Sociedad Colombiana de ORQUIDEOLOGIA

Apartado Aéreo 4725
Medellín - Colombia

Seccional Valle del Cauca
Apartado Aéreo 2558
Cali

Seccional Santander
Apartado Aéreo 1969
Bucaramanga

Seccional Risaralda
Apartado Aéreo 1594
Pereira

Personería Jurídica Res. 325 de Junio 3 de 1965 - Gob. Deptal.
Asociada a la American Orchid Society Inc.
6000 South Olive Ave West Palm Beach, FL. 33405
La Sociedad Colombiana de Orquideología es una entidad privada, sin ánimo de lucro, dedicada a fomentar el estudio, cultivo y conservación de las Orquídeas

JUNTA DIRECTIVA

THE TELIPOGONS OF COSTA RICA
(I)

Calaway H. Dodson *
Rodrigo Escobar R. **

The genus *Telipogon* HBK occurs at high elevations from Costa Rica to Bolivia. The members of the genus are characterized by extraordinarily large flowers in relation to the size of the plant. In some cases the tissue mass of the flowers exceeds the total tissue mass of the rest of the plant (see fig. 1 & 2). The flowers may be strikingly insect-like. Horticulturally the plants would be among the most desirable of orchid species except that they have proven to be exceedingly difficult to maintain in cultivation. Typically the plants occur as epiphytes at very high elevations (2000-3000 m) or lower but in cloud forests where humidity levels are nearly 100% most of the time, yet, the plants require nearly perfect drainage. Temperatures of the habitat do not exceed 24 degrees Centigrade (76 degrees farenheight) or drop lower than 7 degrees Centigrade (36 degrees farenheight). The plants tend to be unforgiving of any treatment not within the climatological parameters of their natural habitats.

---

* Curator, Missouri Botanical Garden, Casilla 449, Sucursal 12 de Oct., Quito, Ecuador.

** Curator of Orchids, Herbarium of Jardin Botánico Joaquin Uribe, Apartado Aereo 4725, Medellin, Colombia.

Several species are often found growing together in the same habitat with no confirmed records existing of natural hybrids. Dense populations of some species occur with thousands of plants per hectare while other species may be very rare. Colonization phenomena seem important. A single tree may have many telipogon plants as epiphytes while other nearby trees, with the same apparent features, are devoid of telipogons.

The group - Subtribe Telipogoninae - to which the genus belongs has been divided into as many as 6 genera (Braas 1981). At the present time, we recognize 4 genera in the group: *Telipogon* HBK, *Trichoceros* HBK, *Stellilabium* Schltr. and *Hofmeisterella* Rchb. f. (the latter monotypic genus has been traditionally treated as a member of the Subtribe Ornithocephalinae, see Dressler 1981).

Approximately 100 species have been proposed in the Telipogoninae. Kraenzlin (1919) treated 53 species in his monograph of *Telipogon*, three of which were later transferred by Schlechter (1914, 1921) to *Stellilabium*, *Dipterostele* and *Sodiroella*. Kraenzlin's treatment is nearly useless. Not only did he tend to use variable vein numbers in the petals and lip of the flowers as primary criteria in separating species but his monograph contains a substantial quantity of errors concerning origins of specimens, collectors, collection sites, etc. His treatment was based entirely on study of scanty herbarium material (mostly from the Reichenbach Herbarium now at Vienna) often consisting only of a single flower. At present we recognize about 130 species in the group with *Telipogon* having about 100 species, *Stellilabium* with 25 species, *Trichoceros* with 5 species and *Hofmeisterella* with one species.

There will certainly prove to be a much larger number of species in *Telipogon* and *Stellilabium* than is presently known. Studies in the field of the population and pollination dynamics of these genera are revealing many new species. In mid 1984, having studied most of the type specimens and nearly all of the specimens in the worlds herbaria (about 800 specimens in total), we were firmly convinced that

Fig. 1 – *T. ardeltianus*
(R. Escobar 3502a)

Fig. 2 – *T. elcimeyae*
(R. Escobar 3516)

Telipogon consisted of less than 60 species. Collecting trips made from mid 1984 til the end of the year in Colombia, Ecuador and Costa Rica have changed that conviction radically. For example, prior to October 1984, 16 species of *Telipogon* had been described as occurring in Costa Rica. Careful study of the available type specimens and the various herbarium specimens of plants from Costa Rica located in the herbaria of the world led us to reduce the number of valid species to 13. Trips to Costa Rica by R. Escobar, in October 1984 and August 1985, in which a substantial number of Costa Rican orchid enthusiasts (*) participated in a "Telipogon frenzy", revealed the presence of several undescribed species and clarified the status of certain species which had been improperly treated. We now recognize at least 21 species as occurring in Costa Rica.

The numerous instances of several sympatric species occurring in each locality, without confirmed reports of natural hybrids, suggests the presence of very effective reproductive isolating mechanisms based on attraction of specific pollinators. In *Stanhopea*, *Gongora* and *Catasetum* and their allies, the differentiation is based on distinctive volatile chemical constituents of their floral fragrances which attract specific kinds of male euglossine bees (Dodson et al. 1968). In such cases, effective attraction or repellance of specific pollinating agents becomes a very powerful force in development and maintenance of distinguishing features between species. Distinctive morphological features tend to accompany these "chemical" species.

The flowers of *Telipogon* and its allies apparently produce no fragrances but attract their pollinators strictly on the basis of visual stimuli (Dodson 1963).

---

* such as: Marcos Retana, Dora Emilia de Retana, Patricia Morúa, Carlos Pacheco, Walter Ballestero, Aldemar Campos, Ricardo Campos, Eliecer Abarca, Alfonso Jimenez, and several others).

The striking similarity between the flowers and insects has lead to the common name "La Mosca" for the plants throughout their range, though different species are usually refered to. The presence of a distinctive, spiny, insect-like callus or column in most of the species (see Figs. 8, 9, 10 & 11) together with the occurance of several species growing together in the same locality suggests highly specific attraction of pollinators. The few reports of pollination observations (Dodson 1963 and Maduro, pers. comm.) indicate pollination by pseudocopulation by male tachinid flies that are deceived by the similarity of the column and callus of the flower to the spiney abdomens of the female flies of the same species. The numerous species of tachinid flies are very distinctive as regards their size, color, and relative spinyness of the abdomen. Probably visual stimuli are very important in specific recognition of mating partners among the flies. Those same visual stimuli present in a pseudocopulation syndrome would provide powerful reproductive isolating mechanisms in the plants. This would make possible occupation of the same habitat by populations of several species whose principal distinguishing features would lie in the form and color of the "insect" in the center of the flower. Therefore, we believe that the primary distinguishing characters between the species of *Telipogon* are to be found in the column and base of the lip (not in the relative numbers of veins in the petals and lip, though vein number may be of use in certain instances to distinguish species). We have developed our key to the species giving most weight to those features of the flowers which we believe are most critical in maintaining reproductive isolating mechanisms. Since floral features of this nature are probably extremely labile genetically we do not intend our key to be any thing other than artificial and do not intend to indicate relationships between species.

The Costa Rican and Panamanian members of the genus *Telipogon* have all proven to be distinct from their South American relatives. Therefore we feel that we can present a useful treatment (in advance of a general monograph of the entire group) of the species

from Costa Rica based on observation and study of substantial natural populations.

LOS TELIPOGONS DE COSTA RICA

Calaway H. Dodson*
Rodrigo Escobar R.**

El género *Telipogon* HBK se presenta en altas elevaciones desde Costa Rica hasta Bolivia. Los miembros del género se caracterizan por flores extraordinariamente grandes en relación con el tamaño de la planta. En algunos casos la masa de tejido de las flores excede el total de la masa de tejido del resto de la planta (ver fig. 1 y 2). Las flores pueden tener notable apariencia de insectos. Horticulturalmente estas plantas estarían dentro de las especies más deseables de orquídeas (ver fig. 3 y 4), si no fuera por que han probado ser excesivamente difíciles de mantener en cultivo. Típicamente las plantas se presentan como epífitas a grandes alturas (2000 - 3000 ms) ó más bajo pero en bosques nublados en los cuales los niveles de humedad son casi siempre del 100o/o la mayor parte del tiempo, sinembargo, las plantas requieren de un drenaje casi perfecto. Las temperaturas del hábitat no pasan de 24°C (76°F) ni bajan de 7°C (36°F). Las plantas tienden a no perdonar cualquier tratamiento que no esté dentro de los parámetros climatológicos de sus hábitats naturales.

Varias especies se encuentran a menudo creciendo juntas en el mismo hábitat pero no existen registros confirmados de híbridos naturales. Se presentan poblaciones densas de algunas especies con miles de plantas por hectárea mientras que otras especies pueden ser muy escasas. El fenómeno de colonia parece ser importante. Un solo árbol puede tener muchas plantas de telipogon como epífitas, mientras que otros árboles cercanos, con las mismas características aparentes, están desprovistos de telipogons.

El grupo –Subtribu Telipogoninae– al cual pertenece el género ha sido dividido en hasta 6 géneros (Braas 1981). Por ahora nosotros reconocemos 4 géneros en el grupo: *Telipogon* HBK, *Trichoceros* HBK, *Stellilabium* Schlt. y *Hofmeisterella* Rchb. f. (este último género monotípico ha sido tradicionalmente tratado como un miembro de la Subtribu Ornithocephalinae, ver Dressler 1981).

* Curador Jardín Botánico de Missouri, Casilla 449, Sucursal 12 de octubre, Quito, Ecuador.

** Curador de Orquídeas, Herbario del Jardín Botánico Joaquín Antonio Uribe, Apartado Aéreo 4725, Medellín, Colombia.

Fig. 3 – *T. gracilipes*
(R. Escobar 3631)

Fig. 4 – *T. leila – alexandrae*
(R. Escobar 3649)

Fig. 5
T. cascajalensis
(R. Escobar 3530)

Fig. 6
T. monticola
(R. Escobar 3643)

Fig. 7
T. ballesteroi
(R. Escobar 3521)

Fig. 8
T. monticola
(R. Escobar 3612)

Fig. 9
T. ballesteroi
(R. Escobar 3635)

Aproximadamente 100 especies han sido propuestas en Telipogoninae. Kraenzlin (1919) trató 53 especies en su monografía de *Telipogon,* tres de las cuales fueron trasladadas por Schlechter (1914, 1921) a *Stellilabium, Dipterostele* y *Sodiroella.* El tratado de Kraenzlin es prácticamente inútil. No sólo tuvo la tendencia a utilizar números variables de venas en los pétalos y labelo de las flores como criterios primarios en la separación de especies, sino que su monografía contiene una gran cantidad de errores en cuanto al origen de los ejemplares, colectores, sitios de colecta, etc. Su tratado se basó enteramente en el estudio de escaso material de herbario (en su mayoría del Herbario Reichenbach ahora en Viena) a menudo consistente en una sola flor. A la fecha nosotros reconocemos una 130 especies en el grupo en donde *Telipogon* cuenta con unas 100, *Stellilabium* con 25, *Trichoceros* con 5 y *Hofmeisterella* con una especie.

Con certeza se comprobará un número mucho más grande de especies en *Telipogon* y *Stellilabium* del que hoy se conoce. Estudios en el campo de las poblaciones y la dinámica de polinización de estos géneros están revelando muchas especies nuevas. A mediados de 1984, cuando habíamos estudiado la mayoría de los ejemplares tipo y casi todos los ejemplares de los herbarios del mundo (unas 800 muestras en total), estábamos firmemente convencidos de que *Telipogon* consistía en menos de 60 especies. Viajes de colecta hechos desde mediados de 1984 hasta finales de 1986 en Colombia, Ecuador y Costa Rica, han cambiado radicalmente esa convicción. Por ejemplo, antes de Octubre de 1984, habían sido descritas 16 especies de *Telipogon* como de ocurrencia en Costa Rica. El estudio cuidadoso de los ejemplares tipo disponibles y los varios ejemplares de herbario de plantas de Costa Rica localizados en herbarios del mundo nos llevó a reducir el número de especies válidas a 13. Viajes a Costa Rica de R. Escobar en Octubre de 1984 y Agosto de 1985, en los cuales un gran número de orquidiófilos entusiastas de Costa Rica (*) participaron en un "frenesí de Telipogons", revelaron la presencia de varias especies no descritas y clarificaron el status de algunas especies que habían sido impropiamente tratadas. Ahora reconocemos por lo menos 21 especies de ocurrencia en Costa Rica.

Las numerosas ocasiones en las cuales se presentan en la misma localidad varias especies simpátricas, sin registros confirmados de híbridos naturales, sugiere la presencia de mecanismos reproductivos aislantes muy efectivos, basados en la atracción de polinizadores específicos. En *Stanhopea, Gongora* y *Catasetum* y sus aliados, la diferenciación se basa en distintivos componentes químicos volátiles de sus fragancias florales que atraen tipos específicos de machos de abejas euglossine (Dodson et al. 1968). En tales casos, la atracción o repelencia efectiva de agentes polinizadores específicos se convierte en una poderosa fuerza en el desarrollo y mantenimiento de rasgos distintivos entre especies. Rasgos morfológicos distintivos tienden a acompañar estas especies "químicas".

---

* tales como: Marcos Retana, Dora Emilia de Retana, Patricia Morúa, Carlos Pacheco, Walter Ballestero, Aldemar Campos, Ricardo Campos, Eliécer Abarca, Alfonso Jiménez y varios otros.

