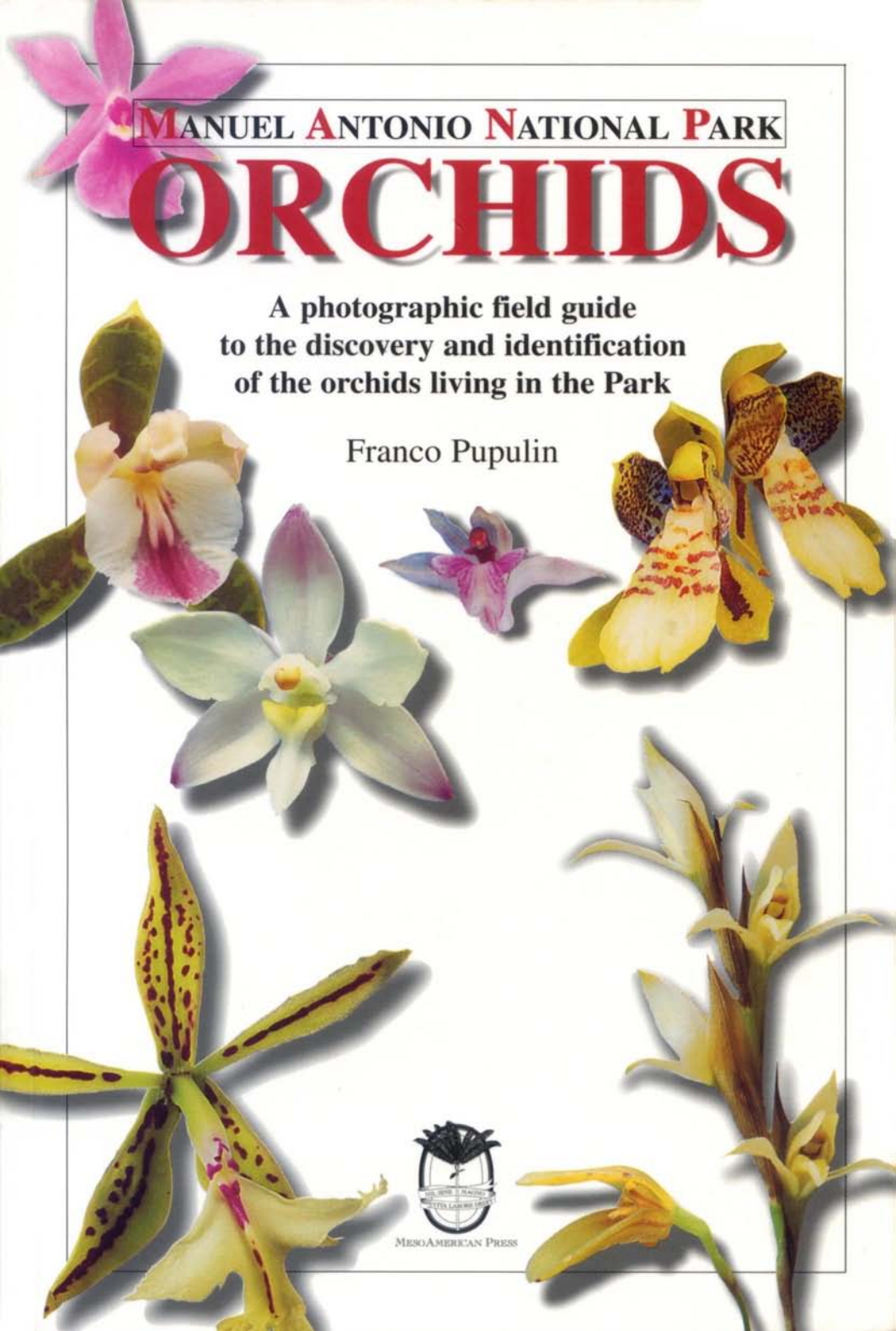
MANUEL ANTONIO NATIONAL PARK

ORCHIDS

A photographic field guide to the discovery and identification of the orchids living in the Park

Franco Pupulin



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ORCHIDS

OF MANUEL ANTONIO NATIONAL PARK

Franco Pupulin

Photographs by
Franco Pupulin

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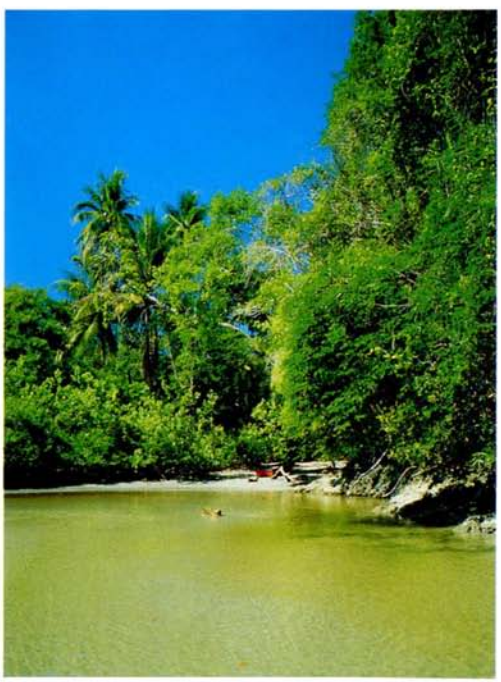
WHERE A FOREST STILL SURVIVES

Manuel Antonio National Park is a forest island, closed between the blue waters of the Pacific Ocean and the emerald green expanse of oil-palm plantations that like a sea covers the surrounding country for tens of miles. Notwithstanding, the Park still hosts an astonishing diversity in plants and animals life that has here its unique refuge

Coming from San José along the road that border the Pacific Ocean just to Quepos, the naturalist will be struck by the size of the oil-palm plantations that take the place of the original rain forest.
When the car reachs the entrance of Manuel Antonio National Park it is a real pleasure to see, beyond the green lagoon that limits the mangrove swamp, the high canopies festooned by bromeliads and other epiphytes of this unique survivor of central Pacific Costa Rican forests. Thanks to the farsightedness of Costa Rican people and the strong emphasis of local politicians on sustainable development, the Parlament stated in 1972 the need to protect here, along some of the most beautiful beaches of all the country, the remnant of the ancient, undisturbed selva.



A FOREST ISLAND
The Park is closed toward Playa Espadilla by a small lagoon and mangrove; still here it is possible to find orchid species such as Brassavola nodosa, *the sweetly scented "lady of the night"*

THE NATIONAL PARK

Manuel AntonioNational Park constitutes today a unique sample for the country of transitional life zone between tropical wet and tropical very wet forests. The Park covers an area of 683 ha, characterized by low hills and irregular topography, with altitudinal range

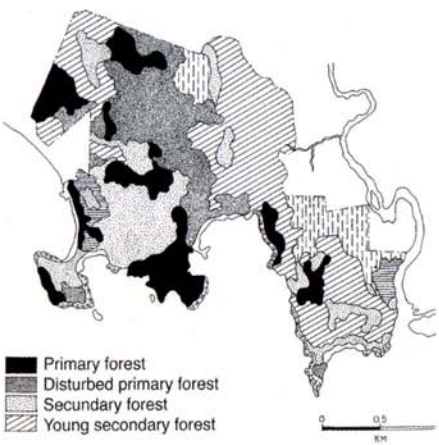
varying from the level of the sea to about 150 m on the highest peaks along the road to Quepos. Rainfall average per year is high, usually reachig more than 3,800 mm. The rainiest months are those from June through November, with a short dry season which extends from December to May.

The climate at the Park is generally hot, and within the forest it may be very hot, w ith average temperature year round of 26.2 °C, with 20 °C and 32 °C minumum and maximum respectively.

THE FOREST

The vegetation of Manuel Antonio National Park is not uniform, but comprises at least nine different types. They range from pristine, primary forest (105 ha) to rock islands (13 ha), passing through disturbed primary forest (130 ha), secondary forest (122 ha), young secondary forest (228 ha), secondary forest with fruit trees (6 ha), mangrove (18 ha), pasture (47 ha), and grassy lagoon (14 ha). Vegetational units are not static, but they change and intergrade also without human intervention. In spite of its size, Manuel Antonio National Park plays a very significant role as an educational center, having one of the highest rates of visits of the whole Costa Rican park system, both by local and foreign visitors.

WITHIN A GREEN PARADISE
Although not ever easily accessed for the visiting naturalist, the Park still hosts patches of pristine forest, with giant trees up to 40 meters tall.



A PUZZLE OF VEGETATION TYPES
Studies on the different types of vegetation at the Park were done in 1983 and 1990. The map is up to dated to 1995, but the situation may have been changed after the "visit" of Cesar hurricane in 1996

ORCHIDS AND OTHER PLANTS

The orchids are the largest family of plants at the Park with 39 different species belonging to 25 genera. Some species are very common and may be seen all around the park just to seashore, but the majority of the Park orchids are found only occasionally or must be considered rare species. Orchid diversity is severely affected in disturbed areas

A preliminar study of the Park flora carried out by a team of Costa Rican botanists in 1986 reported a figure of 346 species of vascular plants (that is, excluding mosses and liverworts). The inventory of orchid species which is presented in the present booklet is based upon observations and collections gathered by myself during the months of June to August 1995, and then during a brief visit in August, 1997.

The collections and the observations were made in 91 plots of 100 m^2 each within the Park area, at intervals of about 10 m between 0 and 150 m above sea level, attempting to record all types of vegetation units.

The list also includes those species that were not collected at Manuel Antonio National Park, but I find living in natural populations in lowlands and hills around the Park. These species are marked in the following key with an asterisk (*). In any case, the distance from the borders of the Park is less than 5 kilometers, and many of the species found within the Park form natural populations also in these areas.

A SPECIAL ORCHID

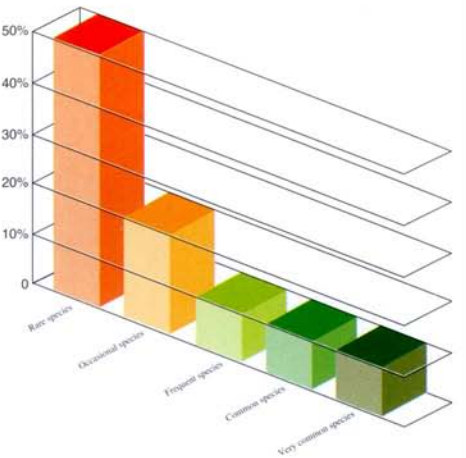
Most of the common orchids have no aestethic value, and their beauty only discloses to fanatics and botanists. Brassavola nodosa *make an exception, being one of the showiest and more common orchids at Manuel Antonio National Park*

THE ORCHIDS

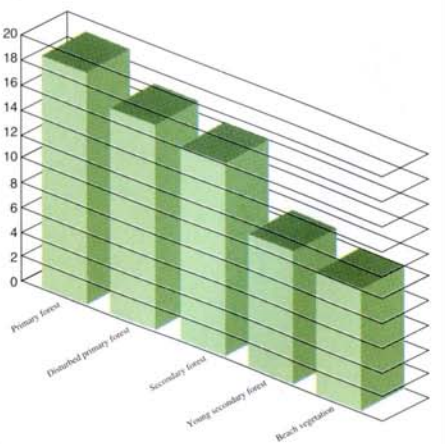
The Orchidaceae constitute the largest family at PNMA, followed by Poaceae and Leguminosae with about 25 and 23 species respectively. I recorded 39 orchid species, pertaining to 25 genera. The genera richest in species are *Epidendrum* (6 species) and *Maxillaria* (4 species), reflecting the very high number of species within these genera all over the country.

For each of the 39 orchid species I also assessed frequency at the Park, classifying them in five different categories. Species occurring in 25 or more 100 m^2 plots are considered "very common". Species that were present in 14 to 24 plots are classified as "common". Orchid species recorded in 6 to 13 plots are "frequent". Those found in 2 to 5 plots are regarded as "occasional". Species observed in 1 plot, or only recorded from outside the Park area, are considered to be "rare".

"Very common" species include *Epidendrum amparoanum* (recorded in 44 plots), *Catasetum maculatum* (35), *Scaphyglottis stellata* (31), and *Brassavola nodosa* (26). "Common" species include *Dimerandra emarginata* and *Epidendrum congestum* (21), *Lockhartia pandurata* (16) and *Caularthron bilamellatum* (15). "Frequent" species include *Pleurothallis corniculata* (9), *Maxillaria conferta* (8), *M. ponerantha* (7), *Nidema ottonis* and *Epidendrum stamfordianum* (6) . "Occasional" and "rare" species account for nearly 60% of total species within the study area.



FREQUENCE OF ORCHID SPECIES
Although the Park hosts some very common species, the majority of orchids at Manuel Antonio are only occasional or definitively rare



ORCHIDS AND VEGETATION TYPES
The number of orchis species decreases where the original vegetation is disturbed by man

What's an Orchid?

About 20.000 different orchid species exist on the Earth, from the high mountains to the borders of deserts, from the deep tropical jungle to the Arctic tundra. Their flowers vary in size from less than 1 millimeter to over 25 centimeters, and their shapes are astonishing different. Notwitstanding, we put all them together within a single group, namely the Orchidaceae, or the orchid family. Why?

Why an orchid is an orchid? This easy question has not a so easy answer. With a technical jargon, orchids are characterized by a zygomorphic flower with male and female organs at least partially fused together in a unique structure called gynostemium, or column. But this is not so easy to see observing an orchid flower. So, we can attempt another way. Orchids possess three sepals that form the outer cover of the bud and are visible also when the flower is still in bud; usually, they are very similar among them. These sepals enclose an inner circle of three petals. One of these petals is generally highly modified and showier. It take the name of "lip" and it is the landing platform for pollinators.

At the very center of the flower is a structure that allows to immeditely recognize an orchid as an orchid. While in lily-like flowers female and male organs are separate, in the orchid family the stamens with their anthers (where is kept the pollen) and the pistil with the stigma (where the pollen must be inserted) are gathered in a unique structure. This structure is the column (ad really it looks like a little column). If you see a flower with three similar sepals, three sepals of which one is modified,

A LILY FLOWER WITH SIX STAMENS
In lily-like flowers the stamens with anters and the pistil are separated; in orchids they are fused

and a single structure column-like at the center, in all probability you are seeing an orchid flower.
It looks rather simple. However, it is not.

20.000 SPECIES

The orchid family encompasses more than 20.000 (and may be 25.000) different species, and all the possible variations on this basic scheme have been realized. Three enormous sepals, two little petals and a microscopic lip; three rather small sepals, two little petals and an enormous lip; three sepals and two petals very similar and a totally different lip; petals wide, petals narrow, petals filiform, or reduced to scale; sepals long, or short, and so on, varying in size from 30 centimeters to less than 1 millimeter. And the situation s not better if we take into account the vegetative characters. Only at Manuel Antonio we have vine-like orchids several meters long (*Vanilla pompona*), and orchids not greater than a 5 colones coin plant and flower included (*Pleurothallis lewisae*), plants bride-like (*Lockhartia*), plants with succulent leaves *(Brassavola),* species that loss leaves *(Catasetum)* and others that host ants within hollow organs (*Caularhtron*).

THE REALM OF DIVERSITY
Sizes and shapes of the flowers in the orchid family are astonishing different. But even broader is the variation in vegetative organs

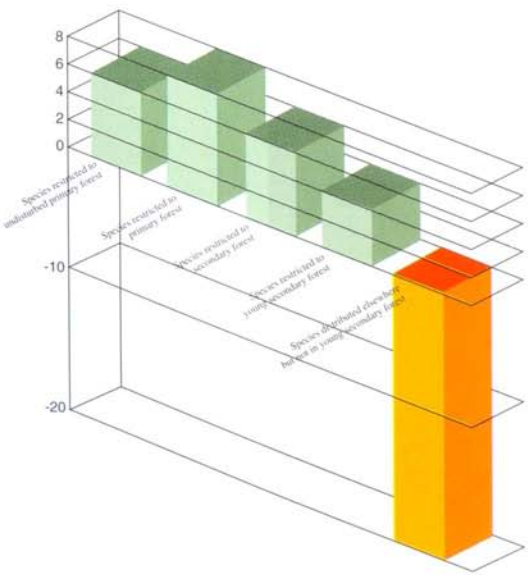
A BASIC SCHEME
Three sepals, two petals, a third petal modified, a column: on this scheme, orchids evolved thousands of variations

However, the key in the following pages should help you in recognize and identify orchids at Manuel Antonio also when they are not in flower.

WHY CONSERVE PRISTINE HABITATS

Many orchid species are restricted in their distribution to primary, undisturbed forest, and the areas still covered with pristine vegetation show higher diversity in orchids

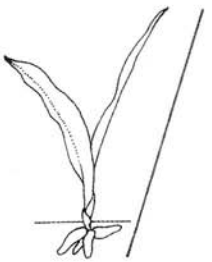
The distribution and number of orchid species within the different vegetation types strongly confirms the importance of conservation of pristine habitats. Orchid diversity is highest in primary forest, decreasing towards young secondary forest and beach vegetation. Of the thirteen plots where no orchid species were observed, ten plots pertained to secondary or young secondary vegetation units. On the contrary, all the five plots where the highest number of orchid species was found (10 to 8 orchid species per plot) were located in primary forest, both pristine or disturbed. The distribution of six species resulted restricted to primary undisturbed forest, and this figure raises to eight if we include the plots of disturbed primary forest. However, it is interesting to note how a number of orchid species are also restricted to secondary (6 species) or young secondary forest (4 species). It is likely the restriction to young secondary forest reflects preferences of some orchid species for disturbed habitats. *Ionopsis satyrioides*, *Leochilus scriptus* and *Trizeuxis falcata* are known to be early colonizers of young canopies, and they usually prefer to establish themselves on the twigs or the outernmost branchlets of their hosts. Notwhitstanding, plots in young secondary forest are relatively poor, and more than twenty species are found elsewhere in the Park except in the areas covered with young secondary vegetation.



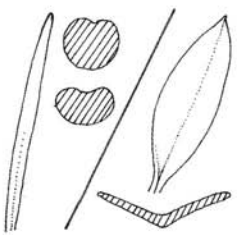
YOUNG VEGETATION IS POOR
If the Park vegetation should be substituted with young forest, half of the orchid diversity would be lost

WHICH ORCHID IS THAT?

