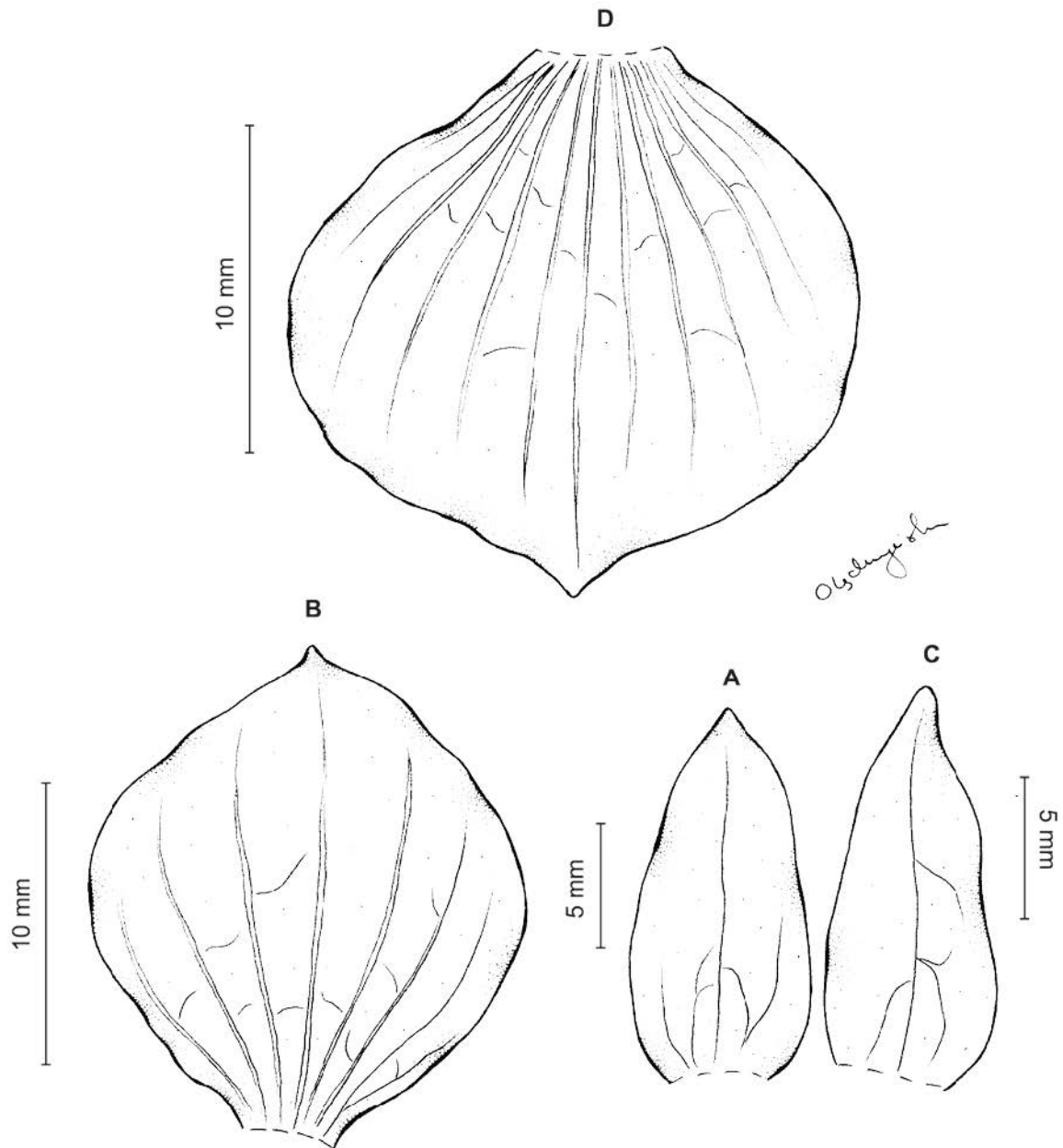


Figure 239 *Telipogon dendriticus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip. Drawn by N. Ołędryńska from Asplund 8261 (US).

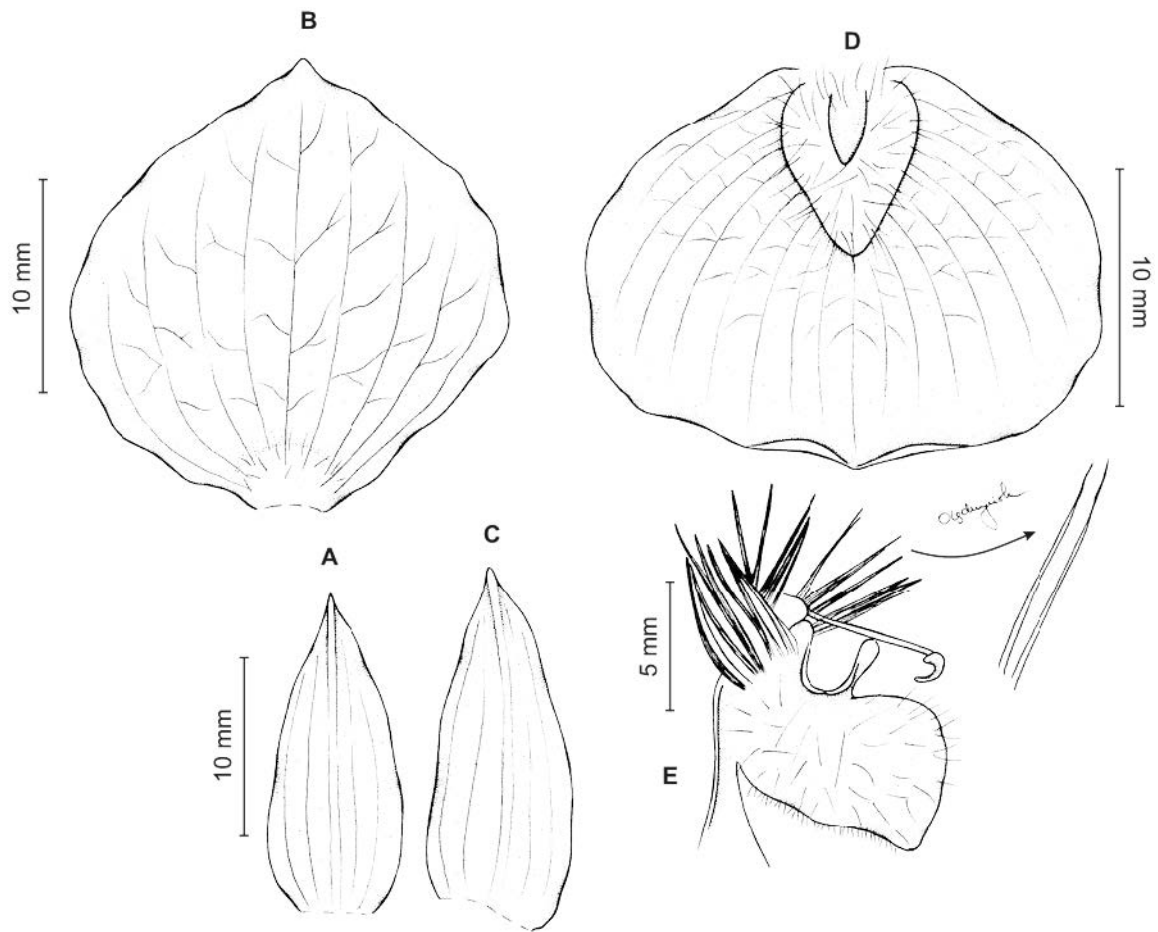


Figure 240 *Telipogon dendriticus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by N. Ołędryńska from *Kolanowska* S16/23 (JAUM).



Figure 241 *Telipogon dendriticus* (photo: A. Hirtz).



Figure 242 *Telipogon jimburensis* (photo: A. Hirtz).



Figure 243 *Telipogon cuyujensis* (photo: T. Kusibab).



Figure 244 *Telipogon cuyujensis* (photo: T. Kusibab).



Figure 245 *Telipogon cuyujensis* (photo: T. Kusibab).



Figure 246 *Telipogon cuyujensis* (photo: T. Kusibab).



Figure 247 *Telipogon cuyujensis* (photo: A. Hirtz).



Figure 248 *Telipogon hagsateri* (photo: A. Hirtz).