Fig. 10
T. storkii
(R. Escobar 3538)

Fig. 11
T. costaricensis
(R. Escobar 3524)

Las flores de *Telipogon* y sus aliados aparentemente no producen fragancias pero atraen a sus polinizadores estrictamente en base a estímulos visuales (Dodson 1963). La notable similitud entre las flores e insectos ha llevado al nombre vulgar de "La Mosca" para las plantas en todo su rango, auncuando se refieran a especies distintas. La presencia de un callo o columna característicos con espinas y apariencia de insecto en la mayoría de las especies (ver fig. 5, 6 y 7), a la vez que la ocurrencia de varias especies creciendo juntas en la misma localidad sugiere alta atracción específica de polinizadores. Los pocos registros de observaciones de polinización (Dodson 1963 y Maduro, com. pers.) indican polinización por seudocopulación por moscas tachinid machos que son engañados por la similitud de la columna y el callo de la flor (ver fig. 8, 9, 10 y 11), con el abdomen espinoso de las moscas hembras de la misma especie. Las numerosas especies de moscas tachinid son muy distintas en cuanto a su tamaño, color y espinosidad relativa del abdomen. Probablemente los estímulos visuales son muy importantes en el reconocimiento específico de la pareja en el apareamiento entre las moscas. Estos mismos estímulos visuales presentes en el síndrome de seudocopulación proveerían poderosos mecanismos reproductivos aislantes en las plantas. Esto hace posible la ocupación del mismo hábitat por poblaciones de varias especies distintas (ver fig. 12) cuyos principales rasgos distintivos reposarían en la forma y color del "insecto" en el centro de la flor. Por lo tanto, nosotros creemos que los caracteres primarios de distinción entre las especies de *Telipogon* deben encontrarse en la columna y en la base del labelo (no en los números relativos de venas en los pétalos y labelo, aun cuando este número de venas puede ser de utilidad en algunos casos para distinguir especies). Hemos desarrollado nuestra clave de las especies dando mayor valor a aquellos detalles de las flores que creemos son los más críticos en el mantenimiento de mecanismos reproductivos aislantes. Como detalles florales de esta naturaleza son probable y extremadamente lábiles genéticamente, no tenemos la intención de que nuestra clave sea algo distinto de artificial y no pretendemos indicar relaciones entre especies.

Los miembros del género *Telipogon* de Costa Rica y Panamá han probado ser todos diferentes de sus parientes suramericanos. Por consiguiente creemos que podemos presentar un tratamiento útil (como anticipo a la monografía general del grupo entero), de las especies de Costa Rica basado en observación y estudio de considerables poblaciones naturales.

LIST OF TELIPOGON SPECIES KNOWN FROM COSTA RICA

LISTA DE LAS ESPECIES DE TELIPOGON CONOCIDAS DE COSTA RICA

Genus and Species

Género y Especie

T. **AMPLIFLORUS** C. Schw.
T. **ARDELTIANUS** Braas
T. **BALLESTEROI** Dodson & Escobar
T. **BIOLLEYI** Schltr.
T. buenavistae Krzl. = *T. costaricensis*
T. **CAROLIAE** Dodson & Escobar
T. **CASCAJALENSIS** Dodson & Escobar
T. **CHRISTOBALENSIS** Krzl.
T. **COSTARICENSIS** Schltr.
T. **ELCIMEYAE** Braas & Horich
T. endresianum Krzl. = *T. biolleyi*
T. **GLICENSTEINII** Dodson & Escobar
T. **GRACILIPES** Schltr.
T. **GUILA** Dodson & Escobar
T. horichianus Braas = *T. gracilipes*
T. lankesteri Ames = *Stellilabium lankesteri*
T. **LEILA-ALEXANDRAE** Braas
T. minutiflorus Krzl. = *Stellilabium minutiflorum*
T. **MONTICOLA** L. O. Wms.
T. **PARVULUS** C. Schw.
T. **PFAVII** Schltr.
T. **PORTILLOI** Dodson & Escobar
T. **RETANARUM** Dodson & Escobar
T. **SETOSUS** Ames
T. standleyi Ames = *Stellilabium standleyi*
T. **STORKII** Ames & C. Schw.
T. **STORKII** ssp. **MAGNIFICUS** Dodson & Escobar
T. **VAMPIRUS** Braas & Horich

KEY TO THE TELIPOGONS OF COSTA RICA

1. Lip without an obvious callus at the base, sometimes with a more or less smooth, villose swelling arising from the surface but not elevated at its apex, sometimes the swelling surrounds the column as a collar, projecting forward from under the stigma. 2

1. Lip with an obvious callus free from the surface of the lip around its outer margins. 11

2. Swelling at the base of the lip with a short horn on each side next to the column. . . . .T. **setosus**

2. Swelling, if present, without a short horn on each side at the base. 3

3. Swelling occupying the basal 1/2 of the surface of the lip, covered with long villose hairs; petals long pubescent toward the base. .T. **vampirus**

3. Swelling, if present, occupying 1/4 or less of the surface of the lip; petals lacking long pubescence at the base. 4

4. Plant subcaulescent or long caulescent. 5

4. Plant caespitose. 6

5. Plant subcaulescent (plants flowering for the 1st time may appear caespitose); petals ovate, acute at the apex; column bald or with 3 sparse clusters of spines. . . . . T. **gracilipes**

5. Plant long caulescent; petals broadly elliptical, obtuse at the apex; column with 3 dense clusters of spines. . . . . .T. **costaricensis**

6. Peduncle filamentous, less than 5 cm tall; flowers white with red-maroon veins. . . . . .**T. elcimeyae**

6. Peduncle not filamentous, more than 8 cm tall; flowers yellow with brown veins and reticulations. 7

7. Flowers large, to 7 cm in diameter, basal half of the lip flushed with wine-red. . . . **T. ampliflorus**

7. Flowers small, 4 cm or less in diameter, basal half of lip without wine-red flush (some species have a small red spot at the base of the lip). 8

8. Vein lines very broad. 9

8. Vein lines narrow. 10

9. Underside of the column lobed, much protruding beyond the stigma; veins heavily reticulated. . . . . .**T. ardeltianus**

9. Underside of the column not lobed, not protruding noticeably beyond the stigma; veins not reticulate (or rarely so). . . . . **T. caroliae**

10. Flowers more than 3 cm in diameter; base of the lip forming a red or brown collar around the column with a slight longitudinal keel down the front. . . . . **T. leila-alexandrae**

10. Flowers less than 2 cm in diameter; base of the lip forming a 3-angled light pink collar around the column. . . . . **T. portilloi**

11. Column developed on each side to form obvious wings which are fimbriate on the upper margins, the lower margin seated in the callus of the lip. . . . . .**T. parvulus**

11. Column essentially terete, without lobes on each side. 12

12. Callus hollow from the back side, occupying 1/3 of the surface of the lip. . . . . .**T. biolleyi**

12. Callus solid, occupying 1/4 or less of the surface of the lip. 13

13. Flowers maroon. 14

13. Flowers yellow, cream or tan. 15

14. Petals obtuse with 11 veins, the base thickened and pubescent; flowers evenly colored. . . . . **T. retanarum**

14. Petals acute with 5 veins, the base not thickened or pubescent; flowers blotched. . . . . **T. guila**

15. Callus small, narrow, semilunate. 16

15. Callus ample, oblong or cordiform. 17

16. Flower large, to 3.5 cm in diameter; lip with 11-17 veins. . . . . .**T. christobalensis**

16. Flower small, to 2 cm in diameter; lip with 19 veins. . . . . **T. glicensteinii**

17. Plant caespitose or subcaulescent (stems less than 20 cm long); spine clusters unequal in length, the laterals longer. 18

17. Plant very long caulescent (rarely shorter than 20 cm long when flowering for the first time); spines long in 3 dense clusters of equal length. . . 20

18. Lateral lobes of the callus not enveloping the column; dorsal spine cluster with very short spines to subglabrous. . . . . .**T. pfavii**

18. Lateral lobes of the callus enveloping the column; dorsal spines 1/2 of the length of the lateral spines, dense. 19

19. Underside of the column much swollen, pink; petals broadly elliptical, obtuse. . . . **T. cascajalensis**

19. Underside of the column slightly swollen, red; petals narrowly ovate, acute. . . . **T. ballesteroi**

20. Petals and lip rhombic-elliptic, not overlapping on the margins; petals 7-veined; lip 15- veined. . . . . **T. monticola**

20. Petals and lip very broadly ovate, overlapping on the lower margins; petals 11-to 19-veined; lip 19-to 27-veined. 21

21. Leaves narrowly oblong-elliptical; petals and lip with broad vein lines, lacking reticulations. . . . . **T. storkii ssp storkii**

21. Leaves broadly elliptical; petals and lip without vein lines, covered with reticulations. . . . . **T. storkii ssp magnificus**

CLAVE DE LOS TELIPOGONS DE COSTA RICA

1. Labelo sin un callo evidente en la base, a veces con una hinchazón más o menos suave, vellosa, que se levanta de la superficie pero sin elevarse en el ápice, algunas veces la hinchazón envuelve la columna como un collar, proyectándose hacia adelante desde debajo del estigma 2

1. Labelo con un callo evidente libre de la superficie del labelo 11

2. Hinchazón en la base del labelo con un corto cuerno a cada lado contiguo a la columna . . . . . **T. setosus**

2. Hinchazón, si presente, sin el pequeño cuerno a cada lado en la base . . . 3

3. Hinchazón ocupando la mitad basal de la superficie del labelo, cubierta con largos pelos vellosos; pétalos con pubescencia larga hacia la base . . . . . **T. vampirus**

3. Hinchazón, si presente, ocupando una cuarta parte o menos de la superficie del labelo; pétalos desprovistos de pubescencia larga en la base 4

4. Planta subcaulescente o largamente caulescente 5

4. Planta cespitosa 6

5. Planta subcaulescente (plantas que florecen por primera vez pueden parecer cespitosas); pétalos ovados, agudos en el ápice; columna calva o con 3 racimos poco densos de espinas . . . . . **T. gracilipes**

5. Planta largamente caulescente; pétalos ampliamente elípticos, obtusos en el ápice; columna con 3 racimos densos de espinas . . . . . **T. costaricensis**

6. Pedúnculo filamentoso, de menos de 5 cms. de alto; flores blancas con nervios rojo marrón . . . . . **T. elcimeyae**

6. Pedúnculo no filamentoso, de más de 8 cms. de alto; flores amarillas con venas y reticulaciones de color café 7

7. Flores grandes, hasta de 7 cms. de diámetro, mitad basal del labelo bañado de color vino tinto . . . . . **T. ampliflorus**

7. Flores pequeñas, de 4 cms. o menos de diámetro, mitad basal del labelo sin coloración vino tinto (algunas especies tienen una pequeña mancha roja en la base del labelo) 8

8. Líneas de las venas muy anchas 9

8. Líneas de las venas angostas 10

9. Parte de abajo de la columna lobulada, sobresaliendo bastante más allá del estigma; venas fuertemente reticuladas . . . . . **T. ardeltianus**

9. Parte de abajo de la columna no lobulada, sin sobresalir notablemente más allá del estigma; venas no reticuladas (o sólo raramente) . . . . . **T. caroliae**

10. Flores de más de 3 cms. de diámetro; base del labelo formando un collar de color rojo o café alrededor de la columna con una ligera quilla longitudinal a lo largo del frente . . . . . **T. leila-alexandrae**

10. Flores de menos de 2 cms. de diámetro; base del labelo formando un collar con 3 ángulos de color rosado pálido alrededor de la columna . . **T. portilloi**

11. Columna desarrollada a cada lado para formar alas evidentes que están fimbriadas en las márgenes superiores, la margen inferior asentada en el callo del labelo . . . . . **T. parvulus**

11. Columna esencialmente terete sin lóbulos a cada lado 12

12. Callo hueco por la parte de atrás, ocupando una tercera parte de la superficie del labelo . . . . . **T. biolleyi**

12. Callo sólido, ocupando una cuarta parte o menos de la superficie del labelo 13

13. Flores de color marrón 14

13. Flores de color amarillo, crema o amarillo tostado 15

14. Pétalos obtusos con 11 venas, la base engrosada y pubescente; flores uniformemente coloreadas . . . . . **T. retanarum**

14. Pétalos agudos con 5 venas, la base ni engrosada ni pubescente; flores cubiertas de manchas . . . . . **T. guila**

15. Callo pequeño, estrecho, semilunado 16

15. Callo amplio, oblongo o cordiforme 17

16. Flores grandes, de 3.5 cms. de diámetro, labelo con 11-17 venas . . . . . **T. christobalensis**

16. Flores pequeñas, de 2 cms. de diámetro, labelo con 19 venas . . . . . **T. glicensteinii**

17. Planta cespitosa o subcaulescente (tallos de menos de 20 cms. de largo); racimos de espinas desiguales en longitud, las laterales más largas 18

17. Planta muy largamente caulescente (raramente más corta de 20 cms. de largo cuando florece por primera vez); espinas largas en tres densos racimos de igual longitud 20

18. Lóbulos laterales del callo sin envolver la columna; racimo dorsal de espinas con espinas muy cortas a subglabras . . . . . **T. pfavii**

18. Lóbulos laterales del callo envolviendo la columna; espinas dorsales de la mitad de la longitud de las laterales, densas 19

19. Parte de abajo de la columna muy hinchada, rosada; pétalos ampliamente elípticos, obtusos . . . . . **T. cascajalensis**

19. Parte de abajo de la columna ligeramente hinchada, roja; pétalos estrechamente ovados, agudos . . . . . **T. ballesteroi**

20. Pétalos y labelo rombo-elípticos, sin traslaparse en las márgenes; pétalos con 7 venas, labelo con 15 venas . . . . . **T. monticola**

20. Pétalos y labelo muy ampliamente ovados, traslapándose en las márgenes inferiores; pétalos con 11 a 19 venas; labelo con 19 a 27 venas 21

21. Hojas estrechamente oblongo-elípticas; pétalos y labelo con líneas de venas anchas, sin reticulaciones . . . . . **T. storkii ssp storkii**

21. Hojas ampliamente elípticas; pétalos y labelo sin líneas de venas, cubiertos de reticulaciones . . . . . **T. storkii ssp magnificus**

THE SPECIES OF TELIPOGON OF COSTA RICA

LAS ESPECIES DE TELIPOGON DE COSTA RICA

TELIPOGON AMPLIFLORUS C. Schw., Bot. Mus. Leafl. 6: 34. 1938.

TYPE: *COSTA RICA*: SAN JOSE: Laguna de la Escuadra, northeast of El Copey, alt. 2000-2200 m, 16 Dec 1925, *Standley 42021* (US holotype, AMES! isotype).

DISTRIBUTION: Costa Rica.

Plant small, caespitose; stems to 1 cm long, rooting from the base. Leaves narrowly obovate, acute and apiculate at the apex, narrowing acutely to the junction with the sheath, to 5 x 1 cm. Inflorescence terminal; peduncle terete, 1-to 3-flowered. Flowers

T. ampliflorus
(R. Escobar 3665)

T. ampliflorus
(C. Pacheco s.n.)

FLORA DE Costa Rica

Telipogon ampliflorus C. Schw.

Province of San José, km 94 of the Pan-American Highway, in front of La Georgina, alt. 3032 m, collected and cultivated by A. Campos. Petals dark yellow suffused with red at the base, with 13 red-brown veins; lip dark yellow, flushed with dark wine red at the basal half, with 21 dark red brown veins, without callus; with 3 bundles of long dark red spines on the column, the one above the anther with sparse and shorter spines.

