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FOUR NEW *TELIPOGON* (ORCHIDACEAE) FROM THE PERUVIAN ANDES

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ABSTRACT

Descriptions with illustrations of four new species of *Telipogon* from Peru are given herein, together with information about their habitats, collection localities and altitude. Comparisons are made with closely related species of the genus.

RESUMEN

Se describen e ilustran cuatro nuevas especies de *Telipogon* del Perú, incluyendo datos sobre sus hábitats, localidades y altitudes de colecta. Asimismo, se comparan con otras especies cercanamente relacionadas del género.

INTRODUCTION

The genus *Telipogon* was described in 1815 by Humboldt, Bonpland and Kunth. The name in Greek *telos* (end), *pogon* (beard) is descriptive of the pilose or bristled apex of the column giving them the appearance of an insect's abdomen. The column, together with the often hirsute base of the lip, contribute to give *Telipogon* a fly-like appearance, but less markedly than in *Trichoceros;* it apparently serves to simulate the abdomen of certain female fly species sufficiently to attract the male of the particular fly species to attempt pseudocopulation, and thus effectively pollinate the flowers (van der Pijl & Dodson 1966). It is this insect-like appearance of the column and the hirsute lip base, if it occurs, which make a very important feature for the identification of *Telipogon*. Many of the species have relatively large bright yellow flowers with contrasting venation and column pubescence color which make them a spectacular reward for collectors using photography. *Telipogon* are most commonly found in the quite cool and constantly moist environment of the Andean cloud forests between 2000 and even to above 3300 m. Their long, relatively thick roots, frequently extend 15 to 25 cm along slender branches enveloped by epiphytic mosses, which abound on the tree and shrub branches in the cloud forest. This habitat is nearly constantly bathed at night by cool fog and also receives high rainfall, except during the drier months of June through September, when

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occasional showers continue to maintain a wet forest with a moderately high relative humidity during the cool nights. These demanding climatic conditions make *Telipogon* a very difficult genus to cultivate and the mortality rate is very high if there is indiscriminate removal by commercial collectors from the natural habitat. These and other cloud forest orchid species are often sold to persons not having the proper greenhouse conditions to grow them efficiently. The depletion of the genetic pool can endanger the survival of these species.

In late 1989, after preliminary studies, we felt certain that we were dealing with several new species of *Telipogon,* and that it would be advantageous to consult with a specialist. Copies of three illustrations of *Telipogon* species were sent for identification to Dr. Calaway H. Dodson. However, an inked drawing by itself may prove to be insufficient for identification, and additional written botanical details, including measurements, may be required to establish definitely the identity of a species. Additional information about the three drawings submitted in 1989 was not requested. In a personal letter dated 12 August 1991, Dr. Dodson answered our query as follows: "Plate number 573 is *Telipogon hercules,* 571 is *T. radiatus,* and 574 is unnamed." Bennett has found major inconsistencies in these (assumedly tentative) identifications and now sets forth the clarifications and full descriptions based upon examination of flowers preserved in liquid and herbarium specimens.

The purpose of this paper is to describe in detail four new species of *Telipogon* discovered in Peruvian andean cloud forests and which were collected, photographed and illustrated in the past four years.

TELIPOGON ANTONIETAE Bennett & Fernández, sp. nov. (Fig. 1)

LATIN DIAGNOSIS: Species haec *Telipogoni inti* Braas similis, sed petalis 7-nervatis subrhombeis-ellipticis apiculatis marginibus ciliatis, labello 15-nervatis subobicularis apiculatis, columna setosi-spinosa subdoliiformi stigmate margine perincrassato distinguitur.

ETYMOLOGY: We name this distinctive orchid in honor of Antonieta Vargas P. who first discovered the species and who is a student and esteemed horticulturist of the neotropical flora found in the montane wet forests of Central Peru.