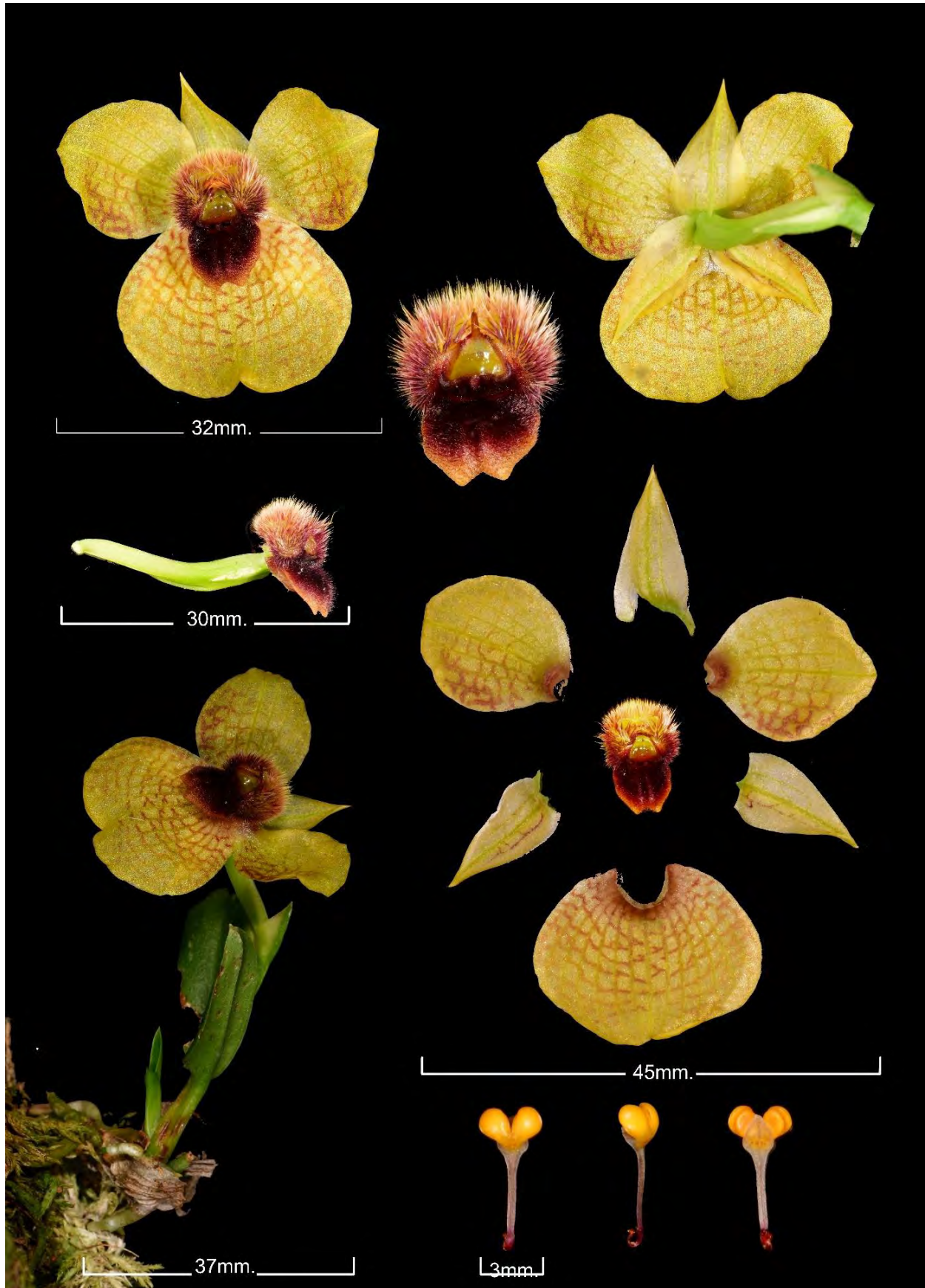


Figure 249 *Telipogon stinae* (photo: C. Uribe-Vélez).



Figure 250 *Telipogon stinae* (photo: A Hirtz).



Figure 251 *Telipogon stinae* (photo: C. Uribe-Vélez).



Figure 252 *Telipogon stinae* (photo: C. Uribe-Vélez).

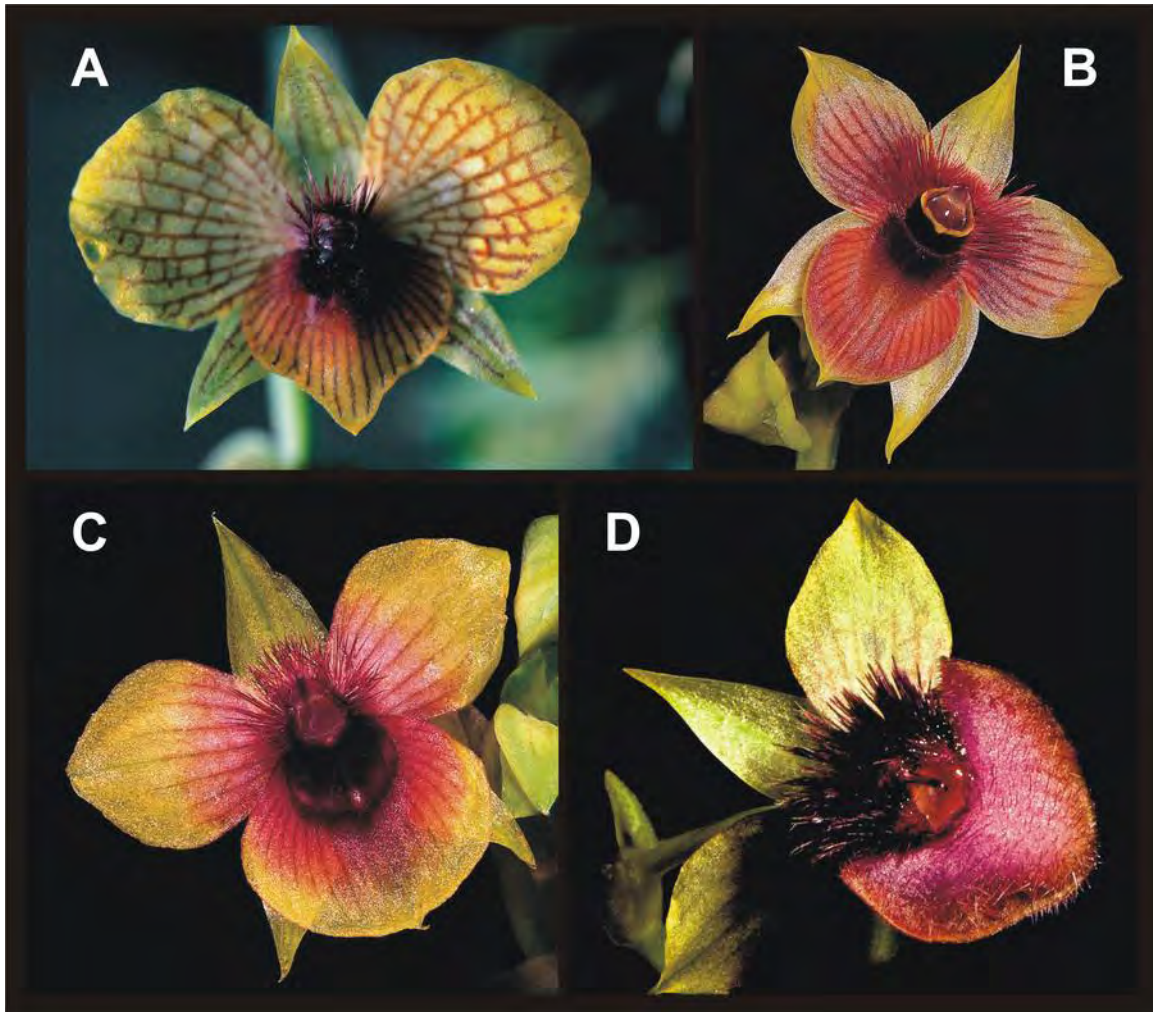


Figure 253 Representatives of *Telipogon amicorum*-group. (A) *Telipogon fritilum* (photo: A. Hirtz), (B,C) *Telipogon hirtzii* (photo: A. Hirtz), (D) *Telipogon vulcanicum* (photo: A. Hirtz).



Figure 254 *Telipogon hirtzii* (photo: A. Hirtz).



Figure 255 *Telipogon* aff. *hirtzii* (photo: A. Hirtz).

