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with Emphasis on Vascular Epiphytes

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## Feature Article

### *Stelis of Bolivia by Carlyle Luer*

Edited by: A.L.V. Toscano de Brito



*Dedicated to the memory of Roberto Vásquez Ch. of Bolivia (left),  
here standing next to Jane Luer, Walter Teague, and Carl Luer.*

*Bolivia, 1997*

THE GENUS *STELIS* SW. (ORCHIDACEAE) IN BOLIVIA

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ABSTRACT. Following a brief history and discussion of the genus *Stelis* Sw. in Bolivia, the 131 currently known species and the following 88 new species are described and illustrated with black and white line drawings:

- S. aberrans* Luer & R.Vásquez  
*S. aciculifolia* Luer & R.Vásquez  
*S. adelphae* Luer & R.Vásquez  
*S. amethystina* Luer & R.Vásquez  
*S. aurantiaca* Luer & R.Vásquez  
*S. bacriosa* Luer & R.Vásquez  
*S. ballatrix* Luer & R.Vásquez  
*S. beckii* Luer & R.Vásquez  
*S. beniënsis* Luer  
*S. brachystachya* Luer & R.Vásquez  
*S. caldaria* Luer & R.Vásquez  
*S. cardenasii* Luer & R.Vásquez  
*S. carnosipetala* Luer & R.Vásquez  
*S. cavatella* Luer & R.Vásquez  
*S. chuspipatensis* Luer & R.Vásquez  
*S. citrinella* Luer  
*S. clausa* Luer & R.Vásquez  
*S. cloesiorum* Luer & R.Vásquez  
*S. coccidata* Luer & R.Vásquez  
*S. comosa* Luer & R.Vásquez  
*S. consors* Luer & R.Vásquez  
*S. coroicensis* Luer & R.Vásquez  
*S. cubicularia* Luer & R.Vásquez  
*S. darwinii* Luer & R.Vásquez  
*S. dasysepala* Luer & R.Vásquez  
*S. delasotae* Luer  
*S. dinoi* Luer & R.Vásquez  
*S. dolabrata* Luer  
*S. enervis* Luer  
*S. farinoso* Luer & R.Vásquez  
*S. florulenta* Luer  
*S. fons-stellarum* Luer & R.Vásquez  
*S. fragilis* Luer  
*S. fuchsii* Luer & R.Vásquez  
*S. gibbosa* Luer & R.Vásquez  
*S. ibischiorum* Luer & R.Vásquez  
*S. inquisiviënsis* Luer & R.Vásquez  
*S. irrasa* Luer & R.Vásquez  
*S. jubata* Luer & R.Vásquez  
*S. kilimanjaro* Luer & R.Vásquez  
*S. kroemeri* Luer  
*S. larsenii* Luer  
*S. leptochila* Luer & R.Escobar  
*S. leucantha* Luer  
*S. llipiënsis* Luer & Hirtz  
*S. marginata* Luer & R.Vásquez  
*S. micklowii* Luer  
*S. minuscula* Luer & R.Vásquez  
*S. morenoi* Luer & R.Vásquez  
*S. naniflora* Luer & R.Vásquez  
*S. nutationis* Luer & R.Vásquez  
*S. oligobotrya* Luer & R.Vásquez  
*S. onychosepala* Luer & R.Vásquez  
*S. pachypetala* Luer & R.Vásquez  
*S. patzii* Luer  
*S. pholeoglossa* Luer & R.Vásquez  
*S. praecipua* Luer & R.Vásquez  
*S. punchinello* Luer & R.Vásquez  
*S. purpurina* Luer & R.Vásquez  
*S. pycnochila* Luer & R.Vásquez  
*S. quadrata* Luer & R.Vásquez  
*S. ricii* Luer & R.Vásquez  
*S. robertoi* Luer  
*S. rudiculifera* Luer & R.Vásquez  
*S. rufescens* Luer  
*S. saavedrensis* Luer & R.Vásquez  
*S. sagittosa* Luer & R.Vásquez  
*S. saltatrix* Luer & R.Vásquez  
*S. samaipatensis* Luer & R.Vásquez  
*S. seriata* Luer & R.Vásquez  
*S. siberica* Luer & R.Vásquez  
*S. signifera* Luer & R.Vásquez  
*S. solomonii* Luer  
*S. steinbachii* Luer  
*S. strigosa* Luer & R.Vásquez  
*S. subequalis* Luer & R.Vásquez  
*S. succuba* Luer & R.Vásquez  
*S. tamboënsis* Luer & R.Vásquez  
*S. tinekae* Luer & R.Vásquez  
*S. tomcroatii* Luer & R.Vásquez  
*S. tomentosa* Luer & R.Vásquez  
*S. torrenticola* Luer & R.Vásquez  
*S. trullifera* Luer & R.Vásquez  
*S. tunariënsis* Luer & R.Vásquez  
*S. unduaviënsis* Luer & R.Vásquez  
*S. vallata* Luer  
*S. varicella* Luer & R.Vásquez  
*S. zongoënsis* Luer & R.Vásquez

Additionally, lectotypes are selected for *S. casanaënsis* Schltr. and *S. virens* Schltr.

Key words: *Stelis*, Orchidaceae, Bolivia

THE *STELIS* OF BOLIVIA

The genus *Stelis* Sw. consists of over 1000 species distributed from southern Mexico and the Antilles, through the Andes into Brazil and neighbors, with the greatest concentration in the Andes of Colombia and Ecuador, each with over 400 species. Eighty-eight new species from Bolivia are proposed. The genus is poorly known in Colombia, Venezuela, Peru, Bolivia, and Brazil. Several morphologically distinct genera with partial

DNA similarities that have been transferred recently to *Stelis* are excluded. Taxonomy is an inexact science for identification of species. When morphology is abandoned for invisible, laboratory analyses, the true purpose of taxonomy is lost.

Thaddaeus Haenke, naturalist from Bohemia of eighteenth century Austria, became employed in Peru as the Royal Botanist. He retired to Cochabamba, where he became the first botanist to work with orchids of Bolivia, but none of his

Bolivian collections of *Stelis* was published. One of his collections from Peru was published in 1827 by Presl as *Stelis connata*, another of many synonyms now attributed to the frequent and widely distributed *Stelis purpurea* (Ruiz & Pav.) Willd., which was first collected in Peru and described as *Humboldtia purpurea* in 1794 by Ruiz and Pavón.

The first species of *Stelis* from Bolivia to be described were collected about 1846 by Thomas Charles Bridges, who had been employed by the Royal Botanic Gardens, Kew, to collect specimens. Among his collections was *Stelis euspatha*, published by Reichenbach filius in 1855, and four that were published in 1858 by Lindley as *Stelis campanulifera*, *S. setacea*, *S. tenuicaulis*, and *S. trisetata*.

Four more species described from collections elsewhere in the early nineteenth century subsequently have been identified in Bolivia. *Stelis elongata* was collected in Colombia by Humboldt and Bonpland in 1801 and published by Kunth in 1816, and from Brazil, Lindley published *Stelis caespitosa* and *S. grandiflora* in 1836, and Reichenbach *Stelis ruprechtiana* in 1849. During the remaining years of the nineteenth century, collecting was occasional by individuals, Lindley and Reichenbach having published 17 additional presently accepted names that are now known to occur in Bolivia.

In his survey of the orchids of Bolivia, Schlechter (1922) included the first list of the species of *Stelis*. Twenty species are enumerated, including 12 names that are considered herein to be synonyms. Thirteen more species were published posthumously for Schlechter (1929) from collections by Otto Buchtien, a German botanist hired by the Bolivian government to organize a National Museum of Natural History. Twelve of these species were from his most noteworthy collecting area around the Haciendas Casana and Simaco

along the trail from La Paz to Tipuani in the province of Larecaja of the department of La Paz. Other collections were made by Martín Cárdenas, botanist, and José Steinbach, naturalist, in the early twentieth century.

While preparing a flora of the orchids of Bolivia, Robert C. Foster (1958) assembled a list of the 37 published species of *Stelis*. In the *Orchids of Bolivia, Vol. I, the Pleurothallidinae*, Vásquez and Ibisch (2000) describe in detail the history of the investigation of orchids in that country. They list 56 epithets for *Stelis*, but these include many that are now known to be synonyms, or misidentifications from other herbaria. About 600 collections of *Stelis* were made during a 25 year period in the last quarter of the twentieth century, mostly by the late Roberto Vásquez Ch., Carl and Jane Luer, and James Solomon of the Missouri Botanical Garden. Forty-two accepted names were known from Bolivia prior to this publication, in which 88 new species are added, for a total of 132, one third the number known from either Colombia or Ecuador.

## TAXONOMIC TREATMENT

*Stelis* Sw., J. Bot. (Schrader) 2(4): 239, t. 2, fig. 3, a–g, 1799, nom. cons.

A discussion of the conserved name, a list of synonyms, and a description of the genus with illustrations have been published in the *Stelis* of Ecuador, Part Four, *Icones Pleurothallidinarum XXX* (Luer 2009). The species of *Stelis* are divided into three sections: Section *Stelis* (Sw.) Pers. is distinguished by more or less similar sepals that are free or variously connate without forming a synsepal; Section *Humboldtia* (Ruiz & Pav.) Pers. is distinguished by the lateral sepals connivent or connate into a synsepal. In Section *Nexipous*, divided

lateral sepals are more deeply connate to the dorsal sepal than to themselves. Only one species of this section, *S. juninensis* Kraenzl., is known from Bolivia.

All species of the genus *Stelis* Sw. are distinguished by a short column that is closely surrounded by the petals and the lip into a compact unit, referred to herein as the "central apparatus." The column bears two stigmas, sometimes confluent,

and the anther with two pollinia; two short petals flank the column; and the lip below is closely associated with the abaxial surface of the column. The details of the morphology of the lip are extremely variable within the limited boundaries of a little lip. The reader should consult Luer (2009) for definitions and illustrations of the different lip types in *Stelis*.

Illustrations are grouped after the text.

### Key to the Species of *Stelis* of Bolivia

For identification, all species are first separated by habit, whether it be caespitose, prolific, or repent. These are inexactly separated into three groups by height, excluding the inflorescence: those with most mature plants small, less than eight centimeters tall, those with most mature plants between eight and 15 centimeters tall, and those taller than 15 centimeters. Intermediate-sized plants are found in both keys. Exceptionally large or small individual plants can be expected in any species, sometimes requiring a search in all three keys.

- 1 Sepals dissimilar, the lateral sepals variously connate or connivent into a synsepal .....Section **Humboldtia**. KEY I, page 4.
- 1' Sepals similar, the lateral sepals neither connate nor connivent into a synsepal Section **Stelis**.
- 2 Habit caespitose to shortly ascending
  - 3 Mature plant less than 8 cm tall .....KEY II, page 5.
  - 3' Mature plant more than 8 cm tall
    - 4 Mature plant between 8 and 15 cm tall ..... KEY III, page 7.
    - 4' Mature plant more than 15 cm tall..... KEY IV, page 9.
- 2' Habit repent to ascending, the rhizome distinct between ramicauls..... KEY V, page 10.

**Stelis** sect. *Humboldtia* (Ruiz & Pav.) Pers. Syn. Pl. 2: 254, 1807.

The synsepal, the classical character of this section, is variable. The single character that defines this section is the apposition of the tips of the lateral sepals. The inner margins of the lateral sepals vary in the degree of their contact, from completely to partially adnate or connate, adherent or coherent, to free. The associated pair of lateral sepals form a deeply concave to a shallowly concave synsepal, or sometimes, a flat synsepal, in which case there is a transition to section *Stelis* when the tips of the lateral sepals are not apposed.

In section *Humboldtia* 23 species are recognized, including 13 described herein as new.

#### KEY 1: The Species of Section *Humboldtia*

- 1 Habit caespitose
- 2 Dorsal sepal 3-veined
  - 3 Mature plant less than 12 cm tall, exclusive of inflorescence
    - 4 Petals 1-veined; lip thick, concave with the tip incurved
      - 5 Petals longer than wide, without a transverse carina .....*S. cubicularia*

- 5' Petals wider than long, thick with a transverse carina..... *S. subequalis*  
 4' Petals 3-veined  
   6 Petals with a thick, transverse margin; lip with a high dorsal callus.....*S. gibbosa*  
   6' Petals triangular, subacute; bar of the lip with a short protrusion.....*S. cloesiorum*  
 3' Plant more than 12 cm tall  
   7 Petals and lip acuminate-apiculate .....*S. pardipes*  
   7' Petals and lip not acuminate-apiculate  
     8 Dorsal sepal 5–6 mm long ..... *S. darwinii*  
     8' Dorsal sepal 2–3 mm long  
       9 Sepals pusticulate within ..... *S. varicella*  
       9' Sepals smooth within  
         10 Lip concave with the tip thick, incurved ..... *S. cubicularia*  
         10' Lip not concave with the tip thick, incurved  
           11 Lip with a round callus on a broad, descending dorsum .....*S. nutans*  
           11' Lip without a callus on a cleft, descending dorsum .....*S. dolabrata*  
 2' Dorsal sepal 5–7-veined  
   12 Sepals and petals minutely pubescent ..... *S. chuspiatensis*  
   12' Sepals and petals glabrous  
     13 Ovaries usually swollen..... *S. heterosepala*  
     13' Ovaries not usually swollen  
       14 Floral bracts elongate, often more or less undulate, 8–12 mm long .....*S. purpurea*  
       14' Floral bracts 3–7 mm long, not as above  
       15 Plant large, leaf ca. 15 cm long, ca. 3 cm wide..... *S. kroemeri*  
       15' Plant medium, leaf ca. 8 cm long, ca. 1.5 cm wide .....*S. cardenasii*  
 1' Habit not caespitose  
 16 Habit prolific, a ramicaul borne from the apex of a ramicaul  
   17 Petals and lip acuminate-apiculate ..... *S. trisetia*  
   17' Petals and lip not acuminate-apiculate  
     18 Petals 4- to 5-veined; lip deeply concave ..... *S. cavatella*  
     18' Petals 3-veined; lip not deeply concave ..... *S. truncata*  
 16' Habit ascending, repent  
   19 Mature plant less than 3 cm tall ..... *S. naviculigera*  
   19' Mature plant more than 3 cm tall  
     20 Inflorescence shorter than the leaf; dorsal sepal obtuse .....*S. siberica*  
     20' Inflorescence longer than the leaf  
       21 Lip 3-lobed with middle lobe acute .....*S. elongata*  
       21' Lip obtuse, not 3-lobed  
       22 Dorsal sepal acute ..... *S. tenuicaulis*  
       22' Dorsal sepal subacute to obtuse  
       23 Plant ca. 15 cm tall; sepals ca. 5 mm long .....*S. brittoniana*  
       23' Plant ca. 5 cm tall; sepals ca. 2 mm long .....*S. tomcroatii*

**Stelis** sect. **Stelis** (Sw.) Pers. Syn. Pl. 2: 254, 1807.

Except for the 23 species of section *Humboldtia*, all the rest, including one, or possibly two species of section *Nexipous*, are treated in section *Stelis*, in which 109 species are recognized herein, including 75 described as new.

### Key to the Species of Section *Stelis*

**KEY II. Sepals similar, habit caespitose to shortly ascending, mature plant less than 8 cm tall excluding inflorescence.**

#### *The dancers*

- 1 Pedicels longer than the sepals; petals longer than wide  
 2 Petals obtuse with subulate tip

- 3 Sepals ca. 4 mm long; lip with a furrowed, basal callus ..... *S. antennata*  
 3' Sepals ca. 2.5 mm long; lip with a smooth basal callus..... *S. unduaviënsis*  
 2' Petals acute, triangular  
 4 Petals long-acuminate; lip obtuse ..... *S. saltatrix*  
 4' Petals and lip triangular, acute..... *S. ballatrix*

***All the rest***

- 1' Pedicels not longer than the sepals; petals not longer than wide  
 5 Floral bracts 4 mm long, conspicuous ..... *S. sagittosa*  
 5' Floral bracts less than 3 mm long, inconspicuous  
 6 Sepals 1-veined; petals 1-veined..... *S. patzii*  
 6' Sepals more than 1-veined  
 7 Sepals 3-veined  
 8 Sepals glabrous to cellular  
 9 Petals 1-veined;  
 10 Lip with the apex acute  
 11 Lip without a bar..... *S. aberrans*  
 11' Lip with a proportionately large callus ..... *S. kilimanjara*  
 10' Lip with the apex obtuse to rounded  
 12 Ramicaul less than 3 mm long ..... *S. parvifolia*  
 12' Ramicaul more than 5 mm long  
 13 Lip with bar thick, the dorsum pubescent ..... *S. llipiënsis*  
 13' Lip with neither bar thick, nor pubescent on the dorsum  
 14 Sepals pale yellow to white, less than 1.5 mm long ..... *S. pusilla*  
 14' Sepals purple, 2 mm long..... *S. purpurina*  
 9' Petals 3-veined  
 15 Lip concave below a bar, type A  
 16 Lip with bar deeply cleft and bitumidous  
 17 Lip with dorsum coarsely pubescent..... *S. comosa*  
 17' Lip with dorsum not coarsely pubescent ..... *S. tamboënsis*  
 16' Lip with bar not deeply cleft  
 18 Dorsal sepal ovate, obtuse ..... *S. ruprechtiana*  
 18' Dorsal sepal acute, distinctly longer than the lateral sepal ..... *S. tineekae*  
 15' Lip not concave below a bar, not type A  
 19 Lip with an acute apiculum..... *S. coccidata*  
 19' Lip without an apiculum..... *S. praecipua*  
 8' Sepals ciliate or pubescent  
 20 Sepals long-ciliate  
 21 Lip obtuse, apiculate ..... *S. fragilis*  
 21' Lip obtuse, not apiculate ..... *S. conccina*  
 20' Sepals pubescent, not long-ciliate  
 22 Lip minutely apiculate  
 23 Plant slender; inflorescence weak, loosely flowered ..... *S. guianensis*  
 23' Plant stout; inflorescence not weak, loosely flowered ..... *S. argentata*  
 22' Lip not apiculate  
 24 Lip truncate at apex with a prominent glenion..... *S. quadrata*  
 24' Lip rounded at apex without obvious glenion ..... *S. tomentosa*  
 7' Sepals 5-veined  
 25 Raceme congested, nearly simultaneously flowered..... *S. grandiflora*  
 25' Raceme loose, successively flowered  
 26 Sepals ca. 5 mm long and wide, glabrous..... *S. carnosipetala*  
 26' Sepals ca. 3 mm long and wide, minutely pubescent..... *S. tunariënsis*



**KEY III. Sepals similar, habit caespitose to shortly ascending, mature plant between 8 and 15 centimeters tall.**

- 1 Sepals 1-veined (with or without basal, vestigial lateral veins); petals 1-veined
- 2 Sepals glabrous
  - 3 Lip concave below an incised bar, type A.....*S. leucantha*
  - 3' Lip without the bar not-incised
    - 4 Lip elliptical-ovate, without lobes
      - 5 Lip four tenths of a millimeter long ..... *S. naniflora*
      - 5' Lip one millimeter long
        - 6 Lip with glabrous, basal callus.....*S. samaipatensis*
        - 6' Lip with farinose, basal callus ..... *S. farinosa*
    - 4' Lip transversely trilobed
      - 7 Lip with ovoid, basal callus ..... *S. dinoi*
      - 7' Lip without a basal callus.....*S. zongoënsis*
- 2' Sepals pubescent
  - 8 Lip with an incised bar, type A ..... *S. minuscula*
  - 8' Lip without a bar..... *S. enervis*
- 1' Sepals more than 1-veined,
  - 9 Sepals 3-veined, often incomplete
    - 10 Petals 1-veined
      - 11 Sepals glabrous, or microscopically pubescent, invisible to the unaided eye
      - 12 Raceme single
        - 13 Sepals less than 2 mm long
          - 14 Lip apex triangular ..... *S. aprica*
          - 14' Lip obtuse .....*S. fuchsii*
        - 13' Sepals 2–3 mm long
          - 15 Lip concave, the bar deeply and widely divided ..... *S. campanulifera*
          - 15' Lip concave with the bar not divided
            - 16 Lip transversely reniform ..... *S. seriata*
            - 16' Lip subquadrate..... *S. rosulenta*
        - 12' Racemes two or more
          - 17 Lip with a broad, flat callus filling basal half ..... *S. trullifera*
          - 17' Lip not with a flat callus filling basal half
            - 18 Stigmatic lobes well developed, outside the clinandrium ..... *S. consors*
            - 18' Stigmatic lobes within the margins of the clinandrium
              - 19 Sepals acute, ca. 2.5 mm long .....*S. irrasa*
              - 19' Sepals obtuse, 1.5 mm or less long ..... *S. hylophila*
        - 11' Sepals ciliate or pubescent (microscopic, not apparent to unaided eye)
          - 20 Raceme markedly to slightly flexuous..... *S. flexuosissima*
          - 20' Raceme not flexuous
            - 21 Sepals sparsely, microscopically pubescent.....*S. irrasa*
            - 21' Sepals diffusely pubescent
              - 22 Petals distinctly larger than the lip
                - 23 Lip concave below a thin bar..... *S. succuba*
                - 23' Lip shallow, not concave, nearly flat .....*S. dasysepala*
              - 22' Petals not larger than the lip
                - 24 Lip suborbicular, inflated, deeply concave.....*S. pholeoglossa*
                - 24' Lip neither suborbicular nor inflated
                  - 25 Racemes 2 or more; sepals pubescent.....*S. euspatha*
                  - 25' Raceme single; sepals microscopically pubescent ..... *S. rosulenta*
        - 10' Petals 3- or more veined
          - 26 Sepals glabrous
            - 27 Racemes shorter than the leaf

- 28 Leaf narrowly semiterete ..... *S. aciculifolia*  
 28' Leaf not semiterete  
 29 Lip with the apex broadly rounded ..... *S. oligobotrya*  
 29' Lip with a short triangular angle at the tip ..... *S. rufescens*  
 27' Racemes as long as or longer than an elliptical leaf  
 30 Roots ca. 2 mm thick ..... *S. pachyrhiza*  
 30' Roots slender, less than 1.5 mm thick  
 31 Sepals and lip acute ..... *S. inquisiviensis*  
 31' Sepals and lip obtuse  
 32 Lip thin and concave thin, notched bar ..... *S. rutrum*  
 32' Lip not thin and concave thin, notched bar  
 33 Lip thick, concave with apex incurved ..... *S. rudiculifera*  
 33' Lip not thick, concave with apex incurved  
 34 Inflorescence elongated with peduncle as long as leaf ..... *S. nutationis*  
 34' Inflorescence with peduncle shorter than leaf ..... *S. citrinella*  
 26' Sepals ciliate, pubescent, minutely pubescent or papillose  
 35 Plant and raceme pendent ..... *S. pendens*  
 35' Plant and raceme not pendent  
 36 Inflorescence shorter, or as long as the leaf;  
 37 Sepals long-ciliate at the tip ..... *S. jubata*  
 37' Sepals not long-ciliate at the tip  
 38 Leaf ca. 5–6 mm wide ..... *S. microtatantha*  
 38' Leaf ca. 1–2 cm wide  
 39 Lip with the dorsum glabrous ..... *S. herzogii*  
 39' Lip with the dorsum pubescent ..... *S. coroicensis*  
 36' Inflorescence exceeding the leaf  
 40 Floral bracts prominent, 3–5 mm long ..... *S. solomonii*  
 40' Floral bracts not prominent, 1–3 mm long  
 41 Petals at least 2 mm wide ..... *S. torrenticola*  
 41' Petals less than 1.5 mm wide  
 42 Lip minutely apiculate with bar convex ..... *S. argentata*  
 42' Lip not apiculate  
 43 Sepals long-pubescent  
 44 Lip obtusely triangular at the apex ..... *S. lanata*  
 44' Lip flat, truncate ..... *S. vallata*  
 43' Sepals not long-pubescent  
 45 Sepals sparsely and minutely papillose ..... *S. ricii*  
 45' Sepals minutely pubescent  
 46 Ramicauls slender; leaves acute ..... *S. amethystina*  
 46' Ramicauls stout; leaves obtuse  
 47 Leaf more than 5 cm wide, abruptly petiolate ..... *S. phaeomelena*  
 47' Leaf less than 4 cm wide, not abruptly petiolate ..... *S. caldaria*  
 9' Sepals 5-veined  
 48 Sepals deeply connate, broader than long ..... *S. grandiflora*  
 48' Sepals not deeply connate and broader than long  
 49 Sepals long-ciliate-pubescent ..... *S. iwatsukae*  
 49' Sepals not long-ciliate-pubescent  
 50 Leaves more than 3 cm wide; sepals glabrous ..... *S. ottonis*  
 50' Leaves 1–2 cm wide; sepals minutely pubescent ..... *S. pachypetala*

**KEY IV. Sepals similar, habit caespitose to shortly ascending, mature plant 15 centimeters tall and taller**

- 1 Sepals 1-veined
  - 2 Sepals with thick, cellular margins ..... *S. marginata*
  - 2' Sepals pubescent..... *S. florulenta*
- 1' Sepals 3- or more veined
  - 3 Dorsal sepal 3-veined
    - 4 Petals 1-veined
      - 5 Sepals pubescent
        - 6 Sepals loosely long-pubescent, especially along the margins
          - 7 Rachis flexuous..... *S. flexuosissima*
          - 7' Rachis not flexuous ..... *S. euspatha*
        - 6' Sepals short-pubescent
          - 8 Sepals sparsely short-pubescent..... *S. irrasa*
          - 8 Sepals densely short-pubescent
            - 9 Sepals with the tips recurved and uncinat..... *S. onychosepala*
            - 9' Sepals with the tips neither recurved nor uncinat..... *S. morenoi*
    - 5' Sepals glabrous
      - 10 Racemes multiple
        - 11 Petals thick and concave at the apex ..... *S. trullifera*
        - 11' Petals thin, not thick and concave at the apex
          - 12 Lip type B, bar not cleft ..... *S. hylophila*
          - 12' Lip type A, bar cleft..... *S. beniënsis*
      - 10' Raceme solitary
        - 13 Raceme congested; sepals expanded, recurved; lip type B ..... *S. hylophila*
        - 13' Raceme lax; sepals antrorse..... *S. strigosa*
- 4' Petals 3-veined
  - 14 Sepals visibly glabrous, or microscopically pubescent
    - 15 Lip acute at the apex ..... *S. juninensis*
    - 15' Lip round at the apex ..... *S. mandoniana*
  - 14' Sepals ciliate or pubescent
    - 16 Rachis flexuous
      - 17 Plant and inflorescence pendent..... *S. cauda-equina*
      - 17' Plant and inflorescence erect ..... *S. flexuosissima*
    - 16' Rachis more or less strict
      - 18 Sepals concave, connivent, ciliate ..... *S. clausa*
      - 18' Sepals expanded, not ciliate
        - 19 Plant slender; petals proportionately large, 3-5-veined ..... *S. torrenticola*
        - 19' Plant stout; petals not proportionately large
          - 20 Leaf more than 5 cm wide, abruptly petiolate ..... *S. phaeomelana*
          - 20' Leaf less than 4 cm wide, not abruptly petiolate
            - 21 Floral bracts protruding, 4-7 mm long ..... *S. steinbachii*
            - 21' Floral bracts short, ca. 2 mm long ..... *S. caldaria*
- 3' Dorsal sepal 5-veined
  - 22 Sepals large, ca. 5 or 6 mm long and wide
    - 23' Lateral sepals inflated, twisted ..... *S. punchinello*
    - 23' Lateral sepals neither inflated nor twisted
      - 24 Lip with apex rounded and minutely apiculate ..... *S. superbiens*
      - 24' Lip with apex rounded without apiculum..... *S. aurantiaca*
  - 22' Sepals small to medium in size, less than 4 mm long and wide
    - 25 Sepals glabrous ..... *S. ottonis*
    - 25' Sepals long-ciliate ..... *S. iwatsukae*

**KEY V. Sepals similar, habit repent, or ascending with the rhizome at least 5 mm long between ramicauls (no prolific species of sect. *Stelis* is known from Bolivia)**

\*The sepals of all species in Key V are 3-veined.

- 1 Plant less than 8 cm tall
  - 2 Petals 1-veined
    - 3 Sepals less than 2 mm long
      - 4 Sepals obtuse ..... *S. pusilla*
      - 4' Sepals acute and apiculate at the tip ..... *S. repens*
    - 3' Sepals more than 2 mm long
      - 5 Lip rounded at the tip, the bar widely cleft ..... *S. signifera*
      - 5' Lip shortly acuminate, the bar not cleft
        - 6 Sepals ovate ..... *S. bacriosa*
        - 6' Sepals elliptical ..... *S. saavedrensis*
  - 2' Petals 3-veined
    - 7 Lip minutely apiculate ..... *S. adelphae*
    - 7' Lip not apiculate
      - 8 Pedicels ca. 1 mm long; lip type A ..... *S. laxa*
      - 8' Pedicels 4-10 mm long
        - 9 Petals long-apiculate ..... *S. antennata*
        - 9' Petals not apiculate ..... *S. larsenii*
- 1' Plant more than 8 cm tall, excluding inflorescence
  - 10 Petals 1-veined
    - 11 Raceme loosely flowered; sepals acuminate at tip ..... *S. micklowii*
    - 11' Raceme densely flowered; sepals obtuse ..... *S. hylophila*
  - 10' Petals 3-veined
    - 12 Inflorescence shorter than the leaf
      - 13 Floral bract exceeding the ovary
        - 14 Lip shallow, round at the apex with broad margin ..... *S. leptochila*
        - 14' Lip obtuse at the apex with narrow margin ..... *S. scandens*
      - 13' Floral bract not exceeding the ovary
        - 15 Rhizome stout, repent ..... *S. brachystachya*
        - 15' Rhizome slender, scandent ..... *S. setacea*
    - 12' Inflorescence as long as, or longer than the leaf
      - 16 Floral bracts 5-7 mm long low in the raceme ..... *S. ibischiorum*
      - 16' Floral bracts less than 4 mm long
        - 17 Lateral sepals less than 2 mm long
          - 18 Lateral sepals smaller than the dorsal ..... *S. atra*
          - 18' Lateral sepals not smaller than the dorsal
            - 19 Rhizome stout, repent ..... *S. fons-stellarum*
            - 19' Rhizome not stout and repent
              - 20 Rhizome slender, scandent ..... *S. flexa*
              - 20' Rhizome not slender and scandent ..... *S. amethystina*
      - 17' Lateral sepals more than 2.5 mm long
        - 21 Sepals 4+ mm long; petals overlapping margins of lip ..... *S. pycnochila*
        - 21' Sepals 2-3 mm long; petals not overlapping margins of the lip
          - 22 Sepals with a transverse fold near the base ..... *S. vallata*
          - 22' Sepals without a transverse fold near the base
            - 23 Lip with an acute apiculum ..... *S. delasotae*
            - 23' Lip without an apiculum
              - 24 Lip short with low, notched bar ..... *S. beckii*
              - 24' Lip not short with low, notched bar
                - 25 Lip with thick, pubescent bar ..... *S. elegans*
                - 25' Lip with a central, forked callus ..... *S. robertoi*

***Stelis aberrans*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, near the pass between Caranavi and Alto Beni, 1559 m, 26 January 1988, *C. Luer, J. Luer & R. Vásquez 12929* (Holotype: MO). FIGURE 1.

This small, caespitose species is distinguished by a few, short inflorescences of small flowers with free, ovate sepals, the laterals being antrorse; oblong, single-veined petals; and a subcircular lip with an abrupt, triangular tip, and a pubescent callus at the base.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2–3 cm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5–8 cm long including a petiole less than 1 cm long, the blade 5–8 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** 3–4 erect, strict, congested, secund, many-flowered racemes with most flowers open simultaneously, 3–4 cm long including the peduncle less than 1 cm long, from a node below the apex of the ramicaul, with a spathe ca. 8 mm long; floral bracts oblique, acute, 1–1.5 mm long; pedicels 1.5 mm long; ovary 0.75 mm long; flowers light green; **sepals** free, similar, glabrous, thickened along margins and midvein externally, ovate, obtuse, 1-veined, but 3-veined at the base, the dorsal sepal 2.5 mm long, 1.4 mm wide, the lateral sepals antrorse, 2.5 mm long, 1.6 mm wide; **petals** membranous, oblong, concave and rounded at the tip, 0.6 mm long, 0.4 mm wide, 1-veined; **lip** ovate, with broadly rounded sides erect, subcircular, with an acute, triangular lobe at the tip, 1 mm long, 0.75 mm wide, 0.3 mm deep, with a pubescent, ill-defined, triangular callus at the truncate base, hinged to the base of the column; **column** slender, clavate, 0.5 mm long, 0.5 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *aberrans*, "aberrant," referring to unusual petals and lip.

**Comments.** This small, caespitose species from near Alto Beni is characterized by a few, secund racemes shorter than the leaf. The sepals appear single-veined but two additional, vestigial veins are present at the base. The petals are membranous, longer than wide and single-veined. The lip is type D without a bar, but with a pubescent callus at the base.

***Stelis aciculifolia*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8592* (Holotype: SEL). FIGURE 2.

This small, caespitose species is distinguished by very narrow, semiterete leaves; obtuse, three-veined petals; and a subquadrate lip with an acuminate tip.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–5 cm long, with a close tubular sheath below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly semiterete, acute, 5–8 cm long, 3.5 mm wide hydrated, longitudinally channeled, gradually narrowed below into the base. **Inflorescence** an erect, subflexuous, distichous, many-flowered raceme with many flowers open simultaneously, 4–7 cm long, flowering from the base, apex of the ramicaul, with a spathe 7–11 mm long; floral bracts oblique, acute, 1–1.25 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers greenish white;

**sepals** similar, nearly free, glabrous, elliptical, obtuse, slightly recurving, 1.5 mm long, 1 mm wide, 3-veined; **petals** transversely obovate, broadly obtuse at the tip with a narrow, thickened margin, concave, 0.6 mm long, 0.75 mm wide, 3-veined; **lip** subquadrate with an acuminate apex, 1 mm long, 0.6 mm wide, 0.4 mm deep, shallowly concave at the base of the apex at the base of the bar, the bar shallowly notched, the base broadly truncate, cellular pubescent toward the broadly truncate base, the base hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther apical, and the stigmatic lobes expanded in front of the petals.

**Distribution.** Bolivia. **Etymology.** From the Latin *aciculifolius*, "with needle-like leaves" referring to the foliage.

**Comments.** This little species is distinguished by semiterete leaves only about three millimeters wide. A minutely flowered raceme is shorter than the leaf and borne from within a proportionately large spathe. The glabrous, elliptical sepals sepals are three-veined as are the petals, and the lip with an acuminate tip. The stigmatic lobes are expanded before the petals.

**Stelis adelphae** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor

Yungas, N of Caranavi toward Alto Beni, 1550 m, 26 January 1988, C. Luer, J. Luer & R. Vásquez 12946 (Holotype: MO). FIGURES 3, 4.

The flowers of this small, repent species of section *Stelis* are similar to those of those of *S. argentata* Lindl., but this species is distinguished by a long-repent rhizome.

**Plant** small, epiphytic, repent, the rhizome slender, 0.5–2 cm long between ramicauls; roots slender. Ramicauls erect, slender, 1.5–3.5 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, 1.5–6 cm long including a petiole 0.5–1.5 cm long, the blade 0.5–1.3 cm wide in the dry state, contracted below into the petiole. **Inflorescence** an erect, subflexuous, distichous, many-flowered raceme with several flowers open simultaneously, 6–10 cm long including the peduncle 1–2 cm long, from a node below the apex of the ramicaul, with a spathe 3–5 mm long; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** similar, light yellow-green, more or less suffused with rose, shortly pubescent, ovate, obtuse, 2 mm long, 1.8 mm wide, 3-veined; **petals** purple, thin, transversely ovate, broadly rounded with a thick margin at the tip, concave, 0.6 mm long, 0.85 mm wide, 3-veined; **lip** purple, transversely subquadrate, 0.5 mm long, 0.6 mm wide, 0.5 mm deep, shallowly concave inside the apical margin, the margin thin, minutely apiculate at the center, the bar thickly convex with a long, shallow, longitudinal channel, the base minutely pubescent, broadly truncate, hinged to the base of the column;

**Distribution.** Bolivia. **Etymology.** From the Greek *adelphē*, "sister" referring to the similarity of the flowers to those of *Stelis argentata* Lindl.

**Comments.** The flowers of this little species are similar to those of the common and variable *Stelis argentata* Lindl., but the habit with the slender, long-

repent rhizome immediately distinguishes it. It is similar to the Peruvian *S. rhizomatosa* Schltr., a vegetatively larger plant.

**Paratypes.** Bolivia—Cochabamba; Chapare, old road from Villa Tunari to Cochabamba, 1349 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez* 18328 (MO); same area, 1650 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez* 18335 (MO).

***Stelis amethystina*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1500 m, 17 January 1988, *C. Luer, J. Luer & R. Vásquez* 12859 (Holotype: MO). FIGURE 5.

This densely caespitose to ascending species is distinguished by a few many-flowered racemes longer than the leaf; small, purple flowers with obtuse, microscopically pubescent sepals; three-veined petals; and a concave lip with a large glenion.

**Plant** medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2–4 cm long, with a tubular sheath from below the middle and 2 other sheaths below. **Leaf** erect, coriaceous, elliptical, acute at the tip, 4–6 cm long including a petiole 0.5 cm long, the blade 1–1.2 cm wide dry, cuneate below into the petiole. **Inflorescence** 2–4 erect, flexuous, successively many-flowered racemes 8–13 cm long including the peduncle 4–5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 0.5 mm long; flowers purple; **sepals** glabrous externally, densely minutely pubescent within, broadly ovate, obtuse, 3-veined, the dorsal sepal 1.5 mm long, 2 mm wide, connate basally to the lateral sepals, the lateral sepals 1.25 mm long, 1.5 mm wide; **petals** subcircular, concave, 0.5 mm long, 0.76 mm wide, with a low transverse callus, 3-veined; **lip** ovoid, 0.5 mm long, 0.6 mm wide, 0.5 mm deep, concave below a thick glenion with a glenion, and within the broadly obtuse apex with a thickened margin, the dorsum slightly convex, the base truncate, hinged to the base of the column-foot; **column** stout, ca. 0.5 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *amethystinus*, "a rich, purple color," referring to the flowers.

**Comments.** This species is distinguished by a dense fascicle of slender ramicauls and narrow, acute leaves, and congested racemes of distichous floral bracts. The sepals are purple, broadly obtuse and three-veined as are the petals. The lip is thick and type A with a large glenion.

*Stelis amethystina* is similar to *S. rutrum* Luer & R. Vásquez, but differs with usually more than one raceme, smaller flowers, sepals minutely pubescent within, and a thick bar of the lip.

**Paratypes.** Bolivia—Ayopaya, Sailapata, 2700 m, October 1935, *M. Cárdenas* 3299 (AMES, Herb. Card.); La Paz: Nor Yungas, SE of Coroico toward Coripata, 2000 m, 3 February 1980, *C. Luer, J. Luer & R. Vásquez* 5075 (SEL); below Unduavi, road to Yolosa Junction, 3000 m, 29 February 1980. *J.C. Solomon* 5193 (MO, SEL), *C. Luer* illustr. 21834; near Incahuaca, 2250 m, 16

January 1994, *P. Ibisch & C. Ibisch 94.0371* (LPB; MO, Herb. Vásq.), *C. Luer* illustr. 21862.

***Stelis antennata*** Garay, Bot. Mus. Leaflet. Harvard Univ. 27: 184, 1979. TYPE:

Bolivia—Cochabamba: Ayopaya, Sailapatá, 3000 m, 1 November 1935, *M. Cárdenas 3288* (Holotype: AMES). FIGURE 6.

**Plant** small to medium in size, epiphytic to lithophytic; roots slender. Ramicauls erect, slender, 2–5 cm long, enclosed by a tubular sheath from below the middle, and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse to subacute, 3–6 cm long including a petiole 1–3 long, the blade 0.7–1.2 cm wide, gradually narrowed below to the petiole. **Inflorescence** an erect, sub-lax, distichous, several- to many-flowered raceme of long-pedicellate flowers with many open simultaneously, 9–12 cm long including the peduncle 4–6 cm long, from a node below the apex of the ramicaul, with a slender spathe ca. 5 mm long; floral bracts oblique, acute, 1.5 mm long; pedicels 5–12 mm long; ovary 1.25 mm long; **sepals** purple, glabrous, ovate, acute, 3-veined, the dorsal sepal 4 mm long, 2.5 mm wide, the lateral sepals oblique 3.5 mm long, 2 mm wide, with the tip acuminate and slightly recurved; **petals** green to purple, subuliform, 3 mm long, 2 mm wide below the middle, 3-veined, acuminate above the middle into the acute tip, shallowly concave below the middle; **lip** green to purple, subquadrate, 1.5 mm long, 1.2 mm wide, concave above the middle with a thin margin, the apex rounded to truncate, thick below the middle with the dorsum microscopically furrowed, and with a small, triangular callus extending forward into the apical cavity, the base broadly truncate, hinged to the column; **column** stout, ca. 1 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *antennatus*, "with antennas," referring to the long-acuminate petals.

**Comments.** This species is the first of four superficially similar species with a long-pedicellate raceme to be described. *Stelis antennata* is distinguished by long-acuminate, subuliform, three-veined petals, and a subquadrate lip that is concave above the middle and thick below the middle and microscopically furrowed. The other three species described herein are distinguished easily by their petals. *Stelis ballatrix* Luer & R.Vásquez is distinguished by acute, triangular petals; *S. saltatrix* Luer & R.Vásquez, by long-acuminate tips of single-veined petals; and *S. unduaviënsis* Luer & R.Vásquez, by truncate petals with an abrupt, setiform process.

**Additional collections.** Bolivia: Cochabamba; Chapare, above Tucachaca, 2800 m, November 1948, *M. Cárdenas 4315* (AMES, Herb. Card.); old road from Cochabamba to Villa Tunari, 2380 m, 29 November 1992, *C. Luer, J. Luer & R. Vásquez 16499* (MO); La Paz: Murillo, valley of Río Zomgo, 3200 m, 20 February 1987, *J.C. Solomon 16149* (MO); same area, 3400 m, 17 November 1987, *J.C. Solomon 17447* (MO); Murillo, lithophytic above Río Zongo, 3200 m, 22 November 1992. *C. Luer, J. Luer & R. Vásquez 16466* (MO); Larecacha, Unutuluni, collected August 1991, flowered in cultivation in Quito, December 1991, *A. Hirtz 5656* (MO); Santa Cruz: Caballera, Karahuasi above Comarapa,



2300 m, 10 January 1994, *S. Dalström & J. Sönnemark 2031* (MO); N of Comarapa, Tinquí Laguna, 2500 m, 12 November 1995, *I.G. Vargas et al. 4180* (MO).

***Stelis aprica*** Lindl., Companion Bot. Mag. 2: 353, 1836. TYPE: Brazil—Santa Catarina, *Martius s.n.* (Holotype: K). FIGURE 7.

*Stelis catharinensis* Lindl., Companion Bot. Mag. 2: 353, 1836. Named for the Brazilian state of Santa Catarina, where the species was collected.

*Stelis minutiflora* Rchb.f. ex Hoffmanns., Linnaea 16: 237, 1842. From the Latin *minutiflorus*, "minutely flowered," referring to the inflorescence.

*Stelis crassifolia* Lindl., Edwards's Bot. Reg. 28(Misc. 9), 1842. From the Latin *crassifolius*, "thick leaved," referring to the leaves.

*Stelis miersii* Lindl., Ann. Mag. Nat. Hist. 14: 397, 1843. Named for John Miers who collected this species.

*Stelis microglossa* Rchb.f., Linnaea 22: 821, 1849. From the Greek *mikroglossa*, "a minute tongue," referring to the labellum.

*Stelis micrantha* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 93, 1881, not Sw., 1799. From the Greek *mikrantha*, "a minute flower," referring to the size of the flower.

*Stelis rodriguesii* Cogn., Fl. Bras. 3(4): 360, 1896, replaced name for *S. micrantha* Barb.Rodr., not Sw. Named for J. Barbosa Rodrigues who collected the species.

**Plant** small to medium in size, epiphytic to lithophytic, caespitose-ascending; roots slender. Ramicauls erect, slender, 4–10 cm long, enclosed by 2–3 thin, tubular sheaths at the base. **Leaf** erect, coriaceous, narrowly linear-elliptic, subacute to acute, 7–10 cm long, 0.5–1.2 cm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** an erect, subax, distichous, many-flowered raceme with many flowers open simultaneously, 8–10 cm long including the peduncle, with a few bracts, subtended by a spathe 0.5–1 cm long, from a node below the apex of the ramicaul; floral bracts thin, tubular, 1.5–2 mm long; pedicels 1 mm long; ovary 0.75–1 mm long; **sepals** yellow-green, glabrous but more or less diffusely cellular, connate basally, broadly ovate, obtuse, the dorsal sepal 1–1.75 mm long, 1–1.5 mm wide, 3-veined, the lateral sepals 1–1.5 mm long, 1.5 mm wide, 3-veined, more or less held forward; **petals** membranous, transversely elliptical, shallowly concave, 0.5–0.7 mm long, 0.5–0.8 mm wide, 1-veined, the apex broadly rounded, with a narrow margin; **lip** green, subquadrate with a prominent, abrupt, acute, triangular apiculus, 0.6 mm long excluding the apiculus 0.3 mm long, the body 0.6 mm wide, 0.4 mm deep, concave between margins of the bar, microscopically pubescent toward the base, the base broadly truncate, hinged to the column; **column** stout, 0.6 mm long, 0.6 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia (not yet reported from Bolivia), Brazil, Colombia, Ecuador, Peru. **Etymology.** From the Latin *apricus*, "growing in sunshine," referring to a habitat.

**Comments.** *Stelis aprica* Lindl. is frequent and widely distributed in southern Brazil, but it is uncommon in the Andes as far N as Colombia. Collections of other species from the Andes have been misidentified as *S. aprica*. It is characterized by a small to medium sized habit with narrowly linear leaves and a many-flowered raceme about as long with tiny flowers. The three-veined sepals are obtuse and less than two millimeters long. The petals are subcircular

and single-veined. The lip is diagnostic with an acute, triangular apiculum, as found in *S. hymenantha* Schltr.

***Stelis argentata*** Lindl., Edwards's Bot. Reg. 28: Misc. 64, 1842. TYPE: Guyana: *R. Schomburgk 427* (Lectotype designated by Christenson 1996: K). FIGURE 8.

*Stelis heylidyana* Focke, Tijdschr. Natuurk. Wetensch. Kunsten 2: 201, 1849. Named for Henric Heylidy.

*Stelis endresii* Rchb.f., Gard. Chron. 1373, 1870. Named for A.R. Endres who collected this species.

*Stelis littoralis* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 85, 1882. From the Latin *littoralis*, "coastal," referring to the habitat.

*Stelis yauaperyënsis* Barb.Rodr., Vellosia ed. 2, 1: 120, 1891. Named for Río Yauapery along which the species was collected.

*Stelis bernoullii* Schltr., Repert. Spec. Nov. Regni Veg. 15: 201, 1918. Named for K.G. Bernoulli, co-collector of this species.

*Stelis parvibracteata* Ames, Orchid. 7: 131, 1922. From the Latin *parvibracteatus*, "with small bracts," referring to the bracts.

*Stelis glandulosa* Ames, Sched. Orch. 3: 3, 1923. From the Latin *glandulosus*, "glandular," referring to the pubescent sepals.

*Stelis praesecta* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 175, 1923. From the Latin *praesectus*, "cut off," referring to the apex of the lip.

*Stelis violascens* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 176, 1923. From the Latin *violascens*, "becoming violet," referring to the color of the flowers.

*Stelis huebneri* Schltr., Beih. Bot. Zentralbl. 42(2): 88, 1925. Named for G. Hübner who collected this species.

**Plant** small to large, epiphytic, caespitose to ascending-creeping; roots slender. Ramicauls erect, stout, 1.5–6 cm long, enclosed by a tubular sheath near the middle and 2–3 others at the base. **Leaf** erect, coriaceous, elliptical, acute, subacute to obtuse, 5–11 cm long including the petiole 1.5–3 cm long, 1–3 cm wide, cuneate below into the petiole. **Inflorescence** a solitary, erect, subdense, distichous, subsecund, many-flowered raceme with several to many flowers open simultaneously, 10–26 cm long including the peduncle 3–10 cm long, with a few bracts, subtended by a spathe ca. 1 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1–1.5 mm long; pedicels 1.5 mm long; ovary 1–2.5 mm long; **sepals** expanded, pale yellow, suffused with purple, or purple, glabrous externally, shortly pubescent or cellular-glandular within, connate basally, broadly ovate, obtuse, the dorsal sepal 2–5 mm long, 2–5 mm wide, 3-veined, the lateral sepals 2–5 mm long, 2–5 mm wide, 3-veined; **petals** yellow or purple, transversely cuneate-obovate, shallowly concave, 0.5–1 mm long, 1–1.5 mm wide, the apex broadly rounded with the margin thickened; **lip** yellow or purple, thick, transversely subquadrate, 0.6 mm long, 0.8–1 mm wide, 0.4 mm deep, shallowly concave inside the apical margin, the margin thin, minutely apiculate centrally, the bar convex with a long, narrow glenion, the base broadly truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 1 mm wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Mexico, Nicaragua, Panama, Peru, Suriname, Venezuela. **Etymology.** From the Latin *argentatus*, "silvered," referring to the crystals in the floral parts.

**Comments.** This species-complex is frequent and variable in its wide distribution through Central America and the Andes. It is allied to *Stelis superbiens* Lindl., differing mostly in its smaller size and smaller flowers. The habit of *S. argentata* Lindl. *sensu lato* varies from small to large with an erect, congested inflorescence of widely spread flowers. The color varies from yellow through all shades of purple. The sepals are broadly ovate and either three-veined or five-veined. The internal surfaces are variously pubescent. The petals are not remarkably different from those commonly seen in the genus. The lip has with a broadly convex surface replacing a transverse bar. A narrow glenion is commonly present, and the apical margin is thin with a single, minute, acute process.

**Additional collections.** Bolivia: La Paz: Murillo, along Río Zongo, 1300 m, 25 August 1991, C. Luer, J. Luer & R. Vásquez 15359 (MO); same area, 2650 m, 30 January 1988. C. Luer, J. Luer, R. Vásquez & J. Solomon 12970 (MO); Sud Yungas, N of Caranavi toward Alto Beni, 1550 m, 26 January 1988, C. Luer, J. Luer, R. Vásquez & J. Solomon 12905, 12931, 12955 (MO); Sud Yungas, collected near Chulumani, flowered in cultivation by Dino Menato, 31 January 1983, C. Luer 8644 (SEL); Sud Yungas, E of Chuspipata, above Yolosa, 1850 m, 21 January 1988, C. Luer, J. Luer, R. Vásquez & J. Solomon 12910 (MO); W of Coroico, 1800 m, 22 January 1984, C. Luer, J. Luer & R. Vásquez 9498 (SEL); Sud Yungas, E of Chuspipata, above Yolosa, 1850 m, 21 January 1988, C. Luer, J. Luer & R. Vásquez 12910 (MO). Inquisivi, pass above Circuata, Polea, 2500 m, 1 February 1983, C. Luer, J. Luer & R. Vásquez 8660 (SEL).

***Stelis atra*** Lindl., *Orchid. Lind.* 11(79), 1846. TYPE: Venezuela—Mérida, J. Linden 687 (Holotype: K). FIGURE 9.

*Stelis dispar* C. Schweinf., *Fieldiana Bot.* 28: 177, 1951. From the Latin *dispar*, "unequal," referring to the sizes of the dorsal and lateral sepals.

*Stelis hallii* var. *atra* (Lindl.) Garay & C. Schweinf., *Orch. Peru Suppl.* 1: 11: 1970.

*Stelis atra* Lindl. var. *boliviana* T. Hashim., *Bull. Natl. Sci. Mus., Ser. B (Bot.)* 2(4): 178, 1976. Named for the country where the specimen was collected.

**Plant** small to medium in size, epiphytic, ascending-repent; roots slender. Ramicauls erect, slender, 4–7 cm long, enclosed by 3 loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute to obtuse, 4–9 cm long including a petiole 0.5–2 cm long, 0.8–1.2 cm wide, narrowly cuneate below into the petiole. **Inflorescence** 1 to 3 erect, congested, distichous, several- to many-flowered racemes with several flowers open simultaneously, 5–12 cm long including the peduncle 1–3 cm long, from an annulus below the apex of the ramicaul; floral bracts broad, oblique, acute, 2.5 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** expanded, glabrous, green to purple externally, blue to pale rose internally, broadly ovate, obtuse, connate less than 1 mm below the middle; the dorsal sepal 2.5 mm long, 3 mm wide, 3-veined, the lateral sepals 2 mm long, 2 mm wide, 3-veined; **petals** yellow, transversely obovate, broadly obtuse, shallowly concave below the thickened margin, 0.75 mm long, 1 mm wide; **lip** brown, thick, transversely oblong, 0.5 mm long, 1 mm wide, 0.6 mm deep, the apex broadly rounded, shallowly concave anteriorly with a small

glenion, the dorsum with a low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the foot obsolescent, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia, Colombia, Ecuador, Peru, Venezuela. **Etymology.** From the Latin *ater*, "dark," referring to the color of the flowers.

**Comments.** This species of the Andes is frequent in Ecuador, but uncommon in Bolivia where it is known by a single collection by Solomon. From a branching rhizome the ramicauls bear one to three racemes about as long as the leaf. The small flowers are green in Bolivia, but variously purple in the northern part of the distribution. The sepals are obtuse with the lateral sepals a trifle smaller than the dorsal sepal. The three-veined petals and type A lip are not remarkable.

**Additional collections.** Bolivia: La Paz: Murillo, Valle del Río Zongo, 25.9 km N of the summit, 2600 m, 30 January 1988, *J.C. Solomon 17752* (MO, SEL), *C. Luer* illustr. 21843. Santa Cruz: SW of Comarapa, 11 October 1971, flowered in cultivation 19 March 1973, *T. Hashimoto BOL 111* (Holotype of *Stelis atra* var. *boliviana*: TI, a depauperate specimen).

**Stelis aurantiaca** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, N of Cocopata, 2630 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 15391* (Holotype: MO). FIGURE 10.

This large, caespitose species is distinguished by orange petals and lip; broadly ovate, orange, 5-veined sepals variously suffused with brown or purple; thick, reniform petals shallowly concave with a shallow, transverse depression from pressure from the stigmatic lobes; and a lip concave below a thin, cleft bar, with the apex rounded.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 3 mm thick, 6–13 cm long, enclosed by a loose, tubular sheath from below the middle, and another sheath below and another at the base. **Leaf** erect, coriaceous, elliptical, subacute, 6–10 cm long including an ill-defined petiole ca. 1.5 cm long, the blade 1.5–2 cm wide, cuneate below into the petiole. **Inflorescence** 1–2; 15–20 cm tall, the raceme erect, strict, congested, distichous, many-flowered, with many flowers open simultaneously; floral bracts oblique, acute, 3–4 mm long; pedicels 2 mm long; ovary 2–4 mm long; the peduncle 2–3 cm long, from a node below the apex of the ramicaul, with a slender spathe 1.5–2 cm long; flowers yellow-orange, orange to brown; **sepals** glabrous externally, microscopically pubescent within, broadly ovate, obtuse, 5-veined, the dorsal sepal 5–6 mm long, 4–6 mm wide, connate below the middle to the lateral sepals, the lateral sepals oblique, 4–5 mm long, 5–6 mm wide; **petals** orange, thick, convex, transversely oblong-reniform with the ends rounded, 1.5 mm long, 2.5 mm wide, 3-veined, shallowly concave below the middle, and perpendicular across the middle from presence of the stigmatic lobes; **lip** orange, oblong-subquadrate, concave below a thin, cleft bar, with the apical margin thin, broadly obtuse, 1 mm long, 1.3 mm wide, 1 mm deep, the dorsum slightly convex, shortly pubescent, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 2 mm wide across the stigmatic lobes, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *aurantiacus*, "orange," referring to the floral parts

**Comments.** *Stelis aurantiaca* Luer & R. Vásquez is a large, handsome species distinguished by orange flowers, the sepals variously suffused with brown or purple. The relatively large sepals are obtuse and five-veined, and the petals are thick and reniform with a shallow perpendicular groove caused by pressure from stigmatic lobes. The lip is concave below a thin, cleft bar.

**Paratypes.** Bolivia—Cochabamba, Chapare, new road from Cochabamba to Villa Tunari, 1780 m, 24 January 1980, *C. Luer, J. Luer & R. Vásquez 4944* (SEL); same area, 1750 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez 12825* (MO); old road from Cochabamba to Villa Tunari, 2500 m, 2 February 1997, *C. Luer, J. Luer & R. Vásquez 18378* (MO).

***Stelis bacriosa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: S of Siberia, 2550 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18399* (Holotype: MO; Isotype: SEL). FIGURE 11.

This repent species is distinguished by a broadly elliptical, petiolate leaf far exceeded by a long-pedunculate inflorescence with ovate sepals purple below the middle; single-veined petals; and a thick, subcordate lip with a shortly acuminate apex.

**Plant** small to medium in size, epiphytic, repent, the rhizome stout, 1–1.5 cm long between ramicauls; roots slender. Ramicauls erect, slender, 1.5–3.5 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, broadly elliptical, obtuse to rounded at the tip, 2.5–3.5 cm long including a petiole 0.7–1 cm long, the blade 1–1.5 cm wide in the dry state, abruptly contracted below into the petiole. **Inflorescence** an erect, strict, subcongested, distichous, many-flowered raceme with many flowers open simultaneously, 10–14 cm long including the peduncle 5–6 cm long, from a node below the apex of the ramicaul, with a spathe 5–6 mm long; floral bracts dilated, oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** similar, pale yellowish white to yellow-green above the middle, purple below the middle, glabrous, ovate, narrowly obtuse, the dorsal sepal 3 mm long, 2 mm wide, 3-veined, the lateral sepals 2.5 mm long, 2 mm wide; **petals** purple, thin, transversely ovate, broadly rounded with a thick margin at the tip, concave, 0.6 mm long, 0.9 mm wide, 1-veined; **lip** purple, thickly subcordate, 0.5 mm long, 0.8 mm wide, 0.5 mm deep, shallowly concave anteriorly with a glenion, below the broadly rounded bar, the apex obtuse and shortly acuminate at the tip, the dorsum truncate with a low, ill-defined callus, hinged to the base of the column; **column** stout, 0.5 mm long, 0.75 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *bacriosus*, "with dippers, or ladles," referring to the leaf and ramicaul.

**Comments.** This little, repent species bears more or less overlapping, paddle-shaped leaves. Broadly elliptical and abruptly petiolate leaves are far surpassed by a long-pedunculate inflorescence with many, little flowers with sepals that are

pale yellowish above the middle and purple below the middle. The petals are single-veined, and the lip is thickly cordate with a shortly acuminate tip.

**Paratypes.** Bolivia—Santa Cruz: Siberia, road to Santa Cruz, Km 132 E of Cochabamba, 1957, *P.C. Hutchison 1921*, cultivated at U of Cal, Berkeley, 21 September 1963; 53 Km. W of Comarapa, 9,200 ft., 9 December 1975, *C. Davidson 3860* (LAM, MO); near Siberia, above Comarapa 2500 m, 1 December 1978, *C. Luer, J. Luer, F. Fuchs 3593* (SEL); near Siberia, 2500–2600 m, 18 January 1983, *C. Luer, J. Luer & R. Vásquez 8531* (SEL); Carrasco, Serrania Siberia, W of Comarapa, old road to Cochabamba, 2000 m, 14 January 1990, *L.J. Dorr & L.C. Barnett 7034* (AMES, LPB, MO, NY), S of Siberia, 2550 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18399* (MO); Caballero, Empalme, 2600 m, 8 February 2004, *C. Patzi et al. CP 270, CP 432* (BOLV, MO).

***Stelis ballatrix*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 2550 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8603* (Holotype: SEL). FIGURE 12.

This small, caespitose species is distinguished by an evenly spaced, distichous raceme of long-pedicellate flowers that far surpasses an elliptical leaf; ovate, acute, revolute sepals; acute, triangular petals; and lip twice longer than wide.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1.5–2.5 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 2–3.5 cm long including a petiole ca. 0.5 cm long, the blade 1–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subcongested, distichous, many-flowered raceme with many flowers open simultaneously, 10–12 cm long including the peduncle 4–5 cm long, from a node below the apex of the ramicaul, with a spathe 7 mm long; floral bracts close, tubular, obtuse, 2 mm long; pedicels 4–5 mm long; ovary 1.5 mm long; flowers red-purple; **sepals** recurved, glabrous, ovate, 3-veined, the dorsal sepal ovate, acute, 2.25 mm long, 1.75 mm wide, the lateral sepals ovate, oblique at the obtuse apex, 2 mm long, 1.5 mm wide; **petals** triangular, acute, with the upper margin of the base rounded, 2 mm long, 1.25 mm wide, 3-veined; **lip** ovate-triangular, acute, 2.25 mm long, 1.25 mm wide, 0.25 mm thick, with a low, rounded callus on the lower quarter, minutely pubescent at the truncate base, hinged to the base of the column; **column** stout, 1 mm long and wide, the anther and the transverse stigma with confluent lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *ballatrix*, "a ballet dancer," referring to the leaf and ramicaul.

**Comments.** This little species, *Stelis ballatrix* Luer & R. Vásquez, is one of the triad of species (the third species being *S. saltatrix* Luer & R. Vásquez described herein) that are superficially similar to *S. antennata* Garay, with evenly spaced, long-pedicellate flowers. Most distinctive of *S. ballatrix* are the flowers with sepals that recurve, while acute, triangular petals rise 45° above a

protruding, similarly acute, triangular lip that is twice longer than wide. The stigmatic lobes are confluent into a transverse lobe below the rostellum.

***Stelis beckii*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz; Murillo, Zongo valley, 44 km beyond the gorge, 1650–1759 m, 19 November 1981, S.G.

*Beck 7243* (Holotype: LPB; Isotype: SEL), C. Luer illustr. 21840. Figure 13.

This large, ascending-repent species is characterized by a thick rhizome; a ramicaul longer than an elliptical leaf; an erect, multiflowered inflorescence shorter than, or as long as the leaf; ovate, pubescent sepals; three-veined petals; and a shallow, broadly rounded lip with a cleft bar.

**Plant** large, epiphytic, with an ascending-repent rhizome that has caespitose elements, 3–5 mm thick, 0–2.5 cm long between ramicauls; roots coarse. Ramicauls erect, relatively stout, 8–16 cm long, enclosed by a tubular sheath from near the middle, and another two sheaths below. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 8–14 cm long, including the petiole 1–1.5 cm long, the blade 2–3 cm wide in the dry state, narrowly cuneate below into the petiole. **Inflorescence** 1–2 erect, strict, subsecund, densely and simultaneously many-flowered racemes, 8–16 cm long, flowering from near the base, with a spathe 1–1.3 cm long; floral bracts oblique, acute, 2.5–3 mm long; pedicels 1.5–2 mm long; ovary 1.5 mm long; flowers yellow; **sepals** pubescent within, broadly ovate, obtuse, the dorsal sepal 2.5–3 mm long, 2.5–2.75 mm wide, 3-veined, the lateral sepals 2–2.75 mm long, 2–2.75 mm wide; **petals** transversely elliptical, 0.75 mm long; 1–1.25 mm wide, 3-veined, the apex broadly rounded with a thickened margin, and with a transverse callus; **lip** cuneate, 0.5 mm long; 1 mm wide, 0.6–1 mm deep, the apex broadly rounded, the bar cleft into a deep glenion, the dorsum slightly convex, glabrous, the truncate base hinged to the base of the column; **column** stout, 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Stephan G. Beck of the National Herbarium of Bolivia, collector of this species.

**Comments.** This robust species is characterized by a thick, ascending, repent rhizome; ramicauls longer than an elliptical leaf; and in the present specimen two strict, simultaneously flowered racemes about as long as the leaf are present. The flowers are small and yellow with three-veined, pubescent sepals, and proportionately small, three-veined petals and lip. The lip is type A with a cleft bar and a deep glenion. The flowers are similar to those of *Stelis phaeomelana* Schltr., and *S. caldaria* Luer & R.Vásquez described herein, but easily distinguished from them by the ascending-repent habit.

**Paratypes.** Bolivia—La Paz: Sud Yungas, SE of Coroico toward Coripata, 2000 m, 3 February 1980, C. Luer, J. Luer & R. Vásquez 5077 (SEL); Sud Yungas, between Huanacán and San Isidro, 2250 m, 11 February 1991, S.G. Beck 19786 (SEL, LPB).

**Stelis beniënsis** Luer, sp. nov. TYPE: Bolivia—Beni: province of Ballivian, summit of Serrania del Pilon Lajas, 850–900 m, 5 March 1990, *D.N. Smith, V. & E. García 14104* (Holotype: LPB), *C. Luer* illustr. 21477. FIGURE 14.

This species is similar to *Stelis hylophila* Rehb.f., but differs with a habitat lower than 1,000 meters above sea level; and the lip is subquadrate, about as long as wide, with the bar conspicuously bilobed above the concave apical third, and with the dorsum glabrous.

**Plant** medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 7–10 cm long, enclosed by a close, tubular sheath from near the middle and 2–3 other sheaths below and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 9–11 cm long including a petiole 1.5–2 cm long, the blade 1.2–1.6 cm wide, cuneate below into the petiole. **Inflorescence** 1–4, erect, congested, distichous, simultaneously many-flowered racemes, 12–17 cm long including a peduncle 3–4 cm long, from a spathe ca. 1 cm long at a node below the apex of the ramicaul; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers yellow; **sepals** expanded, not recurved, glabrous, elliptical-ovate, obtuse, connate basally, 1.5 mm long, 1 mm wide, 3-veined; **petals** thin, concave, broadly obovate, with the apex truncate, 0.5 mm long, 0.6 mm wide, 1-veined; **lip** thick, subquadrate, 0.6 mm long, 0.6 mm wide, 0.3 mm deep, the apex broadly obtuse, concave above a thick, bilobed bar near the middle, the dorsum featureless, glabrous, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther apical, the stigmatic lobes small inside the margins of the gynostemium.

**Distribution.** Bolivia. **Etymology.** Named for department of Beni, where this species was found.

**Comments.** This species is from a habitat less than 1000 meters above sea level. It is similar to the relatively frequent, variable, and widely distributed *Stelis hylophila* Rehb.f., which occurs at higher altitudes, and from which it differs only in trivial features, except for the markedly different morphology of the lip. The lip of *S. hylophila* is longer than wide with a simply curved bar, and minutely pubescent on the dorsum. The lip of *S. beniënsis* is type A: subquadrate, not longer than wide, with a thick, conspicuous, bilobed bar that is glabrous dorsally.

**Stelis brachystachya** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, NE of Caranavi, 1300 m, 31 August 1991, *C. Luer, J. Luer & R. Vásquez 15390* (Holotype: MO). FIGURE 15.

This species is related to *Stelis scandens* Rolfe, but differs with a shortly ascending habit, proportionately longer leaves; short, obtuse floral bracts; a convexity across the lower fourth of the dorsal sepal; and a lip with a broader, deeper cleft.

**Plant** large, epiphytic, shortly ascending to caespitose, the rhizome stout, less than 0.5 cm long between ramicauls; roots slender. Ramicauls erect, stout, 8–10 cm long, enclosed by a tubular sheath from below the middle, and 2 other sheaths about the base. **Leaf** erect, coriaceous, elliptical, acute, 10–12 cm long, 1.5–2 cm wide in the dry state, narrowly cuneate below into a petiole ca. 1 cm long. **Inflorescence** 1–2 erect, strict, subcongested, distichous, several-flowered racemes with most flowers open simultaneously, 4–5 cm long, flowering from



near the base, from the apex of the ramicaul, with a slender spathe 8–10 mm long; floral bracts broad, obtuse, 2–2.5 mm long; pedicels 1 mm long; ovary 1.5 mm long; **sepals** yellow, microscopically pubescent within, ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.5 mm wide, convex across the lower 0.5 mm, the lateral sepals 2 mm long, 2.5 mm wide; **petals** brown, thickly triangular, concave, the apex obtuse with a thickened margin, with a distinct transverse callus, 0.75 mm long, 1 mm wide, 3-veined; **lip** brown, type A, the apex subtruncate, 0.75 mm long, 1 mm wide, 0.9 mm deep, longitudinally concave anteriorly below a widely cleft bar, the dorsum with a subspherical callus, the truncate base hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *brachystachys*, "short spike," referring to inflorescence shorter than the leaf.

**Comments.** This large, coarse, ascending to caespitose species with inflorescences about a third the length of an elliptical leaf, is related to *Stelis scandens* Rolfe, but it is distinguished from the latter by an abbreviated rhizome between ramicauls; proportionally longer leaves; short, obtuse floral bracts; a dorsal sepal with a convexity across the lower quarter; and a lip with a wide, deep, longitudinal cavity descending from a broad cleft in the bar.

**Stelis brittoniana** Rolfe, Mem. Torr. Bot. Club 4: 261, 1895. TYPE: Bolivia—La Paz: Nor Yungas, 1890, *M. Bang* 739 (Holotype: NY; Isotypes: AMES, BR, G, GH, MO, NDG, PH, US). FIGURE 16.

*Stelis ascensor* C.Schweinf., Bot. Mus. Leafl. Harvard Univ., 15: 10, 1951. From the Latin *ascensus*, "ascending," referring to the habit.

*Stelis curvicarina* C.Schweinf., Bot. Mus. Leafl. Harvard Univ., 15: 14, 1951. From the Latin *curvicarinus*, "with curved carina," referring to the bar of the lip.