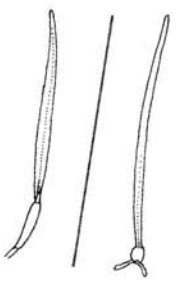
A dichotomous key works like a computer: if yes, then..., and if not, then... Following each obligate choice beginning from point one, you should be able to determine the species



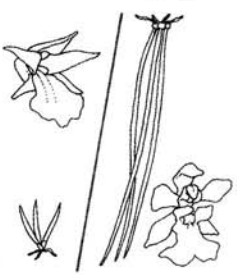
1. Plant terrestrial ..*Stenorrhynchos speciosum* *
1. Plant epiphytic 2



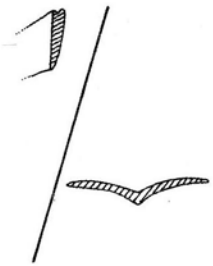
2 (1). Leaves cylindric (subterete to terete) 3
2. Leaves flattened 5



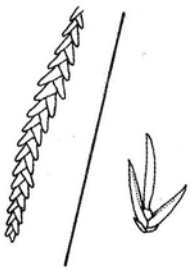
3 (2). Pseudobulbs cylindric, more than 3 cm long .. .. *Brassavola nodosa*
3. Pseudoblbs rounded, very reduced, less than 1 cm long 4



4 (3). Plants usually less than 10 cm long .... *Ionopsis satyrioides*
4. Plants usually more than 50 cm tall (to 1 m) .. .. *Oncidium ascendens*



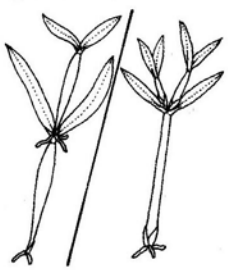
5 (2). Leaves laterally flattened 6
5. Leaves dorsoventrally flattened 7



6 (5). Stems elongated, plants braid-like .... *Lockhartia pandurata*
6. Stems short; plants fanlike ..*Trizeuxis falcata* *

7 (5). Plants with pseudobulbs 8
7. Plant without pseudobulbs 27

8 (7). Pseudobulbs arising from top of old pseudobulbs, forming chains..... 9
8. Pseudobulbs arising from base of old pseudobulbs, not forming chains 10

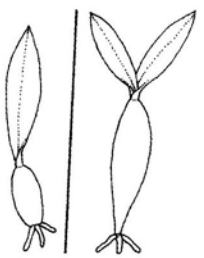


9 (8). Pseudobulbs pyriform, stalked .... *Scaphyglottis stellata*
9. Pseudobulbs cylindric, not stalked .... *Scaphyglottis prolifera* *

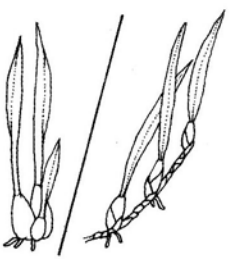
10 (9). Leaves scattered along pseudobulb 11
10. Leaves (1-2) terminal on pseudobulb 13

11 (10). Inflorescence lateral .. *Catasetum maculatum*
11. Inflorescence terminal 12

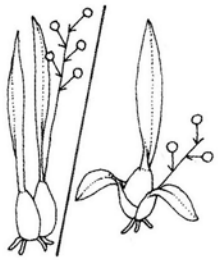
12 (11). Pseudobulbs solid .....
..... *Polystachya masayensis* *
12. Pseudobulbs hollow .....
..... *Caularthron bilamellatum*



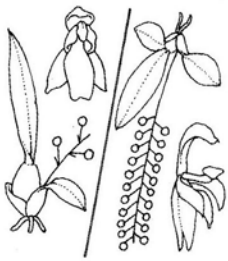
13 (10). Pseudobulbs monophyllous 14
13. Pseudobulbs 2-leaved at apex 18



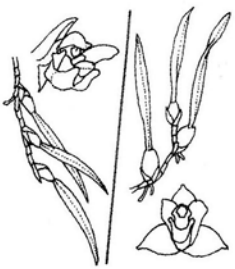
14 (13). Plants cespitose (rhizome very short) 15
14. Plants with pseudobulbs scattered
on a long rhizome 17



15 (14). Inflorescence terminal ..... *Nidema ottonis*
15. Inflorescence lateral 16



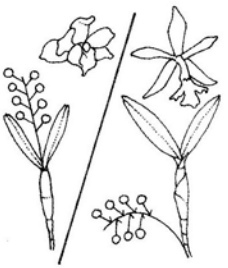
16 (15). Inflorescence erect ..... *Leochilus labiatus*
16. Inflorescence pendulous ..... *Notylia pittieri*



17 (14). Inflorescence pendulous .....
..... *Maxillaria conferta*
17. Inflorescence erect ..... *Maxillaria oreocharis*

18 (13). Pseudobulbs at less three times longer than wide 19
18. Pseudobulbs not more than two times longer than wide 21

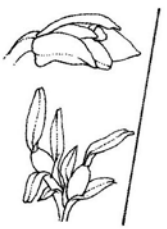
19 (18). Pseudobulbs of a single internode.....
.....*Encyclia abbreviata*
19. Pseudobulbs of more than one internode.... 20



20 (19). Inflorescence terminal .... *Scaphyglottis micrantha*
20 . Inflorescence lateral .... *Epidendrum stamfordianum*

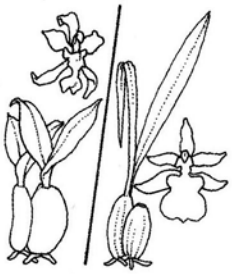
21 (18). Basal leaves (cataphylls) present 22
21. Basal leaves (cataphylls) absent 26

22 (19). Plant pendent... ..... *Maxillaria crassifolia*
22. Plant erect 23



23 (22). Plant small, about 5 cm tall .... *Maxillaria ponerantha*
23. Plant more than 15 cm tall 24

24 (23). Pseudobulbs club shaped .... *Aspasia epidendroides*
24. Pseudobulbs not club shaped 25

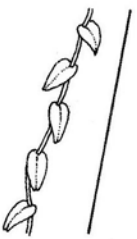


25 (24). Pseudobulbs very flat .... *Oncidium stenobulbon* *

25. Pseudobulbs sulcate, not flat .... *Oncidium polycladium* *

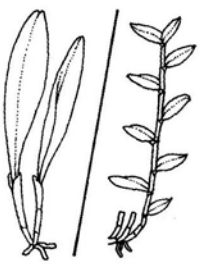
26 (21). Inflorescence erect .... *Trigonidium egertonianum*

26. Inflorescence pendent..... ..... *Bulbophyllum oerstedii* *



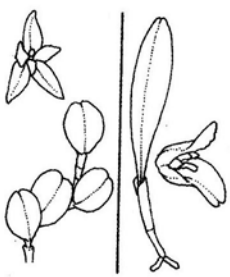
27 (7). Plant a vine .....*Vanilla pompona* *

27. Plant not a vine 28



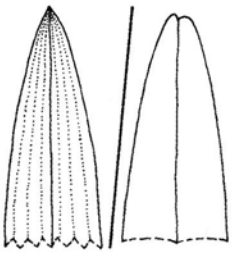
28 (27). Single leaf on each stem 29

28. Leaves several on each stem 30

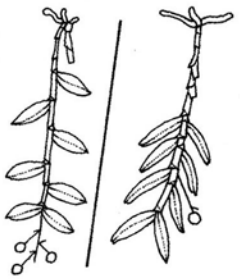


29 (28). Leaf coin like, rounded, flat on the bark..... ..... *Pleurothallis lewisae*

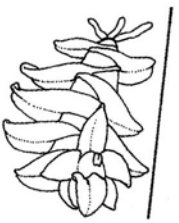
29. Leaf lanceolate, not flat on the bark..... .....*Pleurothallis corniculata*



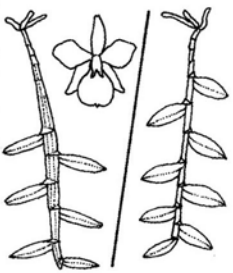
30 (29). Leaves distinctly pleated .... *Sobralia decora*
30. Leaves not pleated 31



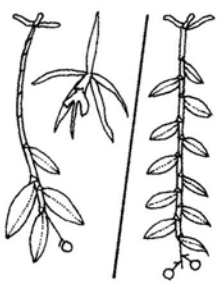
31 (30). Inflorescence terminal 32
31. Inflorescence lateral 37



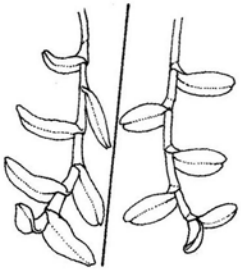
32 (31). Stem less than 5 cm long, completely concealed by the base of the leaves .... *Epidendrum congestum*
32. Stem more than 15 cm long 33



33 (32). Plant with tickened stem .... *Dimerandra emarginata*
33. Plant with slender stem 34

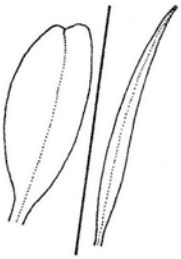


34 (33). Stem with 4-6 leaves only at apex .... *Epidendrum nocturnum*
34. Stem covered by leaves for all its lenghth..... 35



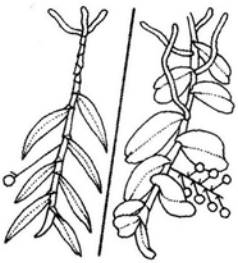
35 (34). Base of the leaves completely envolving the stem ..... *Epidendrum amparoanum*

35. Base of the leaves only partially envolving the stem 36



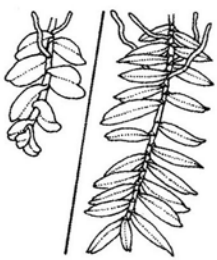
36 (35). Leaves elliptic, obtuse, fleshy .... *Epidendrum sculptum*

36. Leaves lanceolate, acute, not fleshy..... ..... *Epidendrum isomerum* *



37 (31). Inflorescence 1-flowered .... *Dichaea panamensis*

37. Inflorescence many-flowered 38



38 (37). Stem less than 20 cm; leaves about 4 cm long ..... *Campylocentrum micranthum*

38. Stem more than 30 cm long (50 cm); leaves about 8-10 cm long .... *Campylocentrum panamense* *

ORCHIDS AT MANUEL ANTONIO

A photographic guide to the delicate beauty of more than 30 fascinating orchids of Manuel Antonio tropical rainforest.

***Aspasia epidendroides* Lindl.**

Though this species is distributed from northern Central America to South America, *Aspasia epidendroides*, an epiphyte of shady areas, is rarely seen in Manuel Antonio National Park, where it is restricted to the remnants of primary forest. The flowers, pollinated by euglossine bees, are sweetly scented and they are produced on short branches over a long period. *Aspasia epidendroides* is occasional at the Park. It flowers from May to July.

***Brassavola nodosa* (L.) Lindl.**

One of the showiest orchids of PNMA, *Brassavola nodosa* is known as "Lady of the night" due to the strong scent the flowers produce during the night to attract their pollinators, large moths. It is a common species on both Pacific and Caribbean coasts, and also at PNMA it forms large specimens also on coconut palms and in mangrove. Very common at PNMA, where it flowers in July to September.

***Bulbophyllum oerstedii* (A. Rich. & Gal.) Hamer & Garay**

Bulbophyllum oerstedii is a species endemic to Central America, ranging from Mexico to Panama at low elevations. The bifoliate pseudobulbs are 4-angled in section, and the apically thickened inflorescence easily distinguish the species. The small, reddish-brown flowers are probably pollinated by flies. Only collected once near eastern border of the park, it should be considered rare at PNMA. Plants flower in December-January.

***Campylocentrum micranthum* (Lindl.) Rolfe**

This species is widespread in the American tropics. The plants are very aerial epiphytes, usually found only loosely attached by their roots to the host branches. The small, white flowers are produced in two rows on short inflorescences and have spurs fullfilled with nectar. *Campylocentrum micranthum* is a rare species at PNMA, where it flowers in August.

***Catasetum maculatum* Kunth**

One of the more common orchids of the Park, *Catasetum maculatum* forms large specimens in open as well as in shaded situations. The flowers may be either male (as in the photograph) or female, or occasionally bisexual. Rarely a single flower stalk may bear both male and female flowers. The flowers are pollinated by an euglossine bee of the genus *Eulaema*. Very common at PNMA, where it begins to flower in July.

***Caularthron bilamellatum* (Rchb.f.) Schultes**

One of the largest orchid species found in the Park, *Caularthron bilamellatum* forms huge specimens on exposed branches and trunks. The hollow pseudobulbs of this species are usually inhabited by ant colonies tha protect them from other herbivorous insects. The flowers are autogamous and sometimes they does not open completely. *Caularthron bilamellatum* is very common at PNMA, where it flowers in December through February.

***Dichaea panamensis* Lindl.**

Epiphytic in understory vegetation, the plants of *Dichaea panamensis* are usually found in very shaded spots in primary or mature secondary forests. Though it is a widespread species in the American tropics and it should be considerared a common species also in Costa Rica, it was never noticed within PNMA borders. The solitary flowers are produced in succession over a log period, and flowering generally begins in October-November.

***Dimerandra emarginata* (G.F.W. Mey.) Hoehne**

Well distributed from Mexico to South America and the West Indies at low elevations, *Dimerandra emarginata* is one of the commonest orchids at PNMA, where it forms strong specimens. Although autogamy is rather frequent, the flowers being self-pollinated before they completely open, some plants have showy flowers that spred out very flat at anthesis. Very common at PNMA. The flowers are produced successively beginning in December.

Encyclia abbreviata
(Schltr.) Dressler

A small orchid with a short inflorescence and pretty flowers, *Encyclia abbreviata* is distributed from Mexico through Central America to Panama, usually in evergreen forest just to 1,000 meters elevations. Within our protected area this species has been found only once, growing epiphytically in secondary forest and in shaded conditions. *Encyclia abbreviata* is rare at PNMA, where its flowering mostly occurs in May-June.

Epidendrum amparoanum
Schltr.

Belonging to the so-called *Epidendrum difforme* complex, a group of species distributed from Florida through Central America and the West Indies to South America, *Epidendrum amparoanum* is endemic of Costa Rica and Panama. It is one of the commonest species at PNMA, and it may be found in all types of vegetation. The greenish flowers are heavy scented. Very common at PNMA, where it flowers from July to September.

Epidendrum congestum **Schltr.**

A common miniature plant, *Epidendrum congestum* may be found as epiphyte on the thiny branches of trees along the beach, sometimes a few meters from the sea. Although they can tolerate strong light levels adopting a purple pygmentation of the foliage, the plants are usually burnt if exposed to direct sunrays. The inconspicuous flowers are nearly indistinguishable in colour and texture from the succulent leaves. *Epidendrum congestum* is a rather common plant at the Park, where it flowers in June.

Epidendrum sculptum **Rchb.f.**

Only found once on a large *Phitecellobium* tree, this pendent epiphyte may reach over 1 meter long. Along the main leafy stem many branches are produced, on which secondary, shorter branches arrange themselves, and so on. This characteristic habit of growth give mature plants the shape of a reversed candelabrum. The small flowers produced in pairs at the apex have a delicate scent of vanillin. Rare at PNMA, *Epidendrum sculptum* flowers in February and March.

***Epidendrum stamfordianum* Batem.**

One of the showiest species of the genus, *Epidendrum stamfordianum* is the largest *Epidendrum* growing at PNMA. Mature specimens may have just to 20 stems up to 70 cm tall. The showy flowers are produced on arched inflorescences that can reach 1 meter in length. It is a common inhabitant of large *Phithecellobium* sp. trees growing in pastures. Occasional at PNMA, it flowers in October-December.

Ionopsis satyrioides
(Sw.) Rchb.f.

Ionopsis satyrioides is often one the first colonizers on young canopy, and it is not unusual to find it on twigs with very smooth bark, like that of *Psidium guayava.* Widely distributed in all the American tropics, this small epiphytic plant has so far escaped notice within the PNMA area, but it forms natural populations in many localities outside the protected area. The tiny flowers of *Ionopsis satyrioides* are produced in May to July.

Leochilus scriptus
(Scheidw.) Rchb.f.

Leochilus scriptus belongs to a distinct subset of Neotropical orchids known as "twig epiphytes" due to their ability to colonize young canopies, where wide fluctuations in water availability reduce competitions with other epiphytic plants. A single but large population was located within the park, growing on the thin branches of an ornamental Croton (*Codiaeum*). The species is rare at PNMA, where it flowers in February-March.

***Lockhartia pandurata* Pupulin**

Only known from the area of Quepos, this species is still undescribed. It was first noticed by the author at PNMA, where it was formerly confused with the similar and widespread *Lockhartia micrantha.* At the Park *Lockhartia pandurata* is easily distinguished by its vegetation, reminding a lady's tress. The species is a common epiphyte at PNMA, where it flowers in April-June.

***Maxillaria neglecta* (Schltr.) L.O. Wms.**

This small species of *Maxillaria* is widespread from Central to South America. It is a common inhabitant of old plantations of cocoa (chocolate), and it is generally associated with mature forest. The white flowers with yellow lip are enveloped by papery bracts, and the plants may form huge, pendent specimens. *Maxillaria neglecta* is frequent at PNMA, where it flowers in July and August.

***Maxillaria oreocharis* Schltr.**

A common inhabitant of wet forests at low and medium elevations in Central America just to Panama, *Maxillaria oreocharis* has small but brightly colored flowers, usually produced in pairs from the base of pseudobulbs. Due to the shape of pseudobulbs, young plants may easily be confused with *Maxillaria neglecta*, but the erect inflorescence allow proper identification. Found only once in a shaded spot within the protected area, *Maxillaria oreocharis* is rare at PNMA. Flowering occurs from February to April.

***Maxillaria ponerantha* Rchb.f.**

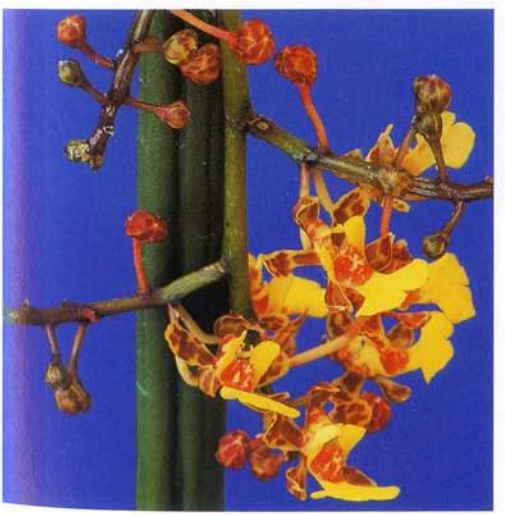
Maxillaria ponerantha has little, dark flowers hidden by the dense foliage of the miniature plant. Though it has been recorded as highly variable in other countries, the flower colour of *Maxillaria ponerantha* at PNMA is definitively dark purple. Native from Costa Rica to the Guianas in South America, the species is a frequent epiphyte at PNMA, where it is restricted to trunks and large, shaded branches in primary forest. Flowering begins in July.

***Nidema ottonis* Britton & Millsp.**

This small epiphytic species is well distributed in Central and South America and in the West Indies. *Nidema ottonis* is an easy species to identify in the field because it has flattened pseudobulbs with a single, erect leaf. The delicate and sweetly scented flowers are produced on a short, flattened inflorescence covered by many long, papery, brown bracts. The species is frequent at PNMA, where it flowers in December and January.

Notylia pittieri
Schltr.

A strong epiphyte with leathery leaves and reduced pseudobulbs, *Notylia pittieri* produces long inflorescences with up to 60 thiny, densely clustered flowers. Like other members of the Oncidiinae orchids, *Notylia pittieri* is usually found on small branches and twigs covered with few bryophites. Only reported twice from the Park area, the species is occasional at PNMA. Flowering occurs in July and August, and fruit production rate is high.



Oncidium ascendens
Lindl.

One of the species pertaining to the group of the so-called "rat-tail" Oncidiums, due to the shape of the long, cylindric leaves, *Oncidium ascendens* has rudimentary, rounded pseudobulbs about 1,5 cm long and pendulous leaves up to 1 meter long.
The showy flowers are bright yellow in colour and are produced on short, branched inflorescences. The species is rare at PNMA and flowers in April-May.

***Oncidium stenobulbon* Lindl.**

The single, most distinguished character of *Oncidium stenobulbon* is the peculiar shape of the pseudobulbs, that are totally flattened when observed by side. Although it is not a unique feature for the genus *Oncidium* in Costa Rica, it allows easy recognition of this species in our area. *Oncidium stenobulbon* is one of the species locally known as "golden rains" due to its inflorescence up to 2 meters long covered by bright yellow flowers. Rare at PNMA, it flowers in October-November.

***Pleurothallis corniculata* Lindl.**

Though it may be completely overlooked due to its small size, *Pleurothallis corniculata* is not a rare species within the park, where it grows in shaded spots generally on trunks and large branches.
Distributed from northern Central America to Panama, it has greenish yellow flowers with orange lip, that turn completely orange with age. The species is frequent at PNMA, where it flowers in June and July.

***Pleurothallis lewisae* Ames**

Pleurothallis lewisae is the smallest orchid at PNMA; the suborbicular, coin-shaped leaves are less than 1 cm long and wide, and the solitary flowers are of the same size. Widespread but not common from northern Central America to Panama, within the park area it is regularly associated with primary forest, where it lives on large branches and trunks covered with moss. Occasional at PNMA, the species flowers in August and September.

***Polystachya masayensis* Rchb.f.**

A member of an orchid genus that has its major diversity in Asia and tropical Africa, in neotropical countries *Polystachya masayensis* is usually associated with secondary and young vegetation. From the apex of the small, pear-shaped pseudobulb, a thin, fuzzy textured inflorescence with many lateral branchlets is produced. The small flower are not resupinate, looking upside down. The spcies is rare at PNMA, where it flowers in September and October

***Scaphyglottis micrantha* (Lindl.) Ames & Correll**

As its specific name suggests, *Scaphyglottis micrantha* produces a cloud of microscopic flowers that need the aid of a lens to be appreciated. However, once magnified, tne flowers of *S. micrantha* are beautifully shaped, rounded and translucent. The small plants, with their delicate, pale green foliage, are usually found in shaded spots. The species is occasional at PNMA, where it has been observed only in two plots, and flowers in June to July.

***Scaphyglottis prolifera* Cogn.**

A species widely distributed in the neotropic from Guatemala through Central America and the West Indies to Brazil and Bolivia, *Scaphyglottis prolifera* is common in wet forests from sea level to about 1000 meters. The small flowers are born on few-flowered fascicles at the apex of the segments of the superposed stems. So far it escaped attention within the protected area, but it forms natural populations in orchards close to the park. Rare at PNMA, it flowers from November to February.

***Scaphyglottis stellata* Lindl.**

With their superposed pseudobulbs and the pendent vegetation, the plants of *Scaphyglottis stellata* are unmistakable at PNMA. Usually known under the name of S. amethystina in allusion to the flower colour, *S. stellata* is a preminenly South American species, reaching in Costa Rica its northern distribution limit. It is one of the commonest species within the park, where it is ubiquitarious and flowers in October through December.