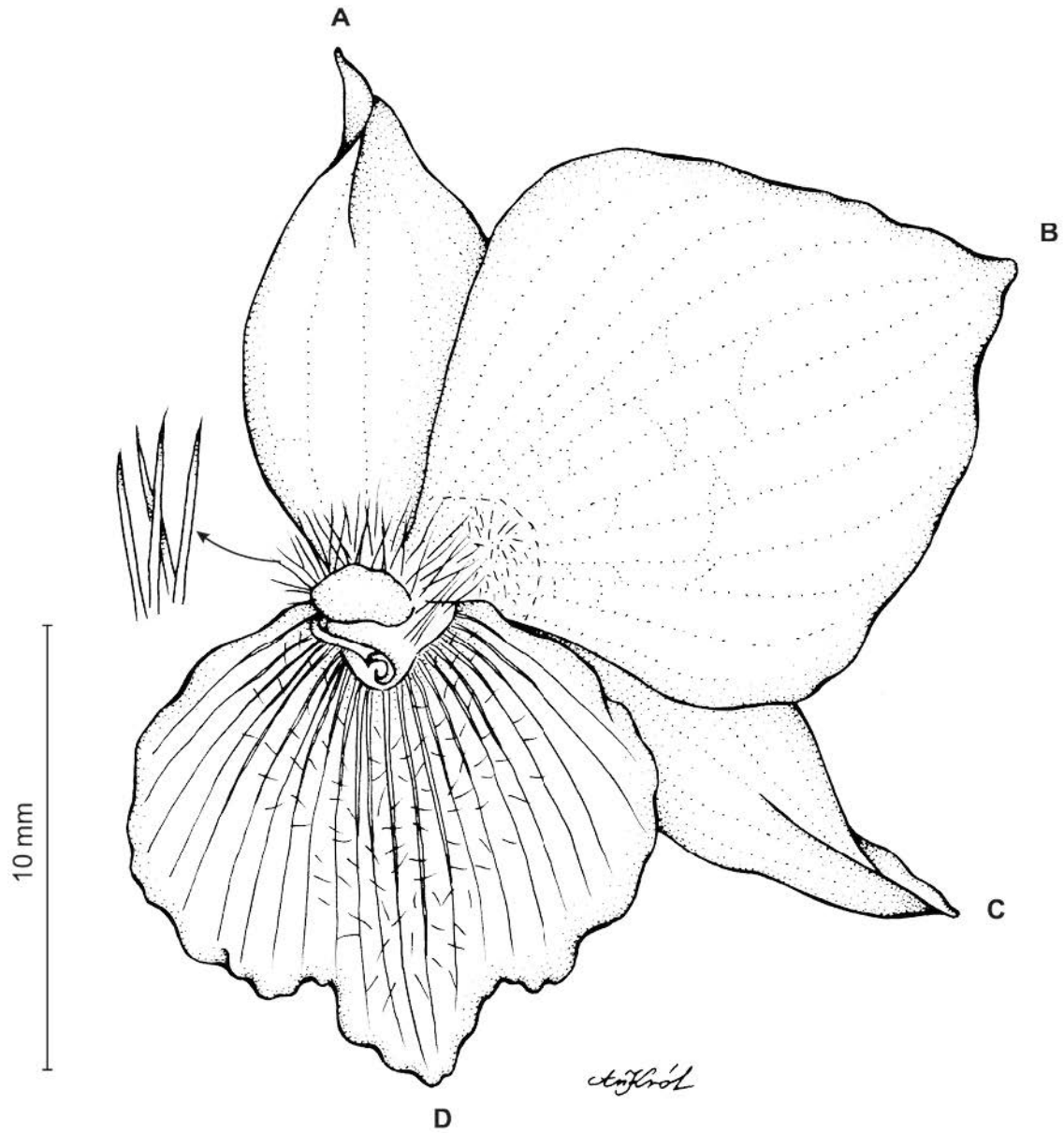


Figure 256 *Telipogon fritillum* Rchb. f. & Warsz. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Warszewicz s.n. (WR 30526).



Figure 257 *Telipogon fritilum* (photo: A. Hirtz).



Figure 258 *Telipogon vulcanicus* (photo: A. Hirtz).

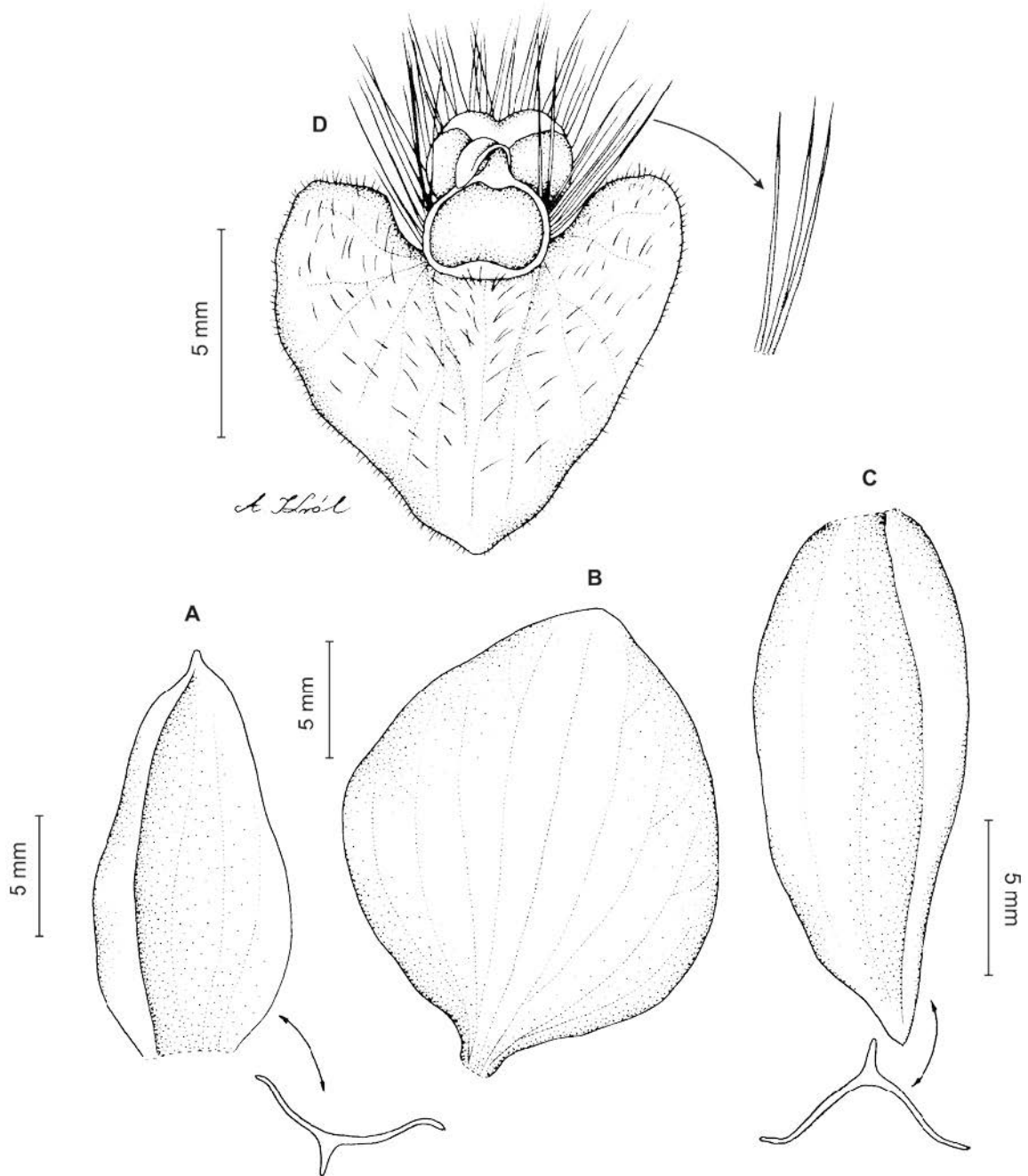


Figure 259 *Telipogon szmittii* Szlach., Mytnik & Baranow. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Szlachetko & al. 8538 (UGDA).



Figure 260 *Telipogon dalstroemii* (photo: T. Kusibab).

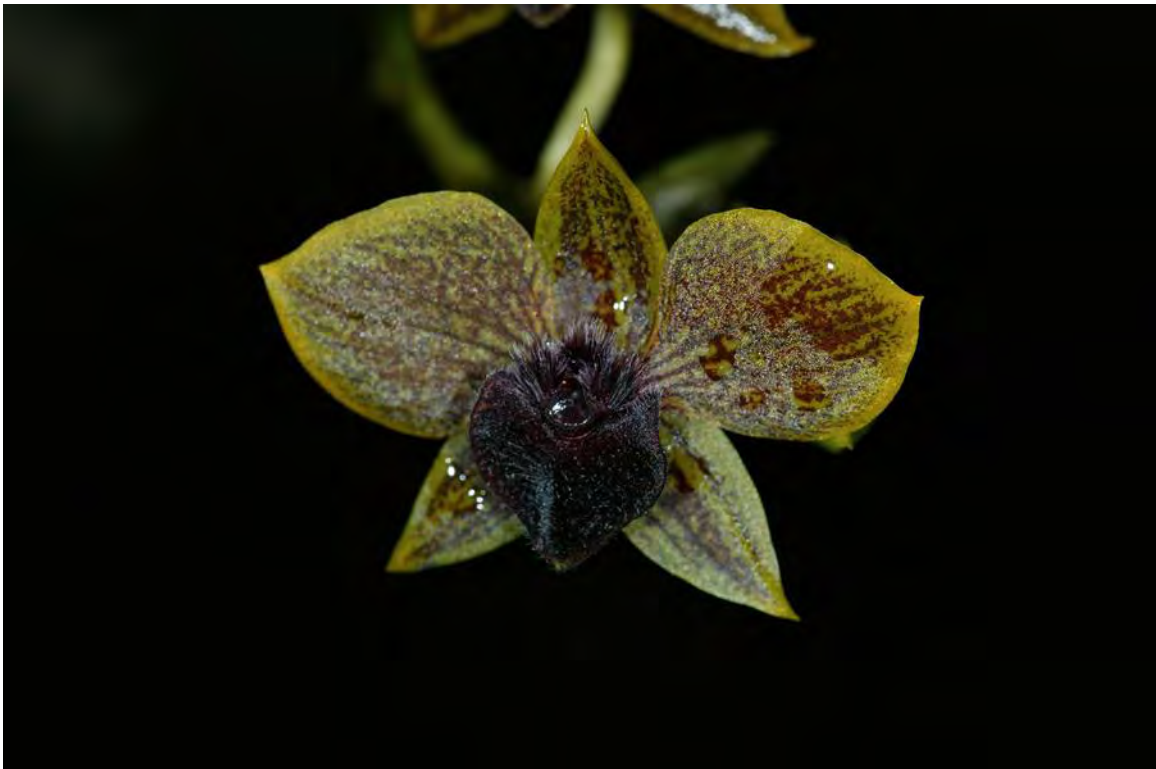


Figure 261 *Telipogon dalstroemii* (photo: T. Kusibab).