TYPE: ***PERU:*** **JUNIN:** Satipo, along the road to Huancayo above Satipo, 2500 m, 31 June 1987, *D. Bennett, Jr., A. de Bennett, G. G. Bennett B. & A. Vargas P. 3905* **(Holotype-USM).**

OTHER SPECIMENS SEEN: ***PERU:*** **JUNIN:** Satipo, 30 June 1986, *Bennett et al. 3906* (USM).

Epiphyte. **Plant** 10 to 20 cm tall. **Roots** slender, firm. **Stem** more or less ascending, invested with 3-5 articulated foliar sheaths 6-10.0 x 1.4 cm, lanceolate to narrowly oblanceolate, acuminate. **Peduncle** terete below, angulate above, usually only 1-2 flowers open at the same time, superior buds opening successively. **Sepals** semihyaline greenish, the **petals** greenish yellow with greenish veins, the **lip** greenish yellow veins pale green becoming purplish red on the basal 1/3 with irregular shaped small spots between the veins, the **column** pale green, bristles pale purplish, finer pubescence hyaline, the **anther** pale brown, the **pollinia** bright yellow, the **stipe** hyaline and the **viscidium** yellow-brown. **Dorsal sepal** 2.1-2.25 x 0.8 cm in natural position, navicular, lanceolate, acuminate, sigmoid viewed from the side, the **lateral sepals** similar but slightly narrower; **petals** 2.4-2.5 x 2.15 cm, 7-veins, ovate-elliptic, lightly rounded below, shortly acuminate, minutely apiculate, basal 2/3 margin short ciliate, thickened base sparsely pilose; **lip** transversely subobicular 2.4 x 2.85 cm, 15-veins which have cross veins near the base, margin minutely short ciliate, base thickened, ecallose, sparsely bristled and pilose; **column** 0.35 x 0.28 cm, barrel shaped, **stigma** outline transversely semiobicular, margin thickened, rounded, apex broadly obtuse, bristles acicular 0.10-0.20 cm long, dorsal surface and sides with fine, very slender hairs 0.05-0.10 cm long, the **pollinia** obovoid in 2 unequal pairs.

HABITAT: Cool, wet cloud forest in deep shade.

FLOWERING SEASON: Throughout the year as new vegetative shoots develop.

ILLUSTRATION VOUCHER: Bennett 3905.