***Trigonidium egertonianum* Lindl.**

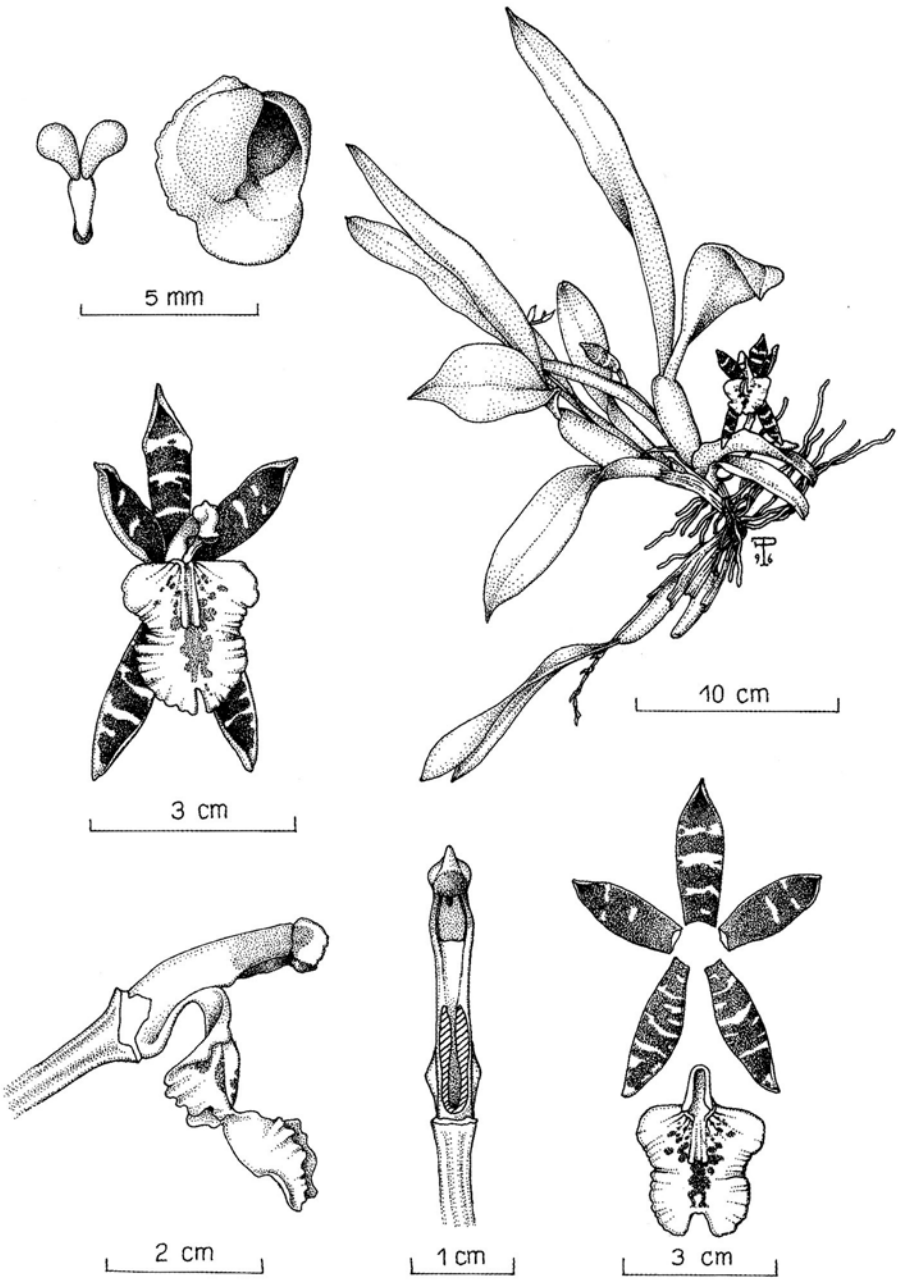
The most prominent character of *Trigonidium egertonianum* is the glossy, bluish, gland-like callus emerging at the apex of the petals from the striped tube of the sepals. A very common lowland species dstributed from Mexico to Colombia, also within the park area *Trigonidium egertonianum* forms huge specimens in primary and secondary mature forest plots. Occasional at PNMA, it flowers from November to January.

***Trizeuxis falcata* Lindl.**

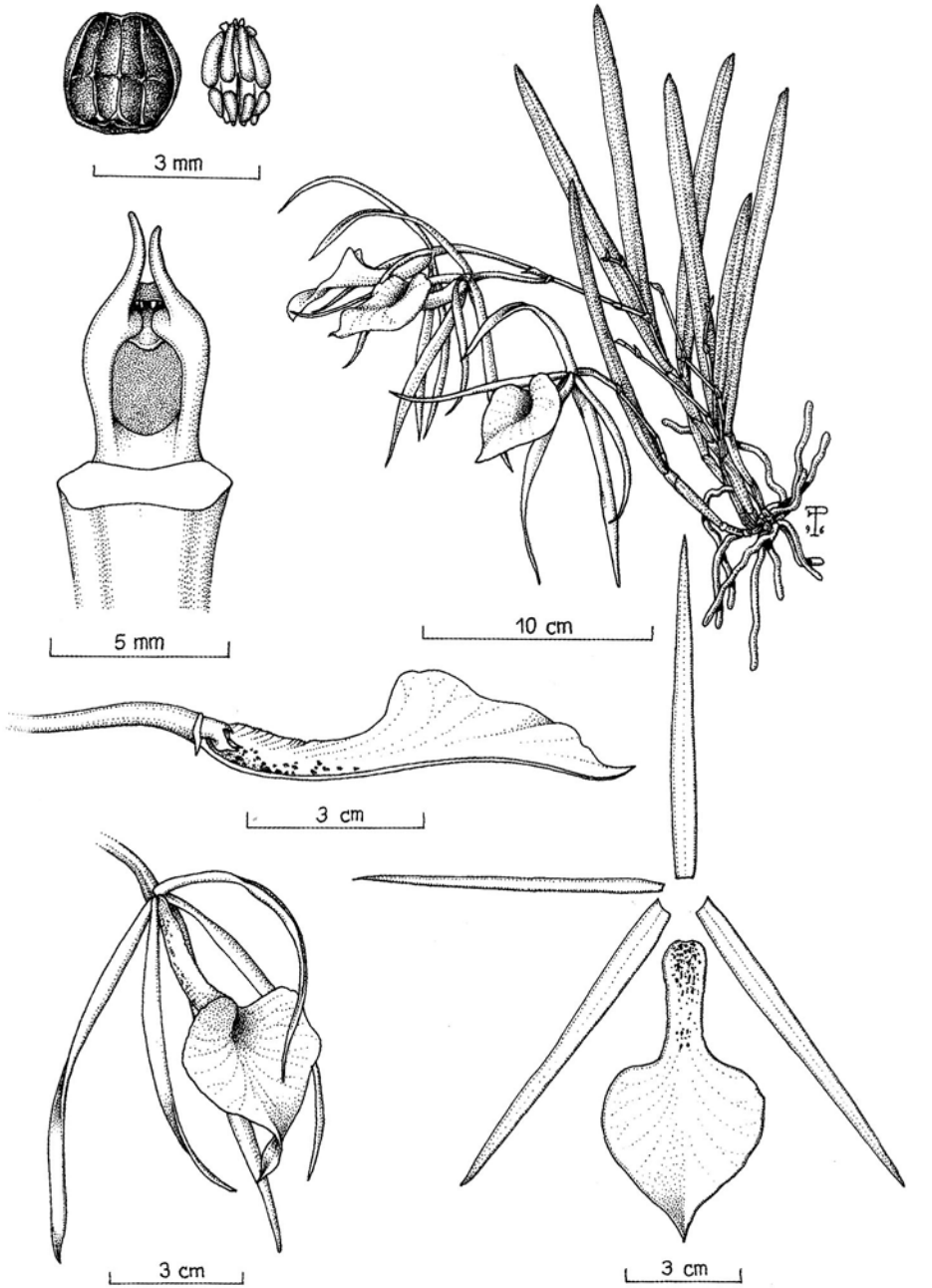
A small epiphyte restricted to slender branchlets in secondary forest and orchards, Trizeuxis falcata is locally common from Costa Rica to South America to Peru. It has so far escaped attention within the Park, but the species forms populations on short trees and cultivated *Citrus* near the eastern border of PNMA. Many inconcpicuous flowers are produced in dense racemes on slender, usually branched inflorescences. rare at PNMA, it flowers in January and February.

BOTANICAL PLATES

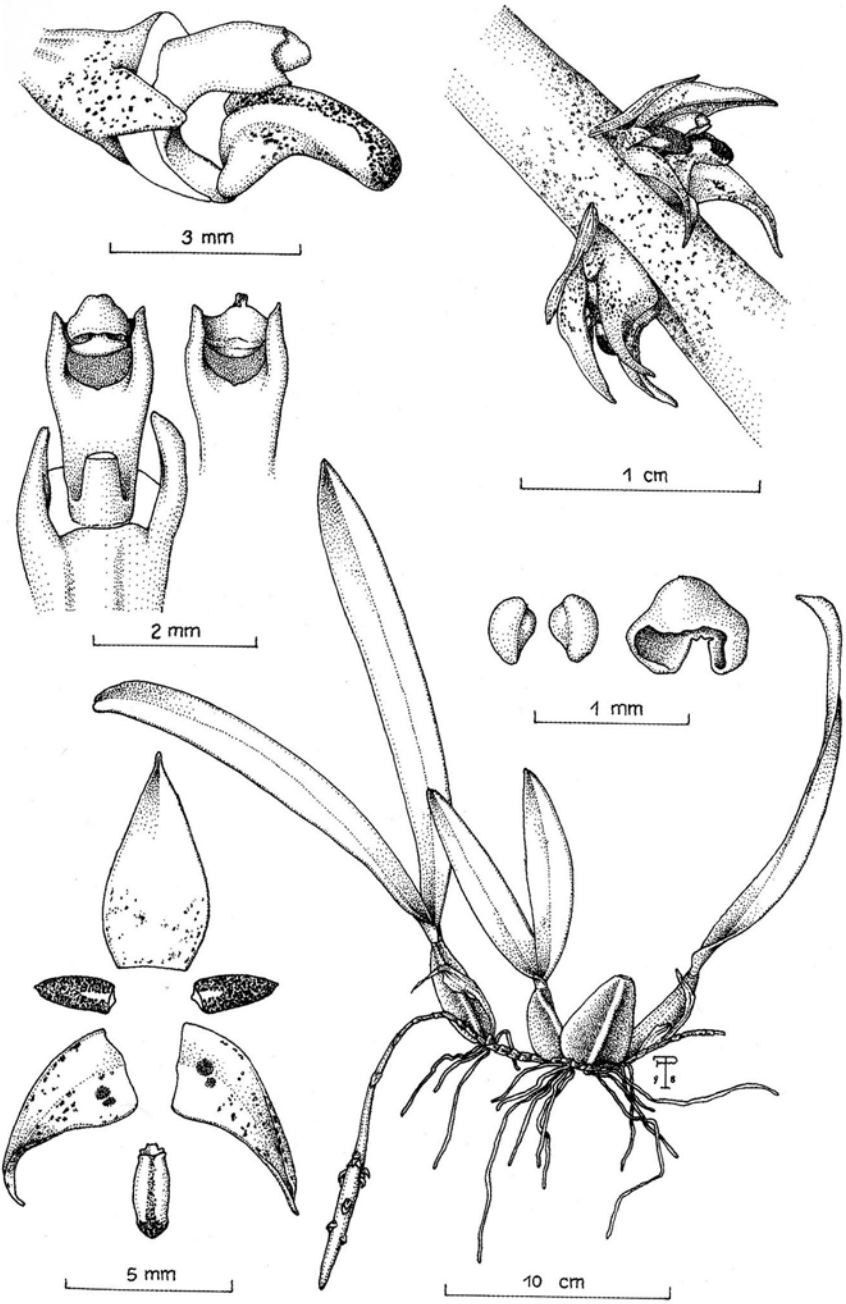
Thirty four botanical illustrations to help you recognize the different sizes and shapes of orchid plants and their flowers