Figure 262 *Telipogon dalstroemii* (photo: A. Hirtz).



Figure 263 Representatives of *Telipogon falcatus*-group. (A) *Telipogon falcatus* (photo: L. C. Piña and M. L. Hincapié), (B,C) *T. schneiderii* (photo: E. Santiago Ayala).

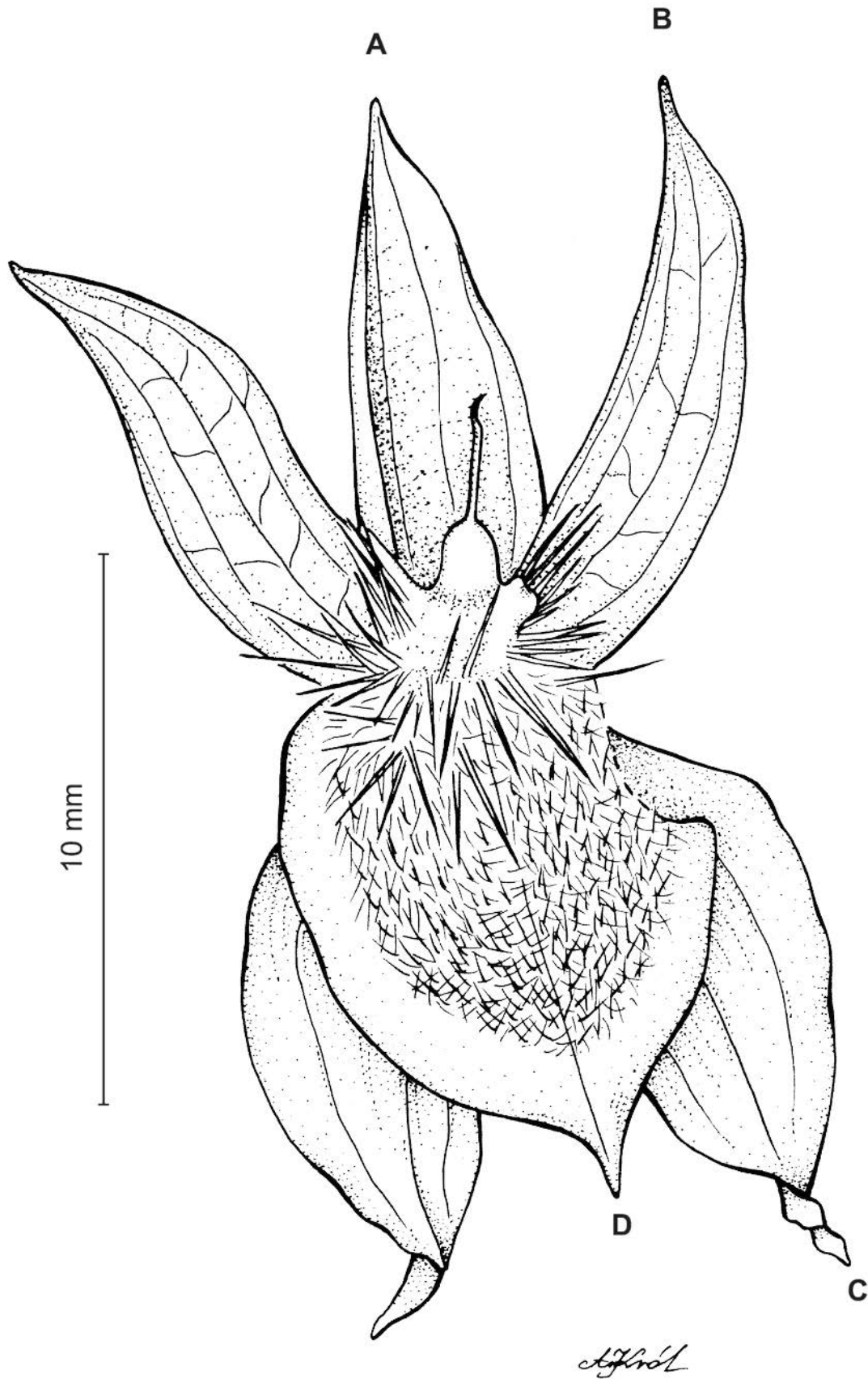


Figure 264 *Telipogon falcatus* Linden & Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Schlim 1192 (W-R).



Figure 265 *Telipogon falcatus* (photo: L. C. Piña and M. L. Hincapie).

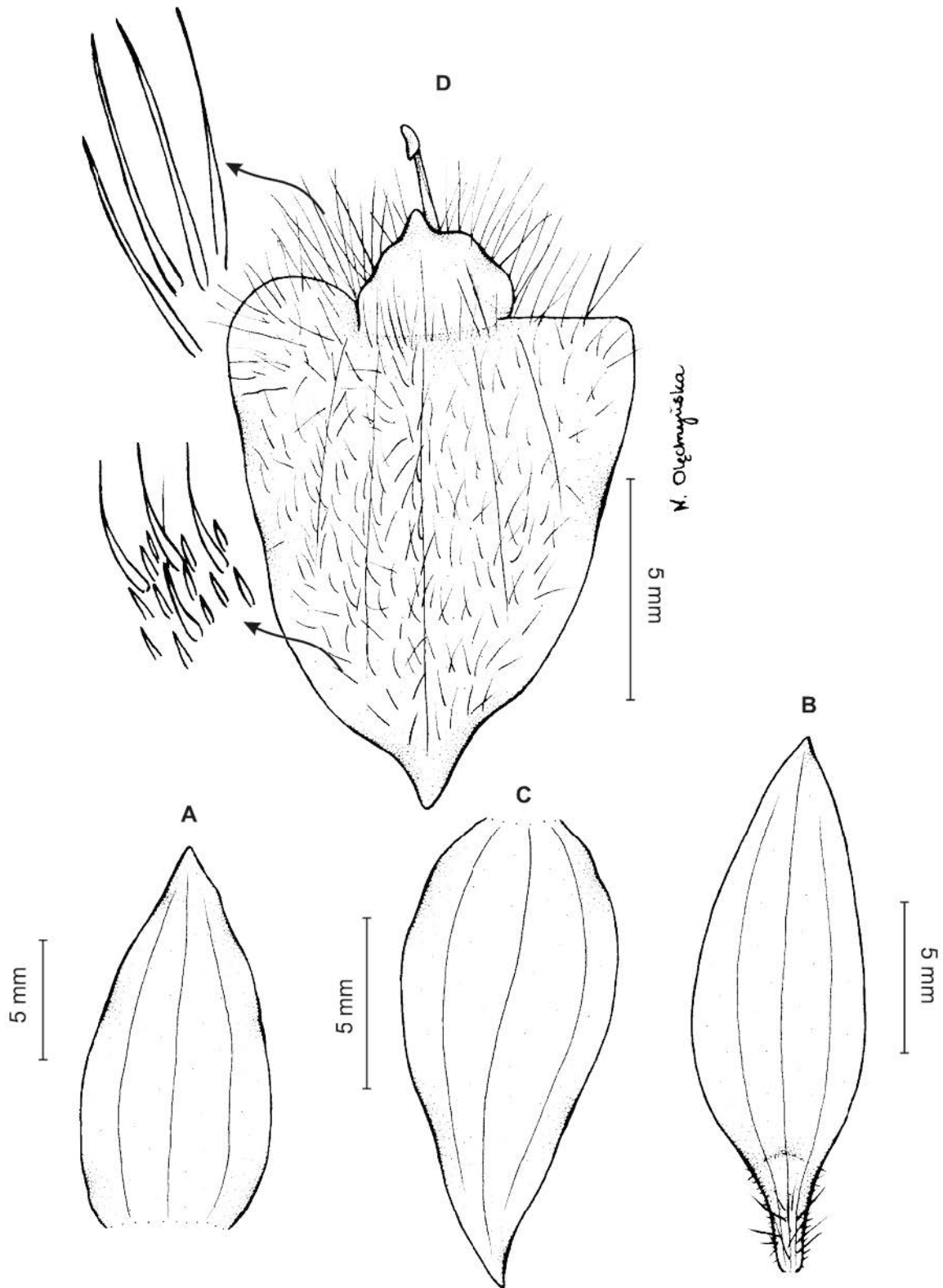


Figure 266 *Telipogon schneideri* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by N. Ołędryńska from *Schneider 290* (AMES).