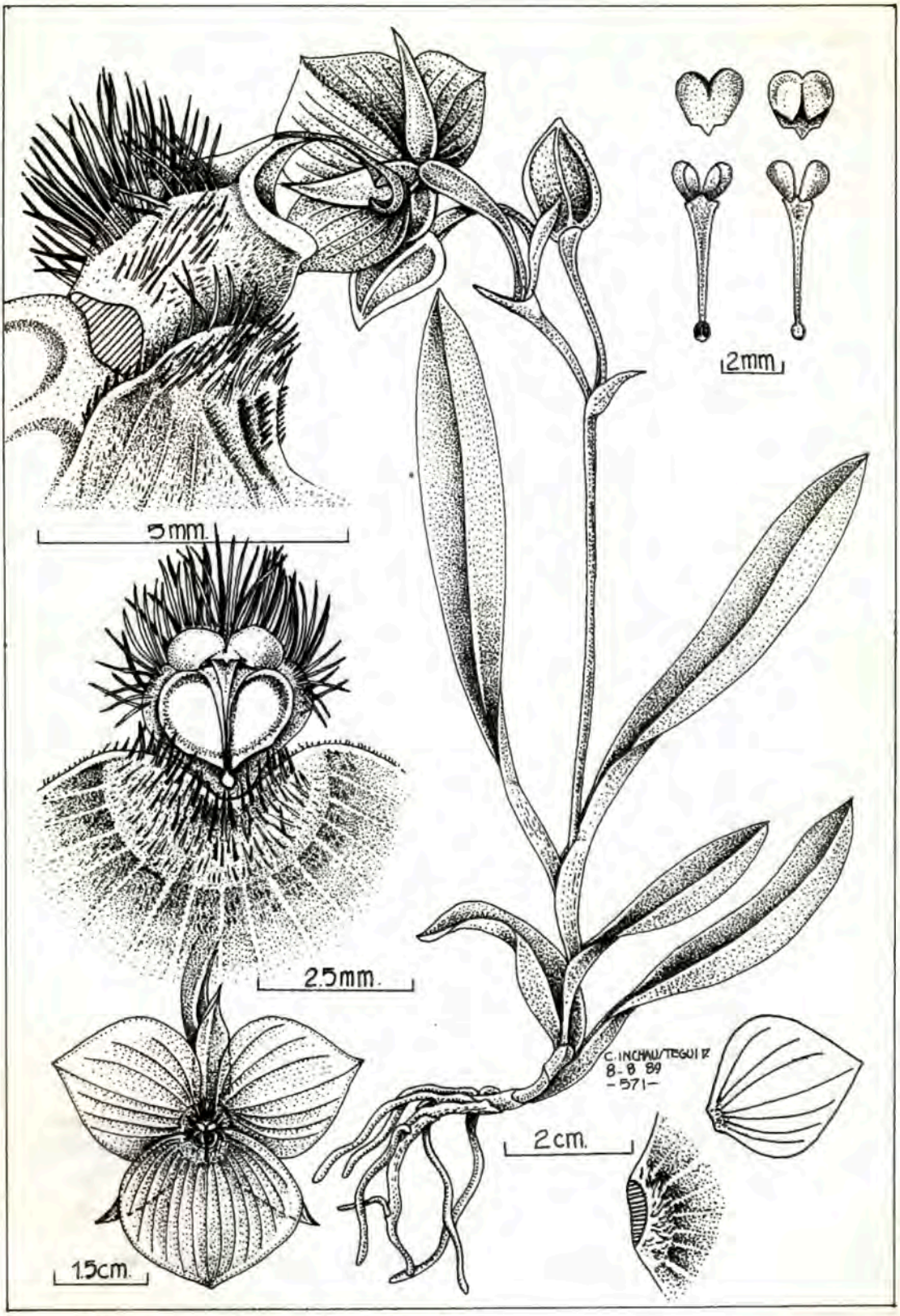

Fig. 1.— *Telipogon antonietae* D. Bennett, Jr. & R. Fernández G.

DISCUSSION: C.H. Dodson tentatively identified this illustration as *Telipogon radiatus* Rchb. f. which according to Schweinfurth (1961) was collected by *Davis s.n.;* the habitat was not recorded: "No authentic material of this species was available. The floral measurements were derived from Kränzlin's description". "Vegetative parts lacking in the type (and apparently the only collection) and the description was drawn from a single flower". *T. antonietae* is distinguished by having 7-veins on the petals, 15-veins on the lip and a barrel shaped, bristled, pilose column with a thickened stigma margin. These features contrast very significantly with the 9- to 11-veins on the petals and 21-nerved, densely pilose basal portion of the lip of *T. radiatus*.

TELIPOGON GENEGEORGEI Bennett & Fernández, sp. nov. (Fig. 2)

LATIN DIAGNOSIS: Species haec *Telipogoni inti* Braas similis, sed petalis 9-11-nervatis, labello 13-nervatis margine ciliatis minutis, columna crista ventrali apice protrude, anthera pagina apicalis granulosa infra medium scalariformi distinguitur.

ETYMOLOGY: We name this orchid for the first author's nine year old grandson Gene George Bennett B., an orchid enthusiast and patient collecting companion.