**Plant** medium to large in size, epiphytic, ascending, ca. 1 cm between ramicauls, roots slender. Ramicauls erect, slender, 5.5–7.5 cm long, enclosed by a loose, tubular sheath from below the middle, and another 2 sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, acute, petiolate, 7–8.5 cm long including a petiole 1–1.5 cm long, the blade 1.4–1.8 cm wide in dry state, cuneate below into the petiole. **Inflorescence** 1–3, 11–14 cm tall, the raceme erect, congested, distichous, many-flowered with most flowers open simultaneously, floral bracts oblique, acute, 1–2.5 mm long; pedicels 1 mm long; ovary 1.5 mm long; the peduncle ca. 5 cm long, with a spathe 1.2–1.5 cm long, from a node below the apex of the ramicaul; **sepals** greenish white, glabrous, the dorsal sepal erect, ovate, obtuse, 4.5–5 mm long, 3.2 mm wide, 3-veined, connate basally to the synsepal, the lateral sepals connate to near the tips into an ovoid, deeply concave synsepal, more or less bulbous at the base, 3 mm long, 4 mm wide, 6-veined, the apex shortly bifid, obtuse to rounded; **petals** purple, transversely ovate, concave, with the apex broadly rounded, thick on the margin, 0.6 mm long, 1 mm wide, 3-veined; **lip** purple, subcordate, 1 mm long, 1 mm wide, 0.5 mm deep, shallowly concave below a broadly rounded bar between rounded basal angles, with a faint glenion, the apex obtuse without a margin. the dorsum

short, slightly convex, the base hinged to the base of the column; column stout, ca. 1 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia and Peru. **Etymology.** Named for Nathaniel Lord Britton, co-founder of the New York Botanical Garden.

**Comments.** This species is characterized by an ascending, repent rhizome, slender ramicauls as long as an elliptical leaf that is surpassed by a many-flowered raceme. The lateral sepals are connate into a deep, ovoid, broadly obtuse synsepal. The lip is similar to that of *Stelis tenuicaulis* Lindl., being smooth below a rounded bar. A faint outline of a glenion can be seen, if sought.

*Stelis brittoniana* Rolfe is closely allied to *S. tenuicaulis* Lindl., but is distinguished by a stronger, ascending habit with ramicauls more or less stouter, and about as long as slightly broader leaves, and obtuse, instead of acute, dorsal sepal and synsepal. The illustration by Elmer Smith of a Peruvian collection published as *S. ascensor* C.Schweinf. was used for *S. tenuicaulis* Lindl. in *Systematics of the Genus Stelis* (Garay 1980). Duplicate collections of the similar Bolivian collection (*M. Bang* 739), now believed to represent *S. brittoniana*, have been identified as *S. tenuicaulis*.

**Additional collections.** Bolivia: without data *M. Bang* 2563 (AMES, MO); Nor Yungas, Río Unduavi, 2650 m, 29 January 1980, *C. Luer, J. Luer & R. Vásquez* 4996 (SEL); road from Unduavi toward Coroico, 2300 m, 22 January 1983, *C. Luer, J. Luer & R. Vásquez* 8550 (SEL); E of Chuspipata, 2930 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez* 12891 (MO); Nor Yungas, Parque Nacional Cotapata, 3100 m, 11 February 2001, *T. Krömer & A. Acebey* 1808 (LPB, SEL).

***Stelis caldaria*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: S of Yapacaní, 650 m, 7 September 1991, *C. Luer, J. Luer & R. Vásquez* 15407 (Holotype: MO). FIGURE 17.

This species from warm lowlands is characterized by a many-flowered raceme that exceeds a thick, obtuse, elliptical-oblong leaf; pubescent, obtuse sepals; three-veined petals; and an obtuse lip shallowly concave below the bar.

**Plant** medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5–15 cm long, enclosed by a loose, tubular sheath from below the middle and 2 other sheaths about the base. **Leaf** erect, thickly coriaceous, elliptical, obtuse to rounded at the tip, 5–12 cm long, the blade 1.5–2.8 cm wide, cuneate below into a narrowly cuneate, or subpetiolate base. **Inflorescence** a single, erect, congested, distichous, simultaneously many-flowered raceme, 10–22 cm long including the peduncle 3–7 cm long, with a spathe 1–2 cm long, from a node below the apex of the ramicaul; floral bracts close, tubular, obtuse, 1.5–2 mm long; pedicels 1–1.5 mm long, mostly within the floral bract; ovary 1.5–2 mm long; flowers dark purple or greenish, suffused with purple; **sepals** glabrous externally, pubescent within; the dorsal sepal is ovate, subacute to obtuse, sometimes convex, 3–3.5 mm long, 3–3.5 mm wide, 3-veined, occasionally with an auxiliary vein, the lateral sepals ovate, oblique, 2 mm long, 2–2.5 mm wide, 3-veined; **petals** semilunate, broadly rounded at the apex, 0.8–1 mm long, 1.25–1.5

mm wide, 3-veined, the margin thickened, microscopically cellular; **lip** subquadrate-triangular, 0.8–1 mm long, 1–1.25 mm wide, 0.5 mm deep, the apex round with a thin margin, shallowly concave below the bar with a narrow glenion, the dorsum smooth with a broad, slightly convex callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1.25 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *caldarius*, "pertaining to heat," referring to the warm climate of the habitat.

**Comments.** This species is one of three with similar flowers with obtuse, pubescent sepals, three-veined petals, and a type A lip shallowly concave below a bar with a small glenion, the three being *Stelis phaeomelana* Schltr., distinguished by a large, broad, abruptly petiolate leaf; *S. beckii* Luer & R. Vásquez, distinguished by a stout, creeping rhizome and proportionately larger petals and lip; and the present species.

*Stelis caldaria* Luer & R. Vásquez is a relatively large species from the warm lowlands of eastern Bolivia. It is characterized by elliptical to oblong, subpetiolate leaves, and one or two long, simultaneously many-flowered racemes of small, purplish flowers. The sepals are expanded and shortly pubescent, the dorsal sepal usually three-veined, but occasionally accessory veins are present; the petals are three-veined; and the type A lip is similar to that of *S. phaeomelana*: shallowly concave below the bar with a glenion, and with a low, broad callus on the dorsum.

The shapes of the sepals of *Stelis caldaria* also distinguish it. The dorsal sepal is larger than the lateral sepals, and the lateral sepals are oblique with outer margins curved and longer than the inner margins so that the tips point downward, instead of about 45° as in *S. phaeomelana* where lateral sepals are ovate with the margins are about equal in length. The angle between the lateral sepals of *S. caldaria* is acute, while the angle in *S. phaeomelana* is obtuse.

**Paratypes.** Bolivia—Cochabamba: Carrasco, along Río Casarsama, 290 m, 24 April 1980, R. Vásquez 407 (SEL, Herb. Vásq.), C. Luer illustr. 21849; Chapare, new road to Villa Tunari, 500 m, 16 January 1981, fl. in cult. 9 April 1981, C. Luer, J. Luer & R. Vásquez 6006 (SEL); NW of Villa Tunari, 500 m, January 1981, fl. in cult. 14 December 1981, C. Luer 6782 (SEL); near Villa Tunari, 500 m, fl. in cult. 14 December 1983, C. Luer 9345 (SEL).

***Stelis campanulifera*** Lindl., Fol. Orchid. *Stelis* 8: 3, 1859. TYPE: Bolivia—La Paz: Yungas, 1846, T.C. Bridges s.n. (Holotype: K). FIGURES 18–19.

*Stelis boliviensis* Rolfe, Bull. New York Bot. Gard. 4: 450, 1907.

**Plant** medium in size, epiphytic, ascending-caespitose, to shortly repent, the rhizome stout; roots slender. Ramicauls erect, slender, 4–7 cm long, enclosed by a close, tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute to subacute, 4–12 cm long including a petiole 1–2 cm long, the blade 0.8–1.5 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–2 erect, congested, distichous, simultaneously

many-flowered racemes, 5–12 cm long including the peduncle 1–2 cm long, from a spathe 7–8 mm long at the a node below the apex of the ramicaul; floral bracts oblique, dilated, acute, 1.5–2 mm long; pedicels 1–1.5 mm long; ovary 1–1.5 mm long; **sepals** purple or yellow with or without brown suffusion, similar, the lateral sepals antrorse, glabrous, ovate, obtuse, 3-veined, the dorsal sepal 2.5–3 mm long, 1.5–2.5 mm wide, the lateral sepals 2–2.5 mm long, 2 mm wide; **petals** purple or yellow, thin, concave, subcircular with the apex broadly rounded, the margin thin, 0.6–1 mm long, 0.6–1 mm wide, 1-veined; **lip** purple or yellow, subquadrate, rounded at the apex, 1 mm long, 0.8–1 mm wide, 0.5–0.6 mm deep, broadly and deeply concave below a thickened, deeply cleft bar, the dorsum narrow behind the margins of the cleft, the base broadly truncate, hinged to the base of the column; **column** stout, terete, ca. 1 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *campanulifer*, "bell-bearing," referring to the floral bracts.

**Comments.** Lindley named this species for the bell-shaped floral bracts that are sometimes not remarkable. Most distinguishing are the antrorse, glabrous sepals; rounded, single-veined petals; and a lip that is deeply concave below a thickened, broadly cleft bar. The shape of this cleft is variable, sometimes acute and "V-shaped," and sometimes it is obtuse, or rounded like a horse shoe.

**Additional collections.** Bolivia: Without locality, *M. Bang 1817* (Holotype of *Stelis boliviensis* Rolfe: AMES). La Paz: Nor Yungas, north of Chuspipata, 2800 m, 21 February 1986, *J.C. Solomon 14981* (MO); E of Chuspipata, 2600 m, 21 January 1988, *C. Luer, J. Luer. R. Vásquez & J. Solomon 12901* (MO); same area, E of Chuspipata, 2930 m, 21 January 1988, *C. Luer, J. Luer. R. Vásquez & J. Solomon 12889* (MO); Inquisivi, between Inquisivi and Circuata, 2700 m, 29 January 1981, *C. Luer, J. Luer & R. Vásquez 5769*; between Circuata and Inquisivi, 2650 m, 21 February 1981, *S.G. Beck 4532* (UMSA, MO); terrestrial along road cut near the pass above Circuata, 2600 m, 30 January 1983, *C. Luer, J. Luer & R. Vásquez 8624* (SEL); old road to La Paz southwest of Coroico, 2800 m, 4 February 1980, *C. Luer, J. Luer & R. Vásquez 5111* (SEL); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 2600 m, 26 November 1978, *C. Luer, J. Luer, F. Fuchs 3510* (SEL); same locality, 2500–2900 m, 22 January 1980, *C. Luer, J. Luer & R. Vásquez 4882, 4887* (SEL); same area, 2800 m, 18 January 1988, *C. Luer, J. Luer & R. Vásquez 12879, 12882* (MO); same area, 2900 m, 14 November 1992, *C. Luer, J. Luer & R. Vásquez 16409* (MO); Carrasco, Sehuencas, lithophytic on road cut, Río Lope Mendoza, 2600 m, 1 February 1981, *C. Luer, J. Luer & R. Vásquez 5814* (SEL); same area, 2630 m, 13 January 1988, *C. Luer, J. Luer & R. Vásquez 12901* (MO).

***Stelis cardenasii*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Road to Chimarè. 1840 m, March 1940, *M. Cardenas 2102* (Holotype: AMES), *C. Luer* illustr. 21899. FIGURE 20.

This medium-sized, caespitose species of *Stelis* section *Humboldtia* is characterized by large, expanded flowers with an acute, five-veined dorsal sepal and a shallowly concave, ovate synsepal.

**Plant** large, epiphytic, caespitose, prolific; roots slender. Ramicauls erect, stout, 8–11 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical, acute, 6–9 cm long including a petiole 1 cm long, the blade 1–1.5 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, subcongested, simultaneously many-flowered raceme with numerous flowers open simultaneously, to 18 cm long including the stout peduncle 3–4 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 12 mm long; floral bracts tubular, close, 3 mm long, 3 mm wide; pedicels 3 mm long; ovary 2–2.5 mm long; **sepals** yellow, suffused with purple externally, fleshy, glabrous, the dorsal sepal ovate, acute, 5 mm long, 4 mm wide, 5-veined, the lateral sepals ovate, oblique, connate 3 mm into a shallowly concave synsepal 4.5 mm long, 7 mm wide expanded, 6-veined, the apex obtuse, minutely bifid, with a mentum beneath the column-foot; **petals** yellow, thick, transversely ovate, broadly obtuse, 1.6 mm long, 2.5 mm wide, 5-veined; **lip** yellow, broadly subtriangular, 1 mm long, 1.3 mm wide, 1.2 mm deep; deeply concave anteriorly with thin, rounded margins below a thin, transverse, shortly cleft bar; shallowly channeled on the dorsum; the broadly truncate base hinged to the base of the column; **column** stout, ca. 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Martín Cárdenas, noted, twentieth century, Bolivian botanist, who collected this species.

**Comments.** This species of *Stelis* section *Humboldtia* is related to *S. purpurea* (Ruiz & Pav.) Willd., but is distinguished by fleshy flowers with a five-veined dorsal sepal, five-veined petals, and a lip deeply concave with thin, rounded margins.

***Stelis carnosipetala*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba; Chapare, new road from Villa Tunari to Cochabamba, 1750 m, 31 January 1997, C. Luer, J. Luer & R. Vásquez 18356 (Holotype: MO). FIGURE 21.

This small, caespitose species is characterized by flexuous racemes longer than the leaves; a relatively large flower with multiveined sepals; thick, semiorbicular petals; and a subdiscoid lip with a suborbicular callus on the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5–3 cm long, enclosed by a tubular sheath from below the middle, and another sheath at the base. **Leaf** erect, coriaceous, elliptical, subacute, long-petiolate, 3–4 cm long, including the petiole 1–1.5 cm long, the blade 0.7–1 cm wide in the dry state, narrowly cuneate below into the petiole. **Inflorescence** an erect, distantly flowered, flexuous, successively more or less 6-flowered raceme, usually with only the last flower open, 7–9 cm long, including the peduncle 5–6 cm long, from the apex of the ramicaul, without an obvious spathe; floral bracts oblique, acute, 3 mm long; pedicels 2 mm long; ovary 1 mm long; **sepals** glabrous, rose inner 2/3, green outer third, broadly ovate, obtuse, the dorsal sepal 4.5 mm long, 5 mm

wide, 5-veined, the lateral sepals 4 mm long, 4.5 mm wide; **petals** rose, convex, thickly semiorbicular, the apex broadly rounded, the margin 1 mm broad, almost the entire distance to the abrupt termination with a transverse carina above the concave base, 1 mm long, 1.5 mm wide, 3-veined; **lip** rose, type A, subdiscoid, the apex rounded, 0.6 mm long, 1.3 mm wide, 0.6 mm deep, the anterior surface smooth below the bar, the dorsum with a microscopically pubescent, subspherical callus, the truncate base hinged to the base of the column; **column** stout, 1.3 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *carnosipetalus*, "with fleshy petals," referring to thick, semiorbicular petals.

**Comments.** The flexuous, several-flowered racemes of this little, caespitose species produce relatively large, rose colored flowers successively, usually only one at a time. The sepals are broad, obtuse and multiveined. The apices of the petals are broadly rounded with a very broad, thickened margin that extends nearly to the base where it abruptly terminates, exposing the bases of the three veins. The anterior surface of the type A lip is smooth, while a rounded callus is on the dorsum.

**Paratype.** Bolivia—Cochabamba; Chapare, new road from Villa Tunari to Cochabamba, 1850 m, 29 January 1984, *C. Luer, J. Luer & R. Vásquez 9467* (SEL).

**Stelis cauda-equina** Luer & R. Vásquez, *Phytologia* 49(3): 225, 1981. TYPE:

Bolivia—La Paz: Sud Yungas, above Unduavi, 3200 m, 28 January 1980, *C. Luer, J. Luer & R. Vásquez 4992* (Holotype: SEL). FIGURE 22.

**Plant** large, epiphytic, pendent, shortly repent-caespitose, the rhizome stout; roots slender. Ramicauls descending, pendent, slender, 10–20 cm long, enclosed by a glabrous, tubular sheath from below the middle and 2–3 pubescent sheaths at the base. **Leaf** pendent, dull gray-green, coriaceous, narrowly linear-elliptical, acute, 15–22 cm long, 1.3–1.6 cm wide, gradually narrowed below to the sessile base. **Inflorescence** 1–3 pendent, flexuous, congested, simultaneously many-flowered racemes, among many old inflorescences, 6–15 cm long including the peduncle 1–2 cm long, from a spathe 15–18 mm long at the a node below the apex of the ramicaul; floral bracts oblique, acute, 2–3 mm long; pedicels 2 mm long; ovary 1.5 mm long; **sepals** similar, rose, glabrous externally, minutely pubescent within, convex, ovate, obtuse, 2.5 mm long, 2.2 mm wide, 3-veined, connate basally; **petals** transversely oblong, thin, concave, 1 mm long, 1.4 mm wide, 3-veined, the apex broadly rounded, narrowly thickened, minutely apiculate; **lip** rose, obovate, round at the apex, shortly acuminate, 1.25 mm long, 1–1 mm wide, 0.6 mm deep, broadly and deeply concave below a thickened, prominent, cleft bar, the dorsum narrow behind thickened halves of the bar, the base truncate, hinged to the base of the column; **column** stout, terete, ca. 1 mm long, 1.25 mm wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *cauda equina*, "a horse tail," in allusion to the appearance of the plant.

**Comments.** This large, shortly repent species with long, narrow, pendent ramicauls and leaves is unique among the species of the genus in Bolivia. The cauline sheaths nearest to the base are densely pubescent. A few, flexuous, many-flowered racemes shorter than the leaves hang among the remnants of many old inflorescences. The sepals of the small, rose colored flowers are ovate; the petals are thin and three-veined; and the lip is a modified type A that is broader and concave above a cleft bar with the halves rounded and protuberant.

***Stelis cavatella*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Saavedra, along river below Charazani, 2550 m, 19 November 1992, *C. Luer, J. Luer & R. Vásquez 16451* (Holotype: MO). FIGURE 23.

This large, prolific species of *Stelis* section *Humboldtia* is distinguished by fleshy flowers with a five-veined dorsal sepal, five-veined petals, and a lip deeply concave with thin, rounded margins.

**Plant** large, epiphytic, caespitose, prolific; roots slender. Ramicauls erect, stout, 8–11 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical, acute, 6–9 cm long including a petiole 1 cm long, the blade 1–1.5 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, subcongested, simultaneously many-flowered raceme with numerous flowers open simultaneously, to 18 cm long including the stout peduncle 3–4 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 12 mm long; floral bracts tubular, close, 3 mm long, 3 mm wide; pedicels 3 mm long; ovary 2–2.5 mm long; **sepals** yellow, suffused with purple externally, fleshy, glabrous, the dorsal sepal ovate, acute, 5 mm long, 4 mm wide, 5-veined, the lateral sepals ovate, oblique, connate 3 mm into a deeply concave, synsepal 4.5 mm long, 7 mm wide expanded, 6-veined, the apex obtuse, minutely bifid, with a mentum beneath the column-foot; **petals** yellow, thick, transversely ovate, broadly obtuse, 1.6 mm long, 2.5 mm wide, 5-veined; **lip** yellow, broadly subtriangular, 1 mm long, 1.3 mm wide, 1.2 mm deep; deeply concave anteriorly with thin, rounded margins below a thin, transverse, shortly cleft bar; shallowly channeled on the dorsum; the broadly truncate base hinged to the base of the column; **column** stout, ca. 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the diminutive of the Latin *cavatus*, "hollowed out," referring to the cavity of the lip.

**Comments.** This large species is characterized by proliferating ramicauls with elliptical leaves, fleshy flowers with a five-veined dorsal sepal and borne in a long raceme, and thick, five-veined petals. The lip is deeply hollowed out anteriorly with the margins thin around the rounded apex. The transverse bar is thin and cleft as it forms a roof over a deep cavity.

**Paratype.** Bolivia—La Paz: Murillo, along Río Zongo, 2100 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez 16484* (MO).

**Stelis chuspipatensis** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, E of the pass E of Chuspipata, 1800 m, 27 January 1991, C. Luer, J. Luer & R. Vásquez 15368 (Holotype: MO). FIGURE 24.

This large, caespitose species of *Stelis* section *Humboldtia* is distinguished by broad, round-tipped leaves longer than the ramicaul, pubescent sepals with the dorsal sepal seven-veined, and an obtuse lip with a high callus on the dorsum.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, relatively stout, 4–5 cm long, enclosed by a loose tubular sheath from below the middle, and another at the base. **Leaf** erect, coriaceous, obovate, round at the apex, 6–11 cm long including a petiole 1–1.5 cm long, the blade 2.5–3 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–2 erect, strict, distichous, subax, simultaneously many-flowered racemes with numerous flowers open simultaneously, 13–22 cm long including the peduncle 4–5 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 10–11 mm long; floral bracts oblique, acute, 3 mm long; pedicels 3 mm long; ovary 1.5 mm long; **sepals** shortly pubescent within, the dorsal sepal purple, ovate, obtuse, 6.5 mm long, 5 mm wide, 7-veined, the lateral sepals purple or yellow, connate about midway into a concave, ovoid, obtuse, bifid synsepal, 6 mm long, 7 mm wide expanded, 6-veined; **petals** yellow-green, lunate, with a broad, thick, slightly roughened, rounded, apical margin, 1.5 mm long, 2 mm wide, 3-veined; **lip** yellow-green, thickly triangular, obtuse with obtuse margins, 1 mm long, 1.3 mm wide, 0.75 mm deep, shallowly concave below the bar, the dorsum with a high, trilobed callus, the middle callus being high, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1.3 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the community of Chauspipata where the species was collected.

**Comments.** This large, caespitose species is similar to *Stelis purpurea* (Ruiz & Pav.) Willd., but is quickly distinguished by short floral bracts. In addition, the leaves are broad, obovate, round-tipped, and surpassed by one or two long, many-flowered racemes with sepals minutely pubescent within, the dorsal sepal being seven-veined. The petals are also minutely pubescent. The lips of the two species are similar.

**Stelis citrinella** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Sud Yungas, below Unduavi, road to Yolosa Junction, 3000 m, 29 February 1980. J.C. Solomon 5193 (Holotype: MO; Isotype: SEL), C. Luer illustr. 21835. FIGURE 25.

This densely caespitose species is distinguished by one or two many-flowered racemes longer than the leaf; small, yellow flowers with obtuse, glabrous sepals; three-veined petals; and a concave lip with a deep glenion.

**Plant** medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2–6 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths below. **Leaf** erect, coriaceous, elliptical, acute to sub-acute, or obtuse, 4–9 cm long including a petiole 1–2 cm long, the blade 1.2–2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–3



erect, subflexuous, congested, distichous, many-flowered racemes with many flowers open simultaneously, 7–12 cm long including the peduncle 2–5 cm long, from a node below the apex of the ramicaul, with a spathe 8 mm long; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers yellow; **sepals** glabrous, minutely to microscopically pubescent within, broadly ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.5 mm wide, the lateral sepals 2 mm long, 2 mm wide; **petals** transversely elliptical, the apex broadly rounded with a thick margin, concave below a transverse carina, 0.9 mm long, 1.1 mm wide, 3-veined; **lip** type A, subcordate, 0.5 mm long, 0.8 mm wide, 0.4 mm deep, the apex broadly obtuse, shallowly concave with a thick margin, the bar cleft with a glenion, the dorsum with a small, rounded callus, the base hinged to the base of the column; **column** stout, ca. 0.6 mm long, 0.6 mm wide, the anther and the bilobed stigma apical

**Distribution.** Bolivia. **Etymology.** From the Latin diminutive of *citrina*, a light yellow, semiprecious stone.

**Comments.** This species is similar to *Stelis amethystina* Luer & R. Vásquez described herein, but differs by a coarsely caespitose habit, with more or less stout ramicauls. The elliptical leaf, with an acute or subacute tip is surpassed by a few, congested, many-flowered racemes of small, yellow flowers. The sepals are glabrous, and broadly ovate, the petals are obtuse and three-veined, and the lip is type A, concave anteriorly above an obtuse tip, and below a shallowly cleft bar and a glenion.

**Paratype.** Bolivia—Cochabamba: Ayopaya, Sailapata, 2700 m, October 1935, *M. Cárdenas* 3299 (AMES, Herb. Card.).

***Stelis clausa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yun-gas, collected near Chulumani, fl. in cult. by Dino Menato, 31 January 1983, *C. Luer* 8638 (Holotype: SEL). FIGURE 26.

This medium-sized, caespitose species distinguished by a many-flowered, crowded, second raceme of minute, barely opened flowers with broad, 3-veined petals; and a subquadrate lip with an acute apex.

**Plant** medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 7–9 cm long, enclosed by 2–3 close, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 7–9 cm long including a petiole 1–1.5 cm long, the blade 1.5 mm wide in the dry state, narrowly cuneate below into the petiole. **Inflorescence** an erect, strict, densely many-flowered raceme with many flowers that barely open, 10–17 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul; floral bracts tubular, obtuse, 2 mm long, 2 mm wide; pedicels 1 mm long; ovary 1 mm long; color of flowers not stated; **sepals** connivent, glabrous externally, minutely pubescent along thickened margins, ovate, acute, concave, 3-veined, connate basally, the dorsal sepal 2.5 mm long, 1.5 mm wide, the lateral sepals 2.25 mm long, 1.75 mm wide; **petals** transversely elliptical, thickened with broadly rounded apex, concave in basal third, 0.4 mm long, 1 mm wide, 3-veined; **lip** subquadrate, 0.75 mm long, 0.5 mm wide, 0.3 mm deep, the apex

triangular, acute, concave below the bar, the dorsum slightly convex, microscopically pubescent, the base truncate, hinged to the base of the column; **column** ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *clausus*, "closed," referring to the flower.

**Comments.** This species is characterized by one or two elongated, congested, secund racemes with a comparatively thick rachis that bears minute, nutant flowers that apparently barely open. The connivent sepals are ovate and acute with microscopically ciliate, slightly thickened margins. The petals are broad with thick, rounded apices; and the triangular apex of the lip protrudes from between the petals.

**Stelis cloesiorum** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, road to Tablas, 2800 m, collected by Patrick and Martine Cloes, fl. in cult. in Hasselt, Belgium, 8 August 2001, *C. Luer 20010* (Holotype: MO). FIGURE 27.

This small species of Section *Humboldtia*, is distinguished by a narrow, long-petiolate leaf that is exceeded by a loose, few-flowered raceme; an ovate, three-veined dorsal sepal; a deep synsepal; hastate petals; and a shallow, semidiscoid lip.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4.5 cm long including the petiole ca. 2 cm long, the blade 0.5 cm wide in the dry state, narrowly cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, loosely few-flowered raceme, 6 cm long including the peduncle 3 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** glabrous, the dorsal sepal rose, ovate, acute, 5 mm long, 3.5 mm wide, 3-veined, the lateral sepals yellow-white, ovate, oblique, connate to above the middle into a deeply concave, ovoid, obtuse synsepal, 5 mm long, each 2 mm wide, 3-veined; **petals** hastate, triangular, acute with thickened margins, 1 mm long, 1.5 mm wide, 3-veined; **lip** shallowly semidiscoid, 0.6 mm long, 1 mm wide, 0.3 mm deep, shallowly concave anteriorly, the apex broadly rounded, the base elevated centrally with a short, antrorse, digitiform process, the dorsum decurved behind the central process; **column** stout, ca. 0.8 mm wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for Patrick and Martine Cloes, collectors of this species.

**Comments.** This small species is known from only a single, possibly depauperate, cultivated plant, from which a leaf and stem that held two fresh, medium-sized flowers was removed. The ovate dorsal sepal and the deeply concave synsepal do not appear unusual, but the hastate petals and shallow, semidiscoid lip are most unusual. The apex of the lip is broadly rounded, and a small, thumb-like process protrudes from a callus in the center of the transverse base.

***Stelis coccidata*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: Samaipata, ca. 1000 m, collected by Dr. Luis Moreno, fl. in cult. in Santa Cruz, 15 January 1983, *C. Luer* 8521 (Holotype: SEL). FIGURE 28.

This small, caespitose species is distinguished by minute flowers in a subax raceme longer than the leaves; transversely ovate to subcircular sepals; three-veined petals; and a subcircular, minutely apiculate lip with a long, elevated glenion.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 18–22 mm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 3–5 cm long including a petiole 1–2 cm long, the blade 7–8 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subax, many-flowered raceme with a few flowers open simultaneously, to 8 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1 mm long; pedicels 1–1.25 mm long; ovary 0.5 mm long; flowers light green, suffused with rose; **sepals** glabrous, concave basally to accommodate the central apparatus, the dorsal sepal broadly ovate, obtuse, 1 mm long, 1.25 mm wide, 3-veined, the lateral sepals subcircular, oblique, 0.8 mm long, 1.25 mm wide, 3-veined; **petals** sub-quadrate, concave, broadly truncate, with a thin margin, 0.5 mm long, 0.6 mm wide, 3-veined; **lip** shallowly subcircular, 0.5 mm long, 0.6 mm wide, 0.25 mm deep, shallowly concave within the broadly rounded apex with a minute apiculum, the bar broad, convex continuing from the base with an elongated glenion, the dorsum narrow, shortly truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long, 0.8 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *coccidatus*, "like cocci, the spherical bacteria," referring to the tiny, subcircular floral parts.

**Comments.** This small, caespitose species is known only from a collection by Dr. Moreno near Samaipata, the eastern edge of Andean forest. A hairlike peduncle lifts the tiny-flowered raceme above the leaves. The transversely ovate to subcircular sepals are about one millimeter long and wide; the petals are three-veined; and the shallow lip is vaguely similar to that of *Stelis argentata* Lindl.

***Stelis comosa*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 2800 m, 14 November 1992, *C. Luer, J. Luer & R. Vásquez* 16412 (Holotype: MO). FIGURE 29.

This small, caespitose species is distinguished by a many-flowered raceme longer than the leaf; ovate sepals with a cellular surface within; three-veined petals sharply concave below a transverse callus; and a concave lip with a thick, bifid bar and a long-pubescent dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2–3 cm long, enclosed by a tubular sheath below the middle and 2–3 other sheaths below. **Leaf** erect, coriaceous, elliptical, acute, 4–5.5 cm long including a petiole 1 cm long, the blade 1–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–3 erect, strict, congested, distichous, many-flowered racemes with most flowers open simultaneously, 9–11 cm long including the

peduncle 2–3 cm long, from near the apex of the ramicaul, with a spathe 5 mm long; floral bracts infundibular, oblique, acute, 2–3 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers dark purple; **sepals** with cellular surface, ovate, 3-veined, the dorsal sepal subacute, 4 mm long, 3 mm wide, the lateral sepals obtuse, antrorse, 3 mm long, 2.5 mm wide; **petals** transversely elliptical, 1 mm long, 1.2 mm wide, the apex broadly rounded with a thick, cellular margin, deeply concave below a transverse callus, 3-veined, overlapping the margins of the lip; **lip** subquadrate with the apex thin, rounded, 1.3 mm long, 1.3 mm wide, 0.9 mm deep, concave below a thick, cleft bar, the dorsum long-pubescent, with a rounded, central callus, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 2 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *comosus*, "hairy," referring to the dorsum of the labellum.

**Comments.** Vegetatively this species is indistinguishable from the frequent *Stelis rutrum* Luer & R. Vásquez described herein, but it differs from the latter by thick, deeply concave petals, and morphology of the lip. As with *S. rutrum*, the lower angles of the petals overlie the upper margins of the lip. The lip is concave with thin margins below thick halves of a cleft bar, and the dorsum is densely finely and long-pubescent.

**Stelis concinna** Lindl., J. Bot. (Hooker) 1: 11, 1834. TYPE: Ecuador: *Col. Hall s.n.* (Holotype: K). FIGURE 30.

*Stelis flexuosa* Lindl., Ann. Mag. Nat. Hist. 12: 397, 1843. From the Latin *flexuosus*, "flexuous," referring to the zigzag rachis.

*Stelis capillipes* Rchb.f., Bonplandia 3: 240, 1855. From the Latin *capillipes*, "capillary-footed," referring to the hair-like peduncle and rachis.

*Stelis longihirta* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 88: 51, 2002. From the Latin *longihirtus*, "long-hairy," referring to the sepals.

**Plant** very small, epiphytic, caespitose; roots numerous, very slender. Ramicauls erect, slender, 0.5–1 cm long, enclosed by a tubular sheath from below the middle and another 1–2 other sheaths at the base. **Leaf** erect, coriaceous, very narrowly linear-obovate, subacute, 2–3 cm long with an indistinct petiole, 0.5–2 cm long, the blade 3–5 mm wide, gradually narrowed into the petiole. **Inflorescence** an erect, lax, successively several-flowered raceme to 15 cm long including the peduncle ca. 4 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1–1.5 mm long; pedicels 1–1.5 mm long; ovary 1 mm long; flowers red-purple; **sepals** long-villous, the dorsal sepal erect, 1.75 mm long, 1.25 mm wide, incompletely 3-veined, convex, the lateral sepals ovate, obtuse, barely connate, 1.5 mm long, 1.25 mm wide, incompletely 3-veined, more or less held forward, opposite when expanded; **petals** transversely oblong-obovate, transversely obtuse with thin margins, 0.75 mm long, 0.8 mm wide, 1-veined, shallowly concave; **lip** subtriangular-ovoid, subacute at the apex, 0.5 mm long, 0.5 mm wide, 0.5 mm deep, shallowly concave anteriorly with a glenion, with the bar convex on either side, the dorsum with a low, minutely pubescent callus toward the base, the base truncate, hinged

to the base of the column; **column** stout, 0.75 mm long, 0.75 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Ecuador, Peru, Venezuela. **Etymology.** From the Latin *concinus*, "neat, elegant," referring to the plant.

**Comments.** Lindley first described this species from Ecuador as *S. concinna* from a fragment collected by Hall, who was known to have collected around Quito. Reichenbach described *S. capillipes* from a collection near Quito by Jameson. This collection was identified by Lindley as the same as his *S. flexuosa* which he had described from a Peruvian collection by Mathews. Lindley had both Mathews's collection and the Ecuadorian collection by Jameson mounted on the same sheet.

This tiny, densely caespitose species is recognized by a long, hair-like, flexible, flexuous, successively flowered raceme that eventually far surpasses the leaves. The widely spread and long-pubescent sepals are ovate, but often with the sides revolute. The petals are broad, thin and single-veined. The lip is cuneate and filled with a thick, cleft bar.

**Additional collections** Bolivia: La Paz: Saavedra, between Charazani and Camata, 2100 m, 20 November 1992, *R. Vásquez, C. Luer, J. Luer & D. Ric 1717* (Herb. VASQ).

***Stelis consors*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, new road from Cochabamba to Villa Tunari, 1750 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez 12827* (Holotype: MO). FIGURE 31.

This small to medium-sized, caespitose species is characterized by several, simultaneous racemes that are more or less as long as narrowly elliptical leaves; very small flowers with glabrous, obtuse sepals; single-veined petals; a type A lip; and a column with a pair of well-developed stigmas.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–8 cm long, enclosed by a close, tubular sheath near the middle and 2–3 other sheaths about the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4–7 cm long including an ill-defined petiole less than 1 cm long, the blade 0.8–1 cm wide, cuneate below into the petiole. **Inflorescence** 1–5 erect, congested, distichous, nearly simultaneously many-flowered racemes, 2–7 cm long, flowering from the base, from a spathe 0.5–0.8 mm long at the node below the apex of the ramicaul; floral bracts oblique, inflated, 1.5 mm long, 1.5 mm wide; pedicels 0.5 mm long; ovary 0.5 mm long; **sepals** white, glabrous, expanded, broadly ovate, obtuse, connate basally, ca. 1 mm long and wide, 3-veined; **petals** purple, thin, transversely obovate, concave, with the apex rounded with a narrow margin, 0.4 mm long, 0.5 mm wide, 1-veined; **lip** purple, subquadrate, 0.3 mm long, 0.4 mm wide, 0.4 mm deep, concave below the cleft bar with a glenion, the apex truncate, minutely apiculate apex, the dorsum densely short-pubescent above the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 1 mm long, 1 mm wide, the anther and the well-developed, diverging stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *consors*, "with features in common," referring to the similarity of physical features to those of other species.

**Comments.** Vegetatively, this species resembles the variable *Stelis hylophila* Rchb.f. but it is distinctly different with well-developed stigmatic lobes. The minute flowers with white, non-recurved sepals and purple petals and lip are produced in a few, congested racemes with dilated floral bracts. The petals are single-veined, and the lip is a classical type A.

**Stelis coroicensis** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8573* (Holotype: SEL). FIGURE 32.

This caespitose species is distinguished by a multiflowered inflorescence about as long as a long-petiolate leaf that is borne by an equally long ramicaul with an inflated sheath; obtuse sepals; three-veined petals; and a rounded lip with the dorsum densely pubescent.

**Plant** medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–6 cm long, enclosed by a loose, tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, petiolate, 8–11 cm long including a petiole 2–3 cm long, the blade 1.2–2 cm wide in the dry state, narrowed below into the petiole. **Inflorescence** 1–2 erect, strict, congested, simultaneously many-flowered racemes, 6–10 cm long including the peduncle 4–5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, inflated, 3 mm long; pedicels 2 mm long; ovary 1.2 mm long; **sepals** yellow-green to rose, glabrous externally, convex, pubescent within, the dorsal sepal ovate, obtuse, 3 mm long, 3 wide, 3-veined, the lateral sepals ovate, obtuse, 2.3 mm long, 2.5 mm wide, 3-veined; **petals** transversely ovate, concave, broadly rounded to truncate at the apex, with a thickened, roughened margin, 0.8 mm long, 1.25 mm wide, 3-veined; **lip** type A, suborbicular, 0.8 mm long, 1 mm wide, 0.6 mm deep, round at the apex with a thickened margin, shallowly concave below with the bar with a glenion, the dorsum covered with a dense, short, pubescence, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for the community of Coroico, near where the species was collected.

**Comments.** This caespitose species has no distinctive feature, but a combination of morphological characters distinguishes it. The ramicaul is mostly concealed by a loose, tubular sheath; the elliptical leaf is acute and long-petiolate; the one or two racemes are about as long as the leaves; the sepals are obtuse, convex and pubescent within; the petals are three-veined; and the dorsum of the type A lip is covered with a dense, short pubescence.

**Stelis cubicularia** Luer & R. Vásquez, *Phytologia* 49: 226, 1981. TYPE: Bolivia—La Paz: Murillo, along Río Zongo, 2800 m, 27 January 1980, *C. Luer, J. Luer & R. Vásquez 4968* (Holotype: SEL). FIGURE 33.

**Plant** small to medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, densely fasciculate, 2–5 cm long, enclosed by a tubular

sheath from near the middle and 1–2 sheaths below the middle and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4–7 cm long including the petiole ca. 1 cm long, the blade 0.5–0.9 cm wide in the dry state, narrowly cuneate below to the petiole. **Inflorescence** 1–3 erect, strict, distichous, congested, many-flowered racemes with many flowers open simultaneously, 6–14 cm long including the peduncle 2–4 cm long, from a node below the apex of the ramicaul, subtended by a spathe 5–8 mm long; floral bracts tubular, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow-green; **sepals** glabrous, the dorsal sepal ovate, narrowly obtuse, 2 mm long, 1.5 mm wide, 3-veined, the lateral sepals ovate, oblique, connate into a deeply concave, ovoid synsepal, 2 mm long, 1.5 mm wide unexpanded, 6-veined with the veins thickened, the apex obtuse, minutely retuse; **petals** elliptical-oblong, the apex concave, rounded, with a thickened apical margin, 0.75 mm long, 0.5 mm wide, faintly 1-veined; **lip** thickly subcordate, 1 mm long, 0.8 mm wide, 0.4 mm deep, concave anteriorly, the apex thick, obtuse, incurved, the basal angles rounded with the dorsum and bar between, shallowly incised into the broad cavity below, the dorsum flat with a low, central thickening, the base truncate, hinged to the base of the column; **column** stout, ca. 0.8 mm wide, with the rostellum protruding, the anther and elongated, diverging stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *cubicularius*, "like a bed chamber," referring to the concave synsepal.

**Comments.** This caespitose species is characterized by a slender ramicauls with slender leaves that are surpassed by one to three densely flowered racemes of small flowers. The dorsal sepal is three-veined, and the lateral sepals are connate into a deeply concave synsepal. single-veined petals that clasp the expanded, protruding stigmatic lobes; and the flat-topped lip is more or less trowel-shaped, deeply and widely concave below the bar, and with an obtuse, incurved tip.

**Additional collections.** Bolivia: La Paz: Murillo, along Río Zongo, January 1980, *R. Vásquez 294* (Herb. Vásq., SEL); Nor Yungas, NW of San Pedro, road through Incahuara–Mejillones, 1500 m, 12 February 1983, *J.C. Solomon 9531, 9534* (MO); Sud Yungas, road to Suapi, W of Coroico, 1600 m, 21 January 1984, *C. Luer, J. Luer & R. Vásquez 9499* (SEL).

***Stelis darwinii*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, old road from Cochabamba to Villa Tunari, 1700 m, 30 January 1997, *C. Luer, J. Luer, R. Vásquez & D. Ric 18338* (Holotype: MO). FIGURE 34.

This large, caespitose species of *Stelis* section *Humboldtia* is distinguished by stout ramicauls, elliptical leaves, and a long, secund, simultaneously flowered raceme with the dorsal sepal three-veined, and an obtuse lip with a concave glenion that divides the bar.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 8–11 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 6–9 cm long including a petiole 1.5 cm long, the blade 1.5–2 cm wide in the dry state, cuneate below into

the petiole. **Inflorescence** an erect, strict, secund, congested, simultaneously many-flowered raceme with numerous flowers open simultaneously, to 27 cm long including the stout peduncle 4–6 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 8–10 mm long; floral bracts oblique, acute, 3 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers yellow-white; **sepals** glabrous, the dorsal sepal elliptical, acute, 6.5 mm long, 2.3 mm wide, 3-veined, with or without an and additional pair of short veins at the base, the lateral sepals lunate, adherent into a shallowly concave, gaping, subspherical synsepal, 5.5 mm long, 5.5 mm wide expanded, 6-veined, the apex rounded; **petals** lunate, with a broad, thick, slightly roughened, rounded, apical margin, 0.5 mm long, 1 mm wide, 3-veined; **lip** thickly triangular, acute with rounded margins, 0.75 mm long, 0.8 mm wide, 0.6 mm deep, the bar thick, cleft with a concave glenion, the dorsum with a low, broadly rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.75 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Darwin Ric of Montero, Santa Cruz, co-collector of this species.

**Comments.** This large, caespitose species is similar to *Stelis nutans* Lindl., but is distinguished by a stouter habit with twice larger flowers. The dorsal sepal is three-veined, and barely five-veined at the base of one collection. The synsepal is rounded and shallowly concave. The lip is triangular and obtuse with a deep glenion descending from a cleft across the bar.

**Paratypes.** Bolivia—La Paz: Inquisivi, near Inquisivi, 2500 m, January 1981, C. Luer, J. Luer & R. Vásquez 5977 (SEL); terrestrial along road cut near the pass above Circuata, 2600 m, 30 January 1983, C. Luer, J. Luer & R. Vásquez 8628, 8633 (SEL).

**Stelis dasysepala** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba; Chapare, along Río Ronco, 10 June 1980, R. Vásquez 430 (Holotype: SEL; Isotype: Herb. Vásq.), C. Luer illustr. 21850. FIGURE 35.

This caespitose species of section is distinguished by flowers with long-pubescent, obtuse sepals in a secund raceme longer than the leaf; proportionately large, subcircular, single-veined petals; and a shallow, obtuse lip with a glenion.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 3.5 cm long, enclosed by a tubular sheath from near the middle, and another sheath below. **Leaf** erect, coriaceous, elliptical, subacute, 5 cm long including a petiole 1.5 cm long, the blade 1.3 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–2 erect, strict, secund, loose, simultaneously many-flowered racemes, to 12 cm long including the peduncle 6 cm long, from the apex of the ramicaul, the spathe fugacious; floral bracts oblique, acute, 2 mm long; pedicels 2 mm long; ovary 1.5 mm long; **sepals** color unknown, with a long, shaggy pubescence on the distal third and along the margins, ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.5 mm wide, the lateral sepals 2 mm long, 2 mm wide; **petals** broadly ovate, 1 mm long, 1 mm wide, 1-veined, the apex broadly obtuse, the margin thickened with irregular aggregations of dark



pigment; **lip** subquadrate, discoid, 0.8 mm long, 0.8 mm wide, 0.2 mm deep, the apex broadly obtuse with an irregular pigment as on the petals, shallowly concave below a low bar with a shallow glenion, the dorsum microscopically pubescent toward the base, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *dasysepala*, "hairy sepals," referring to the long-pubescent sepals.

**Comments.** This species is characterized by relatively stout ramicauls that bear a petiolate leaf and one or two longer, strict racemes of small flowers with a long, disheveled pubescence on the distal third of the sepals. The apical margins of both the sepals and lip are minimally thickened, but marked with irregular clumps of microscopical bits of a dark pigment. The petals are subcircular and single-veined, and the lip is subquadrate and thin with a low, indistinct bar with a glenion.

**Stelis delasotae** Luer, sp. nov. TYPE: Bolivia—La Paz; Sud Yungas, Cerro Uchunachi, near Coroi-co, 2200 m, 25 February 1956, *E. de la Sota* 746 (Holotype: AMES; Isotype: HB), C. Luer illustr. 21896. FIGURE 36.

This shortly repent, ascending species is distinguished by flowers in a loose raceme about as long as an acute, elliptical leaf; obtuse, minutely pubescent sepals; proportionately large petals; and a shallow lip with a minute, acute apiculum.

**Plant** small, epiphytic, shortly repent, rhizome stout, ascending; roots slender. Ramicauls erect, stout, 4–5 cm long, enclosed by a tubular sheath from near the middle, another sheath below, and a sheath at the base. **Leaf** erect, coriaceous, elliptical, acute, 6–10 cm long including a petiole 1–2 cm long, the blade 1–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–2 erect, subflexuous, loose, simultaneously many-flowered racemes, 5–11 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul, the spathe slender, 5 mm long; floral bracts oblique, acute, 2.5 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** color unknown, densely short-pubescent, broadly ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.75 mm wide, the lateral sepals 2.5 mm long, 2.3 mm wide; **petals** transversely lunate, 0.6 mm long, 1 mm wide, faintly 3-veined with a transverse carina, the apex broadly rounded with the margin thick; **lip** subquadrate, 0.25 mm long, 0.8 mm wide, 0.25 mm deep, the apex truncate, with an acute apiculum, transversely concave below a low bar, the dorsum slightly convex, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Prof. Ramón Elías de la Sota of the Universidad Nacional de La Plata, Argentina, who collected this species.

**Comments.** This species is characterized by a stout, ascending rhizome that bears a petiolate leaf and one or two, subflexuous, loosely flowered racemes. The sepals are broadly ovate and densely short-pubescent; the petals are thickly margined and faintly three-veined; and the lip is shallow with the truncate apex minutely apiculate.

*Stelis delasotae* Luer is similar to the variable *S. argentata* Lindl., but differs in the stout, ascending rhizome; the thick petals with a thick, rounded margin; and a flat, apiculate lip with a narrow, transverse cavity.

**Stelis dinoi** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, collected near Chulumani, fl. in cult. by the late Dino Menato, 31 January 1983, C. Luer 8640 (Holotype: SEL). FIGURE 37.

This medium-sized species is distinguished by four or five many-flowered, crowded, distichous racemes of minute flowers with single-veined sepals, single veined petals, and a three-lobed lip.

**Plant** medium in size, epiphytic, caespitose; roots missing, ramicaul incomplete, erect, slender, at least 4 cm long, sheaths absent. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 7 cm long including a petiole 1 cm long, the blade 1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 4–5 erect, slender, strict, crowded, many-flowered, distichous racemes with many flowers open simultaneously, 7–8 cm long including the peduncle ca. 2 cm long, subtended by a spathe ca. 1 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.75 mm long; flowers yellow; **sepals** glabrous, ovate, acute, 1-veined, the dorsal sepal 2 mm long, 1 mm wide, the lateral sepals 2 mm long, 1.25 mm wide; **petals** thin, thickened at the apex, subcircular, concave, 0.5 mm long and wide, 1-veined; **lip** 3-lobed, 1 mm long, 1 mm wide across lateral lobes, 0.4 mm deep, the apical lobe triangular, acute, protruding, the lateral lobes broadly rounded, shallowly concave centrally below a thick, ovoid callus at the base, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Dino Menato of Chulumani who cultivated this species.

**Comments.** Cultivated in Chulumani by Dino Menato, only a specimen broken off above the base remains. This unique species is characterized by four or five delicate racemes about as long as the leaf with numerous, tiny flowers with single-veined sepals that are connivent in the only known specimen. No doubt the sepals part as they do in similar species with acute, single-veined sepals. The rounded petals are single-veined; and the lip is three-lobed with a triangular middle lobe, and larger, rounded, lateral lobes. The lip is like no others, but there is a vague similarity to the lip of that of *Stelis enervis* Luer & R. Vásquez described herein.

**Stelis dolabrata** Luer, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, old road SE of Unduavi bridge, 2900 m, 7 November 1982, J.C. Solomon 8742 (Holotype: MO), C. Luer illustr. 21869. FIGURE 38.

This large, caespitose species of *Stelis* section *Humboldtia* is distinguished by elliptical leaves far surpassed by an elongated raceme of small flowers; lateral sepals concave, connate near the middle forming a bifid synsepal; three-veined petals with a thick, rounded margin; and a hatchet-shaped lip.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5–8 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 7–9 cm long including a petiole 2–2.5 cm long, the blade 1.2–1.6 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, secund, congested, simultaneously many-flowered raceme with numerous flowers open simultaneously, 15–20 cm long including the peduncle 3–4 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 1–1.5 cm long; floral bracts oblique, acute, 1.5–2 mm long and wide; pedicels 1 mm long; ovary 0.5 mm long; flowers light yellow-green; **sepals** glabrous, concave, 3-veined, the dorsal sepal ovate, obtuse, 3 mm long, 2.5 mm wide, the lateral sepals ovate, obtuse, connate below the middle, forming a concave, bifid synsepal, each sepal 2.5 mm long, 2.5 mm wide, 3-veined; **petals** transversely oblong, concave, with a thick, rounded, apical margin, 1 mm long, 1.5 mm wide, 3-veined, without a carina; **lip** dola-briform, thin across the broad bar, with a short, central cleft flanked by an obtuse swelling, thick at the broadly rounded apex with a thick margin, the dorsum acutely descending, 1 mm long, 1.5 mm wide, 0.5 mm deep, hinged at the base to the base of the column; **column** stout, 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *dolabratus*, "shaped like an axe," referring to the labellum.

**Comments.** This large, caespitose species is characterized by an elongated, crowded raceme of small flowers that far surpass the elliptical leaf. The lateral sepals that comprise a concave synsepal are connate below the middle and adherent above the middle. The petals are thick and concave with a rounded margin. The wedge-shaped lip is most unusual with a thin, erect bar (the blade of the axe) created by the acute descent of the dorsum. In the center is a broad, rounded notch, or cleft, that divides the lip into two equal halves. The broadly rounded apex (the heavy head of the axe) is thickened.

**Stelis elegans** Luer & R. Vásquez., *Phytologia* 49(3): 228, 1981. TYPE: Bolivia—La Paz: Murillo, along Río Zongo, 2600 m, 27 January, 1980, *C. Luer, J. Luer, R. Vásquez & R. Lara 4966* (Holotype: SEL). FIGURE 39.

**Plant** medium to large, ascending-repent with a rhizome 5 mm thick, 0.5–2 cm long between ramicauls, epiphytic to terrestrial, roots coarse, numerous. Ramicauls stout, 4–5 cm long, enclosed by a tubular sheath from below the middle and another sheath below at the base. **Leaf** erect, coriaceous, elliptical, subacute to rounded at the tip, 7–9 cm long, 2 cm wide, cuneate below to a petiole 1–1.5 cm long. **Inflorescence** an erect, congested, many-flowered raceme, with the flowers overlapping, most open simultaneously, 8–11 cm long including the peduncle 3–4 cm long, from a spathe 8–9 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 3–4 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers yellow; **sepals** microscopically ciliate-pubescent, broadly ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 3 mm wide, the lateral sepals 2.5 mm long, 2.5 mm wide,

connate basally; **petals** transversely obovate, concave, the apex broadly rounded, thickened on the margin, 1 mm long, 1.2 mm wide, 3-veined; **lip** subquadrate, rounded at the apex, 1.2 mm long, 1.2 mm wide, 0.5 mm deep, concave below a thickened, shallowly notched bar, with a glenion, the dorsum truncate, densely minutely pubescent, hinged to the base of the column; **column** stout, terete, ca. 1.5 mm long and wide, the anther and stigmatic lobes apical, the foot obsolescent.

**Distribution.** Bolivia. **Etymology.** From the Latin *elegans*, "elegant," referring to a pleasant quality of the plant.

**Comments.** This repent, medium-sized species is distinguished by a stout, ascending rhizome, a densely flowered raceme, slightly longer than the leaf, of many overlapping, yellow flowers. The sepals are broadly ovate and obtuse, and convex above a deep recess for the proportionately large central apparatus; the petals are three-veined; and the lip is rounded and concave below a thick bar that is pubescent on the dorsum.

**Additional collections.** Bolivia: Cochabamba: Ayopaya, N of Cocapata, 2630 m, 5 February. 1997, C. Luer, J. Luer & R. Vásquez 18392, 18400 (MO).

**Stelis elongata** Kunth, Nov. Gen. Sp. 1: 363, 1816. TYPE: COLOMBIA—

Cauca: A. Humboldt & A. Bonpland s.n. (Holotype: BP, photo at AMES).

FIGURE 40.

*Stelis lobata* Rchb.f., Bonplandia 3: 241, 1855. From the Latin *lobatus*, "lobed," referring to the labellum.

*Stelis melicoides* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 66, 1921. From the Greek *melicoides*, "bee-like," referring to the fancied appearance of the flowers.

*Stelis angustifolia* Kraenzl. ex Weberb., Pflanzw. Peru. And. 259, 1911, not Kunth. From the Latin *angustifolius*, "narrow-leaved," referring to the leaves.

**Plant** small to large, epiphytic, scandent, long-repent, the rhizome stout, ascending, 0.5–2 cm long between ramicauls; roots slender. Ramicauls ascending, slender, 1–8 cm long, enclosed by a tubular sheath from near the middle and 2–3 other sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, petiolate, with the apex subacute to acute, 2–9 cm long including the petiole 0.5–1.5 cm long, 0.7–1 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, congested, secund, simultaneously many-flowered raceme, 4–20 cm long including the peduncle 1–5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2–3.5 mm long; pedicels 1–2 mm long; ovary curved, 1–1.5 mm long; flowers yellow-green to rose or purple; **sepals** glabrous externally, cellular-papular within, the dorsal sepal erect, oblong-obovate, obtuse, 3–3.5 mm long, 1.75–2 mm wide, 3-veined, connate basally to the synsepal, the lateral sepals ovate, subacute, 2.3–2.75 mm long, 1.5–1.9 mm wide, 3-veined, connate basally, but held forward; **petals** yellow-green, transversely ovate, 0.5–0.6 mm long, 0.8 mm wide, shallowly concave below the broadly obtuse, thickened margin; **lip** yellow-green thick, trilobed, 0.8–1 mm long, 0.6 mm wide across the transversely oblong body with the basal lobes, the apical lobe narrowly triangular, acute, concave, the base

truncate, hinged to the column-foot; **column** stout, 0.5 mm long, 0.75 mm wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia, Colombia, Ecuador, Peru. **Etymology.** From the Latin *elongatus*, "elongated," referring to the habit.

**Comments.** This slender, long-scandent species is variable, relatively frequent and widely distributed in the Andes from Colombia into central Bolivia. It is characterized by a stout, ascending, creeping rhizome and ascending, erect ramicauls about as long as the long, slender leaves that are surpassed by a slender, many-flowered raceme. The erect dorsal sepal is longer than the lateral sepals that are variously connate and held forward as a synsepal. The petals are flabellate and thickened; the lip is one millimeter long and three lobed; the lateral lobes are small and basal while the anterior lobe is narrowly triangular.

**Additional collections.** Bolivia: Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 2800 m, 18 January 1988, *C. Luer, J. Luer & R. Vásquez 12875* (MO); old road from Cochabamba to Villa Tunari, 3150 m, 1 February 1997, *C. Luer, J. Luer & R. Vásquez 18364* (MO); old road from Cochabamba to Villa Tunari, 2800 m, *C. Luer, J. Luer & R. Vásquez 18371* (MO).

***Stelis enervis*** Luer, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, between Huancané and San Isidro, 2250 m, 11 February 1991, *S.G. Beck 19785* (Holotype: SEL; Isotype: LPB), *C. Luer* illustr. 21838. FIGURE 41.

This small, caespitose species is distinguished by slender, long-petiolate leaves; a shorter, many-flowered inflorescence; minute flowers with single-veined sepals that are long-pubescent near the margins; petals often without a visible vein; and an ovate lip without a bar.

**Plant** small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2.5–3 cm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, long-petiolate, obtuse, 5–7 cm long including a petiole 1.5–3 cm long, the blade 5–8 mm wide in the dry state, gradually narrowed below into the petiole. **Inflorescence** an erect, strict, congested, many-flowered raceme with several flowers open simultaneously, 7–8 cm long including the peduncle 1–2 cm long, from a node below the apex of the ramicaul, with a spathe 6–7 mm long; floral bracts oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers yellow; **sepals** free, long-pubescent near the margins, elliptical, obtuse, 1-veined, the dorsal sepal 3 mm long, 1.5 mm wide, the lateral sepals antrorse, 3 mm long, 1.6 mm wide; **petals** translucent, ovate, obtuse, 0.7 mm long, 0.6 mm wide, often without a visible vein; **lip** ovate with erect, broadly rounded sides, acuminate-obtuse at the tip, 1.2 mm long, 1 mm wide, 0.2 mm deep, with a minutely pubescent, low, rounded callus at the truncate base, hinged to the base of the column; **column** slender, clavate, 0.5 mm long, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *enervis*, "without a nerve," referring to the petals.

**Comments.** This species is characterized by single-veined sepals that are long-pubescent, especially toward the margins; membranous petals often without a visible vein; and a lip with a thick, basal callus that is sparsely and minutely pubescent.

*Stelis farinosa* Luer & R.Vásquez described herein is closely allied, but differs with glabrous sepals, petals with a single vein, and a farinose callus that fills the basal third of the lip.

**Stelis euspatha** Rchb.f., Bonplandia 3: 225, 1855. TYPE: Bolivia—La Paz:

Yungas, ca. 1846, *T.C. Bridges s.n.* (Holotype: W). FIGURE 42.

*Stelis mononeura* Lindl., Fol. Orchid. *Stelis* 8: 4, 1859. From the Greek *mononeuron*, "one-nerved," referring to the petals.

*Stelis iminapensis* Rchb.f., Xenia Orchid. 3: 25, 1881. Named for Cerro Imiñapi, where the species was collected.

*Stelis buchtienii* Schltr., Repert. Spec. Nov. Regni Veg. 10: 451, 1912. . Named for Otto Buchtien, collector of the species.

*Stelis xanthantha* Schltr., Repert. Spec. Nov. Regni Veg. 10: 452, 1912. From the Greek *xanthanthos*, "yellow-flowered," referring to the flowers.

**Plant** medium in size to large, epiphytic, densely caespitose-ascending, to shortly repent; roots slender. Ramicauls erect, slender, 5–18 cm long, with a tubular sheath from near the middle and 2 tubular sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, acute, 4–12 cm long including a petiole 1–1.5 cm long, the blade 0.5–1.5 cm wide, cuneate below into the petiole. **Inflorescence** 1–6 erect, congested, many-flowered racemes 6–15 cm long including the peduncle ca. 1 cm long, with many flowers open simultaneously, with a spathe 1–1.5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1–2.5 mm long; pedicels 1–1.5 mm long; ovary 1 mm long; **sepals** green to yellow, with or without purple suffusion, glabrous externally, pubescent within, elliptical-ovate, subacute to obtuse, 1- to incompletely 3-veined, connate basally, the dorsal sepal 1.75–2.75 mm long, 1.25–1.75 mm wide, the lateral sepals held forward, opposite when expanded, oblique, 1.5–2.5 mm long, 1–1.75 mm wide; **petals** green or purple, transversely obovate to obcuneate, concave, more or less truncate at the thickened apex, 0.5–0.9 mm long, 0.5–0.75 mm wide, 1-veined; **lip** green or purple, oblong-ovoid, 0.6–0.75 mm long, 0.6–0.7 mm wide, 0.4–0.5 mm deep, concave anteriorly with the apex obtuse, often with a minute, obtuse marginal angle, concave beneath a retuse or incised, shelf-like bar, the dorsum convex, minutely pubescent, the base truncate, hinged to an obsolescent column-foot; **column** stout, 1 mm long, with the anther and the bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Peru. **Etymology.** From the Greek *euspatha*, "with good spathe," referring to the spathe. Reichenbach described the spathe as "carinate, with the apex inflexed and minutely uncinata," but this is not evident on the type-specimen. Possibly Reichenbach was looking at an artifact.

**Comments.** This variable species occurs frequently at high altitudes from southern Colombia to central Bolivia. It is characterized by one to several racemes of small flowers that usually surpass the narrow leaf. The spathe is

narrow, but often conspicuous. The sepals are pubescent within, sometimes sparsely pubescent, rarely glabrous, with the lateral sepals antrorse. The sepals are incompletely three-veined, the lateral veins weak, vestigial, or absent; the petals are always single-veined. The lip is type A, concave below a bifid bar and with the dorsum minutely pubescent, or cellular at most, and with the apex obtuse to rounded, and sometimes obtusely apiculate.

In his description of *Stelis buchtienii* and *S. xanthantha*, Schlechter states that the sepals are glabrous, but they are pubescent in rehydrated flowers of isolectotypes. Buchtien made two simultaneous collections at the same site with consecutive numbers that Schlechter published as *S. buchtienii* and *S. xanthantha*. His drawings of the floral parts appear identical, as well as rehydrated flowers of isolectotypes.

**Additional collections.** Bolivia: La Paz: Larecaja, Cerro Cilileca, 2900 m, 18 October – 9 May 1860, *G. Mandon 1134* (AMES); Larecaja, Cerro Imiñapi, 2650 m, December 1859, *G. Mandon 1131* (Holotype of *Stelis iminapensis* Rchb.f.: AMES; Isolectotypes: MO, NY); Sud Yungas, Unduavi, 2800 m, Nov, 1910, *O. Buchtien 2608* (Holotype of *Stelis buchtienii* Schltr.: B†; Lectotype: GH; Isolectotypes: AMES, US); Sud Yungas, Unduavi, 2800 m, November 1910, *O. Buchtien 2609* (Holotype of *Stelis xanthantha* Schltr.: B†; Lectotype designated by Christenson 1996: US; Isolectotypes: AMES, L); Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8571, 8599* (SEL); above Río Unduavi, 3050 m, 24 November 1992, *C. Luer, J. Luer & R. Vásquez 16485* (MO); Río Acero Marca, 2950 m, 29 January 1980, *C. Luer, J. Luer & R. Vásquez 5021* (SEL); Saavedra, along river below Charazani, 2700 m, 19 November 1992, *C. Luer, J. Luer & R. Vásquez 16430* (MO); Nor Yungas, Parque Nacional Cotapata, 2050 m, 18 November 2000, *T. Krömer & A. Acebay 1653* (SEL, LPB), *C. Luer* illustr. 21844; Cochabamba: Chapare, N of Cocopata, 2950 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18379* (MO, SEL); Carrasco, Sehuencas, Río Lupe Mendoza, 2450 m, 13 January 1988, *C. Luer, J. Luer & R. Vásquez 12811* (MO); Carrasco, road to Tablas, 1 December 1979, *R. Vásquez 211* (MO, Herb. Vásq.); forest E of Unduavi, 3100 m, 22 January 1984, *C. Luer, J. Luer & R. Vásquez 9444* (SEL); Sehuencas, below the bridge over Río Fuerte, 2100 m, 11 June 1993, *P. Ibisich & C. Ibisich 93.0365* (LPB; MO, Herb. Vásq.); same collection data, *P. Ibisich & C. Ibisich 93.0397A* (LPB; MO, Herb. Vásq.); Sehuencas, above the cabins of the Country Club, 2250 m, 15 December 1993, *P. Ibisich & C. Ibisich 93.1903* (LPB; MO, Herb. Vásq.), *C. Luer* illustr. 21860; Santa Cruz: Caballero, Parqué Nacional Amboro, N of Comarapa, 2400 m, 12 November 1995, *I.G. Vargas et al. 4165* (MO, USZ).

***Stelis farinosa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1800 m, 22 January 1984, *C. Luer, J. Luer & R. Vásquez 9417* (Holotype: SEL). FIGURE 43.

This small, caespitose species is distinguished by one to three minutely flowered racemes about as long as the leaf; ovate, acute, antrorse, glabrous, single-veined sepals; ovate-

triangular, single-veined petals; and a thin, broadly ovate, acuminate lip with a farinose callus at the base.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–4 cm long, enclosed by 2–3 ribbed, tubular sheaths. **Leaf** erect, coriaceous, elliptical, acute, 5.5–6.5 cm long including a petiole ca. 1 cm long, the blade 12 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** 2–3 erect, strict, congested, many-flowered racemes with most flowers open simultaneously, 5–6 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul, with a spathe ca. 5 mm long; floral bracts oblique, acute, 1 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow; **sepals** glabrous, elliptical-ovate, acute, 1-veined, the dorsal with a pair of vestigial lateral veins, the dorsal sepal 2.5 mm long, 1.5 mm wide, the lateral sepals antrorse, 2.3 mm long, 1.5 mm wide; **petals** membranous, ovate-triangular, obtuse, concave, 0.5 mm long, 0.6 mm wide, 1-veined; **lip** ovate, acuminate, with erect, broadly rounded sides, 1 mm long, 0.6 mm wide unexpanded, 1 mm wide expanded, 0.25 mm deep, with a thick, farinose callus across the basal third, the base truncate, hinged to the base of the column; **column** slender, clavate, 0.5 mm long, 0.6 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia **Etymology.** From the Latin *farinosus*, "mealy," referring to the callus on the lip.

**Comments.** Among the species with single-veined sepals, this species is distinguished by glabrous, elliptical-ovate sepals; ovate-triangular, membranous petals also with a single vein; and a thin, broadly ovate lip with an acuminate apex, and a thick, basal callus that is coarsely farinose.

*Stelis enervis* Luer & R. Vásquez described herein is similar, but differs with sepals that are long-pubescent near the margins, petals without a visible vein, and a non-farinose callus at the base of the lip.

**Stelis flexa** Schltr., Repert. Spec. Nov. Regni Veg. 27: 41, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5060* (Holotype: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES). FIGURE 44.

**Plant** medium in size, epiphytic, ascending-caespitose to long-repent, the rhizome slender, creeping, flexuous, branching, 0.5–2.5 cm long between ramicauls; roots slender. Ramicauls erect to suberect, slender, 2–5 cm long, enclosed by a close, tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 9–12 cm long including an ill-defined petiole ca. 3 cm long, the blade 0.9–1 cm wide dried, narrowed below into the petiole. **Inflorescence** an erect, congested, distichous, simultaneously many-flowered raceme, 12–20 cm long including a peduncle 3–6 cm long, from a spathe 10–12 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.75 mm long; **sepals** rose, bluish to purple, similar, cellular pubescent within, broadly ovate, obtuse, connate basally, 3-veined, the dorsal sepal 1.75 mm long,



2 mm wide, the lateral sepals 1.5 mm long, 2 mm wide; **petals** purple, transversely elliptical, concave, with the apex broadly rounded, the margin thickened, concave below a transverse callus, 0.75 mm long, 0.9 mm wide, 3-veined; **lip** purple, subquadrate, oblong, rounded at the apex, 0.6 mm long, 0.8 mm wide, 0.6 mm deep, concave below a thickened bar with a concave glenion, the dorsum with a low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, terete, ca. 0.8 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia and Peru. **Etymology.** From the Latin, *flexus*, "flexuous," apparently referring to the roots.

**Comments.** The degree of flexion of the slender, repent rhizome depends upon the immediate growing conditions. In a loose, mossy substrate, the rhizome is elongated and flexuous, but in a nearby, compact substrate, the rhizome is short, causing the plant to appear caespitose. An elongated, congested, many-flowered raceme of tiny flowers far surpasses a narrowly elliptical leaf. The sepals are minutely pubescent and obtuse, the petals are three-veined, and the lip is type A.

The habit of *Stelis setacea* Lindl. is similar, but the inflorescence is less than half the length of the leaf, and the sepals are glabrous.

**Additional collections.** Bolivia: Cochabamba: Carrasco, Sehuencas, along Río Lope Mendoza, 2650 m, 13 January 1988, *C. Luer, J. Luer & R. Vásquez 12816* (MO); Sehuencas, Río Fuerte, Nacional Carrasco, 2100 m, 14 December 1993, *P. Ibisch & C. Ibisch 93.1884* (MO, LPB), *C. Luer* illustr. 21855. Chapare, new road from Cochabamba to Villa Tunari, 1850 m, 17 January 1984, *C. Luer, J. Luer & R. Vásquez 9388* (SEL); Chapare, new road from Cochabamba to Villa Tunari, 1900 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez 12842* (MO).

**Stelis flexuosissima** Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 88: 46, 2002. TYPE: Ecuador—Zamora-Chinchi: south of the pass south of Jimbura, 3050 m, 21 February 1986, *C. Luer, J. Luer & A. Hirtz 12012* (Holotype: MO; Isotype: K). FIGURES 45–48.

*Stelis stephanii* B.Steudel, Phytotaxa 38: 49, 2011. Named for Stephan G. Beck of the National Herbarium of Bolivia, collector of this species.

**Plant** small, medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–9 cm long, enclosed by a tubular sheath from below the middle and 2–3 sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, acute, 4–11 cm long including a petiole 1.5–3 cm long, the blade 0.8–2 cm wide in dry state, cuneate below into the petiole. **Inflorescence** 1–3, erect, 15–33 cm long, the raceme flexuous to nearly strict, lax to subcongested near the tip, successively many-flowered, often with many flowers open simultaneously, the peduncle 3–7 cm long, from a node below the apex of the ramicaul, with a spathe 5–10 mm long; floral bracts oblique, acute, 3–4 mm long below to 2 mm long above; pedicels 1.5 mm long; ovary 1.5–2 mm long; **sepals** similar, variously suffused with purple, the pubescence usually white, ovate, obtuse, connate basally, 2.5–3 mm long, 2–2.5 mm wide, 3-veined; **petals** transversely

elliptical-ovate to semilunate, 0.8–1.25 mm long, 1–1.6 mm wide, 3-veined or 1-veined, concave, the apex broadly rounded, thickened on the margin, with or without a transverse carina; **lip** purple, subquadrate, 0.6 mm long, 0.8–1 mm wide, 0.5 mm deep, the apex broadly rounded to obtuse, shallowly concave below a thick, shallowly sulcate bar with a descending glenion, the dorsum with a low, rounded, central callus, minutely pubescent toward the base, the base truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia and Ecuador. **Etymology.** From the Latin *flexuosissimus*, "very flexuous," referring to the rachis.