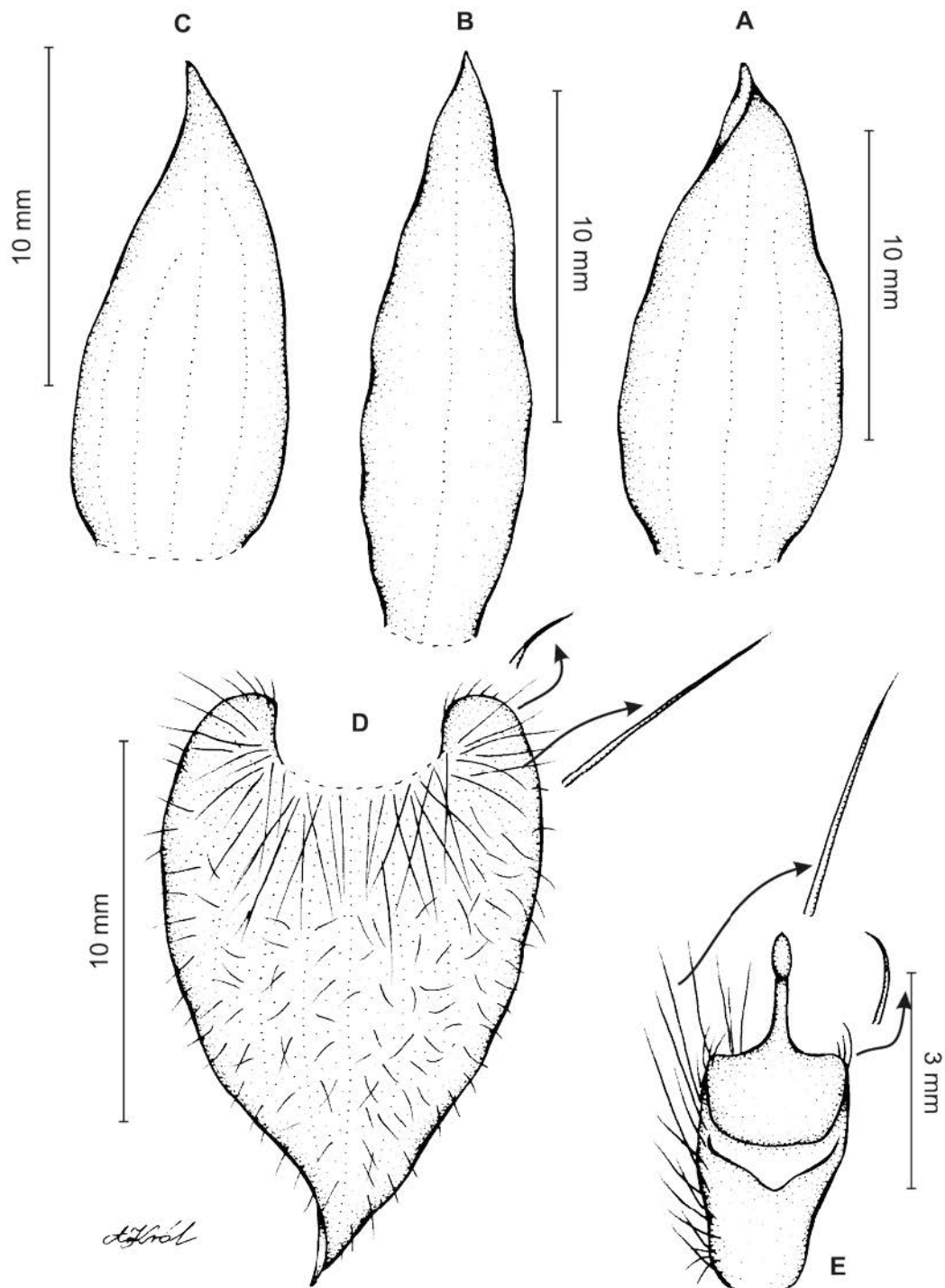


Figure 267 *Telipogon schneideri* Szlach. & Kolan. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from Ospina 1478 (COL).



Figure 268 *Telipogon schneiderii* (photo: E. S. Ayala).



Figure 269 *Telipogon schneiderii* (photo: E. S. Ayala).



Figure 270 *Telipogon schneiderii* (photo: E. S. Ayala).

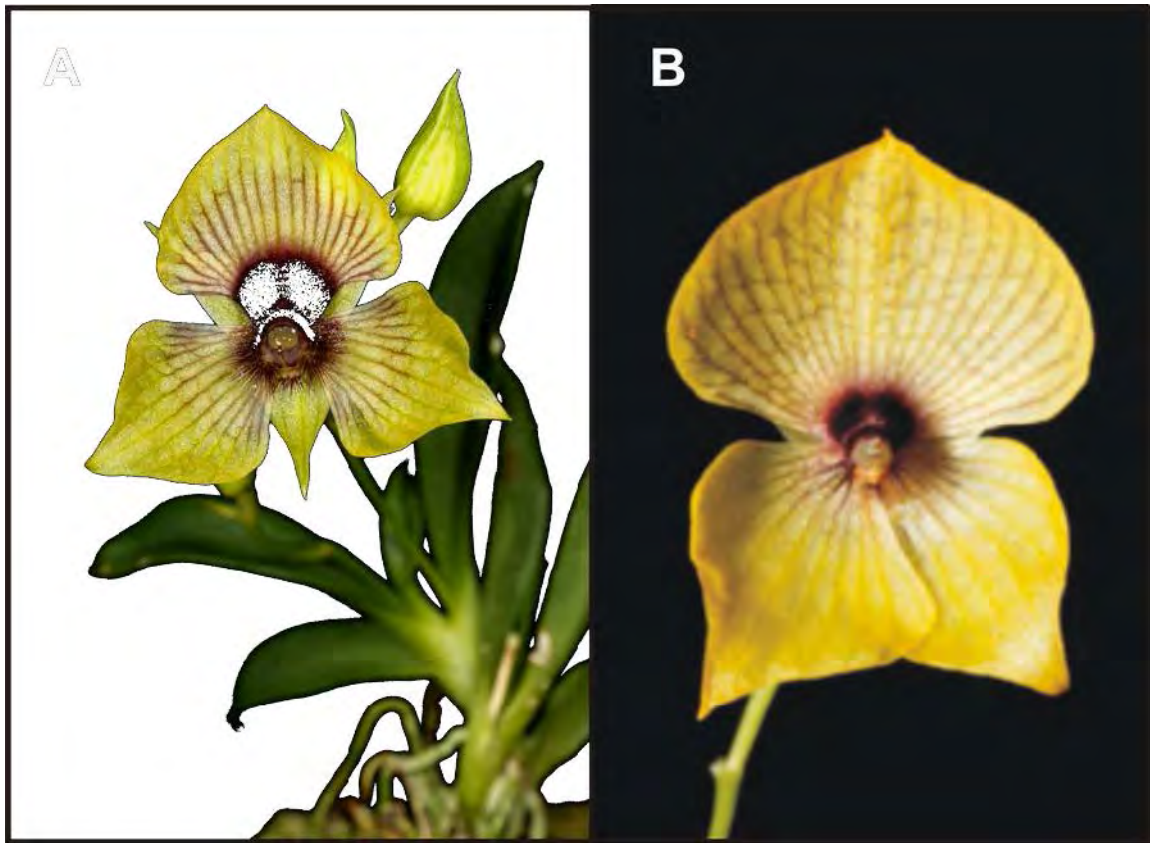


Figure 271 Representatives of *Mesoamerican*-group. (A) *Telipogon griesbeckii* (photo: T. Kusibab), (B) *T. panamensis* (photo: T. Kusibab).



Figure 272 *Telipogon panamensis* (photo: T. Kusibab).