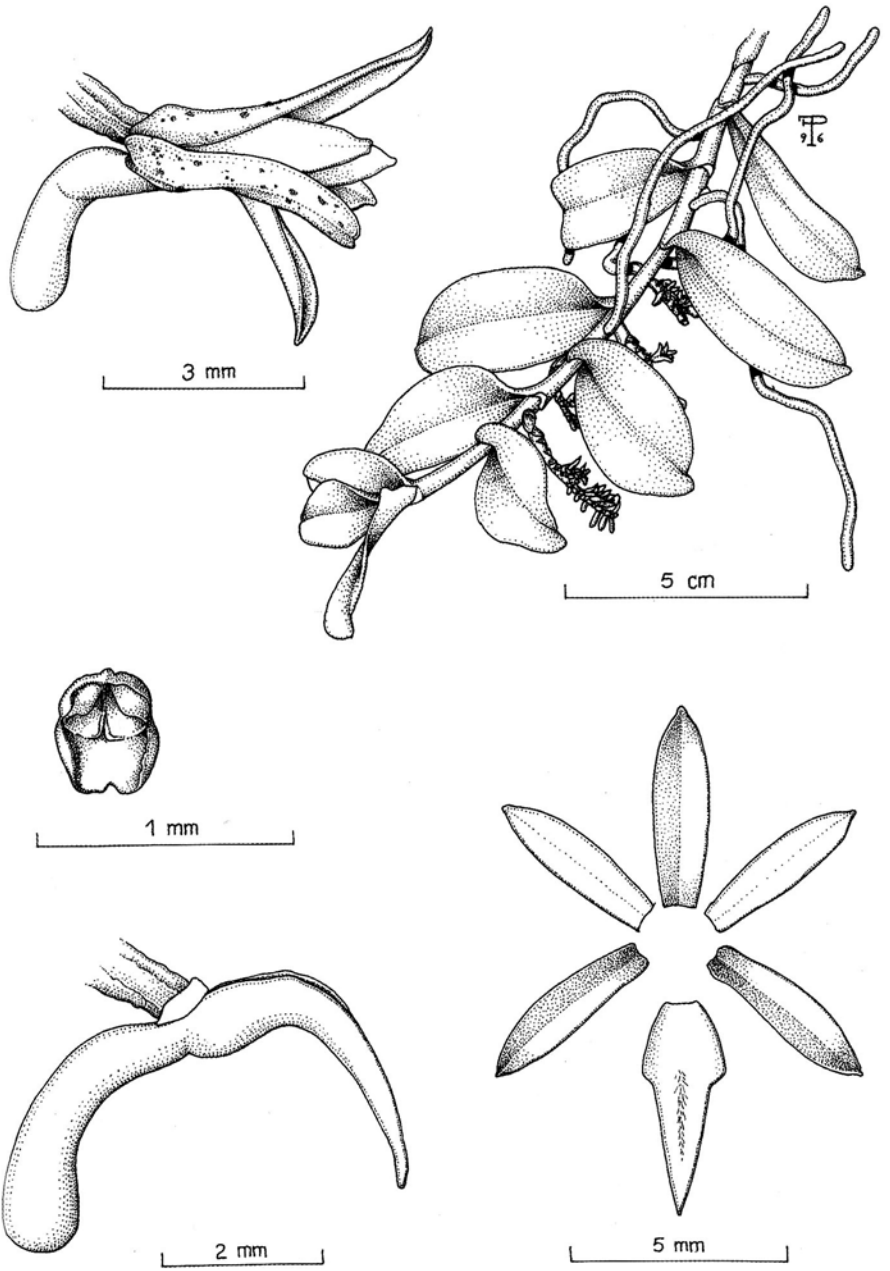
Aspasia epidendroides



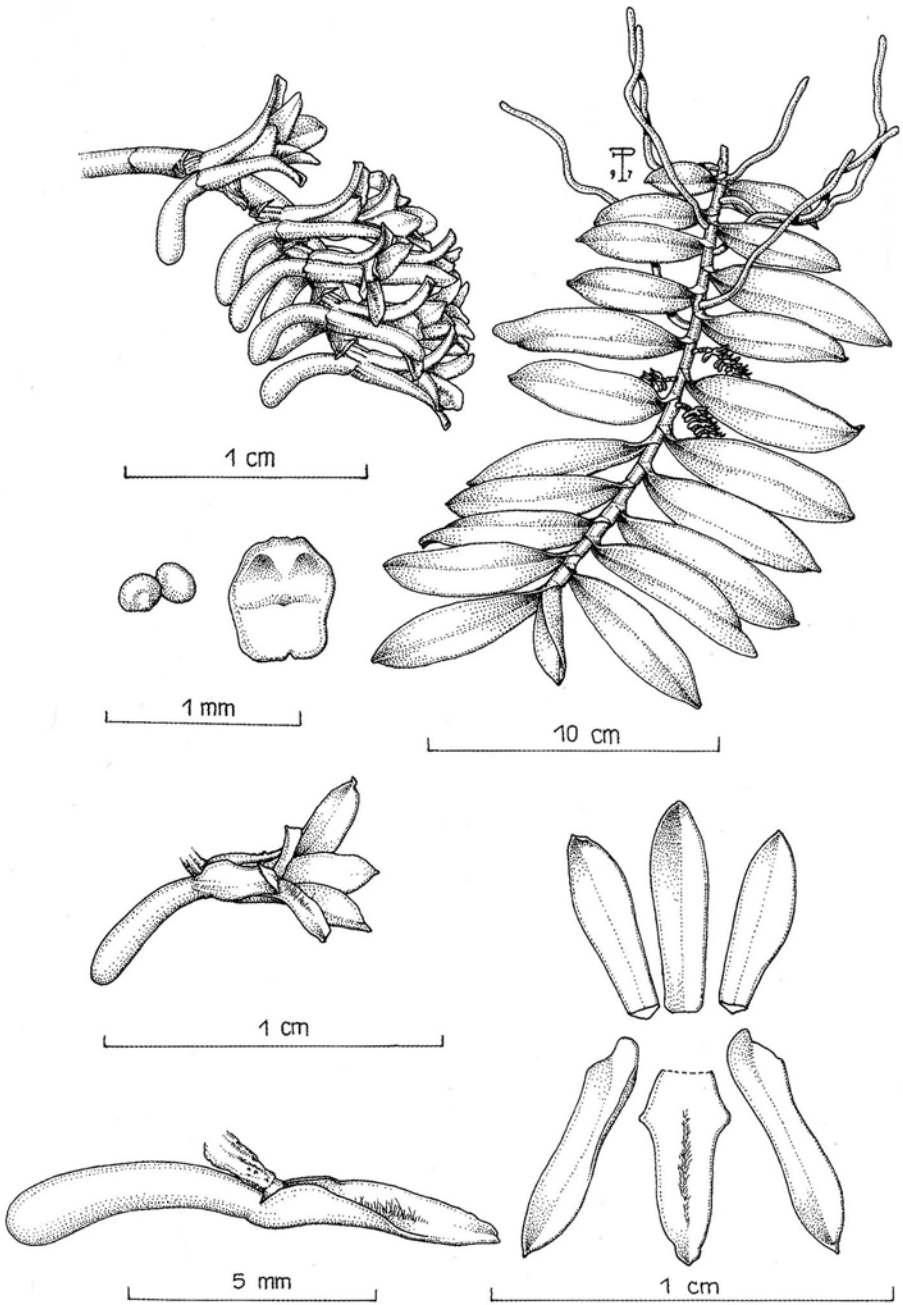
Brassavola nodosa



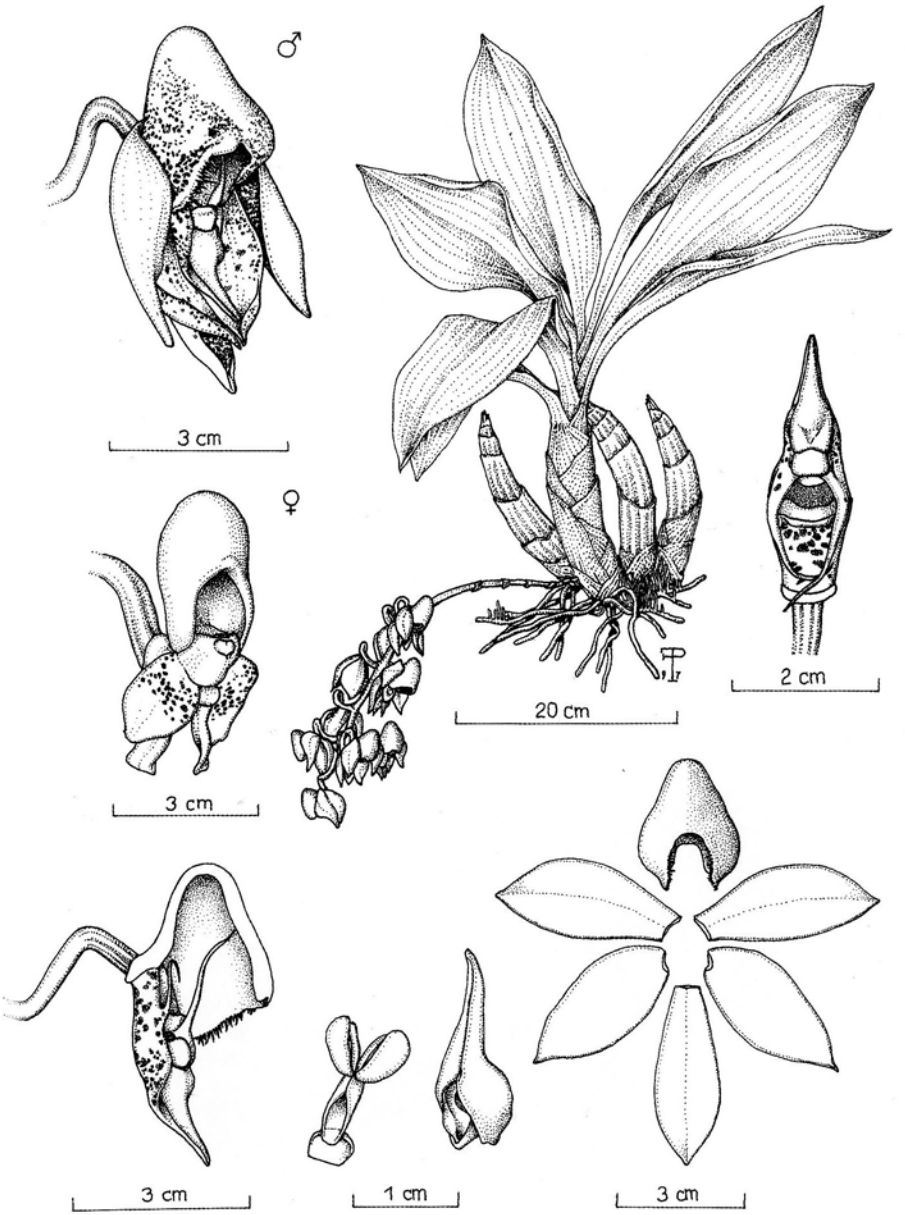
Bulbophyllum oerstedii



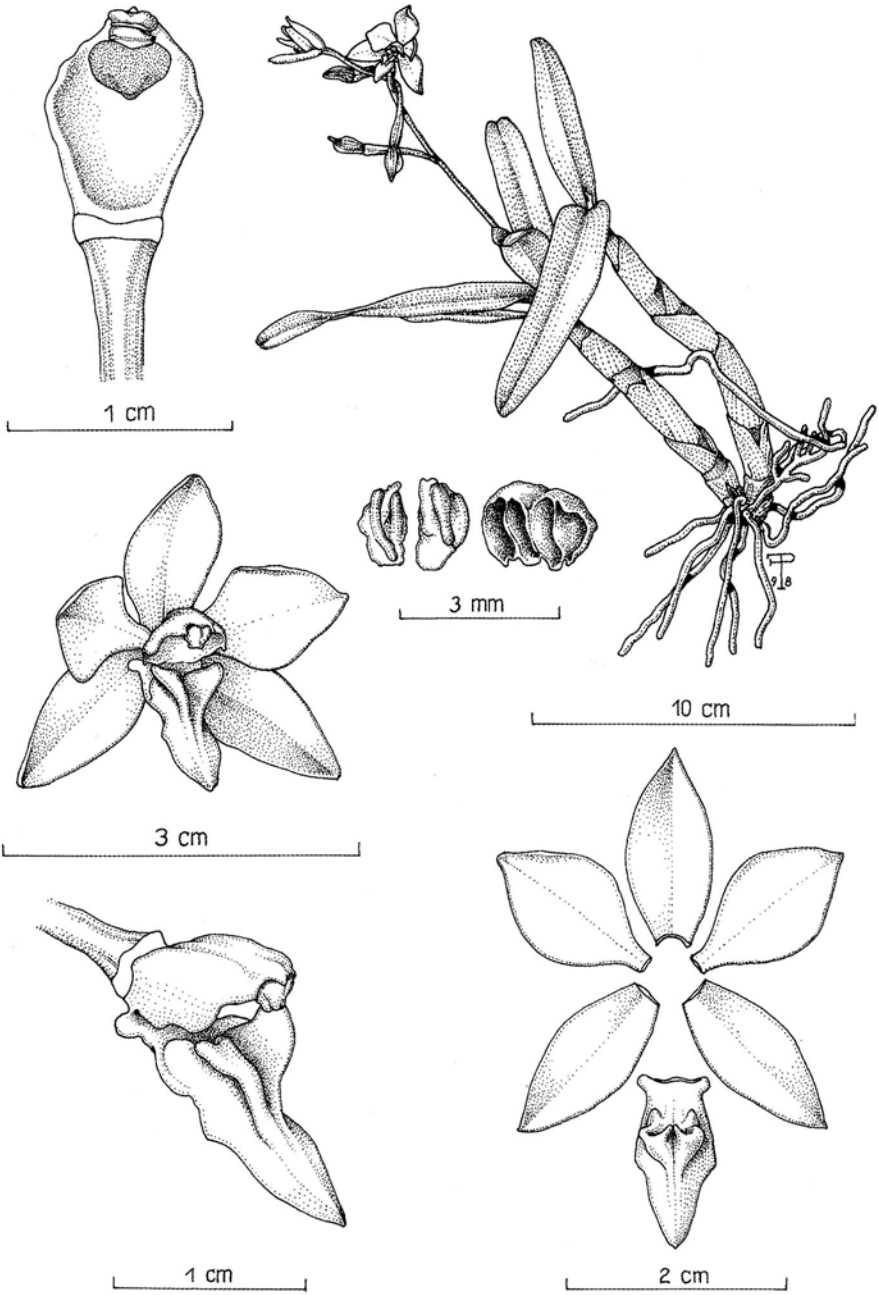
Campylocentrum micranthum



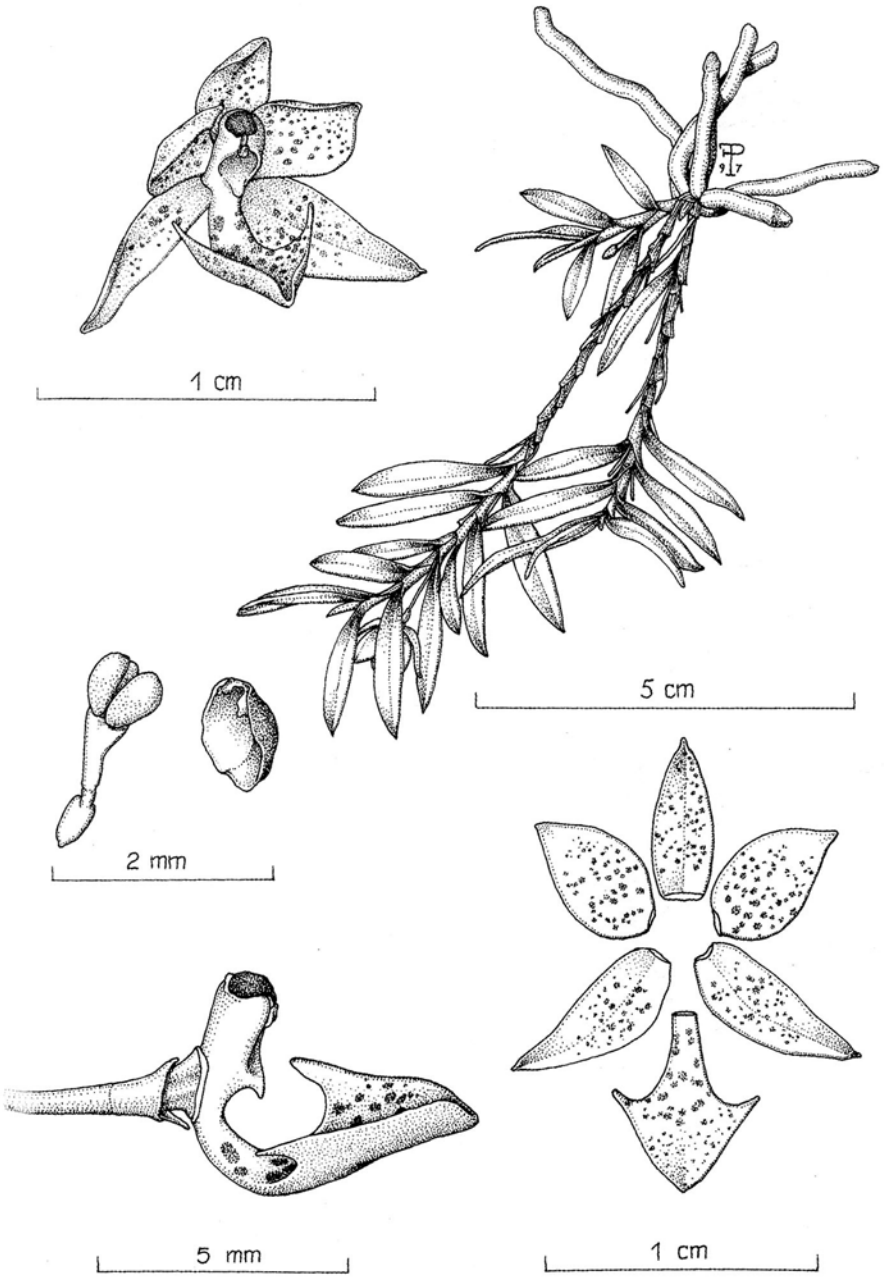
Campylocentrum panamense



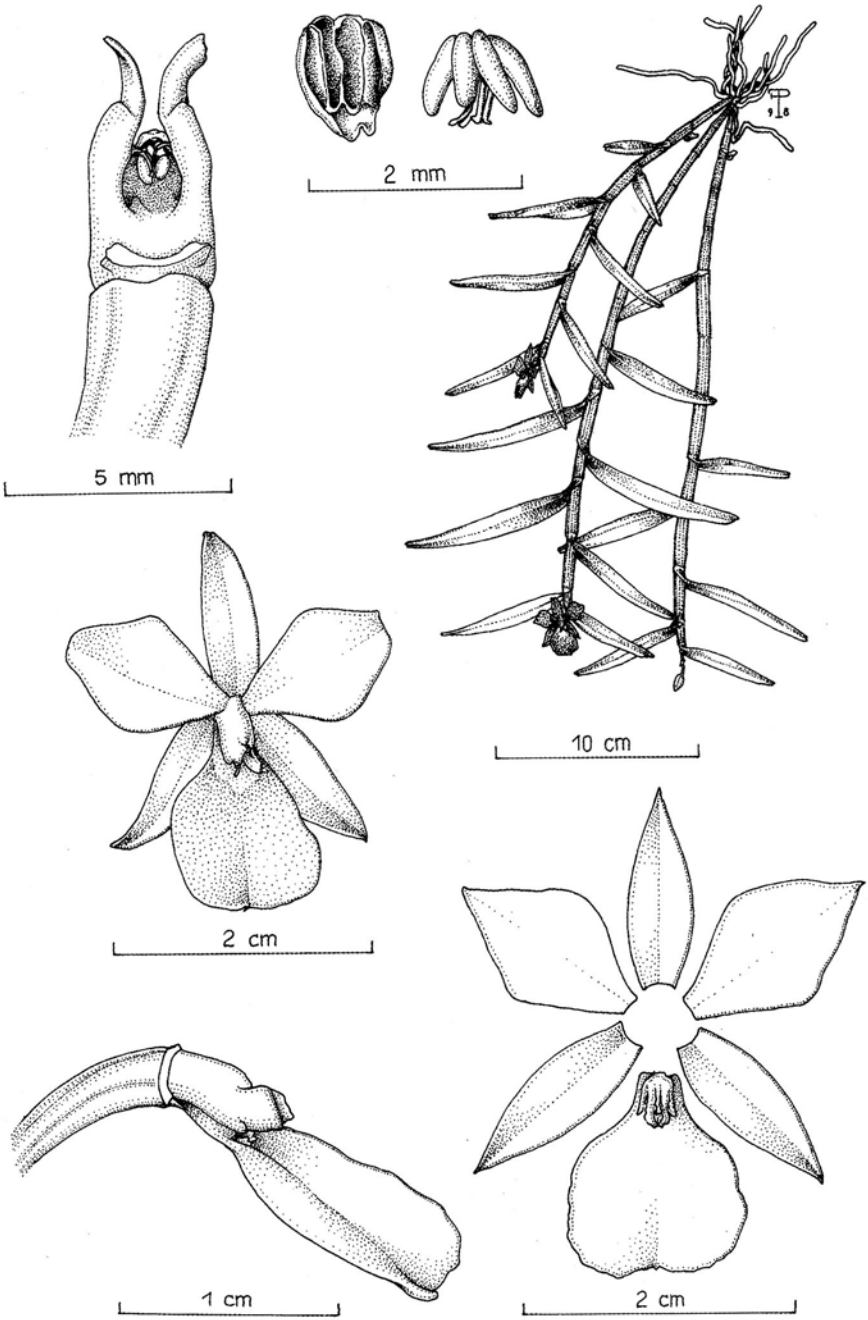
Catasetum maculatum



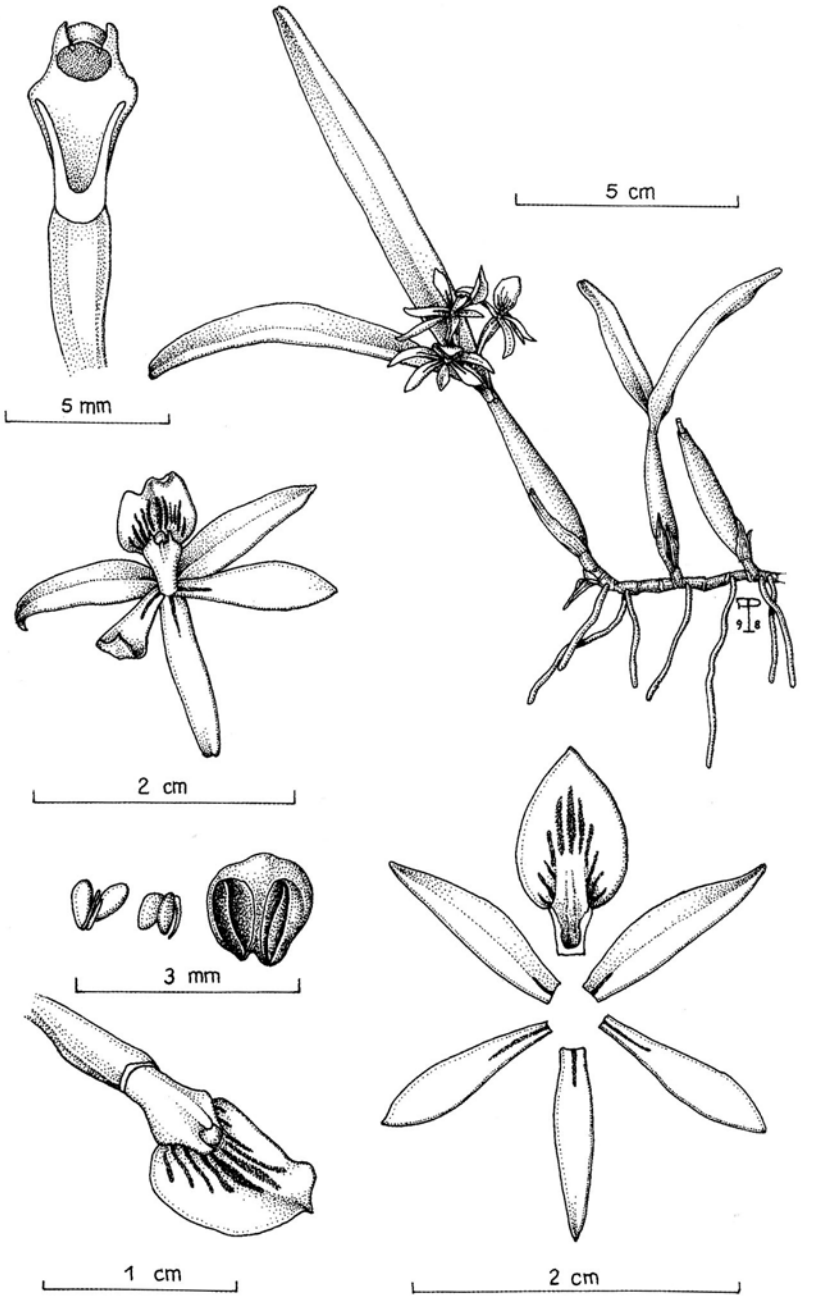
Caularthron bilamellatum



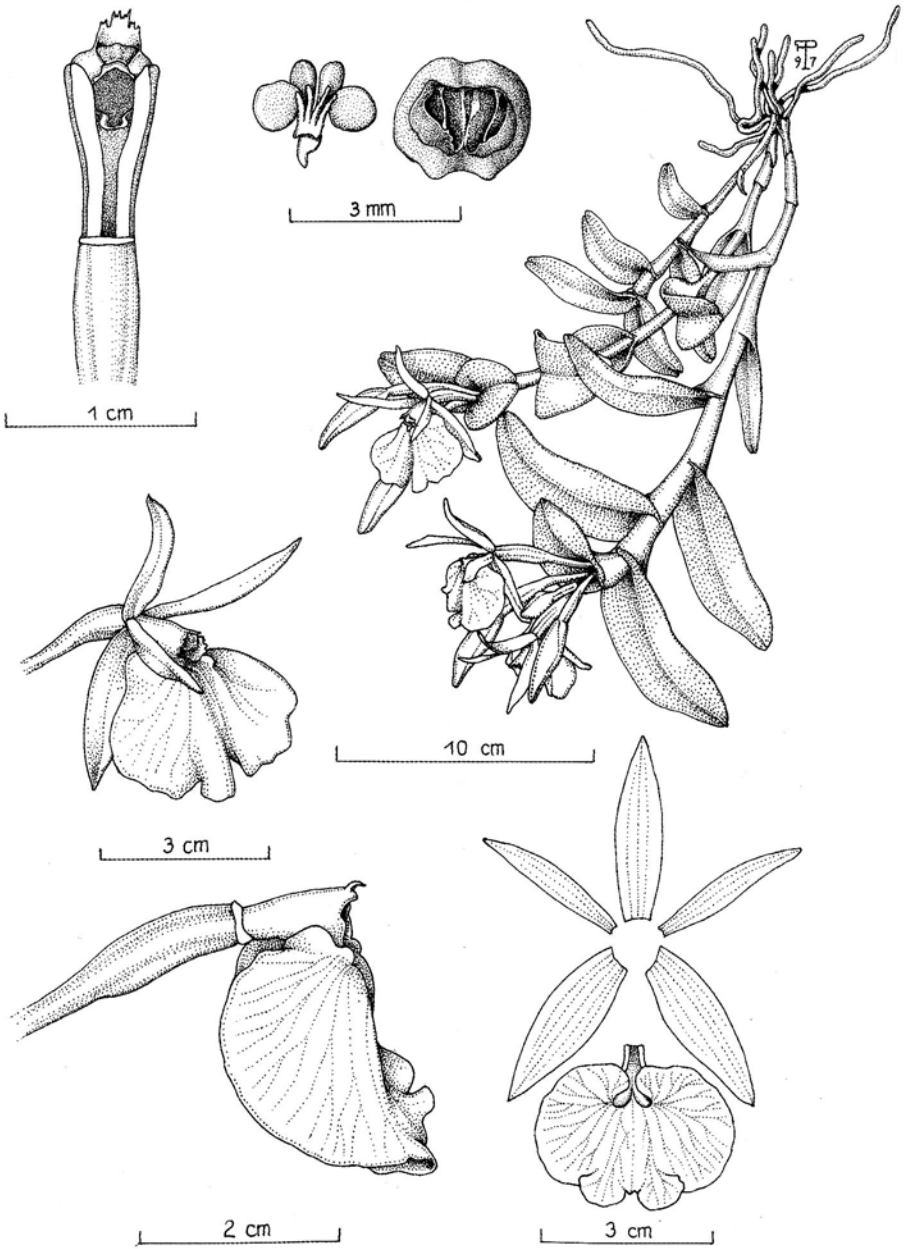
Dichaea panamensis