Colector: D. E. de Retana

No. [illegible] Fecha 1985

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

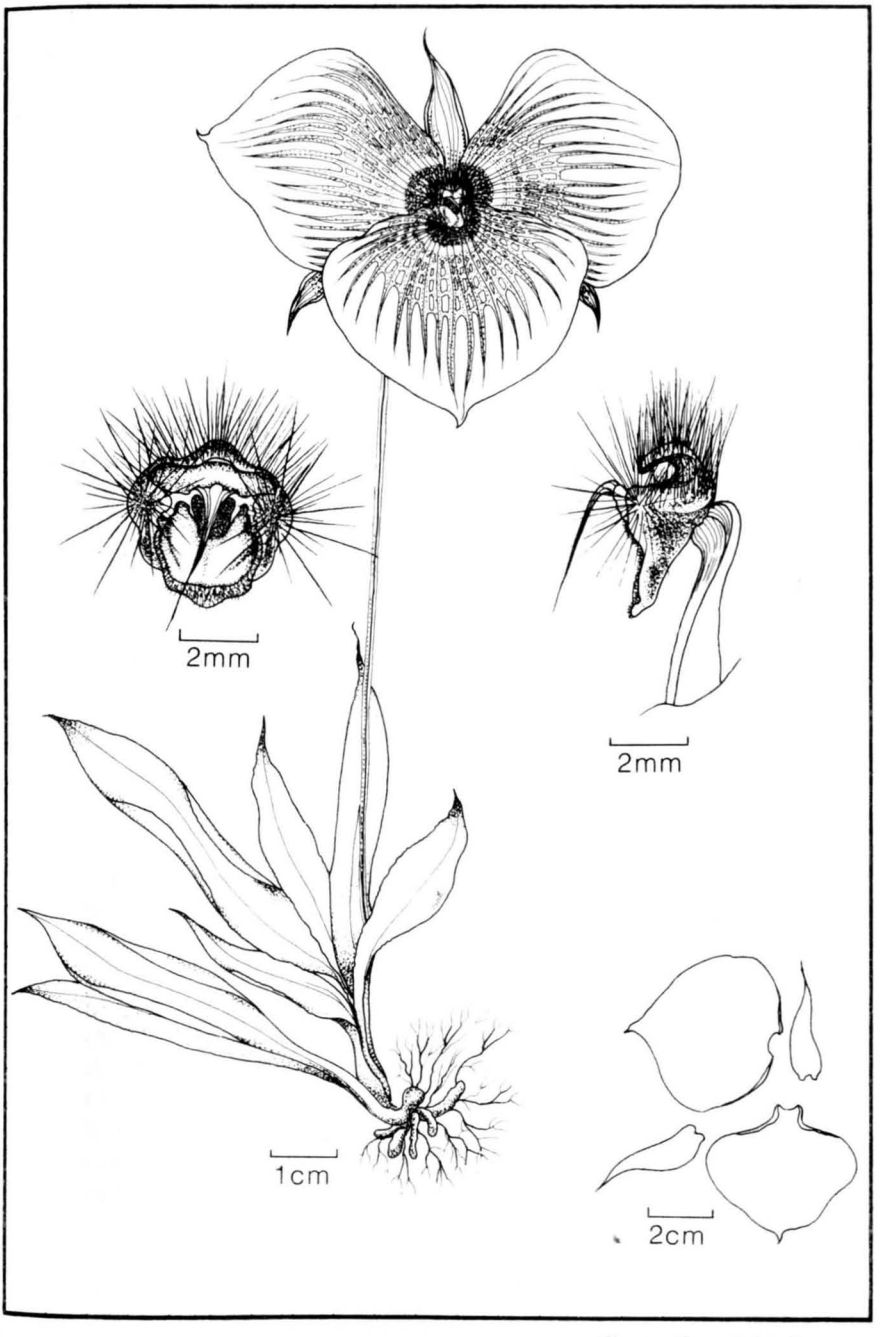


Illustration: L.M. Bermeo

Telipogon ampliflorus

very large for the size of the plant, to 7 cm in diameter, resupinate; sepals yellow-green, the petals dark yellow toward the margin, lighter yellow toward the base with dark red-brown vein lines and a flush of wine red at the base, the lip yellow with red-brown vein lines and the lower half wine-red. Sepals equal, 2.5 x 1 cm; petals rhombic-elliptic, acuminate, 3.8 x 3.2 cm, 13-to 15-veined; lip transversely rhombic elliptic, 3 x 4 cm, 21-to 23-veined, without a callus, red hirsute at the base; column erect, terete, the lower margin of the stigma projecting with a cluster of dense long red spines on each side and a cluster of shorter sparse red spines above the anther.

ILLUSTRATIONS: L. C. Vieira No. 16 (JAUM, RPSC).
L. M. Bermeo (D. E. de Retana sn, JAUM, RPSC).

DISTINGUISHING FEATURES:

Peduncle terete.
Petals 13-to 15-veined; lip 21-to 23-veined, red hirsute at base.
Callus lacking.
Plant caespitose.

OTHER SPECIMENS SEEN: *COSTA RICA:* CARTAGO: Photo of type (AMES): El Cajón, Talamanca Mts. along Panamerican Highway, 30 Dec 1955, *Saxe sn.* (RPSC); SAN JOSE: km 94 Panamerican highway, in front of La Georgina, alt. 3050 m, collected and cultivated by A. Campos in 1985, *D. E. de Retana sn* (JAUM, RPSC, USJ); cultivated at Colomborquideas near Medellín, flowered 20 Oct 1986, *R. Escobar 3665* (JAUM); between Macho Gaf and La Trinidad de Dota, km 62, Panamerican Highway, alt. 2450 m, collected by W. Ballestero in July 1984, cultivated in San Jose by C. Pacheco, 10 Nov 1984, *R. Escobar sn* (color photo JAUM, RPSC).

NOTES: At the locality of La Georgina, *T. ampliflorus* has been found growing in trees in pastures at lower

elevations. In this area, between km 78 and km 98 on the Panamerican Highway, 8 additional species have been found: *T. caroliae, T. christobalensis, T. costaricensis, T. glicensteinii, T. guila, T. leila-alexandrae, T. monticola* and *T. portilloi. Telipogon ampliflorus* is the largest-flowered species of the genus in Costa Rica.

NOTAS: En la localidad de la Georgina, *T. ampliflorus* se ha encontrado creciendo en árboles en potreros a una altura un poco menor. En esta área, entre el km 78 y el km 98 de la Carretera Panamericana se han encontrado 8 especies adicionales: *T. caroliae, T. christobalensis, T. costaricensis, T. glicensteinii, T. guila, T. leila-alexandrae, T. monticola* y *T. portilloi. Telipogon ampliflorus* es la especie de flores más grandes del género en Costa Rica.

TELIPOGON ARDELTIANUS Braas, Die Orchidee 32: 241. 1981.

TYPE: *COSTA RICA*: SAN JOSE: Cordillera de Talamanca, Rio Chirripó Pacifico, Alt. ca. 2500 m, Mar 1981, collected by Ardelt, *L. A. Braas* 33 (private herbarium of L. A. Braas, holotype).

DISTRIBUTION: Costa Rica.

Plant small, caespitose; stems to 0.8 cm long, rooting from the base. Leaves narrowly elliptic, acute, acuminate at the apex, narrowing to the junction with the sheath, to 4 x 0.5 cm. Inflorescence terete, to 12 cm long, unbranched, bracts conspicuous, 3-to 11-flowered, produced in succession. Flowers to 3 cm in diameter, resupinate, yellow to yellow-brown with broad red-brown vein lines and abundant reticulations, the column and swollen base of the lip red-brown. Sepals equal, narrowly ovate, 1.2 x 0.5 cm; petals elliptic, acuminate, 2.3 x 1.5 cm, 11-to 13-veined, veins mostly unbranched but with reticulations; lip broadly elliptical, apiculate, 15-to 19-veined but usually 17-veined, with abundant reticulations, 1.2 x 2 cm, the base swollen & fitting the column like a collar, red hirsute; column subterete, red-brown with 3 sparse

FLORA DE Costa Rica

Telipogon ... Braas

Province of Cartago, ..., Km 37 of the Panamerican Highway, alt 1950 to 2040 m, Epiphytic on "Cantarillo" trees

Flowers from medium to dark yellow, veined and suffused with red brown; petals with 11 to 13 double vein lines, with many branches and reticulations; lip with 15 to 19, but most of the time with 17 double, reticulated, vein lines, without elevated callus, with a hairy swelling at the base; column with 3 small bundles of sparse spines

Colector R. Escobar, L. Mora & M. Garcés

No. 3502 Fecha, 2 October 1984

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

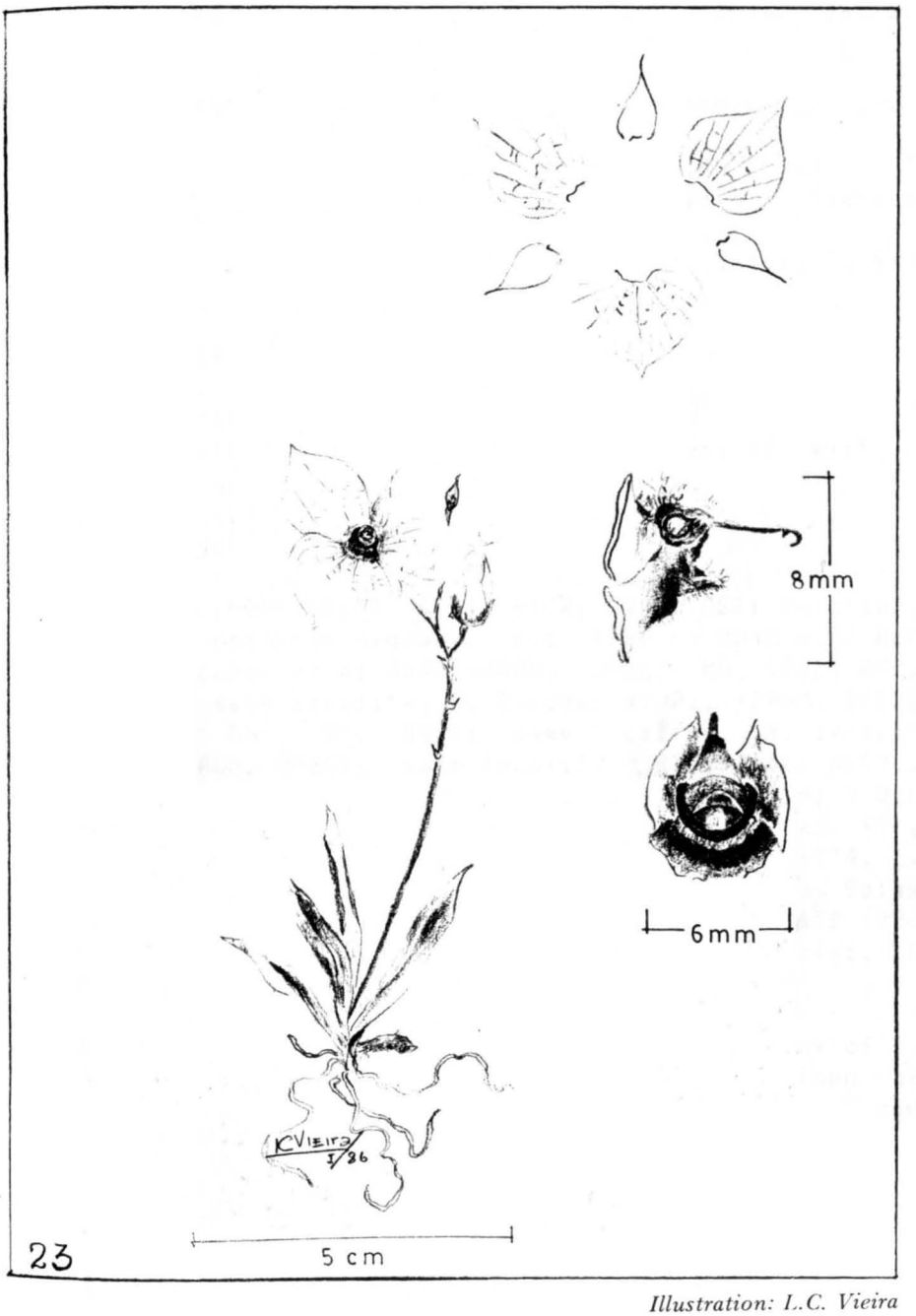


Illustration: L.C. Vieira

Telipogon ardeltianus

T. ardeltianus
(R. Escobar 3502)

short spine tufts of equal size, the lower margin of the stigma projecting; pollinia 4 in 2 equal pairs, yellow.

ILLUSTRATIONS: L. A. Brass, Die Orchidee 32: 242. 1981.
L. C. Vieira No. 23 (JAUM, RPSC).
R. L. Rodriguez, *S. Salas & W. Ramirez*, 12 Jun 1965 (USJ).
R. L. Rodriguez, *J. A. Saenz*, 26 Nov 1971, (USJ).

DISTINGUISHING FEATURES:

Peduncle terete.
Petals 11-to 13-veined; lip 15-to 19-veined with a swollen hirsute base.
Callus lacking.
Plant caespitose.

OTHER SPECIMENS SEEN: *COSTA RICA*: SAN JOSE: Palmital, km 37 Pan American Highway, alt. 1980 to 2040 m, 2 Oct 1984, *Escobar et al 3502* (JAUM, RPSC, MO, COL, ANT, USJ, CR); same locality, *R. Escobar 3502a*, (JAUM, RPSC, MO, COL, ANT, CR, USJ); same locality, *R. Escobar 3502b*, (JAUM, RPSC); same locality, *R. Escobar 3502c, d, & e*, (JAUM); San Cristobal Norte, alt 1900 m, 8 Oct 1978, *C. Todzia 459* (CR); San Isidro de Coronado (?), purchased from a collector in the street, Dec 1974, *L. D. Gomez sn* (CR); La Carpintera, collected by S. Salas & W. Ramirez, 12 June 1965, *R. L. Rodriguez 1067B* (USJ 10202); same locality, collected by J. A. Saenz, 26 Nov. 1971, *R. L. Rodriguez 1340* (USJ 15473).