**Comments.** This species is uncommon in Ecuador, where it was described, but it is frequent and extremely variable in Bolivia. It seems to be speciating into two taxa, one with thicker, three-veined petals, and the other, with petals not as thick, and single-veined. The variation of the petal is not associated with any of the innumerable number of characters found in the vegetative and floral variations of species. The variations are sympatric.

Plants vary in size from small to large; the leaves are narrowly elliptical, acute and petiolate; and the inflorescence with a long peduncle far surpasses the leaf. The many-flowered raceme is loose and variable in the degree of flexion, from marked to nearly strict. The sepals are less than three millimeters long, ovate, three-veined, and long-pubescent; the petals are either single-veined, or three-veined with a transverse carina. The lip is type A with many minor variations.

**Additional collections.** Bolivia: La Paz: Murillo, along Río Zongo, same area along Río Zongo, 2500 m, 27 November 1982, *J. Solomon 8991* (MO, SEL); same area, 1800 m, 18 December 1982, *J.C. Solomon 9169* (MO, SEL); below Lago Zongo, 2500 m, 16 March 1984, *J.C. Solomon, B. Stein & M. Uehling 11860* (MO, SEL); along Río Zongo, 2350 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez 16481* (MO); Sud Yungas, along Río Unduavi, 2400 m, 6 February 1980, *C. Luer, J. Luer & R. Vásquez 5135* (SEL); Chuspipata, Sud Yungas, vally of Coroico, 2450 m, 28 January 1984, *A. Gentry & J. Solomon 44803* (MO); Sud Yungas, near Chulumani, cultivated by Dino Menato, 31 January 1983, *C. Luer, J. Luer & R. Vásquez 8637* (SEL); old road to La Paz SW of Coroico, 2450 m, 4 February 1980, *C. Luer, J. Luer & R. Vásquez 5106* (SEL); Larecaja, Alto Llipi, collected by A. Hirtz 5697, cultivated in Quito, February 2012, *C. Luer 21706* (MO); Saavedra, along river below Charazani, 2550 m, 19 November 1992, *C. Luer, J. Luer & R. Vásquez 16440* (MO); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 2500, 26 November 1978, *C. Luer, J. Luer, F. Fuchs 3540* (MO); same area, 2500 m, 22 January 1980, *C. Luer, J. Luer & R. Vásquez 4876* (SEL); same area, 2400 m, 13 January 1981, petals 3-veined, *C. Luer, J. Luer & R. Vásquez 5654* (SEL); same area, 1750 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez 12829* (MO); same area, 1950 m, 30 January 1988, petals 1-veined, *C. Luer, J. Luer & R. Vásquez 12974* (MO); old road, Cochabamba to Villa Tunari, 2500 m, 23 August

1991, petals 3-veined, *C. Luer, J. Luer & R. Vásquez 15347* (MO); Carrasco, Sehuencas, Río Lupe Mendoza, 2630 m, 13 January 1988, petals 3-veined, *C. Luer, J. Luer & R. Vásquez 12802* (MO); Carrasco, below Monte Puncu along Río Lope Mendoza, 2400 m, 1 February 1981, *C. Luer, J. Luer & R. Vásquez 5811* (SEL); Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 4 February 1983, *C. Luer, J. Luer & R. Vásquez 8676* (SEL).

***Stelis florulenta*** Luer, sp. nov. TYPE: Bolivia—La Paz: Larecaja, Mapiri region, San Carlos, 800 m, 10 February 1927, *O. Buchtien 566* (AMES), *C. Luer* illustr. 21892. FIGURE 49.

This tall, slender species is distinguished by three or four racemes of numerous, minute flowers that more or less equal a linear leaf; obtuse, pubescent, single-veined sepals; single-veined petals; and a lip obtuse and concave below an entire bar with faint markings of a glenion.

**Plant** tall, slender, epiphytic, densely caespitose. Ramicauls erect, slender, 7–8 cm long, enclosed by 2 tubular sheaths, 1 above the middle, and another below the middle, with 1–2 shorter sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical-linear, acute, 12–17 cm long, 2 cm wide in the dry state, narrowly cunate below into a slender petiole 2–3 cm long. **Inflorescence** 3–4 erect, strict, congested, distichous, simultaneously many-flowered racemes, 4–13 cm long including the peduncle 1–2 cm long, with a spathe 7 mm long, from a node below the apex of the ramicaul; floral bracts oblique, obtuse, 1 mm long and wide; pedicels 1 mm long; ovary 1 mm long; flowers without color notes; **sepals** glabrous externally, pubescent within, ovate, subacute to obtuse, 1.5 mm long, 1 mm wide, 1-veined; **petals** transversely elliptical, concave, broadly rounded at the apex, slightly thickened above the middle, 0.5 mm long, 0.8 mm wide, 1-veined; **lip** type A, subtriangular, the apex rounded, concave below the bar with faint markings of a glenion, 0.5 mm long, 0.5 mm wide, 0.4 mm deep, the dorsum featureless, the base hinged to the base of the column; **column** stout, ca. 0.5 mm long, 0.8 mm wide across the stigmatic lobes, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *florulentus*, "profusely flowering," referring to the multitude of tiny flowers.

**Comments.** This nineteenth century collection by a familiar collector of Bolivian orchids was present among unidentified specimens at AMES. It is a densely caespitose species characterized by linear leaves more or less equalled in length by three or four, slender, multiflowered, distichous racemes of closely spaced, tiny flowers. The sepals are obtuse, single-veined and pubescent within; the petals are single-veined; and the lip is type A, obtuse, and without a distinct callus on the dorsum. The single-veined sepals and petals distinguished this species from all others that are more than 15 centimeters tall.

***Stelis fons-stellarum*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8593* (Holotype: SEL). FIGURE 50.

This repent species is distinguished by one or two crowded, multiflowered, distichous inflorescences that surpass a narrowly linear leaf; minute flowers with obtuse sepals and three-veined petals; and a simple, obtuse lip.

**Plant** medium in size, epiphytic, repent, the rhizome stout, 0.5–1.5 cm long between ramicauls; roots slender. Ramicauls erect, relatively stout, 4–5 cm long, enclosed by a tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical-linear, acute, 7–10 cm long, 4–8 mm wide in the dry state, gradually narrowed below into a narrow, sessile base. **Inflorescence** 1–2 erect, strict, congested, simultaneously many-flowered racemes, 10–18 cm long including the peduncle 4–6 cm long, with a spathe 1 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.5 mm long; **sepals** greenish white, glabrous externally, microscopically cellular within, ovate, subacute, 3-veined, the dorsal sepal 1.5 mm long, 1.5 mm wide, the lateral sepals 1.4 mm long, 1.4 mm wide; **petals** purple-brown, transversely obovate, concave, broadly rounded at the apex, with a thickened, roughened margin, 0.5 mm long, 0.6 mm wide, 3-veined; **lip** purple-brown, type A, subtriangular, obtuse at the apex, shallowly concave below the bar with a glenion, 0.6 mm long, 0.6 mm wide, 0.5 mm deep, the dorsum slightly convex, the base hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *fons-stellarum*, "fountain of stars," alluding to the numerous tiny flowers.

**Comments.** This stoutly repent species is characterized by narrowly linear leaves surpassed by one or two multiflowered, distichous racemes of closely and evenly spaced, tiny flowers that resembles showers of microscopic stars. The sepals are obtuse and the petals are three-veined. The lip is type A, obtuse, and without a distinct callus on the dorsum.

**Stelis fragilis** Luer, sp. nov. TYPE: Bolivia—La Paz: Larecaja, Muñecas, below Consata, 1300 m, 15 December 1981, *J.C. Solomon* 6587 (Holotype: MO), C. Luer illustr. 21867. FIGURE 51.

This small, caespitose species is characterized by elliptical leaves and a longer, loose raceme of light green flowers with broadly ovate sepals that are long-ciliate; three-veined petals; and a transverse lip with a deep glenion.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, relatively stout, 2–2.5 cm long, enclosed by a tubular sheath from below the middle, and another sheath below. **Leaf** erect, coriaceous, elliptical, subacute, 4.5–5.5 cm long, including a petiole ca. 1 cm long, the blade 1–1.4 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, loose, simultaneously many-flowered raceme, 8–10 cm long including a peduncle 3–4 cm long, from within the cauline sheath, from near the apex of the ramicaul; floral bracts tubular, acute, 2.5 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers light green; **sepals** glabrous, long-ciliate within, more or less concave, 3-veined, broadly ovate, obtuse, the dorsal sepal 1.75 mm long, 1.75–2 mm wide, the lateral sepals 1.75 mm long, 1.75 mm wide; **petals** transversely obovate, 0.75

mm long, 1.2 mm wide, 3-veined, the apex broadly truncate, with a slightly thickened margin; **lip** transversely oblong, 0.5 mm long; 0.75 mm wide, 0.4 mm deep, the apex rounded with a minute, acute apiculum, the bar thick, deeply cleft and concave midway to the apex, the dorsum cleft centrally, the truncate base hinged to the base of the column; **column** stout, 0.75 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *fragilis*, "easily broken," referring to the rehydrated sepals.

**Comments.** This small species is distinguished by a loose, strict raceme of small, light green flowers with more or less concave sepals that are long-ciliate. Upon rehydration, the sepals are excessively fragile and difficult to expand without destruction, but the petals and lip are in satisfactory condition. The petals are simply three-veined, and the lip is transverse with a minute, acute apiculum. The glenion is a broad, deep cleft with raised margins, which may be exaggerated in a rehydrated specimen.

**Stelis fuchsii** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, new road between Cochabamba and Villa Tunari, 2500 m, 26

November 1978, C. Luer, J. Luer & F. Fuchs 3543 (Holotype: SEL). FIGURE 52.

This medium-sized, caespitose species is characterized by elliptical leaves longer than the ramicaul; an erect, strict, loose to crowded, multiflowered raceme longer than the leaf; minute, purple flowers that sit within the floral bracts with an abbreviated pedicel; single veined petals; and an ovoid lip.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 2–3 cm long, enclosed by a close, tubular sheath from below the middle, and another sheath below. **Leaf** erect, coriaceous, elliptical, acute to subacute, 3–4 cm long, including a petiole less than 1 cm long, the blade 1–1.3 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, successively many-flowered raceme, loosely flowered below to congested above, 12–14 cm long including a peduncle ca. 4 cm long, with a spathe less ca. 1 cm long, from near the apex of the ramicaul; floral bracts oblique, acute, 3 mm long; pedicels 0.5 mm long; ovary 1 mm long; flowers purple; **sepals** glabrous, 3-veined, broadly ovate, obtuse, the dorsal sepal 1.75 mm long, 1.75 mm wide, the lateral sepals 1.5 mm long, 1.5 mm wide; **petals** transversely elliptical, 0.75 mm long, 1 mm wide, 3-veined, the apex broadly rounded with a thickened margin; **lip** type A, ovoid, 0.6 mm long; 0.8 mm wide, 0.4 mm deep, the apex broadly obtuse, concave below a thick, shallowly cleft bar, the dorsum not remarkable, the truncate base hinged to the base of the column; **column** stout, 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the late Fred Fuchs, Jr., co-collector of this species.

**Comments.** This species is distinguished by a tall, slender raceme of small, purple flowers that are borne from within a proportionately large floral bract.

Loosely flowered below, the raceme becomes densely flowered above where the tiny, rounded buds are borne within the floral bract as they mature. The sepals are broadly ovate, the petals are single-veined, and the type A lip is ovoid, concave below a thick bar without a glenion.

**Stelis gibbosa** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, between Coroico and Coripata, 2000 m, 26 January 1988, C. Luer, J. Luer & R. Vásquez 12958 (Holotype: MO). FIGURE 53.

This small, caespitose species of *Stelis* section *Humboldtia* is distinguished by narrowly elliptical leaves and an equally long raceme of flowers with broadly obtuse sepals, and a subtriangular lip with the bar widely divided by a tall, descending callus from the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2–4.5 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 3–5 cm long including a petiole less than 1 cm long, the blade 0.8 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, subflexuous, distichous, subcongested raceme of ca. 10 flowers, several open simultaneously, 5 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 3.5 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers dark red-purple; **sepals** glabrous, the dorsal sepal broadly ovate, obtuse to rounded at the apex, 4 mm long, 3.75 mm wide, 3-veined with an occasional, incomplete vein, the lateral sepals broadly ovate, oblique, connate about midway into a shallowly concave, transversely oblong, bifid synsepal, 2.5 mm long, 4.5 mm wide expanded, 6-veined; **petals** lunate, with a broad, slightly irregular, transversely thickened apical margin, 0.6 mm long, 1 mm wide, 3-veined; **lip** thickly triangular-subquadrate, rounded at the apex, 0.6 mm long, 0.6 mm wide, 0.5 mm deep, the bar widely divided into a deep cavity by the descending portion of a tall, rounded, microscopically pubescent callus on the dorsum, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.75 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *gibbosus*, "gibbous," referring to the tall callus on the dorsum of the lip.

**Comments.** This small, caespitose species is characterized by narrowly elliptical leaves, and an equally long, distichous raceme of dark red-purple flowers. The sepals are broadly obtuse and each three-veined. The lip is most remarkable with a tall, rounded callus on the dorsum that divides the bar on its descent through the center of the lip.

**Stelis grandiflora** Lindl., Companion Bot. Mag. 2: 353, 1836. TYPE: Brazil—Rio de Janeiro: Macahé, J.T. Descourtilz s.n. (Holotype is Descourtilz's illustration at the Library of Institute de France in Paris). FIGURES 54–55.

*Stelis tristyla* Lindl., Edwards's Bot. Reg. 24: misc. no. 69, 1838. From the Greek *tristylos*, "three-pillared," referring to the three lobes of the column (two stigmas and the rostellum).

*Stelis muscifera* Lindl., Fol. Orchid. *Stelis* 8: 2, 1859. From the Latin *muscifer*, "fly-bearing," in allusion to the flowers.

- Stelis megantha* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 83, 1882. From the Greek *meganthos*, "large flower," referring to the flower.
- Stelis zonata* Rehb.f. Gard. Chron. 2: 556, 1883. From the Latin *zonatus*, "zoned," referring to the colored zones of the sepals.
- Stelis bangii* Rolfe ex Rusby, Mem. Torrey Bot. Club 4: 260, 1895. Named for Miguel Bang, collector of the species.
- Stelis robusta* Schltr., Notizbl. Bot. Gart. Mus. Berlin-Dahlem 66(7): 270, 1918, not 1924. From the Latin *robustus*, "robust," referring to the habit.
- Stelis amblyophylla* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 6: 33, 1919. From the Greek *amblyophyllos*, "blunt-leaved," referring to the leaves.
- Stelis trinitatis* Ames, Sched. Orch. 2: 15, 1923. Named for Trinidad, where the species was collected.
- Stelis trinitensis* Ames ex Broadway, Orchid Rev. 34: 134, 1926, sphalm. Ames
- Stelis macrochlamys* Hoehne & Schltr., Album Secc. Bot. Mus. Paulista S. Paulo 135, 1925, nom. nud.; Arch. Bot. São Paulo 1(3): 204, 1926. From the Greek *macrochlamys*, "large mantle," referring to the cauline sheaths.
- Stelis atrobrunnea* Schltr., Repert. Spec. Nov. Regni Veg. 27: 40, 1929. From the Latin *atrobrunneus*, "dark brown," in allusion to the flowers.
- Stelis casanaënsis* Schltr., Repert. Spec. Nov. Regni Veg. 27: 40, 1929. Named for Hda. Casana where the species was collected.
- Stelis trianguliflora* Schltr., Repert. Spec. Nov. Regni Veg. 27: 48, 1929. From the Latin *trianguliflorus*, "referring to the shape of the flowers."

**Plant** small to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 2–10 cm long, enclosed by a loose, tubular sheath from below the middle, and 2 others near and at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 4–15 cm long, 1.5–5 cm wide, cuneate below into a petiole ca. 1 cm long. **Inflorescence** single; to 35 cm long, the raceme erect, congested, distichous, many-flowered, many flowers open simultaneously, floral bracts erect, more or less inflated, oblique, acuminate, more or less imbricating, from 6–12 mm long below to 4–6 mm long above; pedicels 2–7 mm long, within the floral bract; ovary 2–3 mm long; the peduncle 5–10 cm long, with a spathe 1–1.5 mm long, from a node above the apex of the ramicaul; flowers purple to brown; **sepals** glabrous, transversely ovate, obtuse, deeply connate, the dorsal sepal 3–9 mm long, 4–11 mm wide, 5-(7)-veined, sometimes with incomplete, accessory veins, the lateral sepals 2–6 mm long, 3.5–8 mm wide, 5-(7)-veined; **petals** brown to purple, broadly ovate, obtuse, 1–1.5 mm long, 1.5–2.5 mm wide, the margin broad, flat, often with minute crystals, with a transverse callus; **lip** purple, subquadrate, 0.6–1 mm long, 1–1.8 mm wide, 0.5–1 mm deep, shallowly concave below the bar with a shallow glenion, with the apex round with a thick margin, (rarely 2.5 mm long with a large glenion), the dorsum with a rounded callus, sometimes flanked on either side with an indistinct, smaller callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1–1.5 mm wide, the anther and the bilobed stigma apical, the foot obsolescent.

**Distribution.** Bolivia, Ecuador, Guyana, Peru, Trinidad, Venezuela.  
**Etymology.** From the Latin *grandiflorus*, referring to size of the flower, being one of the largest known at that time.

**Comments.** This species is frequent in southern Brazil, but not rare in the northern parts of its distribution, gathering numerous synonymous names. It was first recorded by Lindley from an 1835 collection by Descourtilz near Macaé de Cima not far from Rio de Janeiro, where a recent collection has been made.

*Stelis grandiflora* Lindl. is greatly variable in size over through its wide distribution from Venezuela through Ecuador, and southern Brazil. It is still unreported from intervening Peru. The species is distinguished by a congested raceme of relatively large to large, expanded flowers. The floral bracts are conspicuous as they alternately overlap. The sepals are deeply connate to form a subcircular flower with nearly 180° angles. The thick, obtuse petals and type A lip are unremarkable.

**Additional collections.** Bolivia: La Paz: Yungas, 1890, collected by *M. Bang 458* (Holotype of *Stelis bangii*: K; Isotypes: AMES, BR, G, MO, NY, US, W); Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February. 1920, *O. Buchtien 5068* (Holotype of *Stelis atrobrunnea*: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES); Larecaja, Hacienda Casana, on way to Tipuani, 1400 m, January. 1921, *O. Buchtien 7219* (Holotype of *Stelis casanaënsis*: B†; **Lectotype here designated:** AMES 00084106 [flowers in glycerin]); Larecaja, Hacienda Simaco, on the way to Tipuani, 1400 m, February. 1920, *O. Buchtien 5066* (Holotype of *S. trianguliflora*: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES); Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 1000 m, 17 January 1986, *C. Luer, J. Luer & R. Vásquez 13851* (MO); new road between Cochabamba and Villa Tunari, 1500 m, 17 January 1986, *C. Luer, J. Luer & R. Vásquez 13865* (MO); old road between Cochabamba and Villa Tunari, 1000 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez 18318* (MO).

***Stelis guianensis*** Rolfe, Trans. Linn. Soc. London, Bot. 6: 59, 1901. TYPE:

Venezuela—Roraima, the Venezuelan part, *V.F. McConnell & J.J. Quelch 703* (Holotype: K). FIGURE 56.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–15 mm long, enclosed by 2–3 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 2–3 cm long, 3–7 mm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** an erect, subflexuous, distichous, distantly and simultaneously few-flowered raceme 3–8 cm long including the peduncle 1–2 cm long, from a node below the apex of the ramicaul; floral bracts acute, 1–2 mm long; pedicels 1–1.5 mm long; ovary 0.75–1.75 mm long; **sepals** dull rose or dull white to purple, glabrous externally, cellular-glandular to pubescent within, the margins ciliate, the hairs often longer and thicker at the apices, ovate, obtuse, 3-veined, connate basally, the dorsal sepal 1.5–3 mm long, 1.5–3.5 mm wide, the lateral sepals 1.5–2.75 mm long, 1.2–3 mm wide; **petals** yellow to purple, transversely oblong, broadly rounded at the apex, thin, concave, 0.5–0.6 mm long, 0.75–1 mm wide, 3-veined; **lip** thick, subquadrate, 0.6 mm long, 0.6 mm wide, 0.3 mm deep, shallowly concave anteriorly with the apex rounded, with an acute apiculum in the center, the anterior surface rounded with a long, narrow glenion, the dorsum rounded, cellular, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.6 mm long, 0.6 mm wide, with the anther and the bilobed stigma apical.



**Distribution.** Bolivia, Ecuador, Guyana, Venezuela. **Etymology.** Named for Guiana, the area where the species was first recorded.

**Comments.** This species is widely distributed from the mountains of Guyana through Venezuela into eastern Ecuador, where it is frequent, and into Bolivia, where it is infrequently found. It is characterized by a small, caespitose habit and a distantly few-flowered raceme longer than the leaf. The sepals are ovate and variously pubescent and ciliate, especially at the apices. The petals are three-veined. The lip is with a tiny, sharp apiculum in the center of the apical margin, resembles a one of a minute *Stelis argentata* Lindl.

**Additional collections.** Bolivia: La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez* 8568, 8588 (SEL); Nor Yungas, Parqué Nacional Cotapata, 1550, 2 February 2000, *T. Krömer & C. Acebey* 931 (LPB, SEL); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, near Puerto Rouell, July 1973, fl. in cult. at SEL, 1975, *C. Chowning s.n.* (SEL).

***Stelis herzogii*** Schltr., Repert. Spec. Nov. Regni Veg. 12: 484, 1913. TYPE:

Bolivia—Santa Cruz: near Tres Cruces, 1500 m, February 1911, *T. Herzog* 1631 (Holotype: W), *C. Luer* illustr. 21798. FIGURE 57.

*Stelis virens* Schltr., Repert. Spec. Nov. Regni Veg. 12: 451, 1913. From the Latin *virens*, "becoming green," referring to the inflorescence.

*Stelis simacoënsis* Schltr., Repert. Spec. Nov. Regni Veg. 27: 47, 1929. Named for Hacienda Simaco, near where the species was collected.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–9 cm long, clothed by a tubular sheath on the middle third and 2 other sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, subacute, 5–9 cm long including a petiole 1–2 cm long, the blade 0.7–2 cm wide, cuneate below into the petiole. **Inflorescence** 1–3 erect, strict, sometimes arching, distichous, congested, many-flowered racemes with most flowers open simultaneously, 2–9 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul, with a spathe 7–10 mm long; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** occasionally antrorse, yellow-green, ovate, acute to obtuse, densely short-pubescent, connate basally, the dorsal sepal 1–3 mm long, 1–1.8 mm wide, 3-veined, the lateral sepals oblique, 1–2 mm long, 1–1.6 mm wide, connate basally; **petals** purple or brown, transversely ovate-cuneate, shallowly concave, 0.5–0.6 mm long, 0.6–1 mm wide, 3-veined, the apex broadly rounded to truncate, narrowly thickened on the margin; **lip** purple or brown, oblong-cuneate, with the apical margin thin, broadly obtuse, 0.3–0.4 mm long, 0.5–0.6 mm wide, 0.5–0.6 mm deep, concave below a thick, retuse bar, the dorsum more or less flat, the base truncate, hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia and Peru. **Etymology.** Named for Theodor Herzog, collector of this species.

**Comments.** Vegetatively similar to many other medium-sized species, *Stelis herzogii* Schltr. is distinguished by one to three distichous, small-flowered racemes about as long as an elliptical leaf. The sepals are shortly pubescent (Schlechter did not see the pubescence of *S. herzogii*) and three-veined, although sometimes very faint (Schlechter counted only one in *S. virens* Schltr.). The lateral sepals are described as being connate toward the base in both *S. herzogii* and *S. virens*, and in fresh and pickled flowers the blades are antrorse, and cannot be spread without breaking the connation (also noted in Schlechter's drawing). Schlechter called the connation an "obtuse sinus." The petals are lunate and three-veined, although in some specimens the veins are so faint that they must be sought under 30-power magnification. The lip is obtuse or subtruncate at the apical margin. Schlechter's published drawing is an exaggeration.

Whether or not to recognize the slightly larger-flowered *Stelis virens* as distinct from the other two taxa is debatable. Herein, it is treated as a variation of *S. herzogii*, which was collected at the same place at the same time, and was published simultaneously.

*Stelis herzogii* is a variable species that sometimes has been referred to *S. aprica* Lindl., from which it differs with broader leaves, larger floral bracts, three-veined petals, and an obtuse tip of the lip.

**Additional collections.** Bolivia: La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5065* (Holotype of *Stelis simacoensis*: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1200 m, 27 January 1988, *C. Luer, J. Luer & R. Vásquez 12856* (MO); Santa Cruz: near Tres Cruces, 1500 m, February 1911, *T. Herzog 1622* (Holotype of *Stelis virens*: B†; **Lectotype here designated:** AMES 42520; Isolectotypes: AMES, S, L); collected by Fred Micklow near Samaipata, August 1978, flowered in cultivation at SEL, 13 December 1981, *C. Luer 6786* (SEL);

**Stelis heterosepala** Schltr., Repert. Spec. Nov. Regni Veg. 27: 42, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5070* (Holotype: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES). FIGURE 58.

*Stelis polycarpa* Schltr., Repert. Spec. Nov. Regni Veg. 27: 46, 1929. From the Latin *polycarpus*, "with many fruits," referring to the numerous capsules.

**Plant** large, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 8–16 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 9–14 cm long including a petiole 1.5–2 cm long, the blade 1.3–2.3 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, secund, congested, successively many-flowered raceme with numerous capsules below and numerous buds above, 12–18 cm long including the peduncle 1–3 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 10–15 mm long; floral bracts oblique, acute, 4–5 mm long; pedicels 1.5 mm long; ovary 2 mm long, capsules 5 mm long; flowers light green; **sepals** glabrous, gaping, the

dorsal sepal ovate, acute, 4 mm long, 3 mm wide, 3- to 5-veined, the lateral sepals ovate, oblique, connate about midway with an obtuse mentum into a transversely ovate, bifid, shallowly concave synsepal, 3.5 mm long, 4.5 mm wide expanded, 6- to 8-veined; **petals** lunate, with a broad, thick, slightly roughened, rounded, apical margin, 0.8 mm long, 1.25 mm wide, 3-veined; **lip** thickly triangular, obtuse, 0.5 mm long, 0.8 mm wide, 0.6 mm deep, the bar thick, protruding and shallowly cleft with a narrow glenion, the dorsum with a trisegmented callus, the center callus high, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.9 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *heterosepalus*, "with different sepals," referring to the synsepal.

**Comments.** This large, caespitose species is characterized by slender ramicauls with elliptical leaves, and a long, strict, secund, successively many-flowered raceme, often with most flowers forming capsules below, while buds are maturing above. The dorsal sepal is three-veined with an accessory pair, the lateral veins being incomplete and inconstant in the same raceme, and spread nearly 180° from a shallowly concave, bifid synsepal. The lip is short, broadly triangular and obtuse with the bar protruding, and with an enlarged callus on the dorsum.

*Stelis heterosepala* Schltr. and *S. polycarpa* Schltr. were collected simultaneously by Buchtien, and given successive numbers. Hydrated flowers of the holotypes of both *S. heterosepala* and *S. polycarpa* are identical, and agree with preserved flowers of *Luer & Vásquez 16495* (MO), the illustration provided herein. In Garay (1980), these two collections are identified as *S. aviceps* Lindl.

**Additional collections.** Bolivia: La Paz, Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5069* (Holotype of *Stelis polycarpa*: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES); Murillo, Cahua, below the river, 1200 m, 30 October 1988, *S.G. Beck & R. Foster 13963, 13964* (LPB, SEL); Sud Yungas, E of Coroico, 1970 m, 25 November 1992, *C. Luer, J. Luer & R. Vásquez 16495* (MO).

**Stelis hylophila** Rchb.f., Bonplandia 3: 241, 1855. TYPE: Ecuador—Pichincha: *W. Jameson 687* (Holotype: W; Isotypes: BR, G, K, LE). FIGURES 59–60.

*Stelis reflexa* Lindl., Fol. Orchid. *Stelis* 8: 3, 1859. From the Latin *reflexus*, "reflexed," referring to the recurved sepals.

*Stelis recurvula* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 68, 1923. From the diminutive of the Latin *recurvus*, "recurved," referring to the recurved sepals.

*Stelis gonzaleziana* C.Schweinf., Revista Acad. Colomb. Ci. Exact. 5: 349, 1943. Named for the Gonzalez family at the request of the collector C. Vargas.

*Apatostelis hylophila* (Rchb.f.) Garay, Bot. Mus. Leaflet. 27: 189, 1980.

**Plant** medium in size to large, epiphytic, ascending-caespitose, the rhizome slender, erect; roots slender. Ramicauls erect, slender, 6–16 cm long, enclosed by a close, tubular sheath near the middle and 2–3 other sheaths about the base. **Leaf** erect, coriaceous, elliptical to narrowly elliptical, subacute to acute, 5–12 cm long including a petiole ca. 1 cm long, the blade 1–2.5 cm wide, cuneate below into

the petiole. **Inflorescence** 1–15, erect, congested, distichous, simultaneously many-flowered racemes, 3–10 cm long including a peduncle 1–2.5 cm long, from a spathe 5–10 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1–1.5 mm long; ovary 0.75–1.75 mm long; flowers purple to yellow, **sepals** expanded to recurved, glabrous, broadly ovate, obtuse, connate basally, the dorsal sepal 1–1.8 mm long, 1–1.8 mm wide, incompletely 3-veined, the lateral sepals 1.25–1.6 mm long, 1–1.6 mm wide, 3-veined; **petals** thin, broadly rounded, with the apex concave within the broadly truncate margin, 0.5 mm long, 0.5–1 mm wide, 1-veined; **lip** thick, oblong, 0.6–0.8 mm long, 0.5–0.8 mm wide, 0.4–0.5 mm deep, concave above the middle with the apex obtuse often with a small, obtuse apiculum, the bar thick, with or without a short, central cleft, densely short-pubescent above the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 1 mm long, 1 mm wide, the anther apical, the stigmatic lobes inside the margins of the gynostemium.

**Distribution.** Bolivia, Colombia, Ecuador, Venezuela. **Etymology.** From the Greek *hylophilos*, "forest-loving," referring to the wooded habitat.

**Comments.** This species is widely distributed in the Andes at altitudes above 2500 meters above sea level. It is characterized by an ascending-caespitose habit with slender ramicauls that may be either shorter or longer than elliptical, petiolate leaves. One to many racemes in a fascicle may be shorter or longer than the leaf. Collections with inflorescences shorter than the leaf have been identified as *Stelis polybotrya* Lindl. The tiny, incompletely three-veined sepals are often recurved; the petals are thin and single-veined; and the oblong lip is longer than wide, concave below the middle with bar entire, and the protruding apex subacute.

**Additional collections.** Bolivia: La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez* 8585 (SEL); same area, 2550 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez* 8604 (MO); NW of San Pedro to Incahuara-Mejillones, 1500 m, 12 February 1983, *J.C. Solomon* 9527 (MO, SEL); W of Coroico, 2750 m, *C. Luer, J. Luer & R. Vásquez* 8684, 8605 (SEL); Inquisivi, pass above Circuata, 2500 m, 1 February 1983, *C. Luer, J. Luer & R. Vásquez* 8659 (SEL); Parqué Nacional-AMMI Madidi, 1819 m, 23 April 2003, *L. Cayola et al.* 300 (MO); Cochabamba: Carrasco, Sehuencas, Río Lupe Mendoza, 2400–2600 m, 1 February 1981, *C. Luer, J. Luer & R. Vásquez* 5813 (SEL); Sehuencas, lithophytic on road cut along Río Lope Mendoza, 2630 m, 13 January 1988, *C. Luer, J. Luer & R.* 12804 (MO); Sehuencas, Río Fuerte, 2100 m, 13 December 1993, *P. Ibisch & C. Ibisch* 93.1763 (MO; LPB, Herb. Vásq.), *C. Luer* illustr. 21857; Sehuencas, past bridge over Río Fuerte, 2100 m, 4 January 1994, *P. Ibisch & C. Ibisch* 94.0094 (MO); Tucachaca, near river, 2250 m, 16 January 1994, *P. Ibisch & C. Ibisch* 94.0395 (MO); same data, January 1994, *P. Ibisch & C. Ibisch* 94.0094, 94.0373, 94.0395 (LPB, MO, Herb. Vásq.); Tucachaca, 2200 m, 20 February 1929, *J. Steinbach s.n.* (AMES, BOLV); Tucachaca, 2200 m, 20 February 1929, *J. Steinbach s.n.* (AMES, BOLV); old

road from Villa Tunari to Cochabamba, 1700 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez 18339A* (MO).

***Stelis ibischiorum*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Carrasco, Sehuencas, Río Fuerte, 2100 m, 13 December 1993, *P. Ibisch 93.1764* (Holotype: MO; Isotypes: LPB, Herb. Vásq.), *C. Luer* illustr. 21851. FIGURE 61.

This large, caespitose species is characterized by a long, crowded, many-flowered raceme that exceeds an oblong, obtuse leaf; large floral bracts; middle-sized, obtuse, three-veined sepals; proportionately small, three-veined petals and a type A lip with rounded apex and a glenion.

**Plant** large, epiphytic, shortly repent, the rhizome thick, 0.5–1 cm long between ramicauls; roots slender. Ramicauls erect, stout, 5–11 cm long, enclosed by a loose, tubular sheath from below the middle and another 2–3 sheaths at the base. **Leaf** erect, coriaceous, narrowly oblong, obtuse to rounded at the tip, 9–11 cm long including a petiole 1–1.5 cm long, the blade 1.8–2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, subsecund, simultaneously many-flowered raceme, 15–22 cm long including the peduncle 5–7 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 1.2 cm long; floral bracts oblique, acute, 5 mm long below, 3 mm long above; pedicels 3 mm long; ovary 1 mm long; **sepals** yellow-white, purple at the tips, similar, glabrous, ovate, obtuse to rounded at the tip, 3-veined, the dorsal sepal 3.5–4 mm long, 3–3.5 mm wide, the lateral sepals 3–3.5 mm long, 3.5 mm wide; **petals** yellow, oblong, concave, rounded and thick at the apex, 0.8 mm long, 0.75 mm wide, 3-veined, **lip** yellow, subquadrate, obtuse at the apex, 0.75 mm long, 1 mm wide, 0.75 mm deep, shallowly concave below the bar with a glenion that descends, and also extends backward across the dorsum, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Pierre Ibisch, presently Professor of Ecology, Eberswalde University, Germany, and Claudia Ibisch, co-collectors of this species.

**Comments.** This strong species is characterized by a thick, ascending, repent rhizome; stout ramicauls with loose, tubular sheaths; an oblong leaf; and a tall, simultaneously flowered raceme with large floral bracts. The flowers are medium-sized with proportionately small petals and lip. The petals are three-veined, and the lip is type A with a glenion descending from the bar and extending backward onto the dorsum.

**Paratypes.** Bolivia—Cochabamba: Carrasco, Sehuencas, along Río Lope Mendoza, 2200 m, 13 January 1988, *C. Luer, J. Luer, & R. Vásquez 12815A* (MO); Sehuencas, past the bridge over Río Fuerte, 2100 m, 4 January 1994, *P. Ibisch & C. Ibisch 94.9133* (MO; LPB, Herb. Vásq.); La Paz: Inquisivi, pass at Cirquata, W of Inquisivi, 2600 m, 30 January 1983, *C. Luer, J. Luer & R. Vásquez 8626* (SEL).

**Stelis inquisiviënsis** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Inquisivi, between Inquisivi and Cirquata, 2700 m, 27 January 1981, C. Luer, J. Luer & R. Vásquez 5775 (Holotype: MO). FIGURE 62.

This caespitose species with one to three racemes about as long as an elliptical-oblong leaf is distinguished by ovate, slightly acuminate sepals; three-veined petals; and a subacute lip.

**Plant** medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 5–9 cm long, enclosed by a close, tubular sheath from near the middle, and another 1–2 at the base. **Leaf** erect, coriaceous, elliptical-oblong, obtuse, 5.5–7 cm long including a petiole less than 1 cm long, the blade 1–1.2 cm wide dry, cuneate below into the petiole. **Inflorescence** 1–3 erect, congested, distichous, simultaneously many-flowered racemes, 4–6.5 cm long, including the peduncle 1–1.5 cm long, with a spathe 5 mm long, from near or at the apex of the ramicaul; floral bracts oblique, 2 mm long; pedicels 0.75 mm long; ovary 0.75 mm long; flowers dark purple; **sepals** glabrous, similar, ovate, acute, slightly acuminate, 1.5 mm long, 1.25 mm wide, 3-veined, connate below the middle; **petals** transversely obovate, concave, the apex broadly rounded with the margin thickened, 0.6 mm long, 0.75 mm wide, 3-veined; **lip** subquadrate, 0.75 mm long, 0.6 mm wide, 0.3 mm deep, the apex triangular, subacute, incurved with a thin margin, concave with a broad glenion that descends from a broad, low, microscopically pubescent callus on the dorsum, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.6 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for province of Inquisivi where this species was collected.

**Comments.** This minutely flowered, medium-sized, caespitose species is characterized by a one to three distichous racemes about as long as elliptical-oblong leaves. The sepals are ovate, slightly acuminate and three veined as are the obovate petals. The lip is subquadrate with a triangular apex, a wide glenion, and a microscopically pubescent callus on the dorsum.

**Stelis irrasa** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, N of Caranavi toward Alto Beni, 1550, 26 January 1988, C. Luer, J. Luer & R. Vásquez 12950 (Holotype: MO). FIGURE 63.

This species is similar to *Stelis hylophila* Rehb.f., but differs with twice larger flowers with sepals minutely and sparsely short-pubescent, antrorse lateral sepals, and a proportionately broader, truncate lip with a short, triangular apiculum.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5–7 cm long, enclosed by a close, tubular sheath near the middle and 2–3 other sheaths about the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 7–10 cm long including a petiole ca. 1.5 cm long, the blade 0.8–1.3 cm wide, cuneate below into the petiole. **Inflorescence** 2–4, erect, congested, secund, simultaneously many-flowered racemes, 3–6 cm long including a peduncle 1–2.5 cm long, flowering to the spathe, spathe 1.3 cm long at a node below the apex of the ramicaul; floral bracts tubular, close, obtuse, 1 mm long; pedicels 1.5 mm long; ovary 1 mm long; light yellow-green, **sepals** glabrous externally, minutely

sparsely short-pubescent within, ovate, acute, connate basally, 3-veined, the dorsal sepal 2.25 mm long, 1.2 mm wide, the lateral sepals antrorse, 2.5 mm long, 1–1.25 mm wide; **petals** thin, subquadrate, broadly rounded at the apex within a slightly thickened margin, 0.5 mm long, 0.5 mm wide, 1-veined; **lip** type A, thick, subquadrate, 0.75 mm long, 0.6 mm wide, 0.5 mm deep, concave below the middle with the apex truncate with a small, triangular apiculum, the bar thick, entire, the dorsum minutely short-pubescent above the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 0.5 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *irrasus*, "unshaven," referring to the sparse, short pubescence of the sepals.

**Comments.** This species is known from one collection on the road to the Alto Beni. With a few, congested racemes about half as long as the leaf, *Stelis irrasa* Luer & R.Vásquez is vegetatively similar to the widely distributed *S. hylophila* Rchb.f., but it differs with larger flowers and twice longer, non-recurved sepals with the lateral sepals antrorse that are sparsely and minutely pubescent. The single-veined petals and the lip are also similar, except that the truncate apex of the lip has a short, triangular apiculum.

***Stelis iwatsukae*** T.Hashim., Bull. Natl. Sci. Mus. Tokyo, Bot. 2(4): 180, 1976.

TYPE: Bolivia—La Paz: Sud Yungas, SE of Unduavi, 2900 m, 19 August 1971, fl. in cult. 18 August 1972, *T. Hashimoto BOL-2* (Holotype: TI).

FIGURE 64.

**Plant** medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5–14 cm long, enclosed by a tubular sheath from near the middle and 2–3 sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, acute, 5–9 cm long including a petiole 1–1.5 cm long, the blade 1–2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, subclax, many-flowered raceme, with many flowers open simultaneously, 7–18 cm long including the peduncle 3–5 cm long, from a node below the apex of the ramicaul, with a spathe 9–25 mm long; floral bracts oblique, acute, 3–4 mm long; pedicels 1.5 mm long; ovary 1.5–2 mm long; flowers yellow or yellow-green; **sepals** ovate, obtuse, pubescent, longer-pubescent toward the apices, connate basally, the dorsal sepal 3–3.5 mm long, 3 mm wide, 5-veined, the lateral sepals oblique, 2.5 mm long, 2.5 mm wide, 4-veined; **petals** transversely obovate, thin, shallowly concave with a transverse callus, 1.3 mm long, 1.75–2 mm wide, 3-veined, the apex broadly rounded, thickened on the margin; **lip** subquadrate, 1.2 mm long, 1.5 mm wide, 1 mm deep, the apex obtuse, more or less slightly acuminate at the tip, shallowly concave below a thick, shallowly sulcate bar, the dorsum coarsely pubescent toward the base, the base truncate, hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the late Dr. Shuko Iwatsuka, Chief of the Expedition to Bolivia.

**Comments.** This species is apparently endemic in a small area of high altitude around the community of Unduavi. The habit is similar to numerous other species with a tall, many-flowered raceme exceeding an elliptical leaf, but *Stelis iwatsukae* T.Hashim. is distinguished by conspicuously pubescent sepals with the dorsal sepal five-veined. The petals are three-veined and the dorsum of the lip is coarsely pubescent.

**Additional collections.** Bolivia: La Paz: Sud Yungas, along Río Unduavi, 2950 m, 29 January 1980, C. Luer, J. Luer & R. Vásquez 4999 (SEL); same area, 2650 m, C. Luer, J. Luer & R. Vásquez 5018 (SEL); above Río Unduavi, 3050 m, 24 November 1992, C. Luer, J. Luer & R. Vásquez 16486 (MO); same area, 3050 m, C. Luer, J. Luer & R. Vásquez 16488 (MO).

**Stelis jubata** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: near Samaipata, S of El Fuerte, ca. 1200 m, fl. in cult. in Santa Cruz, 5 September 1992, collected and cultivated by Dr. Luis Moreno s.n. (Holotype: MO), C. Luer illustr. 15399. FIGURE 65.

This small, caespitose species is distinguished by a multiflowered inflorescence half the length of a long-petioled leaf; ovate sepals long-pubescent at the tips; thick, three-veined petals; and a rounded lip with a thick margin.

**Plant** small to medium, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1–2 cm long, enclosed by a tubular sheath and another sheath at the base. **Leaf** erect, coriaceous, elliptical, sub-acute, petiolate, 9–12 cm long including a petiole 2–3 cm long, the blade 1–1.5 cm wide in the dry state, narrowed below into the petiole. **Inflorescence** an erect, strict, congested, many-flowered raceme with many, non-resupinate flowers open simultaneously, 7–8 cm long including the peduncle 2–4 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1–1.5 mm long; pedicels 0.5 mm long; ovary 1 mm long; flowers purple; **sepals** glabrous externally, shortly pubescent within with long cilia at the tips, the dorsal sepal ovate, narrowly obtuse, 2.5 mm long, 2 mm wide, 3-veined, smaller than the lateral sepals, the lateral sepals ovate, narrowly obtuse, 2.75 mm long, 2.3 mm wide, 3-veined; **petals** thick, transversely ovate, broadly rounded to truncate at the apex, with a thickened, ill-defined margin, 0.6 mm long, 1.2 mm wide, 3-veined; **lip** type A, sub-triangular, shallowly concave anteriorly with a short glenion at the bar, with the apex broadly rounded with the margin thickened, 0.8 mm long, 0.8 mm wide, 0.6 mm deep, the dorsum with a low, rounded, pubescent callus, hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther large, yellow, obscuring the stigmatic lobes.

**Distribution.** Bolivia. **Etymology.** From the Latin *jubatus*, "crested with hairs," referring to the tips of the sepals.

**Comments.** This small, caespitose species of lowland Bolivia is related to *Stelis ciliaris* Lindl., a common species in Central America, but rarely found farther south. It is characterized by an erect, many-flowered raceme that reaches only about half the length of the leaf. The racemes of *S. ciliaris* are longer and commonly droop. The sepals of both species are ovate and three-veined with the tips long-ciliate. The petals of *S. ciliaris* are thin and single-veined, while those



of *S. jubata* are thick and three-veined. The lip of *S. ciliaris* is pyriform, longer than wide, while the lip of *S. jubata* is rounded and more or less subquadrate.

**Paratype.** Bolivia—La Paz: Mulford Biological Exploration of the Amazon Basin, Tumupaza, 1,000–1,500 ft. (350 m), 8 Dec. 1921, *O.E. White 1842* (AMES).

***Stelis juninensis*** Kraenzl., Bot. Jahrb. Syst. 54, Beibl. 117: 21, 1916. TYPE:

Peru—Junín: *A. Weberbauer 6534* (Holotype of *Stelis juninensis*: Not located; Isotypes: AMES, F, USM). FIGURE 66.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6–10 cm long, enclosed by a loose, tubular sheath from below the middle and 2–3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, petiolate, with the apex obtuse to rounded, 8–10 cm long including the petiole 1–1.5 cm long, the blade 1.5–2.2 cm wide dry, cuneate below into the petiole. **Inflorescence** 1–2 erect, distichous, secund, subdense, multiflowered racemes with most flowers open simultaneously, 15–20 cm long including the peduncle ca. 3 cm long, subtended by a slender spathe 1–1.3 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 2.5 mm long; ovary 2 mm long; flowers nutant; **sepals** whitish, glabrous to very sparsely pubescent, the dorsal sepal elliptical-ovate, obtuse, 6.5–7.5 mm long, 4–4.5 mm wide, 3-veined, connate basally to the laterals for 1–1.5 mm, the lateral sepals ovate, oblique, with the apex decurved, subacute, 6–7.5 mm long, 4–4.25 mm wide, connate basally 1 mm, more or less held forward; **petals** dull gray-purple, thick, transversely oblong, subverrucose, 0.8 mm long, 1.5 mm wide, the apex broadly subtruncate with the thickening vaguely delineated; **lip** dull gray-purple, subquadrate, 1 mm long, 0.75 mm wide, 0.4 mm deep, the apex triangular, acute, concave, the bar with an elevated, rounded, marginal callus, the dorsum with a midline callus that merges with the shortly pubescent base, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the stigmatic lobes triangular and protuberant laterally, the anther and the stigma apical.

**Distribution.** Bolivia, Ecuador, Peru. **Etymology.** Named for the Peruvian province Junín where the species was collected.

**Comments.** This uncommon but widely distributed species is the only known member of *Stelis* sect. *Nexipous* in Bolivia. It is characterized by a large habit with the large-flowered raceme exceeding an elliptical, obtuse leaf. The sepals are ovate and acute with the laterals barely connate at the base, and more or less antrorse. The central apparatus is proportionately small with transversely oblong petals and a lip that is longer than broad with an acute, triangular apex.

**Additional collection.** Bolivia: La Paz: Nor Yungas, below Unduavi, 2850 m, 29 February 1980, *J.O. Solomon 5209* (MO), C. Luer illustr. 21882.

***Stelis kilimanjaro*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 1740 m, 15

January 1988, *C. Luer, J. Luer & R. Vásquez 12822* (Holotype: MO). FIGURE 67.

This very small, caespitose species is distinguished by minute flowers in a subflexuous raceme longer than the leaves; single-veined petals; and a lip with a proportionately large, mountain-sized callus.

**Plant** very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–5 mm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 15–25 mm long including a petiole 1–3 mm long, the blade 3 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, subflexuous, 12- to 15-flowered raceme with several flowers open simultaneously, to 4 cm long including the peduncle ca. 1.5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers rose colored; **sepals** glabrous, ovate, obtuse, 3-veined, the dorsal sepal 1.5–1.75 mm long, 1.25–1.5 mm wide, the lateral sepals oblique, 1–1.5 mm long, 1–1.5 mm wide; **petals** transversely ovate, concave, broadly obtuse, with a thin margin, 0.5 mm long, 0.6 mm wide, 1-veined; **lip** trapeziform, 0.5 mm long, 0.4 mm wide, 0.3 mm deep, the apex triangular, acute, the lateral angles obtuse, the bar and dorsal callus together in a tall, rounded callus that extends from the base to near the middle, the base truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Mt. Kilimanjaro, a celebrated mountain in Africa.

**Comments.** This very small, caespitose species is distinguished by a subflexuous raceme longer than narrow leaves. The sepals are three-veined and the petals are single-veined. The most distinctive lip is filled with a proportionately large, rounded callus from the base to the middle, where it slopes down the triangular apex.

**Paratype.** Bolivia—La Paz: Sud Yungas, E of Chuspipata, 2770 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez 12896* (MO).

**Stelis kroemeri** Luer, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, Parque Nacional Cotapata, 1800 m, 21 August 2000, *T. Krömer & A. Acebey 1466* (Holotype: SEL; Isotype: LPB). *C. Luer* illustr. 21846. FIGURE 68.

This large species of section *Humboldtia* is similar to the variable *Stelis purpurea* (Ruiz & Pav.) Willd. but is distinguished by shorter, oblique floral bracts; larger flowers; and a lip concave below the bar and with a single, suborbicular callus on the dorsum.

**Plant** large, epiphytic, ramicaul stout, broken away from the base, with a tubular sheath above the middle. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 15 cm long including the petiole 3 cm long, 3.5 cm wide, cuneate below into the petiole. **Inflorescence** 1 with fragment of an old inflorescence, erect, distichous, lax, many-flowered raceme, 25 cm long including the peduncle ca. 10 cm long, subtended by a spathe 2 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 5 mm long; pedicels 3 mm long; ovary 3 mm long; flowers bilabiate, color of flowers unknown; **sepals** glabrous, the

dorsal sepal erect, oblong-ovate, obtuse, 8–9 mm long, 5 mm wide, 5-veined, connate to the synsepal for 2 mm, the lateral sepals connate into a broadly ovate, semiorbicular, concave synsepal, 8.5–9.5 mm long, 7–8 mm wide expanded, 6-veined; **petals** thick, transversely semilunate, 1.5 mm long, 2 mm wide, concave below a broadly rounded apex with the margin thickened and flattened, 3-veined below a transverse carina; **lip** ovoid, 1 mm long, 1 mm wide, 1 mm deep, concave below a thick, bifid bar, the apex obtuse, the dorsum with a suborbicular callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Torsten Krömer, German botanist, at that time working with the University of Göttingen.

**Comments.** The stout ramicaul of this large species has been broken off above the base; the leaf is large and petiolate; and the long inflorescence is loosely flowered, similar to the frequent and variable *Stelis purpurea* (Ruiz & Pav.) Willd. However, the floral bracts are half as long, neither acuminate, nor undulate. The sepals are glabrous with the dorsal sepal and synsepal obtuse. The petals are also similar to those of *S. purpurea*, but there are distinct differences between the lips. Instead of shallowly concave with a glenion, the lip is deeply concave below a thick, bifid bar, and a single semiorbicular callus occupies the dorsum.

**Stelis lanata** Lindl., Fol. Orchid. *Stelis* 8:13, 1859. TYPE: Ecuador—Pichincha: *W. Jameson s.n.* (Holotype: K). FIGURE 69.

**Plant** medium in size, epiphytic, ascending-caespitose; roots slender. Ramicauls erect, slender, 3–7 cm long, enclosed by a close, tubular sheath from near the middle, and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, petiolate, 5–7 cm long including the petiole ca. 1 cm long, the blade 0.8–1 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme, with many flowers open simultaneously, 6–10 mm long including the peduncle 4–5 cm long, from a spathe 6–7 mm long below the apex of the ramicaul; floral bracts oblique, infundibular, acute, 4 mm long below to 3 mm long above; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** purple externally, bluish within with long, white pubescence within, similar, ovate, subacute to obtuse, 3-veined, connate basally, the dorsal sepal 2.5 mm long, 2.5 mm wide, the lateral sepals 2.75 mm long, 2 mm wide; **petals** purple, transversely ovate, the apex broadly rounded and thickened on the margin with crystals, 0.75 mm long, 1.2 mm wide, 3-veined, concave below a transverse carina; **lip** purple, subquadrate, 1.25 mm long, 0.9 mm wide, 1 mm deep, the apex triangular, obtuse, concave below a deeply cleft bar between rounded margins, the dorsum with a low, rounded callus, the base truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia and Ecuador. **Etymology.** From the Latin *lanatus*, "woolly," referring to the densely pubescent sepals.

**Comments.** This uncommon species is widely distributed in the Andes. The illustration in Luer (2009), was made from a poor flower, but the illustration provided herein is faithful, agreeing with a flower from the holotype. *Stelis lanata* Lindl. is distinguished by a crowded raceme longer than a narrow leaf; large floral bracts; and a lip with a cleft bar similar to that of *S. campanulifera* Lindl., but the sepals of *S. lanata* are densely long-pubescent within. From *S. euspatha* Rchb.f., *S. lanata* also differs with three-veined petals that are concave below a transverse carina.

**Additional collections.** Bolivia: La Paz: Inquisivi, between Inquisivi and Circuata, 2700 m, 27 January 1981, C. Luer, J. Luer & R. Vásquez 5764 (SEL); Sud Yungas, Huancané, 2500 m, 9 March 1980, S.G. Beck 3178 (UMSA, MO).

**Stelis larsenii** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, collected by Rony Neukermans, flowered in cultivation in Borgerhout, Belgium, April 2012, by B. T. Larsen 2012 101010-16 (Holotype: MO), C. Luer illustr. 21780. FIGURE 70.

This species is related to *Stelis laxa* Schltr., but differs with larger leaves, a longer raceme, and a proportionately larger lip that is shallowly concave with a pubescent dorsum.

**Plant** small, epiphytic, repent, the rhizome relatively stout, 2–3 cm long between ramicauls; roots slender. Ramicauls erect, slender, 2–2.5 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse to rounded at the tip, 5–6 cm long including a petiole 1.5–2 cm long, the blade 0.8–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subclax, distichous, several-flowered raceme with 2–3 flowers open simultaneously, 10–12 cm long including the peduncle ca. 6 cm long, from a node below the apex of the ramicaul, the spathe evanescent; floral bracts oblique, acute, 2.5 mm long; pedicels 4–5 mm long; ovary 1 mm long; **sepals** similar, pale green, suffused with rose along the margins, densely short-pubescent, ovate, broadly ovate, obtuse, 3-veined, the dorsal sepal 2 mm long, 2 mm wide, the lateral sepals 2 mm long, 1.75 mm wide; **petals** rose, thin, transversely elliptical, concave, broadly rounded with a thickened margin at the apex, 1 mm long, 1.25 mm wide, 3-veined; **lip** rose, thickly subdiscoid, 1.25 mm long, 1 mm wide, 0.6 mm deep, the apical margin thin, rounded, shallowly concave anteriorly with a large glenion descending from a narrow, densely short-pubescent dorsum, truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Bruno Tavares da Silva Larsen currently living in Borgerhout, Belgium, who cultivates this species.

**Comments.** This species is related to *Stelis laxa* Schltr., a small, long-repent species that is frequent in the same mountainous area of Bolivia, but it is distinguished by a proportionately larger central apparatus. The lip is subdiscoid and shallowly concave, a compressed lip with a rather large glenion descending from a narrow, pubescent base, without a defined bar.

**Stelis laxa** Schltr., Repert. Spec. Nov. Regni Veg. 10: 451, 1912. TYPE: Bolivia; La Paz: Sud Yungas, mountain slopes near Unduavi, 3200 m, November 1910, *O. Buchtien* 2607 (Holotype: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES). FIGURE 71.

**Plant** small, epiphytic, repent, the rhizome slender, 1–2 cm long between ramicauls; roots slender. Ramicauls erect, slender, 1–3 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 3–4.5 cm long including a petiole 1–1.5 cm long, the blade 0.5–0.9 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict to subflexuous, lax to sublax, distichous, several-flowered raceme with 2–6 flowers open simultaneously, 3–6 cm long including the peduncle 1–2 cm long, from a node below the apex of the ramicaul, with a spathe 3–4 mm long; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** similar, usually purple, occasionally red, rose, tan, dull green, yellow, glabrous to microscopically cellular, ovate, subacute to obtuse, the dorsal sepal 2–3 mm long, 2–2.75 mm wide, 3-veined, the lateral sepals 1.75–2.75 mm long, 2–2.5 mm wide; **petals** purple, transversely lunate, broadly rounded with a thick margin at the tip, concave below a transverse callus, 0.8 mm long, 1.25 mm wide, 1-veined; **lip** purple, thickly subquadrate, obtuse, 0.5 mm long, 0.8 mm wide, 0.5 mm deep, shallowly concave anteriorly with a glenion, below the broadly rounded bar, the dorsum with a rounded callus, truncate, hinged to the base of the column; **column** stout, 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *laxus*, "lax, loose," referring to the habit of the plant.

**Comments.** This small, repent species is frequent on the eastern slopes of the Andes in central Bolivia. It is characterized by a slender, branching rhizome that bears at intervals short ramicauls with narrowly elliptical, petiolate leaves. The few-flowered inflorescence sometimes does not exceed the leaf. The flowers are usually dark purple; the petals, three-veined; and the lip, type A with a rounded callus on the dorsum.

**Additional collections.** Bolivia: La Paz: Sud Yungas, along Río Unduavi, 2450 m, 6 February 1980, *C. Luer, J. Luer & R. Vásquez* 5138 (SEL); E of Unduavi, 3100 m, 22 January 1984, *C. Luer, J. Luer & R. Vásquez* 9413 (SEL); Nor Yungas, Sacramento Valley of Río Coroico, E of Chuspipata, 2450 m, 29 January 1984, *A. Gentry & J.C. Solomon* 44799; E of Chuspipata, 2600 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez* 12902 (MO); Nor Yungas, Nacional Cotapata, 1550, 24 July 2000, *T. Krömer & C. Acebey* 13446 (LPB, SEL); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1850 m, 17–29 January 1984, *C. Luer, J. Luer & R. Vásquez* 9397, 9399, 9453, 9466 (SEL); same area, 1900 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez* 12818, 12834, 12868 (MO); same area, 1900 m, 14 November 1992, *C. Luer, J. Luer & R. Vásquez* 16408, 16413, 16418, 16422 (MO); Murillo, along Río Zongo, 2900 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez* 16473 (MO); Carrasco, El

Sunchal, road to Comarapa, 2700 m, 8 November 2003, *I.G. Vargas & C.G. Jordan 7063* (MO, USZ); Santa Cruz: S of Siberia, 2600 m, 18 January 1983, *C. Luer, J. Luer & R. Vásquez 8534* (MO).

***Stelis leptochila*** Luer & R.Escobar, sp. nov. TYPE: Bolivia—La Paz: Sud

Yungas, along Río Unduavi, 3100 m, 29 January 1980, *C. Luer, J. Luer & R. Vásquez 5051* (Holotype: SEL). FIGURE 72.

This medium-sized, ascending species is distinguished by conspicuous floral bracts in a raceme shorter than the leaf, and a flat, sublunate lip.

**Plant** medium in size, epiphytic, ascending-caespitose, the rhizome thick with ramicauls approximate to 5 mm apart; roots slender. Ramicauls erect, slender, 3–5 cm long, enclosed by a tubular sheath from below the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute, 5–7.5 cm long including a petiole 1.5–2 cm long, the blade 1–1.5 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 1–2 erect, strict, congested, simultaneously many-flowered racemes with most flowers open simultaneously, 4–5 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 0.8–1 cm long; floral bracts oblique, acute, 3–5 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers yellow; **sepals** margined, microscopically cellular-papillose within, the dorsal sepal ovate, obtuse, 3 mm long, 2.6 mm wide, 3-veined, the lateral sepals ovate, oblique, obtuse, connate 1 mm, 2.2 mm long, 2.5 mm wide, 3-veined; **petals** lunate, broadly rounded with a thick, broad margin, concave below, 1 mm long, 1.25 mm wide, 3-veined; **lip** sublunate, 0.75 mm long, 1.1 mm wide, 0.25 mm deep, flat anteriorly, the apex broadly rounded with a broad, flat margin, the bar thin, shallowly cleft with a glenion, the dorsum very narrow, more or less transversely channeled behind the bar, the base shortly truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long, 1 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *leptocheila*, "thin lipped," referring to the thickness of the lip.

**Comments.** This species is apparently limited to an area of high altitude along the Río Unduavi in central Bolivia where it grows with *Stelis iwatsukae* T.Hashim. It is distinguished by an ascending habit; narrowly elliptical, petiolate leaves; and shorter racemes with floral bracts as long as the flower. Most unusual is the lip that is more or less lunate, and so thin that the dorsum is merely a transverse groove behind the bar.

***Stelis leucantha*** Luer, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, Parque Nacional Cotapata, 2050 m, 18 November 2000, *T. Krömer & A. Acebay 1653* (Holotype: SEL; Isotype: LPB), *C. Luer* illustr. 21844. FIGURE 73.

This caespitose species is related to *Stelis euspatha* Rchb.f., but is distinguished by white, glabrous flowers with single-veined sepals.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3.5–4.5 cm long, with a close tubular sheath below the middle and another sheath

at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute, 4.5–5.5 cm long including a petiole ca. 1 cm long, the blade 7–8 mm wide dry, narrowly cuneate into the petiole. **Inflorescence** 2–3 erect, distichous, many-flowered racemes with many flowers open simultaneously, to 6.5 cm long, including the peduncle ca. 1 cm long, from near the apex of the ramicaul, with a spathe 8 mm long; floral bracts oblique, broad, 0.6 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers white; **sepals** similar, glabrous, elliptical-ovate, subacute, 1.5 mm long, 1 mm wide, 1-veined, the lateral sepals antrorse; **petals** transversely obovate, broadly obtuse and thickened externally at the tip, concave, 0.5 mm long, 0.5 mm wide, 1-veined; **lip** subquadrate with a broadly acuminate apex, 0.3 mm long, 0.5 mm wide, 0.3 mm deep, concave below a shortly cleft bar, the dorsum thickened, glabrous, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther apical, the stigmatic lobes within the margins of the clinandrium.

**Distribution.** Bolivia. **Etymology.** From the Greek *leucanthos*, "white flowered," referring to the flowers.

**Comments.** This small, caespitose species is related to the frequent and variable *Stelis euspatha* Rchb.f. A few racemes about as long as the leaf bear numerous, minute, white flowers that are basically similar to those of *S. euspatha*, except that the sepals are glabrous and single-flowered. The floral bracts are minute. The petals and lip are practically identical to those of *S. euspatha*.

**Stelis llipiënsis** Luer & Hirtz, sp. nov. TYPE: Bolivia—La Paz: Larecaja, above Tipuani, Sta. Barbara, Alto Llipi, 1350 m, collected by A. Hirtz, J. Del Hierro & W. Teague, 30 August 1991, *C. Luer 15389A*, (Holotype: MO).  
FIGURE 74.

This small, caespitose species is distinguished by a narrowly obovate leaf exceeded by a single, loosely flowered raceme; transversely ovate, more or less recurved sepals; single-veined petals; and a subquadrate lip with a broad, low, shortly pubescent dorsal callus.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5–13 mm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 2–4.5 cm long, 0.8 cm wide, gradually narrowed below to the base. **Inflorescence** an erect, strict, distichous, remotely flowered, several-flowered raceme with few flowers open simultaneously, 7 cm long including the peduncle ca. 3.5 cm long, from a node below the apex of the ramicaul, with a spathe ca. 3 mm long; floral bracts tubular, 1 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; flowers yellow; **sepals** glabrous, transversely ovate, obtuse, more or less reflexed and convex with recurved margins, the dorsal sepal 1 mm long, 1.75 mm wide, the lateral sepals 1 mm long, 1.2 mm wide; **petals** membranous, transversely oblong, concave and broadly rounded at the apex, 0.6 mm long, 0.9 mm wide, 1-veined; **lip** type A, subquadrate with broadly obtuse apex that is concave below a thick, bifid bar, 0.5 mm long, 0.6 mm wide, 0.4 mm deep, with a low, flat, pubescent callus on the dorsum, the base truncate,

hinged to the base of the column; **column** stout, clavate, 0.4 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Alto Llipi in the province of Larecaja above Tipuani.

**Comments.** This small, caespitose species was found during a search for the lost species of *Masdevallia* Ruiz & Pav. collected by Buchtien on the "way to Tipuani," described by Schlechter. *Stelis llipiënsis* could be treated as a variation of *S. pusilla* Kunth, but it is distinguished from all the variations by larger, narrowly obovate leaves surpassed by a remotely flowered raceme of tiny flowers with sepals transverse and reflexed; petals larger and single-veined; and a type A lip with a flat, pubescent dorsal callus.

**Stelis mandoniana** Schltr., Repert. Spec. Nov. Regni Veg. 27: 42, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, above the way to Tipuani, 1400 m, March 1920, *O. Buchtien 5071* (Holotype: B†; Isotype: US). FIGURE 75.

**Plant** large, epiphytic, shortly repent, ca. 4 mm between ramicauls. Ramicaul erect, stout, 5–6 cm long, enclosed by a tubular sheath from below the middle, and other sheaths below. **Leaf** erect, coriaceous, elliptical, 9–11 cm long, 1.8–2.2 cm wide, obtuse to subacute, narrowed below into a subpetiolate base. **Inflorescence** an erect raceme, about twice longer than the leaf, secund, subclax, many-flowered; floral bracts thin, erect, elliptic-lanceolate, acuminate; flowers appeared to have been dark-purple, 3 mm wide. **Sepals** broadly ovate, subacute, 3-veined, the lateral sepals oblique; **petals** cuneate-obovate, broadly obtuse, 3-veined at the base, fleshy-thickened at the apex, much smaller than the sepals; **lip** almost as long as the sepals, broadly cuneate-concave at the base, with a transverse, bilobed lamella at the middle, the anterior half semirhombic, fleshy, the upper half slightly marked (impressed); **column** conspicuously dilated at the apex, slightly shorter than the petals, with diverging, obliquely triangular, obtuse lateral lobes (no doubt stigmatic lobes), the dorsal sepal oblong, nearly twice longer; ovary cylindrical, glabrous, pedicellate, 2 mm long.

**Distribution.** Bolivia. **Etymology.** Named for Gilbert Mandon, French Botanist who worked extensively in Bolivia.

**Comments.** This species is rare, unknown since the collection in the Province of Larecaja by Buchtien in 1920. Schlechter cites another collection by Buchtien in the nearby province of Sud Yungas in 1910 as a paratype, but he was not certain, because the flowers were too immature.

*Stelis mandoniana* Schltr. is large with a long, multiflowered raceme with slender floral bracts and very small flowers. Schlechter states that the dry flower is three millimeters wide, which could mean that the sepals are only one and a half millimeter wide, but possibly not, because the column is described as being two millimeters long, but those two millimeters may include the pedicel. The sepals and petals are three-veined; the lip, apparently with a cleft bar is described as being almost as long as the sepals.



Garay (1980) reduced *Stelis mandoniana* to synonymy of *S. purpurascens* A.Rich. & Gal., but the floral bracts of *S. purpurascens* are not large, and the sepals are glabrous with the dorsal sepal five-veined. The illustration provided herewith was made from Schlechter's published information.

**Paratype.** Bolivia—La Paz: Sud Yungas, rocky slopes near Unduavi, 2800 m, November 1910, *O. Buchtien 2614* (AMES, LPB).

***Stelis marginata*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor

Yungas, E of Chuspipata above Yolosa, 1850 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez 12906* (Holotype: MO). FIGURE 76.

This species is allied to *Stelis hylophila* Rchb.f., but differs with single-veined sepals with thick, cellular margins, and a minute lip with an elevated, glabrous callus on the dorsum.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, fasciculate, slender, 7–9 cm long, enclosed by a close, tubular sheath near the middle and 2–3 other sheaths below the middle and about the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute, 7–10 cm long including a petiole ca. 1 cm long, the blade 0.9–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 2–5, erect, congested, distichous, simultaneously many-flowered racemes, 10–12 cm long, flowering from near the base, from a spathe 10–14 mm long below the apex of the ramicaul; floral bracts oblique, acute, 0.75 mm long; pedicels 0.6 mm long; ovary 0.5 mm long; flowers yellow; **sepals** glabrous, ovate, acute, with thick, cellular margins, 1-veined, the dorsal sepal 1 mm long, 0.75 mm wide, the lateral sepals antrorse, 1.25 mm long, 0.75 mm wide; **petals** thin, transversely cuneate, concave, the apex broadly truncate with the margin narrowly thickened, 0.75 mm long, 0.75–1 mm wide, 1-veined; **lip** thick, subtriangular, truncate, minutely acuminate at the tip, 0.3 mm long, 0.4 mm wide, 0.3 mm deep, concave below a cleft bar, the dorsum with an elevated, rounded, glabrous callus, the base broadly truncate, hinged to the base of the column; **column** stout, terete, ca. 0.4 mm long and wide, the anther apical, the stigmatic lobes inside wings of the column.

**Distribution.** Bolivia. **Etymology.** From the Latin *marginatus*, "margined," referring to the thick, cellular margins of the sepals.

**Comments.** This species is related to the frequent, widely distributed *Stelis hylophila* Rchb.f. with similar, slender, fasciculated ramicauls and a few, slender many-flowered racemes that exceed narrowly elliptical leaves. The sepals are one millimeter long, acute, single-veined with thick, cellular margins; the petals are single-veined; and the lip is minute, smaller than that of *S. hylophila*, with a cleft bar and an elevated, smooth callus.

***Stelis micklowii*** Luer, sp. nov. TYPE: Bolivia—Without locality, collected

August 1978, by the late Fred Micklow s.n., flowered in cultivation at the Marie Selby Botanical Gardens, 11 August 1981, *C. Luer 6442* (Holotype: SEL). FIGURE 77.

This medium sized, shortly repent species is characterized by a loose raceme of very small flowers with ovate, shortly acuminate, subpusticulate sepals; broad single-veined petals; and a shortly acuminate apex of the lip.