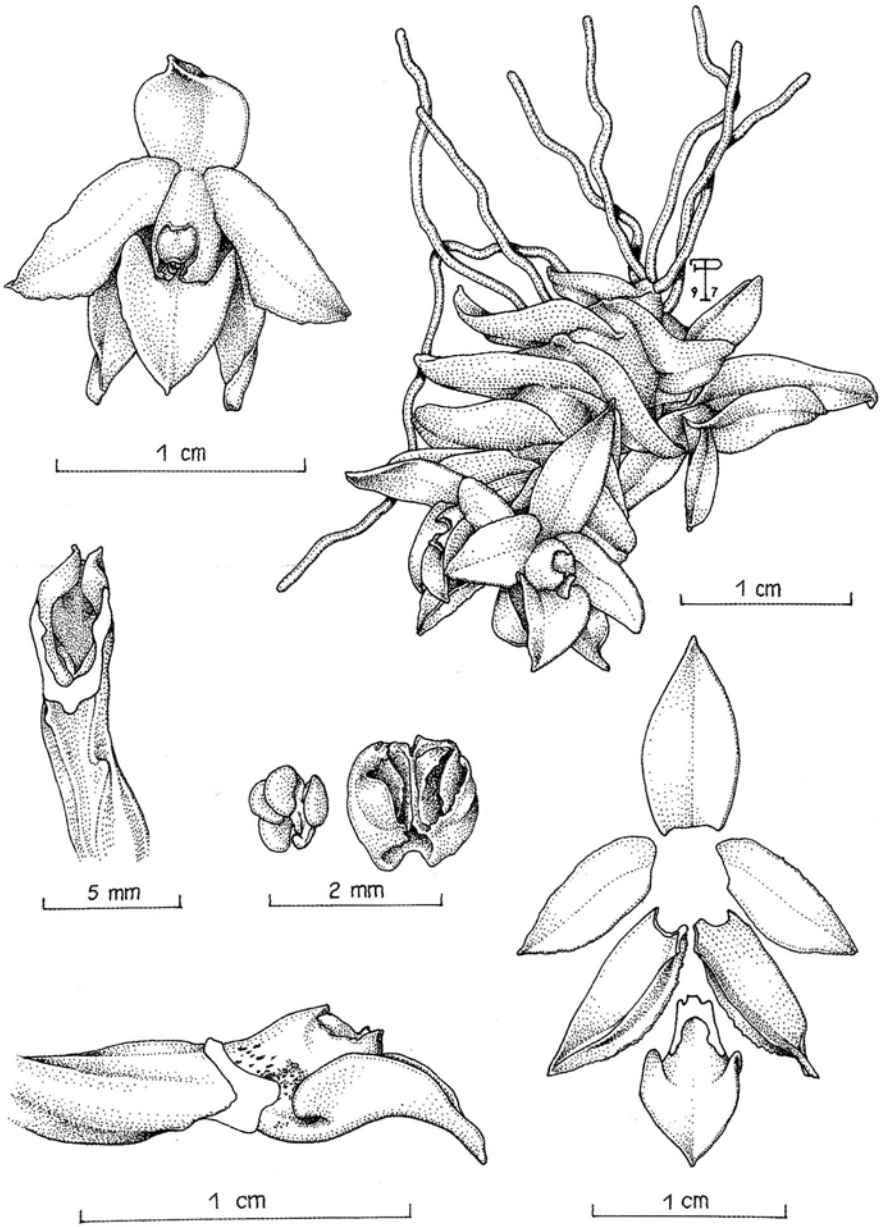
Dimerandra emarginata



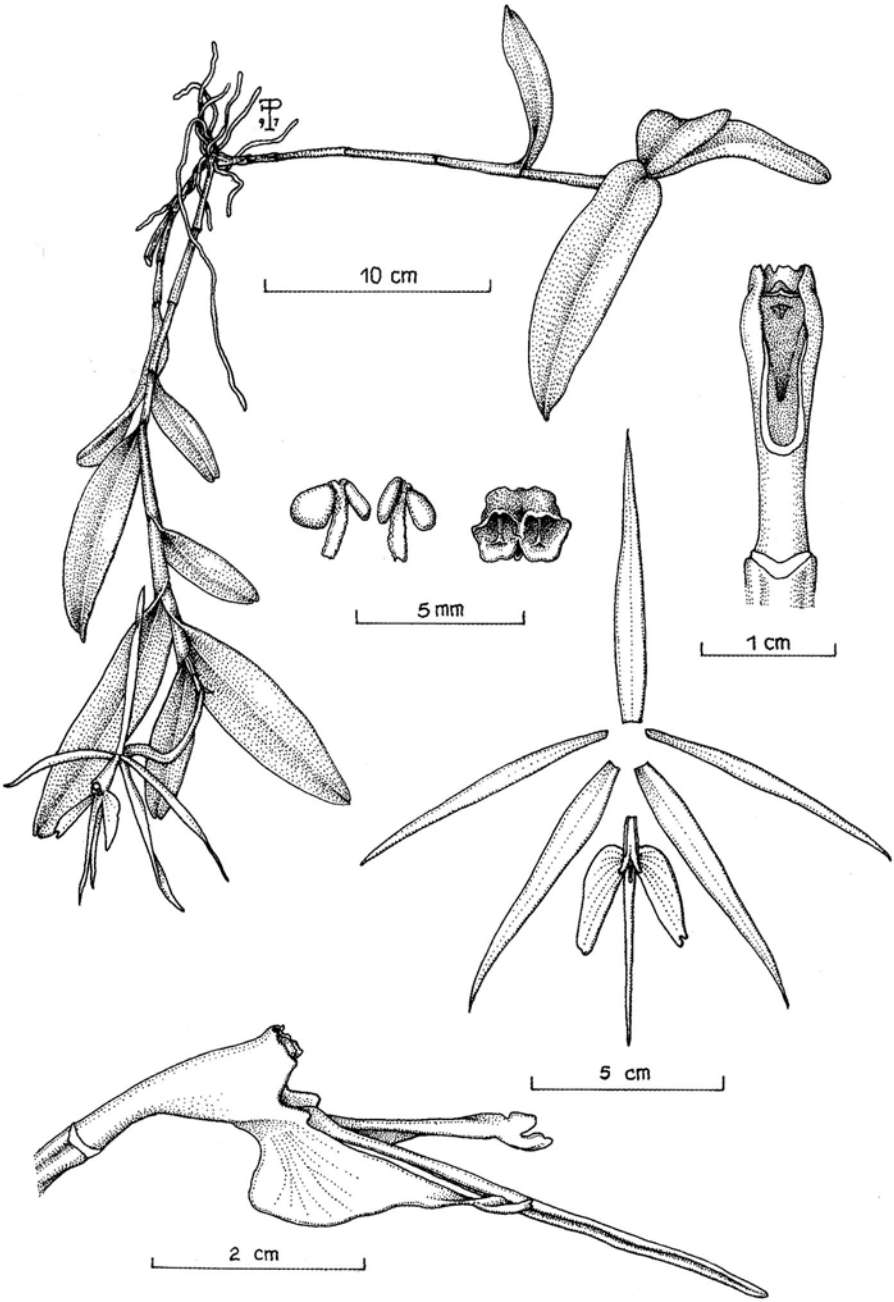
Encyclia abbreviata



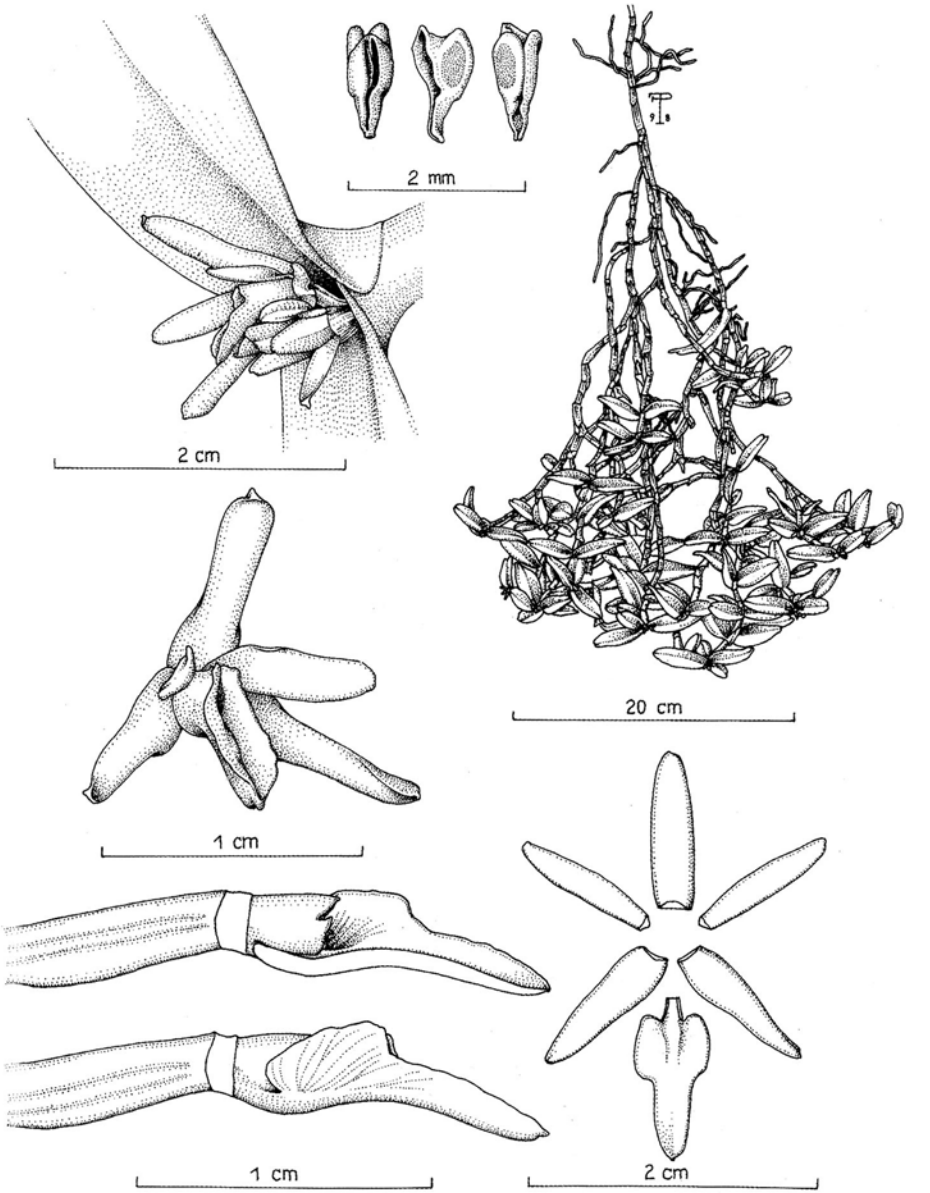
Epidendrun amparoanum



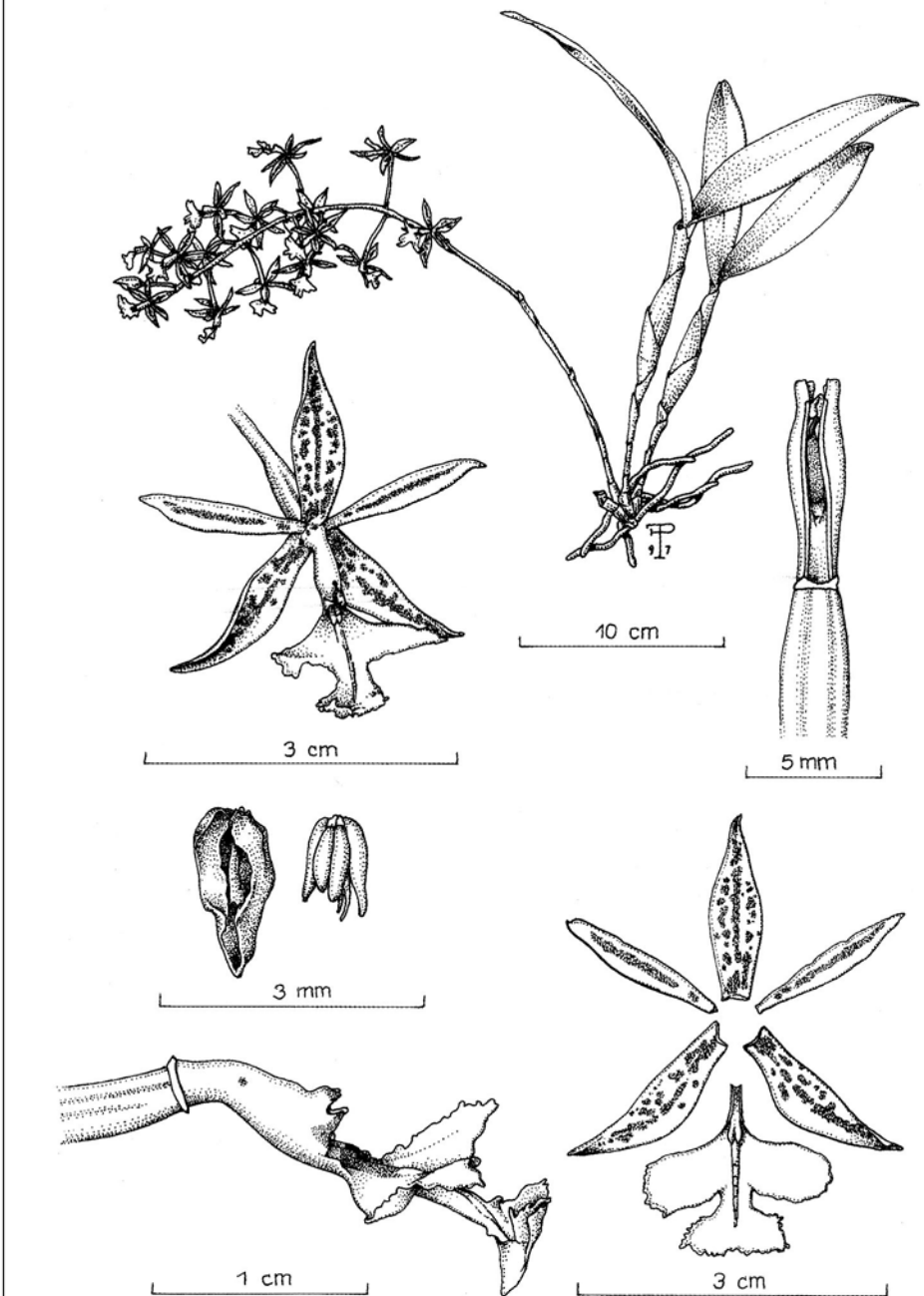
Epidendrun congestum



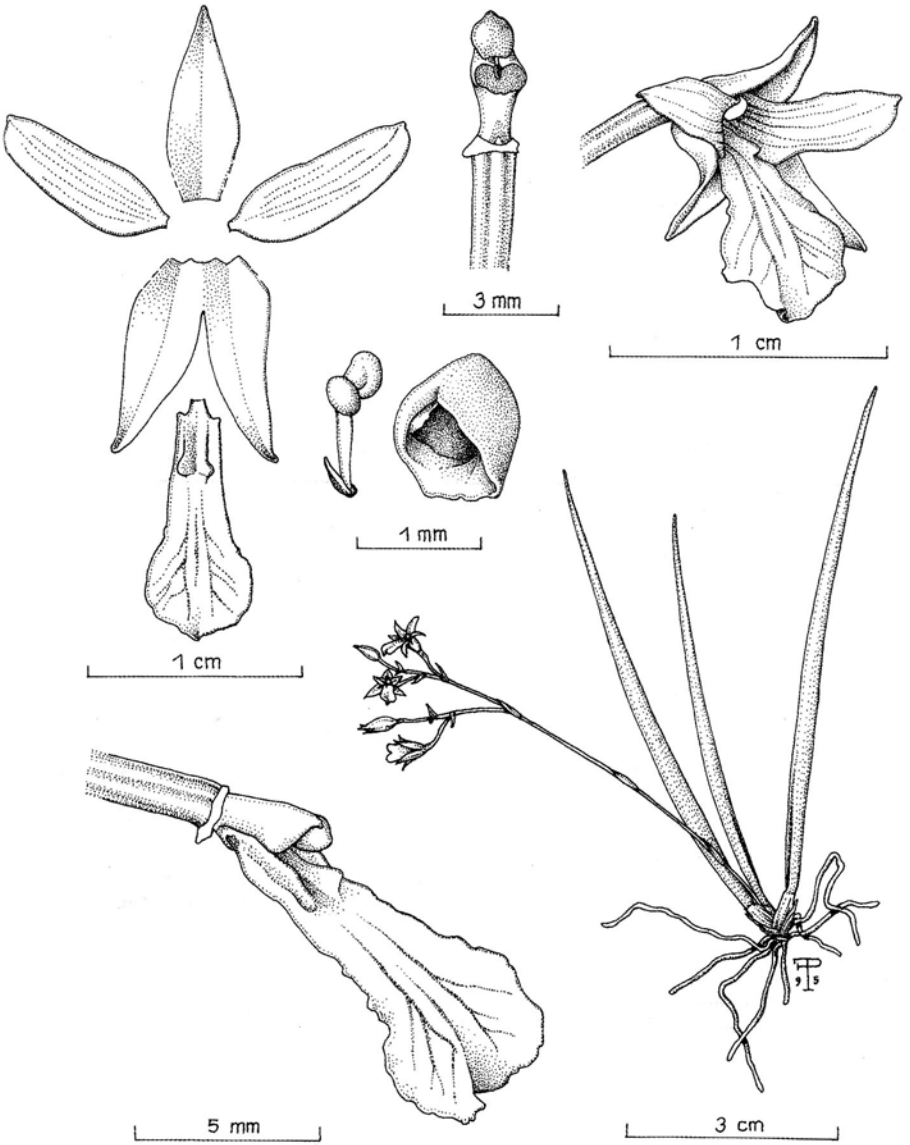
Epidendrun nocturnum



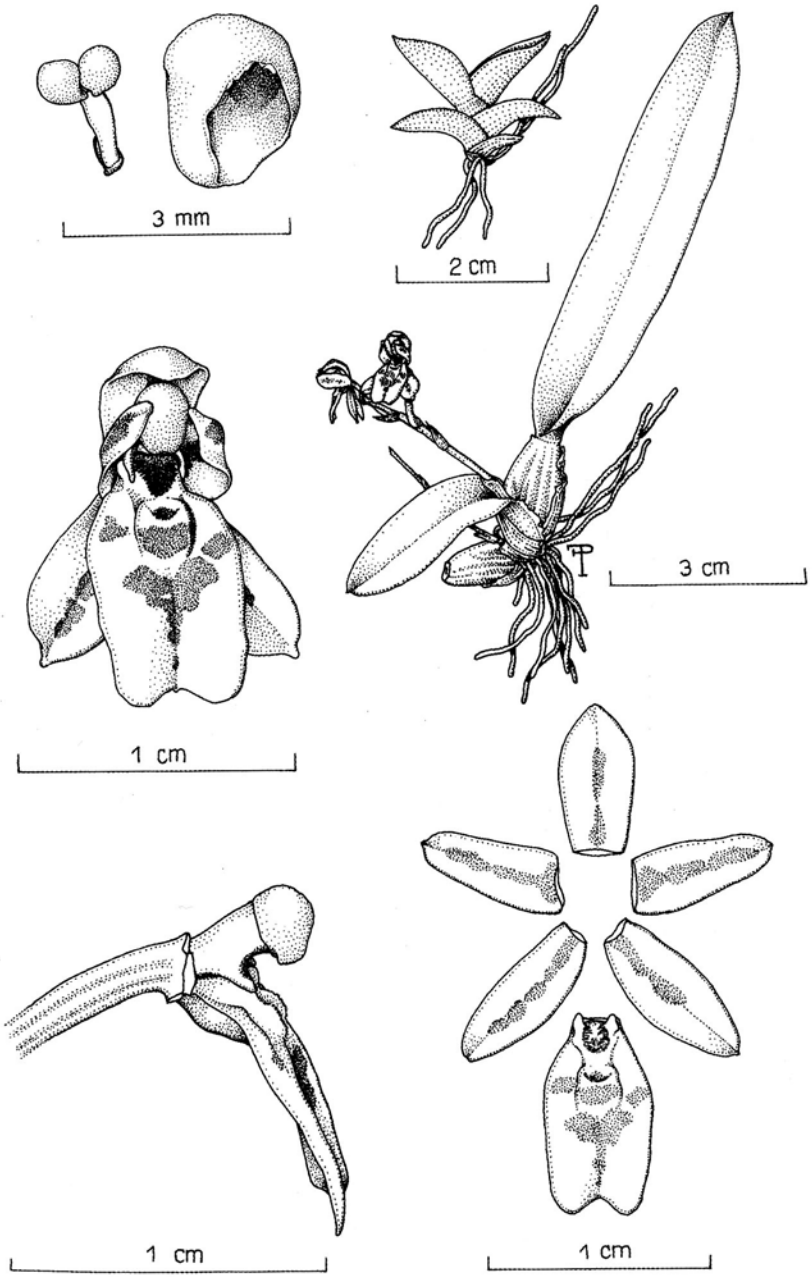
Epidendrum sculptum



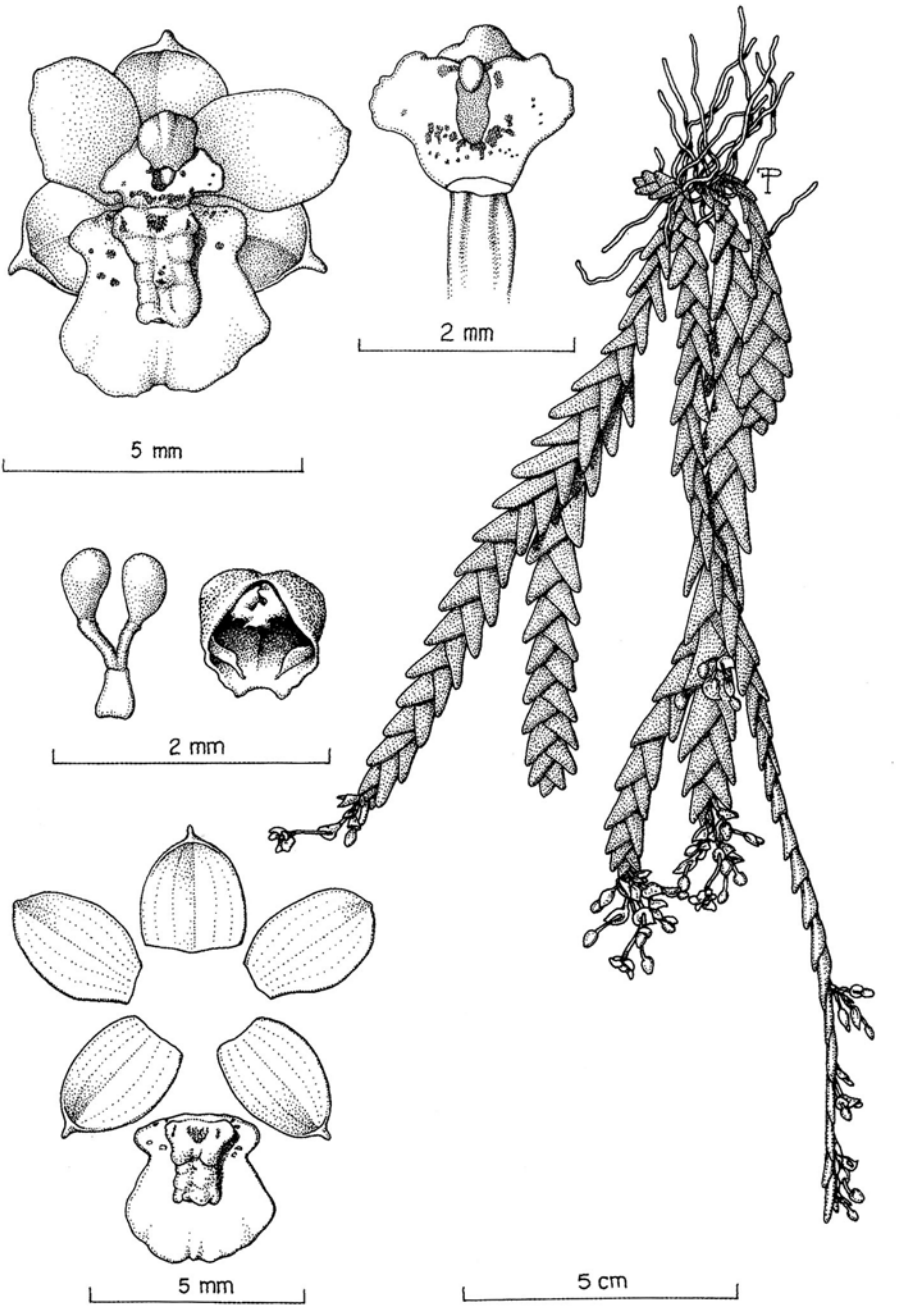
Epidendrun stamfordianum



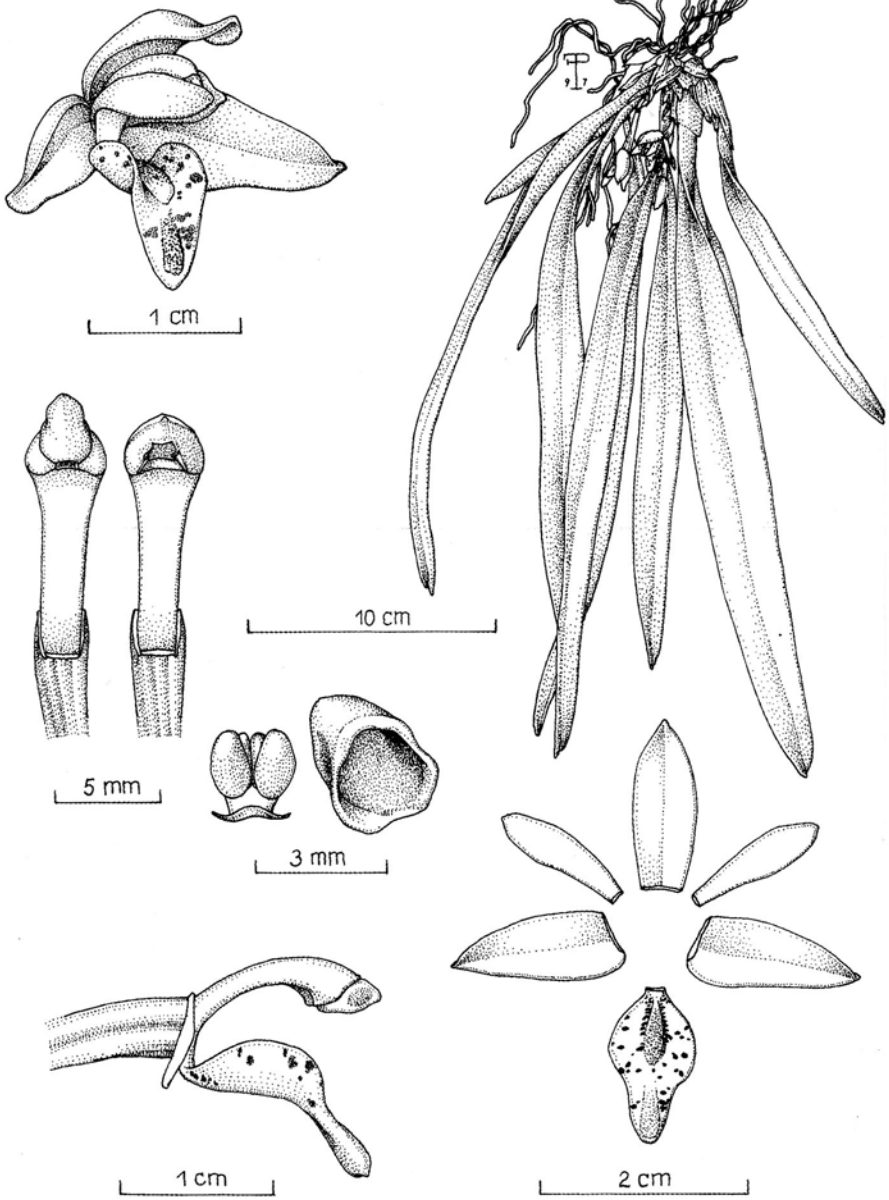
Ionopsis satyrioides