NOTES: At the locality of Palmital a large colony of *T. ardeltianus* was studied with 44 flowers examined of which 19 had been pollinated. The plants were found between 1980 m and 2040 m growing exclusively on thin non mossy twigs of a tree of the Melastomataceae, known locally as "Cantarillo". At the higher elevation site they were not associated with any other species of *Telipogon*. At the lower elevation site they were associated with *T. biolleyi* and *T. parvulus*.

NOTAS: En la localidad de Palmital se estudió una colonia grande de *T. ardeltianus* con 44 flores examinadas de las cuales 19 habían sido polinizadas. Las plantas se encontraron entre 1980 y 2040 mts. creciendo exclusivamente en las ramitas sin musgo de un árbol de las Melastomáceas, conocido localmente como "Cantarillo". En el sitio de mayor elevación no estaban asociadas con ninguna otra especie de *Telipogon*. A más baja altura estaban asociadas con *T. biolleyi* y *T. parvulus*.

TELIPOGON BALLESTEROI Dodson & Escobar, sp. nov.

TYPE: *COSTA RICA*: SAN JOSE: between Macho Gaf and La Trinidad de Dota, km 62 of the Panamerican Highway, alt. 2450 m, 6 Oct 1984, *R. Escobar, H. Garces & W. Ballestero 3521* (JAUM holotype, RPSC isotype).

Species haec *T. storkii* Ames & C. Schw. similis, sed floribus minoribus et petalis labelloque angustissimis, sepalo dorsali inter margines superiores petalorum visibili, columna calloque vinaceis, callo anguste cordiformi-hastato, spinarum caespitibus lateralibus elongatis, caespite dorsali brevi differt.

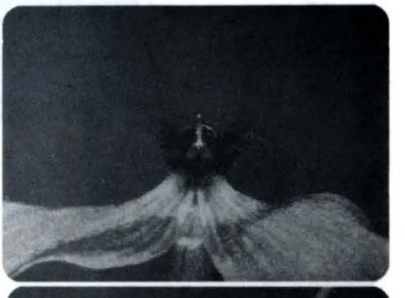
ETYMOLOGY: Named in honor of Sr. Walter Ballestero of San Jose, Costa Rica, who discovered the species and has collected it several times.

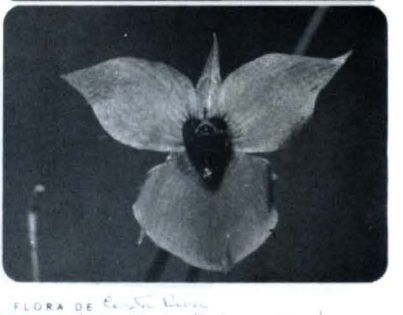
DISTRIBUTION: Costa Rica.

Plant small, shortly caulescent; total stem 7 cm long, branched from the apical nodes, the branches to 1 cm long; roots coarse, produced along the stem. Leaves alternate, distichous, narrowly obovate, to 4 x 1.2 cm, obtuse at the apex, apiculate, narrowing acutely toward the base, with net-like veination; sheaths surrounding the stem. Inflorescence terminal, terete, to 14 cm long, 2-to 3-flowered, the flowers produced in succession, unbranched; peduncle of 1 internode, to 12 cm long; floral bracts triangular, apiculate, to 1.5 mm long; pedicel terete, 2 cm long, bent at the midpoint. Flowers lemon-yellow, suffused with tan, with darker

T. ballesteroi
(R. Escobar 3521)

HOLOTIPO





FLORA DE

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

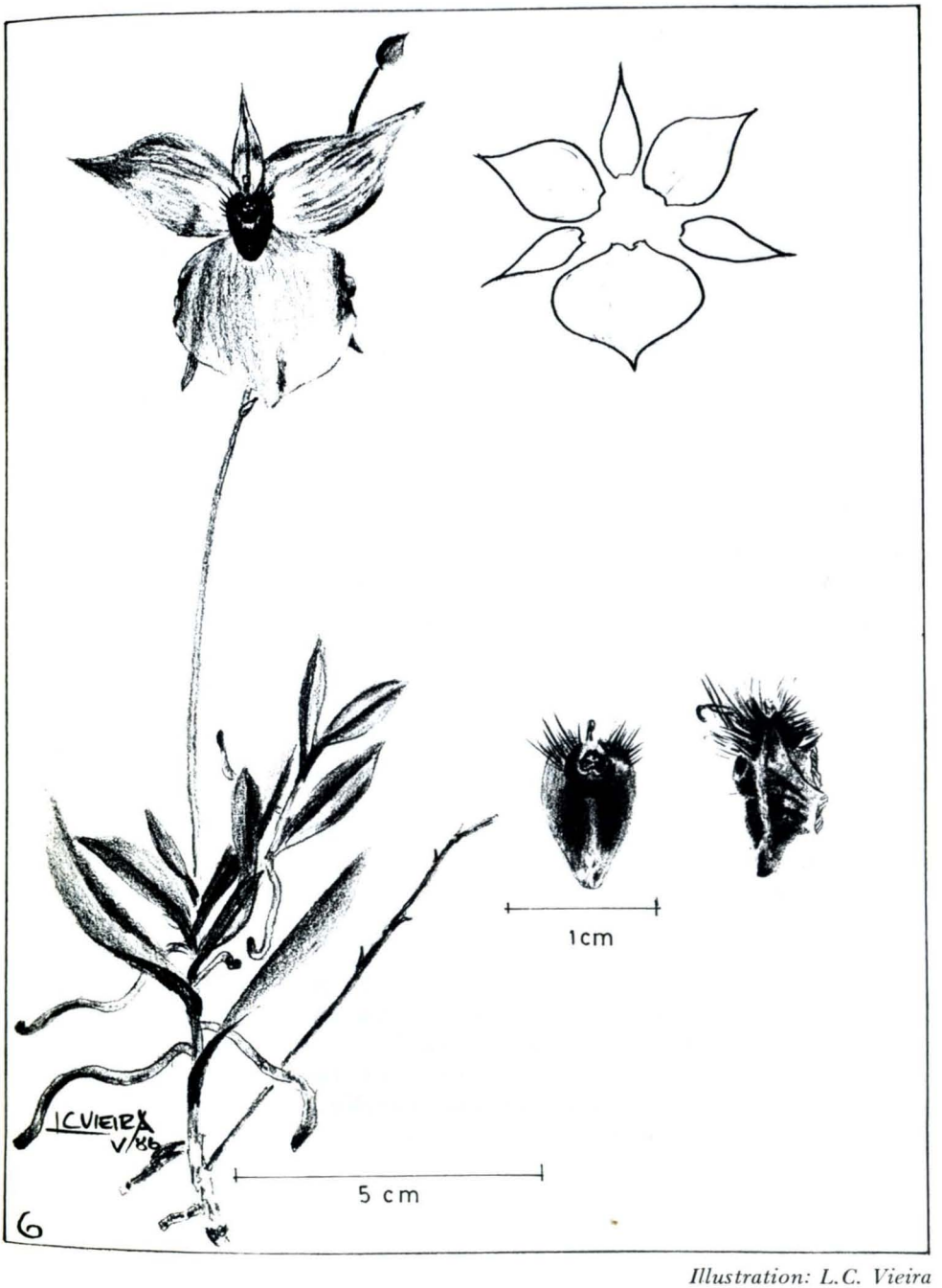


Illustration: L.C. Vieira

Telipogon ballesteroi

double tan vein lines on each side of the veins, resupinate, the sepals transluscent pale yellow with a darker vein, the petals with a lighter colored area at the base with the vein lines interrupted, the lip with continuous vein lines and a flush of orange at the base, the callus and column bright red, the spines red. Sepals equal, narrowly ovate, carinate on the back side, to 1 x 0.6 cm, the dorsal sepal obvious between the petals; petals ovate, acuminate, 1.9 x 1.2 cm, 12- to 15-veined, the veins unbranched; lip broadly elliptical, apiculate at the acute apex, obtuse to acute at the base, 22-to 26-veined, the veins at the outer margin often branched, to 1.7 x 1.8 cm, the callus at the base of the lip solid, forming a collar around the column, to 8 x 6 mm, mostly free from the surface of the lip, peltate from a lateral view, cordiform-hastate from a frontal view, the lateral lobes of the callus surrounding the column to the anther, the center with a longitudinal cushion-like swelling, sparsely villose; column subpeltate-quadrate from a lateral view, 3 mm long, 4 mm deep, the underside below the stigma protruding, the stigma pale greenish white, ovoid with a white marginal hirsute collar around the margin and a tuft of elongate red spines on each side at the lateral points and a tuft of shorter red spines above the anther; pollinia 4 in 2 equal pairs, burgundy red; viscidium white.

ILLUSTRATIONS: L. C. Vieira no. 6 (JAUM, RPSC).

DISTINGUISHING FEATURES:

Scape terete.
Petals 12-to 15 nerved; lip 22-to 26-nerved.
Callus cordiform-hastate, free from the lip and forms a collar surrounding the column.
Column terete with lateral tufts of long red spines and a dorsal tuft of shorter red spines.
Plant subcaulescent.

OTHER SPECIMENS SEEN: *COSTA RICA*: SAN JOSE: between Macho Gaf and La Trinidad de Dota, km 62 of the

Panamerican Highway, alt. 2450 m, collected by W. Ballestero in early 1985, cultivated by C. Pacheco in San Jose, flowered in cultivation 15 Aug 1985, *R. Escobar 3635* (JAUM, RPSC).

NOTES: This species was found in a dense oak forest growing between 2 and 30 meters from the ground. In the same oak forest *T. storkii* and *T. ampliflorus* have been found. The species is uncommon in the area and has not been found elsewhere.

NOTAS: Esta especie se encontró en un bosque denso de robles creciendo entre 2 y 30 metros del suelo. En el mismo bosque de robles se han encontrado *T. storkii* y *T. ampliflorus.* La especie no es común en el área y no se ha encontrado en otro sitio.

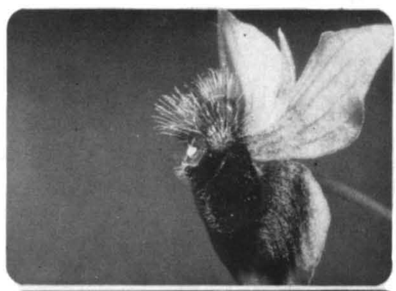
TELIPOGON BIOLLEYI Schltr., Rep. Spec. Nov. Beih. 9: 293. 1911.

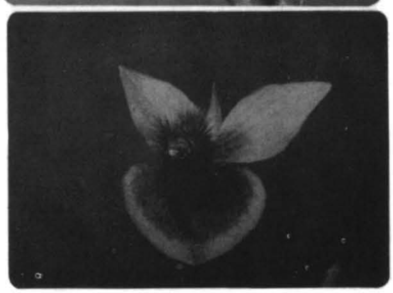
TYPE: *COSTA RICA*: HEREDIA: Volcan Barba, Aug. 1889, *Biolley 1340* (US! lectotype designated here).

SYNONYMS: *T. endresianum* Krzl. Ann. Nat. Hist. Mus. Wien 33: 31. 1919.

DISTRIBUTION: Costa Rica to Panama.

Plant small, caespitose; stem to 0.5 cm long; roots produced from the base. Leaves elliptic-obovate, acute, to 3 x 0.7 cm. Inflorescence terete, to 15 cm long, unbranched, 3-to 8-flowered, the flowers produced in succession. Flowers resupinate, yellow, the petals with a red-brown flush at the base and red-brown vein lines, the lip with a large red-brown spot covering most of the lip leaving a yellow margin, the callus dark red-brown, the column and spines red. Sepals ovate, equal, to 1.2 x 0.5 cm; petals elliptic, acute at the apex, 2.2 x 1.2 cm, 5-to 7-veined, minutely pubescent at the base; lip broadly ovate, retuse at the base, 13-to 17-veined, usually 15-veined, the veins





FLORA DE Costa Rica

Telipogon biolleyi Schltr.

Province of Cartago, Palmital, km 37 of the Panamerican Highway, alt 1930 m, epiphytic on "Cantarillo" trees.

Petals lemon yellow suffused with brown, minutely pubescent at the base, with 5 to 7 green veins; lip bright brown with a yellow margin and 13 to 15 veins, with a hollow, pubescent, blackish callus at the base; column with 3 bundles of equally long, red-brown spines.