**Plant** medium in size, epiphytic, repent, the rhizome stout, 5 mm long between ramicauls; roots slender. Ramicauls erect, slender, 4–8 cm long, enclosed by a tubular sheath from below the middle and 2 other sheaths about the base. **Leaf** erect, coriaceous, elliptical, acute, 4–7.5 cm long including a petiole ca. 1 cm long, the blade 0.9–1.7 cm wide, cuneate below into the petiole. **Inflorescence** 1 to 2 erect, loose, distichous, successively many-flowered racemes with 2–3 flowers open simultaneously, 4–10 cm long including a peduncle ca. 1.5 cm long, from a spathe 4–5 mm long from near the apex of the ramicaul; floral bracts oblique, acute, 1.5–2 mm long; pedicels 1 mm long; ovary 0.75 mm long; flowers light green, **sepals** glabrous, faintly pusticulate, ovate, obtuse, shortly acuminate, the dorsal sepal 1.5 mm long, 1.5 mm wide, 3-veined, the lateral sepals similar, 1.3 mm long, 1.3 mm wide; **petals** thin, transversely oblong, with the transverse apex slightly acuminate at the tip, the margin narrowly thickened, 0.75 mm long, 1 mm wide, 1-veined; **lip** cuneate-oblong, 0.4 mm long, 0.6 mm wide, 0.6 mm deep, shallowly concave behind a broad, shortly acuminate tip, the bar shallowly cleft, the dorsum microscopically pubescent toward the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 0.8 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the late Fred M. Micklow who collected and cultivated this species.

**Comments.** This species is known from a collection made by Fred Micklow in 1978. It is characterized by a stout, repent rhizome, and not remarkable ramicauls and leaves. The very small flowers are borne two or three simultaneously in a loose raceme that becomes gradually longer and more closely flowered as it reaches the limit of the leaf. The sepals are faintly pusticulate, and obtuse and slightly acuminate. The petals are proportionately large, thin and single-veined. The lip is shortly apiculate.

**Stelis microtatantha** Schltr., Repert. Spec. Nov. Regni Veg. 27: 43, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5064* (Holotype: B†; Lectotype designated by Christenson 1996: US). FIGURE 78.

**Plant** small, slender, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 3–4 cm long. **Leaf** erect, coriaceous, narrowly linear-elliptic, acute, to 12 cm long including the blade ca. 7 cm long, 5–6 millimeters wide, and a petiole ca. 5 cm long, according to Schlechter's description. **Inflorescence** a single multiflowered raceme half as long to barely exceeding the leaf, floral bracts ovate-cucullate; flowers yellowish, ca. 2 mm broad; **sepals** broadly ovate, obtuse, 3-veined, minutely "papillose"; **petals** broadly and obliquely flabellate, thickened at the apex, 3-veined; **lip** as long as the sepals, broadly flabellate, thickened and rounded at the apex, with a low, transverse, semilunate callus with

the anterior margins parallel; **column** cylindrical, dilated above the middle, pedicel with ovary 1.5 mm long.

**Distribution.** Bolivia. **Etymology.** From the Greek *mikrotatanthos*, "with very small flowers," referring to the inflorescence.

**Comments.** This species is rare and local, not having been collected since Buchtien collected a plant nearly a century ago. It exists only at US as a dry specimen without a flower. The plant is distinctive with narrowly linear-elliptic leaves, and the multiflowered raceme is about as long. Schlechter describes a minute flower with three-veined sepals and petals. The lip is broadly flabellate, as long as the sepals, and with a low, semilunate callus above the middle with the margins forward and parallel, probably similar to the variable bar and callus of *Stelis campanulifera* Lindl. Garay (1980) reduced *S. microtatantha* to synonymy of *S. intermedia* Poepp. & Endl., but the sepals of *S. intermedia* are pubescent, and the petals are single-veined, as found on *Poeppig 1579*, an isotype at LE. The illustration provided herewith was made from Schlechter's published information.

**Stelis minuscula** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, above Yolosa, 1850 m, 21 January 1988, C. Luer, J. Luer & R. Vásquez 12907 (Holotype: MO). FIGURE 79.

This medium-sized, caespitose species is similar to *Stelis euspatha* Rchb.f., but is distinguished by a few racemes much shorter than the leaf; oblique, single-veined lateral sepals; and dimensions of the components of the central apparatus half the size.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5–9 cm long, with a tubular sheath from below the middle and 2 tubular sheaths below at the base. **Leaf** erect, coriaceous, elliptical, narrowly rounded at the tip, 5–8 cm long including a petiole 0.5 cm long, the blade 1–1.5 cm wide dry, cuneate below into the petiole. **Inflorescence** 3 erect, secund, congested, many-flowered racemes 2–3 cm long including the peduncle ca. 0.5 cm long, with most flowers open simultaneously, with a spathe 5 mm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers yellow; **sepals** pubescent within above the middle, the dorsal sepal ovate, subacute, 1.3 mm long, 1.1 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals antrorse, oblique, 1.3 mm long, 1.1 mm wide, 1-veined; **petals** transversely oblong-cuneate, truncate at the apex, 0.2 mm long, 0.3 mm wide, 1-veined; **lip** subquadrate, type A, 0.25 mm long, 0.4 mm wide, 0.25 mm deep, concave anteriorly with the apex truncate with obtuse, acuminate tip, the bar incised, the dorsum minutely pubescent, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.4 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *minusculus*, "very small," referring to the central apparatus.

**Comments.** This species is related to the frequent and variable *Stelis euspatha* Rchb.f., but is remarkable for the minute size of the central apparatus. The inflorescence consists of a few (three in the present specimens) racemes less than half the length of the leaf. The lateral sepals are single-veined and oblique

with the lower margin longer and more or less dilated. The dimensions of the petals and lip are less than half a millimeter long.

**Paratype.** Bolivia—La Paz: Nor Yungas, above Yolosa, 1850 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez 12923* (MO).

**Stelis morenoi** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: near Samaipata, ca. 1000 m, fl. in cult. in Santa Cruz, 15 September 1983, collected and cultivated by *Dr. Luis Moreno s.n.* (Holotype: MO), *C. Luer* illustr. 8523. FIGURE 80.

This medium-sized, caespitose species is distinguished by two racemes that eventually exceed elliptical leaves; three-veined, cellular-papillose sepals; single-veined petals; and a subquadrate lip with a rounded apex.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6–9 cm long, enclosed by a tubular sheath from near or below the middle and 2–3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse to rounded at the apex, petiolate, 8–13 cm long including a petiole 0.5–1 cm long, the blade 2–2.8 cm wide, cuneate below into the petiole. **Inflorescence** 1–2 erect, strict, distichous, congested, many-flowered racemes with many flowers open simultaneously, 7–14 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul; floral bracts tubular, obtuse, 2 mm long; pedicels 1.5 mm long; ovary 1.75 mm long; flowers light green; **sepals** glabrous externally, cellular-papillose within, all 3 sepals narrowly ovate, obtuse, 2.3 mm long, 1.1 mm wide, 3-veined, connate basally; **petals** cuneate, concave, broadly rounded to truncate at the tip, with a thin margin, 0.6 mm long, 0.8 mm wide, 1-veined, sometimes with an additional, vestigial pair; **lip** type A, subquadrate, concave anteriorly with a shallow glenion below the bar, with the apex rounded, 0.5 mm long, 0.5 mm wide, 0.5 mm deep, the dorsum with a broad, low callus, the truncate base hinged to the base of the column; **column** stout, ca. 0.75 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Dr. Luis Moreno, surgeon in Santa Cruz, Bolivia, who first collected and cultivated this species.

**Comments.** This species first collected in Samaipata, and cultivated by Dr. Moreno in Santa Cruz, has subsequently been found to have a wide distribution in central Bolivia. It was also discovered in the collection of Dino Menato in Chulumani. One or two many-flowered racemes more or less equal or surpass a broad leaf in length. The sepals are narrowly ovate, often with recurved sides, three-veined, shortly connate, and cellular-papillose; the petals are cuneate and single-veined, but sometimes with an additional, vestigial pair; and the type A lip is concave, rounded at the apex, and with a broad, low, dorsal callus.

**Paratypes.** Bolivia—La Paz: Sud Yungas, collected near Chulumani, flowered in cultivation by Dino Menato, 31 January 1983, *C. Luer 8647* (SEL); Nor Yungas, N of Caranavi toward Alto Beni, 1550 m, 30 January 1988, *C. Luer, J. Luer & R. Vásquez 12938* (MO); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 26 January 1978, *C. Luer, J. Luer & F. Fuchs 3542* (SEL).

***Stelis naniflora*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, west of Coroico, 1920 m, 27 January 1983, C. Luer, J. Luer & R. Vásquez 8577 (Holotype: SEL). FIGURE 81.

This species is related to *Stelis hylophylla* Rchb.f., but is distinguished by a fascicle of short racemes, sepals not more than one millimeter long, petals longer than wide, and a lip less than four tenths of a millimeter long.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–5 cm long, enclosed by a close, tubular sheath near the middle and 2–3 other sheaths about the base. **Leaf** erect, coriaceous, elliptical, obtuse to rounded at the tip, 5–7 cm long including a petiole ca. 0.5 cm long, the blade 1–1.4 cm wide dry, cuneate below into the petiole. **Inflorescence** a fascicle of 3–4, erect, congested, simultaneously many-flowered racemes, to 2 cm long, with an evanescent spathe from the annulus below the apex of the ramicaul; floral bracts oblique, acute, 1 mm long; pedicels 0.5 mm long; ovary 0.5 mm long; **sepals** yellow, expanded, recurved, glabrous, ovate, obtuse, connate basally, the dorsal sepal 0.8–1 mm long, 0.8 mm wide, incompletely 3-veined, the lateral sepals 0.8–1 mm long, 0.8 mm wide, 1-veined at the base; **petals** dark yellow, thin, obovate, concave, rounded at the apex, 0.5 mm long, 0.4 mm wide, 1-veined; **lip** dark yellow, oblong, 0.4 mm long, 0.3 mm wide, 0.1 mm deep, concave above the middle with the apex rounded, thick and mealy below the middle, the base truncate, hinged to the base of the column; **column** stout, ca. 0.4 mm long and wide, the anther apical, the stigmatic lobes inside wings of the column.

**Distribution.** Bolivia. **Etymology.** From the Latin “*naniflorus*,” referring to the small floral parts.

**Comments.** This species is related to the variable and frequent *Stelis hylophylla* Rchb.f., but differs with an inflorescence of a fascicle of a few racemes barely two centimeters long, single-veined sepals up to one millimeter long, single-veined petals longer than wide, and a minute lip less than half a millimeter long, and only about a tenth of a millimeter thick.

***Stelis naviculigera*** Schltr., Rep. Spec. Nov. Regni Veg. 27: 44, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, O. Buchtien 5058 [cited as 5088] (Holotype: B†; Lectotype designated by Christenson 1996: US; Isolectotypes: AMES, NY, US), C. Luer ill. 21884. FIGURE 82.

**Plant** small, epiphytic, shortly repent, the rhizome 3–5 mm long between ramicauls; roots slender. Ramicauls erect, slender, 8–12 mm long, enclosed by a tubular sheath from near the base, with another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, petiolate, with the apex subacute to narrowly obtuse, the blade 1.7–2.3 cm long, 2.5–3.5 mm wide, gradually narrowed below into a petiole 5 mm long. **Inflorescence** an erect, loose, simultaneously 5- to 9-flowered raceme, 2.2 cm long, the inflorescence 3–4 cm long; floral bracts about as long as the pedicel and the ovary; flowers glabrous, yellow-green; **sepals** glabrous, the dorsal sepal erect, broadly ovate, obtuse, ca. 1 mm long and wide in a rehydrated bud, 3-veined, connate basally to the synsepal, the lateral sepals

connate into a subcircular, concave, bifid synsepal, ca. 1 mm long, ca. 1.5 mm wide; **petals** broadly rhombic, single-veined, obtuse with the margin thickened *fide* Schlechter; **lip** oblong, obtuse, ca. 0.5 mm long, 0.5 mm wide, concave between a deeply cleft bar, the base truncate; **column** trilobed *fide* Schlechter.

**Distribution.** Bolivia. **Etymology.** From the Latin *naviculiger*, "boat-bearing," referring to the concave synsepal.

**Comments.** No subsequent collection of this little species of section *Humboldtia* has been made since Buchtien made and distributed numerous individual specimens under *Buchtien 5058* and *5088*. Schlechter published *Buchtien 5088* as the holotype, which was presumably destroyed at B, but collections were also distributed under *Buchtien 5058*, one of which has been designated the lectotype. Somewhere, typographical errors might have been made.

In the published description, the repent rhizome is "5 cm" long between ramicauls, but this is obviously a typographical error. The rhizome of the numerous plants at AMES, NY and US are no more than five millimeters long. All flowers of the plants are reportedly in bud.

The plants are very small and shortly repent with narrow leaves less than three centimeters long. The loosely flowered inflorescences exceed the leaves about twice their length. In the published description, the sepals are three-veined without dimensions; the lateral sepals are connate into a concave synsepal; the petals are single-veined; *fide* Schlechter, the lip is suborbicular, obtuse, with the apex slightly incurved, and about as long as the petals, nothing more (the lip from a rehydrated bud is oblong, obtuse, and concave between the halves of a cleft bar); *fide* Schlechter, the column is dilated and three-lobed. The "lateral lobes" are probably the stigmatic lobes.

The accompanying illustration of the plant was based on *Buchtien 5058* at AMES; the habit was made from one of the dried specimens and the illustration of the flower was made from a rehydrated bud.

**Stelis nutans** Lindl., *Folia Orchid. Stelis* 15(109), 1858. TYPE: Ecuador—Pichincha, *W. Jameson s.n.* (Holotype: K; Isotype: W). FIGURE 83.

**Plant** medium in size to large, epiphytic, ascending-caespitose; roots slender. Ramicauls erect, slender, 10–22 cm long, enclosed by a close, tubular sheath near the middle and 2–3 sheaths about the base. **Leaf** erect, coriaceous, elliptical, acute, 6–15 cm long including a petiole 2–3 cm long, 2–3.5 cm wide, cuneate below into the petiole. **Inflorescence** 1–3 erect, crowded, distichous, many-flowered racemes, with almost all flowers open simultaneously, 8–17 cm long including the peduncle 1–2.5 cm long, from a spathe 8–13 mm long at a node below the apex of the ramicaul; floral bracts thin, oblique, acute, 1.5–2 mm long; pedicels 1–1.5 mm long; ovary 1 mm long; **sepals** yellow-green, glabrous to microscopically pubescent within, the dorsal sepal ovate, obtuse, convex, 2–3 mm long, 1.4–2 mm wide, 3-veined, connate basally to the laterals for 0.5 mm, the lateral sepals ovate, oblique, 2–2.25 mm long, 1.3–1.75 mm wide, 3-veined,

connate 1 mm, held together as an ovoid, bifid synsepal; **petals** light green, transversely obovate, thickened above the middle and at the apex, broadly obtuse, 0.5–0.75 mm long, 0.6–1 mm wide, concave below the apical margin, 3-veined; **lip** light green, thick, oblong-subquadrate, 0.4–0.5 mm long, 0.6–0.8 mm wide, 0.4 mm deep, the apex broadly obtuse, shallowly concave below the bar, cleft with a glenion, the dorsum with a spherical callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia and Ecuador. **Etymology.** From the Latin *nutans*, "nodding," referring to the attitude of the flowers.

**Comments.** This species of section *Humboldtia* is frequent and widely distributed in Ecuador. It must certainly also occur in Peru, but Schweinfurth (1958, 1970) did not record it. One collection from Bolivia appears to represent this species. It is characterized by an ascending-caespitose habit with long, slender ramicauls, and an elliptical, long-petiolate leaf. The slender, densely flowered raceme surpasses the leaf. The sepals are obtuse with the laterals connate into a concave synsepal; the petals are thick with thickened margins; and the type A lip is obtuse with the dorsum callous in varying degrees. In the Bolivian collection, the dorsal callus of the lip is single and rounded.

**Additional collection.** Bolivia: La Paz: Sud Yungas, W of Coroico, 2550 m, 23 January 1983, C. Luer, J. Luer & R. Vásquez 8602A: SEL).

**Stelis nutationis** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, E of Chuspipata, 2770 m, 21 January 1988, C. Luer, J. Luer & R. Vásquez 12897 (Holotype: MO). FIGURE 84.

This medium-sized, caespitose species is distinguished by slender ramicauls, narrow leaves, and an elongated, long-pedunculate, strict, secund raceme of many nutant flowers with obtuse, glabrous sepals; three-veined petals; and a subquadrate lip with obtuse tip and cellular-pubescent, dorsal callus.

**Plant** medium in size, epiphytic, densely caespitose-ascending; roots slender. Ramicauls erect, slender, 4–6 cm long, with a tubular sheath from below the middle and 2–3 other sheaths below and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4–6 cm long including a petiole ca. 1 cm long, the blade 0.8–1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subcongested, secund, many-flowered raceme of nutant flowers, 10–16 cm long including the peduncle ca. 7 cm long, from a node below the apex of the ramicaul, with a spathe ca. 12 mm long; floral bracts tubular, acute, 3–4 mm long, pedicels 1 mm long; ovary 1 mm long; color of flowers unknown; **sepals** glabrous, similar, ovate, subacute, 3-veined, the dorsal sepal 3 mm long, 2.5 mm wide, the lateral sepals 2.5 mm long, 2.5 mm wide, connate basally; **petals** transversely ovate, the apex broadly rounded with a thick, rough margin, concave below a low, transverse callus, 0.8 mm long, 1.25 mm wide, 3-veined; **lip** type A, subquadrate, broadly obtuse, 0.6 mm long, 1 mm wide, 0.75 mm deep, concave below a shallowly cleft bar with a concave glenion extending to the obtuse apex, the dorsum with a low, microscopical pubescence

callus, the base truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *nutationis*, "a nodding of the head," referring to the nutant flowers.

**Comments.** This slender, densely caespitose species is characterized by a long, secund raceme of nutant flowers. The sepals are glabrous, ovate and subacute; the thick margin of the petals is minutely verrucose; and the bar of the type A lip shallowly cleft, with a low, microscopic callus on the dorsum. *Stelis nutationis* Luer & R.Vásquez is similar to *S. ricii* Luer & R.Vásquez, but the flowers of the latter are borne in a crowded, subdistichous raceme; the sepals are subcircular and cellular-papillose; and the callus on the dorsum of the lip is suborbicular and smooth.

**Paratype.** Bolivia—La Paz: Nor Yungas, new road above Unduavi, 3050 m, 22 January 1983, *C. Luer, J. Luer & R. Vásquez 8541* (SEL).

**Stelis oligobotrya** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, E of Chuspipata, above Yolosa, 1850 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez 12911* (Holotype: MO). FIGURE 85.

This small, caespitose species is distinguished by narrowly linear-elliptical leaves that are much longer than a few short inflorescences of minute flowers with obtuse sepals; three-veined petals; and a minute, shortly apiculate lip.

**Plant** small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–6 cm long, enclosed by a thin, tubular sheath from below the middle and another 1–2 below and at the base. **Leaf** erect, thickly coriaceous, narrowly linear, acute, 5–7 cm long, 0.3–0.5 cm wide in the dry state, narrowed below to the base with an ill-defined petiole, ca. 1 cm long. **Inflorescence** 2–3 simultaneous, erect, strict, congested, many-flowered racemes with most flowers open simultaneously, 2–3.5 cm long, flowering from the base, from a node below the apex of the ramicaul, with a spathe ca. 7 mm long; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; flowers rose-colored; **sepals** glabrous, ovate, acute, 3-veined, the dorsal sepal 1.5 mm long, 1.2 mm wide, the lateral sepals 1 mm long, 1 mm wide; **petals** membranous, transversely ovate, concave and rounded with a thin margin, 0.3 mm long, 0.4 mm wide, 3-veined; **lip** subquadrate, 0.5 mm long, 0.5 mm wide, 0.4 mm deep, concave below the bar, the apex truncate with an acute, central, triangular lobule, the dorsum convex with a low callus, microscopically pubescent toward the truncate base, hinged to the base of the column; **column** stout, 0.5 mm long, 0.8 mm wide, the anther and the bi-lobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *oligobotrys*, "with few racemes," as compared to species with multiple racemes.

**Comments.** This small to medium-sized, caespitose, narrow-leaved species is similar to *Stelis polybotrya* Lindl., but it differs with thick, narrowly linear leaves, distinctly three-veined sepals and petals, and a lip with a small, triangular apiculum. True *S. polybotrya* has not been found south of Ecuador.



**Paratypes.** Bolivia—La Paz: Nor Yungas, W of Coroico toward Yolosa, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8567* (SEL); between Chuspipata and Yolosa, 2100 m, 2 April 1984, *J.C. Solomon & M. Uehling 12164* (MO, SEL); Santa Cruz: near Siberia, ca. 2500 m, January 1981, collected by B. Würstle, *C. Luer, J. Luer*, flowered in cultivation in Spielberg, Germany, 6 September 1981, *C. Luer 6458* (SEL).

***Stelis onychosepala*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz:

Loricaja, between Guanay and Tipuani, 1150 m, 26 January 1983, *C. Luer, J. Luer & R. Vásquez 8562B* (Holotype: SEL). FIGURE 86.

This minutely flowered species is related to *Stelis hylophila* Rchb.f., but differs with densely short-pubescent sepals with a minute, uncinat process at the tip of the dorsal sepal, and a broadly rounded apex of the lip.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–9 cm long, enclosed by a thin, tubular sheath from below the middle and another 1–2 below and at the base. **Leaf** erect, coriaceous, elliptical, acute, 5–12 cm long, 1–1.5 cm wide in the dry state, narrowed below to the petiole, 1–1.5 cm long. **Inflorescence** 1–3 erect, strict, sublax, simultaneously, many-flowered racemes with most flowers open simultaneously, 5–11 cm long, with a stout peduncle 1–3 cm long, from a node below the apex of the ramicaul, with a spathe ca. 7 mm long; floral bracts tubular, obtuse, 1.5 mm long; pedicels 0.5 mm long; ovary 1 mm long; color unknown; **sepals** densely short-pubescent, ovate, acute, with the apices recurved, the tip of the dorsal sepal with a small, uncinat tip, the dorsal sepal 1.5 mm long, 1 mm wide, 3-veined, the lateral sepals 1 mm long, 1 mm wide; **petals** membranous, cuneate, concave, truncate with a thin margin, 0.5 mm long, 0.5 mm wide, 1-veined; **lip** subquadrate, 0.3 mm long, 0.5 mm wide, 0.5 mm deep, concave below the bar, the apex broadly rounded, the dorsum filled with a low, flat callus, the truncate base hinged to the base of the column; **column** stout, 0.5 mm long, 0.8 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *onychosepalon*, "with clawed sepals," referring to the tips of the sepals.

**Comments.** This species, apparently endemic in an area of central Bolivia, is related to the familiar *Stelis hylophyla* Rchb.f. that is found through the Andes from Colombia into Bolivia. *Stelis onychosepala* differs with racemes about as long as the leaf; densely short-pubescent sepals with recurved tips, that of the dorsal sepal with a small, uncinat process, those of the lateral sepals with a small, acute process; single-veined petals; and a minute, lip with a rounded apex.

***Stelis ottonis*** Schltr., Repert. Spec. Nov. Regni Veg. 27: 45, 1929. TYPE: Bolivia —La Paz: Larecaja, Hacienda Casana, on way to Tipuani, 1400 m, February 1923, *O. Buchtien 7209* (Holotype: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES). FIGURE 87.

**Plant** medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 7–15 cm long, enclosed by a loose, tubular sheath from below the middle

and 2 other sheaths about the base. **Leaf** erect, thickly coriaceous, elliptical, obtuse to rounded at the tip, sessile to subpetiolate, 8–14 cm long, the blade 4–8 cm wide, cuneate below at the base. **Inflorescence** 1–2 erect, congested, distichous, simultaneously many-flowered racemes, 10–30 cm long including the peduncle 5–8 cm long, with a spathe 1.5–2.5 cm long, from a node below the apex of the ramicaul; floral bracts close, tubular, obtuse, 1–1.5 mm long; pedicels 1–1.5 mm long, mostly within the floral bract; ovary 1–1.5 mm long; **sepals** purple, purplish brown, or greenish suffused with purple, glabrous, the dorsal sepal ovate, subacute to obtuse, 3–3.5 mm long, 2.75–3 mm wide, 5-veined with auxiliary veins, the lateral sepals 1.8–2.75 mm long, 2–2.5 mm wide, 3-veined. **petals** purple, semilunate, broadly rounded at the apex, 0.5–0.8 mm long, 1.25–1.5 mm wide, 3-veined, the margin thickened; **lip** purple, subquadrate-triangular, 1 mm long, 1–1.25 mm wide, 0.75 mm deep, the apex round with a thick margin, shallowly concave below a bar with a small glenion, the dorsum with a low, smooth dorsal callus, and the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the collector, Otto Buchtien.

**Comments.** *Stelis ottonis* Schltr. and *S. phaeomelana* Schltr., collections by Buchtien "on the way to Tipuani" but three years apart, were published posthumously for Schlechter, *S. ottonis* preceding *S. phaeomelana* on the same page. Both were reduced to the synonymy of the Brazilian *S. gigas* Barb.Rodr. by Garay (1980). This species is very similar to the large-leaved *S. phaeomelana*, with which it is easily and often confused, from which *S. ottonis* is distinguished by leaves not abruptly petiolate and glabrous sepals with the dorsal sepal 5-veined, although incompletely.

*Stelis ottonis* is a strong, large species with broad, thick, subsessile leaves that are exceeded by one or two simultaneously many-flowered racemes of small, purplish flowers. The sepals are expanded, glabrous and subacute, the dorsal vein 5-veined; and the petals are three-veined. The lips of both species is type A, that is, shallowly concave below the bar with a glenion, and with a low, broad callus on the dorsum.

**Additional collections.** Bolivia: La Paz: Larecaja, Muñecas, near Consata, 1200 m, 23 January 1981, fl. in cult. at SEL, 81-483, 30 April 1981, *C. Luer* 6014 (SEL); Nor Yungas, below Yolosa, 1200 m, 25 January 1983, *J.C. Solomon* 9401 (MO); NE of Chuspipata, 2100 m, 3 April 1984, *J.C. Solomon* & *M. Uehling* 12186 (MO, SEL); Murillo, along Río Zongo, 1550 m, 25 August 1991, *C. Luer*, *J. Luer* & *R. Vásquez* 15358 (MO); Sud Yungas, between Chuspipata and Coroico, 1800 m, 27 August 1991, *C. Luer*, *J. Luer* & *R. Vásquez* 15371 (MO).

***Stelis pachypetala*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, west of Coroico, 1820 m, 27 January 1983, fl. in cult. 10 June 1983, *C. Luer*, *J. Luer* & *R. Vásquez* 9082 (Holotype: SEL). FIGURE 88.

This large, caespitose species is distinguished by stout ramicauls that are shorter than an elliptical leaf; a much longer, multiflowered raceme of very small flowers with subcircular, five-veined sepals; petals thick, convex externally and flat medially; and a short, type A lip.

**Plant** medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 4–6 cm long, enclosed by a loose, tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to rounded at the tip, 7–9 cm long including a petiole ca. 1 cm long, the blade 1.5–2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous to secund, simultaneously many-flowered raceme to 24 cm tall, including the peduncle ca. 6 cm long, with a spathe ca. 1 cm long, from below the apex of the ramicaul; floral bracts oblique, acute, 5 mm long low in the raceme, 3 mm long above; pedicels 1 mm long; ovary 2 mm long; flowers yellow; **sepals** thick, incompletely expanded, visibly cellular within, broadly ovate to subcircular, broadly obtuse, connate basally, 2 mm long, 2 mm wide, 5-veined; **petals** subquadrate, subtruncate, thick, convex externally, flat medially, not concave, 0.75 mm long, 0.75 mm wide, 3-veined; **lip** type A, the apex broadly rounded, 0.75 mm long, 1 mm wide, 0.75 mm deep, concave below a cleft bar, with broadly rounded, lateral margins, the dorsum with a rounded, microscopically pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 0.5 mm long, 1 mm wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *pachypetalon*, "a thick petal," referring to the semiorbicular apex of the petals.

**Comments.** This species is easily distinguished by stout ramicauls shorter than the leaves. The raceme is tall and many-flowered, the flowers being very small with five-veined sepals. The semiorbicular petals are unusual with a solid, interior surface beyond the three veins at the base. The lip is type A, concave below a cleft bar, and with a round callus on the dorsum.

***Stelis pachyrhiza*** Luer & R. Vásquez, *Phytologia* 49(3): 233, 1981. TYPE:

Bolivia—La Paz: Inquisivi, terrestrial on road embankment between Quime and Inquisivi, 3000 m, 27 January 1980, C. Luer, J. Luer & R. Vásquez 5737 (Holotype: SEL). FIGURE 89.

**Plant** medium in size, caespitose, terrestrial or lithophytic, roots 2–3 mm thick. Ramicauls relatively stout, 2–17 cm long, enclosed by a tubular sheath from near the middle and 2–3 sheaths below and at the base. **Leaf** erect, coriaceous, elliptical, acute to subacute, 4–12 cm long, 1–2.5 cm wide, narrowed below to petiole 0.5–1.5 cm long. **Inflorescence** 1–5 erect, congested, distichous, many-flowered racemes, with 5–7 flowers open simultaneously, 7–30 cm long including the peduncle 4–6 cm long, from a spathe 10–12 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 2.5 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** similar, yellow-green, glabrous externally, minutely ciliate and pubescent near the margins, ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.25 mm wide, the lateral sepals 2.25 mm long, 2 mm wide, connate basally; **petals** dark purple, transversely obovate,

concave, the rounded apex thickened, 1 mm long, 1.1 mm wide, 3-veined; **lip** dark purple, subquadrate, rounded at the apex, 1 mm long, 1 mm wide, 0.6 mm deep, concave below a thickened bar with a small glenion, the dorsum minutely pubescent toward the base, the base truncate, hinged to the base of the column; **column** stout, terete, ca. 1 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *pachyrhiza*, "with thick roots."

**Comments.** This caespitose, medium-sized species, remarkable for the thick, fleshy roots, grows lithophytically and terrestrially at an altitude of 2700–3000 meters above sea level. Up to five simultaneous, many-flowered racemes exceed an elliptical leaf. Only a few flowers open while buds are maturing above. The sepals are ovate and obtuse; the petals are three-veined; and the type A lip is rounded at the apex, and concave before the bar with a small glenion.

**Additional collections.** Bolivia: La Paz: Inquisivi, lithophytic between Quime and Inquisivi, 2750 m, 29 January 1983, *C. Luer, J. Luer & R. Vásquez 8616* (SEL); same area, 2750 m, 12 March 1988, *J.C. Solomon & M. Nee 18175* (MO); same area, terrestrial on steep slopes S of Inquisivi, 2750 m, 27 November 1992, *C. Luer, J. Luer & R. Vásquez 16498* (MO).

**Stelis pardipes** Rchb.f., Beitr. Orchid.-K. C. Amer. 96, 1866. TYPE: Costa Rica—Heredia: *H. Wendland 899* (Holotype: W). FIGURES 90–91.

*Stelis guatemalensis* Schltr., Bull. Herb. Boissier 7: 541, 1899. Named for Guatemala, the country where the species was first identified.

*Stelis longicuspis* Schltr., Repert. Spec. Nov. Regni Veg. 9: 28, 1910. From the Latin *longicuspis*, "with a long tooth," referring to the petals and lip.

*Stelis patula* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 10: 359, 1912. From the Latin *patulus*, "spreading," referring to the sepals.

*Stelis albertii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 170, 1923. Named for Albert M. Brenes who collected this species.

*Stelis vagans* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 27: 48, 1929, not Ames 1922, nom. illeg. Etymology. From the Latin *vagans*, "wandering," referring to a variation of the rhizome.

*Stelis trisetata* Lindl. var. *pardipes* (Rchb.f.) C. Schweinf., Bot. Mus. Leafl. Harvard Univ. 15: 24, 1951.

**Plant** small to large, epiphytic, densely caespitose to ascending; roots slender. Ramicauls erect, slender, 10–16 cm long, nonprolific, enclosed by a tubular sheath near the middle and 2–3 other sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical-oblong, with the apex subacute to acute, 7–10 cm long including the petiole 1–1.5 cm long, 0.5–2 cm wide, narrowly cuneate below into the petiole. **Inflorescence** 1–3 erect, congested to subcongested, distichous to subsecund, many-flowered racemes with many flowers open simultaneously, 6–24 cm long including the peduncle 1–6 cm long, from a node below the apex of the ramicaul, with a spathe 1–1.5 mm long; floral bracts thin, tubular, 2–3 mm long; pedicels 1–2 mm long; ovary 1.5 mm long; flowers light green, yellow, rose, to light purple or brown; **sepals** glabrous to microscopic-pubescent within, the dorsal sepal erect, elliptical, obtuse, slightly convex, 3–5 mm long, 2–3 mm wide, 3-veined, connate basally to the synsepal, the lateral sepals connate into an ovoid, deeply concave synsepal, 2–3 mm long, 2.5–3 mm

wide expanded, 6-veined; **petals** light green to purple, transversely triangular, obtuse, with the margin thickened, contracted into an apiculum, 0.5–1.3 mm long including the apiculum, 0.9–1 mm wide, concave below the middle, the base broadly truncate; **lip** green to purple, thick, subquadrate, 0.6–1.25 mm long including the apiculum, 0.5–0.6 mm wide, 0.4 mm deep, the apex abruptly acute, acuminate into a narrowly triangular process, the bar with a shallow cavity on the anterior surface, the dorsum with a low callus, indistinctly trilobed callus, the base truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama, Peru. **Etymology.** From the Latin *pardipes*, "a foot spotted like a leopard," referring to spots seen on juvenile cauline sheaths.

**Comments.** Described by Reichenbach in 1866 from a Costa Rican collection, this species is frequent and variable with a wide distribution through Central America and the Andes into Bolivia. A very similar plant from Guatemala was described as *Stelis guatemalensis* by Schlechter in 1899. These two concepts are commonly recognized by merely the lengths of the apicula of the petals and lip, and minor differences in the shape of the body of the lip. After reviewing numerous collections, it is concluded that these variations occur throughout the distribution.

Vegetatively, the plants are usually slender and caespitose to shortly ascending with narrow leaves. One or two long, erect inflorescences bear numerous, simultaneous, small flowers. The lateral sepals are variously connate, or adherent to their apices into a deeply concave synsepal. The petals are broadly triangular with the thickened apex obtuse, and with the tip contracted into a short or long process. Specimens with the process shorter than the body of the lip have been identified as *S. guatemalensis*.

*Stelis pardipes* Rchb.f. should not be confused with the common, prolific *S. trisetata* Lindl. with surprisingly similar, individual flowers.

**Additional collections.** Bolivia: La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien 5061* (Holotype of *Stelis vagans*: B†; Lectotype designated by Christenson 1996: US; Isolectotype: AMES); Nor Yungas, below Chuspipata to Yolosa, 2400 m, 23 January 1983, *J.C. Solomon 9322* (MO); Coroico valley, Sacramento, 2450 m, 27 January 1984, *Al Gentry & J.C. Solomon 44715* (MO, SEL); Nor Yungas, Río Unduavi, 2650 m, 29 January 1980, *C. Luer, J. Luer & R. Vásquez 5008* (SEL); Nor Yungas, N of Caranavi toward Alto Beni, 1550 m, 26 January 1988, *C. Luer, J. Luer & R. Vásquez 12945* (MO); Cochabamba: new road from Cochabamba to Villa Tunari, 1900 m, collected November 1978, fl. in cult. 8 May 1979, *C. Luer 4062* (SEL); same area, 2000 m, 31 December 1982, *J. Fernández Casas 8001* (MO); new road from Cochabamba to Villa Tunari, 2400 m, 15 January 1988, *C. Luer, J. Luer & R. Vásquez 12831* (MO); same area, 1500 m, 17 January 1988, *C. Luer, J. Luer & R. Vásquez 12862* (MO); same area, 1750, 31 January 1997, *C. Luer, J. Luer & R. Vásquez 18352* (MO); old road from Cochabamba to Villa Tunari, 1700 m,

30 January 1997, *C. Luer, J. Luer & R. Vásquez 18336* (MO); old road from Cochabamba to Villa Tunari, 1350 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez 18326* (MO).

***Stelis parvifolia*** Garay, Arch. Jard. Bot. Rio de Janeiro 13: 38, 1954 [replaced name for *Stelis microphylla* Hoehne & Schltr., not Lindl. 1859]. TYPE: Brazil—São Paulo, *F.C. Hoehne s.n.* (Holotype of *S. microphylla*: B†; Isotype: SP). FIGURE 92.

*Stelis microphylla* Hoehne & Schltr., Arch. Bot. São Paulo 1: 205, 1926. From the Greek *mikrophyllos*, "with little leaves," for obvious reason.

**Plant** very small, epiphytic, densely caespitose; roots thin. Ramicauls erect, slender, 2–25 mm long, enclosed by a loose, ribbed, tubular sheath from near the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 5–25 mm long, 2–3.5 mm wide, cuneate below to an ill-defined petiole 1–10 mm long. **Inflorescence** an erect, loose, distichous, several-flowered raceme with most flowers open simultaneously, up to 4 cm long including the peduncle 1–1.5 cm long, from a node on the ramicaul; floral bracts infundibular, oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.6 mm long; flowers yellow; **sepals** diffusely minutely cellular-papillose within, broadly ovate, obtuse, 3-veined, connate below the middle to the lateral sepals, the dorsal sepal 1.5 mm long, 1.5 mm wide, the lateral sepals 1 mm long, 1.5 mm wide; **petals** thin, transversely obovate, broadly rounded at the apex, with minimally thickened margin, 0.5 mm long, 0.6 mm wide, faintly 1-veined; **lip** type A, subquadrate, 0.4 mm long, 0.6 mm wide, 0.3 mm deep, the apex obtuse to rounded, shallowly concave below the bar with a glenion, the dorsum convex, with a low callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia and Brazil. **Etymology.** Named *parvifolia*, the Latin equivalent of *microphylla*.

**Comments.** Typical *Stelis parvifolia* Garay (*S. microphylla* Hoehne & Schltr.) is a tiny plant, described from a Brazilian collection, with ramicauls two or three millimeters long, and leaves about one centimeter long. A similar plant with identical flowers, except for cellular-papillose sepals has been found in Bolivia. *Stelis parvifolia* could be treated as an extreme vegetative variation of the variable *S. pusilla* Kunth.

**Additional collection.** Bolivia: Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 2500 m, 26 November 1978, *C. Luer, J. Luer, F. Fuchs 3578* (SEL).

***Stelis patzii*** Luer, sp. nov. Type: Bolivia—Santa Cruz: Caballero, Empalme, 2600 m, 8 February 2004, *César Patzi CP 425* (Holotype: MO; Isotype: BOLV), *C. Luer* illustr. 21876. FIGURE 93.

This small, caespitose species is distinguished by a long raceme of expanded flowers with both the sepals and the petals being single-veined, and a lip with a short apiculum on the truncate apex.

**Plant** small, caespitose, epiphytic, roots slender. Ramicauls slender, 1.5–2 cm long, enclosed by a tubular sheath from below the middle and another at the base. **Leaf** erect, coriaceous, elliptical, obtuse to subacute, 3–4 cm long including a petiole ca. 8 mm long, narrowed below to the petiole. **Inflorescence** an erect, strict, congested, distichous, many-flowered raceme, with many flowers open simultaneously, 7–9 cm long including the peduncle 4–5 cm long, from a minute spathe at a node below the apex of the ramicaul; floral bracts oblique, infundibular, acute, 1.5–2 mm long, 1.5–2 mm wide expanded; pedicels 1 mm long; ovary 1 mm long; **sepals** similar, spreading, color not noted, glabrous, elliptical-ovate, obtuse, 1-veined, 3 mm long, 2 mm wide, connate basally; **petals** membranous, concave, the apical margin of the broadly obtuse apex minimally thickened, 0.7 mm long, 0.9 mm wide, 1-veined; **lip** shallowly subquadrate, 0.8 mm long, 0.8 mm wide, 0.4 mm deep, shortly concave below a thickened bar with a relatively large glenion, the apex truncate with a short, obtuse apicula, the dorsum slightly thickened, the base truncate, attached to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for César Patzi, collector of this species.

**Comments.** This caespitose species is distinguished by relatively large flowers for the small size of the plant. Expanded flowers with nearly free, single-veined sepals three millimeters long are borne in an erect raceme that far exceeds the leaf. The petals are membranous and also single-veined. The lip is shallowly subquadrate with a comparatively large glenion, and a truncate apex with a short, triangular apiculum.

**Stelis pendens** Luer & R. Vásquez, *Phytologia* 49(3): 228, 1981. TYPE: Bolivia—Cochabamba: Carrasco, along Río Mendoza, below Monte Puncu, 2500 m, 1 February 1981, fl. in cult. at Selby Botanical Gardens, 17 April 1981, C. Luer, J. Luer & R. Vásquez 6012 (Holotype: SEL). FIGURE 94.

**Plant** medium in size, epiphytic, shortly repent-caespitose; roots slender. Ramicauls descending, slender, 3–9 cm long, enclosed by a close, tubular sheath from near the middle and 2 red-pubescent sheaths at the base. **Leaf** pendent, coriaceous, elliptical, acute, 4–7 cm long, 1.2–1.9 cm wide, narrowly cuneate below to a subsessile base. **Inflorescence** a pendent, flaccid, subcongested, distichous, many-flowered raceme, with many flowers open simultaneously, 10–14 cm long including the peduncle 3–4 cm long, from a spathe 13–15 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 2.5 mm long; ovary 2 mm long; flowers non-resupinate in the pendent position; **sepals** red-purple, similar, ciliate, ovate, acute, connate basally, 2.5 mm long, 2 mm wide, 3-veined; **petals** rose-white edged in purple, transversely oblong, thin, concave, broadly rounded at the apex, 1.3 mm long, 2 mm wide, 3-veined; **lip** greenish white, slightly suffused with purple at the apex, subdiscoid, 1.3 mm long, 0.9 mm wide, 0.5 mm deep, rounded at the apex, shallowly concave with a minute droplet (noted in a fresh flower) within, the base truncate,

thickened into a shallow bar, microscopically pubescent, the base hinged to the base of the column; **column** stout, terete, ca. 1.25 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *pendens*, "pendent," referring to the habit of the plant.

**Comments.** This pendent species is distinguished by red-pubescent sheaths at the base of the ramicauls; a pendent raceme of small, purple flowers with three-veined, ciliate sepals; thin rounded three-veined petals; and a shallowly concave lip with a rounded tip and a shallow bar.

**Stelis phaeomelana** Schltr., Repert. Spec. Nov. Regni Veg. 27: 45, 1929. TYPE: Bolivia—La Paz: Larecaja, Hacienda Simaco, on way to Tipuani, 1400 m, February 1920, *O. Buchtien* 5059 (Holotype: B†; **Lectotype here designated:** AMES 26481). FIGURE 95.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 18–20 cm long, enclosed by a loose, tubular sheath above the middle and another loose, tubular sheath at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 10–19 cm long including a petiole 2.5–3 cm long, the blade 5–7 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, simultaneously many-flowered raceme with numerous flowers open simultaneously, 15–30 cm long including the peduncle ca. 3–7 cm long, from a node below the apex of the ramicaul, subtended by a tubular spathe ca. 1 cm long; floral bracts broad, obtuse, 2–3 mm long, 3 mm wide; pedicels 1.5 mm long; ovary 2 mm long; **sepals** similar, greenish white, suffused with purple toward the base, densely short-pubescent, broadly ovate, obtuse, convex, 3-veined, the dorsal sepal 2.75 mm long, 3 mm wide, lateral sepals 2.5 mm long, 2.5 mm wide; **petals** purple, lunate, the margin broadly obtuse, slightly thickened, 0.75 mm long, 1.2 mm wide, 3-veined; **lip** type A, thickly triangular, 0.75 mm long, 1.1 mm wide, 0.6 mm deep, broadly rounded at the apex with a thickened margin, shallowly concave anteriorly below the bar thick with a glenion, the dorsum with a low, trilobed callus, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *phaeomelanos*, "dusky black," referring to the flowers in the dry state.

**Comments.** This large, uncommon species is characterized by a one or two single, densely flowered racemes that surpass a large, broadly elliptical, distinctly petiolate leaf. The sepals are overlapping, broad, more or less convex, three-veined and densely short-pubescent; the petals are three-veined; and the lip is type A with a broadly rounded apex.

*Stelis phaeomelana* Schltr. was published simultaneously with the very similar *S. ottonis* Schltr. Schlechter distinguished *S. phaeomelana* from the latter by having two racemes instead of one, but more collections disprove that claim;



pubescent sepals instead of glabrous; and differences in the stigmatic lobes that Schlechter called "lateral lobes" of the column.

**Additional collections.** Bolivia: La Paz: Sud Yungas, collected near Chulumani by Dino Menato, fl. in cult. in Chulumani, 31 January 1983, *C. Luer* 8648 (SEL); Cochabamba: new road from Cochabamba to Villa Tunari, 1000 m, 17 January 1988, *C. Luer, J. Luer & R. Vásquez* 12850 (MO).

***Stelis pholeoglossa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, below the pass between Cochabamba and Villa Tunari, 2830 m, 29 November 1992, *C. Luer, J. Luer & R. Vásquez* 16500 (Holotype: MO).

FIGURE 96.

The habit of this species is similar to that of *Stelis hylophila* Rehb.f., but differing with twice larger flowers; pubescent, three-veined sepals; and an inflated lip with the dorsum short.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, fasciculate, slender, 5–9 cm long, enclosed by close, tubular sheaths below the middle and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 6–8 cm long including a petiole 1–1.5 cm long, the blade 0.5–0.7 cm wide in the dry state, narrowed below into the petiole. **Inflorescence** 2–3, erect, congested, secund, simultaneously many-flowered racemes, 9–11 cm long, including the peduncle 1–2 cm long, with a spathe 5–7 mm long, from below the apex of the ramicaul; floral bracts oblique, acute, 2.5 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers yellow; **sepals** long-pubescent within, ovate, acute, nearly free, barely connate basally, 3-veined, the dorsal sepal 3 mm long, 2 mm wide, the lateral sepals antrorse, 3 mm long, 2 mm wide; **petals** thin, transversely ovate, concave, the apex broadly rounded with the margin narrowly thickened, 0.5 mm long, 0.9 mm wide, 1-veined; **lip** inflated, ovoid, obtuse, with broadly rounded, incurved sides, 1 mm long, 1 mm wide, 0.5 mm deep, deeply concave below the bar, the bar thin, shallowly cleft, with a low, triangular callus, with a small, short lamella within at the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 0.5 mm long and wide, the anther apical, the stigmatic lobes inside wings of the column.

**Distribution.** Bolivia. **Etymology.** From the Greek *pholeoglossa*, "a cave-like lip," referring to the hollowed out labellum.

**Comments.** With slender, densely fascicled ramicauls and densely small-flowered inflorescences longer than the leaves, this species resembles *Stelis hylophila* Rehb.f. From the latter, it differs with narrower leaves and larger flowers with long-pubescent, acute, three-veined sepals that are nearly free, with the lateral sepals held forward. The single-veined petals are proportionately smaller. Most distinctive is the inflated lip with a thin bar forming a short dorsum much less than half the length of the lip.

***Stelis praecipua*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud

Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez* 8594 (Holotype: SEL). FIGURE 97.

This small, caespitose species with a raceme that exceeds the leaf differs from many other species with a similar habit by a lip with a broad, smooth, slightly elevated callus that curves forward and downward from the base to the concavity within the rounded apex.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–5 mm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 4–5.5 cm long including a petiole ca. 1 cm long, the blade 1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect or suberect, congested, secund, simultaneously several-flowered raceme, to 7 cm long, including the peduncle ca. 3 cm long, from within the sheath, from near or at the apex of the ramicaul; floral bracts oblique, infundibular, dilated, 2 mm long, 2 mm wide; pedicels 1 mm long; ovary 1 mm long; **sepals** purple, glabrous, broadly ovate, obtuse to rounded at the apex, 1.75 mm long, 2 mm wide, connate below the middle, 3-veined; **petals** yellow, thin, transversely elliptical, concave, the apex broadly rounded with the margin narrowly thickened, 0.8 mm long, 1.25 mm wide, 3-veined; **lip** yellow, subquadrate, broadly rounded at the apex, 1 mm long, 1 mm wide, 0.5 mm deep, shallowly concave below a broad, smooth, decurved, slightly elevated callus that descends from the base to within the apex, minutely ciliate toward the base, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *praecipuus*, "peculiar," referring to the lip.

**Comments.** This small, caespitose species is similar to many others with a raceme that exceeds the leaf. The floral bracts are dilated; the sepals are broadly ovate, obtuse and three-veined; the petals are thin, concave and three-veined; and the lip has a broad, smooth, slightly elevated callus that curves forward and downward from the base to the concavity within the rounded apex.

**Stelis punchinello** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Murillo, along Río Zongo, 2750 m, 22 November 1992, C. Luer, J. Luer & R. Vásquez 16474 (Holotype: MO). FIGURE 98.

The flexuous raceme of this caespitose species is about as long as a long-petiolate leaf; the dorsal sepal is ovate, the lateral sepals are also ovate, but broader, not only concave centrally with reflexed margins, but twisted as well, with a convexity at the junction with the dorsal sepal.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–6 cm long, enclosed by a tubular sheath from below the middle, and 2 about the base. **Leaf** erect, coriaceous, elliptical, subacute, long-petiolate, 7–11 cm long including a petiole 2–4 cm long, the blade 1.5–2.2 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, flexuous, subclax, distichous, several-flowered raceme with most flowers open simultaneously, 8–10 cm long including the peduncle 3–4 cm long, from a node below the apex of the ramicaul, with a spathe ca. 8 mm long; floral bracts oblique, acute, 3 mm long; pedicels 3 mm long; ovary 2 mm long; **sepals** green, suffused with purple on the margins, the dorsal sepal erect, glabrous, ovate, subacute, 5 mm long, 4 mm wide, 5-veined, the lateral sepals antrorse, broadly ovate, obtuse, with the

upper margin recurved inflated centrally and forming a retrorse mentum, 3.5 mm long, 5 mm wide, 5-veined, twisted when expanded, with a small, ovoid convexity at the connation to the dorsal sepal; **petals** dull white, edged in purple, membranous, oblong, concave and rounded at the tip, 1.2 mm long, 1.2 mm wide, 3-veined; **lip** dull purple, subdiscoid, 1.5 mm long, 2 mm wide, 0.5 mm deep, the apex broadly obtuse with thickened margins extending to obtuse corners, the bar across the base, with a prominent glenion with thickened parallel margins from the center of the bar to near the apex, the dorsum narrow with a flat, cellular callus, the truncate base hinged to the base of the column; **column** stout, 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Punchinello, a celebrated, comical puppet.

**Comments.** This caespitose species with inflated, contorted lateral sepals is distinguished by a flexuous raceme about as long as a long-petiolate leaf. The sepals are unusual with an ovoid convexity at the connation between the dorsal and laterals, but the broader lateral sepals are most unusual with the sides recurved above the midvein, and concave below the midvein, forming a retrorse, inflated mentum.

**Stelis purpurea** (Ruiz & Pav.) Willd., Sp. Pl. 4: 140, 1805. TYPE: Peru—Huánuco: *H. Ruiz & J. Pavón. s.n.* (Holotype: MA). FIGURES 99–100.

*Humboldtia purpurea* Ruiz & Pav., Fl. Peruv. Chil. Prodr. 121, t. 27, 1794, not Vahl 1794, nom. rej.

*Humboldtia purpurea* Ruiz & Pav., Syst. Veg. Fl. Peruv. Chil. 235, 1798. From the Latin *purpureus*, "purple," referring to the color of the flowers.

*Stelis connata* C.Presl, Reliq. Haenk. 1: 103, 1827. From the Latin *connatus*, "connate," referring to the lateral sepals.

*Stelis cupuligera* Rchb.f. & Warsz., Bonplandia 2: 114, 1854. From the Latin *cupuliger*, "cup bearing," referring to the bilabiate flowers.

*Stelis dubia* Lindl., Folia Orchid. *Stelis* 8(55), 1858. From the Latin *dubius*, "doubtful," because of a mistaken similarity to *S. nanegalensis*.

*Stelis acutissima* Lindl., Folia Orchid. *Stelis* 8: 14, 1858. From the Latin *acutissimus*, "very acute," referring to the floral bracts.

*Stelis densiflora* Lindl., Folia Orchid. *Stelis* 8: 16, 1858. From the Latin *densiflorus*, "densely flowered," referring to the raceme.

*Stelis endocharis* Rchb.f., Linnaea 41: 8, 1877. From the Greek *endocharis*, "pretty inside," referring to the flowers.

*Stelis abrupta* Rchb.f., Linnaea 41: 7, 1877. From the Latin *abruptus*, "terminated abruptly," referring to the truncate lip.

*Stelis hemicardia* Rchb.f., Linnaea 41: 8, 1877. From the Greek *hemicardia*, "half-a-heart," referring to the bilabiate flowers.

*Stelis rusbyi* Rolfe, Mem. Torrey Bot. Club. 4: 261, 1895. Named for Henry Hurd Rusby, American medical botanist, who collected this species.

*Stelis macrantha* Rolfe, New York Bot. Gard. 4: 450, 1907. From the Greek *makranthos*, "big flowered," referring to the flowers.

*Stelis huancabambae* Kraenzl., Bot. Jahrb. Syst. 54, Beibl. 117: 20, 1916. Named for the community of Huancabamba, near where the species was collected.

*Stelis saxicola* Schltr., Repert. Spec. Nov. Regni Veg. 10: 452, 1912. From the Latin *saxicola*, "growing on rocks," referring to the habitat.

*Stelis pachyphylla* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 91, 1920. From the Greek *pachyphyllon*, "thick-leaf," referring to the foliage.

*Stelis cordibractea* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 51, 1921. From the Latin *cordibracteus*, "with cordate bracts," referring to the bracts.

*Stelis phaeantha* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 68, 1921. From the Greek *phaeanthos*, "darkly colored flower," referring to the flowers.

*Stelis robusta* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 27: 38, 1924, not 1918. From the Latin *robustus*, "robust," referring to the habit.

*Stelis robustior* Garay, Bot. Mus. Leaflet. 27(7–9): 185, 1980, replaced name for *S. robusta* Schltr., 1924.

*Stelis yungasensis* Schltr., Repert. Spec. Nov. Regni Veg. 27: 49, 1929. Named for the Yungas of Bolivia where the species was collected.

*Stelis repanda* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 88: 22, 2002. From the Latin *repandus*, "repand," referring to the wavy margins of the floral bracts.

*Stelis alpina* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 121, 2004. From the Latin *alpinus*, "of a high altitude," referring to the habitat.

*Stelis lapoi* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 112: 11, 2007. Named for Lester Lapo of Gualaceo, collector and cultivator of this species.

**Plant** medium to large in size, epiphytic, shortly repent to densely caespitose; roots slender. Ramicauls stout, erect, up to 40 cm long, enclosed by a loose, tubular sheath near the middle and 2–3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, petiolate, with the apex subacute to obtuse, 6–17 cm long including the petiole 0.5–2.5 cm long, 1–5 cm wide, cuneate below into the petiole. **Inflorescence** 1–3 erect, distichous, subdensely many-flowered racemes with many flowers open simultaneously, 18–35 cm long including the peduncle 5–13 cm long, subtended by a spathe 1–2 cm long, from a node below the apex of the ramicaul; floral bracts infundibular, oblique, acute, from 12 mm long below to 5 mm long above; pedicels 3–6 mm long; ovary 2–3 mm long; flowers nutant, bilabiate, purple, yellow, yellow-green, or purple with yellow petals and lip; **sepals** glabrous externally, microscopically pubescent within, purple, yellow-green, or yellow-green variously suffused with shades of purple, the dorsal sepal erect, ovate-triangular, acute, 5–10 mm long, 5–6 mm wide, 5- to 7-veined, connate to the synsepal for 1 mm, the lateral sepals connate into a broadly ovate, concave synsepal, 5–6.5 mm long, 5–7 mm wide unexpanded, 6-(8-)veined; **petals** purple, transversely semilunate, 1–1.25 mm long, 2–2.25 mm wide, concave below the broadly rounded apex with the margin thickened and flattened, the base transversely truncate; **lip** purple, thick, subquadrate, 0.9–1.2 mm long, 1.2–1.5 mm wide, 0.9–1 mm deep, the apex thick, broadly rounded, shallowly concave anteriorly with a glenion, the dorsum with a low, more or less lobed callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.2–1.5 mm wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia, Colombia, Ecuador, Peru.

**Comments.** This species is frequent and variable in its wide distribution in the Andes. Apparently because he had no access to an authentic specimen of *Stelis purpurea* (Ruiz & Pav.) Willd., Lindley described two specimens of this species as *S. acutissima* and *S. dubia*. No specimen in his herbarium was identified by him as *S. purpurea*. Variations and combinations of variations account for the multitude of synonymous names.

*Stelis purpurea* is usually a robust plant characterized by a very shortly repent to a densely caespitose habit with many-flowered racemes that usually far exceed the elliptical, petiolate leaves. The floral bracts are long and more or less inflated and undulate. The flowers are variable in size, some large specimens

equalling those of *S. maxima* Lindl. The color varies among all shades of purple to yellow-green. The five-(occasionally seven-)veined dorsal sepal is ovate-triangular, more or less acute, usually about six millimeters long, and the lateral sepals are connate into a concave synsepal. The petals are proportionately large with broadly rounded, thick margins. The apex of the type A lip is also rounded and thick, and on the dorsum a low, rounded callus, sometimes lobulated, fits beneath the column.

**Additional collections.** Bolivia: La Paz: Yungas, 1846, *T.C. Bridges* s.n. (K); Yungas, 6,000 ft., 1885, *H.H. Rusby* 2758 (Holotype of *S. rusbyi*: K; Isotype: LE); Yungas, 1890, *M. Bang* 332 (W); Sud Yungas, Polo-Polo near Coroico, 1100 m, October–November 1911, *O. Buchtien* 3699 (Holotype of *S. yungasensis*: B†; Lectotype selected by Christenson 1996: US; Isolectotype: AMES); Sud Yungas, growing on rocks near Unduavi, 2800 m, November 1910, *O. Buchtien* 2610 (Holotype of *S. saxicola*: B†; Lectotype selected by Christenson 1996: US; Isolectotype: AMES); without data, *M. Bang* s.n. (Holotype of *Stelis macrantha*: K); without data, *M. Bang* 1816 (MO); 9.3 Km E of Unduavi, 8,400 ft., 15 November 1976, *C. Davidson* 5033 (LAM, MO); along Río Unduavi, 2650 m, 29 January 1980, *C. Luer, J. Luer & R. Vásquez* 5006 (SEL); between Chuspipata and Yolosa, 2100 m, 21 October 1982, *J.C. Solomon* 8638 (MO, SEL); same area, 2000 m, 21 October 1984, *J.C. Solomon* 12542 (MO); E of the pass near Chuspipata, 2800 m, 27 August 1991, *C. Luer, J. Luer & R. Vásquez* 15366 (MO); W of Coroico, 1820 m, flowered in cultivation at SEL, 10 April 1983, *C. Luer* 8711 (SEL); E of Chuspipata, 2750 m. 24 November 1992, *C. Luer, J. Luer & R. Vásquez* 16492 (MO); Inquisivi: terrestrial on road cut near the pass above Circuata, 2600 m, 30 January 1983, *C. Luer, J. Luer & R. Vásquez* 8632 (SEL); Murillo, Valle de Río Zongo, 2200 m, 22 October 1987, *J.C. Solomon & M. Moraes* 17214 (MO); Murillo, along Río Zongo, 2350 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez* 16480 (MO); Saavedra, along river below Charazani, 2550 m, *C. Luer, J. Luer & R. Vásquez* 16439 (MO); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1500 m, 26–30 November 1978, *C. Luer, J. Luer, F. Fuchs* 3484, 3500, 3528 (SEL); same area, 2500 m, 22 January 1980, *C. Luer, J. Luer & R. Vásquez* 4874 (SEL); same area, 21 November 1980, *T.B. Croat* 51333, 51347 (MO); Chapare, Pampa Tambo, 2800 m, 20 December 1979, *R. Vásquez* 224 (SEL, Herb. Vásq.).

***Stelis purpurina*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Carrasco, Sehuencas, along Río Lope Mendoza, 2450 m, 13 January 1988, *C. Luer, J. Luer & R. Vásquez* 12812 (Holotype: MO). FIGURE 101.

This small, caespitose species is distinguished by a strict, crowded, many-flowered raceme longer than the leaf; small, purple flowers with obtuse sepals; single-veined petals; and a shallowly concave lip with a minute glenion.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1–3 cm long, with a tubular sheath from below the middle and another tubular sheath below at the base. **Leaf** erect, coriaceous, elliptical, subacute to rounded at

the tip, 3–4 cm long including a petiole 0.5–1 cm long, the blade 0.6 cm wide dry, cuneate below into the petiole. **Inflorescence** a single, erect, distichous, congested, many-flowered raceme 6 cm long including the peduncle ca. 2 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1–1.5 mm long; ovary 1.5 mm long; flowers purple; **sepals** broadly ovate, broadly obtuse, more or less convex, microscopically cellular within, connate to near the middle, 3-veined, the dorsal sepal 2 mm long, 2 mm wide, the lateral sepals 1.5 mm long, 2 mm wide; **petals** thin, subcircular, rounded and concave, 0.8 mm long, 0.8 mm wide, single-veined with 1–2 faint, vestigial veins at the base; **lip** simple, type A, broadly rounded at the apex, shallowly concave, the bar with a minute glenion, the dorsum featureless, 0.6 mm long, 1 mm wide, 0.5 mm deep, the base truncate, hinged to the base of the column-foot; **column** stout, ca. 1 mm long and wide, the anther and the stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *purpurinus*, "a purple color," referring to the flowers.

**Comments.** This little species has no distinctive character. It is characterized by a small, caespitose habit with an erect, distichous, densely many-flowered raceme of little, purple flowers. The two-millimeter long sepals are broadly obtuse and three-veined; the petals are single-veined with or without faint accessory veins at the base; and the lip is a simple type A.

**Stelis pusilla** Kunth, Nov. Gen. Sp. 1: 361, 1816. TYPE: Ecuador—Pichincha: Quito, 1801, A. *Humboldt* & A. *Bonpland s.n.* (Holotype: P). FIGURES 102–104.

*Stelis myriantha* Lindl., Fol. Orchid. *Stelis* 8: 10, 1859. From the Greek *myrianthos*, "many-flowered," referring to the inflorescence.

*Stelis microphylla* Lindl., Fol. Orchid. *Stelis* 8: 10, 1859. From the Greek *microphyllos*, "minute-leaved," referring to the vegetation.

*Stelis apiculata* Lindl., Fol. Orchid. *Stelis* 8: 11, 1859. From the Latin *apiculatus*, "apiculate," referring to the labellum.

*Stelis megahybos* Schltr., Repert. Spec. Nov. Regni Veg. 14: 122, 1915. From the Greek *megahybos*, "with a large projection," referring to the large callus of the lip.

*Stelis callicentrum* Schltr., Repert. Spec. Nov. Regni Veg. 15: 52, 1917. From the Latin *callicentrum*, "central calli," referring to the labellum.

*Stelis tenuis* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 94, 1920. From the Latin *tenuis*, "thin," referring to the leaves.

*Stelis scandens* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 27: 39, 1924, not Rolfe 1907. From the Latin *scandens*, "scandent," referring to the habit.

*Stelis dazae* Garay, Bot. Mus. Leaflet 27(7–9): 194, 1980, replaced name for *S. scandens* Schltr., nom. nud. Named for the community of Daza, NW of Pasto where the plant was collected.

**Plant** small to very small, epiphytic, shortly repent, caespitose in part, to ascending, forming large, intertwining clusters; roots slender. Ramicauls ascending-erect, slender, 0.5–1 cm long, enclosed by a tubular sheath. **Leaf** erect, coriaceous, narrowly elliptical, acute, 1.5–3 cm long including an indistinct petiole, the blade 0.3–0.5 cm wide when dry, gradually narrowed below into the petiole. **Inflorescence** an erect, subclax, distichous, few- to many-flowered raceme with many flowers open simultaneously, 3–5 cm long including the peduncle 1–2

cm long, from a node below the apex of the ramicaul; floral bracts acute, 1.5 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers purple, yellow or greenish; **sepals** glabrous to microscopically ciliate, ovate, obtuse, dorsal sepal 1.5–1.75 mm long, 1.5–1.75 mm wide, 3-veined, the lateral sepals ca. 1.4 mm long, 1.5 mm wide, 3-veined; **petals** translucent, subcircular to transversely cuneate, 0.5 mm long, 0.6–0.7 mm wide, 1-veined, thin, shallowly concave; **lip** yellow to purple, type A, subquadrate, ca. 0.4 mm long, 0.6 mm wide, 0.4 mm deep, the apex broadly rounded, concave below a thick, prominent bar that is swollen to either side, with a cleft below toward the apical margin, the dorsum concave, featureless, the base hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Dominican Republic, Ecuador, Haiti, Peru, Venezuela. **Etymology.** From the Latin *pusillus*, "very small," referring to the habit.

**Comments.** The identity of the little species included in the synonymy is uncertain, as is the identity of the other species cited here. All have loose racemes of small, pale yellow, rarely purple flowers, with glabrous sepals about one and a half millimeters long, and with thin, single-veined petals. Although most descriptions of the lips are too vague to be of value, the lip is a simple type A, each with a trivial variation.

This species-complex is common in Ecuador where one of the taxa blankets some road banks at high altitudes. The tiny rhizome is variously short-repent and branching as it forms great, tangled masses of plants. Individual plants accumulated many synonyms. In Bolivia, the species is uncommon, but locally abundant.

**Additional collections.** Bolivia: La Paz: Sud Yungas, old road to La Paz SW of Coroico, 2000 m, 4 February 1980, *C. Luer, J. Luer & R. Vásquez 5110* (SEL); along Río Unduavi, 2450 m, 6 February 1980. *C. Luer, J. Luer & R. Vásquez 5142, 5143, 5144* (SEL); Sud Yungas, along Río Unduavi, 3100 m, 29 January 1980, *C. Luer, J. Luer, R. R. Vásquez 5011* (SEL); Cochabamba: Carrasco, Sehuencas, along Río Lope Mendoza, 2450 m, 13 January 1988, *C. Luer, J. Luer, R. Vásquez & A. Vogel, 12806* (MO); Carrasco, Sehuencas, Río Fuerte, 2100 m, 4 January 1994, *P. Ibisch & C. Ibisch 94.0124* (Herb. Vásq., MO), *C. Luer* illustr. 21861; Chapare, 1700 m, 26 February 1929, *Steinbach 9322, 9383* (AMES, LPB), *C. Luer* illustr. 21890.

***Stelis pycnochila*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Ayopaya, terrestrial on road embankment N of Cocapata, 2950 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18381* (Holotype: MO; Isotype: SEL). FIGURE 105.

This large, repent species is characterized by relatively large, broadly ovate, glabrous sepals, three-veined petals, and a subtriangular lip that is thick and concave at the obtuse apex, and with the bar thick and protruding on either side of a deep cleft.

**Plant** medium to large, epiphytic, repent, the rhizome 2–3 mm thick, to 2 cm long between ramicauls; roots slender. Ramicauls erect, slender, 5–18 cm long,

enclosed by a close, tubular sheath below the middle and 1–2 other sheaths below. **Leaf** erect, coriaceous, elliptical, acute, long-petiolate, 6–20 cm long including a petiole 2–5 cm long, the blade 1.5–3.5 cm wide, narrowed below into the petiole. **Inflorescence** an erect, congested, distichous, simultaneously many-flowered raceme, 8–18 cm long, including the peduncle 2–5 cm long, with a spathe 7–12 mm long, from below the apex of the ramicaul; floral bracts oblique, acute, 2–3 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** yellow-green, glabrous, broadly ovate, obtuse, connate to near the middle, 3-veined, the dorsal sepal 4–6 mm long, 4–7 mm wide, the lateral sepals 3–6 mm long, 4–5 mm wide; **petals** yellow, transversely ovate, concave, the apex broadly rounded with the margin thickened, 1.5 mm long, 2 mm wide, 3-veined; **lip** purple or brown, subtriangular, thick and concave at the obtuse apex, 2 mm long, 2 mm wide, 1.5 mm deep, concave below a cleft bar, the bar thick and protuberant to either side of the cleft, the dorsum more or less flat, densely short-pubescent toward the base, the base broadly truncate, hinged to the base of the column; **column** stout, terete, 2 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *pyknocheilos*, "a thick lip," referring to the labellum.

**Comments.** Although distinctly repent, clusters of ramicauls sometimes develop along the rhizome of this large species. The leaves are elliptical, acute, long-petiolate, and surpassed by a congested raceme of relatively large flowers with broadly ovate, three-veined sepals. Three-veined, concave petals extend forward and overlap part of the lateral margins of the lip. The type A lip is concave below a thick bar that is protuberant to either side of a central cleft. The lip is distinctly thicker above the middle toward the obtuse tip, and the dorsum is minutely pubescent.

**Paratypes.** Bolivia—La Paz: Sud Yungas, old road from La Paz to Unduavi, 2800 m, 4 February 1980, *C. Luer, J. Luer & R. Vásquez 5112* (SEL); W of Coroico, 2550 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8607* (SEL); Sacramento Valley of Río Coroico, NE Chuspipata, 2450 m, 29 January 1984, *A. Gentry & J.C. Solomon 44802* (MO); same area, 2800 m, 21 February 1986, *J.C. Solomon 14980* (MO); E of Chuspipata, 2770 m, 21 January 1988, *C. Luer, J. Luer, R. Vásquez & J.C. Solomon 12895* (MO); Murillo, epiphytic along Río Zongo, 2750 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez 16475* (MO).

**Stelis quadrata** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, *C. Luer, J. Luer & R. Vásquez 8591* (Holotype: SEL). FIGURE 106.

This very small, caespitose species is distinguished by minute flowers in a distichous raceme much longer than the leaves; transversely ovate to subcircular, pubescent sepals; three-veined petals; and a proportionately large, subquadrate lip.