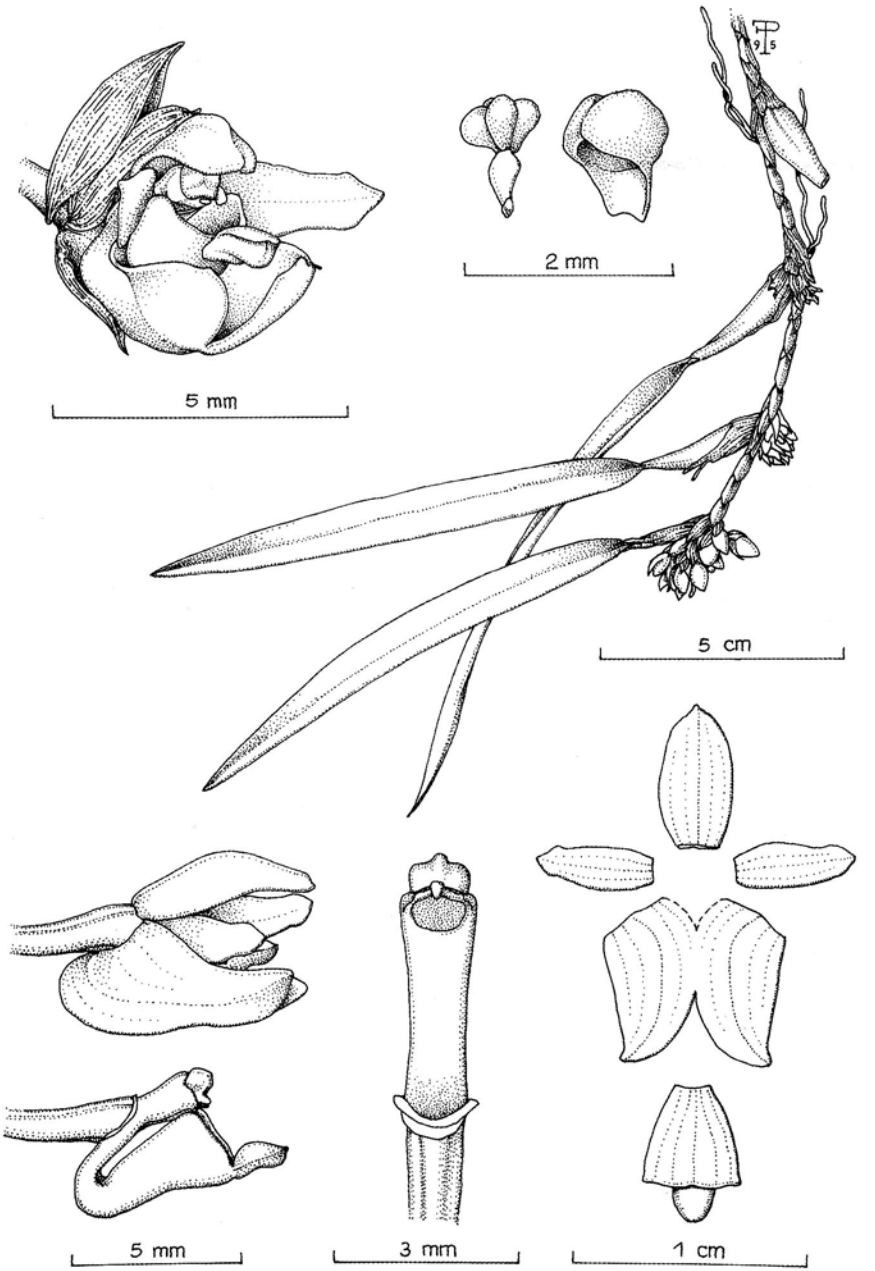
Leochilus labiatus



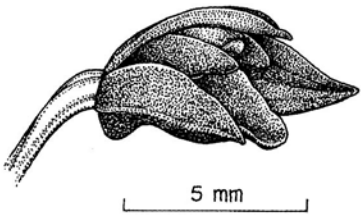
Lockhartia pandurata

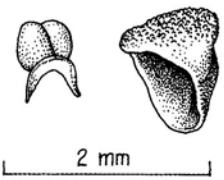


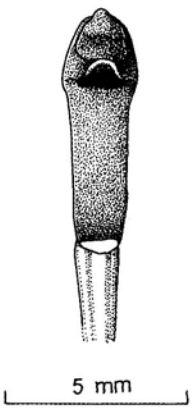
Maxillaria crassifolia

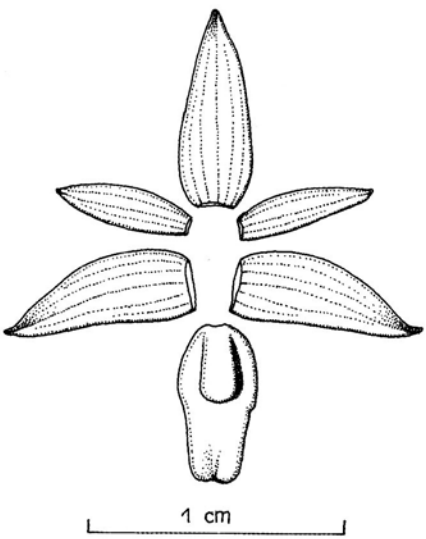


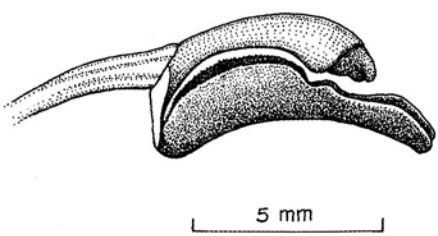
Maxillaria neglecta



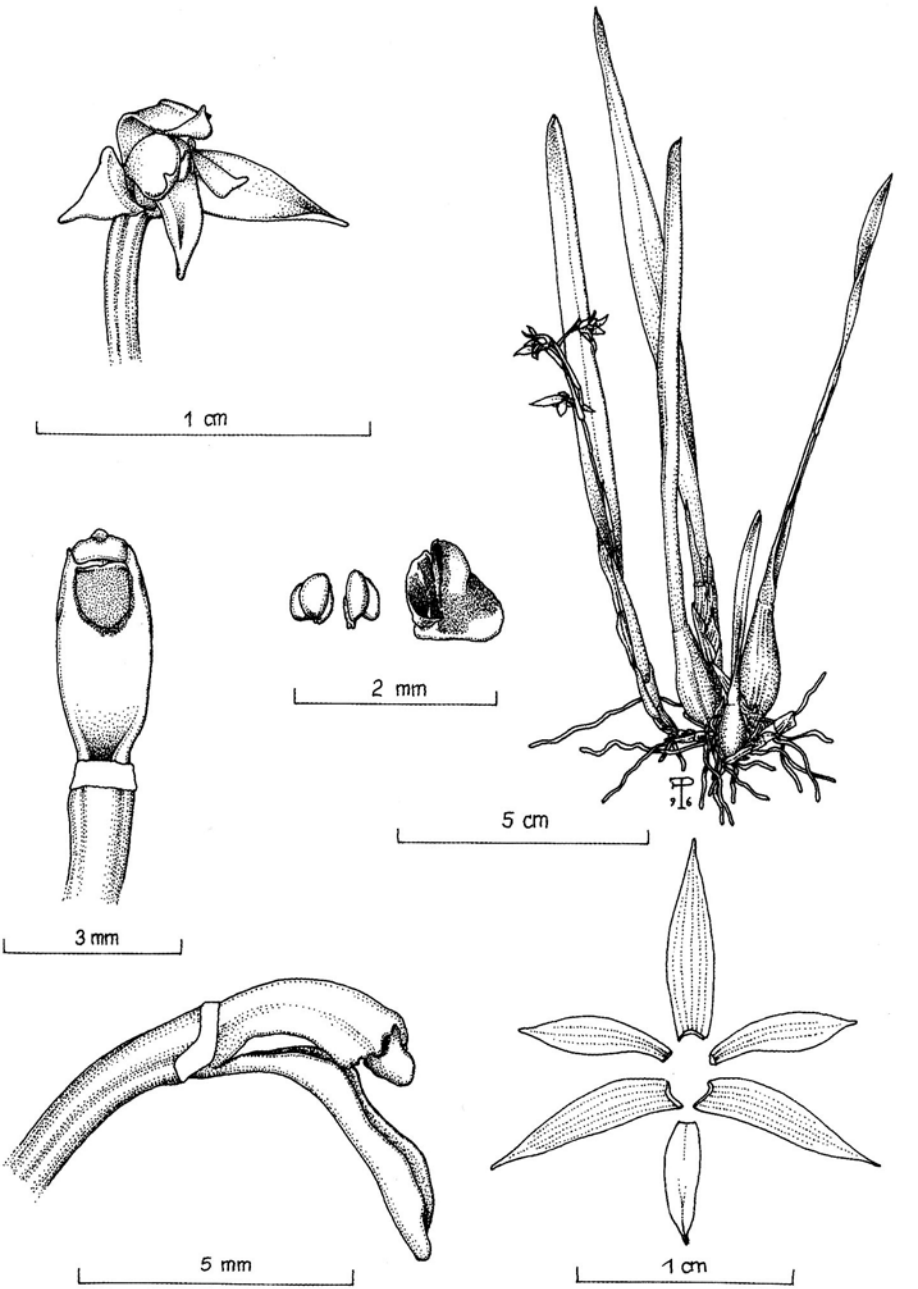




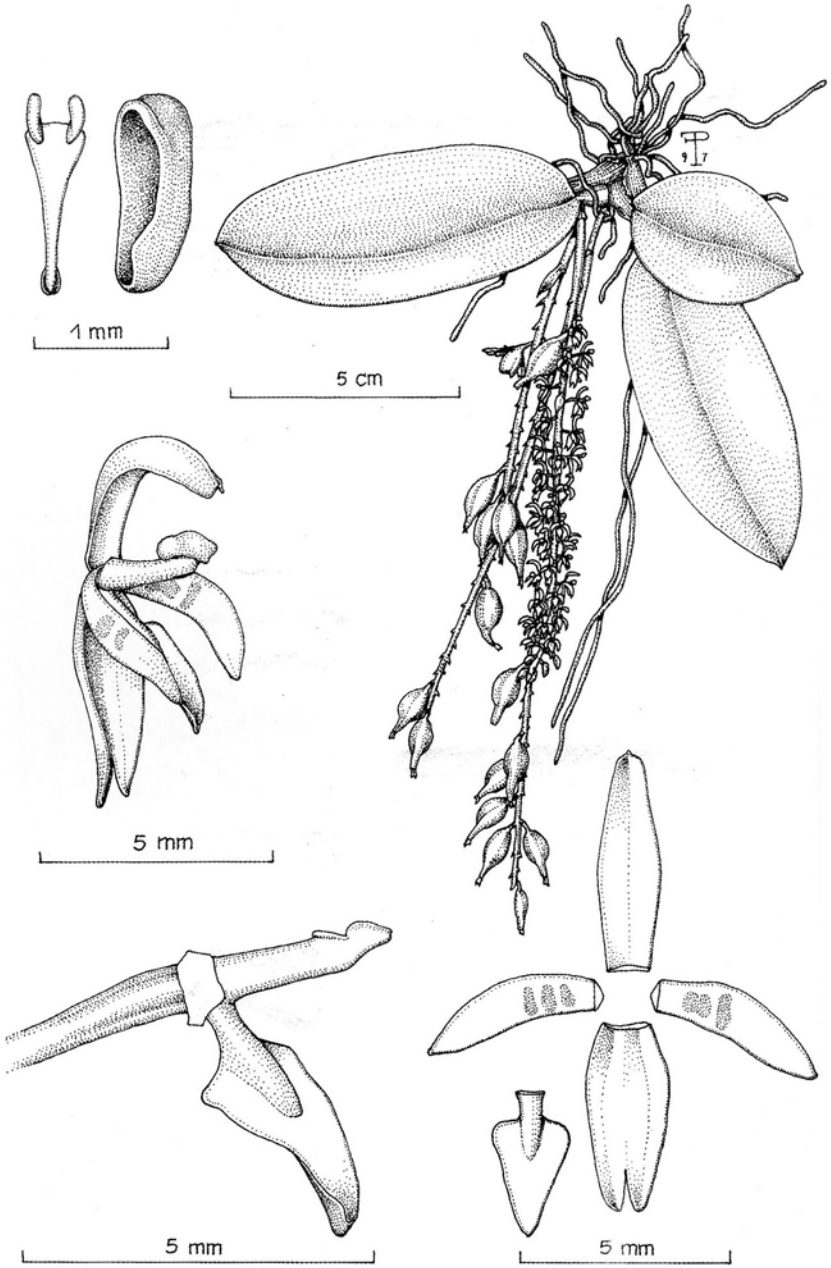




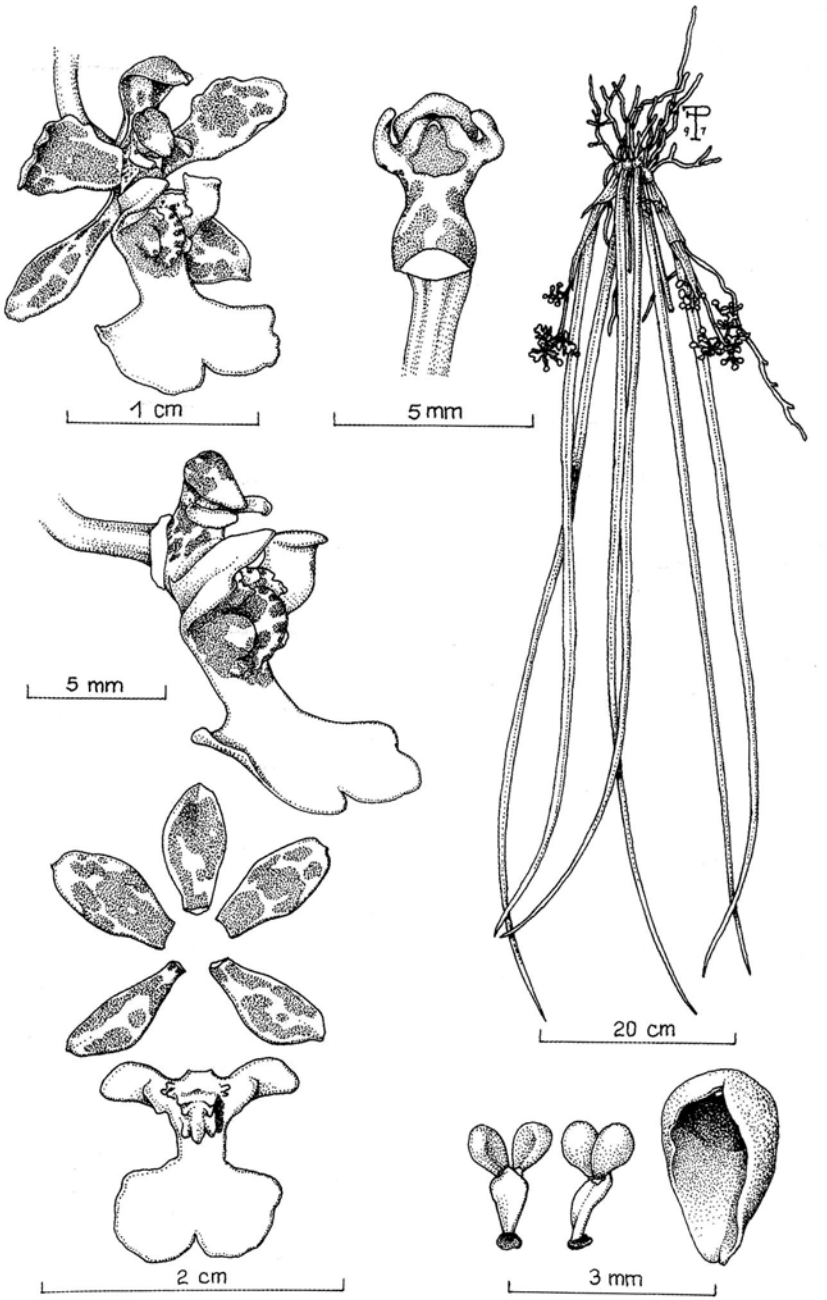
Maxillaria ponerantha



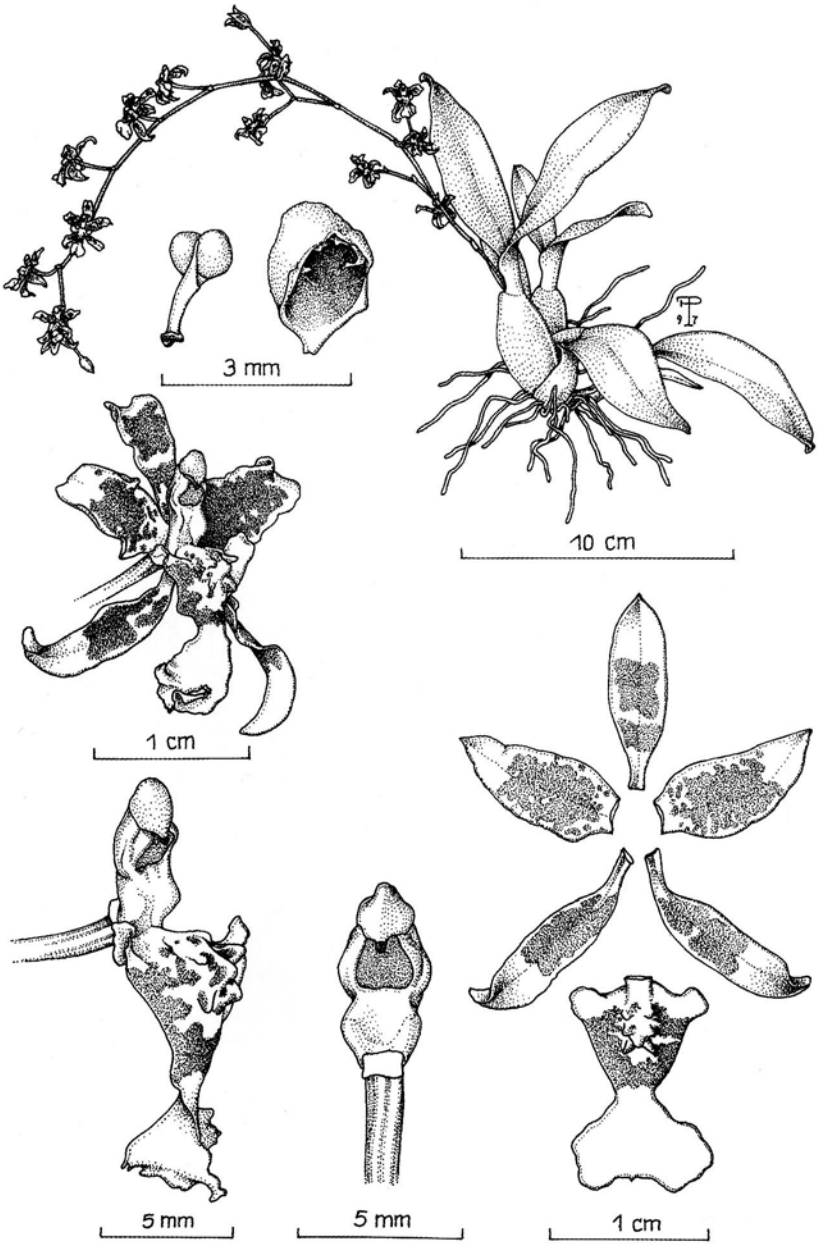
Nidema ottonis