Colector: R. Escobar, L. Mora e M. Garcés

No. 3501 Fecha. 2 October 1984

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

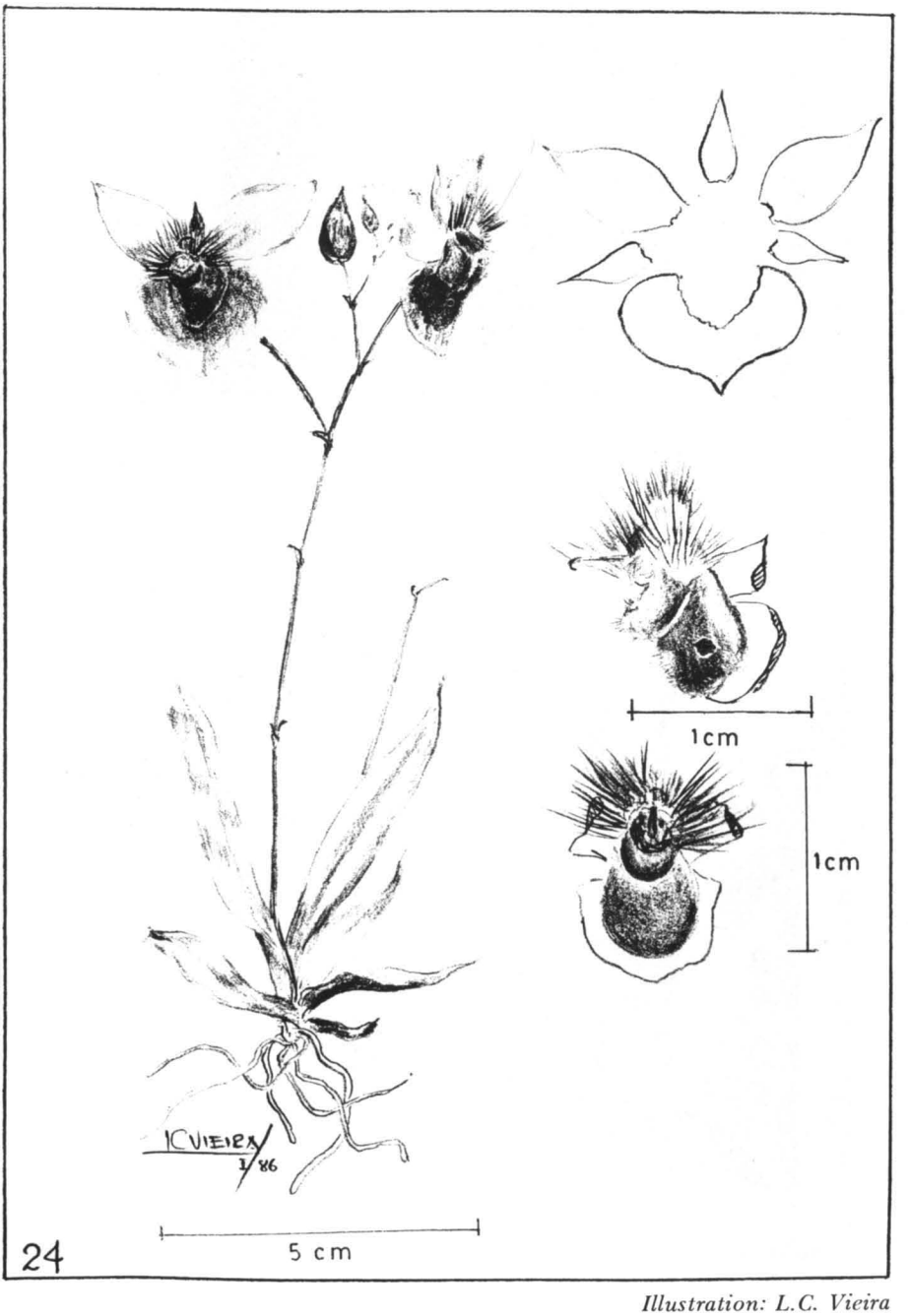


Illustration: L.C. Vieira

Telipogon biolleyi

T. biolleyi
(R. Escobar 3501)

T. biolleyi
(R. Escobar 3533)

T. biolleyi & T. elcimeyae
growing together on a guava tree near the school of San Carlos de la Estrella

occasionally with reticulations, with a large, raised, cordiform pad-like callus covering 1/3 of the lip surface, hollow and concave on the underside of the lip; column short, broad, with 3 large dense clusters of red spines from the dorsal side, the stigma hexagonal; pollinia 4 in 2 equal pairs.

ILLUSTRATIONS: Schltr., original illustration prepared from type (AMES!)
Hawkes, Encyclopedia of the Orchids (as *T. endresianus*)
The Orchid Journal, 1: 7-8 (as *T. endresianus*)
L. C. Vieira No. 24 (JAUM, RPSC).
R. L. Rodriguez, 31 Aug 1962 (USJ).
R. L. Rodriguez, *F. Acuña sn*, 12 Nov 1968 (USJ).

DISTINGUISHING FEATURES:

Scape terete.
Petals 5-to 7-veined; lip 13-to 17-veined.
Callus a hollow pad covering 1/3 of the lip surface.
Column short with dense red spines, stigma hexagonal.
Plant caespitose

OTHER SPECIMENS SEEN: *COSTA RICA*: Birris, *Endres sn.* (holotype of *T. endresianum* Krzl) (AMES 26049); SAN JOSE: La Hondura, Coronado, 26 Sept. 1934, *M. Valerio 970* (F, CR); La Hondura, Volcan Turrialba, Alt. 1830, 14 Oct 1950, *Allen 5689, 5989* (SEL); Aserri, 22 Sept 1940, *J. Leon 85* (CR); Bajo La Hondura, Camino de Carillo, *R. W. Holm & H. H. Iltis 630* (USJ); before Bajo La Hondura, Hacienda Zurqui, on "Plomillo" trees, alt 1530 m, 13 Oct 1984, *Escobar, Dressler & D. E. de Retana, et al. 3548* (JAUM); La Palma, 12 Nov 1968, *F. Acuna sn* (USJ 10948); above Coronado, Cascajal, Hacienda de Mario Chandi, alt. 1700 m, 10 Oct 1984, on "Plomillo" trees *R. Escobar, W. Ballestero & A. Cedeno 3533* (JAUM, MO, RPSC, COL, CR); CARTAGO: Tapanti, alt. 1460 m, 8 Aug 1985, *R. Escobar, D. Portillo & M. Retana 3627* (JAUM, RPSC); Palmital, km 37 on Pan American

Highway, alt. 1980 m, on "Cantarillo" trees, *R. Escobar, M. Garces & L. Hora 3501* (JAUM); La Carpintera, in front of Kativo Factory, alt 1700 m, epiphytic on *Randia karstenii* ("Peispute"), 5 Oct 1984, *R. Escobar, D. E. & M. Retana 3515* (JAUM, COL, CR, USJ, RPSC, MO, ANT); same locality, *R. Escobar 3515 a, b, c & d* (JAUM); above Rio Estrella, alt. 1650 m, epiphytic on mossy *Psidium guayava*, 5 Oct 1984, *R. Escobar, D. E. & M Retana 3512* (JAUM, MO, RPSC, USJ, CR); Sierra before El Empalme, Panamerican Highway, alt. 2000 m, 9 Sept 1979, *C. Todzia 686* (CR); La Carpintera, Sept 1976, *R. A. Ocampo 1313* (CR); near school of San Carlos de la Estrella, alt. 1760 m, epiphytic on *Psidium guayava*, *R. Escobar, M. Garces & M. Ballestero 3517* (JAUM, COL, USJ, CR, MO, ANT, RPSC); Tucurrique, Aug 1961, *C. Lankester sn.* (SEL); above Orosi, alt. ca. 1600 m, epiphytic on *Psidium guayava*, 15 Oct 1984, collected by V. Brenes, *R. Escobar 3555* (JAUM, RPSC, USJ); HEREDIA: Cariblanco, bought from a farmer, 12 Sept 1957, *C. Lankester L-3 (CR); Varablanca de Sarapiqui, alt. 1500-1750 m, Jul.-Sep. 1937, Skutch 3253A* (SEL); same locality, 26 Jun 1966, *G. S. Daniels sn* (USJ 10948); near Chahuttes, alt 1900 m, 11 Sept 1936, *V. F. Goerger sn* (AMES); Volcan Barba, alt. 1800 m, 5 Sep. 1963, epiphytic on *Psidium guayava*, *Dodson 2545* (SEL); between Los Cartagos and Varablanca, km 21, alt. 1990 m, epiphytic on *Randia karstenii* ("Peispute"), 12 Oct 1984, *R. Escobar, M. Garces & O. Penez 3539* (JAUM, RPSC, MO, CR); ALAJUELA: near San Ramon, 8.5 km from the Interamerican Highway overpass on the road to Berlin, hill below Torre de Berlin, alt. 1390 m, epiphytic on *Psidium guayava*, 1 Feb 1984, *M. Chase 84169* (CR)

PANAMA: CHIRIQUI: Cordillera, alt. 1400 m, 9 Jul. 1966, *Butcher sn* (SEL!).

NOTES: This species is the most common and widely distributed species in Costa Rica and grows lower in elevation than most of the other species. In a few localities it has been found growing with *T. elcimeyae, T. vampirus, T. cascajalensis, T. parvulus, T.*

ardeltianus and *T. gracilipes*, but is usually not found in association with other *Telipogon* species. It is commonly found growing on *Randia karstenii* (known locally as "Peispute") or *Psidium guayava*. ("Guava").

NOTAS: Esta especie es la más común y ampliamente distribuida en Costa Rica y crece a elevaciones menores que la mayoría de las otras especies. En unas pocas localidades se ha encontrado creciendo con *T. elcimeyae, T. vampirus, T. cascajalensis, T. parvulus, T. ardeltianus* y *T. gracilipes*, pero usualmente no se encuentra asociada con otras especies de *Telipogon*. Por lo general se encuentra creciendo en *Randia karstenii* ("Peispute") o *Psidium guayava* ("Guayaba").

TELIPOGON CAROLIAE Dodson & Escobar, sp. nov.

TYPE: *COSTA RICA*: CARTAGO: Cerro de la Muerte, km 98 of the Panamerican Highway, near the restaurant La Auxiliadora, on mossy twigs, alt. 2850 m,20 Aug 1985, *R. Escobar, D. Portillo and D. E. de Retana 3640* (JAUM holotype, RPSC, USJ isotypes).

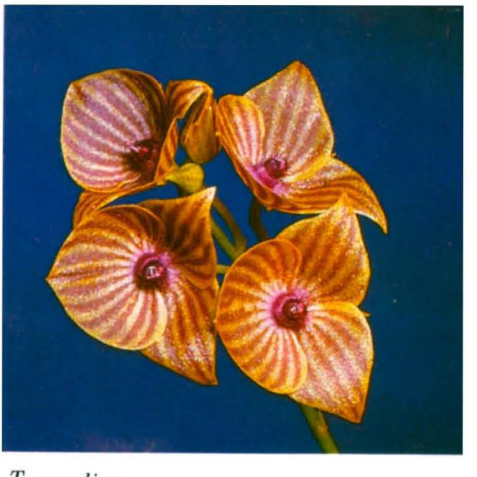
Species haec *T. ardeltiani* Braas similis, sed foliis non-reticulatis et columna infra non-lobata ultra stigma non-protrudenti differt.

ETYMOLOGY: Named,to honor Dr. Carol Todzia who first collected the species.

DISTRIBUTION: Costa Rica.

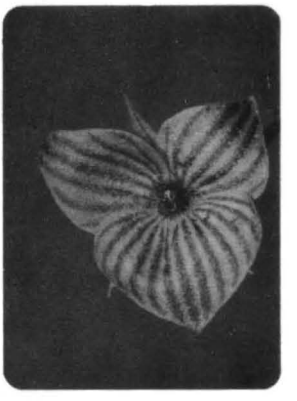
Plant small, caespitose; stems to 0.5 cm long; roots fine, produced from the base of the stem. Leaves 3 to 5, alternate, distichous, obovate-elliptic, to 7.2 x 1.1 cm, acute at the apex, narrowing at the base to unite with the sheath, with net-like veination; sheaths overlapping at the base. Inflorescence terminal, occasionally branched, terete to 27 cm long, to 14-flowered, the flowers non resupinate, usually produced singly in succession; peduncle of 1 or 2 internodes to 5 cm long each; floral bracts triangular, to 3 mm long; pedicel terete, to 2 cm long. Flowers yellow-brown

T. caroliae
(R. Escobar 3600)



T. caroliae
(R. Escobar 3640)

HOLOTIPO



Holotype

FLORA DE Costa Rica

Telipogon canalae Dodson & Escobar

Province of Cartago, Cerro de la Muerte, Km 98 of the Pan American Highway, near Restaurante la Auxiliadora, epiphytic on moss-covered twigs, alt. 2850 m.

Flowers small for the genus, concave, dark yellow with double brown veins, the petals with 7 and the lip with 13; lip without callus, but with a shortly pubescent swollening at the base, surrounding the column below; column purple-brown with 3 bundles on top of short, sparse, soft hairs.

Colector R. Escobar, D. Portillo & D.E. de Retana

No. 3640 Fecha 20 August 1985

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

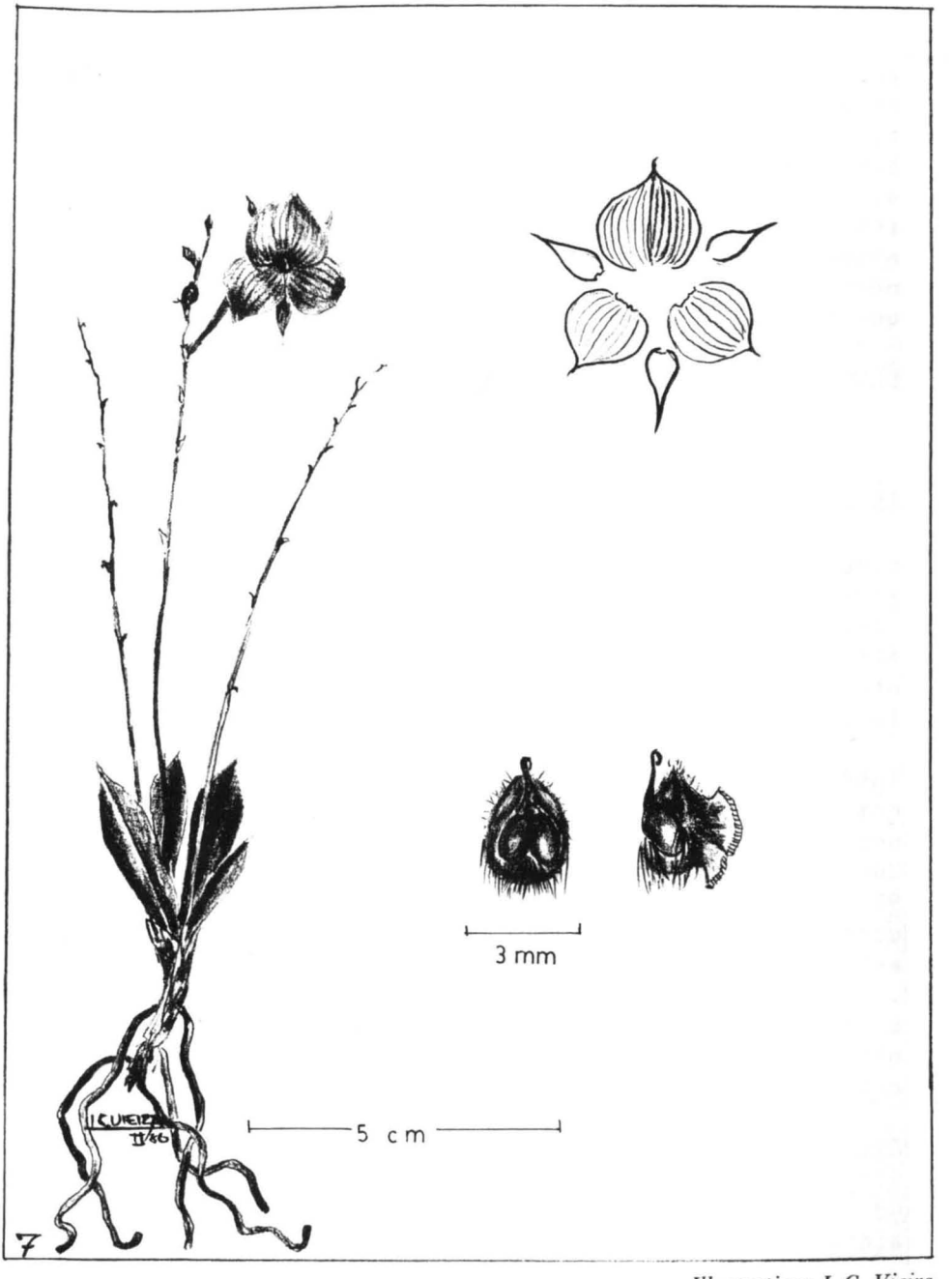


Illustration: L.C. Vieira

Telipogon caroliae

with broad, unbranched red-brown vein lines, without reticulations, the column, base of the lip and petals purple red. Sepals equal, narrowly ovate, concave, carinate on the back side, to 1 x 0.4 cm; petals broadly ovate-elliptic, obtuse at the apex, to 1.3 x 1 cm, 7-veined, veins unbranched; lip broadly ovate, obtuse at the apex, retuse at the base, to 1.1 x 1.3 cm, the base of the lip forming an unswollen finely hirsute collar surrounding the base of the column; column short, 3 mm long, the stigma projecting on the underside, with red spines in 3 small, sparse, short equal bundles; pollinia 4 in 2 pairs, yellow.