TYPE: ***PERU:*** **JUNIN:** Satipo, above Calabaza near Río Pampa Hermosa, 2550 m, 31 July 1987, *D. Bennett, A. de Bennett, G. G. Bennett B. & A. Vargas P. 3966* **(Holotype-USM).**

OTHER SPECIMENS SEEN: ***PERU:*** **JUNIN:** Satipo, along the Satipo-Huancayo road, 1 August 1987, 2580 m, *D. Bennett et al. 4014* **(USM).**

Epiphyte. **Plant** small 10-15 cm tall. **Rhizome** short, invested with several imbricating, articulated foliar sheaths, 3-4 **leaves** 8-10.0 cm long, 0.6-1.6 cm broad, lanceolate to oblanceolate, apical 1/4 or less minutely ciliate, apiculate, **inflorescence** bialate with a thickened central rib, 1 to 4 flowers open at the same time, peduncle exceeding the leaves, floral bracts concave, ovate-triangular, acuminate, carinate. The **sepals** pale yellow, veins pale reddish purple, the **petals** bright yellow, veins red-purple, pilose base reddish purple, the **lip** similar to petals, the **column** pale greenish with intense red-purple setae. **Sepals** to 1.65 x 0.8 cm, 3-veined, base concave, ovate-lanceolate, acuminate, sharply carinate; **petals** 2.15-2.3 x 1.85-1.95 cm, 9- to 11-veins, base pilose, very shortly attenuate, shortly acuminate above, transversely broad elliptic across middle, margins minutely short ciliate; **lip** 1.8-1.9 x 2.1-2.22 cm, 13-veins, base rounded, apex broadly obtuse minutely apiculate, distal 1/3 of margin minutely short ciliate; **column** 0.52 x 0.25 cm, 0.4 cm seen from side to tip of anther and stigma, 35 to 40 long acicular bristles 0.15 to 0.4 cm long borne mostly on the upper sides with fewer on the tip, lower sides with smaller and more slender setae 0.1 to 0.15 cm long, the **stigma** concave, cordiform with a prominent blunt projection 0.08 x 0.07 cm from a thick straight ridge on the ventral side of column, margin not thickened, the **anther** 0.22 x 0.18 cm, base sharply carinate with the tip hooked inward, apical surface minutely granulate, scalariform from middle to base, the **stipe** 0.42 cm long, 0.1 cm across convex apex, less than 0.01 cm across the very slender v-shaped base, tapers abruptly from the 3 lobulate apex, the **viscidium** thicker, hooked, base with a short knob at the junction with the stipe, the **pollinia** in 2 unequal pairs, outer larger pair convex-concave, oblong-obovoid, inner pair compressed, oval-elliptic.

OBSERVATIONS: Distinguished by the 9- to 11-veined petals with minutely ciliate margins, lip 13-veins, minutely ciliate margins, column with a ventral ridge tip protruding, anther distally granulose, scalariform below. Four clones examined and preserved.

HABITAT: Cool cloud forest on moss covered tree branches.

FLOWERING SEASON: Probably throughout many months of the year when growing conditions are favorable.

ILLUSTRATION VOUCHER: Bennett 3966.