**Plant** very small, epiphytic, caespitose; roots slender. Ramicauls erect, 5–6 mm long, enclosed by a loose, tubular sheath and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 18–23 mm long including a petiole 5–7 mm long, the blade 4–5 mm wide in the dry state, contracted below



into the petiole. **Inflorescence** an erect, strict, congested, many-flowered raceme with flowers open simultaneously, to 7 cm long including the peduncle 4–5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 1–1.5 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers light yellow; **sepals** glabrous externally, short-pubescent within, broadly ovate, convex, obtuse (the lateral sepals subcircular), connate below the middle, 1.5 mm long, 1.5 mm wide, 3-veined; **petals** transversely elliptical, concave, broadly rounded at the apex, with a thin margin, 0.6 mm long, 0.85 mm wide, 3-veined; **lip** modified type C, shallowly subquadrate, with the apex broadly truncate, 0.8 mm long, 0.8 mm wide, 0.6 mm deep, shallowly concave anteriorly with the surface curved without forming a bar, a shallow, dumbbell-shaped glenion extends from the anterior surface onto the dorsum as a smaller counterpart, the dorsum narrow, truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *quadratus*, "quadrate," referring to the square shape the lip.

**Comments.** This tiny, caespitose species is distinguished by minute flowers in a crowded, distichous raceme that far surpasses the leaves. The sepals are obtuse, convex and densely short-pubescent, and the petals are three-veined. The glenion of the subquadrate lip extends onto the dorsum where a second part completes the appearance of a dumbbell.

**Stelis repens** Cogn., Symb. Antill. 6: 692, 1910. TYPE: Dominican Republic: *H. von Tüerckheim* 3329 (Holotype: BR; Isotypes: AMES, K, US). FIGURE 107.

**Plant** small, epiphytic, long-repent, the rhizome stout, to 30 cm long, 0.5–2 cm long between ramicauls; roots slender. Ramicauls ascending, erect, slender to stout, 2–3.5 cm long, enclosed by a tubular sheath from below the middle and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, shortly petiolate, 2–5 cm long including a petiole less than 1 cm long, 0.5–1 cm wide when dry, narrowly cuneate below into the petiole. **Inflorescence** an erect, secund, subdensely many-flowered raceme with most flowers open simultaneously, 3–4 cm long, including the peduncle ca. 1 cm long, subtended by a spathe 3–5 mm long, from below the apex of the ramicaul; floral bracts oblique, tubular, 1 mm long; pedicels 0.5 mm long; ovary 0.5 mm long; **sepals** glabrous, yellow to pale green, ovate, acute, thickly apiculate, 1-veined to the naked eye, sometimes with faint vestigial remnants at the base, the dorsal sepal 1.75 mm long, 1 mm wide, the lateral sepals oblique, antrorse, 1.75 mm long, 0.8 mm wide; **petals** light green, obcuneate, shallowly concave, 0.5 mm long, 0.5 mm wide, 1-veined, the apex broadly truncate and thickened on the margin; **lip** light green, thick, trilobed, 0.5 mm long, 0.25 mm wide, 0.2 mm deep, the apical lobe narrowly triangular, narrowly obtuse, the laterals erect, broadly rounded, the disc with a thick cellular-papular, callus above the base, the base truncate, hinged to the base of the column; **column** stout, cucullate, 0.4 mm long and wide, the anther and the confluent stigmatic lobes within the margin apical.

**Distribution.** Bolivia, Dominican Republic, Ecuador, Haiti. **Etymology.** From the Latin *repens*, "creeping," referring to the repent habit.

**Comments.** This little, repent species described from Hispaniola is known from the Andes, by three collections in Ecuador, and this single collection from Bolivia. The rhizome is long-repent, producing ramicauls, about as long as the leaf, every five to 15 millimeters. The delicate raceme of tiny flowers is about as long. The sepals are acute, apiculate and single-veined to the naked eye, with the lateral sepals antrorse; the petals are single-veined; and the lip is triangular at the apex, and the body modified with erect, lateral lobes.

The Bolivian collection is vegetatively larger than the other known collections of the species. All produce minute flowers, the floral parts of the Bolivian collection varying in a few minor details from those given in Luer (2009).

**Additional collection.** Bolivia: La Paz: Sud Yungas, W of Coroico, 1820 m, 27 January 1983, fl. in cult. at the Marie Selby Botanical Gardens, 27 March 1983, *C. Luer, J. Luer & R. Vásquez 8702* (SEL).

***Stelis ricii*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: old road from Cochabamba to Villa Tunari, 2800 m, 1 February 1997, *C. Luer, J. Luer, W. Teague, D. Ric & R. Vásquez 18367* (Holotype: MO). FIGURE 108.

This medium-sized, caespitose species is distinguished by slender ramicauls, narrow leaves, and an elongated, long-pedunculate, strict, subdistichous inflorescence of many flowers with rounded, cellular-papillose sepals; three-veined petals; and a subquadrate lip with obtuse tip and a smooth, subspherical, dorsal callus.

**Plant** medium in size, epiphytic, densely caespitose-ascending; roots slender. Ramicauls erect, slender, 5–6 cm long, enclosed by a tubular sheath from below the middle and 2–3 other sheaths below. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5–7 cm long including a petiole 1.5 cm long, the blade 0.8–1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subcongested, subdistichous, many-flowered raceme with many flowers open simultaneously, 12–25 cm long including the peduncle 8–10 cm long, from a node below the apex of the ramicaul, with a spathe 8 mm long; floral bracts tubular, acute, 5 mm long below to 3 mm long above; pedicels 1.5 mm long; ovary 1 mm long; flowers yellow; **sepals** glabrous externally, minutely papillose within, similar, broadly ovate, more or less rounded at the apex, 3-veined, the dorsal sepal 3.25 mm long, 2.6 mm wide, the lateral sepals 2.5 mm long, 2.5 mm wide, connate basally; **petals** transversely ovate, the apex broadly rounded with a thick, rough margin, concave below a low, transverse callus, 0.8 mm long, 1.4 mm wide, 3-veined; **lip** type A, subquadrate, broadly obtuse, 0.6 mm long, 0.9 mm wide, 0.6 mm deep, concave below a shallowly cleft bar with a concave glenion extending to the obtuse apex, the dorsum with a smooth, subspherical callus, the base truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Darwin Ric of Montero, Bolivia, co-collector of this species.

**Comments.** This slender, densely caespitose species is characterized by a long, crowded raceme of yellow flowers. The sepals are subcircular and cellular-papillose within; the thick margin of the petals is microscopically rough; and the bar of the type A lip shallowly cleft, with a subspherical callus on the dorsum.

*Stelis ricii* Luer & R. Vásquez is similar to *S. nutationis* Luer & R. Vásquez described herein, but the flowers of the latter are nutant in a second raceme, the ovate sepals are glabrous, and the callus on the dorsum of the lip is microscopically pubescent.

**Stelis robertoi** Luer, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, W of Coroico, 1800 m, 22 January 1984, *C. Luer, J. Luer & R. Vásquez 9418* (Holotype: SEL). FIGURE 109.

This large species is characterized by a stout, ascending-repent rhizome; long-petiolate, elliptical leaf; and a tall, strict, subcongested raceme of yellow flowers with rounded, antrorse lateral sepals, three-veined petals, and a subquadrate lip with a forked callus.

**Plant** large, epiphytic, densely ascending-repent, the rhizome thick, ca. 1 cm long between ramicauls; roots slender. Ramicauls erect, relatively stout, 5–7 cm long, enclosed by a tubular sheath from below the middle, and 2 other sheaths about the base. **Leaf** erect, coriaceous, elliptical, acute, 5–8 cm long, petiolate, 1–1.5 cm wide in the dry state, cuneate below into a slender petiole 1.5–3 cm long. **Inflorescence** an erect, strict, subclax, subdistichous, many-flowered raceme with many flowers open simultaneously, 7–11 cm long including the peduncle 2–3 cm long, from the apex of the ramicaul, with a slender spathe 15–18 mm long; floral bracts oblique, infundibular, acute, 2 mm long; pedicels 1.5–2 mm long; ovary 1 mm long; flowers yellow; **sepals** glabrous, 3-veined, the dorsal sepal ovate, subacute, 3.25 mm long, 3 mm wide, the lateral sepals antrorse, transversely ovate to subcircular, rounded at the tip, 2 mm long, 2.5 mm wide; **petals** transversely ovate, concave, the apex obtuse, with a thickened margin, 1.3 mm long, 1.5 mm wide, 3-veined; **lip** subquadrate, the apex obtuse, 1.3 mm long, 1.3 mm wide, 1 mm deep, concave below the bar with a callous center that descends as a forked callus, the dorsum with a low, slightly convex callus, covered with a pubescence, the truncate base hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther with a 1.3 mm long anther cap and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Dedicated to the late Roberto Vásquez Chávez, foremost authority of Bolivian Cactaceae and Orchidaceae, co-collector of almost all the new species of *Stelis* published herein.

**Comments.** This large species is characterized by a stout, densely ascending-repent rhizome. The ascending ramicauls bear long-petiolate, elliptical leaves that are far surpassed by a many flowered raceme of gaping, yellow flowers with broadly rounded, antrorse lateral sepals. The lip with a forked callus descending from the bar.

**Stelis rosulenta** Luer & R. Vásquez, *Phytologia* 49(3): 236, 1981. TYPE: Bolivia—La Paz: Inquisivi, between Inquisivi and Circuata, 2500 m, 28 January 1980, C. Luer, J. Luer & R. Vásquez 5980 (Holotype: SEL). FIGURE 110.

**Plant** medium to large, caespitose, epiphytic; roots slender. Ramicauls stout, 2–6 cm long, enclosed by a tubular sheath from below the middle and another sheath below at the base. **Leaf** erect, coriaceous, elliptical, subacute to rounded at the tip, 5–11 cm long, 1–2.3 cm wide, cuneate below to a petiole 1–1.5 cm long. **Inflorescence** an erect, congested, distichous, many-flowered raceme, with the flowers overlapping, most open simultaneously, 12–17 cm long including the peduncle 5–6 cm long, from a spathe ca. 1 cm long at the node below the apex of the ramicaul; floral bracts oblique, infundibular, acute, 2–3 mm long; pedicels 1–1.5 mm long; ovary 1–1.5 mm long; **sepals** pale rose, marked with rose, microscopically ciliate and cellular, broadly ovate, obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.5 mm wide, the lateral sepals 2.25 mm long, 2 mm wide, connate below the middle; **petals** translucent rose, transversely obovate, concave, the apex broadly rounded, minimally thickened on the edge, 1.3 mm long, 1.3 mm wide, 1-veined; **lip** purple, subquadrate, rounded at the apex, 1.3 mm long, 1.5 mm wide, 0.75 mm deep, concave below a thickened, shallowly notched bar, with a deep glenion, the dorsum truncate, hinged to the base of the column; **column** stout, terete, elongate, ca. 1.5 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Greek *rosulentus*, "full of roses," in allusion to the multitude of tiny flowers that resemble rose buds.

**Comments.** This caespitose, medium-sized species is distinguished by a long, densely flowered raceme of many overlapping, rose colored flowers. The sepals are broadly ovate, obtuse and convex above a deep recess for the proportionately large central apparatus; the petals are single-veined; and the lip is rounded and concave below a notched bar. The original description was made from flowers past their prime.

**Additional collection.** Bolivia: La Paz: Inquisivi, near pass above Circuata, Polea, 2500 m, 1 February 1983, C. Luer, J. Luer & R. Vásquez 8667 (SEL).

**Stelis rudiculifera** Luer, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, road from Coroico to the summit of Uchu Machi, 2050 m, 21 March 2000, T. Krömer 921 (Holotype: SEL; Isotype: LPB), C. Luer illustr. 21845. FIGURE 111.

This medium-sized species is distinguished by a long, congested, many-flowered raceme of flowers with subcircular sepals, 3-veined petals, and a thick, concave lip with the apex incurved.

**Plant** medium in size, possibly caespitose, roots unknown. Ramicaul of the only specimen at hand 4.5 cm long, relatively stout, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical-obovate, obtuse, 6 cm long, 1 cm wide in the dry state, narrowed below to the base. **Inflorescence** a single, erect, strict, congested, distichous, many-flowered raceme with many flowers open simultaneously, 23 cm long including

the peduncle ca. 7 cm long, from near the apex of the ramicaul, subtended by a spathe 5 mm long; floral bracts oblique, acute, 4 mm long; pedicels 3 mm long; ovary 1 mm long; flowers yellow-green; **sepals** expanded, glabrous, subcircular, broadly obtuse to rounded, connate in lower thirds, 3-veined, the dorsal sepal 3 mm long, 3 mm wide, the lateral sepals 2.5 mm long, 3 mm wide; **petals** transversely ovate, 1 mm long, 1.5 mm wide, 3-veined, the apex rounded with a thick, broad margin, and concave below a transverse carina; **lip** thick, spoon-shaped, 1.6 mm long, 1.3 mm wide, 0.75 mm deep, concave below a bifid bar, the cavity extending to the incurved, obtuse tip, the dorsum slightly sloping downward, featureless, the base truncate, attached to the base of the column; **column** stout, ca. 1 mm long and wide, the foot obsolescent, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *rudiculifer*, "bearing a wooden shoe," suggested by the thick, concave lip.

**Comments.** This presumably caespitose species is described from a single ramicaul that is broken off near the base without roots, and with a single inflorescence. The plant is distinguished by a congested, distichous, many-flowered raceme that far exceeds the leaf. The floral bracts are longer than the nearly circular sepals, and the petals are three-veined with a thick transverse carina. The lip is relatively long, thick and concave with the obtuse tip incurved. Vegetatively, *Stelis rudiculifera* Luer is similar to *S. rutrum* Luer & R.Vásquez, from which it is distinguished by the thick, spoon-shaped lip.

**Stelis rufescens** Luer, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, below Chuspipata toward Yolosa, 2400 m, 23 January 1983, *J.C. Solomon 9323* (Holotype: MO), C. Luer illustr. 21878. FIGURE 112.

This medium-sized, caespitose species is distinguished by small, red-brown flowers in one or two multiflowered racemes about as long as the leaf; a subcircular, dorsal sepal; three-veined petals; and a minute, transverse lip that is concave below a thick, descending bar.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2–4 cm long, enclosed by 2 loose, tubular sheaths and another at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 4–9 cm long including a petiole 1.5–2.5 cm long, the blade 1–2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, many-flowered raceme with many flowers open simultaneously, to 5–7 cm long including the peduncle 3 cm long, from a node below the apex of the ramicaul; floral bracts oblique, inflated, acute, 1.5 mm long; pedicels less than 1 mm long; ovary 0.5 mm long; flowers red-brown; **sepals** glabrous, fleshy, the dorsal sepal subcircular, concave, 1.75 mm long, 1.75 mm wide, 3-veined, the lateral sepals oblique broadly ovate, obtuse, 1.5 mm long, 1.5 mm wide, obtuse, 3-veined, with a transverse elevated fold above the base if forcibly expanded; **petals** transversely elliptical, concave, broadly rounded at the apex, with a thin margin, 0.6 mm long, 1 mm wide, 3-veined without transverse carina; **lip** transversely subdiscoid, 0.4 mm long, 0.8 mm wide, 0.3 mm deep, concave behind a broadly rounded apex with a thick margin, the bar thickened and obtuse, descending over the cavity, the base

truncate, descending, firmly hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *rufescens*, "red-brown," referring to the color of the flowers.

**Comments.** This medium-sized, caespitose species is distinguished by small, fleshy, red-brown flowers in one or two multiflowered racemes about as long as the leaf. The sepals are broadly obtuse and three-veined; the petals are also three-veined and concave with a sharply demarcated, thick margin, without a transverse carina. The minute, transverse lip is concave within the broadly rounded apical margin, and below the obtuse, descending, central portion of the bar.

**Stelis ruprechtiana** Rchb.f., *Linnaea* 22: 821, 1849. TYPE: Brazil—Rio de Janeiro: Without precise locality, *L. Riedel s.n.* (Holotype: W; drawing of the type: AMES). FIGURE 113.

*Stelis hoehnei* Schltr., *Arch. Bot. São Paulo* 1:203, 1926. Named for F.C. Hoehne, collector of this species.

**Plant** small to very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–15 mm long, enclosed by a tubular sheath from below the middle and another at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 10–25 mm long including a petiole 2–5 mm long, the blade 4–6 mm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, distichous, several-flowered raceme with 2–5 flowers open simultaneously, 2–5 cm long including the peduncle 1–2 cm long, from a node below the apex of the ramicaul; floral bracts infundibular, oblique, acute, 2 mm long; pedicels 1 mm long; ovary purple, 0.5–1 mm long; flowers purple, yellow or green; **sepals** glabrous externally, microscopically cellular internally, broadly ovate, obtuse, 3-veined, connate below the middle, the dorsal sepal 2 mm long, 2.5 mm wide, the lateral sepals 1.76 mm long, 2 mm wide; **petals** transversely obovate, broadly rounded at the apex, with thickened margin, concave below a transverse carina, 0.5 mm long, 1 mm wide, 3-veined; **lip** type A, subquadrate, 0.4 mm long, 0.6 mm wide, 0.3 mm deep, the apex rounded, shallowly concave anteriorly below the bar with a small glenion, the dorsum with a rounded, central callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long and wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia and Brazil. **Etymology.** Probably named by Reichenbach for a friend.

**Comments.** This variable species, frequent in Brazil, is also frequent in central Bolivia. There being no distinguishing morphological feature, the species is identified by a commonly seen small, caespitose habit; elliptical leaves surpassed by a raceme of small flowers that are either yellow or purple; obtuse 3-veined sepals; petals 3-veined, often thick with a transverse callus, with intermediate variations that occur at random; and a classical type A lip, that is, round at the apex, concave below the bar, and with a round callus on the dorsum. *Stelis ruprechtiana* Rchb.f. is similar to Brazilian *S. parvifolia* Garay (a replaced

name for *S. microphylla* Hoehne & Schltr.), but the petals are three-veined with a transverse carina, instead of thin, subcircular and single-veined.

**Additional collections.** Bolivia: La Paz: Larecaja, Alto Llipi, collected in August 1991, fl. in cult. by A. Hirtz 5693, cultivated in Quito, December 1991, A. Hirtz 5693 (MO), C. Luer illustr. 21707; Sud Yungas, E of Chuspipata, 2770. 21 January 1988, C. Luer, J. Luer & R. Vásquez 12896 (MO); Sud Yungas, along Río Unduavi, 3100 m, 29 January, 1980, C. Luer, J. Luer & R. Vásquez 5011 (SEL); Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1850 m, 17 January 1984, C. Luer, J. Luer & R. Vásquez 9402, 9466 (SEL); same area, 2500 m, 24 January 1980, C. Luer, J. Luer & R. Vásquez 4948 (SEL); same area, 1750 m, 15 January 1988, C. Luer, J. Luer & R. Vásquez 12823 (MO).

**Stelis rutrum** Luer & R. Vásquez, *Phytologia* 89(3): 237, 1981. TYPE: Bolivia—Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 2400 m, 13 January 1981, C. Luer, J. Luer & R. Vásquez 5648 (Holotype: SEL). FIGURES 114–116.

**Plant** small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2–8 cm long, enclosed by a tubular sheath from below the middle and 2–3 other sheaths below. **Leaf** erect, coriaceous, elliptical, acute to subacute, 5–8.5 cm long including a petiole 1–2 cm long, the blade 1–1.8 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict to subflexuous, subcongested, distichous, few- to many-flowered raceme with most flowers open simultaneously, 6–15 cm long including the peduncle 2–3.5 cm long, from a node below the apex of the ramicaul, with a spathe 6–7 mm long; floral bracts oblique, acute, 1.5–2.5 mm long; pedicels 1–1.5 mm long; ovary 1.5 mm long; **sepals** usually purple, occasionally yellow, glabrous, broadly ovate, obtuse, 3-veined, the dorsal sepal 2.5–3.5 mm long, 2.5–3.5 mm wide, the lateral sepals 2.5–3 mm long, 2.5–3 mm wide; **petals** transversely ovate, the apex broadly rounded with a thick margin, concave below a transverse callus, 1.3–2 mm long, 1.5–2 mm wide, 3-veined, overlapping the margins of the lip; **lip** subcordate, 1.2–1.5 mm long, 1.3–1.5 mm wide, 1 mm deep, smooth and concave below a thin, cleft bar, shallowly cleft centrally, the apex obtuse to rounded, concave with a thin margin, the dorsum with a low, broad, cellular callus, hinged to the base of the column; **column** stout, 1.5 mm long, 1.75 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *rutrum*, "the shovel," in allusion to the shape of the lip.

**Comments.** This rather frequent, caespitose species is characterized by slender ramicauls and an acute, elliptical, petiolate leaf that is surpassed by a several- to many-flowered raceme. Although usually dark purple, a few collections with yellow flowers, one of which includes the holotype, have been found. The sepals are broadly ovate and glabrous; the petals are obtuse, three-veined, concave with a distinct transverse callus, and they overlap the lateral margins of the lip. The lip is concave and smooth below a distinctive thin, cleft

bar with a flat dorsum, and the apex is obtusely angled with a thin margin. Rarely, the tip of the lip is shortly acuminate (*C. Luer et al. 5618*).

A larger, robust, repent species with larger flowers with sepals four to six millimeters long, instead of two and a half to three millimeters long, but with similar petals and lip, except for the lip being thicker, is described herein as *Stelis pycnochila* Luer & R.Vásquez.

**Additional collections.** Bolivia: Cochabamba: Chapare, new road between Cochabamba and Villa Tunari, 2840 m, 13 January 1981, *C. Luer, J. Luer & R. Vásquez 5618* (SEL); Chapare, Tu-cachaca, Chusí, 2400 m, 16 February 1929, *J. Steinbach 9161* (AMES, BOLV); Chapare, new road between Cochabamba and Villa Tunari, 2600 m, 26–30 Nov. 1978, *C. Luer, J. Luer, F. Fuchs 3474, 3492, 3576* (SEL); Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 22 January 1980, *C. Luer, J. Luer & R. Vásquez 4875* (SEL); same locality, 2500 m, 4 February 1983, *C. Luer, J. Luer & R. Vásquez 8675* (SEL); Carrasco, Serrania Siberia, W of Comarapa, old road to Cochabamba, 2000 m, 14 January 1990, *L.J. Dorr & L.C. Barnett 7035* (AMES, LPB, MO, NY), *C. Luer* illustr. 21874; Sehuenca, near bridge at Río Fuerte, 2100 m, 6 January 1994, *P. Ibisch & C. Ibisch 94.0336* (LPB, MO); La Paz: Santa Cruz: S of Siberia, 2550 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18401* (MO); near Siberia, above Comarapa, 2500 m, 1 December 1978, *C. Luer, J. Luer & F. Fuchs 3594* (SEL); near Siberia, 2500–2600 m, 18 January 1983, *C. Luer, J. Luer & R. Vásquez 8529* (SEL); N of Siberia, 2470 m, February 1997, *C. Luer, J. Luer & R. Vásquez 16405* (MO); Caballero, Empalme, 2600 m, 10 February, 2004, *C. Patzi et al. CP 252B* (BOLV, MO).

***Stelis saavedrensis*** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—La Paz:

Saavedra, along river below Charazani, 2550 m, 19 November 1992, *C. Luer, J. Luer & R. Vásquez 16442* (Holotype: MO). FIGURE 117.

This repent species is distinguished by elliptical leaves; a petiolate leaf far exceeded by a long-pedunculate inflorescence; elliptical sepals that are blue within; single-veined petals; and a thick, subcordate lip with a shortly acuminate apex.

**Plant** small to medium in size, epiphytic, repent, the rhizome stout, 1–1.5 cm long between ramicauls; roots slender. Ramicauls erect, slender, 3–4 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, broadly elliptical, obtuse, 4–5 cm long including a petiole 1–1.5 cm long, the blade 1–1.3 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, subcongested, distichous, many-flowered raceme with many flowers open simultaneously, 10–15 cm long including the peduncle 7–8 cm long, from a node below the apex of the ramicaul, with a spathe ca. 1 cm long; floral bracts dilated, oblique, acute, 3–3.5 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** similar, dark purple externally, blue internally, glabrous, elliptical, obtuse to rounded at the tip, the dorsal sepal 2.75 mm long, 2 mm wide, 3-veined, the lateral sepals 2.5 mm long, 1.8 mm wide; **petals** light yellow, thin, transversely elliptical, broadly rounded with a thick margin at the tip, concave, 0.75 mm long, 1 mm wide, 1-veined; **lip** light



yellow, thickly subcordate, 0.8 mm long, 0.8 mm wide, 0.5 mm deep, shallowly concave anteriorly with a glenion, below the broadly rounded bar, the apex acuminate into a short apiculum, the dorsum truncate with a low, microscopically pubescent callus, hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the province of Bautista Saavadra in the department of La Paz where the species was collected.

**Comments.** This small, long-repent species bears elliptical, petiolate leaves that are far surpassed by a long-pedunculate inflorescence. Most remarkable are the sepals that are dark purple externally, and intensely blue within. The petals are single-veined, and the lip is thickly cordate with a shortly acuminate tip.

***Stelis sagittosa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Saavedra, along river below Charazani, 2630 m, 19 November 1992, C. Luer, J. Luer & R. Vásquez 16435 (Holotype: MO). FIGURE 118.

This small, caespitose species of section *Stelis* is distinguished by ramicauls much shorter than the leaf; a large-bracted inflorescence much longer than the leaf; ovate, glabrous sepals; three-veined petals; and a lip deeply concave below a thin bar with a low, broad, rounded callus on the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, relatively stout 0.8–1 cm long, enclosed by a tubular sheaths from near the middle and another from the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, 2–3 cm long including a petiole ca. 0.5 cm long, the blade 0.8–1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, many-flowered raceme with most flowers open simultaneously, 8–10 cm long including the peduncle 2–3 cm long, from a node near the apex of the ramicaul within the sheath; floral bracts dark purple, oblique, acute, 4 mm long; pedicels 1 mm long; ovary 1 mm long; flowers dark purple; **sepals** glabrous, ovate, subacute or obtuse, 3-veined, the dorsal sepal 2.5 mm long, 2.5 mm wide, the lateral sepals 2.3 mm long, 2.3 mm wide; **petals** obovate, thickened, roughened and subacute above the middle, concave below, 1 mm long, 0.9 mm wide, 3-veined; **lip** subquadrate, deeply concave below a thin bar with a small glenion as a continuation of a low, broad, rounded callus on the dorsum, the truncate base, hinged to the base of the column; **column** stout, 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *sagittosus*, "with arrows," referring to the floral bracts.

**Comments.** This small, caespitose species is spectacular when in full flower, with most ramicauls producing a long raceme filled with purple or yellow flowers. The long, pointed floral bracts conceal both the pedicel and ovary of the flower. The petals are thickened and subacute at the tip. The lip is concave below a thin bar with a small glenion as a continuation of a low, broad, rounded callus on the dorsum.

**Paratype.** Bolivia—La Paz; Sud Yungas, SE of Coroico toward Coripata, 2000 m, 3 February 1980, C. Luer, J. Luer & R. Vásquez 5074 (SEL).

**Stelis saltatrix** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, road to Tablas, 2400 m, 9 February 1980, C. Luer, J. Luer & R. Vásquez 5180 (Holotype: SEL). FIGURE 119.

This small, caespitose species is distinguished by an evenly spaced, distichous raceme of long-pedicellate flowers that far surpasses an elliptical leaf; ovate, obtuse, revolute sepals; acute, triangular, long-acuminate petals; and an obtuse lip as long as wide.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1.5–2.5 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 1.5–2.5 cm long including a petiole 3–4 mm long, the blade 0.8–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, distichous, many-flowered raceme with many flowers open simultaneously, 7–10 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul, with a spathe 3 mm long; floral bracts oblique, acute, 1.5 mm long; pedicels 3–4 mm long; ovary 0.5 mm long; flowers light purple; **sepals** glabrous, 3-veined, the dorsal sepal broadly ovate to suborbicular, rounded at the apex with a minute apiculum, 1.75 mm long, 1.6 mm wide, the lateral sepals ovate, oblique, obtuse, 1.75 mm long, 1.5 mm wide; **petals** triangular, acute, long-acuminate at the tip, 2 mm long, 1 mm wide, 1-veined; **lip** thin, suborbicular, broadly rounded at the apex, 1 mm long, 1.2 mm wide, shallowly concave above the middle, microscopically pubescent at the truncate base, hinged to the base of the column; **column** erect, stout, 1.25 mm long, 0.75 wide, the clinandrium expanded, the stimatic surfaces within at the base of the clinandrium; the foot microscopically pubescent in contact with the base of the lip.

**Distribution.** Bolivia. **Etymology.** From the Latin *saltatrix*, "a dancer," referring to the leaf and ramicaul.

**Comments.** This little species, *Stelis saltatrix* Luer & R.Vásquez, is one of the triad of species (the third species being *S. ballatrix* Luer & R.Vásquez described herein) that are superficially very similar to *S. antennata* Garay, with evenly spaced, long-pedicellate flowers. Most distinctive are the obtuse sepals; single-veined, triangular petals that are long-acuminate at the tip; a thin, shallowly concave, suborbicular lip; and a proportionately large, erect column with a gaping clinandrium.

**Stelis samaipatensis** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: Samaipata, ca. 1000 m, collected by Dr. Luis Moreno, fl. in cult. in Santa Cruz, 15 January 1983, C. Luer 8522 (Holotype: SEL). FIGURE 120.

This small, caespitose species is distinguished by minute flowers in subax racemes shorter than the leaves; ovate, acute, single-veined sepals; oblong, single-veined petals; and an ovate, acute lip with a glabrous, triangular callus at the base.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–4 cm long, enclosed by 2–3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5–7 cm long including a petiole ca. 1 cm long, the blade 7–8 mm wide in the dry state, cuneate below into the petiole. **Inflorescence** 2 erect, strict, congested, many-flowered racemes with most

flowers open simultaneously, to 6 cm long including the peduncle ca. 1 cm long, from a node below the apex of the ramicaul, with a spathe ca. 5 mm long; floral bracts oblique, acute, 1–1.5 mm long; pedicels 1.5 mm long; ovary 0.75 mm long; flowers light green; **sepals** glabrous, with rare, short, marginal cilia, ovate, acute, 1-veined, the dorsal sepal 2 mm long, 1.25 mm wide, the lateral sepals antrorse, 2 mm long, 1.35 mm wide; **petals** membranous, oblong, concave and rounded at the tip, 0.8 mm long, 0.4 mm wide, 1-veined; **lip** membranous, ovate, acute, with broadly rounded sides erect, 1.4 mm long, 0.8 mm wide, 0.1 mm deep, with a glabrous, triangular callus at the truncate base, hinged to the base of the column; **column** slender, clavate, 0.5 mm long, 0.8 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Samaipata, the area where this species was collected.

**Comments.** This caespitose species is known only from a collection by Dr. Luis Moreno near Samaipata in the eastern department of Santa Cruz. Small-flowered inflorescences are shorter than the leaves; the sepals are ovate, acute and single-veined, the dorsal sepal being narrower than the lateral sepals; and the petals are oblong and single-veined. The lip is ovate and acute, without a bar, but with a glabrous, triangular callus at the base.

**Stelis scandens** Rolfe, Bull. New York Bot. Gard 4: 451, 1907. TYPE: Bolivia—La Paz: without collection data, *M. Bang 1817A* (Holotype: K). FIGURE 121.

**Plant** medium in size, epiphytic, scandent, repent, the rhizome slender, 1–2 cm long between ramicauls; roots slender. Ramicauls erect, slender, 5–10 cm long, enclosed by a tubular sheath below the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical, acute, petiolate, 7–10 cm long including a petiole 2–2.5 cm long, the blade 1.5–2 cm wide, cuneate below into the slender petiole. **Inflorescence** 1–2 erect, distichous, congested, many-flowered racemes with many flowers open simultaneously, 5–10 cm long including the peduncle 1–3 cm long, subtended by a spathe 5–8 mm long, below the apex of the ramicaul; floral bracts oblique, acute, 3–5 mm long below, 1.5–3 mm long toward the tip; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** light yellow-green to red-purple, glabrous externally, microscopically pubescent within, broadly ovate, obtuse, connate basally, the dorsal sepal 2.5–3 mm long, 2.5 mm wide, 3-veined, the lateral sepals 2.5 mm long, 2–2.5 mm wide, 3-veined; **petals** green or red, transversely ovate, obtuse, the margin thickened, cellular, concave below a transverse callus, 0.8–1 mm long, 1.2–1.4 mm wide, 3-veined; **lip** green or red, subquadrate, 1 mm long, 1.2 mm wide, 0.8 mm deep, concave below a shallowly cleft bar, the apex obtuse-subacute, the dorsum with a round, central callus, the base truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, with a rudimentary foot, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *scandens*, "scandent," referring to the habit.

**Comments.** This repent species is similar to *Stelis lancea* Lindl. of Ecuador, but it differs with twice larger floral bracts in a raceme that is shorter than the leaf. The flowers are very similar.

**Additional collections.** Bolivia: La Paz: Saavedra, along the river below Charazani, 2470 m, 20 November 1992, *C. Luer, J. Luer & R. Vásquez 16459* (MO); same area, 2550 m, 20 November 1992, *C. Luer, J. Luer & R. Vásquez 16447* (MO); Cochabamba: Ayopaya, N of Cocapata, 2630 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18393* (MO, SEL); Carrasco, Sehuenca, near bridge at Río Fuerte, 2100 m, 15 November 1993, *P. Ibsch & C. Ibsch 93.1349, 93.1364* (LPB, MO).

***Stelis seriata*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 4 February 1983, *C. Luer, J. Luer & R. Vásquez 8677* (Holotype: SEL). FIGURE 122.

This medium-sized, ascending-caespitose species is distinguished by an erect, secund raceme of small flowers with obtuse, antrorse lateral sepals; flabellate, narrow-margined, single-veined petals; and a reniform lip concave below a narrow bar.

**Plant** medium in size, epiphytic, ascending-caespitose; roots slender. Ramicauls erect, slender, 3–5 cm long, with a tubular sheath below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5–10 cm long including a petiole ca. 1 cm long, the blade 0.5–1 cm wide in the dry state, narrowly cuneate below into the petiole. **Inflorescence** an erect, strict, congested, secund, many-flowered raceme with most flowers open simultaneously, 10–13 cm long including the peduncle 4–6 cm long, from a node below the apex of the ramicaul, with a spathe ca. 0.5 cm long; floral bracts oblique, acute, 3 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers greenish white; **sepals** glabrous, the dorsal sepal erect, elliptical, obtuse, 3 mm long, 1.5 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals ovate, antrorse, connate only at the base, 2 mm long, 2 mm wide, 3-veined, the midvein carinate; **petals** semicircular, 0.5 mm long, 0.7 mm wide, single-veined, the apex broadly rounded, with a narrow, thickened margin, the base broadly truncate; **lip** transversely reniform, 0.5 mm long, 0.6 mm wide; 0.3 mm deep, concave, broadly rounded at the apex with a narrow margin, the bar narrow, curved along the base, the dorsum narrow, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *seriatus*, "in a row," referring to the strict, secund raceme.

**Comments.** This medium-sized, shortly ascending-caespitose species is distinguished by narrowly elliptical leaves that are surpassed by a slender, secund raceme of small flowers with antrorse lateral sepals. The petals are single-veined and semicircular with a narrow margin; the lip is reniform and concave below a narrow bar.

***Stelis setacea*** Lindl., *Fol. Orchid. Stelis* 8: 3, 1859. TYPE: Bolivia—La Paz: Yungas, ca. 1846, *T.C. Bridges s.n.* (Holotype: K). FIGURE 123.

**Plant** medium in size, epiphytic, long-repent, the rhizome slender, creeping, flexuous, branching, 1–2.5 cm long between ramicauls; roots slender. Ramicauls erect to suberect, slender, 4–7 cm long, enclosed by a close, evanescent, tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical-ovate, acute, 7–10 cm long including an ill-defined petiole ca. 1.5 cm long, the blade 0.4–0.5 cm wide dried, narrowed below into the petiole. **Inflorescence** 1–2 erect, congested, distichous, simultaneously many-flowered racemes, 3–6 cm long including a peduncle 0.5–1 cm long, from a spathe 5–6 mm long at the node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers purple; **sepals** glabrous, 3-veined, the dorsal sepal ovate, subacute, 2.5 mm long, 2 mm wide, connate basally, the lateral sepals elliptical-ovate, obtuse, 2.5 mm long, 2 mm wide; **petals** transversely elliptical, concave, with the apex transversely rounded, the margin thickened, 0.75 mm long, 1.5 mm wide, 3-veined; **lip** subquadrate, rounded at the apex with oblique margins, 0.8 mm long, 0.8 mm wide, 0.6 mm deep, concave below a prominent, shallowly cleft bar, the dorsum sloping downward, with a low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, terete, ca. 0.8 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** From the Latin, *setaceus*, "like bristles," referring to the long, narrow leaves.

**Comments.** A single ramicaul, or sometimes a pair of ramicauls, is borne at intervals along a long, slender, branching rhizome. The slender ramicauls bear a narrow, elongated leaf, and a raceme or two that are distinctly shorter than the leaf. The sepals are broadly ovate, obtuse and glabrous.

The habit of *Stelis flexa* Schltr. is similar, but the inflorescence is much longer and crowded with flowers with sepals that are shortly pubescent.

**Additional collection.** Bolivia: La Paz: Nor Yungas, Nacional Cotapata, 3050 m, 11 February 2001, *T. Krömer & A. Acebay 1816* (LPB, SEL), C. Luer illustr. 21836.

***Stelis siberica*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Santa Cruz: S of Siberia, 2550 m, 5 February 1997, *C. Luer, J. Luer & R. Vásquez 18403* (Holotype: MO). FIGURE 124.

This species is distinguished by a shortly repent habit; slender ramicauls with narrowly elliptical, petiolate leaves; an inflorescence shorter than the leaf; an inflated synsepal; and an acute lip with a thick bar.

**Plant** small to medium in size, epiphytic, repent, the rhizome 0.5–1 cm long between ramicauls; roots slender. Ramicauls erect to ascending, slender, 3–6 cm long, with a tubular sheath below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 5–7.5 cm long including the petiole 1.5–2 cm long, the blade 0.8 cm wide in the dry state, cuneate below

into the slender petiole. **Inflorescence** an erect, congested, secund, many-flowered raceme with most flowers open simultaneously, 5–6 cm long including the peduncle 2 cm long, from a node below the apex of the ramicaul with a slender spathe 5–6 mm long; floral bracts oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow-green; **sepals** glabrous, the dorsal sepal erect, elliptical-ovate, obtuse, 3.5 mm long, 2.5 mm wide, 3-veined, connate basally to the synsepal, the lateral sepals transversely ovate, oblique, concave, connate to near the middle into a subspherical, inflated synsepal, 2 mm long, each 2.6 mm wide, prominently 3-veined; **petals** transversely oblong, the apex broadly rounded, thickened, 0.5 mm long, 1 mm wide, concave below a transverse callus; **lip** thickly triangular, the apex sharply acute, 0.5 mm long, 0.6 mm wide, 0.5 mm deep, concave below a thick, bulbous bar, the dorsum with a round callus, the base truncate, hinged to the base of the column; **column** stout, ca. 0.6 mm long and 1 mm wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the community of Siberia near where the species was collected.

**Comments.** This shortly repent species is distinguished by slender ramicauls borne by a slender, creeping rhizome; a narrowly elliptical, petiolate leaf; a congested, secund raceme shorter than the leaf; a subspherical synsepal with the veins prominent; three-veined petals; and an a type A lip. The lip is concave below a bulbous bar and within narrowly thickened margins to the acute tip.

**Stelis signifera** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, along Río Unduavi, 2450 m, 6 February 1980, *C. Luer, J. Luer & R. Vásquez 5157* (Holotype: SEL). FIGURE 125.

This small, long-repent species is distinguished by a broadly elliptical, petiolate leaf that is exceeded by a many-flowered raceme of small, orange flowers with 3-veined sepals, single-veined petals, and a lip with a broadly cleft bar and a rounded apex.

**Plant** small, epiphytic, repent, the rhizome stout, 1.5–2 cm long between ramicauls; roots slender. Ramicauls erect, relatively stout, 1.5–3 cm long, enclosed by a tubular sheath from below the middle and 1–2 other sheaths at the base. **Leaf** erect, coriaceous, broadly elliptical, obtuse to rounded at the tip, 2–3 cm long including a petiole 0.5 cm long, the blade 1–1.2 cm wide in the dry state, abruptly contracted below into the petiole. **Inflorescence** an erect, strict, subcongested, distichous, many-flowered raceme with many flowers open simultaneously, to 7 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul, a spathe not noted; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** orange, glabrous, ovate, 3-veined, the dorsal sepal 2.5 mm long, 2 mm wide, the lateral sepals 2 mm long, 2 mm wide; **petals** thin, transversely elliptical, broadly rounded with a thin margin at the tip, concave, 0.75 mm long, 0.8 mm wide, 1-veined; **lip** thickly subcordate, 0.75 mm long, 1 mm wide, 0.5 mm deep, concave and broadly rounded at the apex, the bar deeply and widely cleft, the dorsum narrow, truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.6 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *signifer*, "bearing signals," referring to the distantly spaced, paddle-shaped leaves that resemble a row of road signs.

**Comments.** This repent, little species with paddle-shaped leaves that resemble road signs with ample space between, is similar to *Stelis bacriosa* Luer & R.Vásquez described herein. The lateral sepals are antrorse; the petals are single-veined; and the lip is similar to that of *S. campanulifera* Lindl. with a concave, rounded apex below a deeply and widely cleft bar.

***Stelis solomonii*** Luer, sp. nov. TYPE: Bolivia—La Paz: Murillo, 30.5 km below dam at Lago Zongo, 2200 m, 16–17 December 1982, *J. C. Solomon 9086* (Holotype: SEL; Isotype: MO), C. Luer illustr. 21839. FIGURE 126.

This medium-sized to large, caespitose species distinguished by stout ramicauls with loose sheaths; a long, simultaneously many-flowered raceme with a relatively large spathe; subcircular, minutely pubescent sepals; thin petals with three barely visible veins; and a shallow lip with the dorsum sloping downward.

**Plant** medium to large, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, 4–6 cm long, enclosed by loose, tubular sheath from below the middle and another at the base. **Leaf** erect, coriaceous, narrowly elliptical-oblong, obtuse, 6–8 cm long including a petiole ca. 1 cm long, the blade 1–1.8 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, distichous, simultaneously many-flowered raceme with all flowers facing the same direction, 28–37 cm long including the peduncle ca. 8 cm long, subtended by a spathe up to 2 cm long, from near the apex of the ramicaul; floral bracts oblique, acute, 5 mm long below to 3 mm long above; pedicels 2 mm long; ovary 1 mm long; flowers pale yellow; **sepals** minutely pubescent within, transversely ovate to subcircular, broadly obtuse to rounded at the apex, 3-veined, the dorsal sepal 2 mm long, 2.5 mm wide, the lateral sepals 2 mm long, 2.3 mm wide; **petals** membranous, subquadrate, without a transverse callus, concave and rounded at the apex, 1.3 mm long, 1.6 mm wide, faintly 3-veined; **lip** subdiscoid, 1 mm long, 1.3 mm wide, 0.6 mm deep, shallowly concave within the broadly rounded, slightly thickened apex, the bar protruding, bitumidous to either side of a glenion, the base sloping downward half the length of the lip, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Dr. James C. Solomon, curator of the herbarium of the Missouri Botanical Garden, collector of this species.

**Comments.** This strong, caespitose species is known only from the orchid-rich region of the Zongo valley. The cauline sheaths are large and loose, and the spathe and floral bracts are proportionately long. The flowers are with round sepals that are arranged alternately in the same direction on a long, strict raceme. Three veins are barely visible in membranous petals without a transverse callus. The lip is shallow with the bar tall and erect with the dorsum sloping downward about half the length of the lip.

**Paratype.** Bolivia—La Paz: along Río Zongo, January 1981, *R. Vásquez, C. Luer & J. Luer 270* (SEL, Herb. Vásq.), *C. Luer* illustr. 21848.

***Stelis steinbachii*** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, Las Orupas, 1700 m, 28 June 1929, *J. Steinbach 9379A* (Holotype: AMES), *C. Luer* illustr. 21894. FIGURE 127.

This large species is characterized by an elongated, many-flowered raceme with prominent, protruding floral bracts, and minutely pubescent sepals about three millimeters long.

**Plant** large, epiphytic, caespitose. Ramicaul erect, stout, 11 cm long, enclosed by a tubular sheath from near the middle, another sheath from above the base, and a sheath at the base. **Leaf** erect, coriaceous, elliptical, 16 cm long, 2.7 cm wide dried, acute at the apex and acute below to a petiole 1 cm long, **Inflorescence** an erect, strict, distichous, many-flowered raceme, 20 cm long including the peduncle ca. 7 cm long, subtended by a spathe 1.5 cm long, from near the apex of the ramicaul; floral bracts conspicuous, oblique, acute, 5 mm long below to 3 mm long above; pedicels 2–3 mm long; ovary 2 mm long; flowers green, suffused with purple; **sepals** minutely pubescent within, broadly ovate, obtuse, 3-veined, the dorsal sepal 3 mm long, 3 mm wide, the lateral sepals 2.5 mm long, 2 mm wide; **petals** transversely oblong, with a transverse callus, concave and rounded at the apex, 0.6 mm long, 0.8 mm wide, 3-veined; **lip** subquadrate, rounded at the tip, type A, 0.5 mm long, 0.8 mm wide, 0.5 mm deep, concave below a bar with a small glenion, the base featureless, the base hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for José Steinbach, German naturalist who emigrated to Bolivia, and who collected this species.

**Comments.** This large species is rare, known from only this one collection by Steinbach in 1929. The specimen at AMES is a single ramicaul broken away from the rhizome. It is mounted on a sheet with a single specimen of *Pleurothallis revoluta* (Ruiz & Pav.) Garay, also with the ramical detached from the rhizome.

Although no distinctive character is present, *Stelis steinbachii* Luer is distinguished by the combination of an elongated, many-flowered raceme that surpasses a large, elliptical leaf; protruding floral bracts; sepals about three millimeters long, broadly obtuse, three-veined and minutely pubescent; petals about three millimeters long and are three-veined; and a simple type A lip.

***Stelis strigosa*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: W of Inquisivi, 2600 m, 30 January 1983, *C. Luer, J. Luer & R. Vásquez 8631* (Holotype: SEL). FIGURE 128.

This slender, caespitose species is distinguished by narrowly elliptical leaves borne by longer, slender ramicauls; a loose raceme that exceeds the leaf; obtuse sepals with the lateral sepals antrorse; narrowly oblong, single-veined petals; and a subcircular lip with a horse shoe-shaped, basal callus.



**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 8–10 cm long, enclosed by an early-shed, tubular sheath from below the middle and 1–2 others at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 6–8 cm long including an ill-defined petiole ca. 1.5 cm long, the blade 0.5–0.8 cm wide dry, narrowly cuneate below into the petiole. **Inflorescence** an erect, loose, distichous, many-flowered raceme with several to many flowers open simultaneously, 7–11 cm long including a peduncle ca. 2 cm long, subtended by a spathe 1.2–1.5 cm long, from a node below the apex of the ramicaul; floral bracts close, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.75 mm long; flowers yellow-white; **sepals** glabrous, elliptical, the dorsal sepal erect, broadly obtuse to rounded at the tip, 2.5 mm long, 1–5 mm wide, incompletely 3-veined, the lateral sepals antrorse, obtuse, 2.5 mm long, 1.25 mm wide, faintly 3-veined; **petals** narrowly oblong, shallowly concave, obtuse to rounded and thickened at the tip, 0.8 mm long, 0.3 mm wide, 1-veined; **lip** shallowly subcircular, 0.7 mm long, 0.6 mm wide, 0.4 mm deep, concave, rounded at the apex, with a horse shoe-shaped callus at the base, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *strigosus*, "lean, slender," referring to the habit.

**Comments.** This species is known from only one collection near Inquisivi in the department of La Paz. It is distinguished by a medium-sized habit with narrow leaves; longer, slender ramicauls; and an erect, loose raceme that eventually surpasses the leaf. The sepals are obtuse with the lateral sepals antrorse. The petals are oblong, nearly thrice longer than wide. The lip is rounded and shallowly concave with the bar widely cleft at the base, giving the appearance of a horse shoe.

***Stelis subequalis*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Nor Yungas, N of Caranavi, toward Alto Beni, 1550 m, 26 January 1988, C. Luer, J. Luer & R. Vásquez 12932 (Holotype: MO). Figure 129.

This small species is similar to *Stelis cubicularia* Luer & R. Vásquez, but differs in a smaller habit with a single, shorter inflorescence; lateral sepals adherent to the tip; three-veined petals shorter than long with a transverse carina; a similar lip with the dorsum lower than the rounded sides; and a narrow clinandrium with small stigmatic lobes.

**Plant** small, epiphytic, caespitose; roots slender. Ramicaul erect, slender, 2–3 cm long, enclosed by a tubular sheath from near the middle and 1–2 sheaths below the middle and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5–7 cm long including the petiole ca. 1 cm long, the blade 0.5–0.7 cm wide in the dry state, narrowly cuneate below to the petiole. **Inflorescence** single, erect, strict, distichous, congested, many-flowered raceme with many flowers open simultaneously, 5–7 cm long including the peduncle 2 cm long, from a node below the apex of the ramicaul, subtended by a spathe 5 mm long; floral bracts tubular, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow-green; **sepals** glabrous, the dorsal sepal ovate, narrowly

obtuse, 2 mm long, 1.5 mm wide, 3-veined, the lateral sepals ovate, obtuse, oblique, 3-veined, 1.5 mm long and wide, adherent to the apex, into a deeply concave synsepal, with the veins not thickened; **petals** transversely ovate, concave, the apex broadly rounded, with a thickened apical margin, 0.5 mm long, 0.6 mm wide, faintly 1-veined; **lip** thickly subcordate, 1 mm long, 0.8 mm wide, 0.4 mm deep, concave below a bar below the margins of the lip, the apex thick, obtuse, incurved, the basal angles rounded, the dorsum concave, descending, the base truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm wide, with the rostellum wide and protruding, the stigmatic lobes small, apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *subequalis*, "subequal," referring to the similarity to *Stelis cubicularia*.

**Comments.** This species is related to *Stelis cubicularia* Luer & R.Vásquez, but differs by a smaller, loose habit with a single, shorter inflorescence. The synsepal is smaller with simply adherent lateral sepals. The petals are transverse, wider than long and three-veined with a transverse carina. The deeply concave lip is similar with an incurved apex, but the bar is lower than the rounded, basal angles. The rostellum is similar, but much larger with a thin, membranous center.

**Stelis succuba** Luer & R.Vásquez, sp. nov. TYPE: Bolivia—Cochabamba:

Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 26 November 1978, C. Luer, J. Luer & F. Fuchs 3546 (Holotype: SEL). FIGURE 130.

This caespitose species is related to *Stelis euspatha* Rchb.f., but it is best distinguished from all the variations by proportionately larger, rounded petals; and additionally, by slightly larger flowers with expanded sepals; longer floral bracts; a shorter raceme; and a lip thicker in depth.

**Plant** medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–6.5 cm long, enclosed by a tubular sheath from below the middle and another at the base. **Leaf** erect, coriaceous, subacute, 6–8 cm long including a petiole 1–1.5 cm long, the blade 1–1.2 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** a congested, many-flowered raceme with flowers overlapping, more than 4 cm long, flowering to the base, within a spathe 10–11 mm long, from below the apex of the ramicaul; floral bracts oblique, acute, 3–4 mm long; pedicels 1.5 mm long within the spathe; ovary 1 mm long; flowers yellow; **sepals** expanded, pubescent, ovate, acute to subacute, indistinctly 3-veined, the dorsal sepal 3 mm long, 2 mm wide, the lateral sepals, 3 mm long, 2.5 mm wide; **petals** transversely obovate, concave, the distal third thickened, rounded at the apex, 0.5 mm long, 0.9 mm wide, faintly 1-veined; **lip** oblong, concave below a shallowly cleft bar, the tip obtuse to round, 0.4 mm long, 0.5 mm wide, 0.6 mm deep, the dorsum low, featureless, truncate at the base, hinged to the base of the column; **column** stout, 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *succubus*, "overlapping with obliquely inserted flowers," referring to the raceme.

**Comments.** The densely flowered raceme of this species is four centimeters long and mounted on the sheet with the raceme curved 180° downward in the

only specimen known. Whether or not the curve is normal or an artifact is unknown. The length is also unknown, because a portion might have been preserved for pickling, but nevertheless the raceme is short, probably half the length of the leaf. The sepals overlap in a congested raceme. They are long-ciliate, long-pubescent near the margins; ovate; and connate near the base; the petals are proportionately large and single-veined; and the oblong lip is concave in the distal quarter.

***Stelis superbiens*** Lindl., *Fol. Orchid. Stelis* 8: 8, 1859. TYPE: Colombia: Without locality: *W. Purdie s.n.* (Holotype: K; Isotypes: AMES, GH). FIGURE 131.

*Stelis nanegalensis* Lindl., *Fol. Orchid. Stelis* 8: 8, 1859. Named for the community of Nanegal near where the species was collected.

*Stelis koehleri* Schltr., *Repert. Spec. Nov. Regni Veg.* 10: 386, 1912. Named for a Herr Köhler who collected the species.

*Stelis vulcanica* Schltr., *Repert. Spec. Nov. Regni Veg.* 14: 125, 1916. From the Latin *vulcanicus*, "volcanic," referring to Pulalagua Crater.

*Stelis pichincha* Dodson & Garay, *Icon. Pl. Trop.* 330, 1980. Named for the Ecuadorian Province of Pichincha where the species was collected.

**Plant** medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5–17 cm long, enclosed by a loose, tubular sheath near the middle and 2–3 others at the base. **Leaf** erect, thickly coriaceous, elliptical to obovate-oblong, subacute to obtuse, 10–16 cm long including the petiole 1–2 cm long, the blade 2–4 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subdense, distichous, many-flowered raceme with several to many flowers open simultaneously, 10–30 cm long including the peduncle 2–10 cm long, with a few bracts, subtended by a spathe 1–2 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 3–5 mm long; pedicels 3–4 mm long; ovary 3–6 mm long; **sepals** expanded, yellow, green, or purple, or purple, glabrous externally, pubescent or cellular-glandular within, connate to near the middle, transversely ovate, obtuse, the dorsal sepal 5–10 mm long, 6–10 mm wide, 5- to 7-veined, the lateral sepals 5–10 mm long, 6–10 mm wide, 5- to 7-veined; **petals** yellow or purple, transversely cuneate-obovate, shallowly concave, 1–1.25 mm long, 1.6–2 mm wide, the apex broadly rounded with the margin thickened; **lip** yellow or purple, thick, transversely subquadrate, 1 mm long, 1.3–1.5 mm wide, 0.7–1 mm deep, concave inside the apical margin, the margin thin, notched centrally with a minute, acute apiculum, the disc transversely callous, the callus curved with a long, narrow glenion, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the anther and the stigma apical, the stigma bilobed.

**Distribution.** Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama, Peru, Venezuela. **Etymology.** From the Latin *superbiens*, "superb," referring to the fine qualities of the species.

**Comments.** This species is widely distributed through the Andes. It is distinguished by a large leaf, a stout ramicaul, and a long, erect inflorescence of large, flat, widely spread flowers that are easily recognized. The color varies from yellow to green or purple. In the Bolivian collections the sepals are glabrous, broadly ovate, obtuse, five-veined, and shallowly connate. The petals

are large with a thickened margin. The lip is proportionately small, and with the apical margin minutely apiculate. To either side of the central apiculum a smaller apiculum is commonly seen. The sizes of the apicula and the immediate marginal angles are variable, often appearing to be an additional pair of teeth that are well-developed in Schlechter's *S. vulcanica* Schltr.

*Stelis nanegalensis* Lindl. and *S. superbiens* Lindl. were published on the same page in Lindley's *Folia Orchidacea*, with *S. nanegalensis* three species above the latter, and assigned a lower number. Lindley apparently distinguished *S. superbiens* from *S. nanegalensis* by a larger vegetative size. Flowers from both holotypes are indistinguishable. The latter name is accepted here because it is widely known today horticulturally.

**Additional collections** Bolivia: La Paz: Sud Yungas, SE of Coroico toward Coripata, 2000 m, 1 February 1980, *C. Luer, J. Luer & R. Vásquez 5081* (SEL); Nor Yungas, below Yolosa, road up Río Huarimilla, 1250 m, 24 January 1983, *J.C. Solomon 9355* (MO).

***Stelis tamboënsis*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, Pampa Tambo, 2500 m, 20 December 1979, *R. Vásquez 226* (Holotype: SEL; Isotype: Herb. Vásq.), *C. Luer* illustr. 21847. FIGURE 132.

This small, caespitose species is characterized by a loosely flowered raceme that is longer than elliptical leaves; medium-sized flowers with obtuse, glabrous sepals; three-veined petals; and a shield-shaped, concave lip with a pair of calli descending from a cleft bar.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, relatively stout, 1.5–3 cm long, enclosed by a tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse to subacute at the tip, 3–5 cm long including a petiole 1–1.5 cm long, the blade 0.8–1.1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, distichous, loose, few to many-flowered raceme with most flowers open, 4–9 cm long including the peduncle 3 cm long, from near the apex of the ramicaul, subtended by a slender spathe 1 cm long; floral bracts infundibular, oblique, subacute, 2.5–3 mm long; pedicels 1.5–2 mm long; ovary 1 mm long; **sepals** green, suffused with purple, similar, glabrous, ovate, obtuse, 3-veined, the dorsal sepal 3 mm long, 2.5–3 mm wide, the lateral sepals antrorse, 2.5–3 mm long, 2.5–3 mm wide; **petals** subcircular, slightly concave, thin, slightly thickened above the middle, rounded at the apex, 1.5 mm long, 1.5 mm wide, 3-veined, **lip** subquadrate, round at the apex, 1.5 mm long, 2 mm wide, 1 mm deep, concave below a broadly cleft bar between a pair of calli descending from the margins of the cleft, the dorsum flat, sloping downward, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Pampa Tambo, where this species was collected.

**Comments.** Vegetatively, this small species is not remarkable. The elliptical leaf is surpassed by a raceme of medium-sized flowers with obtuse, glabrous

sepals. The petals are three-veined with a transverse callus. The lip is concave between a pair of calli that descend from the margins of the broad cleft of the bar.

**Paratypes.** Bolivia—Cochabamba: Chapare, new road from Cochabamba to Villa Tunari, 1780 m, 24 January 1980, *C. Luer, J. Luer & R. Vásquez 4946* (SEL); same area, 2400 m, 16 January 1981, *C. Luer, J. Luer & R. Vásquez 5651, 5655* (SEL).

***Stelis tenuicaulis*** Lindl., *Folia Orchid. Stelis* 8: 16, 1859. TYPE: Bolivia—La Paz: Yungas, 1846, *T.C. Bridges s.n.* (Holotype: K). FIGURE 133.

**Plant** medium to large, epiphytic, ascending, shortly repent, less than 1 cm to 3 cm long between ramicauls; roots slender. Ramicauls erect, slender, 7–10 cm long, enclosed by a close, tubular sheath from below the middle, and another 2 sheaths below and at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 8–11 cm long including a petiole 1–1.5 cm long, the blade 1.3–1.5 cm wide, cuneate below into the petiole. **Inflorescence** 1–2, 10–13 cm long, the racemes erect, congested, distichous, many-flowered with most flowers open simultaneously, floral bracts oblique, acute, 1–2.5 mm long; pedicels 1–1.5 mm long; ovary 1.5 mm long; the peduncle 3–5 cm long, with a spathe 10–12 mm long, from a node below the apex of the ramicaul; **sepals** greenish white, glabrous, the dorsal sepal erect, ovate, acute, 5 mm long, 3 mm wide, 3-veined, connate basally to the synsepal, the lateral sepals connate into an ovoid, acute, deeply concave synsepal, 4.5 mm long, 6 mm wide expanded, 6-veined, the apex shortly bifid; **petals** red, transversely ovate, concave, with the apex broadly rounded, thick on the margin, 0.5 mm long, 1 mm wide, 3-veined; **lip** red, subcordate, acute, 0.8 mm long, 1 mm wide, 0.5 mm deep, the shallowly concave below a broadly rounded bar between rounded basal angles, the dorsum short, the base hinged to the base of the column; **column** stout, ca. 1 mm long, 1 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *tenuicaulis*, "with thin stem," referring to the ramicaul.

**Comments.** *Stelis tenuicaulis* Lindl. was described from a Bolivian collection by Bridges, but it is very similar to a more frequent and widely distributed taxon, recognized herein as *S. brittoniana* Rolfe. Because of the distinctive appearance of the flowers with acute sepals, it is being maintained separately.

This species is distinguished by an ascending, repent rhizome, slender ramicauls usually distinctly longer than the leaves, and an acute, narrow leaf that is surpassed by a many-flowered raceme. The dorsal sepal is acute at the tip and the lateral sepals are connate into an acute synsepal. Similar to that of *Stelis brittoniana*, the lip is smooth below a rounded bar.

The illustration by Elmer Smith of a Peruvian collection, *Stelis ascensor* C.Schweinf., was identified as *S. tenuicaulis* in Garay (1980). Duplicate

collections of the similar Bolivian collection (*M. Bang 739*), now believed to represent *S. brittoniana*, also have been identified as *S. tenuicaulis*.

**Additional collection;** Bolivia: La Paz: Nor Yungas, E of Chuspipata, 2930 m, 21 January 1988, *C. Luer, J. Luer & R. Vásquez 12891* (MO).

***Stelis tinekae*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, E of Chuspipata, 2930 m, 21 January 1988, *C. Luer, J. Luer, Tineka & Dirk Mulder 12890* (Holotype: MO). FIGURE 134.

This little, caespitose species is characterized by a secund raceme about as long as a narrow leaf; overlapping flowers with a dorsal sepal significantly longer than a lateral sepal; three-veined petals; and a lip smooth below the bar, and a small, subspherical callus on the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3–4 cm long, enclosed by a tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4–6 cm long including a petiole ca. 1 cm long, 0.6 mm wide in the dry state, gradually narrowed below into the petiole. **Inflorescence** an erect, strict, secund, congested, several-flowered raceme with 6- to 8-flowers simultaneously, 3–4 cm long including the peduncle ca. 1 cm long, with a spathe 6 mm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers purple; **sepals** glabrous, 3-veined, the dorsal sepal ovate, acute, 3.5 mm long, 2.75 mm wide, the lateral sepals broadly ovate, obtuse, 2.25 mm long, 2.6 mm wide; **petals** transversely ovate-lunate, concave, broadly rounded at the apex, with a thickened, roughened margin, 0.6 mm long, 1 mm wide, 3-veined; **lip** type A, obtuse at the apex, shallowly concave anteriorly with a smooth surface below the bar, 0.6 mm long, 0.8 mm wide, 0.5 mm deep, the dorsum with a small, protruding, spherical callus at the base, hinged to the base of the column; **column** stout, ca. 0.8 mm long and wide, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for the late Tineka Mulder of Wageningen, the Netherlands, co-collector of the species.

**Comments.** This small, caespitose species is characterized by narrow, elliptical leaves and a congested, secund raceme of overlapping flowers about as long. The dorsal sepal is ovate and acute, and distinctly longer than the obtuse, transversely ovate lateral sepals. The petals are three-veined, and the type A lip is smooth below the bar without a visible glenion, and a small, protruding, spherical callus is at the basal margin of the dorsum.

***Stelis tomcroatii*** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Chapare, near Km 94 between Cochabamba and Villa Tunari, ca. 1500 m, 21 November 1980, *T.B. Croat 51301* (Holotype: MO), *C. Luer* illustr. 21866. FIGURE 135.

This small, repent species is assigned to section *Humboldtia* because of the antrorse sepals that connive into a synsepal; the rhizome is slender and creeping; the petiolate, elliptical leaves are surpassed by short raceme of small flowers; antrorse sepals; thick, transverse, petals; and a very shallow, transverse lip.

**Plant** small, epiphytic, repent, the rhizome slender, 0.5–1 cm long between ramicauls; roots slender. Ramicauls erect, slender, 1.5–2 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, 3–4 cm long including the 0.7–1 cm long petiole, the blade 0.9–1.3 cm wide in the dry state, cuneate below to the petiole. **Inflorescence** an erect, strict, distichous, subcongested, several-flowered raceme with few flowers open simultaneously, 4–5 cm long including the peduncle 2–3 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 1 mm long; color unknown; **sepals** glabrous, the dorsal sepal ovate, obtuse, 2 mm long, 2 mm wide, 3-veined, the lateral sepals ovate, oblique, connate below the middle, connivent above, into a deeply concave, ovoid synsepal, each sepal 1.75 mm long, 2 mm wide, 3-veined, the apex of the synsepal obtuse, shortly bifid; **petals** transversely ovate, thick, the apex broadly rounded, with a narrow, apical margin, 0.8 cm long, 1 cm wide, 3-veined; **lip** transversely semilunate, 0.5 mm long, 1 mm wide, 0.3 mm deep, shallowly concave with a shallow glenion anteriorly above the thick, rounded margin, the lateral angles rounded with the bar very narrow between, the dorsum sharply descending behind the bar, more or less flat with the rounded margin about as far from the bar as the anterior surface; **column** stout, ca. 0.8 mm wide and long, the anther and stigmatic lobes apical.

**Distribution.** Bolivia. **Etymology.** Named for Dr. Tom Croat of the Missouri Botanical Garden, collector of this species.

**Comments.** This small, repent species is characterized by a slender rhizome and slender ramicauls that bear an elliptical, petiolate leaf that is surpassed by a short inflorescence. The synsepal, formed by broad, connivent lateral sepals is deeply concave; the petals are thickly margined and three-veined; and the bar is a sharp edge between the descending, anterior surface and the acutely descending dorsum, now the posterior surface and more or less parallel with the anterior surface.

**Stelis tomentosa** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba: old road from Villa Tunari to Cochabamba, 1500 m, 30 January 1997, *C. Luer, J. Luer & R. Vásquez 18330* (Holotype: MO). Figure 136.

This small, caespitose species is distinguished by small flowers with long-pubescent sepals in a distichous raceme that exceeds the leaves; transversely ovate, three-veined petals; and a type A lip with a thick bar and a single, rounded callus on the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, 9–17 mm long, enclosed by a thin, tubular sheath below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, petiolate, 15–30 mm long including a petiole ca. 5 mm long, the blade 5–7 mm wide in the dry state, contracted below into the petiole. **Inflorescence** an erect, subflexuous, successively flowered raceme 4.5 cm long including the peduncle 2.5 cm long, from an node below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** purple with pale margins, glabrous externally,

long-pubescent within toward the margins, broadly ovate, obtuse, connate below the middle, 3-veined, the dorsal sepal 2 mm long, 2 mm wide, the lateral sepals 1.75 mm long, 2 mm wide; **petals** transversely elliptical, with a transverse callus, broadly rounded at the apex, 0.6 mm long, 1 mm wide, 3-veined; **lip** type A, ovoid, concave and rounded anteriorly below a thick bar, with an obscure glenion, 0.5 mm long, 0.6 mm wide, 0.4 mm deep, the dorsum with a rounded callus, truncate, hinged to the base of the column; **column** stout, ca. 0.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *tomentosus*, "tomentose," referring to the long pubescence of the sepals.

**Comments.** This small, caespitose species is distinguished by a successively flowered raceme that barely surpasses the acute, elliptical leaves. The sepals are obtuse and densely long-pubescent toward the margins; the proportionately large petals are three-veined with a transverse callus; the type A lip with a round dorsal callus is round at the apex and concave below a thick bar.

**Stelis torrenticola** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Saavedra, along river below Charazani, 2550 m, 20 November 1992, C. Luer, J. Luer & R. Vásquez 16452 (Holotype: MO). FIGURES 137–138.

This large, slender, narrow-leaved, caespitose species is characterized by a long, secund raceme with pubescent sepals with the dorsal sepal reflexed; proportionately large, three- to five-veined petals that enclose the column and lip; and a rounded, concave lip with pubescent dorsum.

**Plant** medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 14–20 cm long, enclosed by a tubular sheath near the middle, and 2 other sheaths about the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, sessile, 9–12 cm long, 1–1.2 cm wide in the dry state, narrowed below to the ramicaul. **Inflorescence** 1–2 erect, strict, congested, secund, many-flowered racemes with most flowers open simultaneously, 15–18 cm long including the peduncle 5–8 cm long, from the apex of the ramicaul, with a slender spathe 15–20 mm long; floral bracts tubular, obtuse, 2–3 mm long; pedicels 2–3 mm long; ovary 2 mm long; flowers purple; **sepals** glabrous externally, long-pubescent within, 3-veined, the dorsal sepal reflexed, ovate, subacute to obtuse, 2.75 mm long, 2.5 mm wide, the lateral sepals ovate, subacute to obtuse, 2.75 mm long, 2 mm wide; **petals** membranous, transversely oblong, 1.5 mm long, 2.5 mm wide, 3- to 5-veined; **lip** thick, rounded at the thin, concave apex, 1.5 mm long, 1.4 mm wide, 0.8 mm deep, shallowly concave, featureless anteriorly, the apex round with thin margin, the bar across the base, slightly swollen on both sides, the dorsum with a low, broadly rounded callus, minutely pubescent, the truncate base hinged to the base of the column; **column** stout, ca. 1.5 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for dwelling along the mountain torrents below the community of Charazani.



**Comments.** This slender, densely caespitose species with narrow, sessile leaves, and long, secund, many-flowered racemes is distinguished by pubescent sepals with the dorsal reflexed. The proportionately large petals that enclose the column and lip are three-veined, with or without a pair of lateral veins. The lip, a modified type A, is minutely and densely pubescent on the dorsum.

**Paratypes.** Bolivia—La Paz: Saavedra, along river below Charazani, 2470 m, 20 November 1992, C. Luer, J. Luer & R. Vásquez 16457 (MO); Cochabamba: Ayopaya, Sailapata, 3500 m, November 1935, M. Cárdenas 3302 (AMES, Herb. Card.).

**Stelis trisetata** Lindl., Folia Orchid. *Stelis* 8: 17, 1859. TYPE: Bolivia—La Paz: Yungas, 1846, T.C. Bridges *s.n.* (Holotype: K). FIGURES 139–140.