Notylia pittieri



Oncidium ascendens



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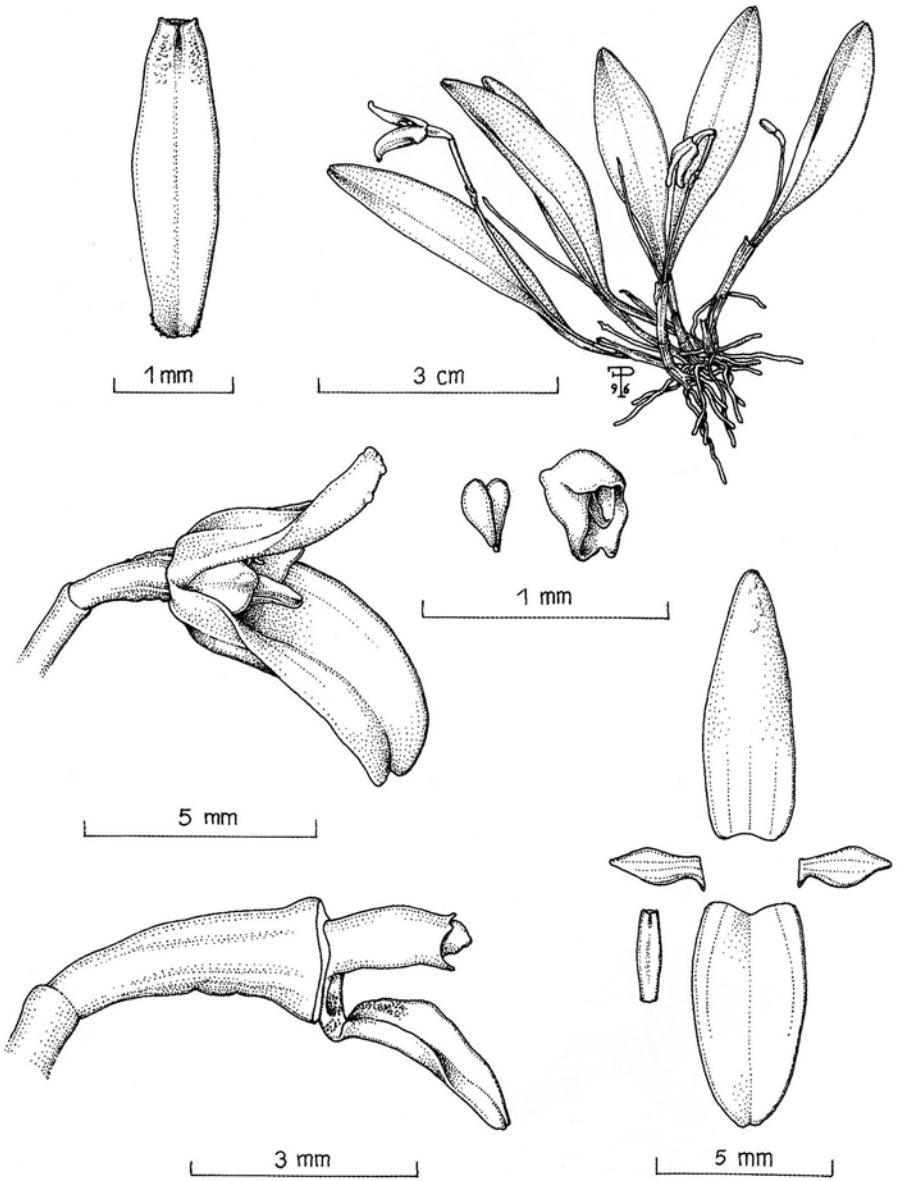
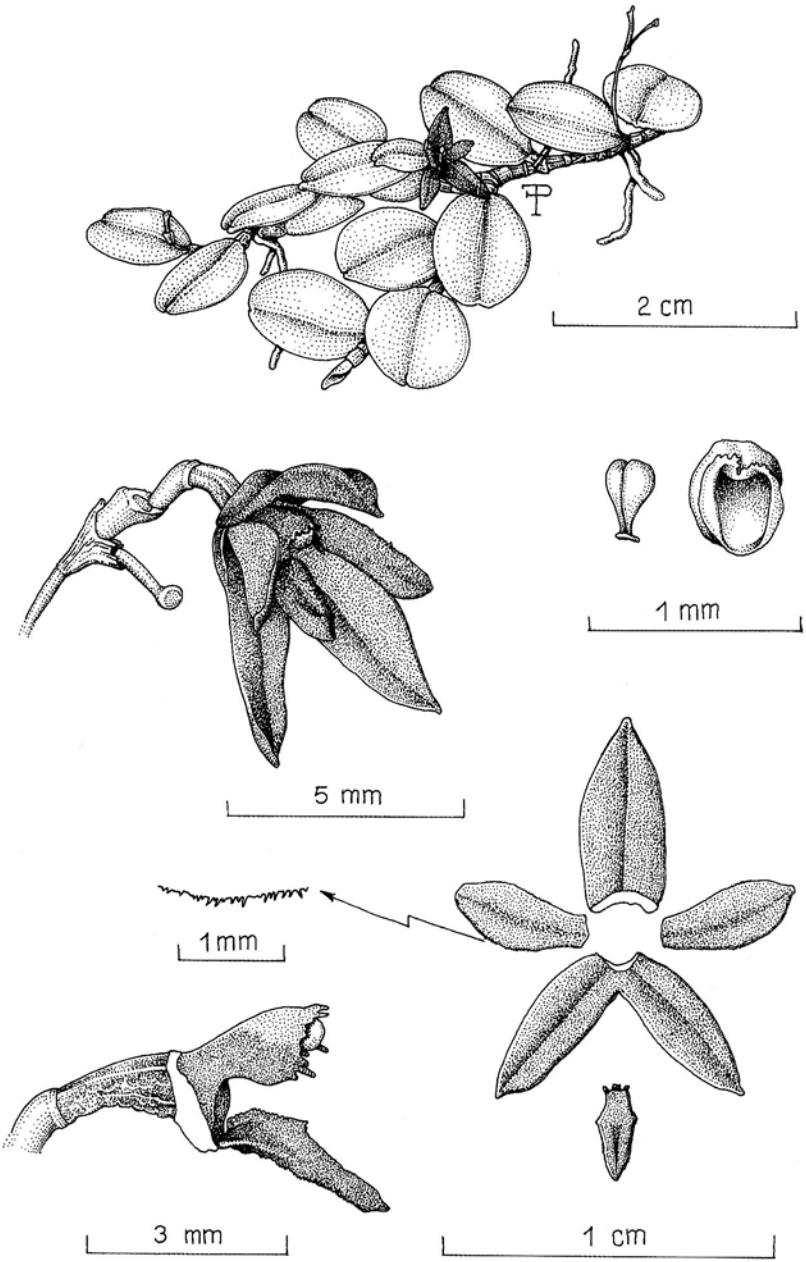
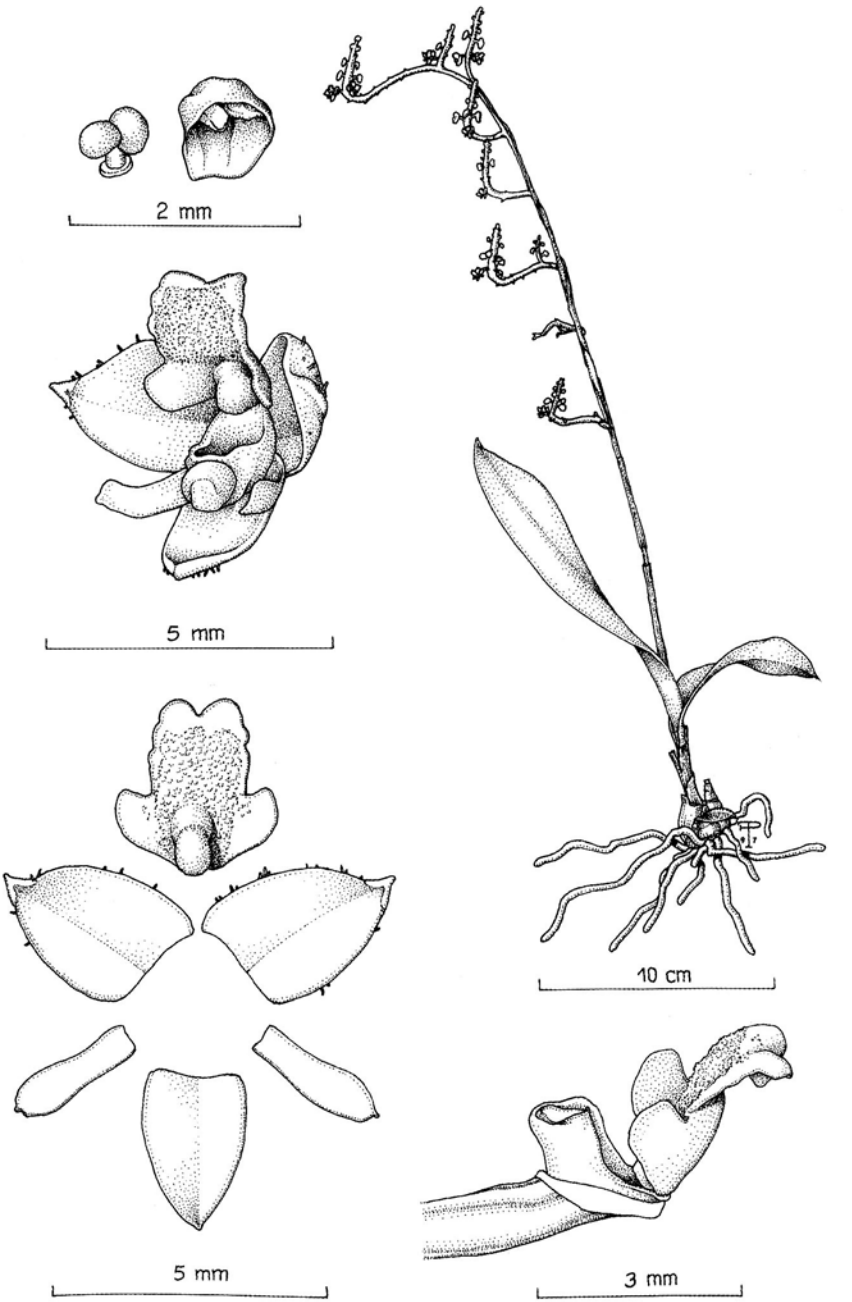


Pleurothalis corniculata



Pleurothallis lewisae



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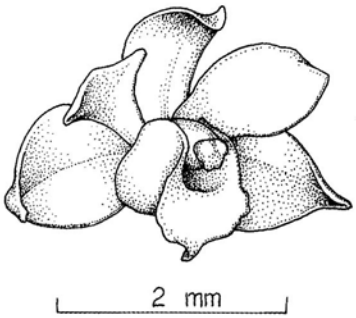
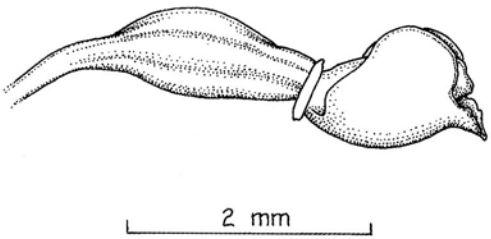
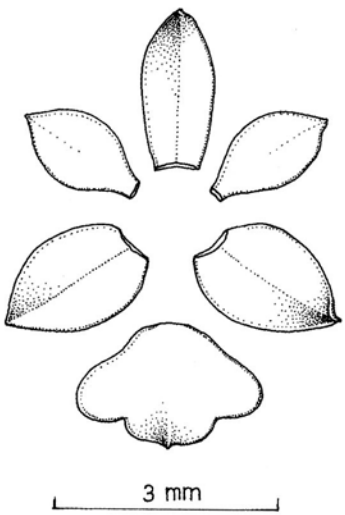
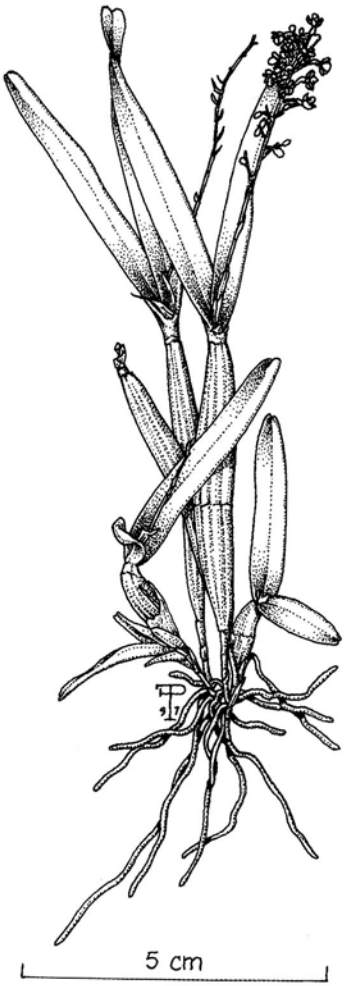
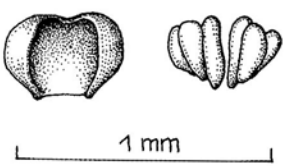