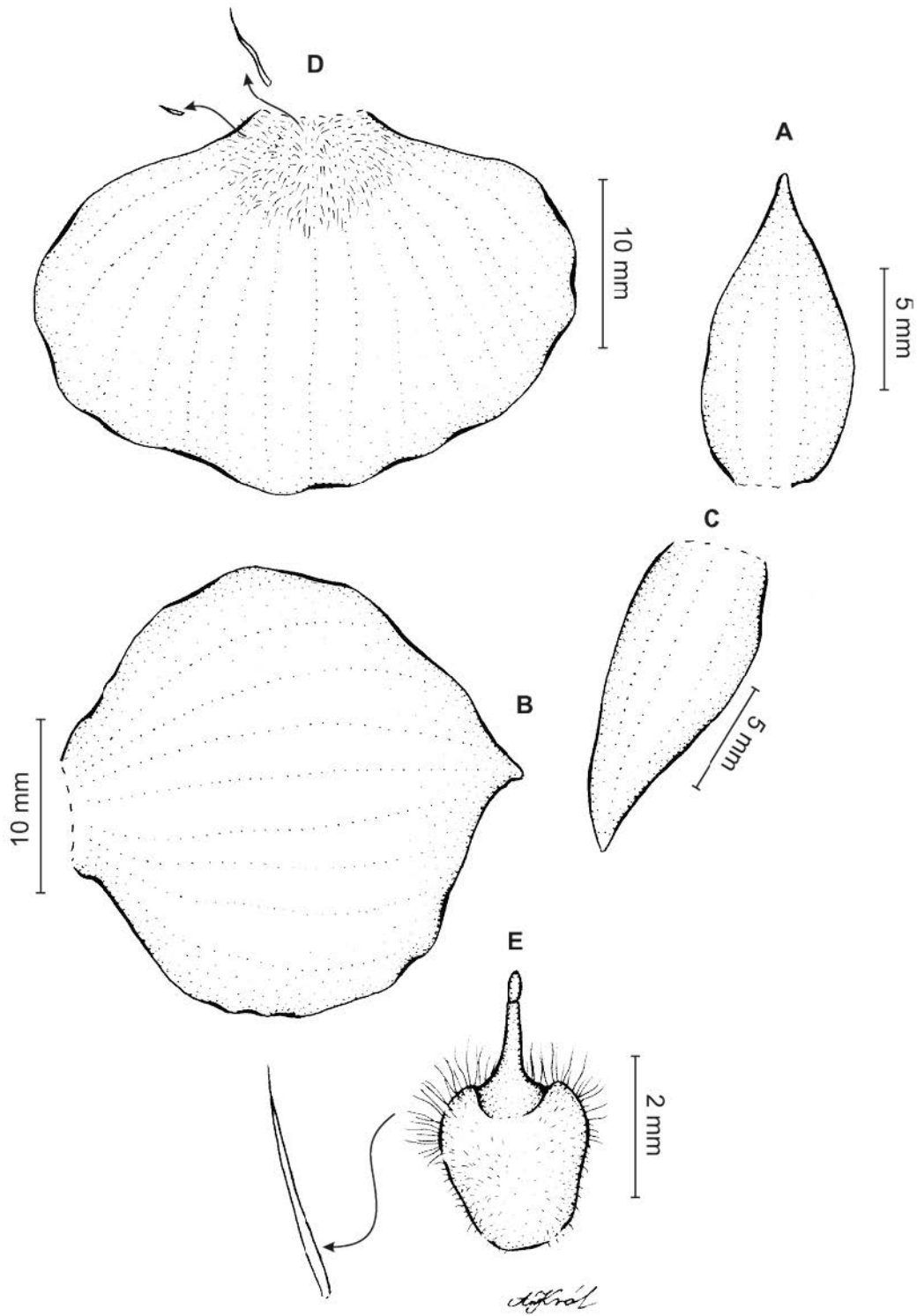


Figure 273 *Telipogon seibertii* Dodson & R. Escobar. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip, (E) gynostemium. Drawn by A. Król from *Burger* 8353 (COL).



Figure 274 *Telipogon griesbecki* (photo: T. Kusibab).

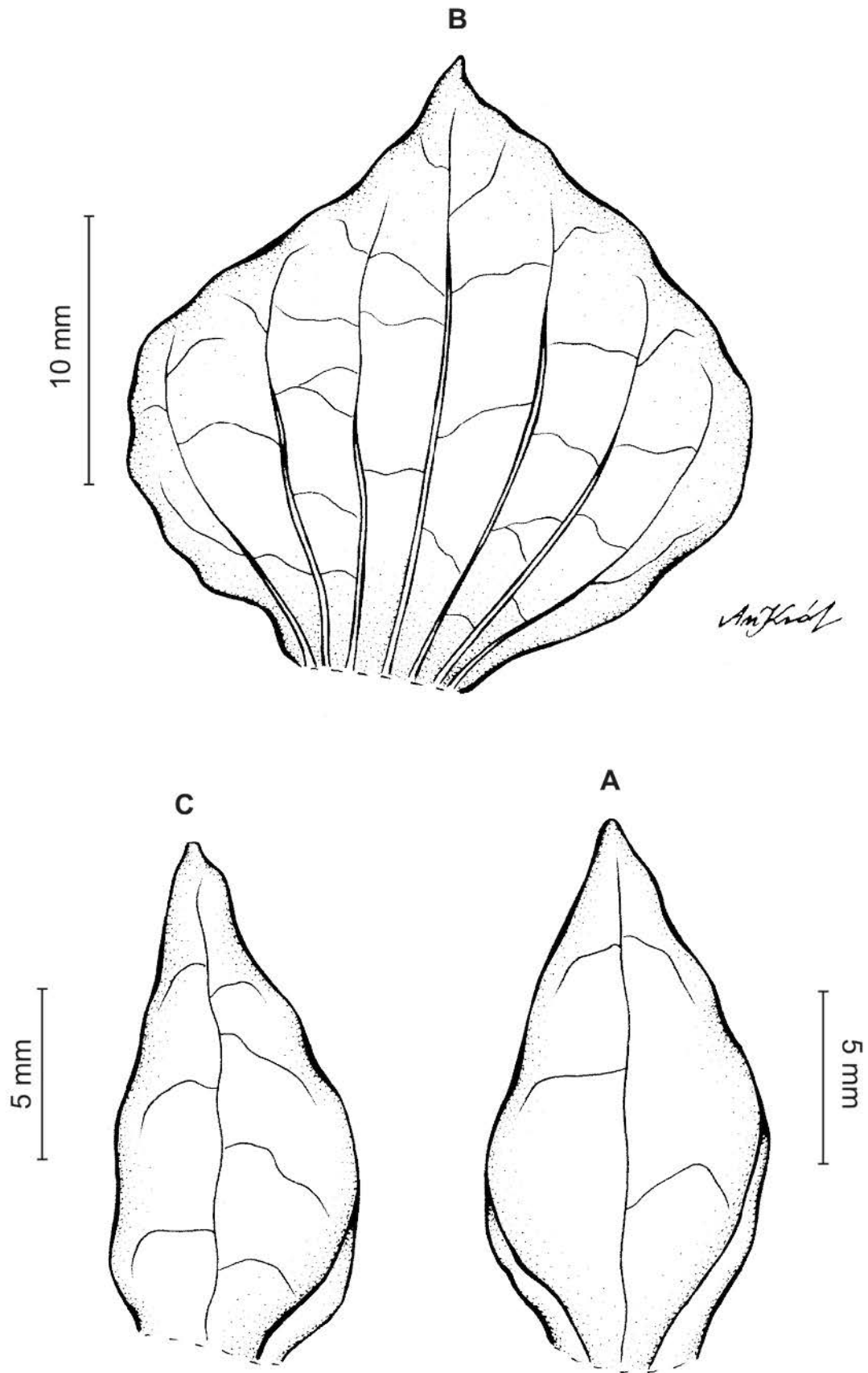


Figure 275 *Telipogon monticola* C. Schweinf. (A) Dorsal sepal, (B) petal, (C) lateral sepal. Drawn by A. Król from Burger & Stolze 5993 (US).