ILLUSTRATIONS: L. C. Vieira No. 7 (JAUM, RPSC).
R. L. Rodriguez, 31 May 1975, No. 965 (USJ).

DISTINGUISHING FEATURES:

Scape terete.
Petals 7-veined; lip 13-veined without swelling or callus at the base.
Callus lacking.
Column terete, underside of stigma projecting.
Plant caespitose.

OTHER SPECIMENS SEEN: *COSTA RICA:* SAN JOSE: direct line from Hotel La Georgina to Cerro Frio, of the Cerro Buenavista complex, area with TV and radio towers, alt. 3200 m, in shade of dense stand of *Chusquea*, 20 Sep 1983, *G. Davidse 24990* (MO, CR); CARTAGO: Cerro de la Muerte, Villa Mills, Km 98 Panamerican Highway, near Restaurante La Auxiliadora, alt. 2850 m, 28 Oct. 1984, *R. Escobar 3600* (JAUM, RPSC); Cerro de la Muerte, near km 94 of the Panamerican Highway, ca. alt 3100 m, collected by E. Abarca, 25 Aug 1985, *R. Escobar & D. Portillo 3651* (JAUM, RPSC).

NOTES: This species was discovered by Carol Todzia in 1975 near La Trinidad de Dota, Province of San Jose, and submitted to Don Rafael Lucas Rodriguez to be painted. Dr. Rodriguez apparently did not prepare an

herbarium specimen. It was found again in 1983, 1984 and 1985 and is described from those collections, but is rare in the area. One plant, *R. Escobar 3651*, was found growing with *T. caroliae* and *T. leila-alexandrae* Braas and is intermediate between the two species in many characters. It is potentially a natural hybrid.

NOTAS: Esta especie fue descubierta por Carol Todzia en 1975 cerca a La Trinidad de Dota, provincia de San José y entregada a Don Rafael Lucas Rodríguez para ser pintada. El Dr. Rodríguez aparentemente no preparó un ejemplar de herbario. Se encontró nuevamente en 1983, 1984 y 1985 y se describe con base a éstas colectas, pero es escasa en el área. Una planta, *R. Escobar 3651,* se encontró creciendo con *T. caroliae* y *T. leila-alexandrae* y es intermedia entre las dos especies en muchos caracteres. Potencialmente es un híbrido natural.

TELIPOGON CASCAJALENSIS Dodson & Escobar, sp. nov.

TYPE: *COSTA RICA*: SAN JOSE: Cascajal, above Coronado, Hacienda de Mario Chandi, alt 1700 m, 10 Oct 1984, *R. Escobar, W. Ballestero & A. Cedeño 3530* (JAUM holotype, RPSC, MO isotypes).

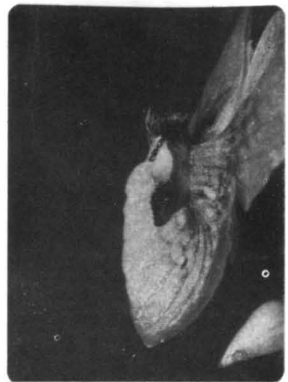
Species haec *T. pfavii* Schltr. similis, sed habitu caespitoso, labelli callo cordiformi columnam omnino amplectenti, columnae textura stigma infra cingenti lavendulaceo et spinarum caespite mediano rubro breviorique differt.

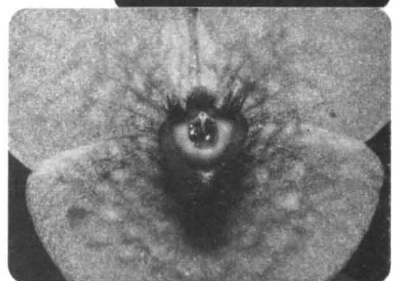
ETYMOLOGY: Named for Cascajal, the place of origin of the collection, and an area very rich in species of the genus.

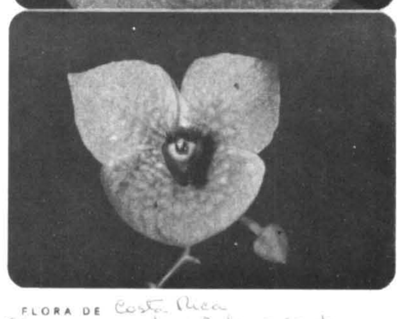
DISTRIBUTION: Costa Rica.

Plant small, caespitose; stems to 0.5 cm long; roots fine, produced from the base of the plant. Leaves 3 to 5, alternate, distichous, obovate-elliptic, to 3 x 0.7 cm, acute at the apex, narrowing at the base to unite with the sheath, with net-like veination; sheaths overlapping at the base. Inflorescence terminal, unbranched, terete, to 8 cm long, to 3-flowered.

HOLOTIPO







FLORA DE Costa Rica

Telipogon cascajalensis Dodson & Escobar

Province of San José, Cascajal, above Coronado, ruins of Mano church, alt 1700 m, epiphytic on a Melastomaceae sp. known locally as "Plomillo", 3 to 4 meters from the ground, in a very windy and exposed area.

Flowers lemon yellow with red-brown transverse markings at the base of petals and lip; veins green, petals with 7 and lip with 13, lip with a callus elevated and free from the lamina, cordiform, forming a collar around the column, the callus dull yellow but densely covered with brown hairs; column lavender with 3 bundles of hairs, the lateral bundles with dark brown and longer hairs, the one on top with more dense, shorter, reddish hairs; pollinia red.

Colector R. Escobar, W. Ballestero & A. Cedeño.

No. 3530 Fecha 10 octubre 1984

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

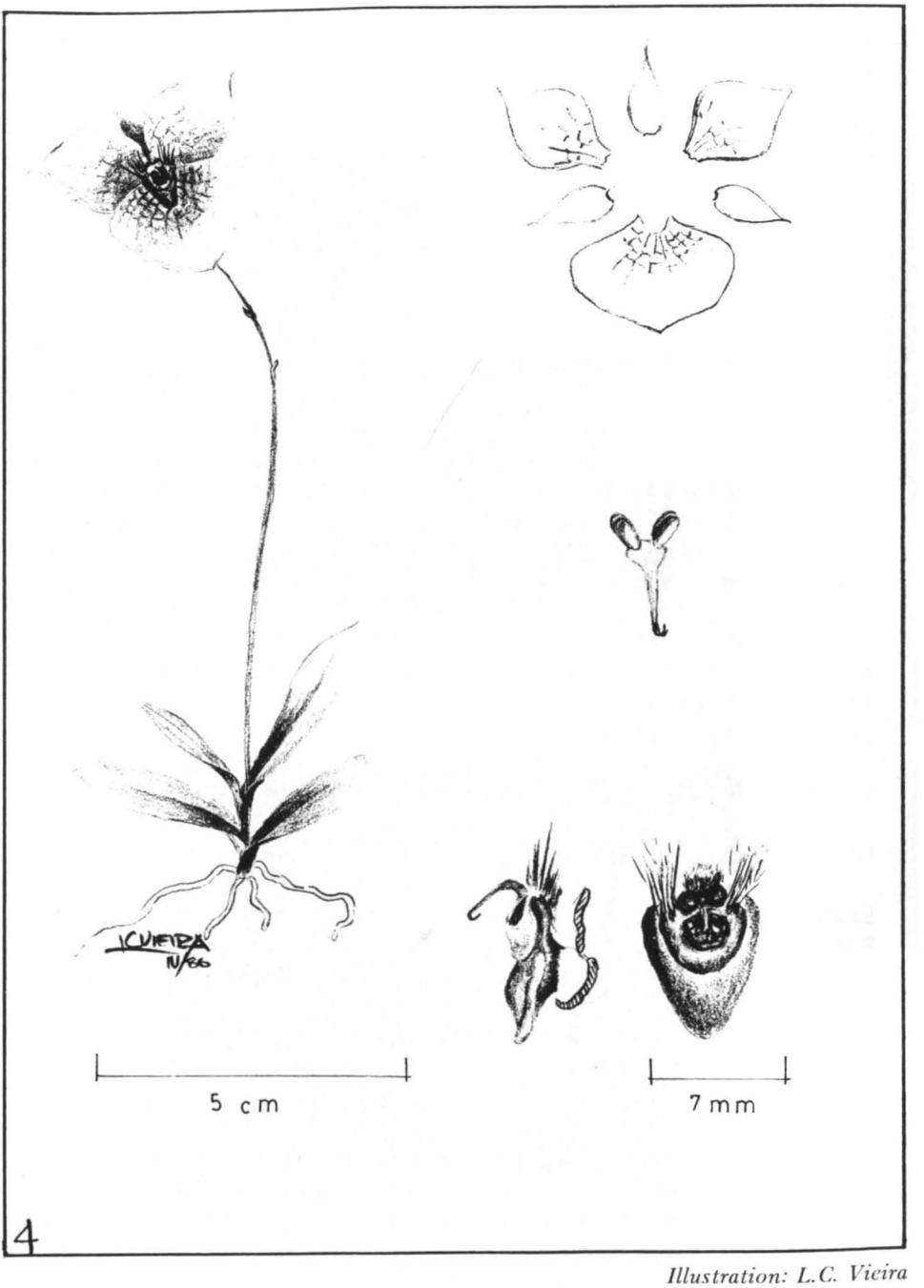


Illustration: L.C. Vieira

Telipogon cascajalensis

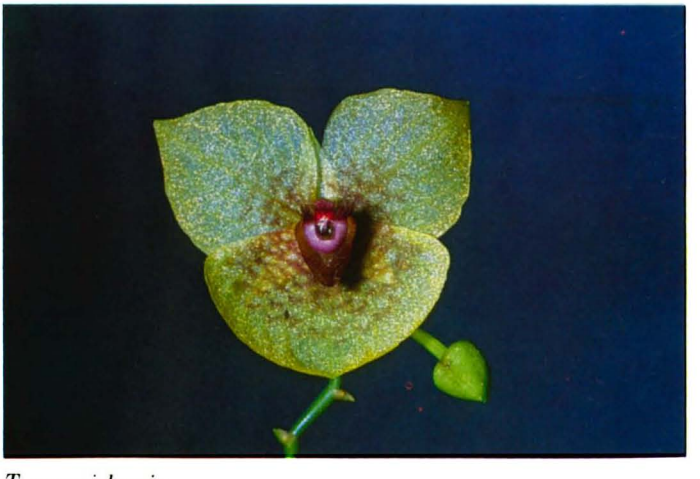
Flowers produced singly in succession; peduncle of a single internode to 5.5 cm long; floral bracts triangular-ovate, to 1.5 mm long; pedicel terete, to 2.2 cm long. Flowers resupinate, lemon-yellow, with faint red-brown transverse concentric reticulations at the base of the petals and lip, the vein lines green, the callus green-brown, the areas surrounding the stigma lavender, the anther red. Sepals equal, narrowly ovate, carinate on the back side, concave, to 1 x 0.5 cm; petals broadly ovate, obtuse-acuminate at the apex, to 2 x 1.5 cm, 7-veined, the veins unbranched; lip very broadly ovate, obtuse at the apex, retuse at the base, 13-veined, to 2.5 x 1.5 cm, the callus at the base of the lip solid, forming a collar around the column, to 5 x 4 mm, mostly free from the lip, peltate from a lateral view, long cordiform-hastate from a frontal view, the lateral lobes of the callus surrounding the column to the anther, the center with a longitudinal cushion-like swelling, densely hirsute; column subpeltate-quadrate from a lateral view, 3 mm long, 4 mm deep; the area under the stigma orifice swollen, cellular-papillate, the stigma subquadrate, the shoulders of the column with a sparse tuft of brown spines on each side, the anther with a short tuft of dense purple-red, soft spines; pollinia 4 in 2 pairs, yellow.

ILLUSTRATIONS: L. C. Vieira No. 4 (JAUM, RPSC).

DISTINGUISHING FEATURES:

Scape terete.
Petals 7-veined; lip 13-veined.
Callus solid, swollen, cordiform-sagitate from a frontal view.
Column with the area under the stigma swollen and lavender.
Plant caespitose.

NOTES: This species is very rare and apparently has been collected only once. Three plants were found growing on the same branch of a tree belonging to the



T. cascajalensis
(R. Escobar 3530)

Melastomataceae, known locally as "Plomillo". One plant had two flowers open and the other 2 plants had buds which opened the following week. Five flowers were examined.

NOTAS: Esta especie es muy rara y aparentemente se ha colectado solamente una vez. Tres plantas se encontraron creciendo en la misma rama de un árbol perteneciente a las Melastomáceas, conocido localmente como "Plomillo". Una planta tenía dos flores abiertas y las otras dos tenían botones que abrieron a la semana siguiente. Cinco flores fueron examinadas.

TELIPOGON CHRISTOBALENSIS Krzl. Ann. Nat. Mus. Wien. 33: 30. 1919.

TYPE: *COSTA RICA*: Tablazo on road to San Cristobal, *Endres 512* (W!)