**Plant** medium to large, epiphytic, prolific or scandent; roots slender. Ramicauls erect to ascending, slender, prolific, 3–15 cm long, enclosed by a tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 4–10 cm long including the petiole 0.5–1.5 cm long, the blade 1–2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme with many flowers open simultaneously, 4–17 cm long including the peduncle 1–5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2.5–3 mm long; pedicels 1–1.5 mm long; ovary 1.5–2 mm long; **sepals** green, yellow, rose to purple, glabrous, the dorsal sepal erect, elliptical, obtuse, 3–4 mm long, 2–3 mm wide, 3- to 5-veined, connate basally to the synsepal, the lateral sepals connate into an ovoid, deeply concave synsepal, 2.5–3.5 mm long, 3.5 mm wide expanded, 6-veined; **petals** transversely oblong, the obtuse apex long-apiculate, 1–1.5 mm long including the apiculum, 1–1.5 mm long with the apiculum, 1–1.5 mm wide, concave below the thickened margin, 3-veined; **lip** thick, subquadrate, 0.5–0.75 mm long, 0.6 mm wide, the obtuse apex abruptly contracted into a narrowly triangular apiculum, 0.5–0.75 mm long, the dorsum broad, with a rounded callus to obscurely tricallous, with a shallow cavity on the anterior surface at the base of the apiculum, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Ecuador, Peru, Venezuela. **Etymology.** From the Latin *trisetata*, "three-bristled," referring to the aristate petals and lip.

**Comments.** *Stelis trisetata* Lindl. is frequent in its wide distribution through the Andes. The flowers are similar to those of the also frequent and variable, but always caespitose, *S. pardipes* Rchb.f., from which it is easily distinguished by the prolific or scandent habit. Both species are characterized by small, bilabiate flowers with the tips of the sepals and petals setiform of variable lengths.

In Luer (2009) collections of *Stelis trisetata* were erroneously considered to be variations of the twice larger *S. bicornis* Lindl. Following Dunsterville & Garay (1965: 298–299), small variations of *S. bicornis*, or *S. trisetata*, were erroneously

considered to be *S. biserrula* Lindl. *Stelis bisserula* was poorly described, because the Jameson collection from Ecuador has only buds. A dissection of two buds hydrated in ammonia reveals the dorsal sepal to be five-veined, and the petals totally devoid of an apiculum. All specimens seen of the Ecuadorian *S. trisetata* have a three-veined dorsal sepal, and petals with an apiculum. In Luer (2009) the description of *S. biserrula* applies to *S. trisetata*. In Luer (2004), *S. biserrula* is illustrated and described as *S. propagans* Luer & Hirtz. Neither *Stelis bicornis* nor *S. biserrula* are known from Bolivia.

**Additional collections.** Bolivia: Below Unduavi, 2500 m, 22 January 1983, C. Luer, J. Luer & R. Vásquez 8542, 8546 (SEL); NE of Chuspipata to Coroico, 2450 m, 27–29 January 1984, A. Gentry & A. Solomon 44715, 44804 (MO); below E of Chuspipata, 2600 m, 23 January 1988, C. Luer, J. Luer & R. Vásquez 12904 (MO). **Cochabamba:** Chapare, new road from Cochabamba to Villa Tunari, 2500 m, 4 February 1983, C. Luer, J. Luer & R. Vásquez 8671, 8678, 8680, 8681 (SEL); same area, 1850 m, 17 January, 1984, C. Luer, J. Luer & R. Vásquez 9389 (SEL); same area, 2800 m, 18 January 1988, C. Luer, J. Luer & R. Vásquez 12819, 12881 (MO); old road from Cocha-bamba to Villa Tunari, 2800 m, 1 February 1997, C. Luer, J. Luer, W. Teague, R. Vásquez & D. Ric 18370, 18373, 18374 (MO); Carrasco, Sehuencas, along Río Lope Mendoza, 2200 m, 13 January 1988, C. Luer, J. Luer & R. Vásquez 12814 (MO); same area, Carrasco, Sehuencas, Río Fuerte, Parque Nacional Carrasco, 2150 m, 15 November 1993, P. Ibisch & C. Ibisch 93.1380 (MO, LPB, Herb. Vásq.), C. Luer illustr. 21852; Río Fuerte, 2100 m, 1 December 1993, P. Ibisch & C. Ibisch 93.1669 (LPB, MO, Herb. Vásq.); same data, 4 January 1984, P. Ibisch & C. Ibisch 94.0095, (LPB, MO, Herb. Vásq.); Parqué Nacional Carrasco, around Country Club, 2250 m, 15 December 1993, P. Ibisch & C. Ibisch 93.1891 (LPB, MO, Herb. Vásq.); Arani, El Limbo, 2920 m, 14 February 2004, S. Altamirano et al. JA 1808 (BOLV, MO); same locality, 2260 m, 10 February 2004, JA 1751 (BOLV).

***Stelis trullifera* Luer & R. Vásquez, sp. nov.** TYPE: Bolivia—Cochabamba:

Ayopaya, forest remnant N of Cocapata, 2630 m, 5 February 1997, C. Luer, J. Luer & R. Vásquez 18384 (Holotype: MO). FIGURE 141.

This species is characterized by numerous, small flowers produced by several simultaneous, long racemes that exceed the narrowly elliptical leaves; free, acute sepals; single-veined petals with a thick, concave apex; and a spoon-shaped lip that is rounded and concave above the middle.

**Plant** medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 8–12 cm long, enclosed by a tubular sheath from below the middle and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 9–11 cm long including a petiole 1–1.5 cm long, the blade 1.2–1.5 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 3–8 erect, strict, subcongested, simultaneously many-flowered racemes with numerous flowers open simultaneously, 11–17 cm long including the peduncle ca. 1.5 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 17–22 mm long; floral bracts oblique, close, acute, 3 mm long;

pedicels 2 mm long; ovary 1 mm long; flowers yellow; **sepals** similar, glabrous, elliptical, acute to subacute, 3 mm long, 2 mm wide, 3-veined, carinate along the midvein externally, the lateral sepals free, directed forward 90° from the dorsal sepal; **petals** oblong, obtuse, 1.4 mm long, 0.6 mm wide, 1-veined, thickened and cellularly rough externally above the middle, concave beneath the tip; **lip** oblong-cymbiform, 1 mm long, 0.8 mm wide, 0.4 mm deep, broadly rounded at the apex and shallowly concave above the middle, low, smooth and callous below the middle, the base shallow, broadly truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin, *trullifer*, "spoon-bearing," referring to the shapes of the petals and lip.

**Comments.** This species is characterized by numerous, small, yellow flowers produced simultaneously in a few, long racemes. The sepals are acute and free with the lateral sepals antrorse. The petals are oblong and concave at a thickened apex. The spoon-shaped lip is rounded and concave above the middle, and low-callous and smooth toward the base.

**Paratype.** Bolivia—La Paz: Inquisivi, between Inquisivi and Circuata, 2850 m, 28 January 1981, *C. Luer, J. Luer & R. Vásquez 5753* (SEL).

***Stelis truncata*** Lindl., Companion Bot. Mag. 2: 353, 1836. TYPE: Peru—

Chachapoyas: San Martin, *Mathews s.n.* (Holotype: K). FIGURES 142–143.

*Stelis fruticulus* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 88, 1920. From the Latin *fruticulus*, "a little shrub," referring to the habit.

**Plant** large, epiphytic, caespitose below, prolific above; roots slender. Ramicauls erect, stout, prolific, 5–18 cm long, with a tubular sheath below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, 5–11 cm long including the petiole 0.5–2 cm long, the blade 1–4 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, simultaneously many-flowered raceme with numerous flowers open simultaneously, 10–23 cm long including the peduncle 2–8 cm long, from a node below the apex of the ramicaul, subtended by a narrow spathe 10–18 mm long; floral bracts oblique, acute, 9 mm long below, 4 mm long above; pedicels 2–4 mm long; ovary 1.5–2 mm long; flowers yellow-green, orange, to purple; **sepals** glabrous, the dorsal sepal ovate, acute, 6 mm long, 4.5–5 mm wide, 5-veined, the lateral sepals ovate, oblique, obtuse, connate to near the middle, or near the apex into a variably concave, bifid synsepal, each sepal 5–6 mm long, 4 mm wide, 4-veined; **petals** transversely lunate, broadly rounded at the apex, with a slightly roughened, apical margin, 1 mm long, 2 mm wide, 3-veined; **lip** thickly triangular, the apex obtuse to slightly acuminate, 0.6 mm long, 1.3 mm wide, 0.8 mm deep, shallowly concave below the bar with a glenion, the dorsum with a broad, low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1.3 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia, Colombia, Ecuador, Peru. **Etymology.** From the Latin *truncatus*, "truncate," referring to the labellum.

**Comments.** This large, robust species is related to the common and variable *Stelis purpurea* (Ruiz & Pav.) Willd., but it is easily distinguished from the latter by the prolific habit. The plant is scandent with stout or slender, superposed ramicauls with elliptical, petiolate leaves. The flowers are also similar, easily falling within the variations found in *S. purpurea*. The lateral sepals are wholly or partially connate into a synsepal, but the depth of the synsepal is variable, especially in the population along the Río Zongo, from deeply to shallowly concave.

**Additional collections.** Bolivia: La Paz: Murillo, along Río Zongo, 2350 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez 16482* (MO); same data, 2900 m, 22 November 1992, *C. Luer, J. Luer & R. Vásquez 16470* (MO); same area, 2800 m, 27 January 1980, *C. Luer, J. Luer & R. Vásquez 4963* (SEL); same area, 2200 m, 16 December 1982, *J.C. Solomon 9084* (MO, SEL); same area, 3300 m, 6 March 1983, *J.C. Solomon 9757* (MO, SEL); same area, 2800 m, 30 January 1988, *C. Luer, J. Luer & R. Vásquez 12959* (MO); same area, 3050 m, 11 February 1986, *S.G. Beck 13092* (LPB, SEL); same area, 2500 m, 16 March 1984, *J.C. Solomon 11909* (MO, SEL); same area, 2200 m, 17 March 1984, *J.C. Solomon 11939* (MO, SEL); same area, 2700 m, 19 January 1985, *J.C. Solomon 13097* (MO, SEL); same area, 3200 m, 20 February 1987, *J.C. Solomon 16106* (MO, SEL); same area, 3000 m, 8 January 1988, *J.C. Solomon 17453* (MO, SEL), *C. Luer* illustr. 12885. Cochabamba: Carrasco, Sehuencas, around the Country Club, 2250 m, 15 December 1993, *P. Ibisch & C. Ibisch 93.1899* (LPB; MO, Herb. Vásq.), *C. Luer* illustr. 21854.

***Stelis tunariënsis*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—Cochabamba; Chapare, old road from Villa Tunari to Cochabamba, 700 m, 31 January 1997, *C. Luer, J. Luer & R. Vásquez 18314* (Holotype: MO). FIGURE 144.

This small, caespitose species is characterized by flexuous racemes longer than the leaves; a flower with multiveined sepals; thick, three-veined petals; and a subdiscoid lip with a suborbicular callus on the dorsum.

**Plant** small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 0.7–1.2 cm long, enclosed by a tubular sheath from below the middle, and another sheath at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 2–3 cm long, including the petiole 0.5 cm long, the blade 0.7 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, loose, flexuous, successively more or less 10- to 12-flowered raceme, 3–5 cm long, including the peduncle ca. 2 cm long, from the apex of the ramicaul, without an obvious spathe; floral bracts oblique, acute, 1.5–2 mm long; pedicels 2 mm long; ovary 1 mm long; **sepals** rose-brown, minutely pubescent within, ovate, obtuse, the dorsal sepal 3 mm long, 3 mm wide, 5-veined, the lateral sepals 2.5 mm long, 3 mm wide; **petals** purple, thick, broadly ovate, the apex broadly rounded with a smooth, thickened margin, concave, 0.6 mm long, 1 mm wide, 3-veined; **lip** purple, type A, subquadrate, the apex rounded, 0.6 mm long, 0.8 mm wide, 0.4 mm deep, shallowly concave below the bar, the dorsum with a microscopically pubescent, subspherical callus, the truncate base hinged to the base of the

column; **column** stout, ca. 0.8 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for Villa Tunari, the community near the area where the species was collected.

**Comments.** This small, caespitose species from low-land forest north of Cochabamba in the vicinity of Villa Tunari is related to *Stelis carnosipetala* Luer & R. Vásquez, described herein. *Stelis tunariënsis* Luer & R. Vásquez is a smaller plant with more, smaller flowers with rose-brown, minutely pubescent, sepals. Although also thick, the petals are concave, not solidly convex.

**Stelis unduaviënsis** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Sud Yungas, above Río Unduavi, 2800 m, 4 February 1980, C. Luer, J. Luer & R. Vásquez 5129 (Holotype: SEL). FIGURE 145.

This small species is similar to *Stelis antennata* Garay, but differs by a truncate apex of the petals with a setiform process produced by thickened veins, and a subquadrate lip that is shortly concave at the apex, a smooth, thick callus that extends from the truncate base to within the apical cavity.

**Plant** medium in size, epiphytic, caespitose-ascending; roots slender. Ramicauls erect, slender, 2–4.5 cm long, with by a tubular sheath from below the middle, and another 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, 2–4.5 cm long including a petiole 0.8–1.2 cm long, the blade 0.6–1 cm wide, gradually narrowed below to the petiole. **Inflorescence** an erect to arching, subclax, secund, long-pedicellate raceme of about 10–12 flowers, 6–13 cm long including the peduncle ca. 5 cm long, from a node below the apex of the ramicaul, with a slender 4–9 mm long; floral bracts oblique, acute, 1.5 mm long; pedicels 6–10 mm long; ovary 1.5 mm long; **sepals** mottled with rose, glabrous, ovate, subacute-acuminate, 3-veined, the dorsal sepal 2.5 mm long, 2–2.5 mm wide, the lateral sepals oblique 2–2.5 mm long, 2 mm wide; **petals** green, 2.4 mm long including the setiform process 1.5 mm long, the blade transversely obovate, shallowly concave, 1 mm long, 1.75 mm wide, 3-veined, the apex subtruncate with the lateral veins converging to create the setiform process; **lip** green below the rose apex, subquadrate, 1.25 mm long, 1.25 mm wide, thick and smooth from the truncate base to within the concave, truncate apex with a thin margin, the base broadly truncate, hinged to the column; **column** stout, ca. 1 mm long and wide, the anther and bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the community of Unduavi, above which the species was found.

**Comments.** This little species is the fourth of a group that bears long-pedicellate flowers. It differs from all of them by a setiform tail emerging from a broadly truncate blade of the petals, and a thick, smooth, quadrate lip with a truncate, narrowly concave apex.

**Stelis vallata** Luer, sp. nov. TYPE: Bolivia—Cochabamba: Carrasco, Schuencas, near Río Fuerte, 2100 m, 4 January 1994, P. Ibisich & C. Ibisich 94.0133 (Holotype: MO; Isotype: LPB.), C. Luer illustr. 21898. FIGURE 146.

This medium-sized, repent species is noted for a stout rhizome and ramicauls; a many-flowered raceme much exceeding the thick, obtuse leaves; sparsely ciliate-pubescent sepals with an erect fold near the base surrounding the central apparatus; membranous, three-veined petals; and an erect lip behind the fold of the lateral sepals.

**Plant** medium in size, epiphytic, repent, the rhizome 3–15 mm long between ramiauls; roots slender. Ramicauls erect, stout, 2–4 cm long, enclosed by a loose, tubular sheath on the lower half. **Leaf** erect, coriaceous, elliptical, obtuse to rounded, 6–8 cm long including a petiole 1–1.2 cm long, the blade 1.4–1.8 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, many-flowered raceme, 14–16 cm long including a peduncle ca. 5 cm long, from a node below the apex of the ramicaul; floral bracts oblique, acute, 2–3 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers appear to have been purple; **sepals** glabrous externally, sparsely long-pubescent along margins, the dorsal sepal ovate, acute, 2.5 mm long, 1.75 mm wide, 3-veined, with a low, transverse fold above the base, the lateral sepals oblique, ovate, 1.5 mm long, 1.75 mm wide, with a tall fold above the bases; **petals** subcircular, membranous, concave, 1 mm long, 1 mm wide, 3-veined; **lip** type unclassified, suboblong-ovate, erect behind the folds of the lateral sepals, 0.5 mm long, 0.7 mm wide, 0.3 mm deep, shallowly concave below a transverse, oblong callus across the base, with a minute, central cleft, the apex rounded, the base truncate, connate to the base of the column; **column** stout, terete, ca. 0.5 long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** From the Latin *vallatus*, "surrounded by a wall," referring to the fold at the bases of the lateral sepals.

**Comments.** This stout, repent species also produces caespitose elements of a few, stout ramicauls, each with an elliptical leaf that is obtuse or rounded at the tip. A single, many-flowered raceme exceeds the leaf, and the sepals are sparsely pubescent near the margins. In the lower quarter of each sepal, an erect fold forms a rampart around the central apparatus. The proportionately large, membranous petals are three-veined. The unique lip stands erect behind the wall-like folds of the lateral sepals. The lip is shallowly concave below a transverse, oblong callus at the base.

**Stelis varicella** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Murillo, along Río Zongo, 2300 m, 25 August 1991, C. Luer, J. Luer & R. Vásquez 15353 (Holotype: MO). FIGURE 147.

This large species of section *Humboldtia* is distinguished by a long, minutely many-flowered raceme with short floral bracts; minutely pustulate sepals; three-veined petals; and a lip with an acute, triangular apex and a deeply cleft bar.

**Plant** large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 9–12 cm long, enclosed by a loose, tubular sheath from below the middle and 1–2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 8–9.5 cm long, 1.8–2 cm wide in the dry state, cuneate below to the sessile base. **Inflorescence** 1–2 erect, strict, subsecund, congested, simultaneously many-flowered racemes with numerous flowers open simultaneously, 12–25 cm long including the peduncle 1

–5 cm long, from a node below the apex of the ramicaul, subtended by a slender spathe 15 mm long; floral bracts tubular, acute, 1.5–2 mm long; pedicels less than 1 mm long; ovary 1 mm long; flowers yellow; **sepals** fleshy, glabrous externally, minutely pustulate within, with margins recurved, the dorsal sepal ovate, obtuse to rounded at the tip, 3 mm long, 2 mm wide, 3-veined, the lateral sepals ovate, connate into a concave, ovoid synsepal, 2.75 mm long, 3.6 mm wide expanded, each 3-veined, the apex broadly rounded; **petals** transversely rhombic, broadly obtuse, with a narrow, slightly roughened, apical margin, 0.8 mm long, 1 mm wide, 3-veined; **lip** thickly triangular, the apex acute and slightly incurved, 0.75 mm long, 0.8 mm wide, 0.5 mm deep, the bar thick, deeply cleft with a longitudinal cavity, the dorsum with a broad low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, ca. 1 mm long and wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for *varicella*, the diminutive of *variola vera* (small pox), the virus that causes chicken pox, referring to the multiple pustules.

**Comments.** This large, caespitose species is characterized by stout ramicauls with elliptical leaves, and one or two long racemes of small, yellow flowers. The margins of the dorsal sepal and lateral sepals are recurved, and the inner surfaces are cellular pustulate. The lateral sepals are adherent into a synsepal; the petals are thin and three-veined; and the lip is type A with an acute, triangular apex, and with a deep cleft of the bar.

**Paratypes.** Bolivia—La Paz: Murillo, along Río Zongo, 2300 m, 22 November 1992, C. Luer, J. Luer & R. Vásquez 16467 (MO); same area, 2750 m, 25 August 1991, C. Luer, J. Luer & R. Vásquez 15351 (MO).

***Stelis zongoënsis*** Luer & R. Vásquez, sp. nov. TYPE: Bolivia—La Paz: Murillo, 36 Km below dam at Lago Zongo, 1800 m, 18 December 1982, J.C. Solomon 9159 (Holotype: MO), C. Luer illustr. 21873. FIGURE 148.

This tall, medium-sized, caespitose species is distinguished by one or two minutely flowered racemes about as long as the leaf; ovate, subacute, antrorse, glabrous, faintly three-veined sepals; subquadrate, faintly single-veined petals with a triangular apiculum; and an acute midlobe of a three-lobed lip.

**Plant** medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, fasciculate, 7–8 cm long, enclosed by a tubular sheath from near the middle and another below the middle. **Leaf** erect, coriaceous, elliptical, narrowly obtuse, 8–9 cm long including a petiole 1.5 cm long, the blade 1 cm wide in the dry state, cuneate below into the petiole. **Inflorescence** 2 in the only specimen, erect, strict, loose, many-flowered racemes with most flowers open simultaneously, 7–8 cm long including the peduncle ca. 3 cm long, from a node below the apex of the ramicaul, with a slightly inflated, ribbed spathe 1–1.3 cm long; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 0.5 mm long; flowers greenish white; **sepals** glabrous, ovate, subacute to obtuse, faintly 3-veined, the dorsal sepal 1.75 mm long, 1 mm wide, the lateral sepals antrorse, 1.5 mm long, 1.25 mm wide; **petals** subquadrate,

truncate with a short, central, triangular apiculum, 0.6 mm long and wide, faintly 1-veined; **lip** trilobed, 1 mm long, 1.3 mm wide expanded, 0.3 mm deep, with erect, broadly obtuse, lateral lobes, the midlobe acute, triangular, with a minute, curved callus at the base, hinged to the base of the column; **column** slender, clavate, 1 mm long, 0.6 mm wide, the anther and the bilobed stigma apical.

**Distribution.** Bolivia. **Etymology.** Named for the Zongo Valley where this species was collected.

**Comments.** This species is another of many related to *Stelis farinosa* Luer & R. Vásquez that are distinguished by ovate, antrorse lateral sepals with a single vein that is often accompanied by an additional pair of faint or merely basal veins. As with the others, the flowers are minute and borne in loose racemes about as long as the leaf. The petals are subquadrate with a short, triangular apiculum, and the lip is trilobed with broad, erect, obtuse lateral lobes and an acute, triangular midlobe.

**Paratypes.** Bolivia—La Paz: Murillo, 32 Km below dam at Lago Zongo, 2000 m, 29 November 1982, *J.C. Solomon 9036* (MO); same area, 30 Km below dam at Lago Zongo, 2200 m, 16–17 December 1982, *J.C. Solomon 9085* (MO).

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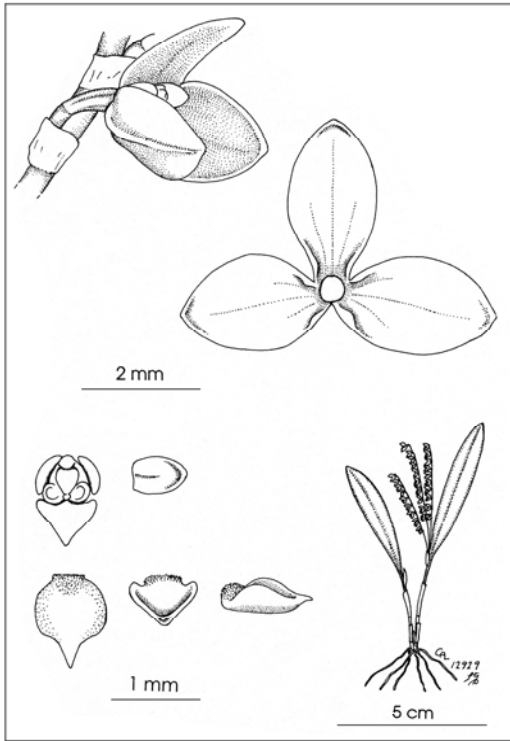


Fig. 1. *Stelis aberrans* Luer & R. Vásquez

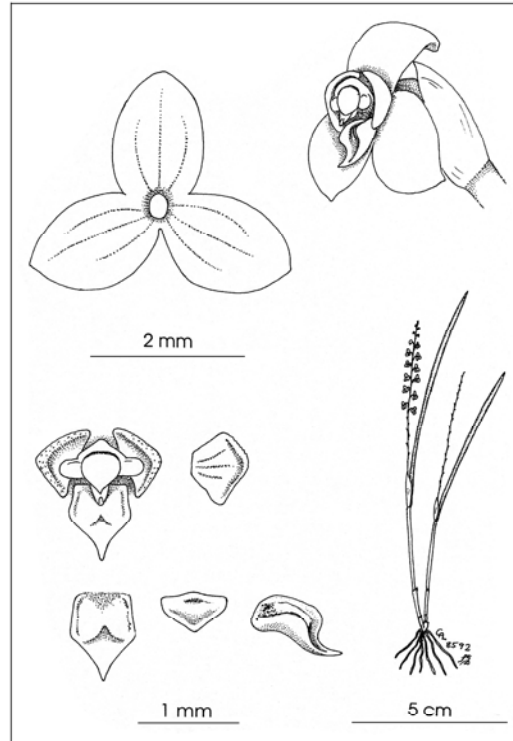


Fig. 2. *Stelis aciculifolia* Luer & R. Vásquez

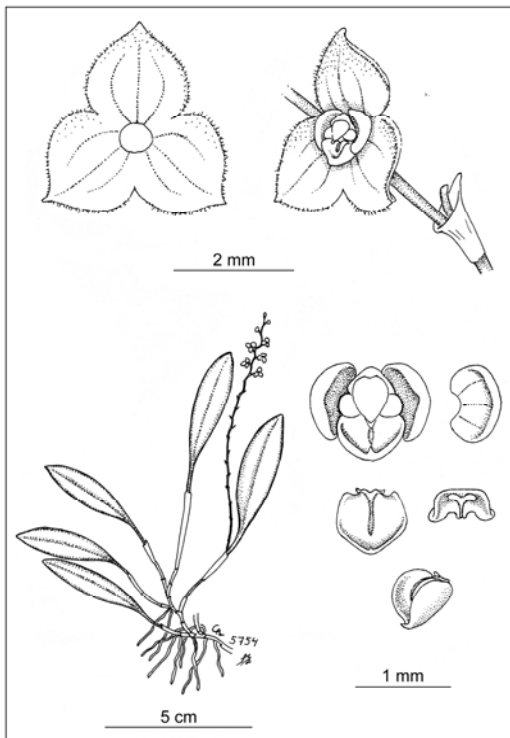


Fig. 3. *Stelis adelphae* Luer & R. Vásquez

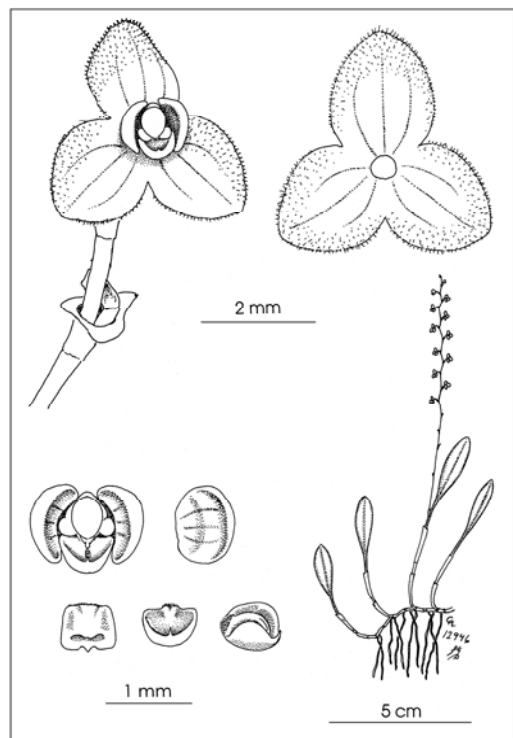


Fig. 4. *Stelis adelphae* Luer & R. Vásquez

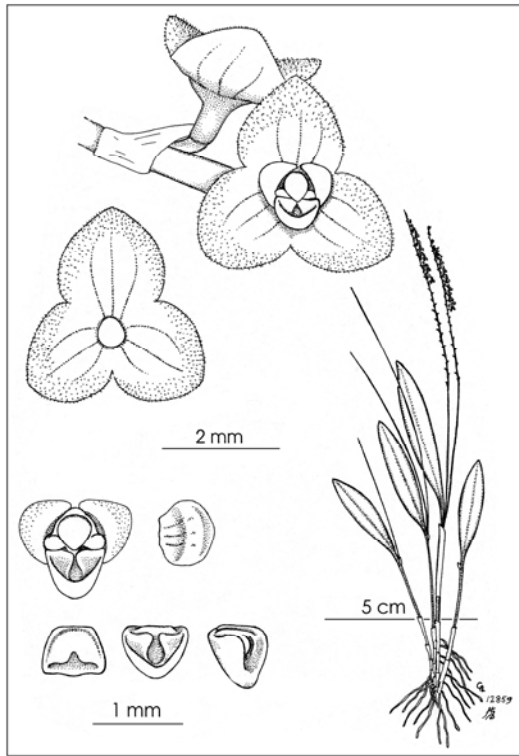


Fig. 5. *Stelis amethystina* Luer & R. Vásquez

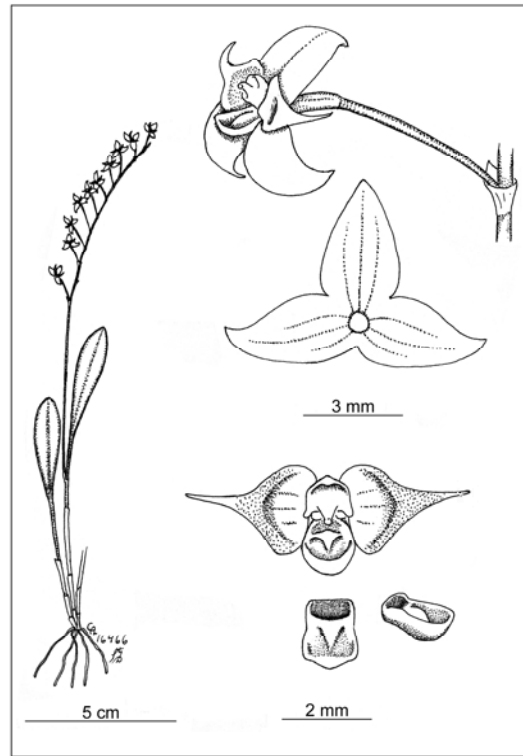


Fig. 6. *Stelis antennata* Garay

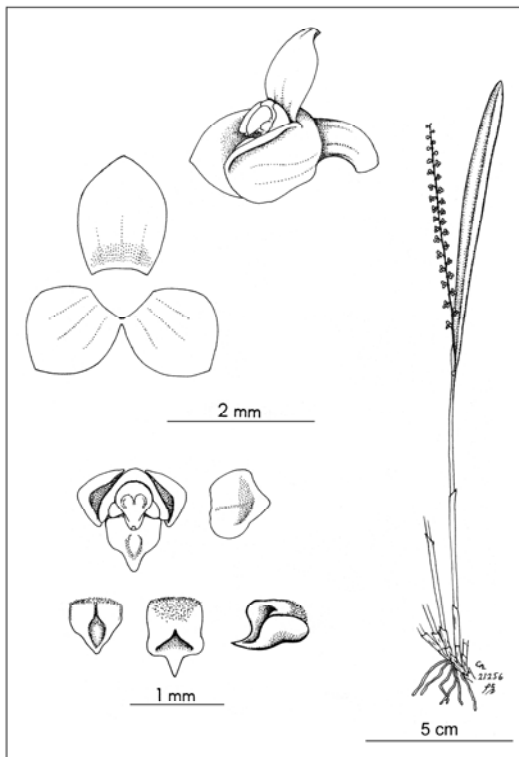


Fig. 7. *Stelis aprica* Lindl.

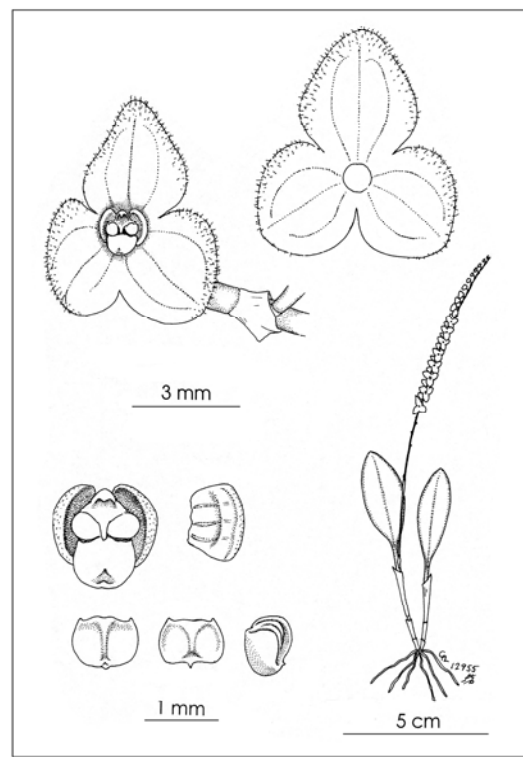


Fig. 8. *Stelis argentata* Lindl.

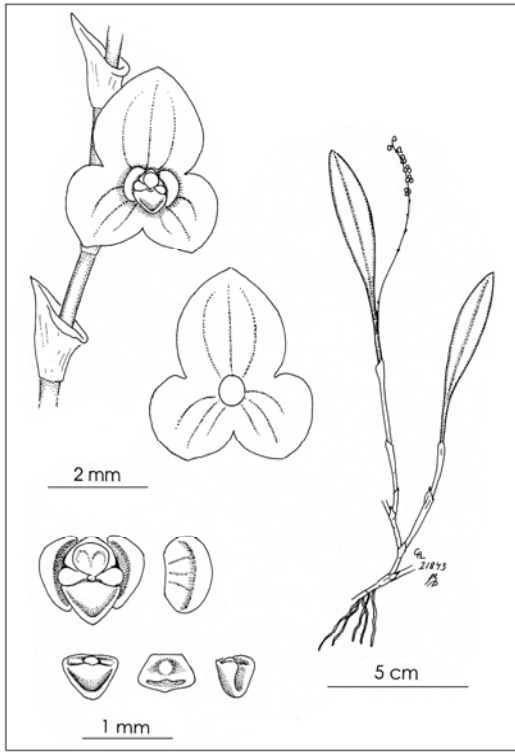


Fig. 9. *Stelis atra* Lindl.

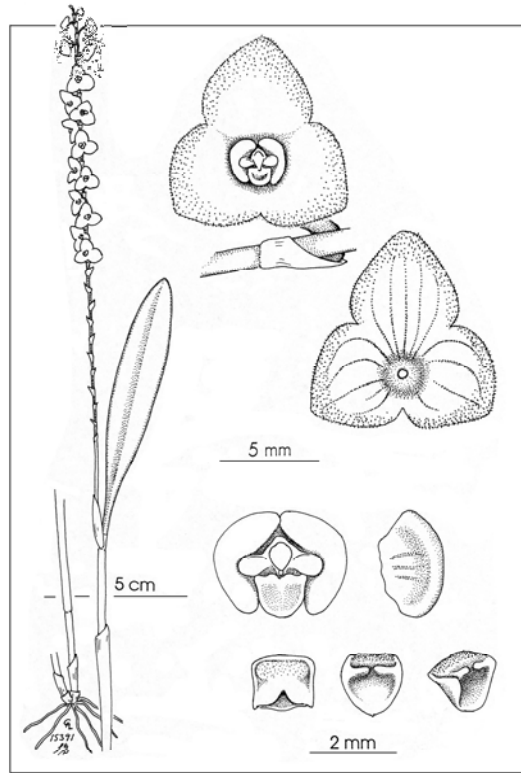


Fig. 10. *Stelis aurantiaca* Luer & R. Vásquez

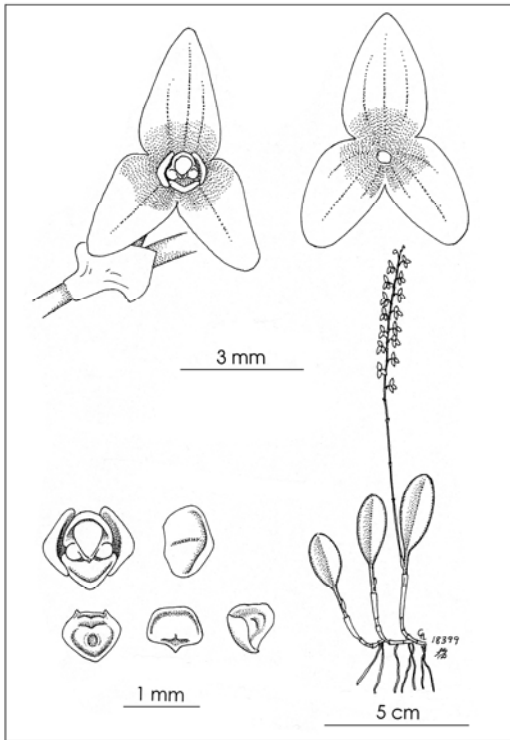


Fig. 11. *Stelis bacriosa* Luer & R. Vásquez

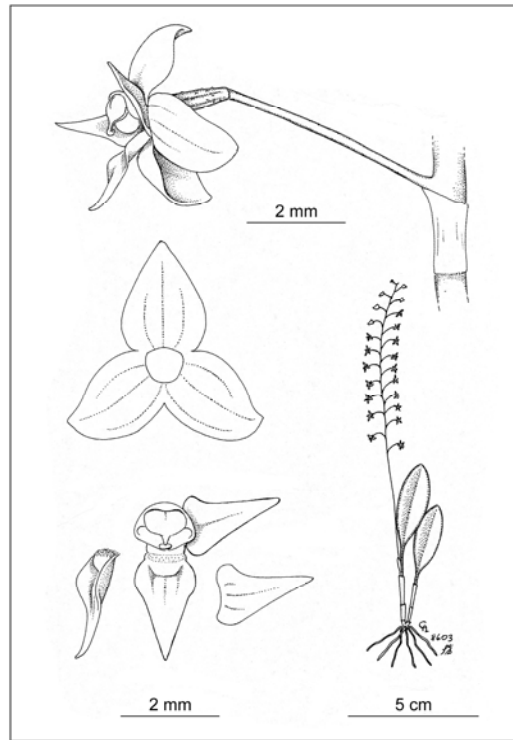


Fig. 12. *Stelis ballatrix* Luer & R. Vásquez

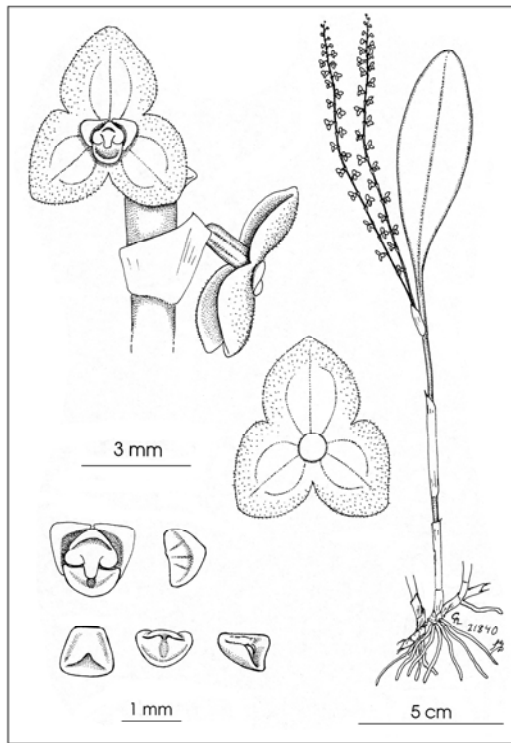


Fig. 13. *Stelis beckii* Luer

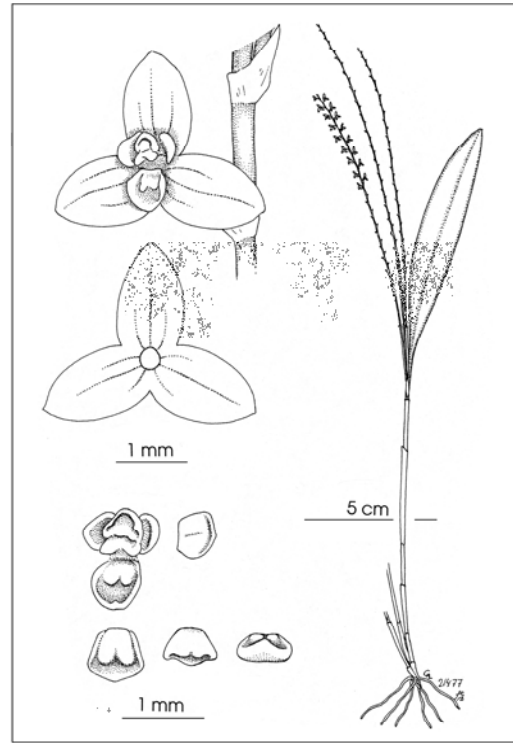


Fig. 14. *Stelis beniënsis* Luer

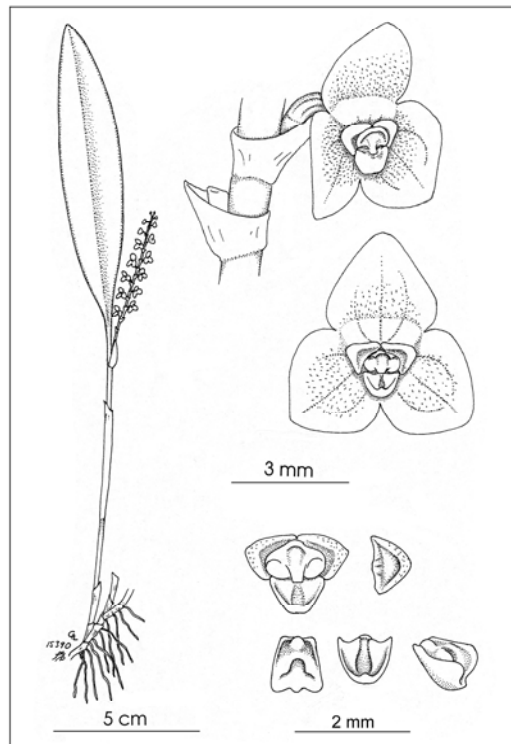


Fig. 15. *Stelis brachystachya* Luer & R. Vásquez

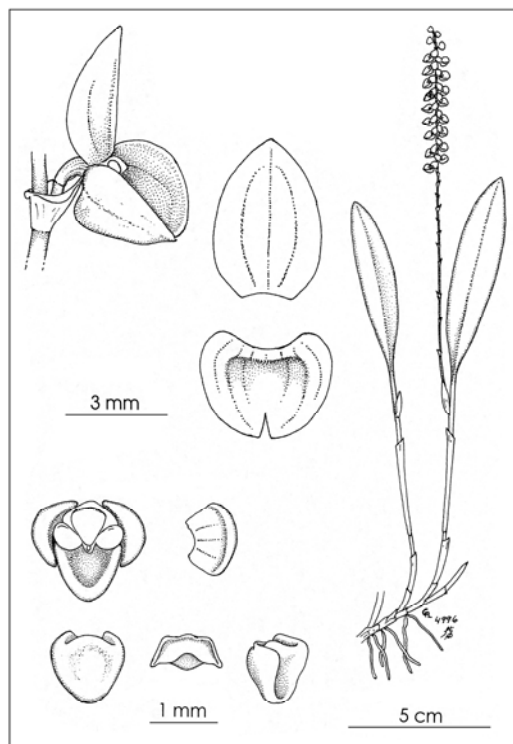


Fig. 16. *Stelis brittoniana* Rolfe

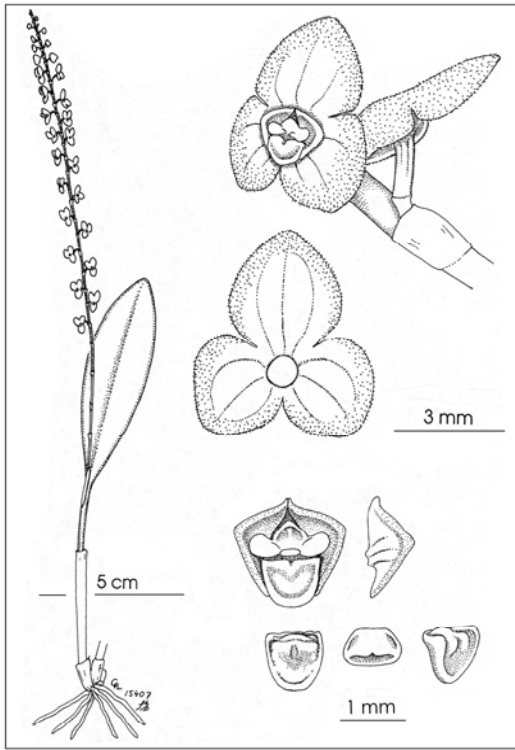


Fig. 17. *Stelis caldaria* Luer & R. Vásquez

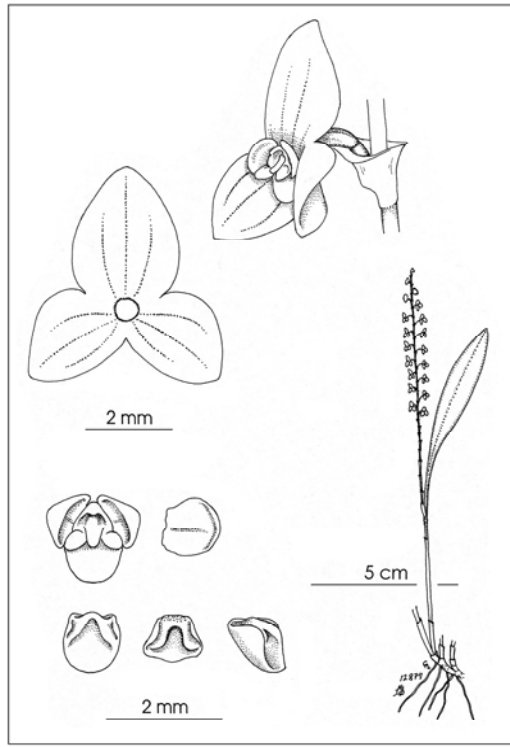


Fig. 18. *Stelis campanulifera* Lindl.

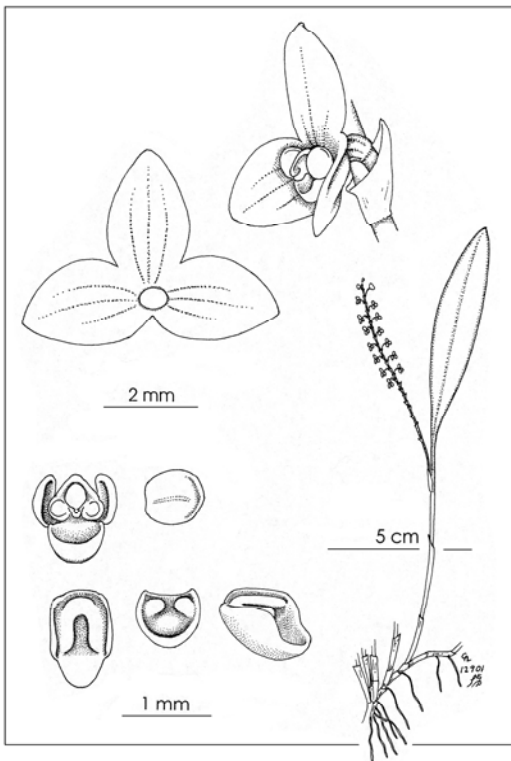


Fig. 19. *Stelis campanulifera* Lindl.

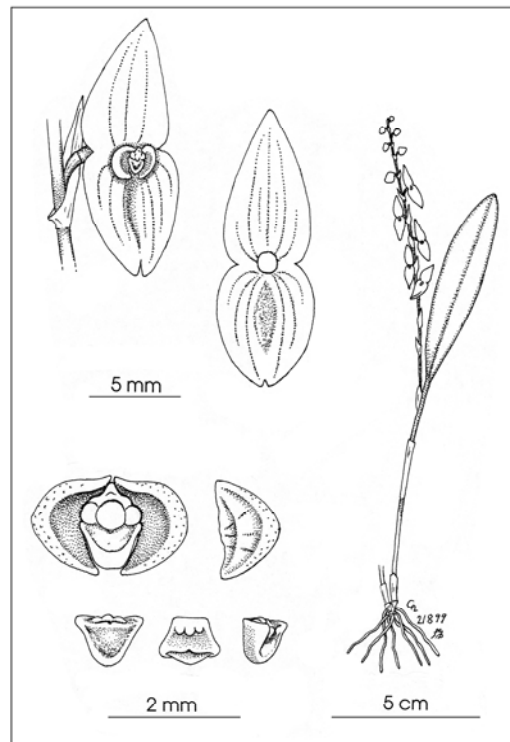


Fig. 20. *Stelis cardenasii* Luer & R. Vásquez

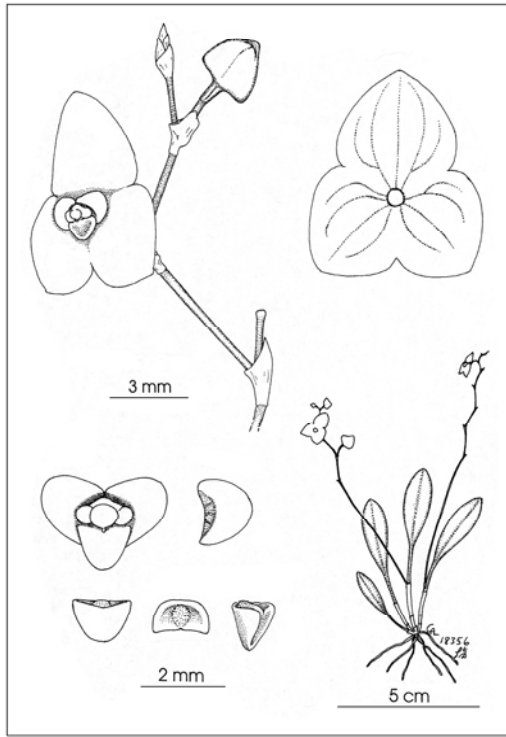


Fig. 21. *Stelis carnosipetala* Luer & R. Vásquez

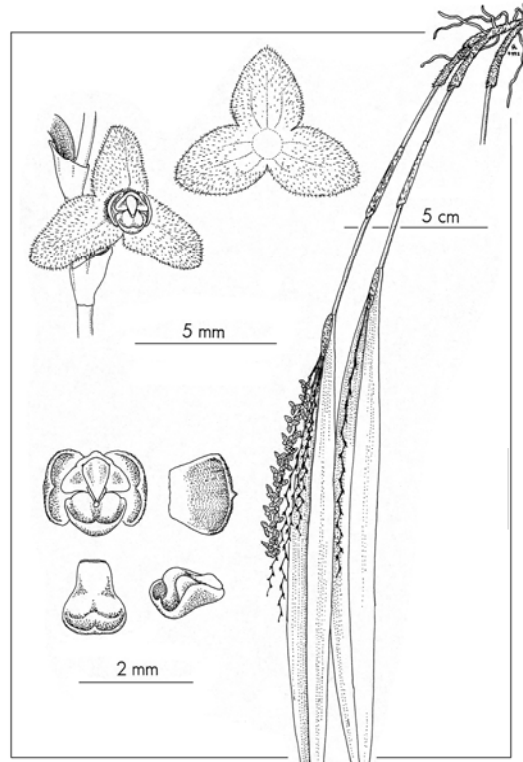


Fig. 22. *Stelis cauda-equina* Luer & R. Vásquez

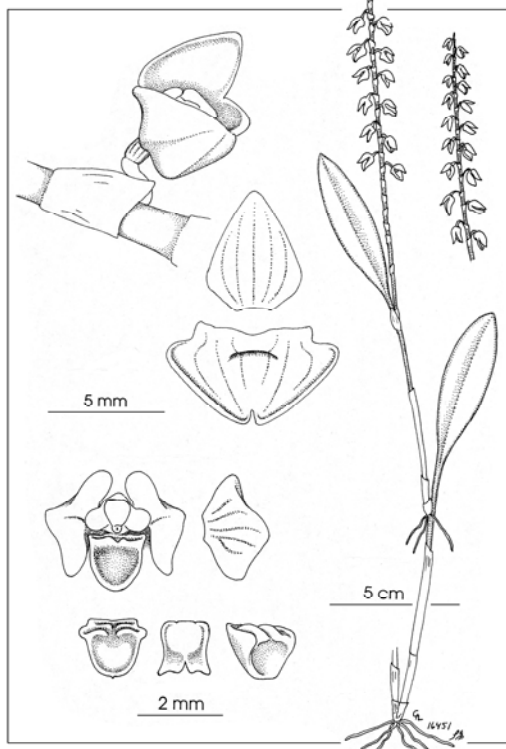


Fig. 23. *Stelis cavatella* Luer & R. Vásquez

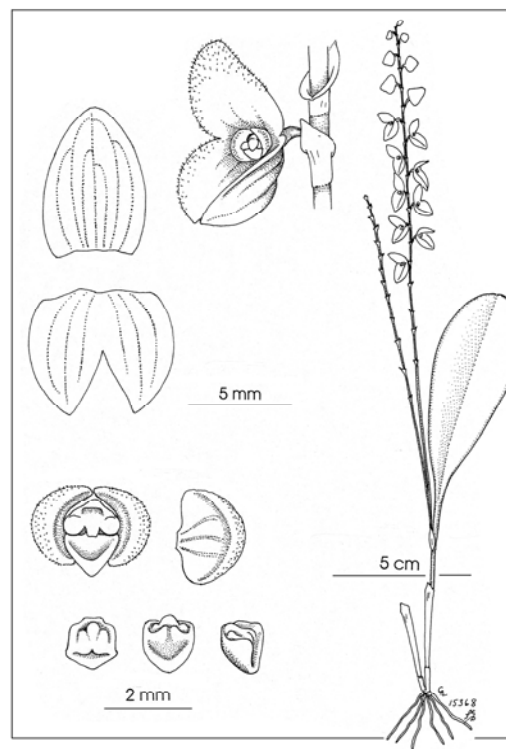


Fig. 24. *Stelis chuspipatensis* Luer & R. Vásquez

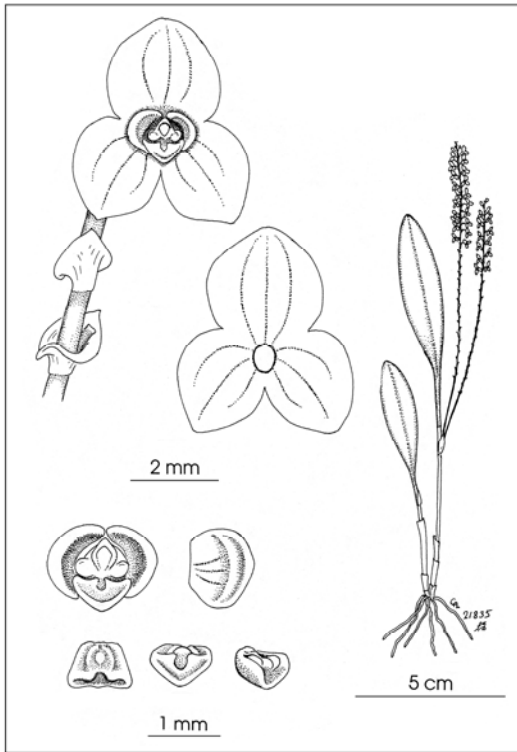


Fig. 25. *Stelis citrinella* Luer

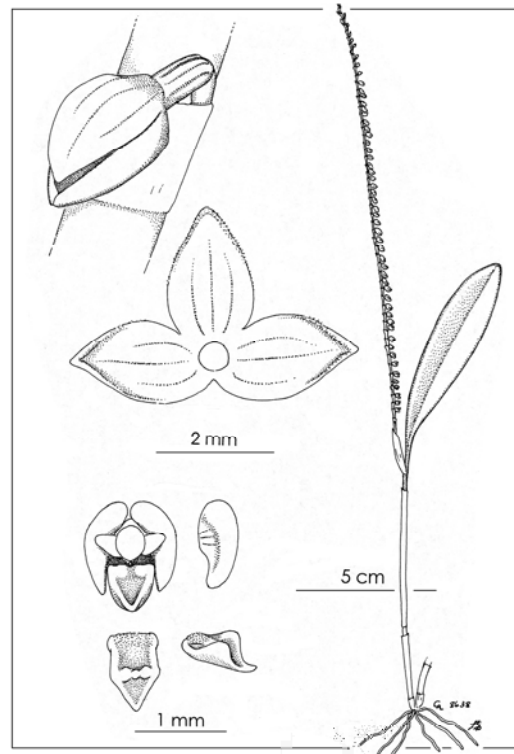


Fig. 26. *Stelis clausa* Luer & R. Vázquez

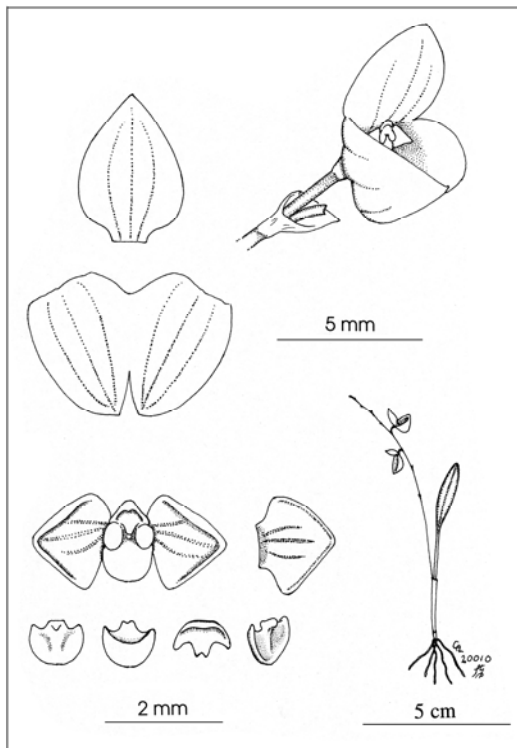


Fig. 27. *Stelis cloesiorum* C. Luer

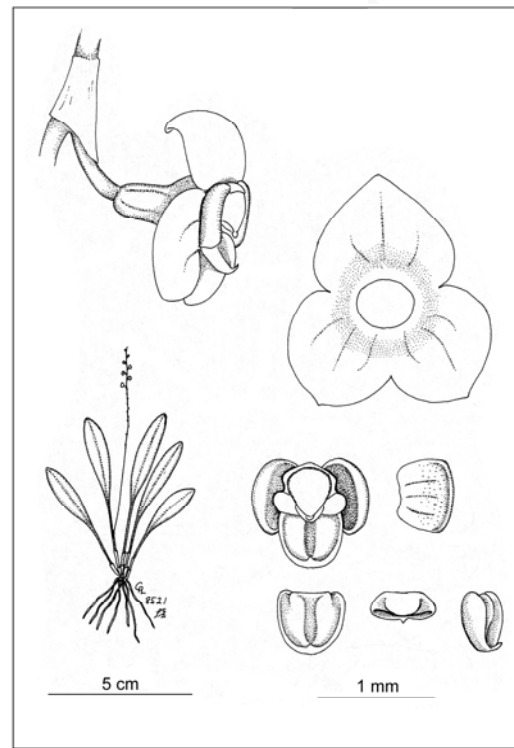


Fig. 28. *Stelis coccididata* Luer & R. Vázquez



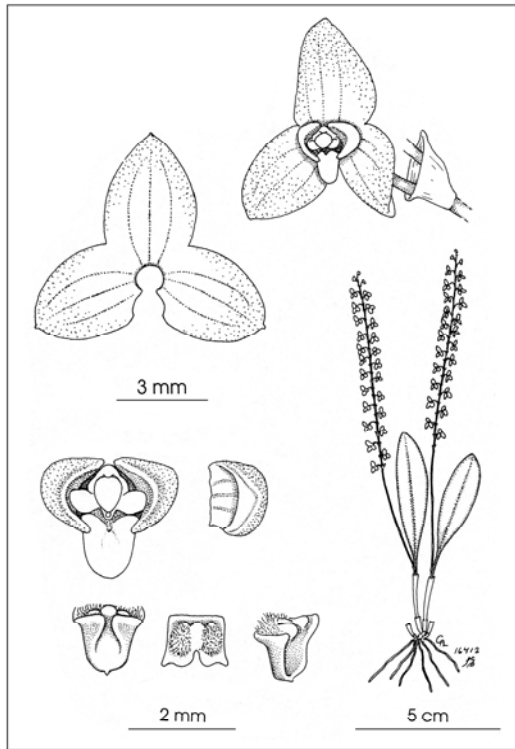


Fig. 29. *Stelis comosa* Luer & R. Vásquez

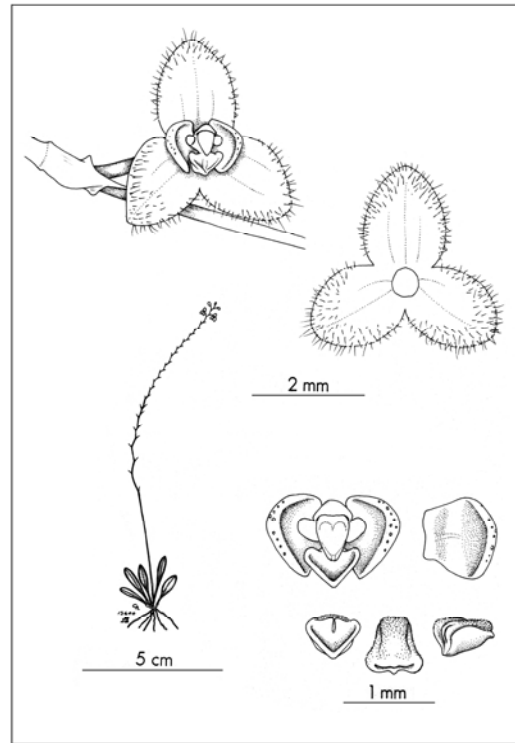


Fig. 30. *Stelis concinna* Lindl.

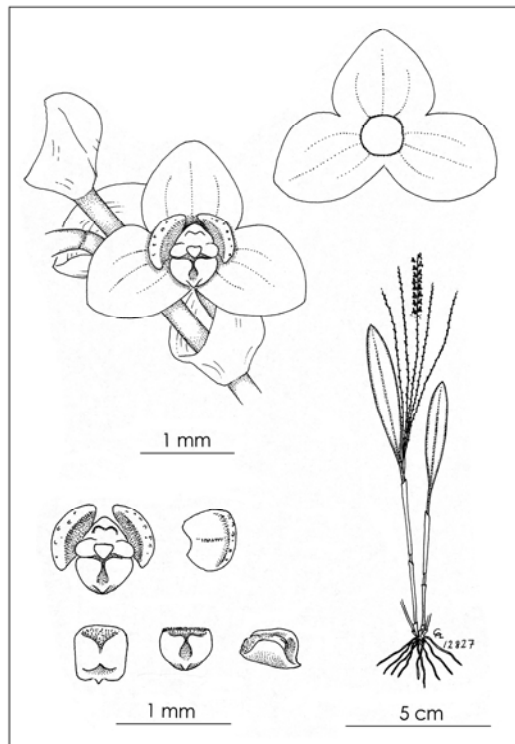


Fig. 31. *Stelis consors* Luer & R. Vásquez

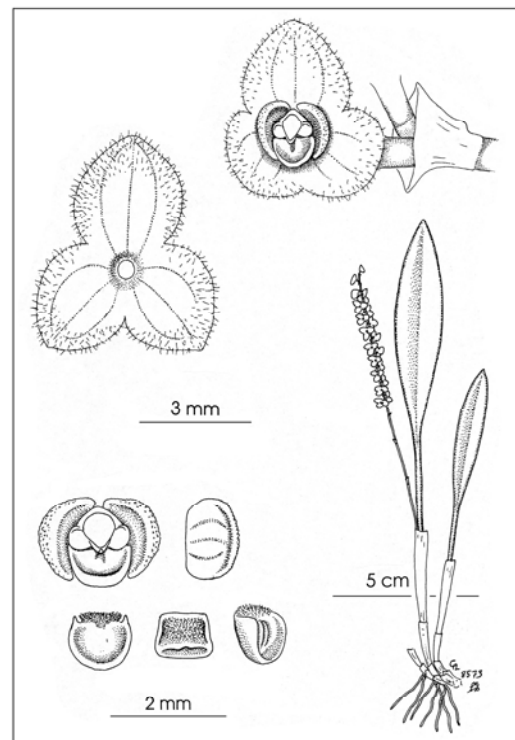


Fig. 32. *Stelis coroiensis* Luer & R. Vásquez

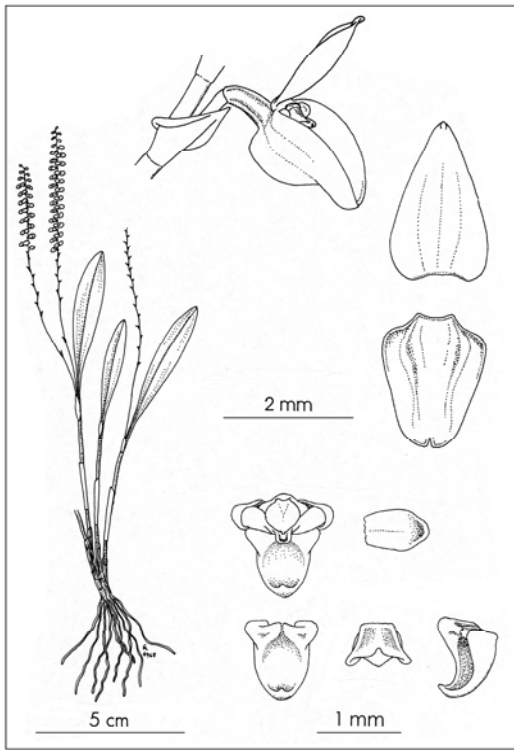


Fig. 33. *Stelis cubicularia* Luer & R. Vásquez

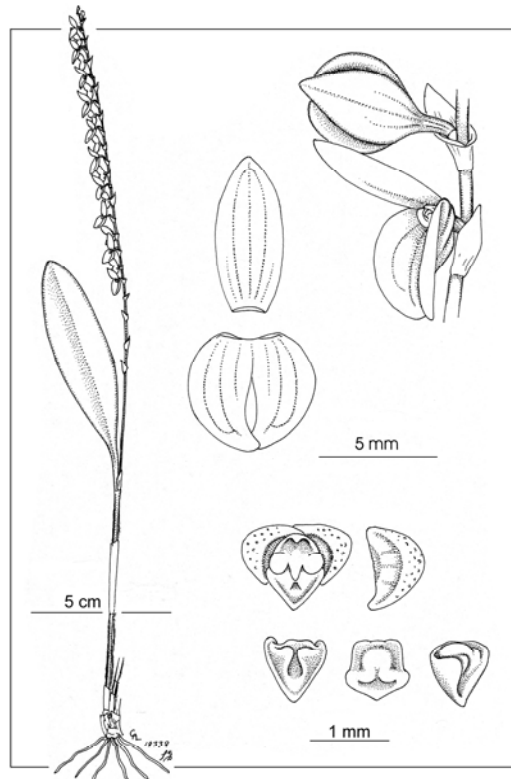


Fig. 34. *Stelis darwinii* Luer & R. Vásquez

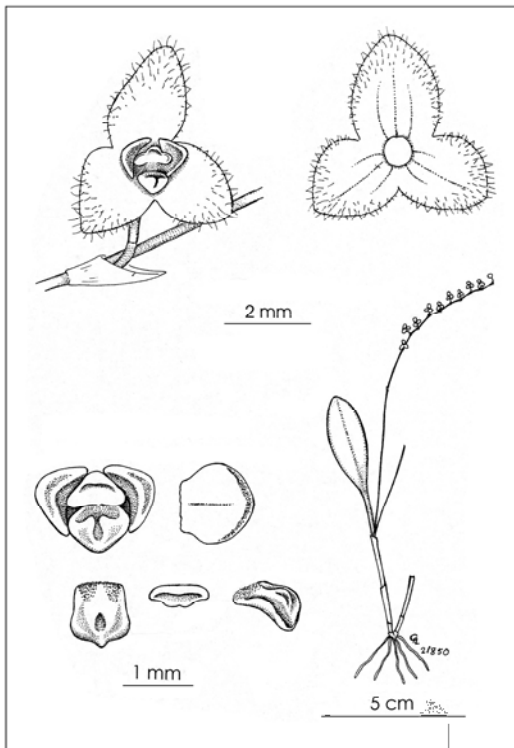


Fig. 35. *Stelis dasysepala* Luer & R. Vásquez

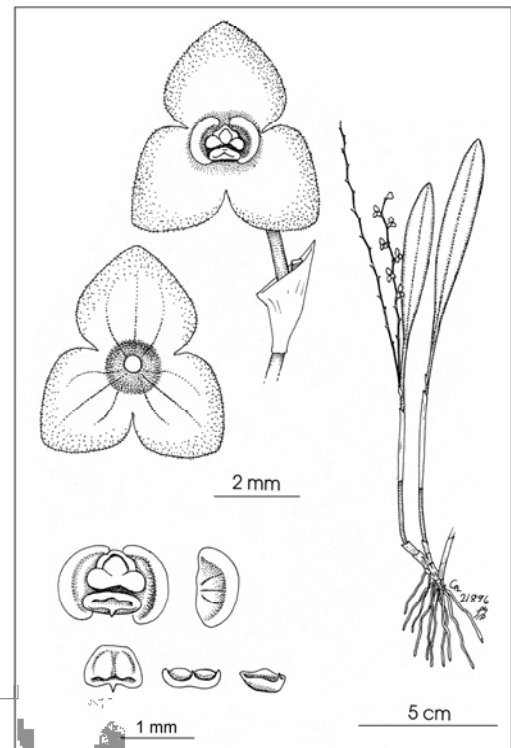


Fig. 36. *Stelis delasotae* Luer

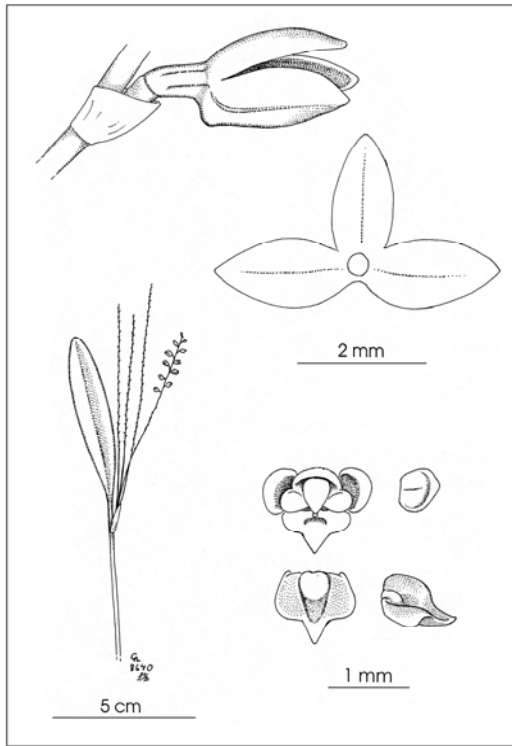


Fig. 37. *Stelis dinoi* Luer & R. Vásquez

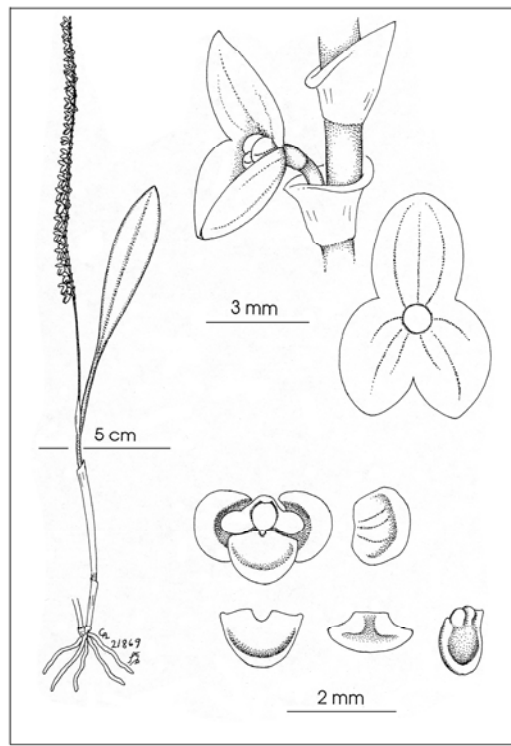


Fig. 38. *Stelis dolabrata* Luer

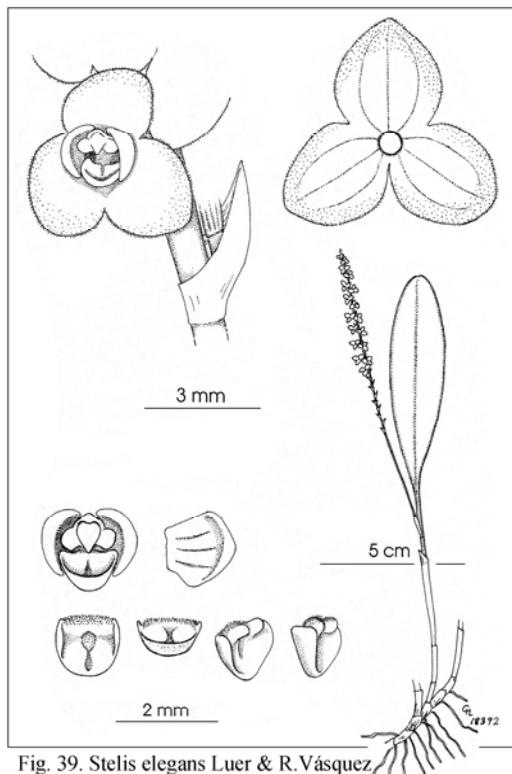


Fig. 39. *Stelis elegans* Luer & R. Vásquez

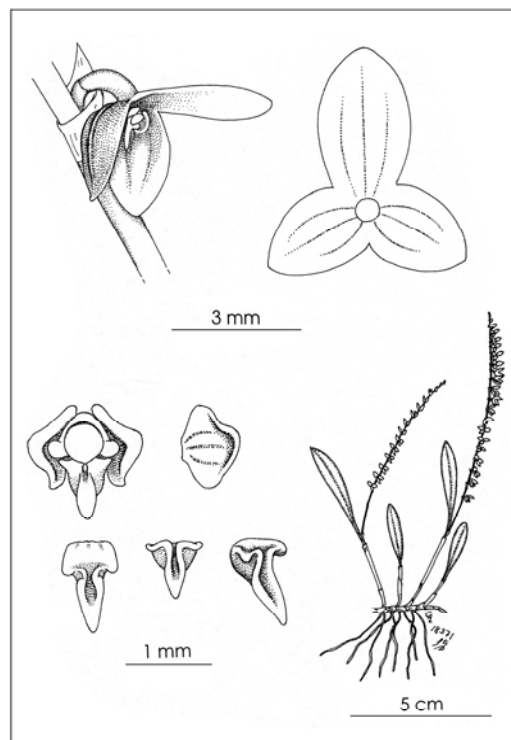


Fig. 40. *Stelis elongata* Kunth

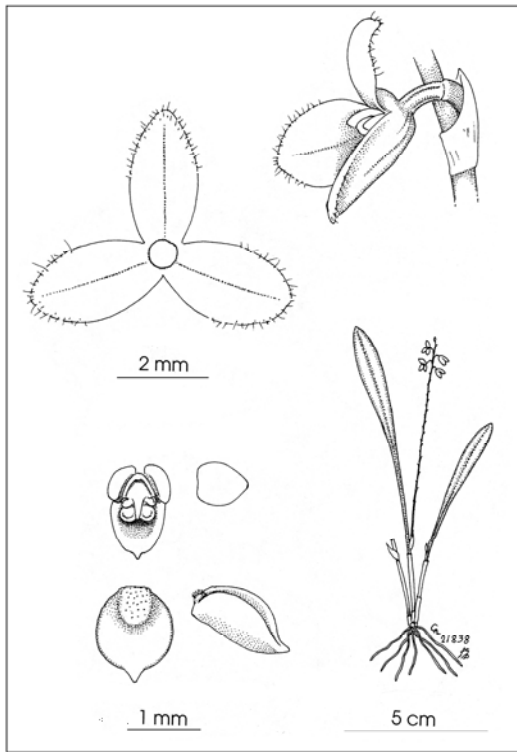


Fig. 41. *Stelis enervis* Luer

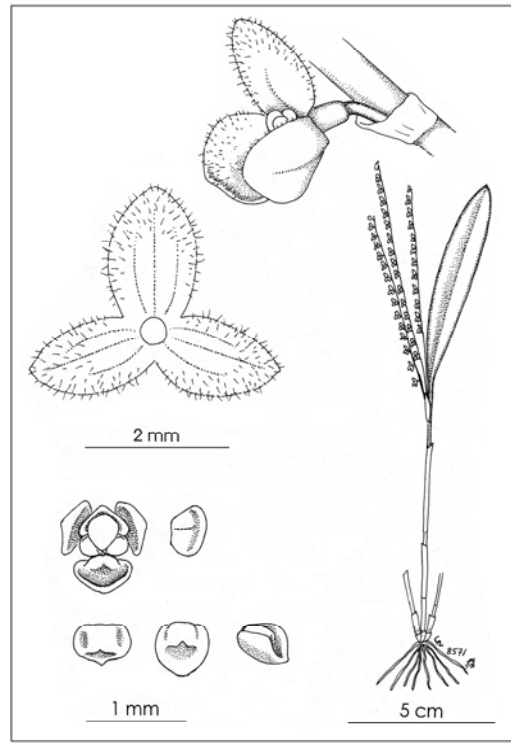


Fig. 42. *Stelis euspatha* Rchb.f.