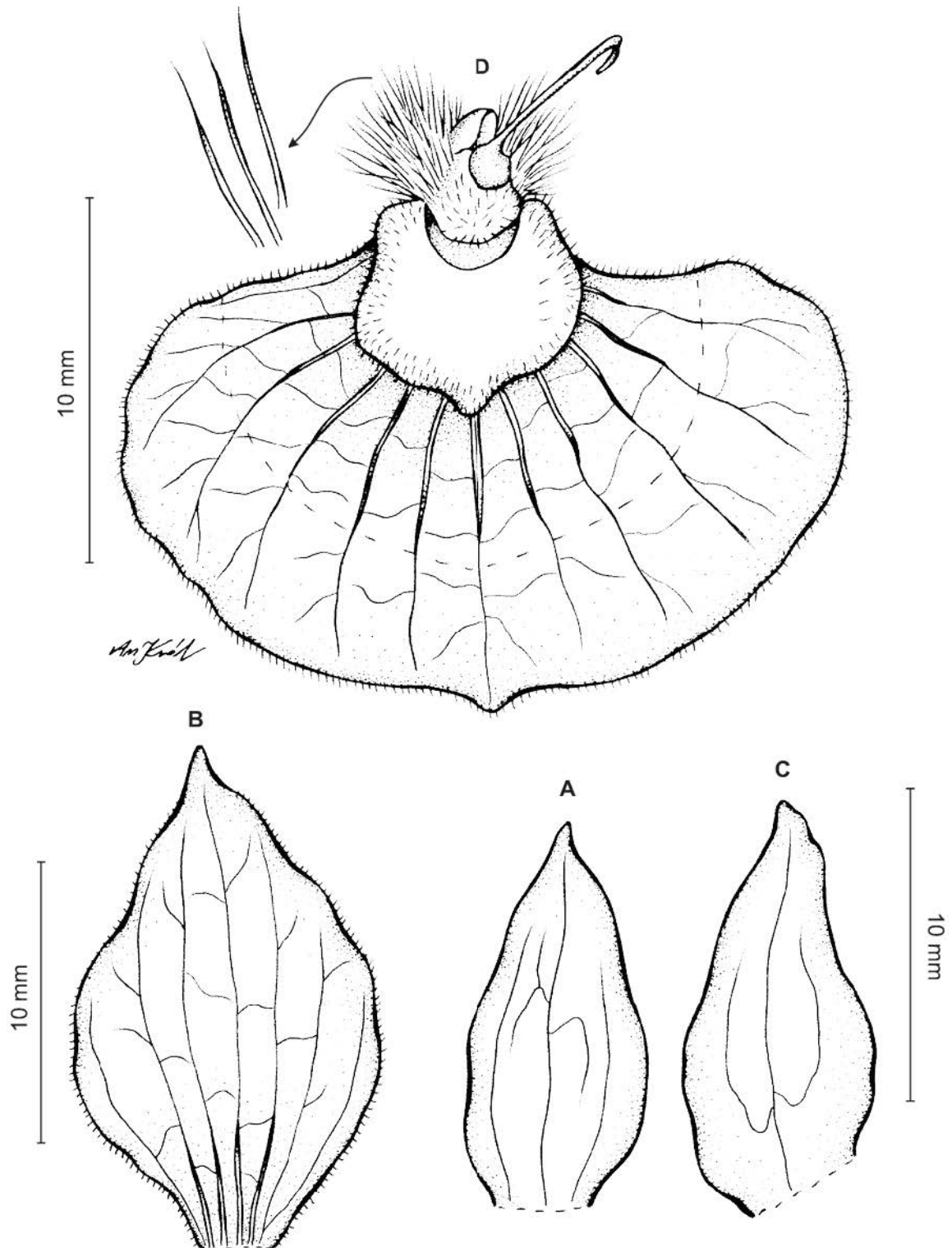


Figure 276 *Telipogon biolleyi* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Biolley 1340* (US).

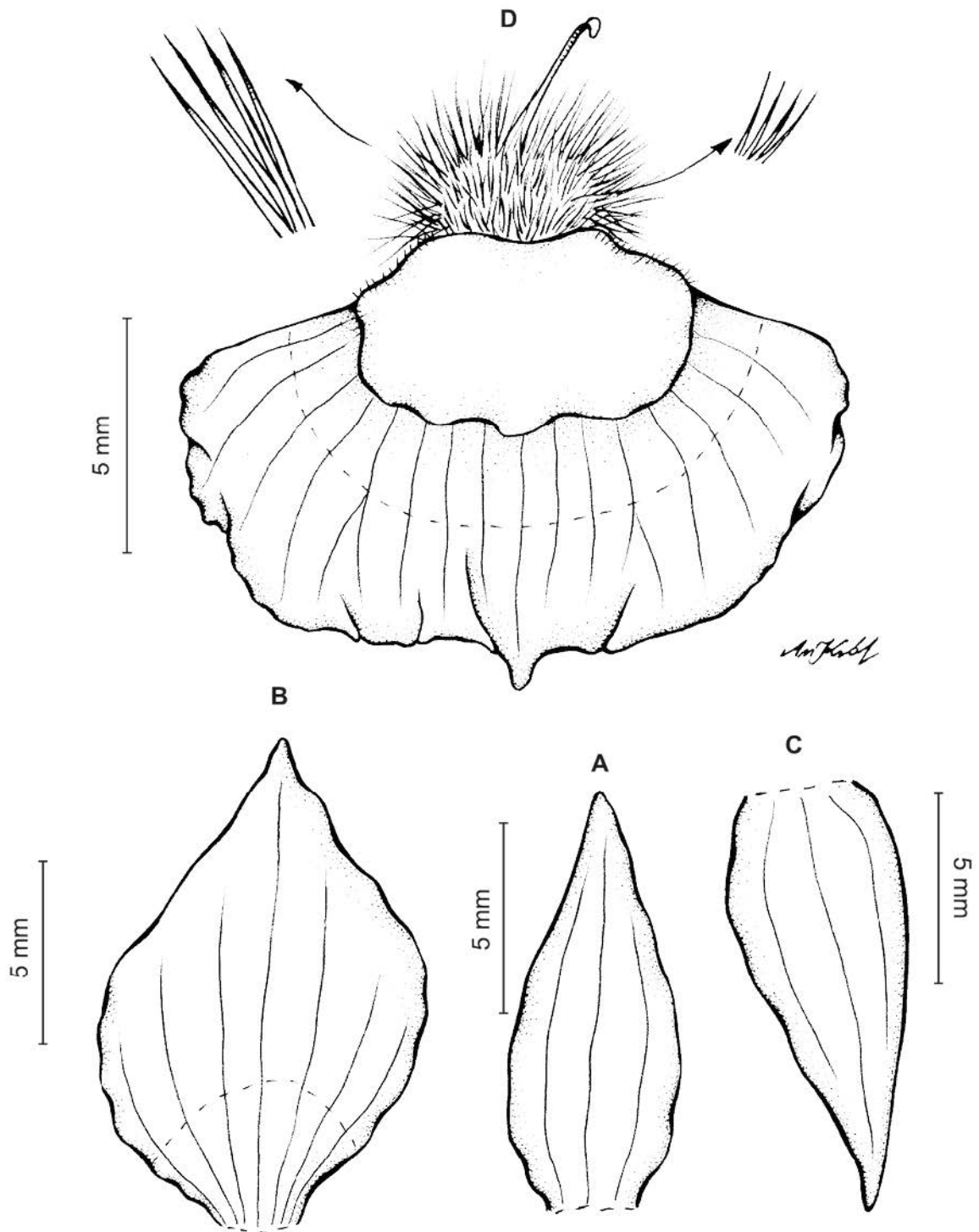


Figure 277 *Telipogon biolleyi* Schltr. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Holm & Iltis 630 (P).