DISTRIBUTION: Costa Rica

Plant subcaulescent; total stem to 10 cm tall, branching from apical nodes, individual stems to 3 cm long; roots coarse, produced along the stem. Leaves elliptic-obovate, obtuse at the apex, to 3.5 x 1 cm. Inflorescence terminal or lateral, unbranched, to 30 cm tall, 5-to 11-flowered, the flowers produced 1-3 in succession. Flowers yellow flushed with pink toward the base of the segments, vein lines and reticulations red-brown, the callus and column wine-red, the spines red-brown. Sepals narrowly ovate, equal, to 1.3 x 0.6 cm; petals ovate, acute at the apex, long acuminate, to 2.2 x 1.6 cm, 11-veined (stated as 5 in the type description); lip broadly ovate, obtuse at the apex, apiculate, retuse at the base, to 2 x 2.2 cm, 15-to 21-veined, veins branched toward the margin, with a callus at the base which is free from the lip around the margin and the apex, cordate from a frontal view, supporting the underside of the column; column projected under the stigma and seated in the callus, with 3 clusters of short, sparse spines.

ILLUSTRATIONS: IPT Pl. Unpubl. (prepared from the type at W).
Sketch of type (AMES!).

DISTINGUISHING FEATURES:

Scape terete.
Petals 11-veined; lip 15-to 21-veined, veins branched near the margin.
Callus free from the lip supporting the column, cordate from a frontal view.
Column protruding under the stigma, with 3 bundles of short, sparse spines.
Plant subcaulescent.

OTHER SPECIMENS SEEN: *COSTA RICA*: SAN JOSE: km 60-80, eastern side of Cerro de la Muerte, alt 2500-3200 m, 22 Aug 1963, *Dodson 2477* (RPSC); without locality, *Endres sn* (W).

T. christobalensis
(C. Dodson 2477)

PLANTS OF Costa Rica

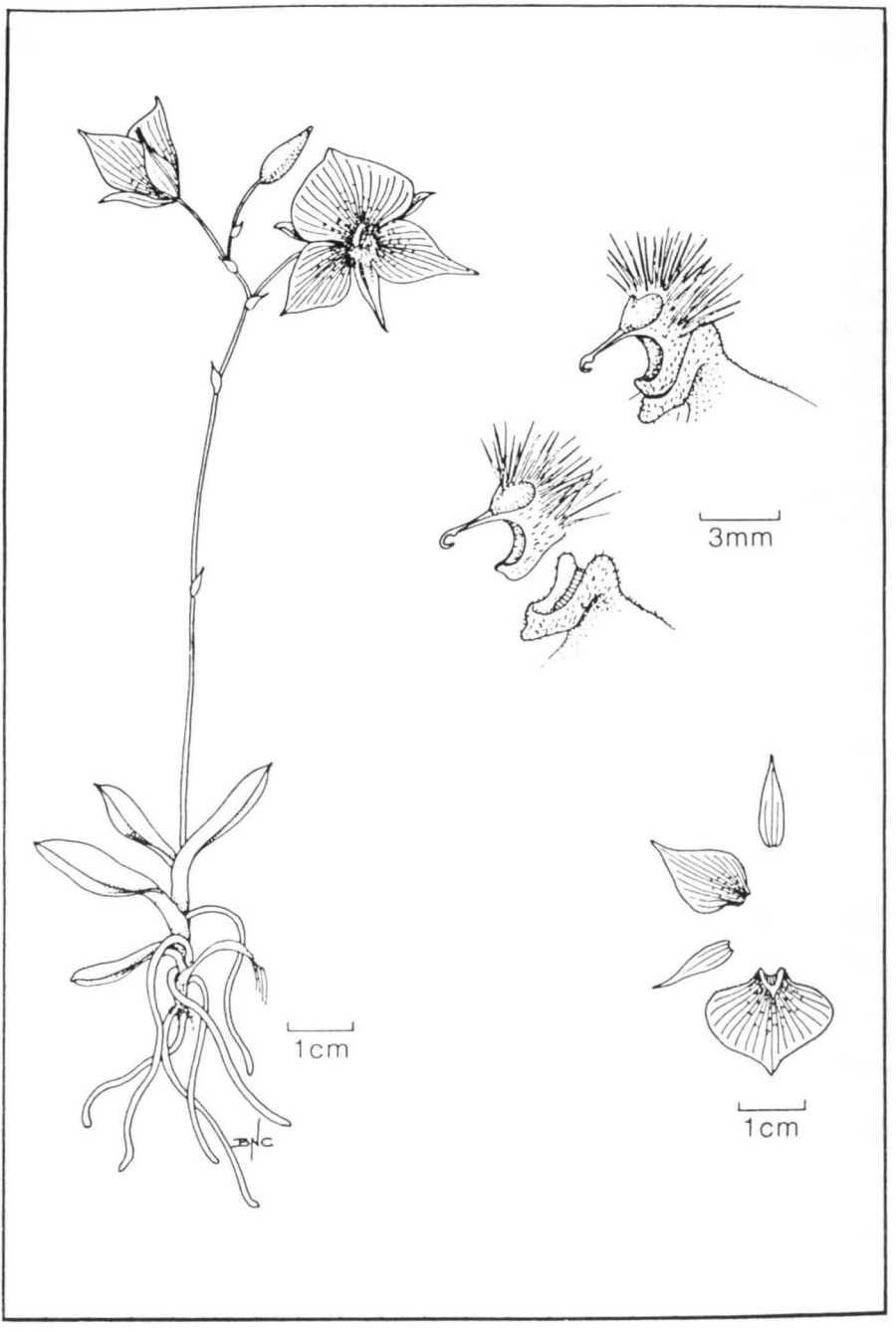
Orchidaceae

Telipogon

Flowers yellow, heavily marked with red barrs and stripes.

Prov. Cartago. Road from Cartago to San Isidro del General, near summit of Cerros de la Muerte. Elev. 2500-3200 m. Km 60-80.

Coll. C. H. Dodson 2477 Date 22 Aug 63



TELIPOGON CHRISTOBALENSIS Krzl. (Endres 512 W) PLATE 0000

Illustration prepared from the type at W.

NOTES: *Telipogon christobalensis* was discovered by Endres ca. 1873 and three specimens, now at Vienna, were sent to Professor Reichenbach, who for some reason left it undescribed. When Kraenzlin, after World War 1, was preparing his monograph of the genus, he described every snippet of material left by Reichenbach. The species was lost for almost a century until C. Dodson rediscovered it in 1963. No other material has been found recently. Kraenzlin's description is misleading in that he stated that the petals are 5-veined, while the petals of the type specimen actually have 11 veins. The type specimen is an excellent match for *Dodson 2477* with the same vein count in both petals and lip.

NOTAS: *Telipogon christobalensis* fue descubierto por Endres alrededor de 1873 y tres ejemplares, ahora en Viena, fueron enviados al profesor Reichenbach, quien por alguna razón los dejó sin describir. Cuando Kraenzlin, después de la Primera Guerra Mundial, estaba preparando su monografía del género, describió cualquier pedacito de material dejado por Reichenbach. Esta especie estuvo perdida por casi un siglo hasta cuando C. Dodson la redescubrió en 1963. Ningún otro material ha sido encontrado recientemente. La descripción de Kraenzlin es engañosa en cuanto a que establece que los pétalos tienen 5 venas, cuando los pétalos del ejemplar tipo verdaderamente tienen 11 venas. El ejemplar tipo concuerda de manera excelente con el ejemplar *Dodson 2477* con el mismo conteo de venas tanto en los pétalos como en el labelo.

TELIPOGON COSTARICENSIS Schltr., Rep. Spec. Nov. 9: 166. 1911.

TYPE: *COSTA RICA*: Forests of El General, alt. ca. 600 m, Jan. 1891, *Pittier 3527* (Schltr. original sketch, AMES!).

SYNONYM: *T. buenavistae* Krzl., Ann. Nat. Hist. Wien 33: 33. 1919.

DISTRIBUTION: Costa Rica.

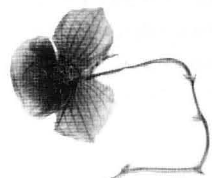
Plant large, caulescent, total stem to 75 cm long, branched apically, the branches to 10 cm long; roots coarse, produced along the stem. Leaves alternate, distichous, oblong, obtuse at the apex, to 8 x 1.5 cm. Inflorescence terminal or lateral, terete, seldom branched, to 45 cm tall, 5-to 11-flowered, the flowers produced singly in succession. Flower color variable, yellow to yellow-brown, usually with a large brown spot at the base of each petal and lip, the vein lines green or brown, with or without reticulations, the column and spines dark brown. Sepals equal; ovate; to 1.5 x 0.9 cm; petals broadly elliptical, obtuse at the apex, apiculate, to 2.8 x 2.5 cm, 9-to 11-veined; lip broadly ovate, obtuse at the apex, apiculate, to 3.3 x 1.9 cm, 17-to 19-veined, the base of the lip swollen to form an hirsute collar around the lower half of the column with an indistinct keel down the front; column swollen under the lower edge of the stigma, with 3 equal, dense bundles of stiff spines.

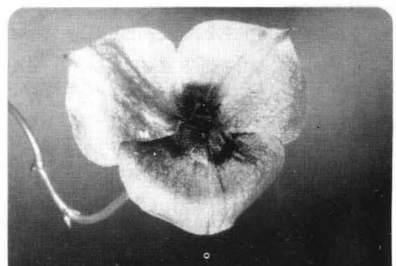
ILLUSTRATIONS: Schltr. original sketch (AMES!).
Sketch made from type of *T. buenavistae* (without flower) (AMES!).
L. C. Vieira No. 17 (JAUM, RPSC).

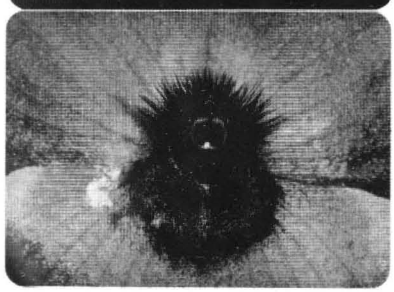
DISTINGUISHING FEATURES:

Scape terete.
Petals 9-to 11-veined; lip 17-to 19-veined.
Callus lacking, the base of the lip swollen to form a collar with a keel down the front.
Column swollen under the stigma with 3 equal dense bundles of stiff spines.
Plant long caulescent.

OTHER SPECIMENS SEEN: *COSTA RICA*: SAN JOSE: 5 km NW of Villa Mills, summit of Interamerican highway San Jose-El General, alt. 3200-3300 m, 4 April 1973, *W. Burger & J Gentry 9063* (F, AMES); same locality, alt 2800 m, 15 Sep. 1961, *Weber 6012* (AMES); near Villa Mills, 20 Mar 1958, *C.. Lankester L-9* (CR); Fila de Nivel, below







FLORA DE Costa Rica

Telipogon costaricensis Schltr.

Province of San José, in front of La Georgina, km 84 of the Pan American Highway, at 3000 m, epiphytic on mossy oak trees.

Petals and lip light brown at the base, yellow at the apex, the petals with 9 veins; lip with 17 veins and a big hairy swelling at the base; column brown with 3 equal bundles of dense, long, hard hairs; pollinia yellow suffused with brown.