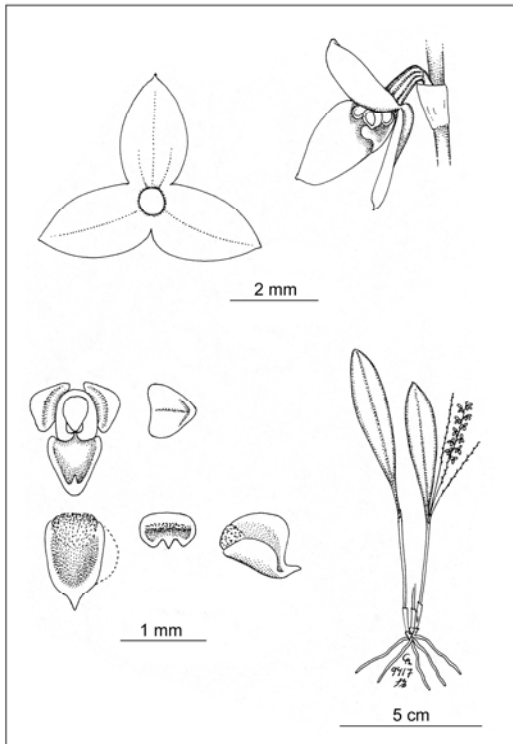


Fig. 43. *Stelis farinosa* Luer & R.Vásquez

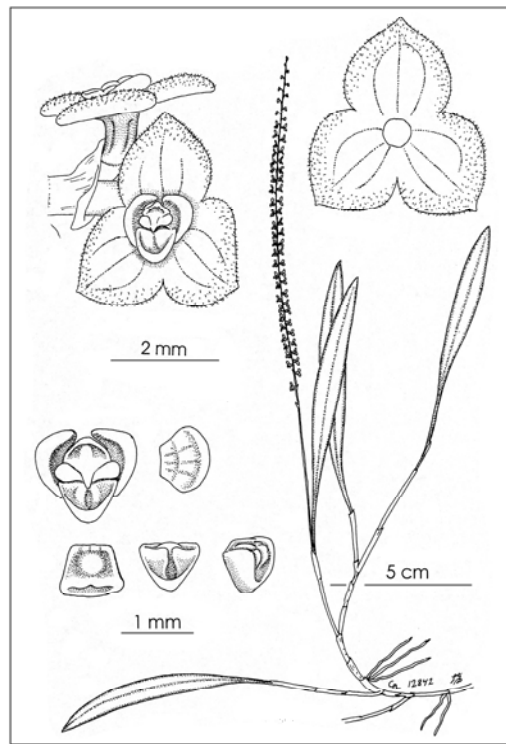


Fig. 44. *Stelis flexa*, Schtr.

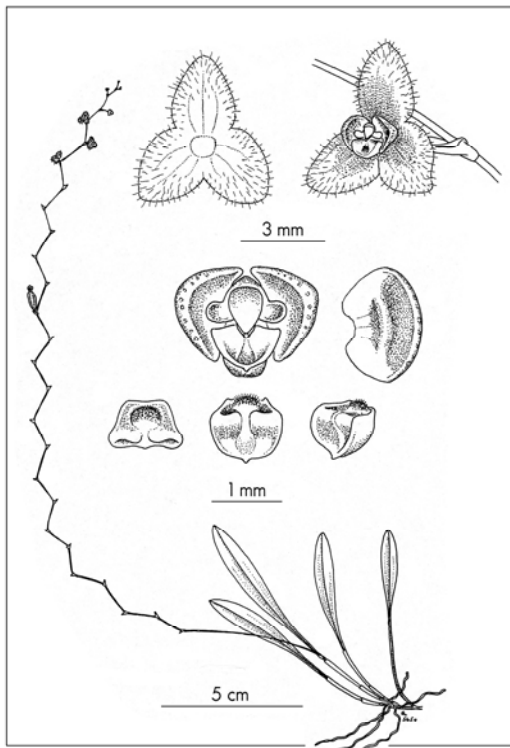


Fig. 45. *Stelis flexuosissima* Luer & Hirtz

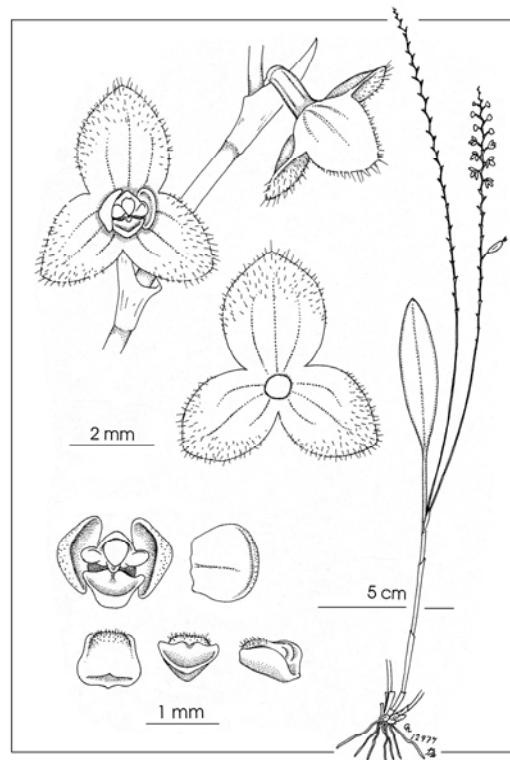


Fig. 46. *Stelis flexuosissima* Luer & Hirtz

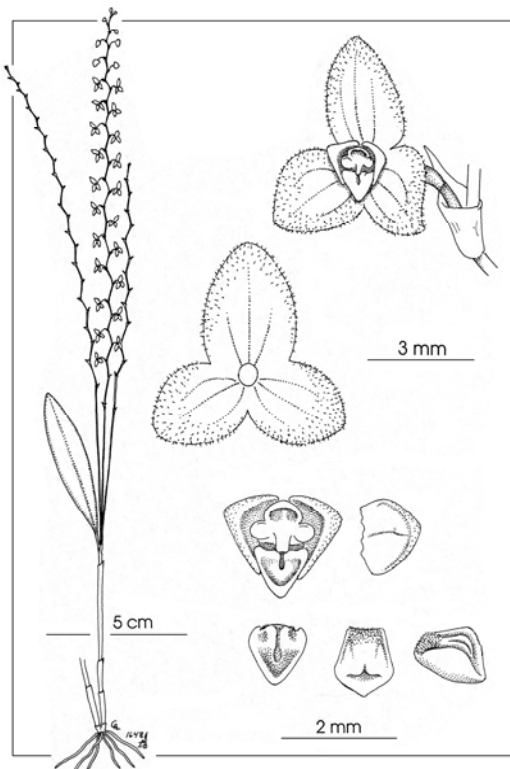


Fig. 47. *Stelis flexuosissima* Luer & Hirtz

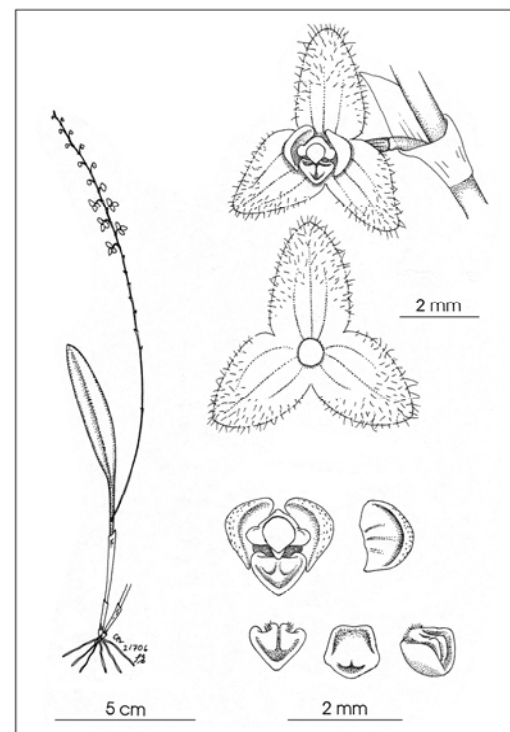


Fig. 48. *Stelis flexuosissima* Luer & Hirtz

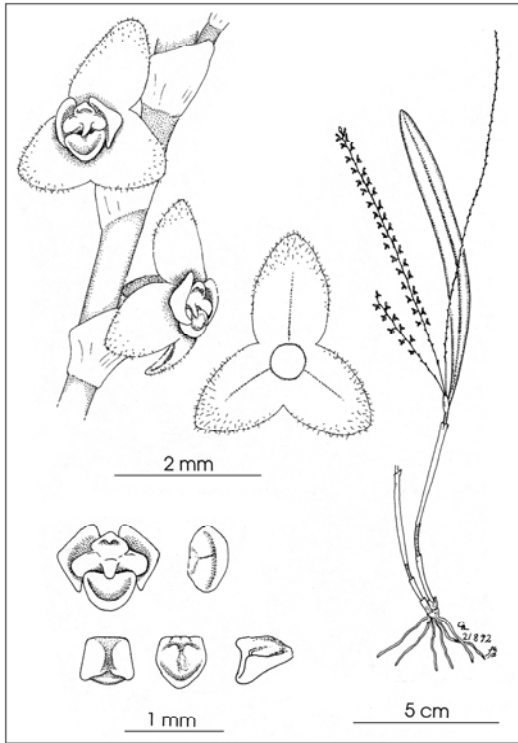


Fig. 49. *Stelis florulenta* Luer

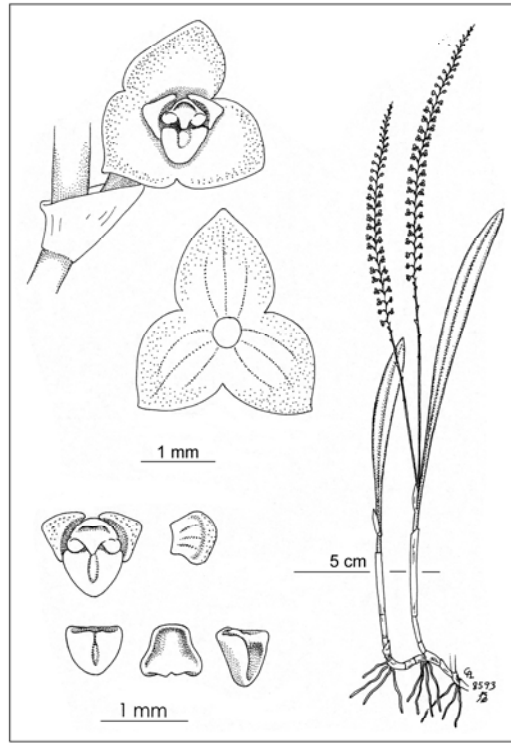


Fig. 50. *Stelis fons-stellarum* Luer & R. Vázquez

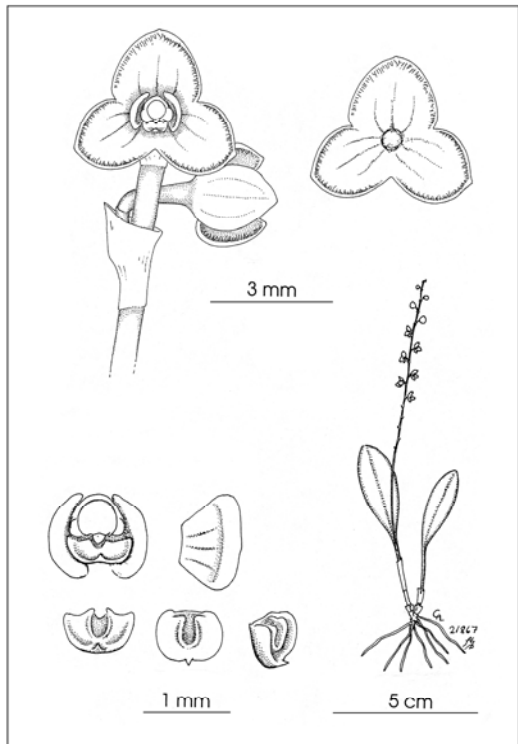


Fig. 51. *Stelis fragilis* Luer

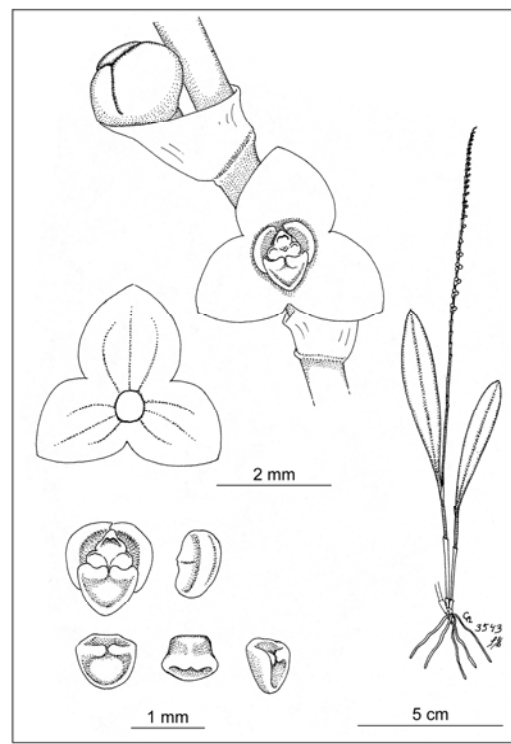


Fig. 52. *Stelis fuchsii* Luer & R. Vázquez

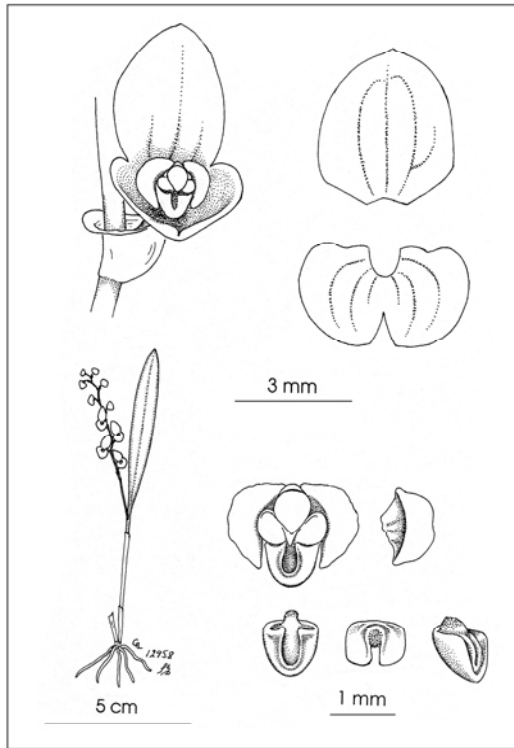


Fig. 53. *Stelis gibbosa* Luer & R. Vásquez

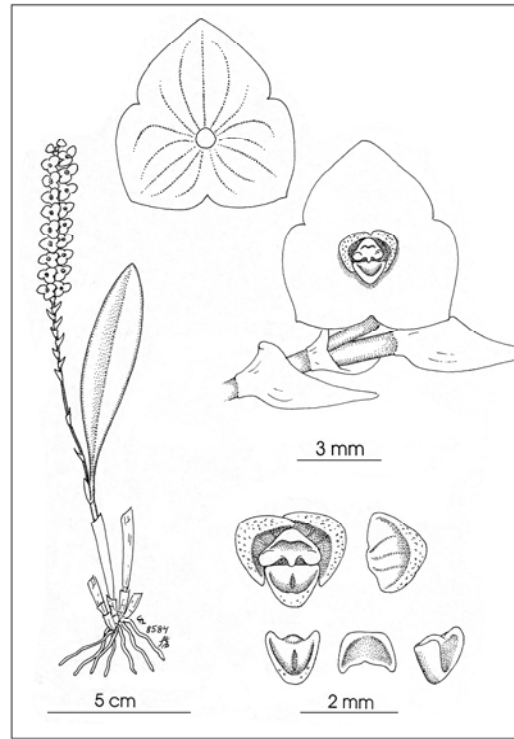


Fig. 54. *Stelis grandiflora* Lindl.

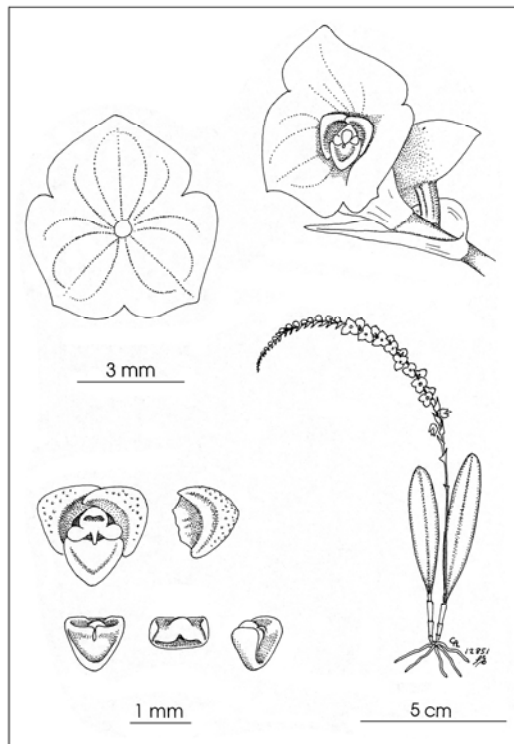


Fig. 55. *Stelis grandiflora* Lindl.

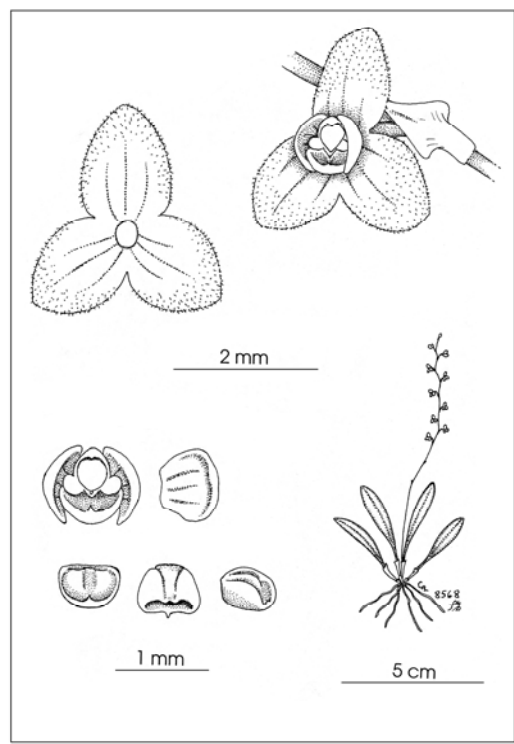


Fig. 56. *Stelis guianensis* Rolfe

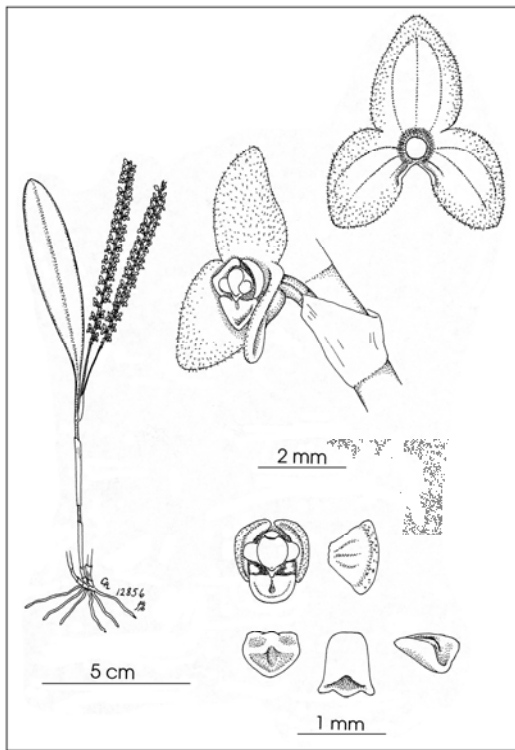


Fig. 57. *Stelis herzogii* Schltr.

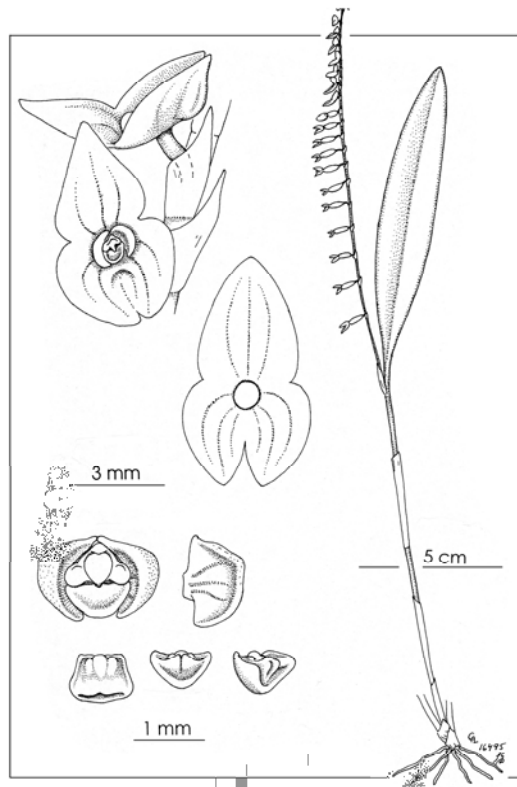


Fig. 58. *Stelis asterosepala* Schltr.

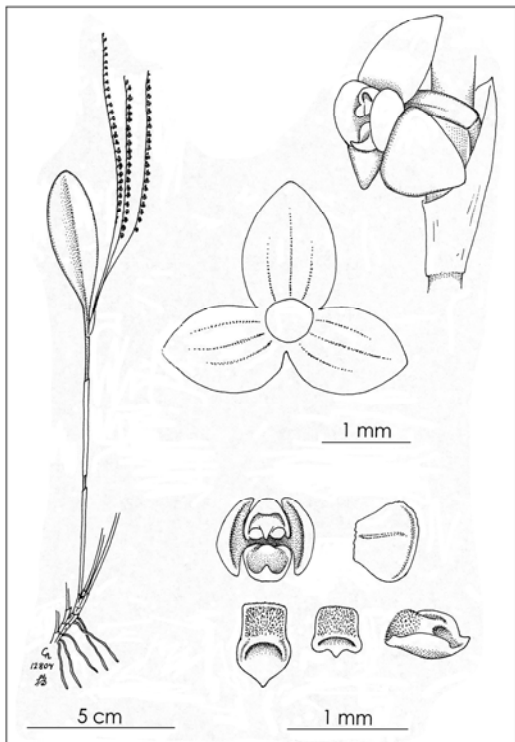


Fig. 59. *Stelis hylophila* Rchb.f.

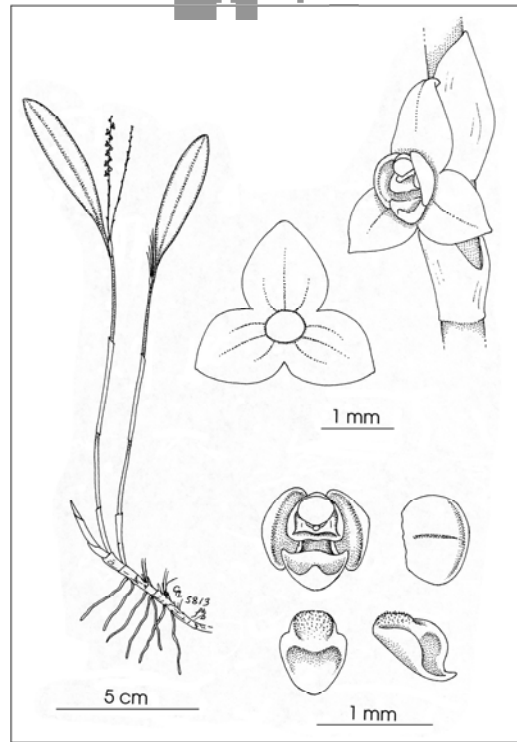


Fig. 60. *Stelis hylophila* Rchb.f.



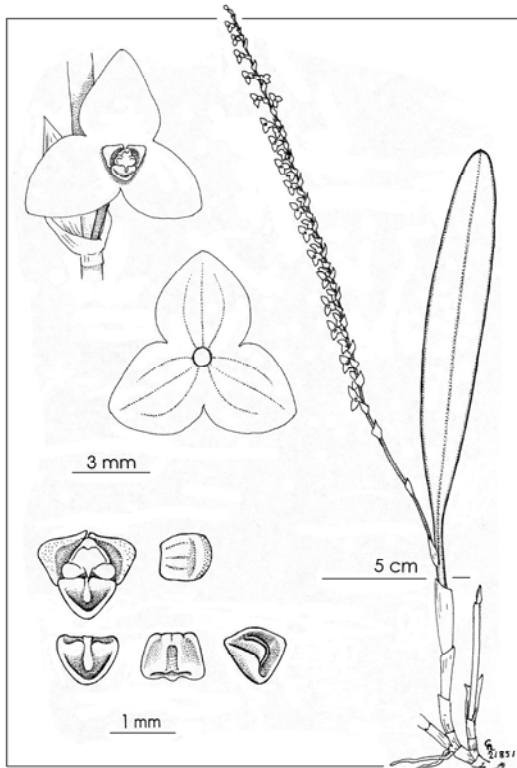


Fig. 61. *Stelis ibischiorum* Luer & R. Vásquez

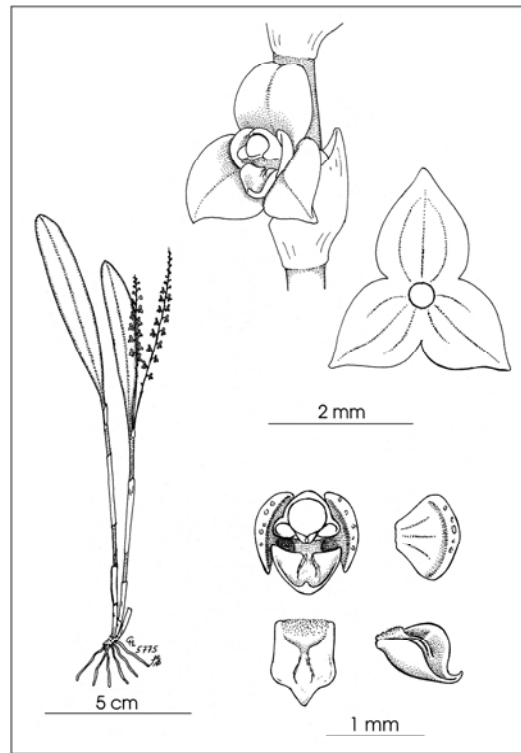


Fig. 62. *Stelis inquisiviënsis* Luer & R. Vásquez

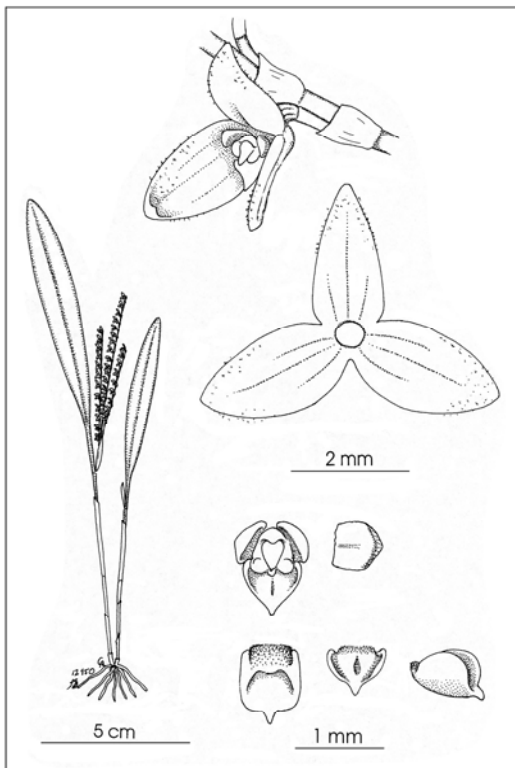


Fig. 63. *Stelis irrasa* Luer & R. Vásquez

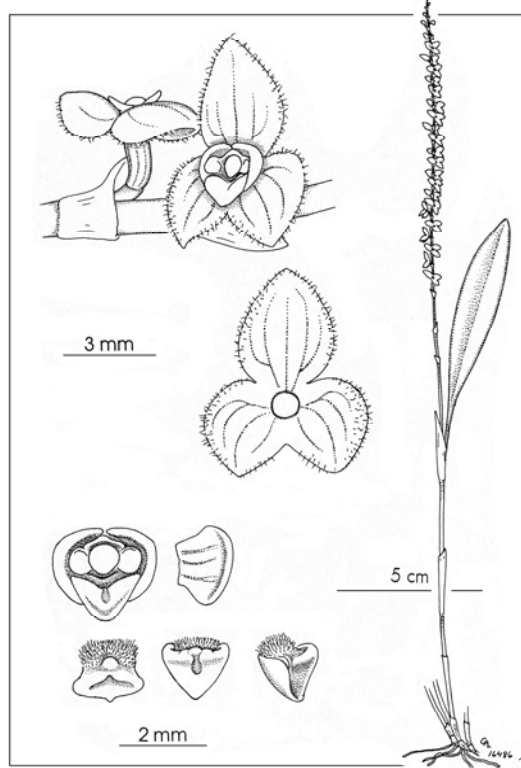


Fig. 64. *Stelis iwatsukae* Hashi.

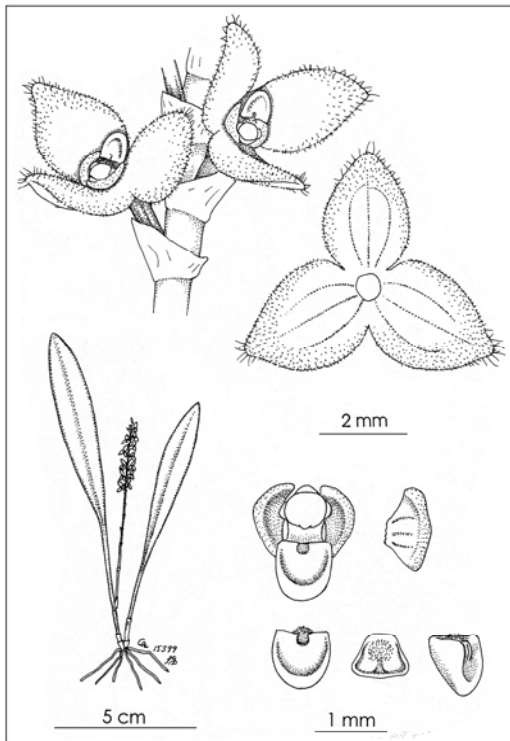


Fig. 65. *Stelis jubata* Luer & R. Vásquez

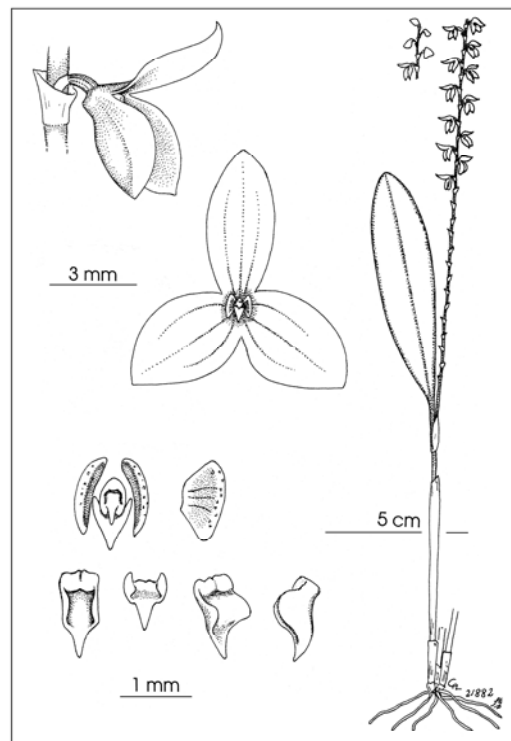


Fig. 66. *Stelis juninensis* Kraenzl.

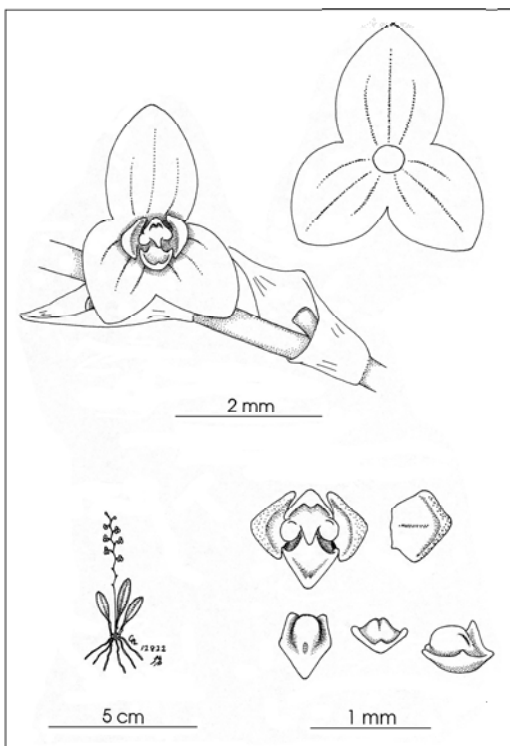


Fig. 67. *Stelis kilimanjaro* Luer & R. Vásquez

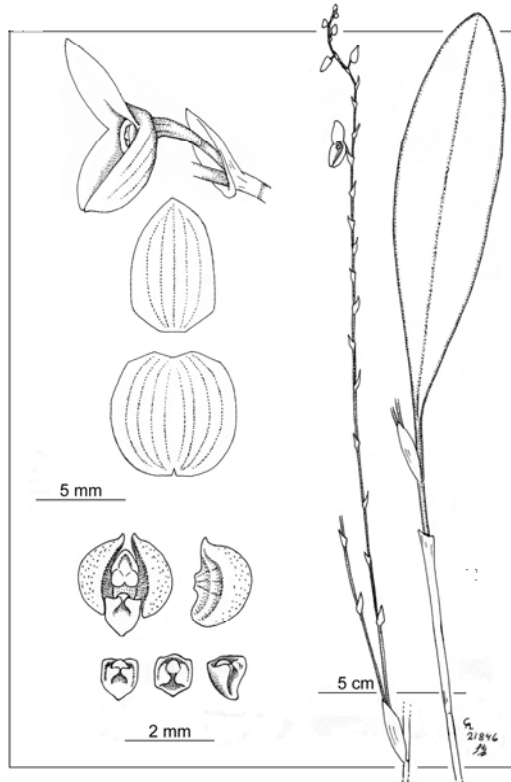


Fig. 68. *Stelis kroemeri* Luer

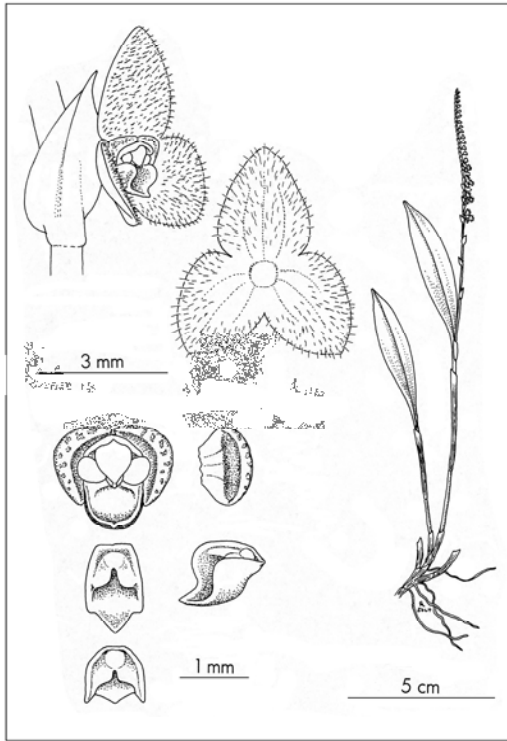


Fig. 69. *Stelis lanata* Lindl.

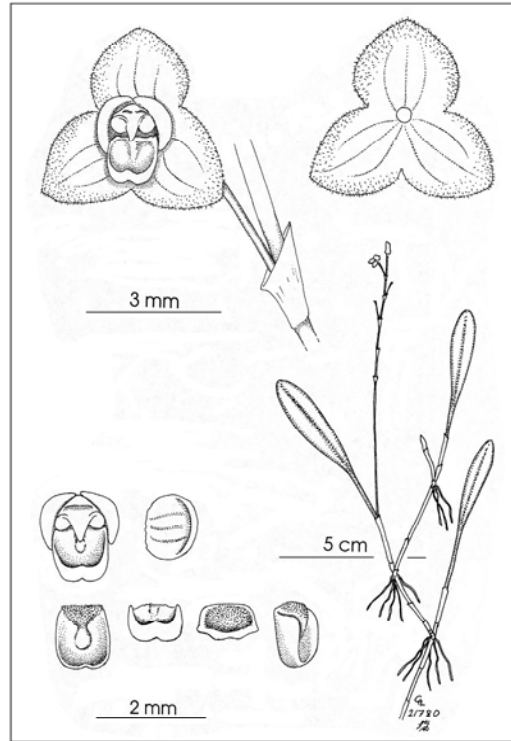


Fig. 70. *Stelis larsenii* Luer

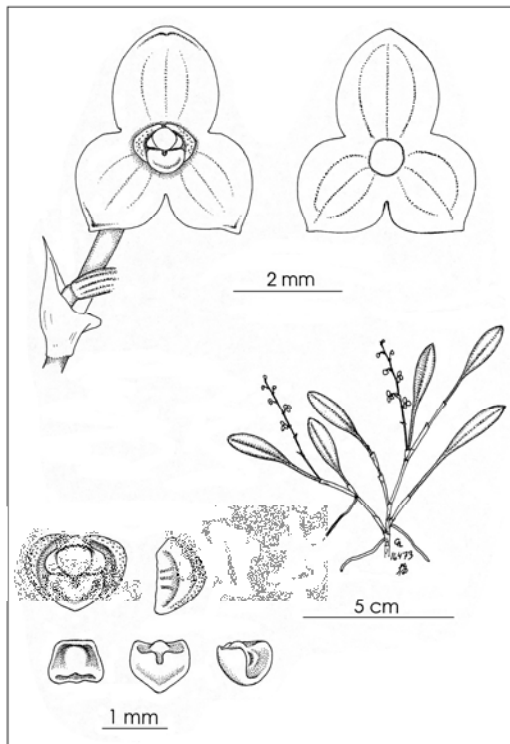


Fig. 71. *Stelis laxa* Schltr.

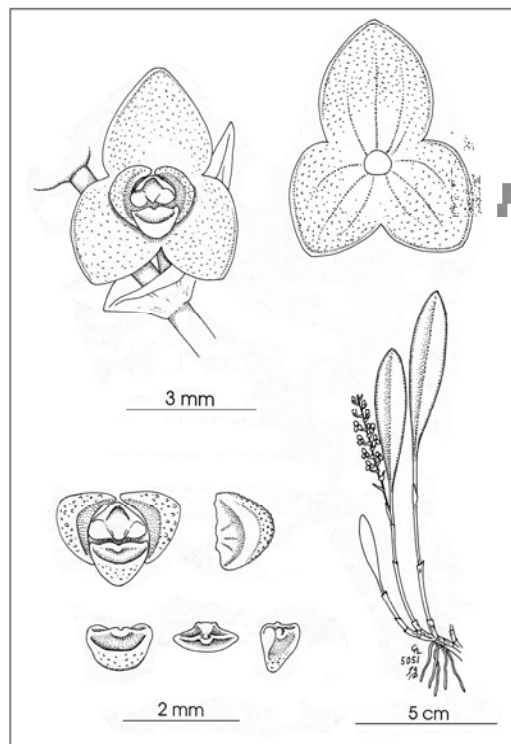


Fig. 72. *Stelis leptochila* Luer & R. Vázquez

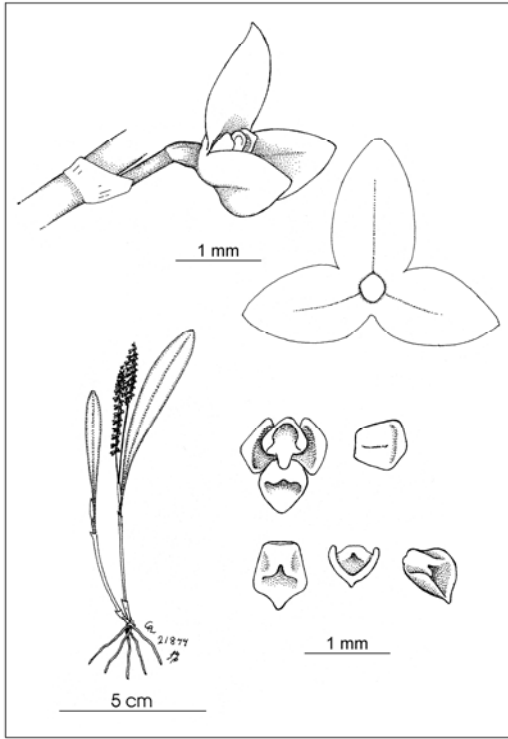


Fig. 73. *Stelis leucantha* Luer

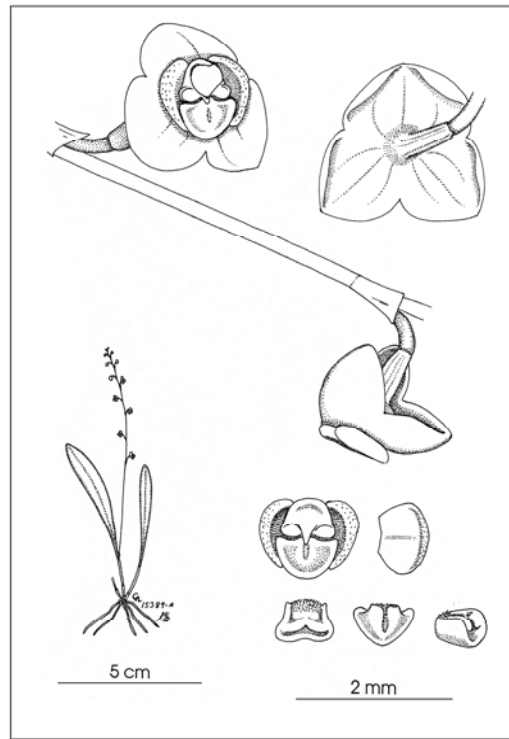


Fig. 74. *Stelis llipiënsis* Luer

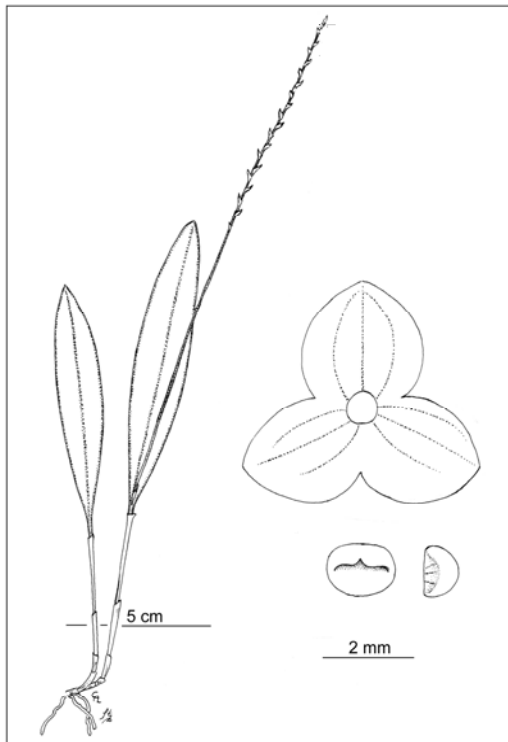


Fig. 75. *Stelis mandoniana* Schltr.

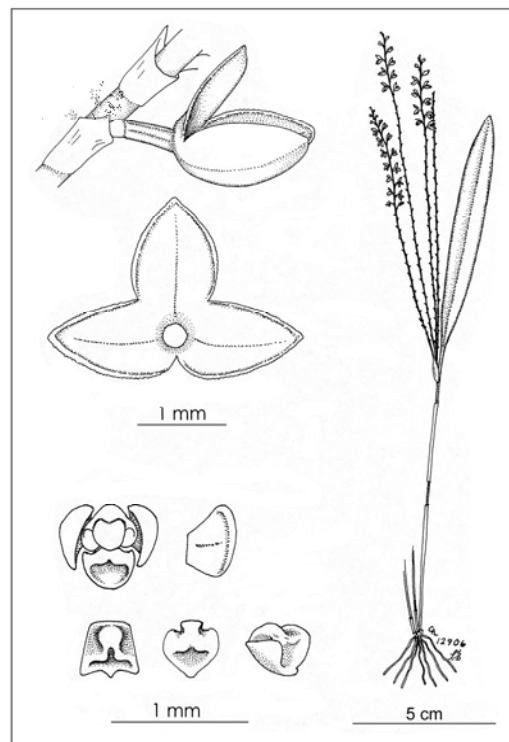


Fig. 76. *Stelis marginata* Luer & R. Vásquez

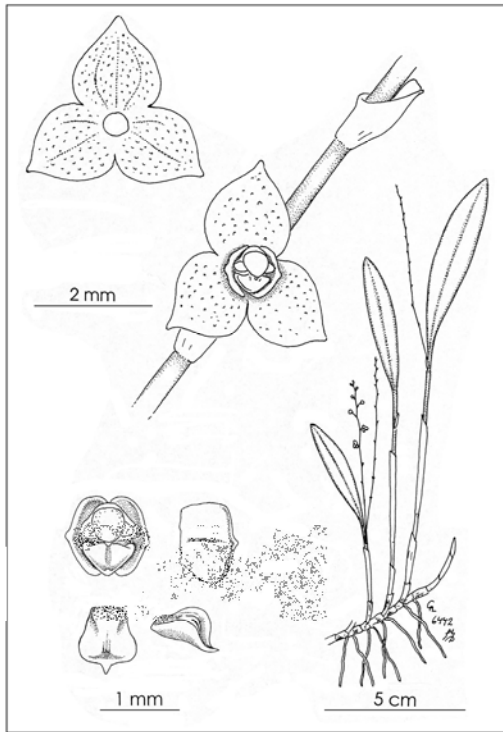


Fig. 77. *Stelis micklowii* Luer

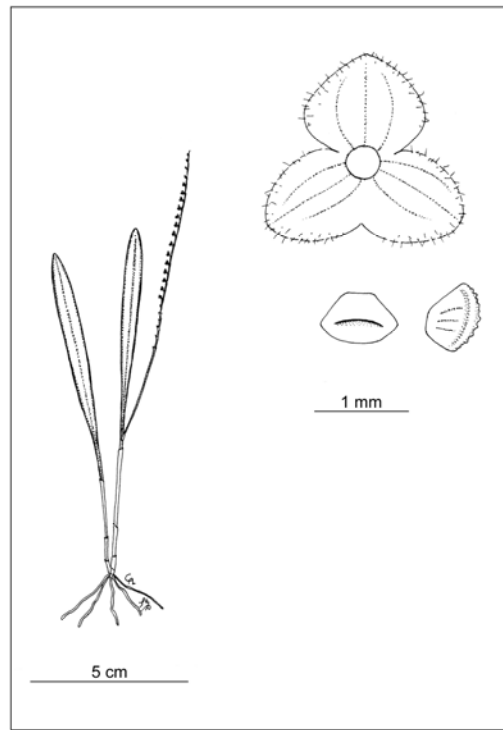


Fig. 78. *Stelis microtatantha* Schltr.

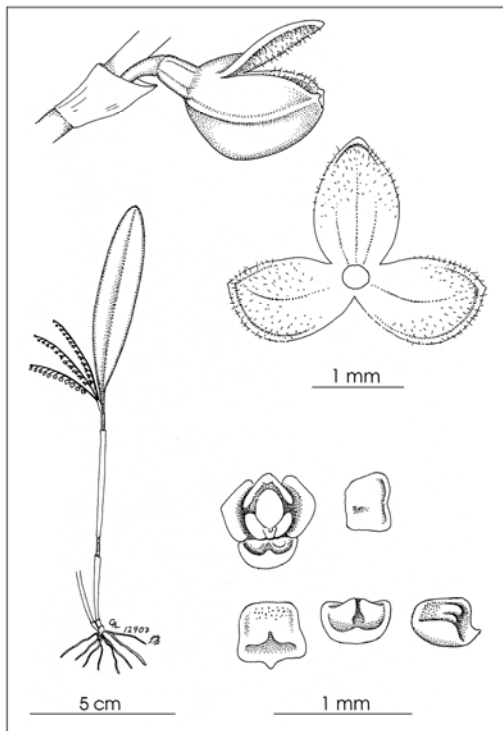


Fig. 79. *Stelis minuscula* Luer & R. Vásquez

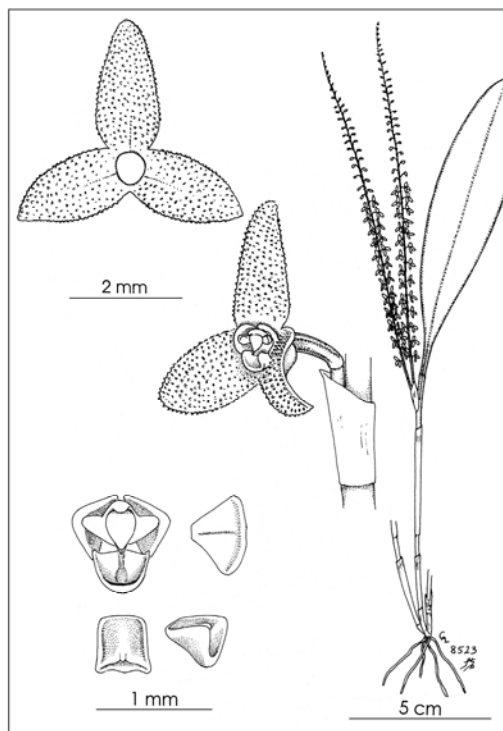


Fig. 80. *Stelis morenoi* Luer & R. Vásquez

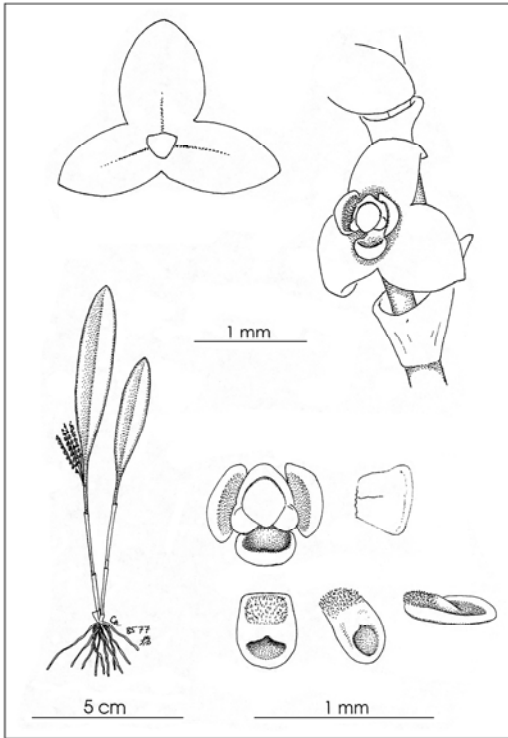


Fig. 81. *Stelis naniflora* Luer & R. Vázquez

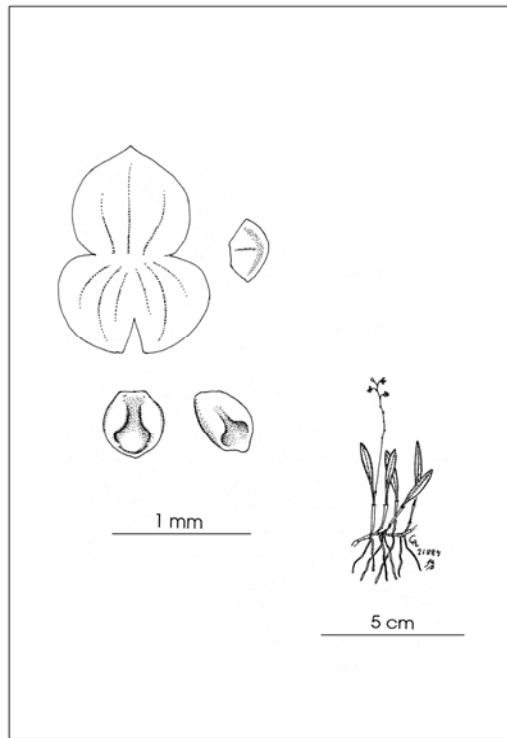


Fig. 82. *Stelis naviculigera* Schltr.

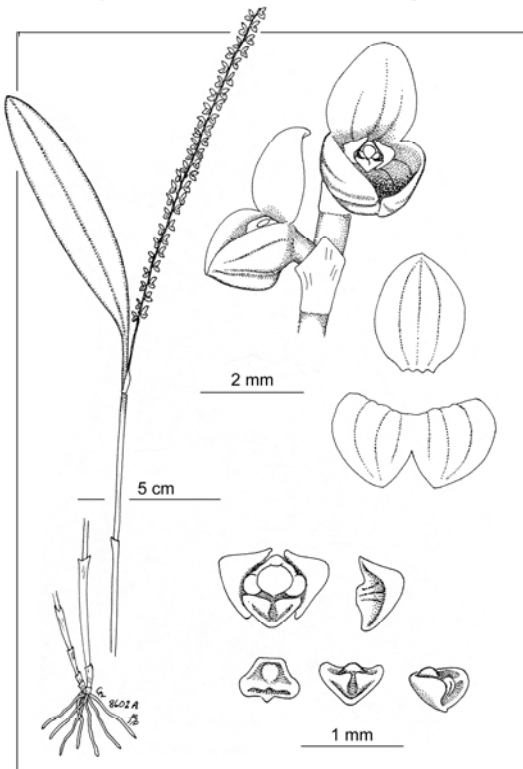


Fig. 83. *Stelis nutans* Lindl.

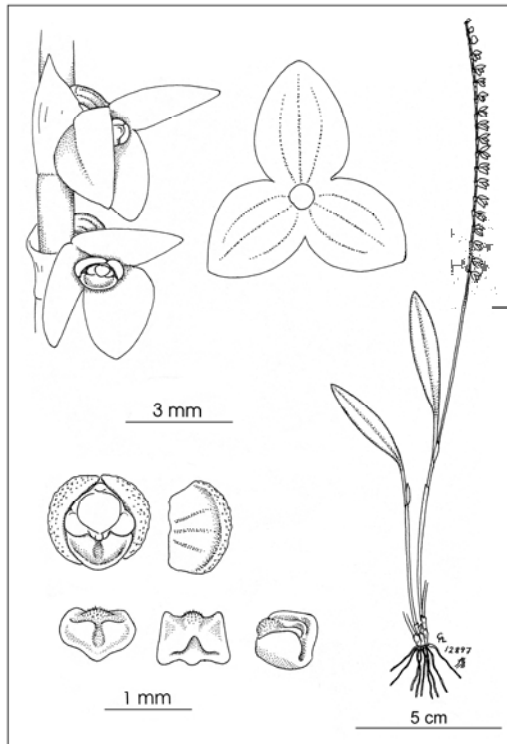


Fig. 84. *Stelis nutationis* Luer & R. Vázquez

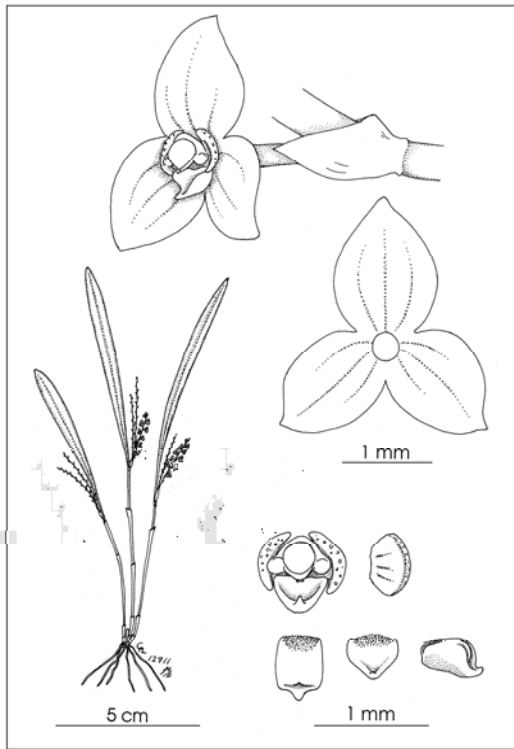


Fig. 85. *Stelis oligobotrya* Luer & R. Vásquez

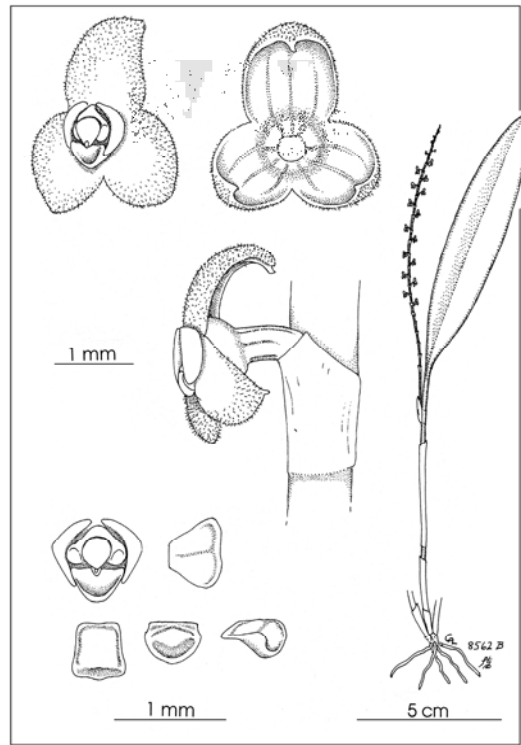


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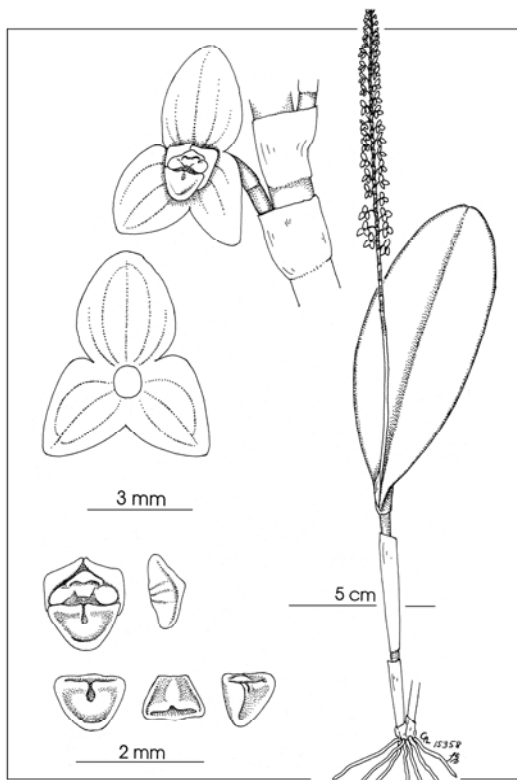


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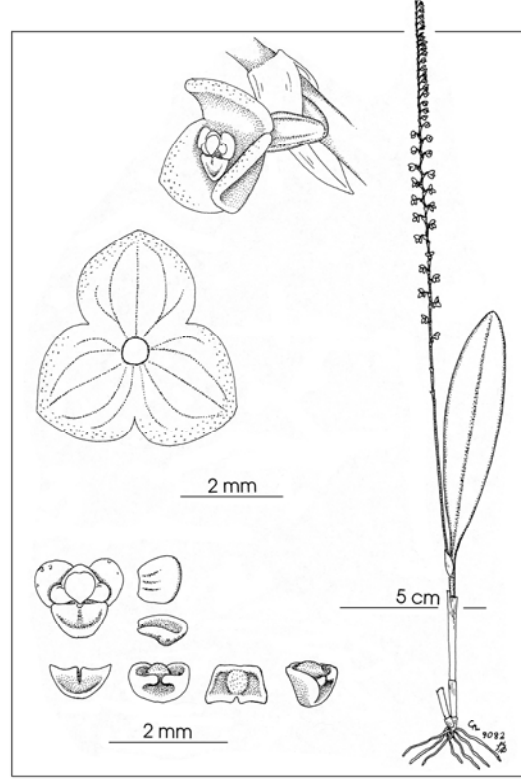


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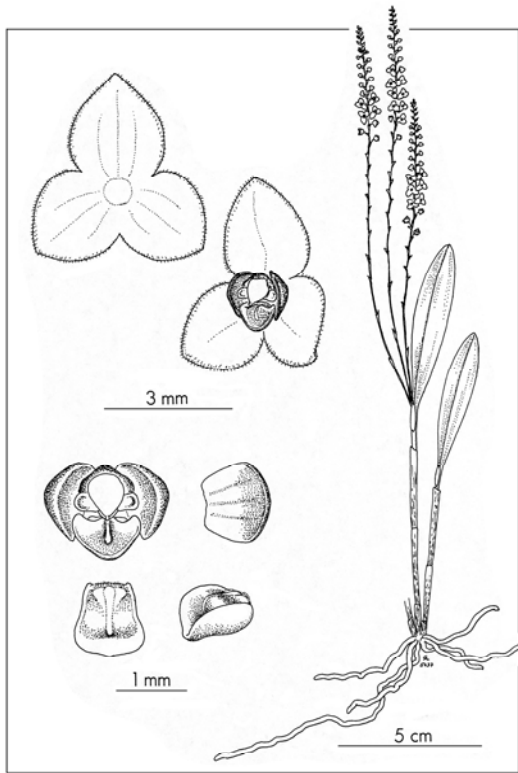


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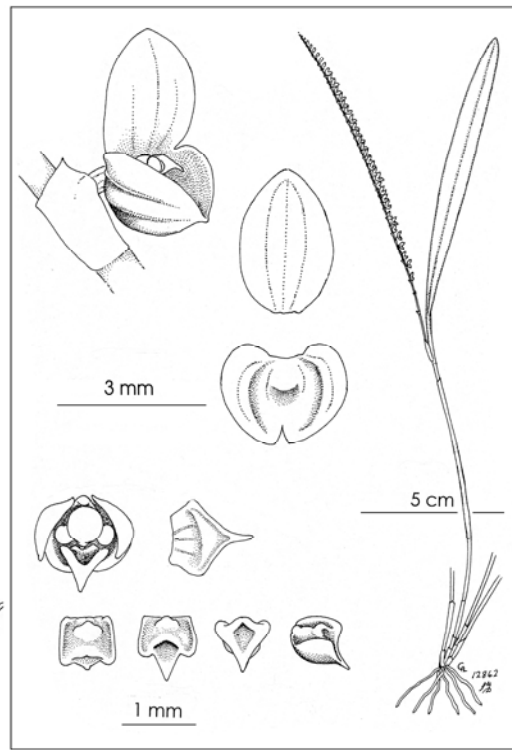


Fig. 90. *Stelis pardipes* Rchb.f.

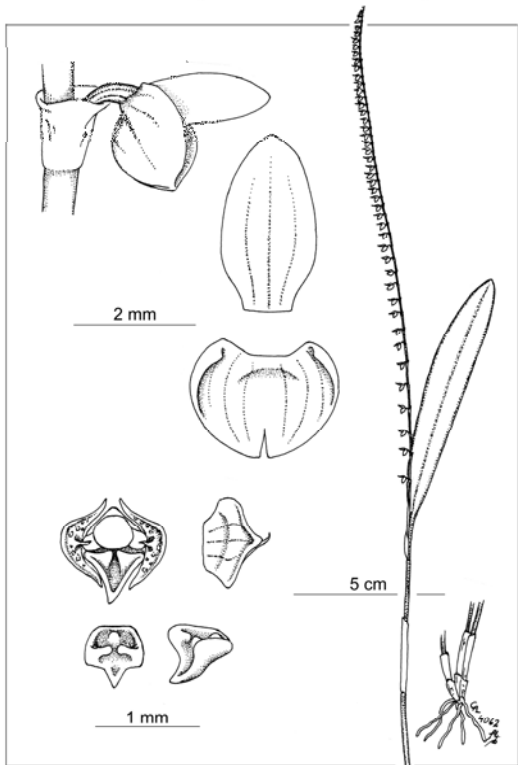


Fig. 91. *Stelis pardipes* Rchb.f.