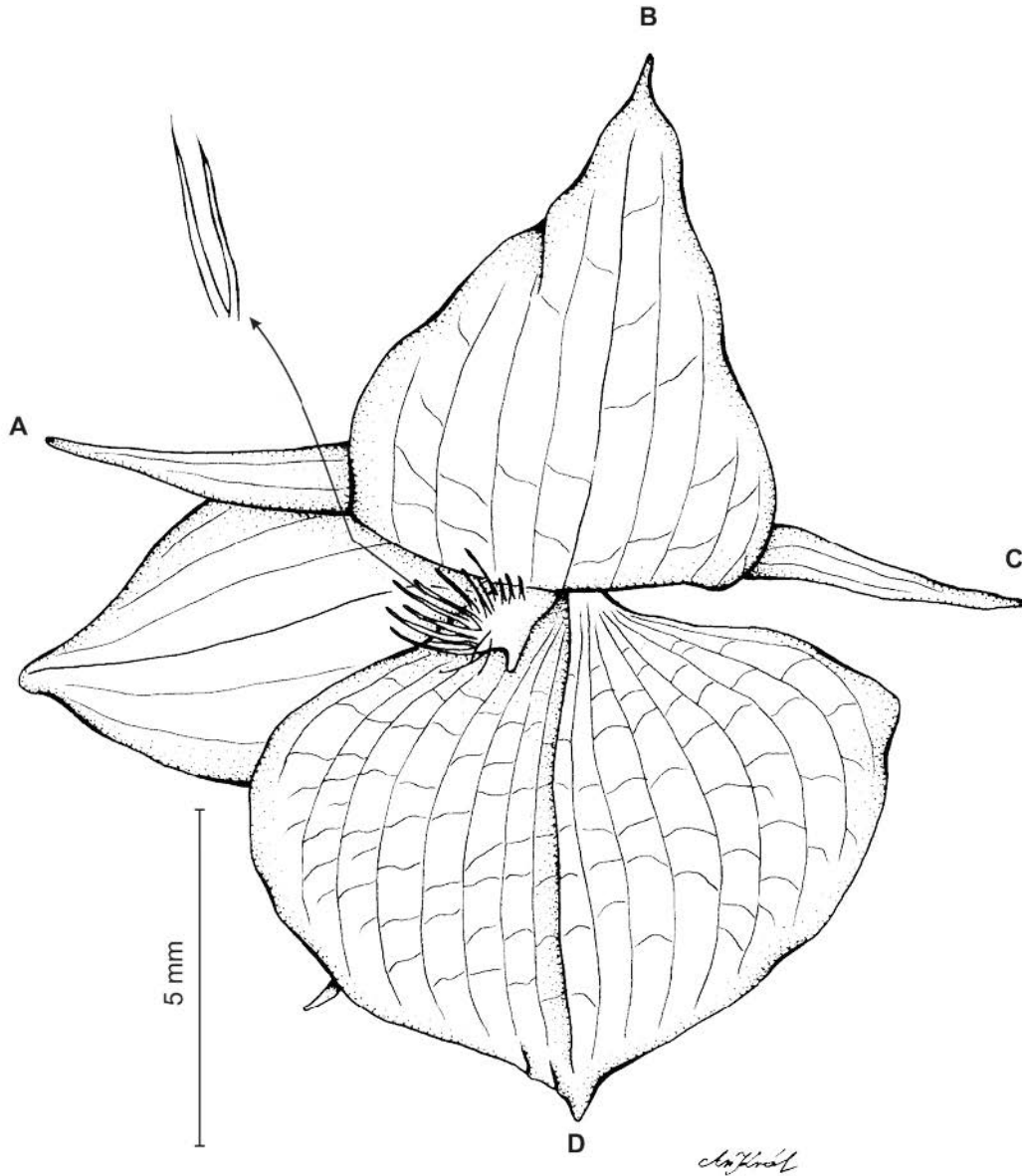


Figure 278 *Telipogon albertii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Bruchmüller s.n. (W-R).

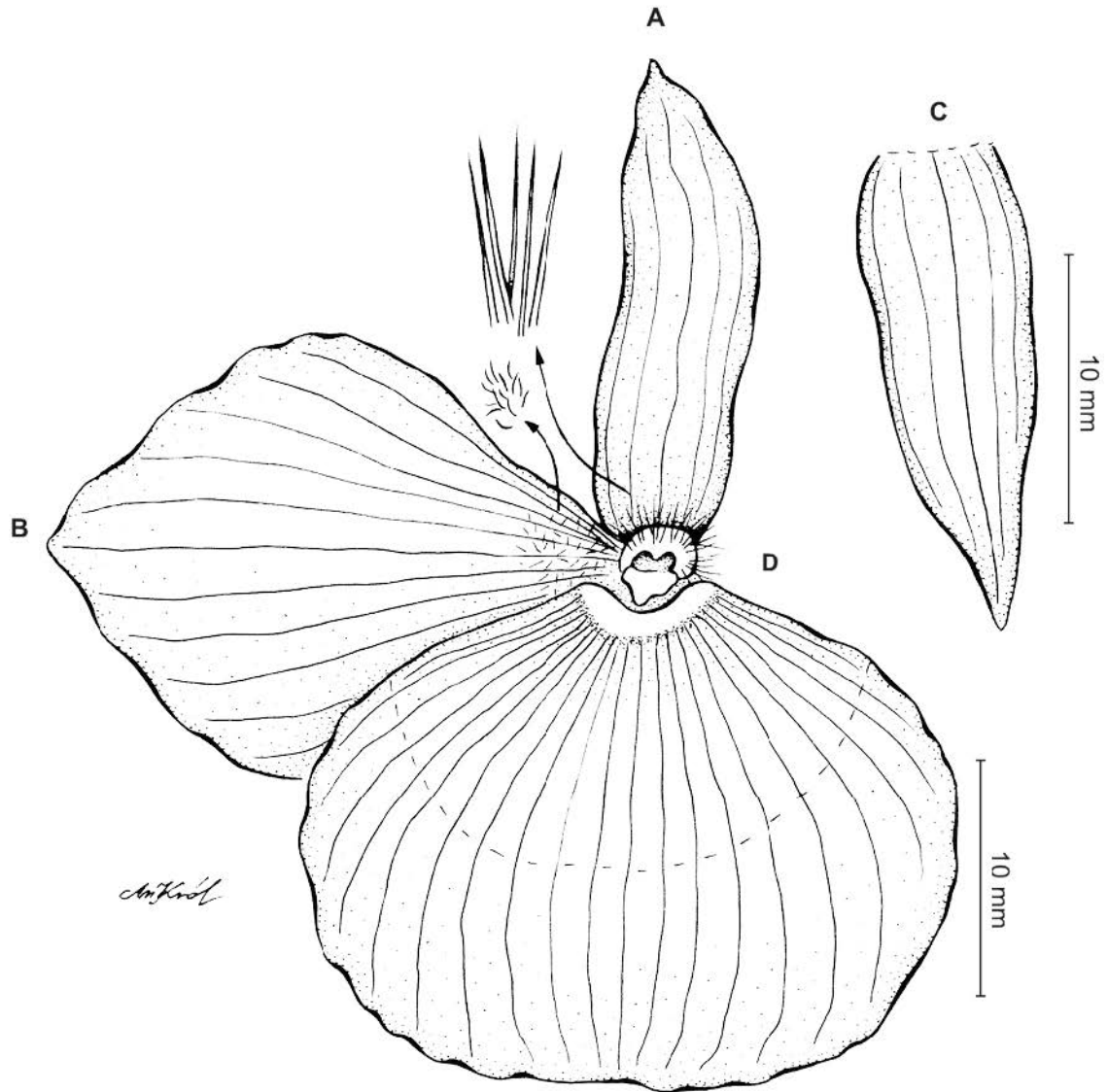


Figure 279 *Telipogon roezlii* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from *Roezl 7* (W-R).

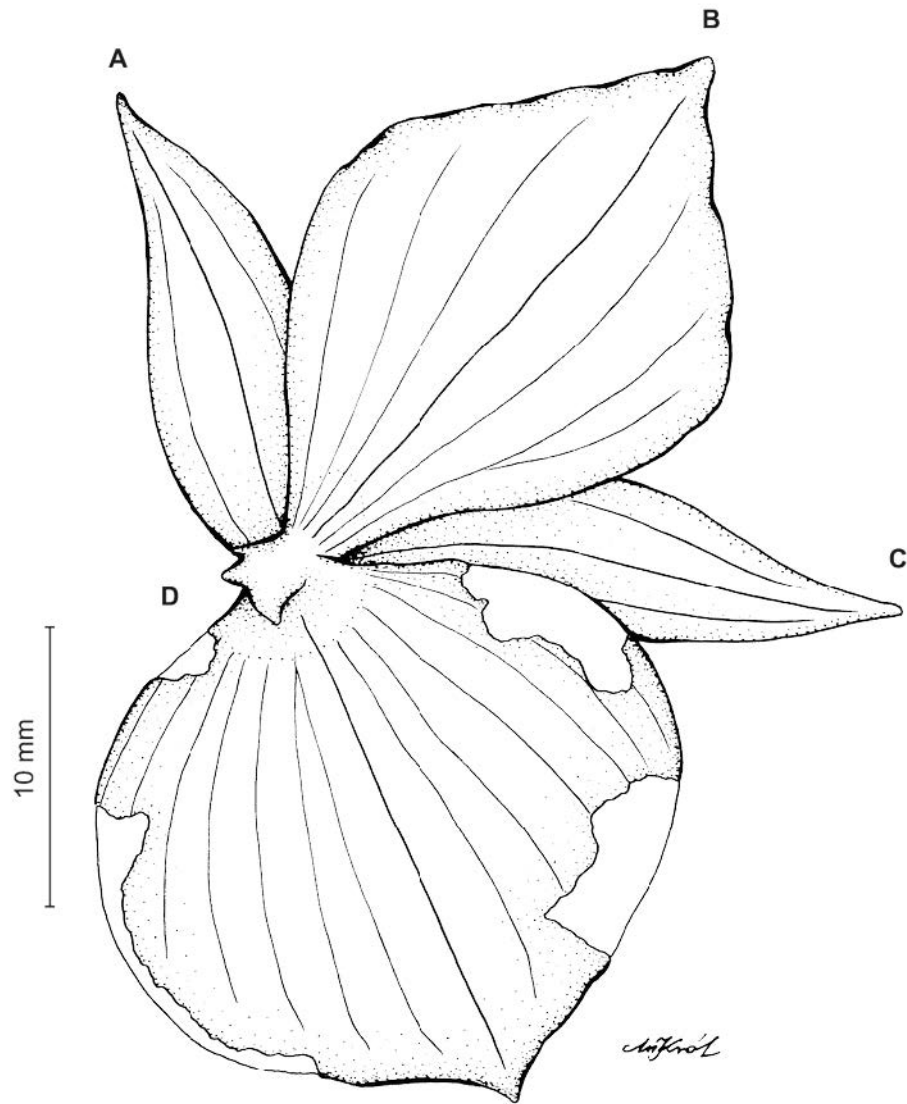


Figure 280 *Telipogon zephyrinus* Rchb. f. (A) Dorsal sepal, (B) petal, (C) lateral sepal, (D) lip and gynostemium. Drawn by A. Król from Bruchmüller s.n. (W-R).