Colector: R. Escobar, H. García, O. Pérez & D.E. de Retana

No. 3524 Fecha, 8 October 1984

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

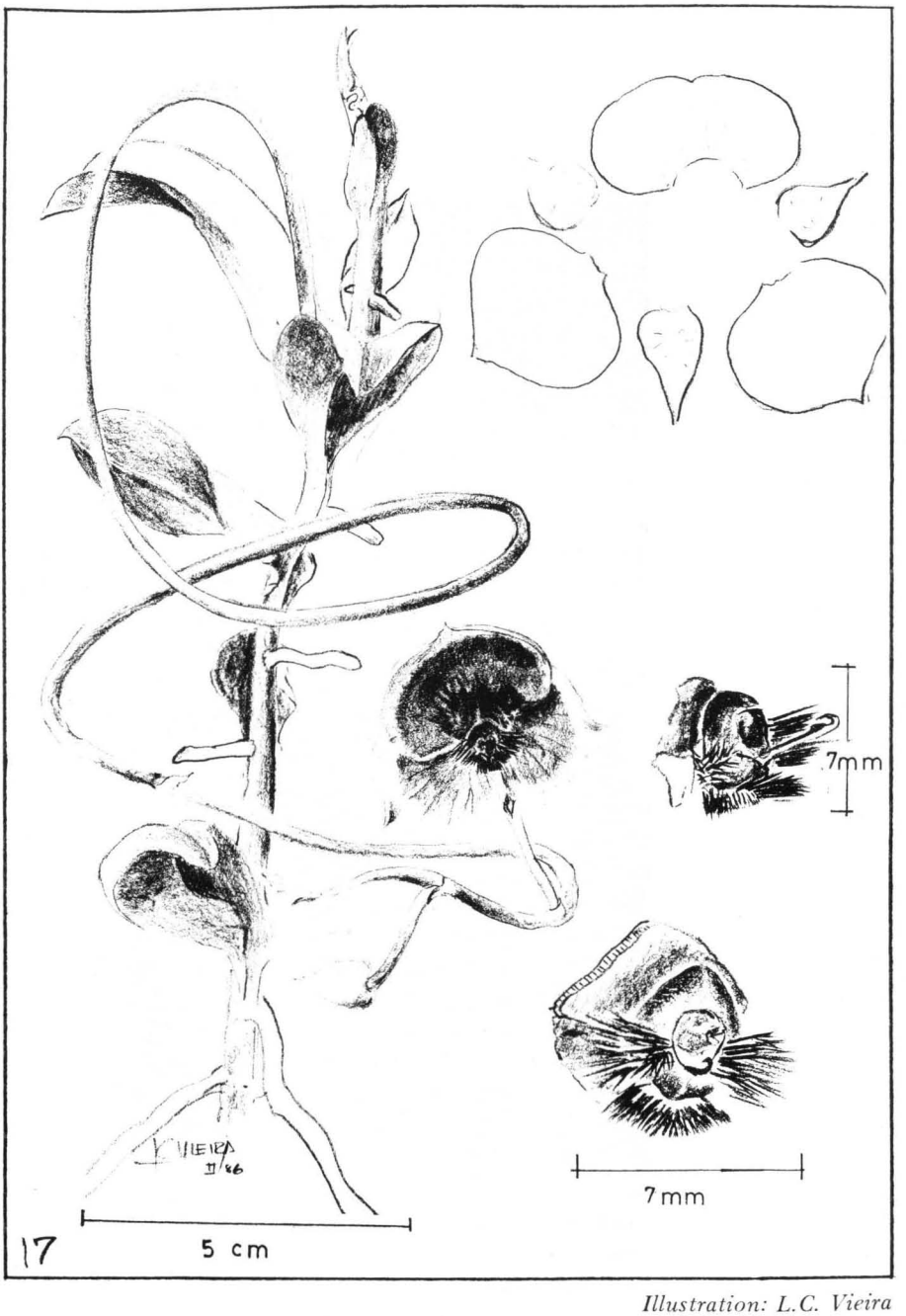


Illustration: L.C. Vieira

Telipogon costaricensis

Villa Mills toward División, alt ca. 2750 m, collected by A. Campos, May 1984, cultivated near La Georgina, flowered in cultivation 22 Oct 1984, *R. Escobar & R. Vega 3572* (JAUM); same locality, 19 Jul 1976, *A. Jimenez sn* (USJ 15544); in front of La Georgina, km 94 Pan American Highway, alt. 3000 m, 3 Mar 1979, *C. Todzia 569* (CR); same locality, alt 3090 m, epiphytic on mossy oak trees, 8 Oct 1984, *R. Escobar, O. Perez, M. Garces & D. E. de Retana 3524* (JAUM); near La Georgina, alt 3120 m, collected by A. Campos, 8 Oct 1984, *R. Escobar, et al. 3525* (RPSC, USJ, CR, MO); same locality, collected by A. Campos, 22 Oct 1984, *R. Escobar & R. Vega 3581* (JAUM, RPSC, MO, USJ,); Buenavista, near Ojo de Agua, alt. 3000 m, *Endres sn* (W - type of *T. buenavistae* Krzl.). CARTAGO: Trail from Canaan to Chirripo via Los Angeles, above and north of Río Talari, alt 3100-3200 m, *W. Burger 8353* (CR); same locality, Jan 1970, *W. Burger & R. Liesner 7388* (RPSC); Chirripó, Cueva de Altamira, alt. 3000 m, Aug. 1971, *L. D. Gomez 3431* (CR); Cerros Cuericí, Parque Nacional Chirripó, alt 3200 m, 16 Sep. 1983, *G. Davidse 24808* (MO, CR); Cordillera of Talamanca, Pacific slopes of Chirripó massif, alt 3000-3100 m, in oak forest, 5 Apr 1969, *G. Davidse & R. Pohl 1613* (F, MO, RPSC); Trail from Canaán to Chirripó via Los Angeles above the Río Talari, 3100-3200 m, 19-22 Jan 1970, *W. Burger & R. Liesner 7388* (MO, F, RPSC).

NOTES: From the western side of Cerro de la Muerte where this species was found, can be seen the 'Valle del General". There is an error in the locality given for the type specimen because no *Telipogon* can be found at an altitude of 600 m. It could be a typographic error and could have been intended to read "2600 m". At the Herbarium of the National Museum (CR) there is a specimen labeled "Pittier 3527" that was considered to be an isotype, but the sample consists of two leaves of a sterile *Vanilla*. This not only adds confusion to the type locality but brings into question the possibility that the collection number of the type is incorrect. The only existing record of the type of *T. costaricensis* is a sketch prepared under the supervision of R. Schlechter and sent to O. Ames. It

T. costaricensis
(R. Escobar 3524)

is a good match for the material cited above and for the type of *T. buenavistae* Krzl., which we have studied, with the exception of the shape of the callus, which is probably an artifact of drying and boiling for the preparation of the sketch. The shape of the lip in the drawing is more clawed than in most specimens.

This species is very common around La Georgina on the western side of Cerro de la Muerte and grows associated with *T. monticola*. It was common on the Chirripó Massif but that area was burned in 1984.

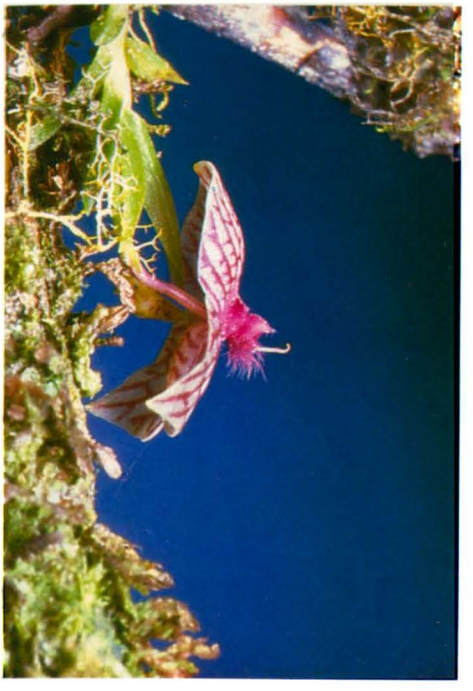
NOTAS: Del costado occidental del Cerro de la Muerte, en donde se encuentra esta especie, puede verse el "Valle del General". Hay un error en la localidad dada para el ejemplar tipo, puesto que no se encuentra ningún *Telipogon* a altitudes de 600 mts. Puede tratarse de un error tipográfico, cuando se quería anotar "2600 mts". En el Herbario del Museo Nacional (CR) existe un ejemplar marcado "Pittier 3527" el cual se consideraba era un isotipo, pero la muestra consiste en dos hojas de una *Vanilla* estéril. Esto no sólo añade confusión en cuanto a la localidad tipo, sino que trae a colación la posibilidad de que el número de colecta del tipo sea incorrecto. El único registro existente del tipo de *T. costaricensis* es un dibujo preparado bajo la supervisión de R. Schlechter y enviado a O. Ames. Este concuerda bastante bien con el material citado arriba y con el tipo de *T. buenavistae* Krzl., que nosotros hemos estudiado, con la excepción de la forma del callo lo cual es probablemente producto del secar y hervir para preparar el dibujo. La forma del labelo en el dibujo es más unguiculada que en la mayoría de los ejemplares.

Esta especie es muy común en los alrededores de La Georgina en el costado occidental del Cerro de la Muerte y crece asociada con *T. monticola*. Era común en el Macizo Chirripó pero esta zona se quemó en 1984.

TELIPOGON ELCIMEYAE Braas & Horich, Die Orchidee 33: 91. 1982.

TYPE: *COSTA RICA*: CARTAGO: La Estrella de Cartago, Río Estrella, alt. ca. 1500-1600 m, forwarded by C. Horich, Oct 1981, L. A. Braas 39 (private herbarium L. A. Braas, holotype).

DISTRIBUTION: Costa Rica.



T. ecimeyae
(R. Escobar 3516)

FLORA DE Costa Rica
Telipogon alcimeyae Braas & Horich
Province of Cartago, near school of San Carlos de la Estrella, alt 1760 m, growing mixed with T. biolleyi on Psidium guajava, 3 to 5 meters from the ground.
Petals white with 9 reticulated, branched veins and burgundy pubescense at the base, the veins red-maroon; lip white with 15 red-maroon veins, the lip without elevated callus, but with a small, shortly pubescent, dark burgundy blotch at the base; column with 3 small, equal bundles of burgundy hairs; pollinia red.

Colector R. Escobar, H. Garcés & W. Ballesteros

No. 3516 Fecha, 6 October 1984

HERBARIO JARDIN BOTANICO JOAQUIN ANTONIO URIBE

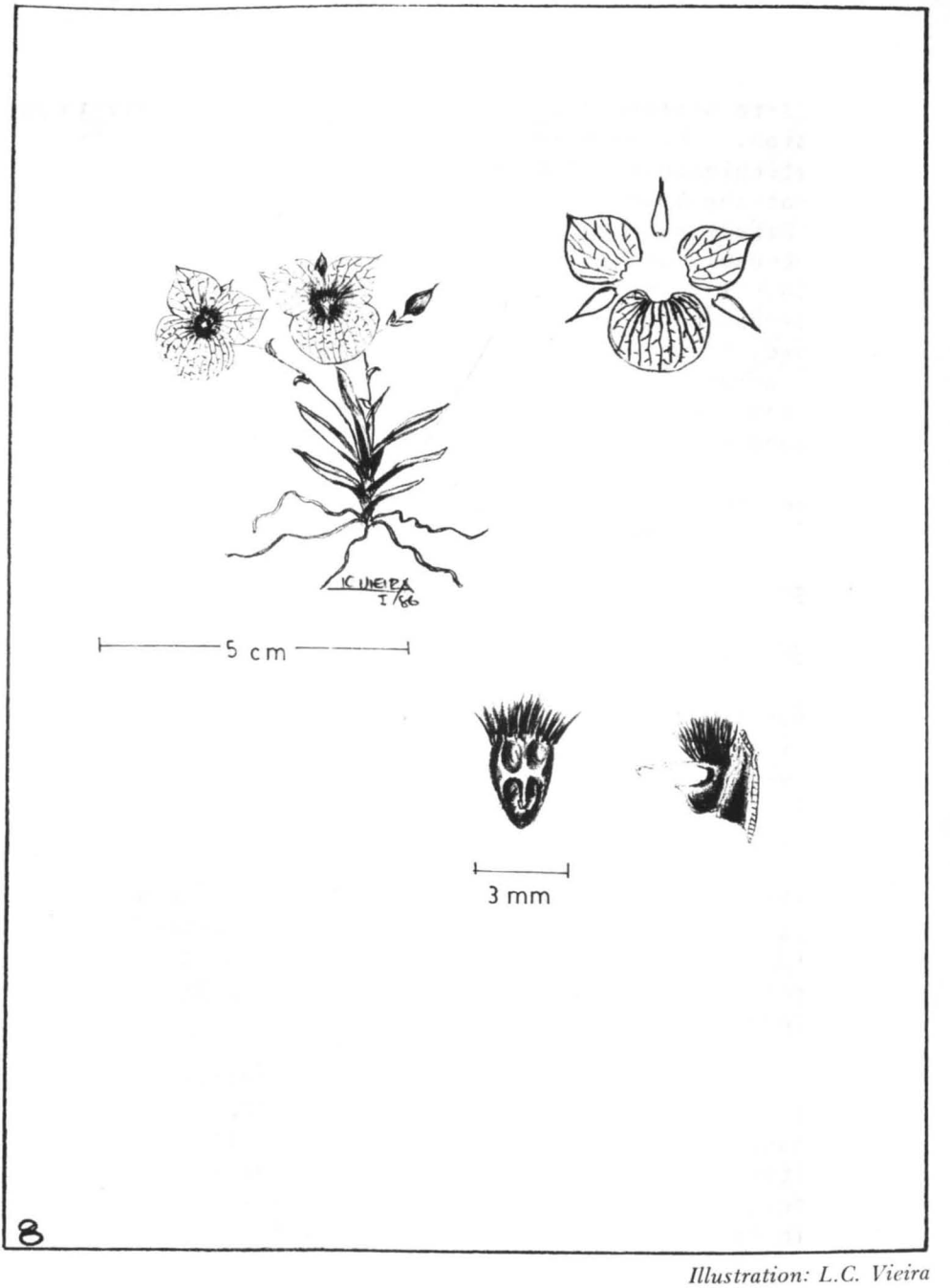


Illustration: L.C. Vieira

Telipogon elcimeyae

Plant very small, caespitose, stem to 1 cm long; roots fine, produced from the base of the stem. Leaves elliptic, acute at the apex, to 1 x 0.3 cm. Inflorescence terminal, terete, filamentous, to 3 cm long, 3-to 4-flowered, the flowers produced singly in succession. Flowers white with red-maroon vein lines and reticulations, the petals and lip with a wine-red blotch at the base, the column wine-red, the pollinia red. Sepals narrowly ovate, concave, 0.5 x 0.2 cm; petals broadly ovate, acute at the apex, acuminate; 1.1 x 0.8 cm, 9-veined, veins branched; lip broadly ovate, truncate-obtuse at the apex, apiculate, 1.5 x 0.9 cm; 15-veined, the base of the lip forming a finely hirsute collar around the base of the column; column with a protruding pubescent lobe below the stigma, with 3 equal bundles of soft spines.

ILLUSTRATIONS: L. C. Vieira No. 8 (JAUM, RPSC).
Braas, Die Orchidee 33: 92. 1982

DISTINGUISHING FEATURES:

Scape terete, filamentous.
Petals 9-veined; Lip 15-veined. Flowers white with red-maroon vein lines and column.
Callus lacking.
Column with a protruding lobe below the stigma, 3 equal bundles of red spines.
Plant tiny, caespitose.

OTHER SPECIMENS SEEN: *COSTA RICA*: CARTAGO: near school of San Carlos de La Estrella, alt 1760 m, growing mixed with *T. biolleyi* on *Psidium guayava*, 3 to 5 meters above the ground *R. Escobar, M. Garces & W. Ballestero 3516* (JAUM, RPSC, CR, USJ, MO).

NOTES: The type locality given for this species is not correct. It is not Rio Estrella as stated, but near the school of San Carlos de La Estrella. It was found by Walter Ballestero and several plants were acquired by Clarence K. Horich who forwarded them to Lothar A. Braas in Germany. It has been collected several times

by Sr. Ballestero, always in the same two guava trees. All the other guava trees in the area are devoid of *T. elcimeyae* but host numerous plants of *T. biolleyi*. *Telipogon elcimeyae* is the smallest member of the genus in Costa Rica. It is also the only species from the region that presents white flowers.

NOTAS: La localidad del tipo para esta especie no es correcta. No se trata del Río Estrella como se anota, sino de un sitio cerca a la escuela de San Carlos de la Estrella. Fue encontrado por Walter Ballestero y varias plantas fueron adquiridas por Clarence K. Horich quien se las envió a Lothar A. Braas en Alemania. Ha sido colectado varias veces por el Sr. Ballestero, siempre en los mismos dos árboles de guayaba. Todos los otros guayabos del área están desprovistos de *T. elcimeyae* pero hospedan numerosas plantas de *T. biolleyi*. *Telipogon elcimeyae* es el más pequeño miembro del género en Costa Rica. Es también la única especie de la región que presenta flores blancas.

ACKNOWLEDGEMENTS

We wish to thank Dr. Carlyle Luer for doing the Latin diagnosis and Dr. Luis Carlos Vieira for preparation of the botanical illustrations. We also thank all those persons in Costa Rica who contributed to the information base which has made this treatment possible.

RECONOCIMIENTOS

Queremos agradecer al Dr. Carlyle Luer por hacer las descripciones en latín y al Dr. Luis Carlos Vieira por las ilustraciones botánicas. También damos las gracias a todas aquellas personas en Costa Rica que contribuyeron a la información básica que hizo posible este estudio.