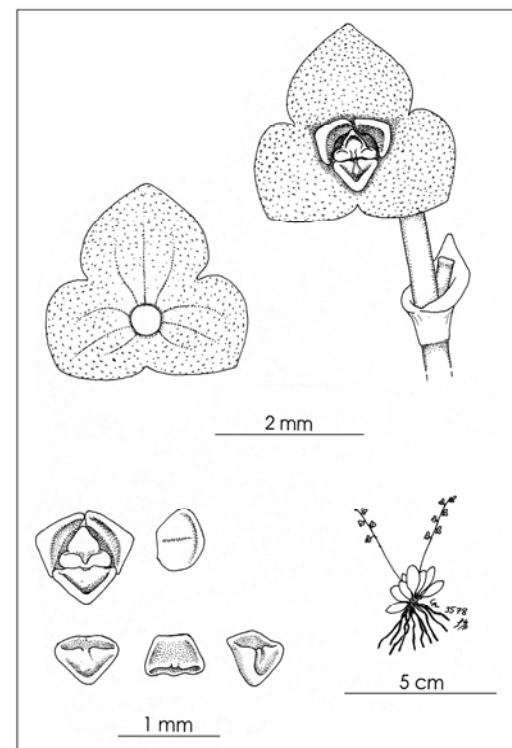


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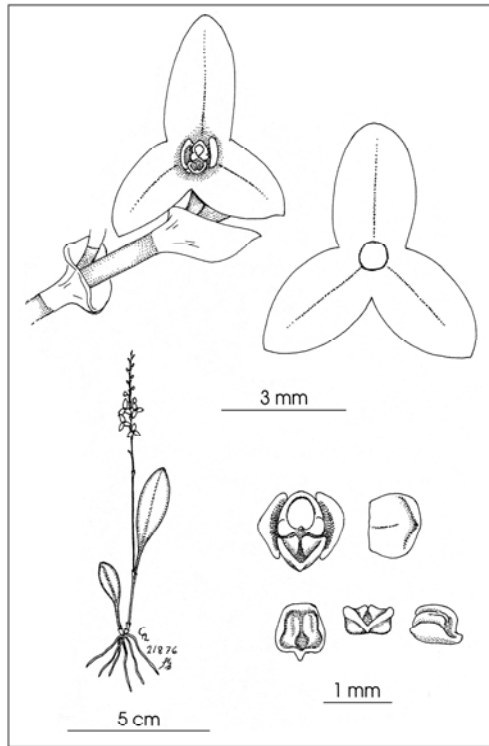


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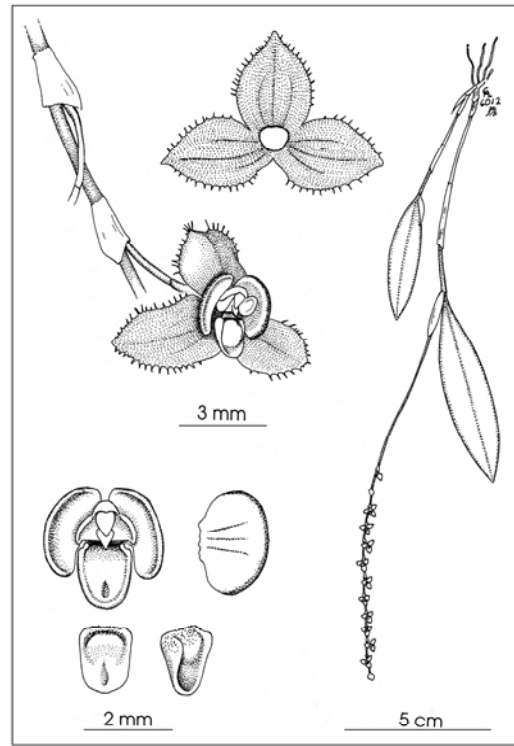


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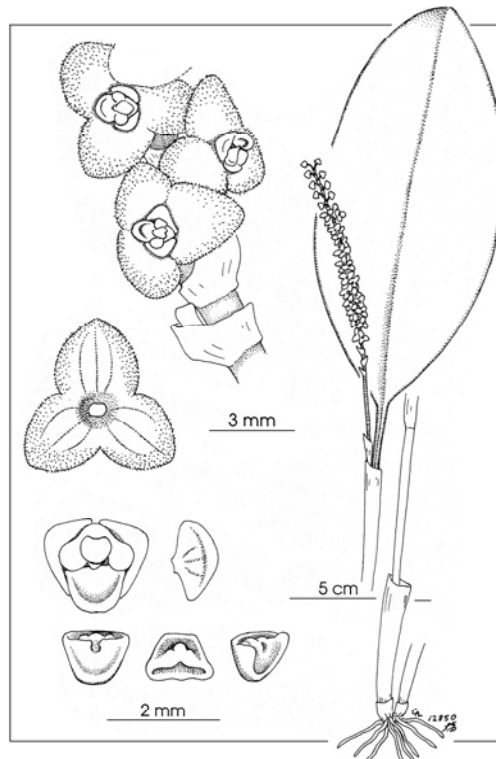


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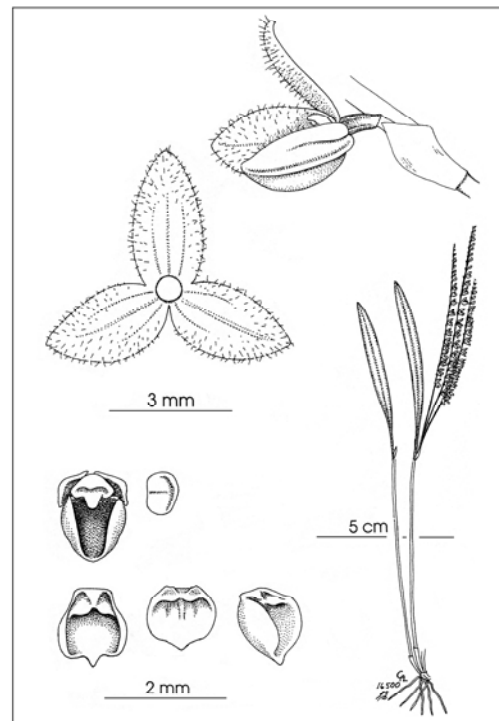


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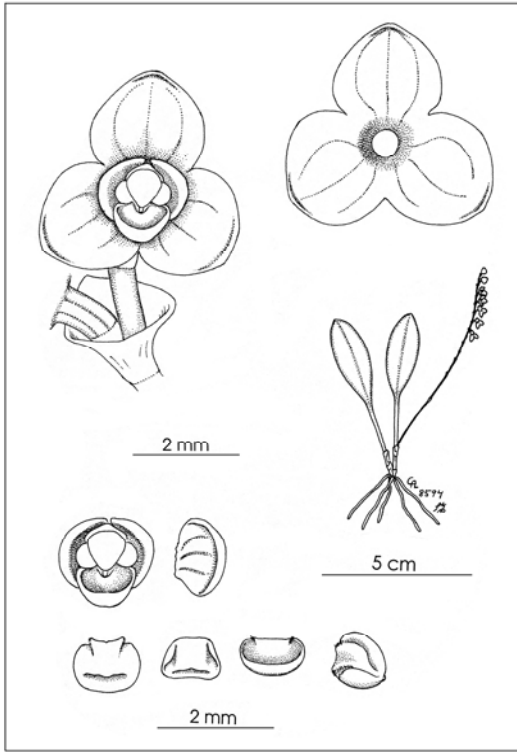


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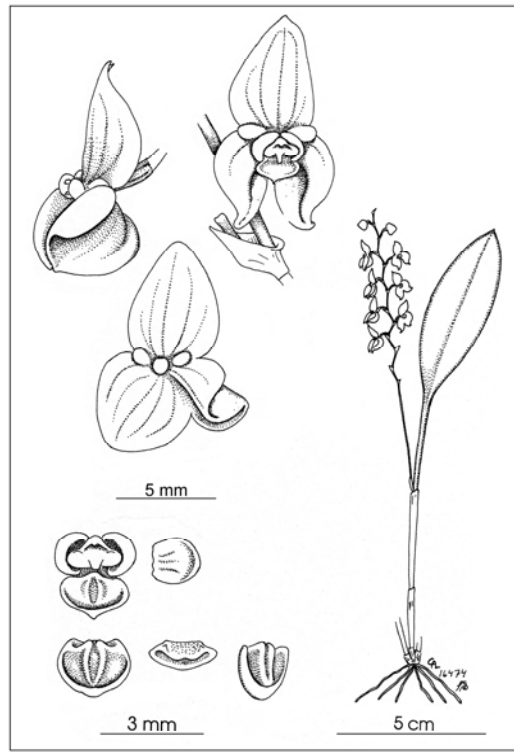


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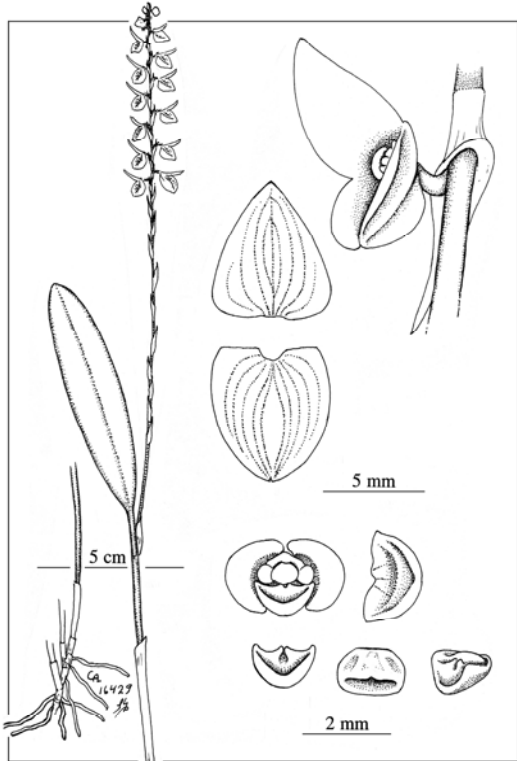


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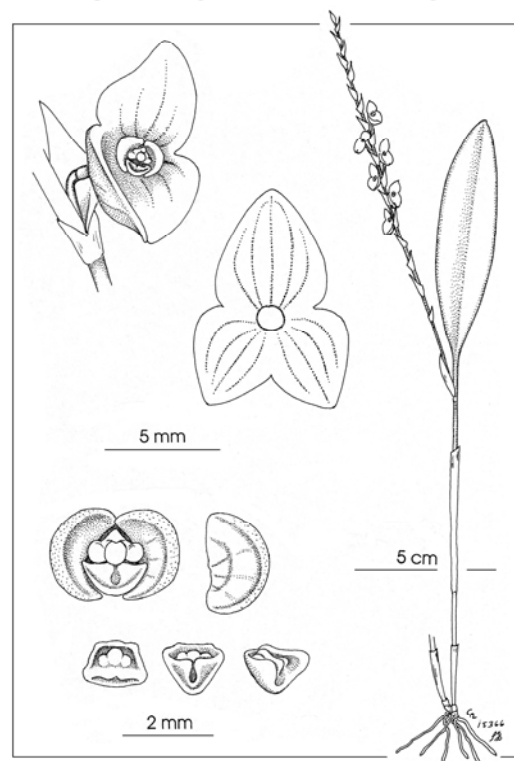


Fig. 100. *Stelis purpurea* (Ruiz & Pav.) Willd.

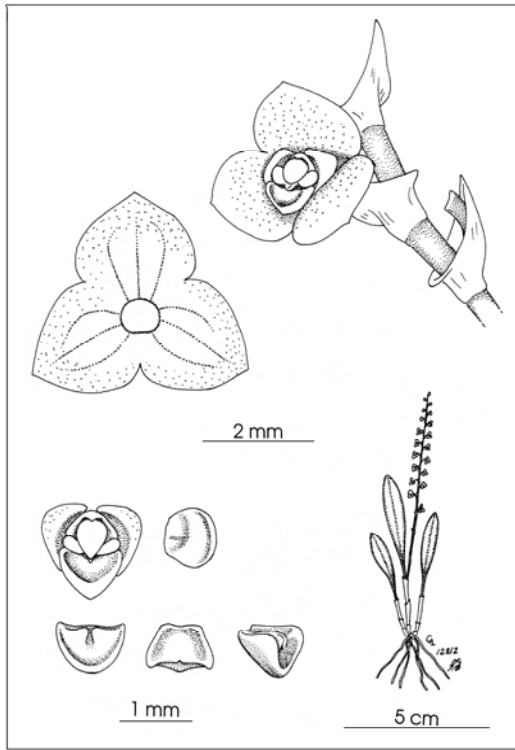


Fig. 101. *Stelis purpurina* Luer & R. Vásquez

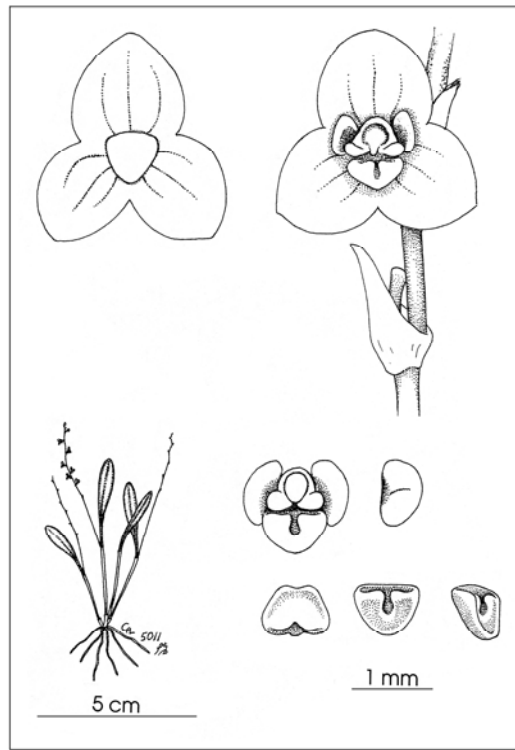


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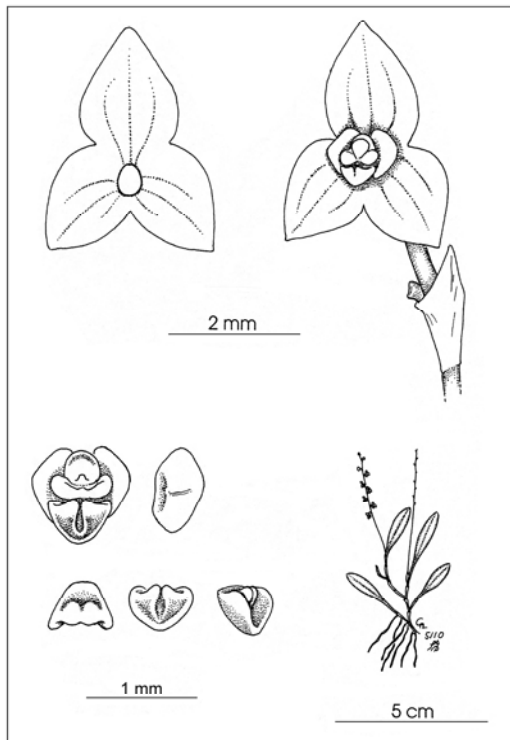


Fig. 103. *Stelis pusilla* Kunth

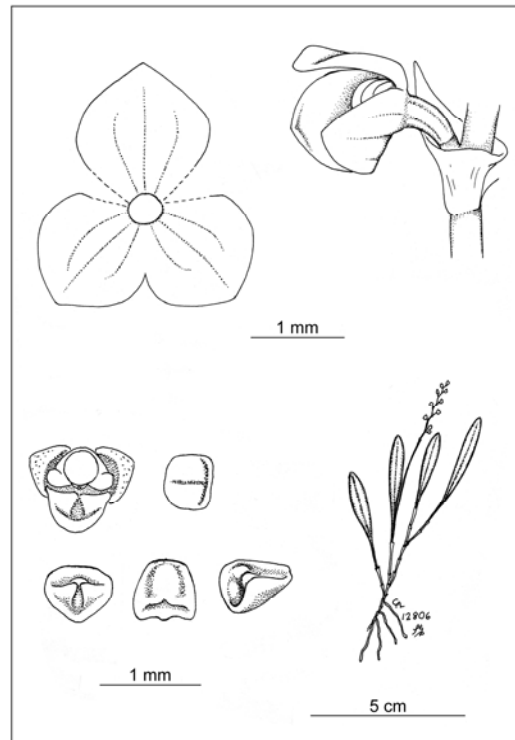


Fig. 104. *Stelis pusilla* Kunth

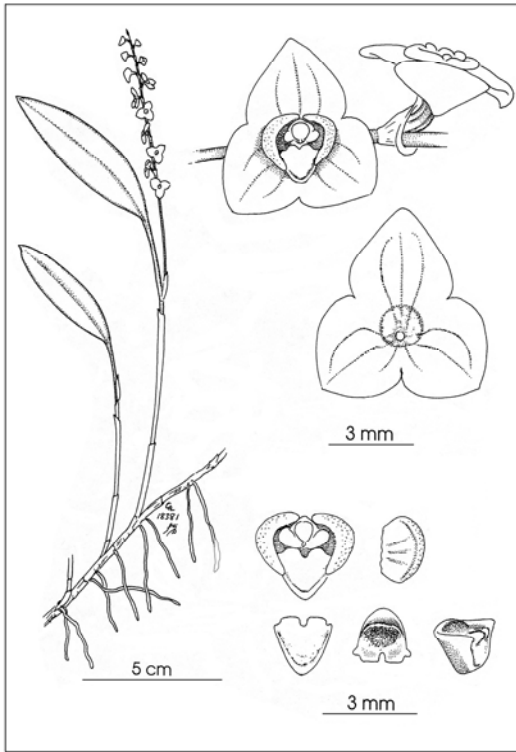


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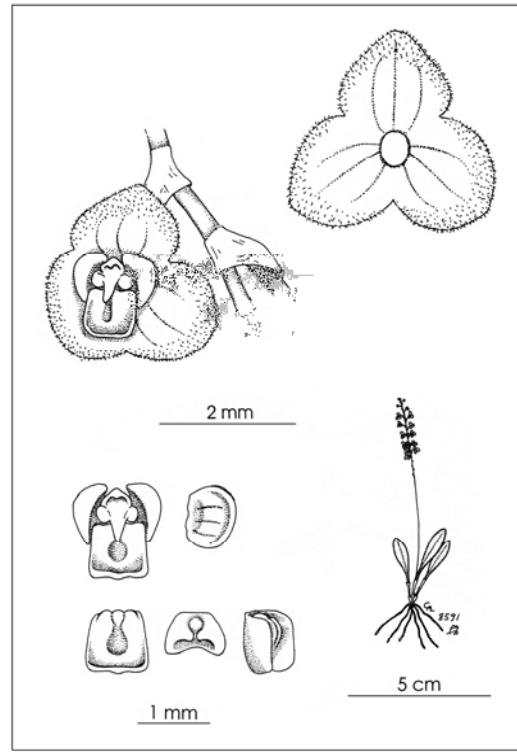


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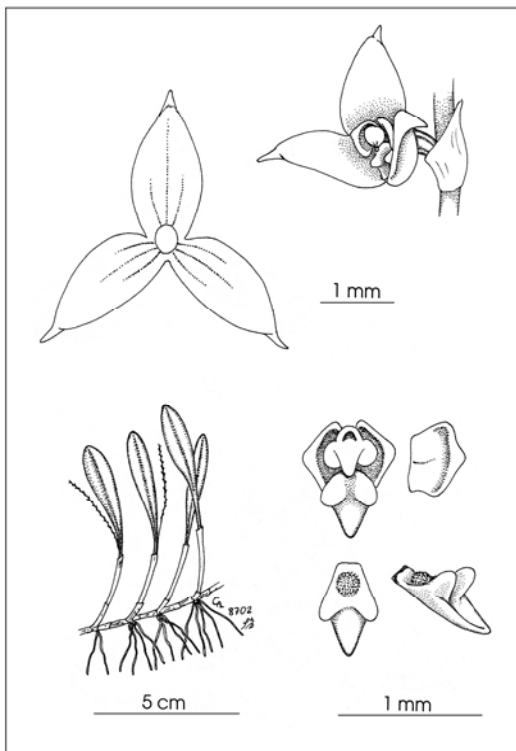


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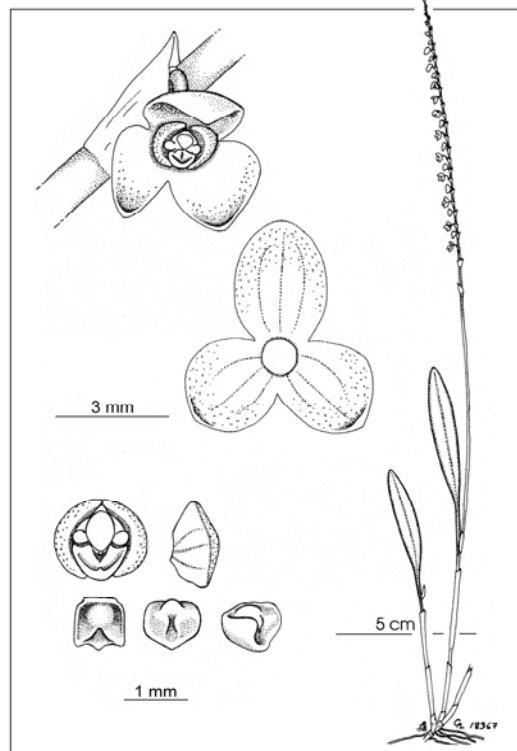


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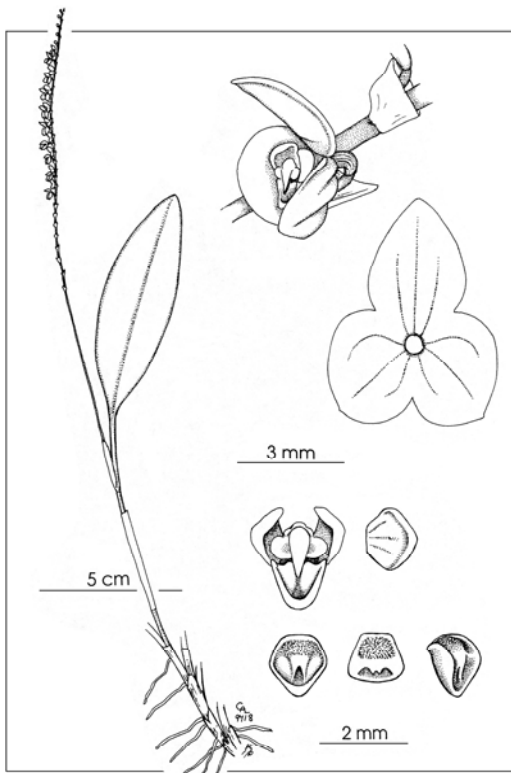


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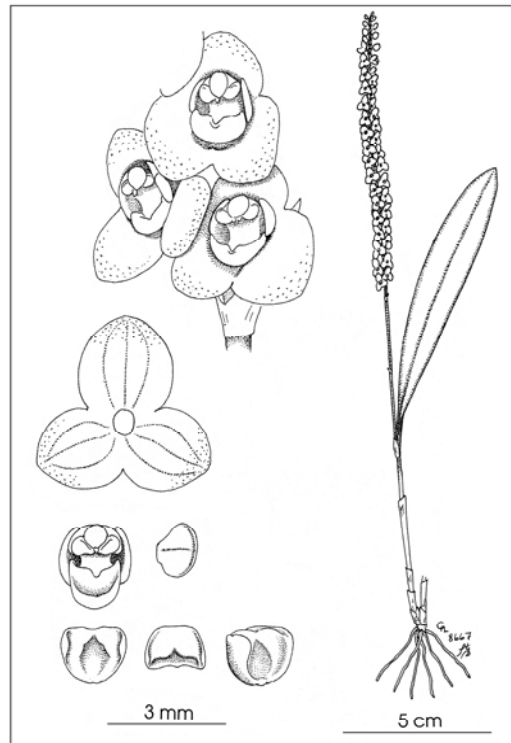


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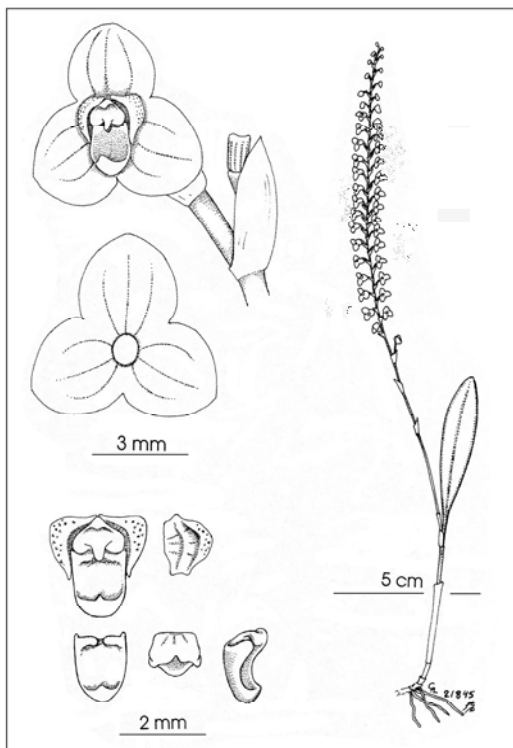


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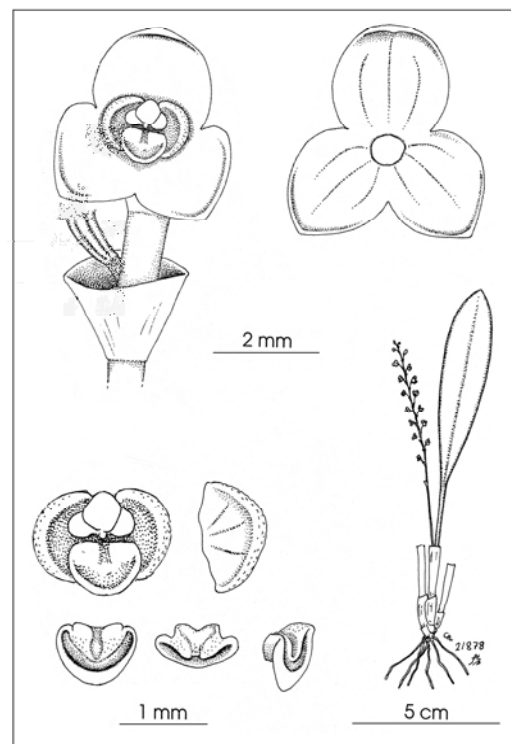


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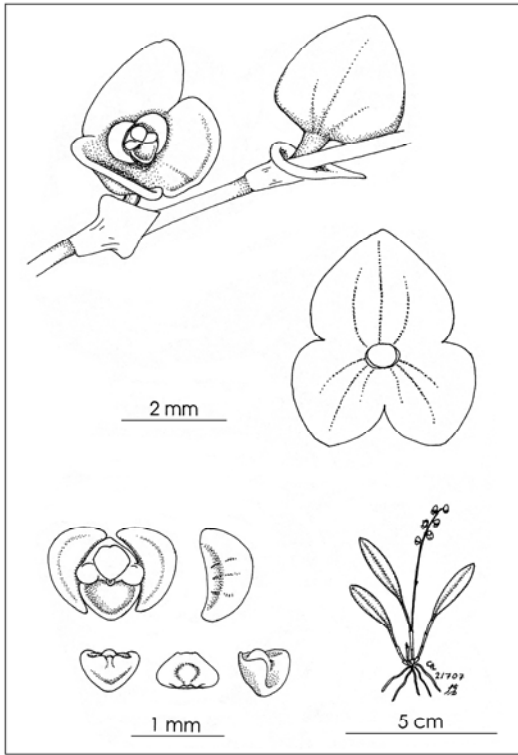


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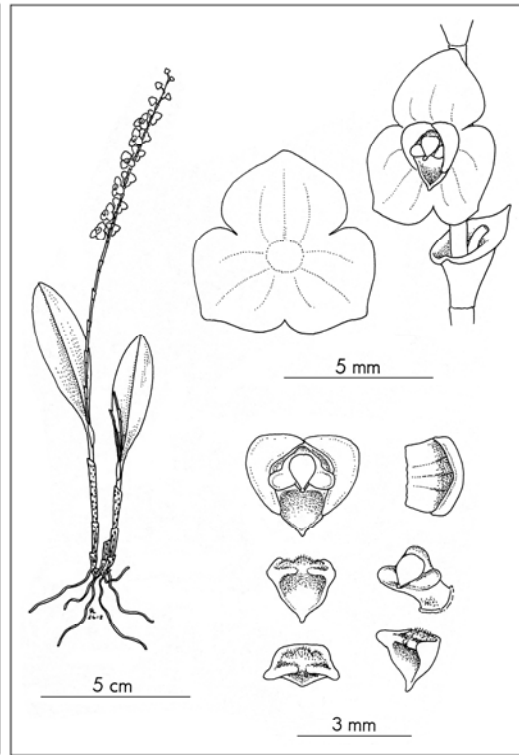


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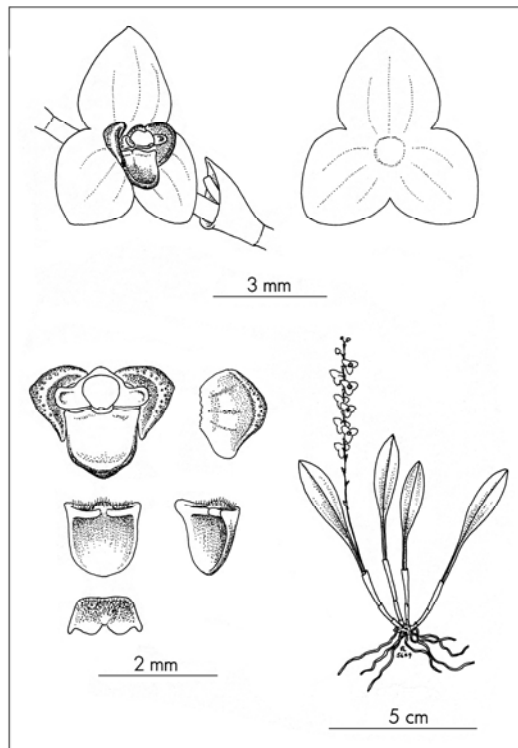


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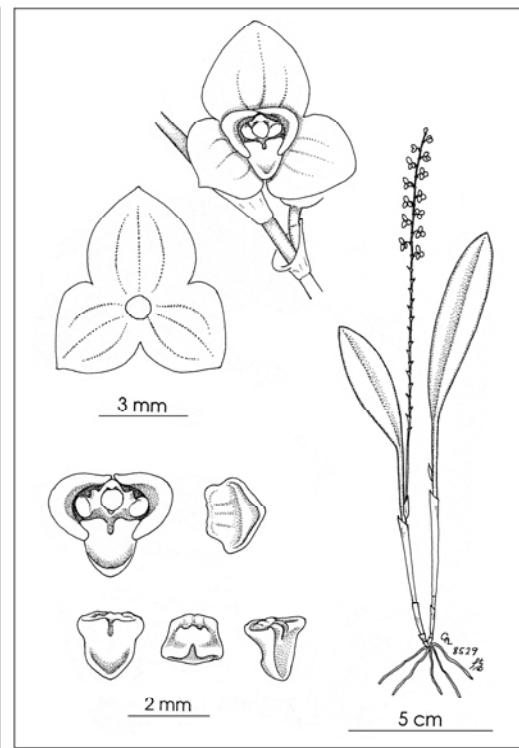


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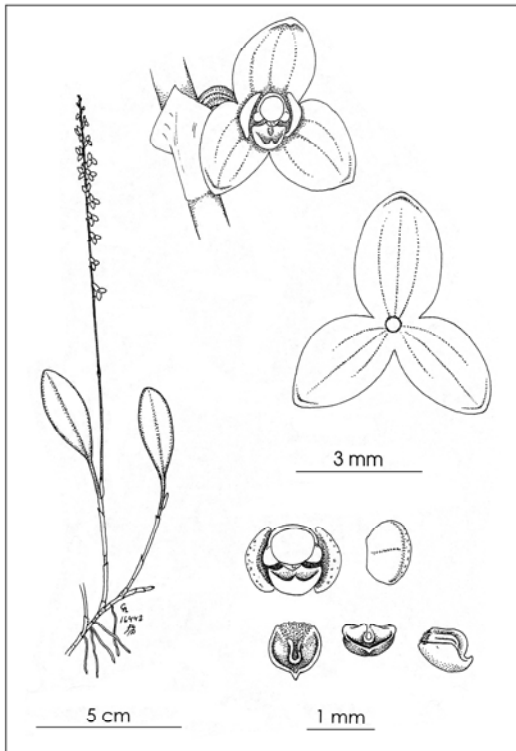


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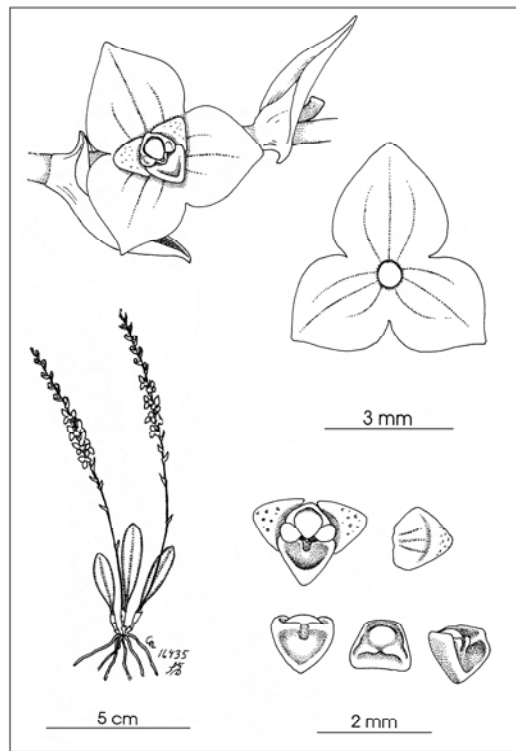


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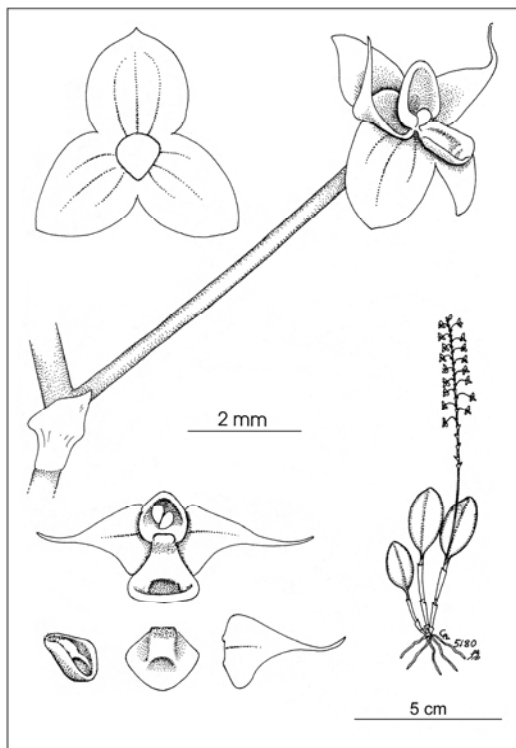


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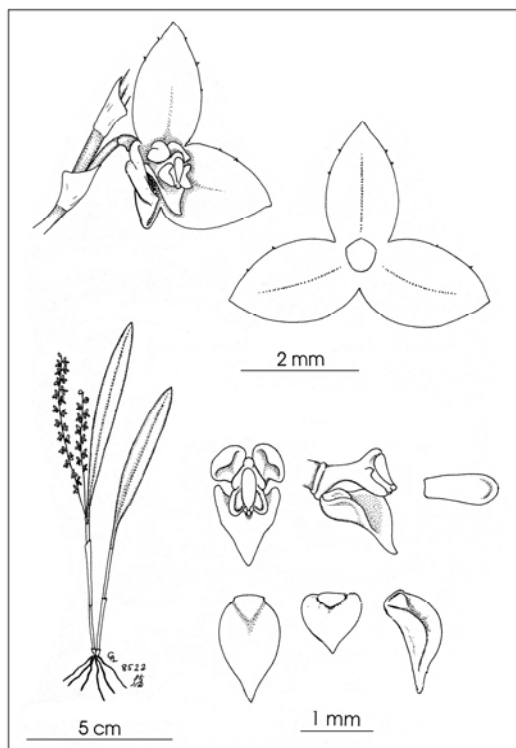


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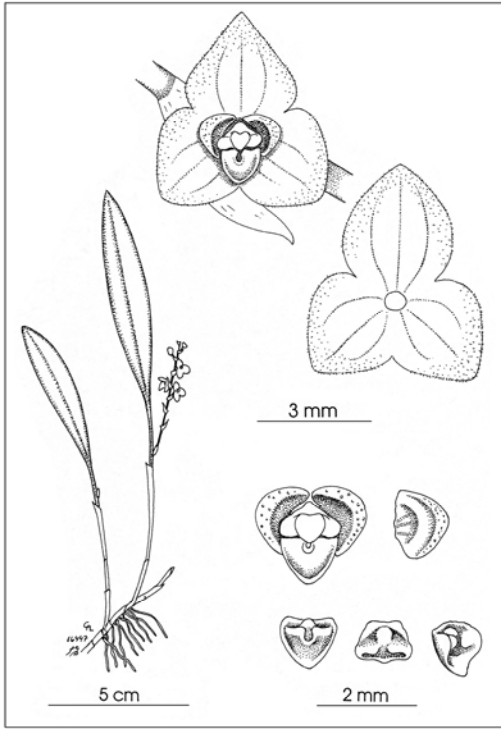


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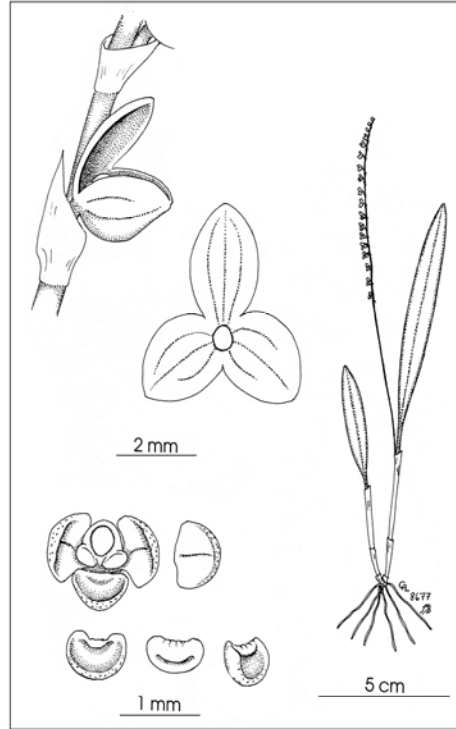


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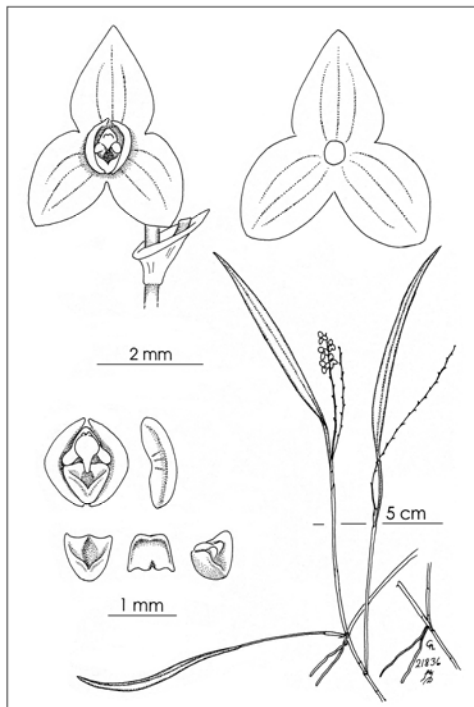


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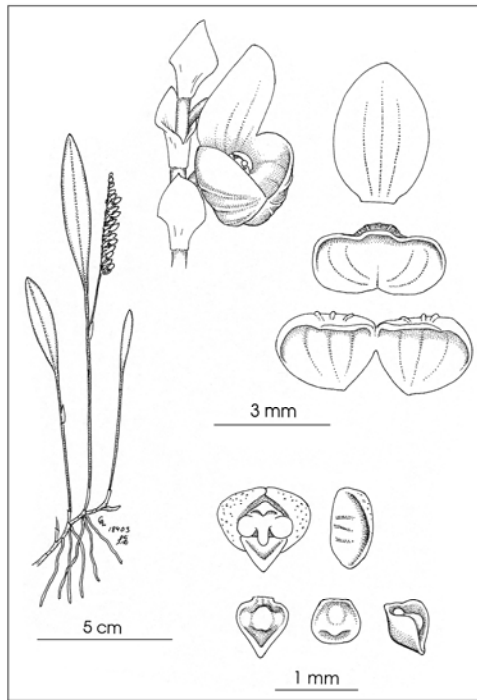


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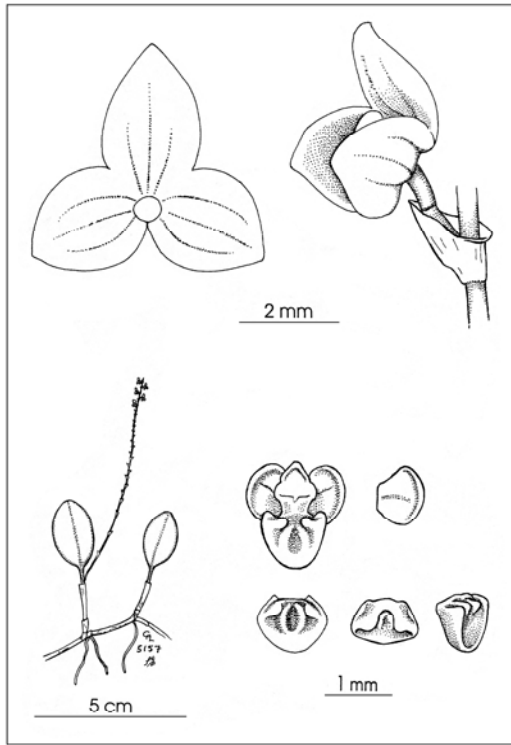


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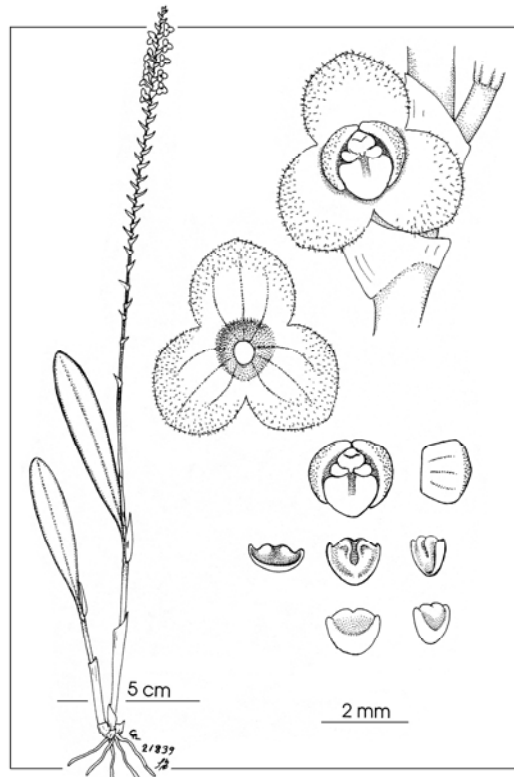


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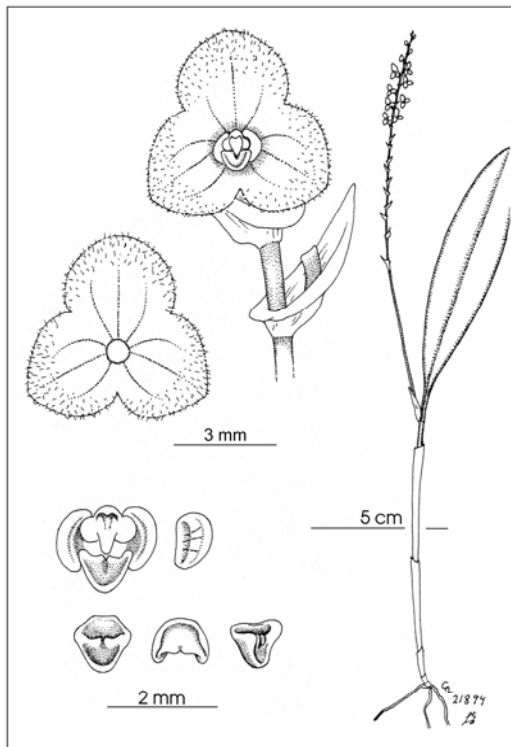


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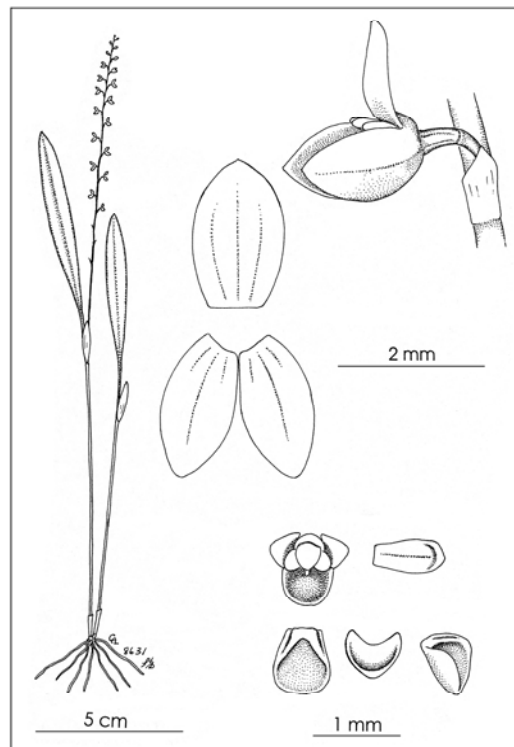


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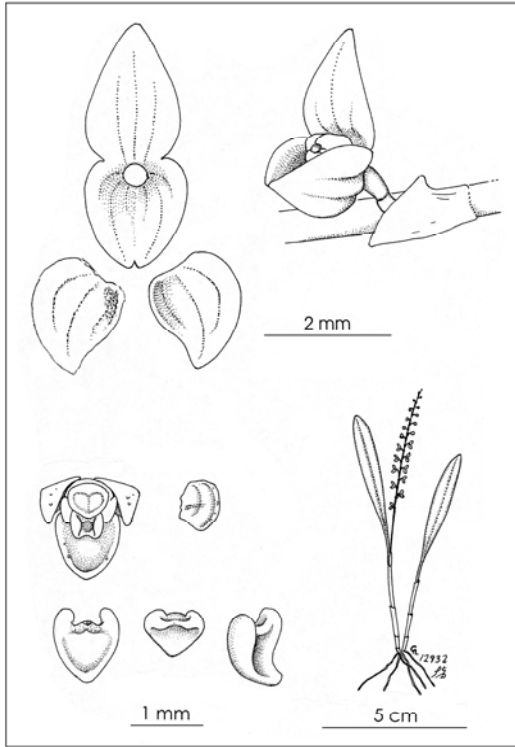


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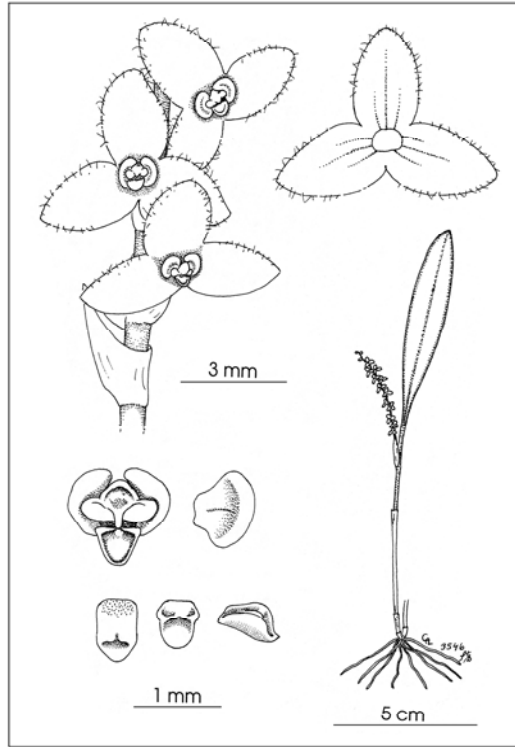


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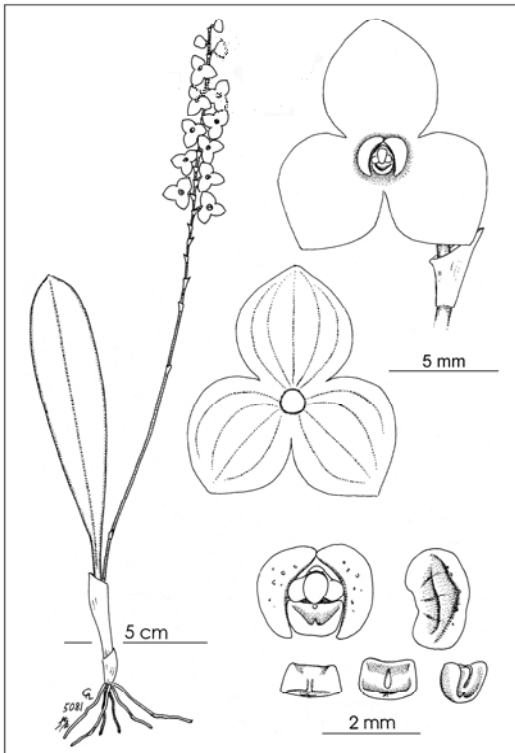


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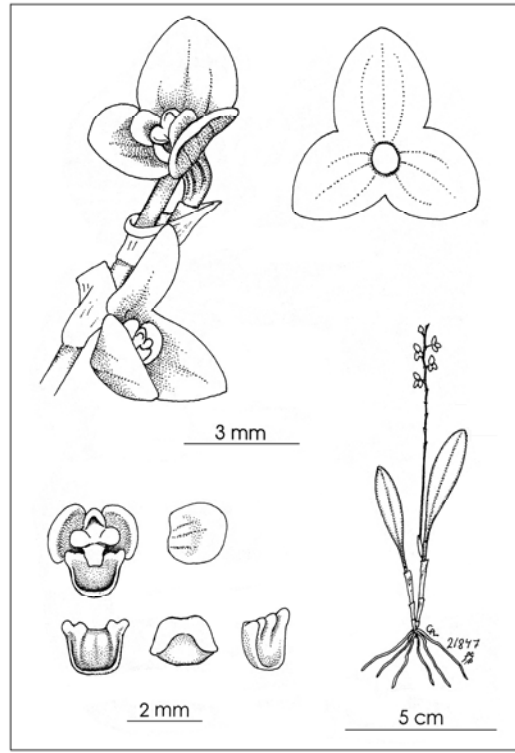


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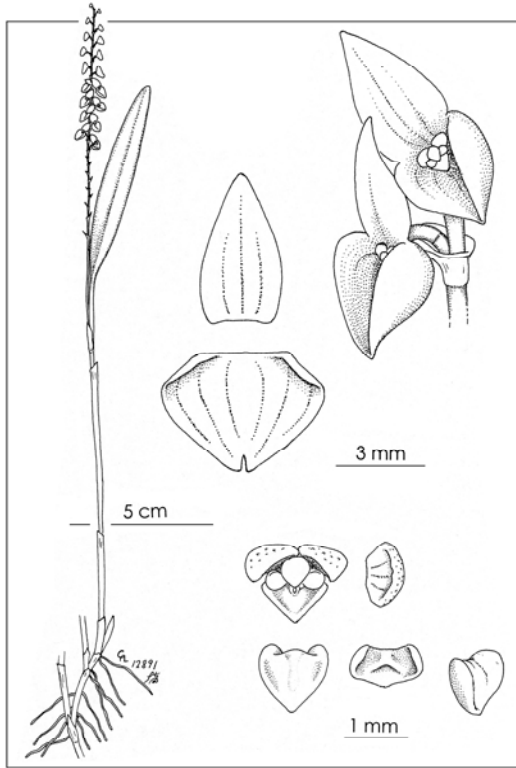


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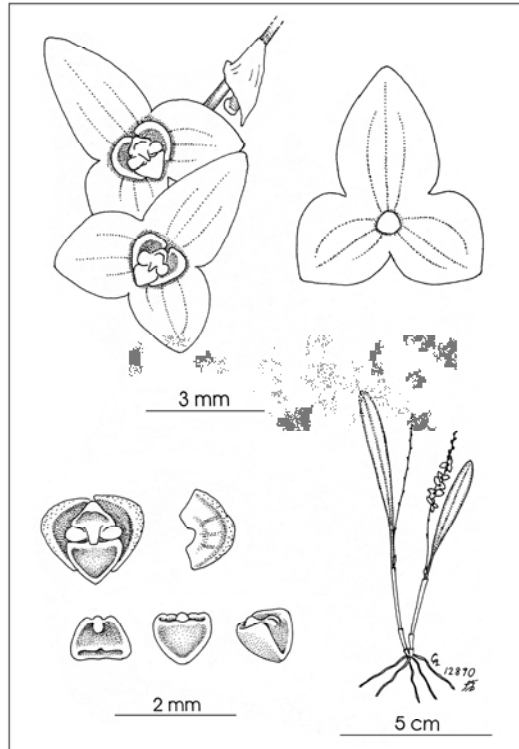


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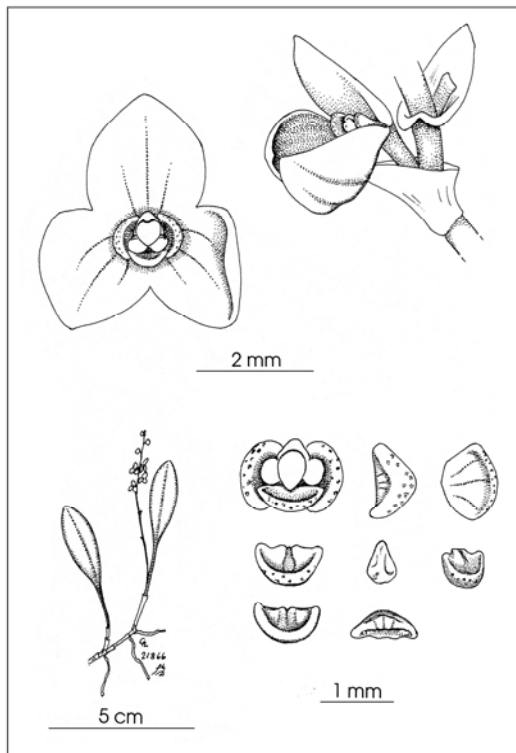


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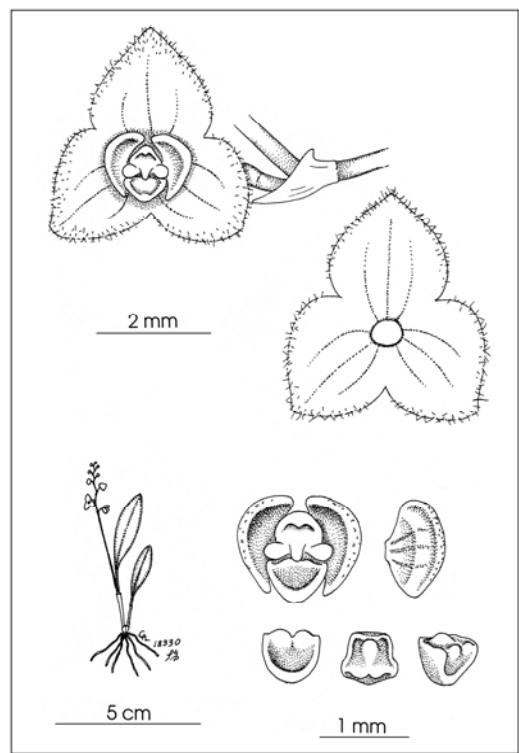


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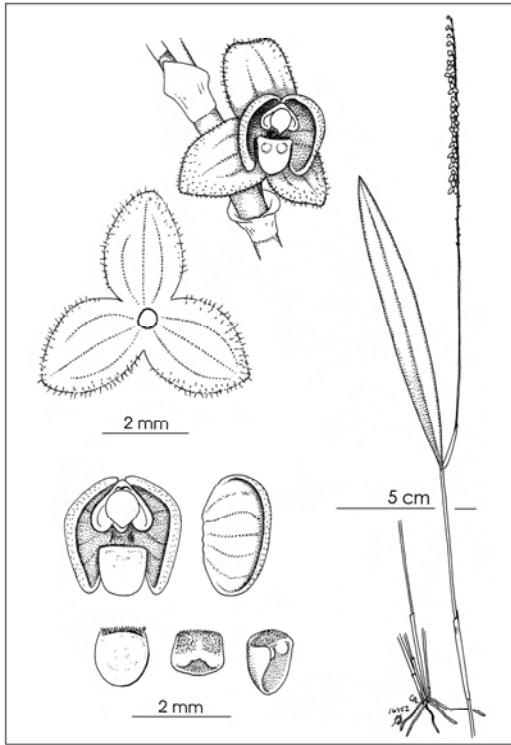


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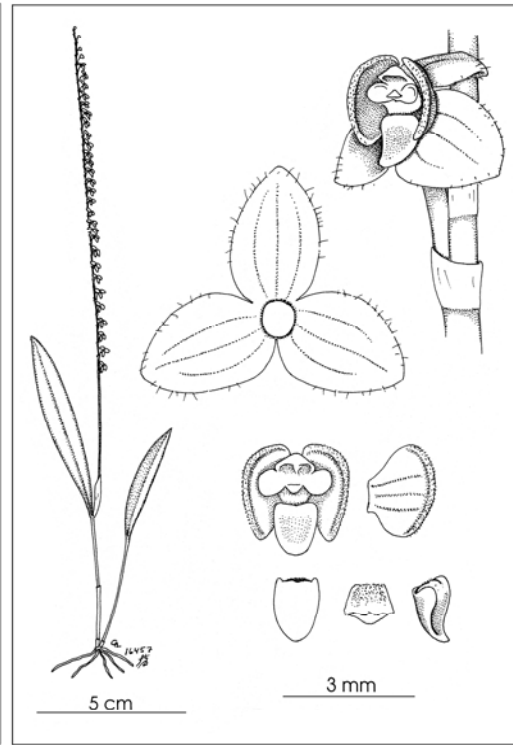


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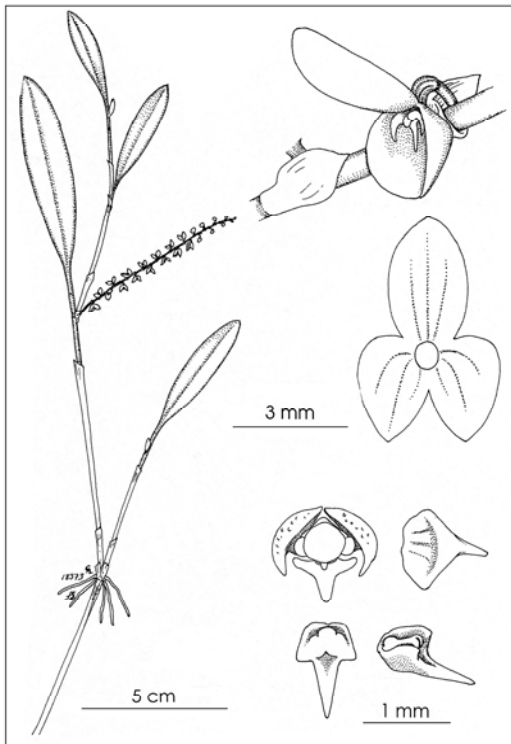


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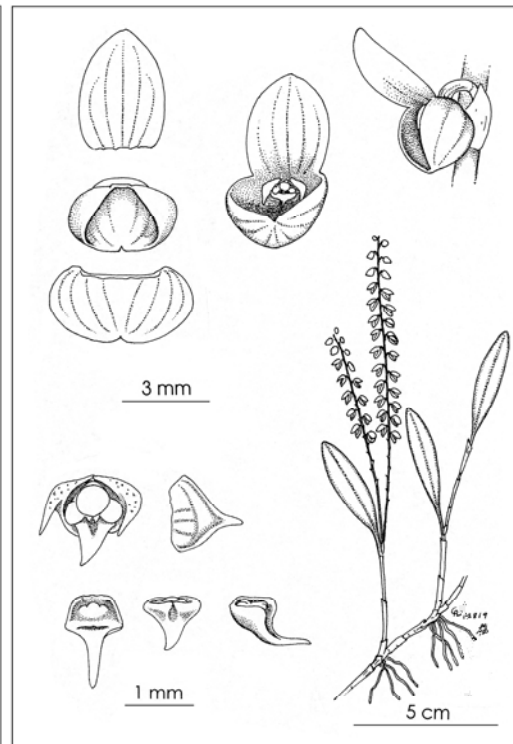


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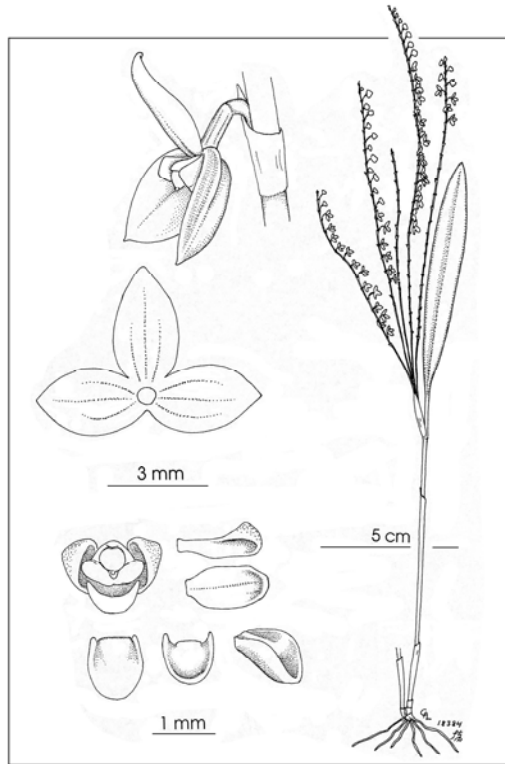


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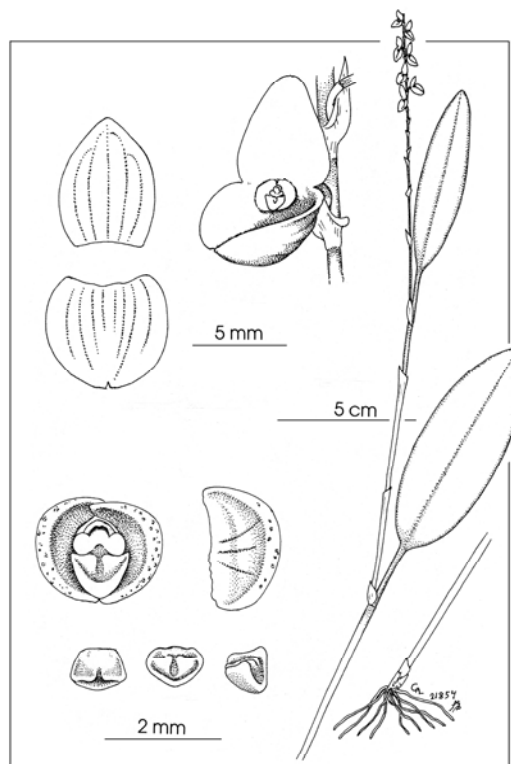


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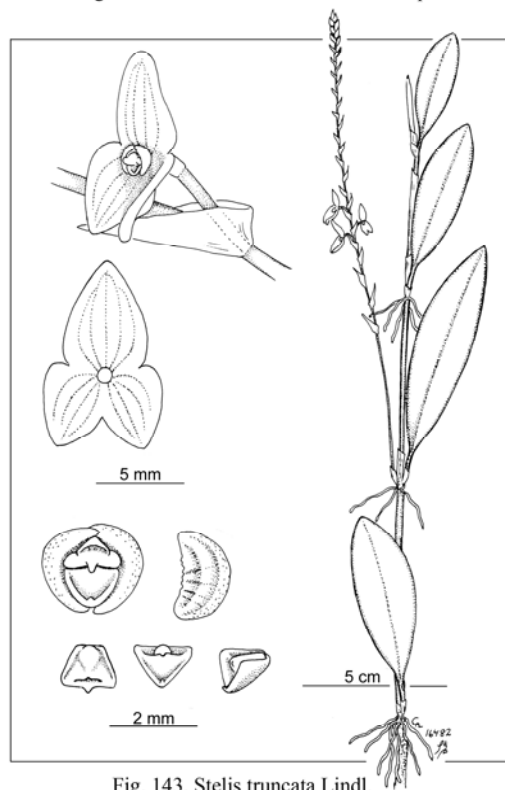


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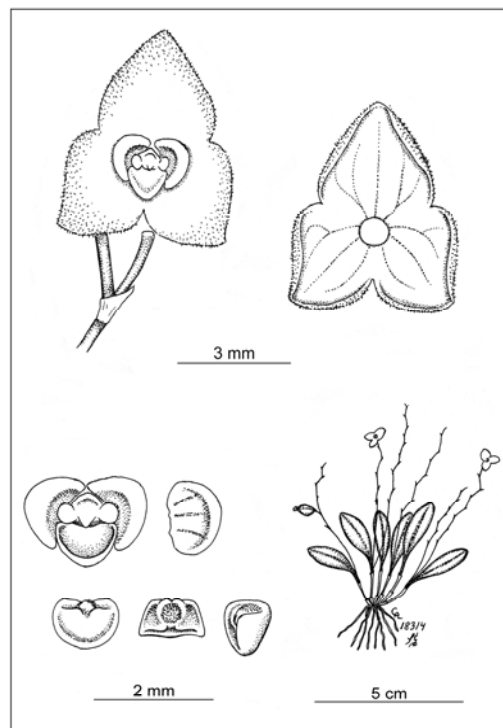


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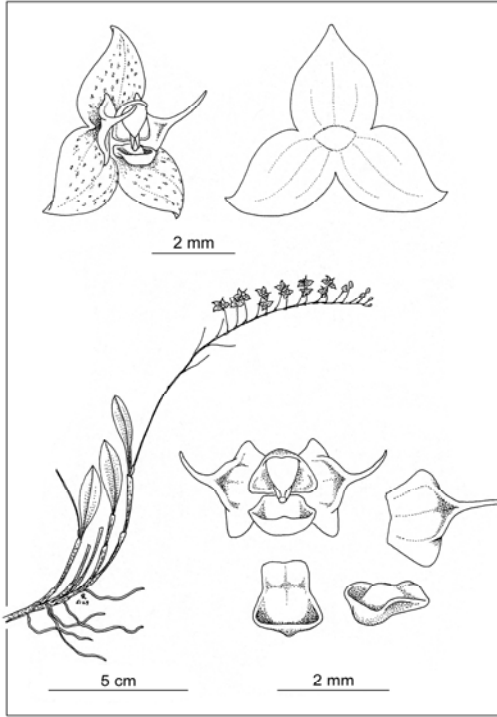


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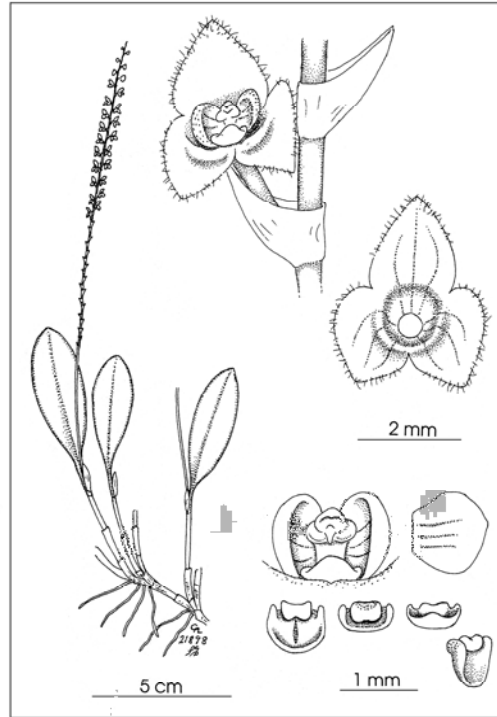


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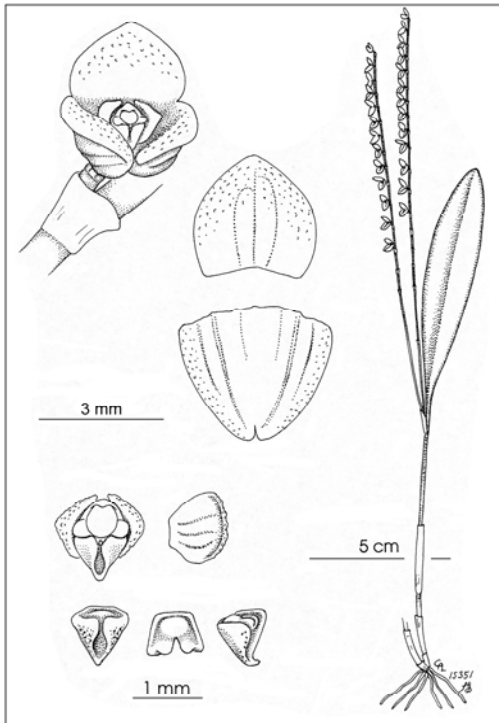


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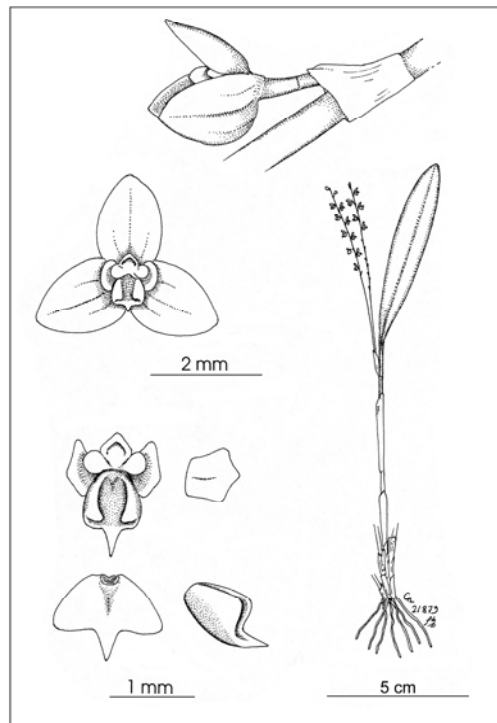


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