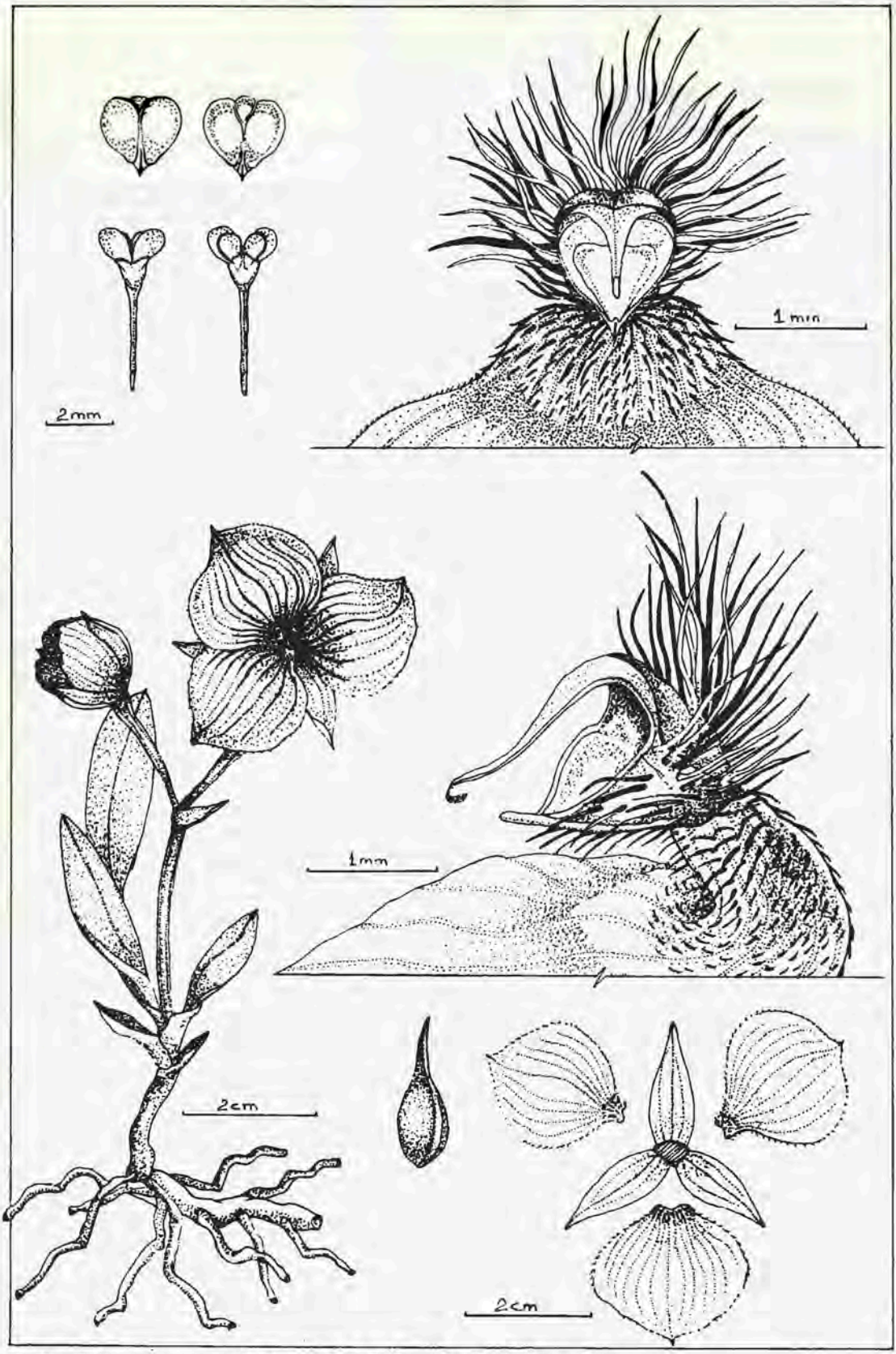

Fig. 2.— *Telipogon genegeorgei* D. Bennett, Jr. & R. Fernández G.; R. Esparza *del.*

TELIPOGON CAMPOVERDEI Bennett & Fernández, sp. nov. (Fig. 3)

LATIN DIAGNOSIS: Species haec *Telipogon papilio* Rchb. f. & Warsc. similis, sed petalis transversis apiculatis 15-nervatis, labello ovato-elliptico transversis latissime 25-nervatis, columna dorso stellato-setosa lateribus pilosis, stigmate margine crasso umbonato ad centrum, crista paralela verruca setosa.

ETYMOLOGY: We name this orchid in honor of José Campoverde, who collected the species.