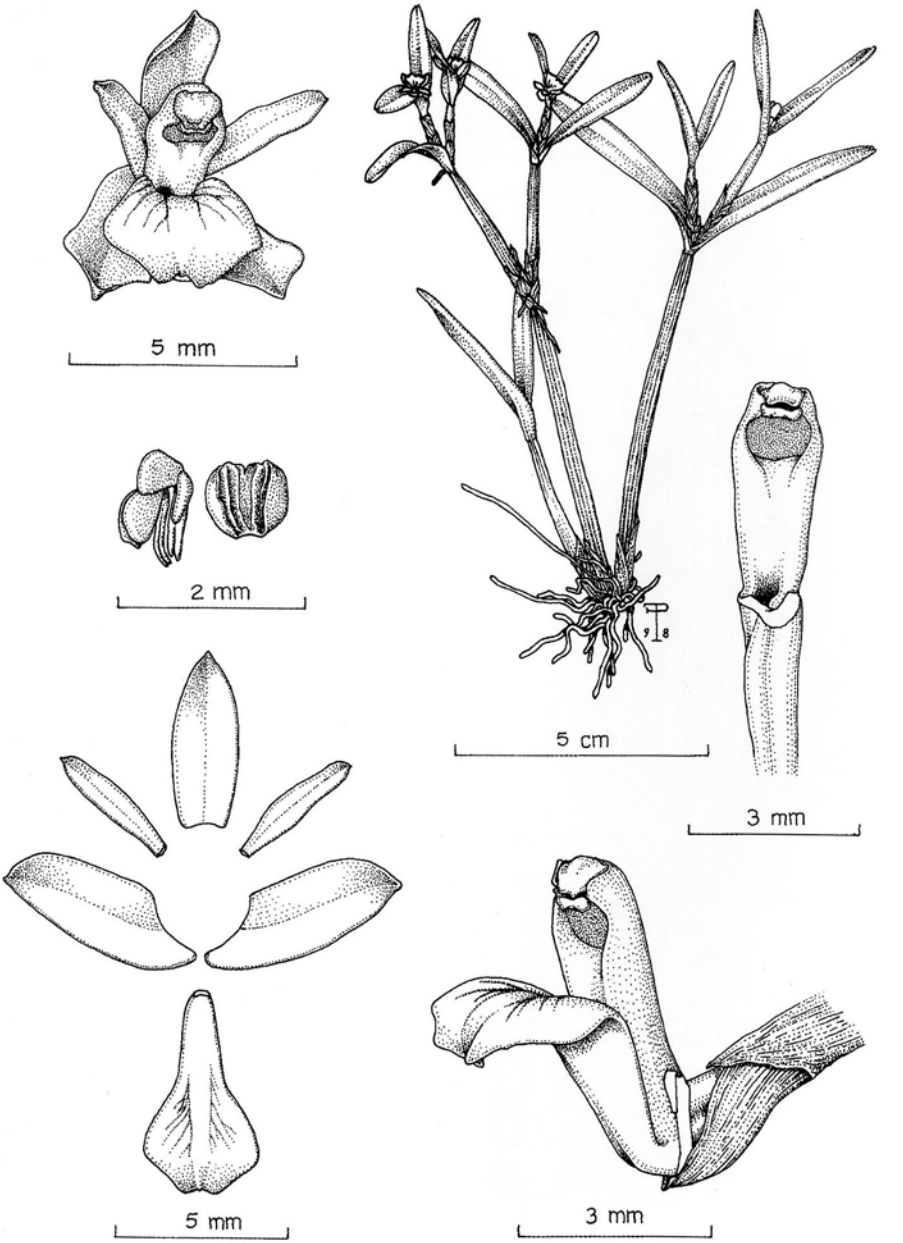




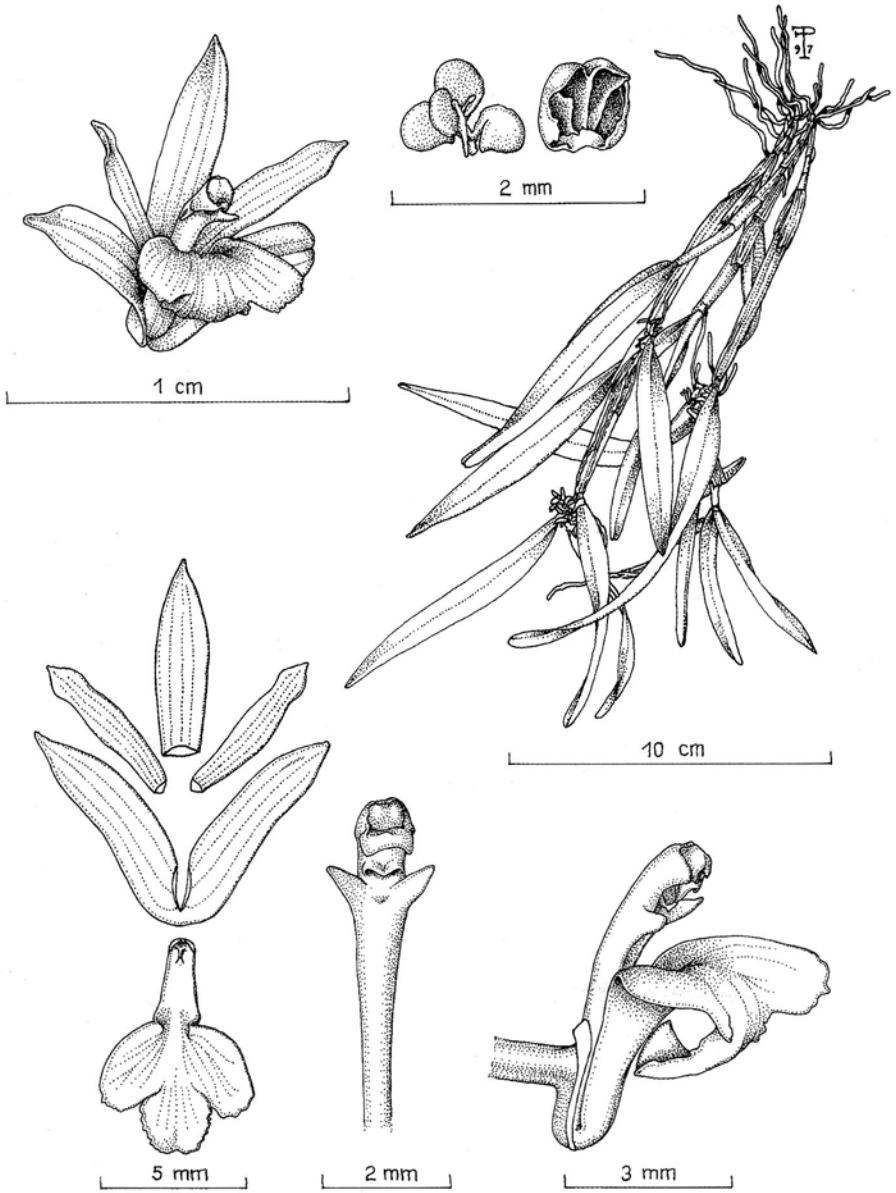




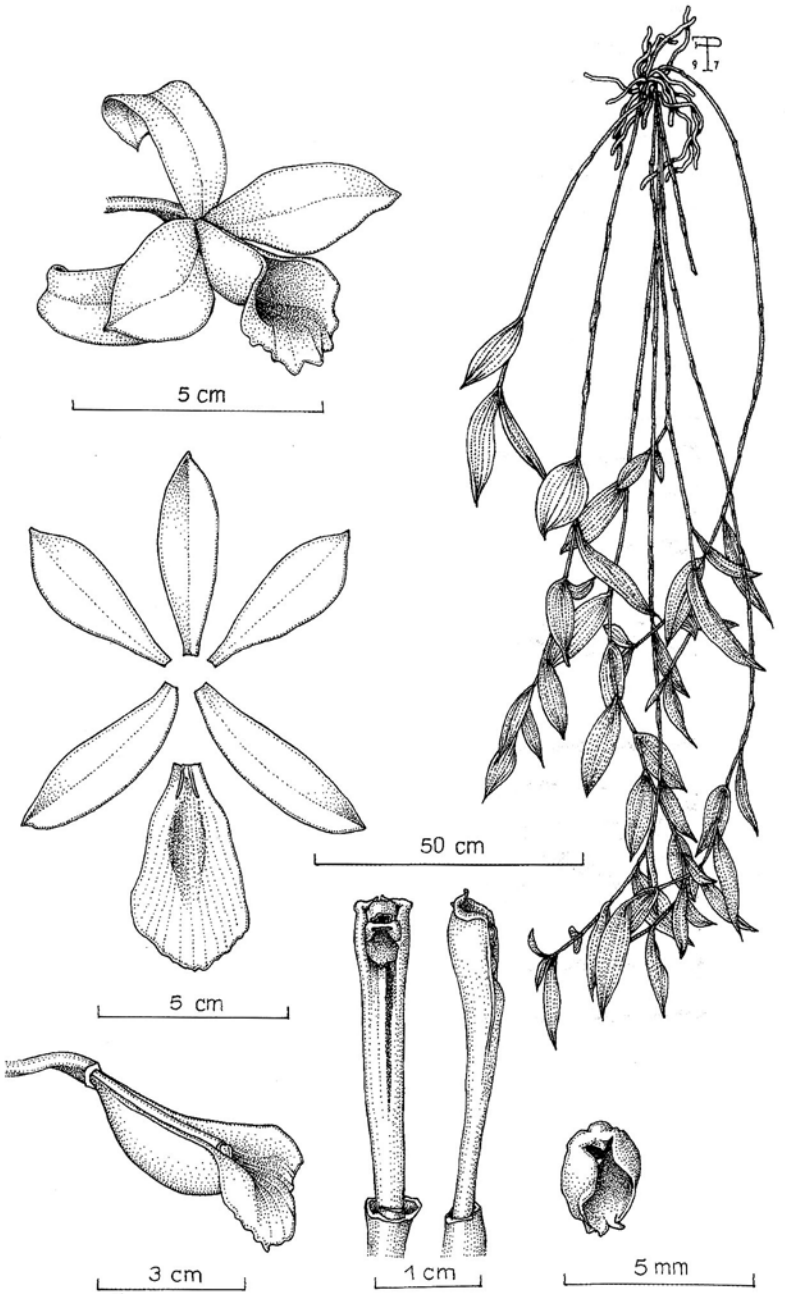
Scaphyglottis micrantha



Scaphyglottis prolifera



Scaphyglottis stellata



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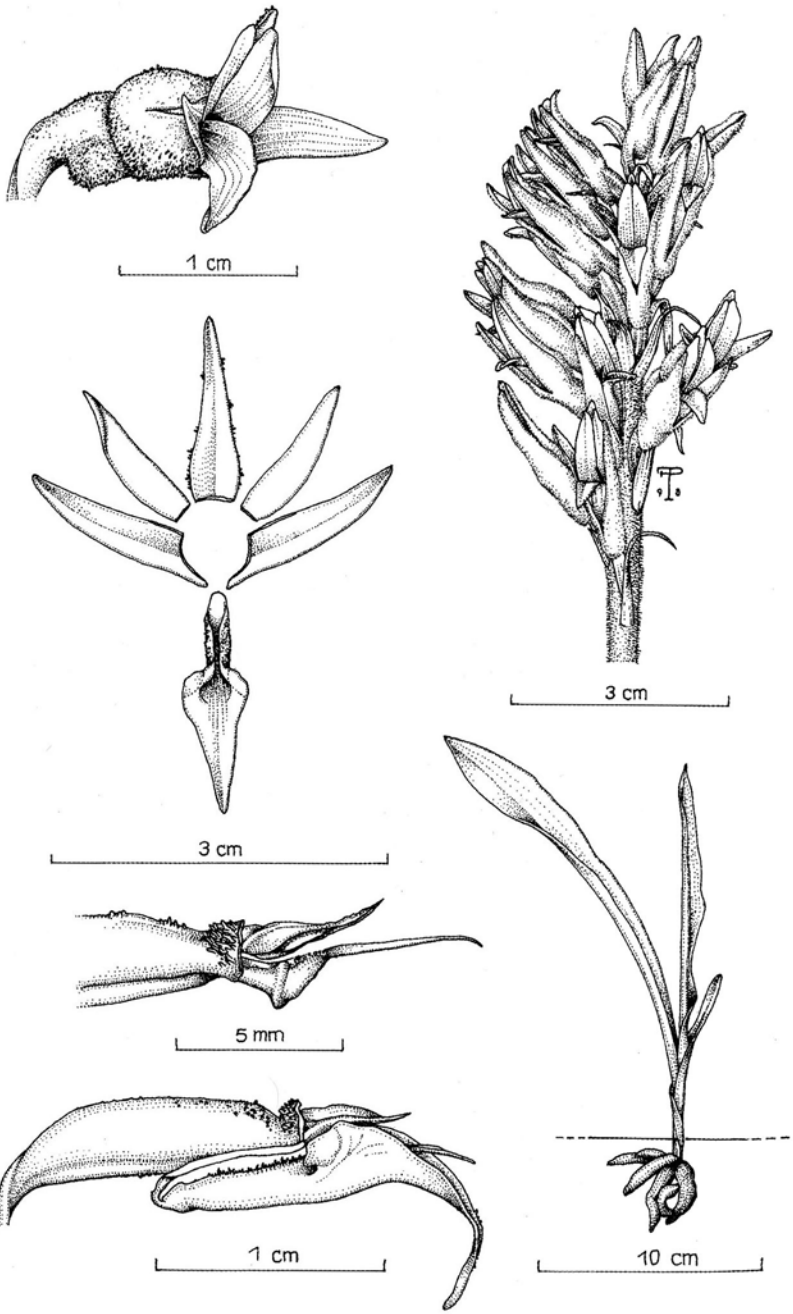
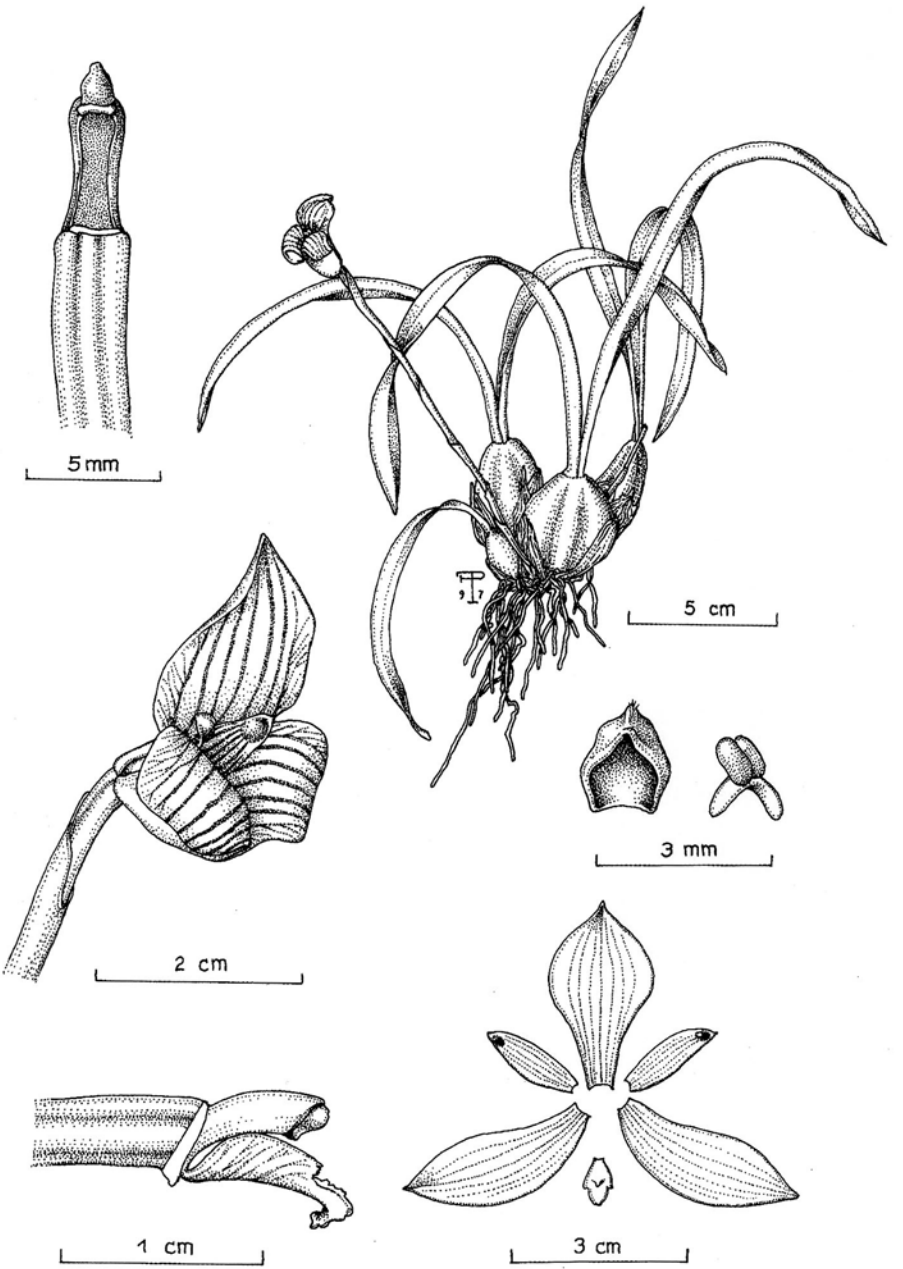
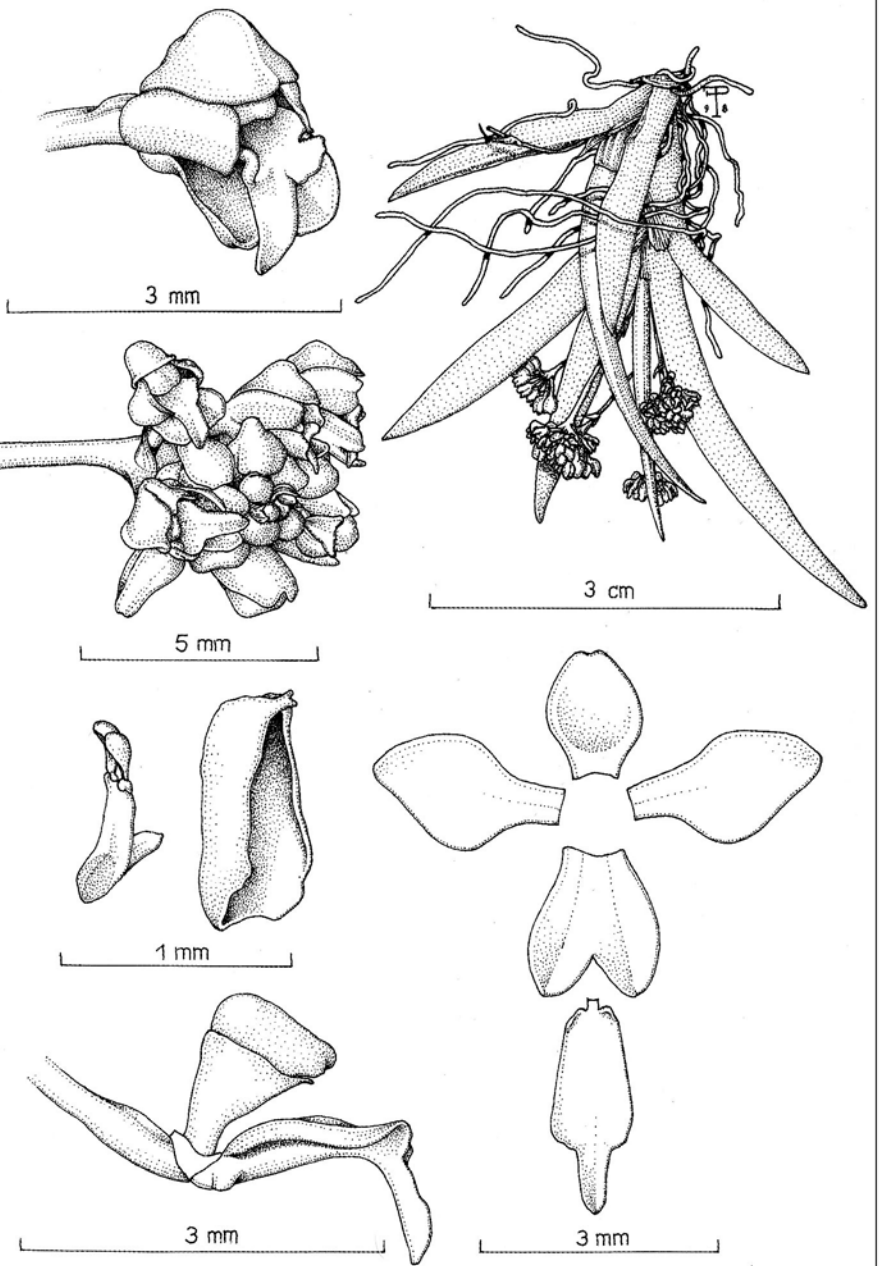


Stenorrhynchos lanceolatus



Trigonidium egertonianum



Trizeuxis falcata

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determining the most difficult taxa.

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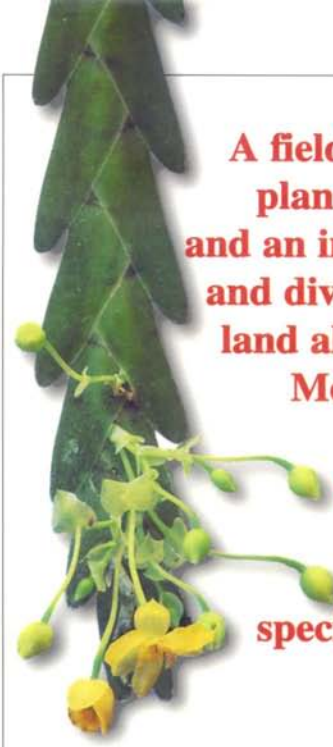

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