TYPE: ***PERU:*** **PIURA:** Huancabamba, near Laguna Huaringas, 3000 m, 6 September 1989, cultivated by I. Rolando, collector J. Campoverde s/n, *Bennett 4561* **(Holotype-USM).**

Epiphyte. **Plant** 10-15 cm tall. **Stem** pseudobulbous, elongate, oblong, somewhat compressed **leaves** 6-9 x 2.0-2.2 cm, thickened, narrowly oval to oblanceolate. **Inflorescence** apparently with few buds, 1-2 open at a time. **Peduncle** slender angular below, broader and flat on one surface with a central thickened rib above, **floral bracts** to 1.7 cm long, concave, carinate, acuminate. **Sepals** yellow with 4-red-brown lines, keel green, the **petals** bright yellow, 15-chestnut brown lines extend to within 0.6 cm of border, brownish red toward base, the **lip** similarly colored with 23-long and 2-short veins, the **column** brownish purple, setae dark purple, the **anther** brownish, the **pollinia** yellow. **Sepals** 5- veins, the dorsal 2.7 x 0.95 cm, expanded, lanceolate, concave, carinate, small tip of apex blunt, the laterals 2.6 x 0.8 cm, shallowly concave, oblong-lanceolate, conduplicate apex abruptly recurved; **petals** transverse, 3.1 cm long, 3.25 cm broad, 15- veins, subrhombic, a short, thickened pilose claw, attenuate, obtuse, apiculate, margin very lightly sinuate; **lip** transverse 3.1 x 4.6 cm, 25-veins, very broadly ovate-elliptic, base shallowly cordate, callus small, obscure, thickened, pilose, setose, margin lightly sinuate, prominently apiculate; **column including anther** 0.51 x 0.2 cm, lightly compressed laterally with 3 clusters of long, apically stellate setae, sparsely pilose on lower sides and below, the **stigma** with a low rounded edge a knob or blunt tip protrudes in the center, just above is a setose wart in the middle of a parallel thin ridge, the **pollinia** in two unequal pairs, obovoid, compressed; **ovary** 3-winged, 1.7-1.8 cm long.

OBSERVATIONS: Distinguished by large flowers, sepals 5-veins, petals transverse 15-veins, transverse very widely obovate. Transverse lip 25-veins and 3-clusters of stellate tipped setae on column apex.

HABITAT: Cool moist cloud forest.

FLOWERING SEASON: Throughout the year as new stems mature under favorable conditions of growth.

ILLUSTRATION VOUCHER: Bennett 4561.

DISCUSSION: This species was identified as *Telipogon Hercules* by C.H. Dodson in 1991. In **ICONES PLANTARUM TROPICARUM,** Series II, Orchids of Ecuador, **1989,** Plate 593, Dodson reduced *T. Hercules* Rchb. f. to a synonym of *T. papilio* Rchb. f. & Warsc. (Dodson & Dodson, 1989). The authors made a second close examination and after checking the description of the type by Schweinfurth (1961), a number of very significant differences were noted. *Telipogon campoverdei* Bennett & Fernández has distinguishing features that clearly separate it from *T. papilio, T. Hercules,* and *T. aureus.* The contrasting distinguishing features are its large flowers on a relatively straight and not flexuous peduncle, 5-veined sepals not 3-veined, 15-veined petals not 13-veined, 25-veins not 17-veins on the lip, column longer and lightly laterally compressed (elliptic in cross-section), the stigma with a rounded edge having a central protruding knob and with a setose wart in the middle of a second, more or less parallel low ridge 0.1 cm above the stigma margin, pilose on the sides and lower surface. These differentiating column features would very probably attract a specific pollinator. We do not find sufficient botanical evidence to equate, as Dodson seems to suggest, *T. campoverdei* with *T. Hercules* Rchb. f. ex Kränzl. which seems to us to be a valid taxon as described by Schweinfurth (1955).

We will not be surprised if *Telipogon Hercules* and *T. radiatus* are rediscovered in Peru in the not too distant future, considering the surprisingly large numbers of new species and genera being collected and published.

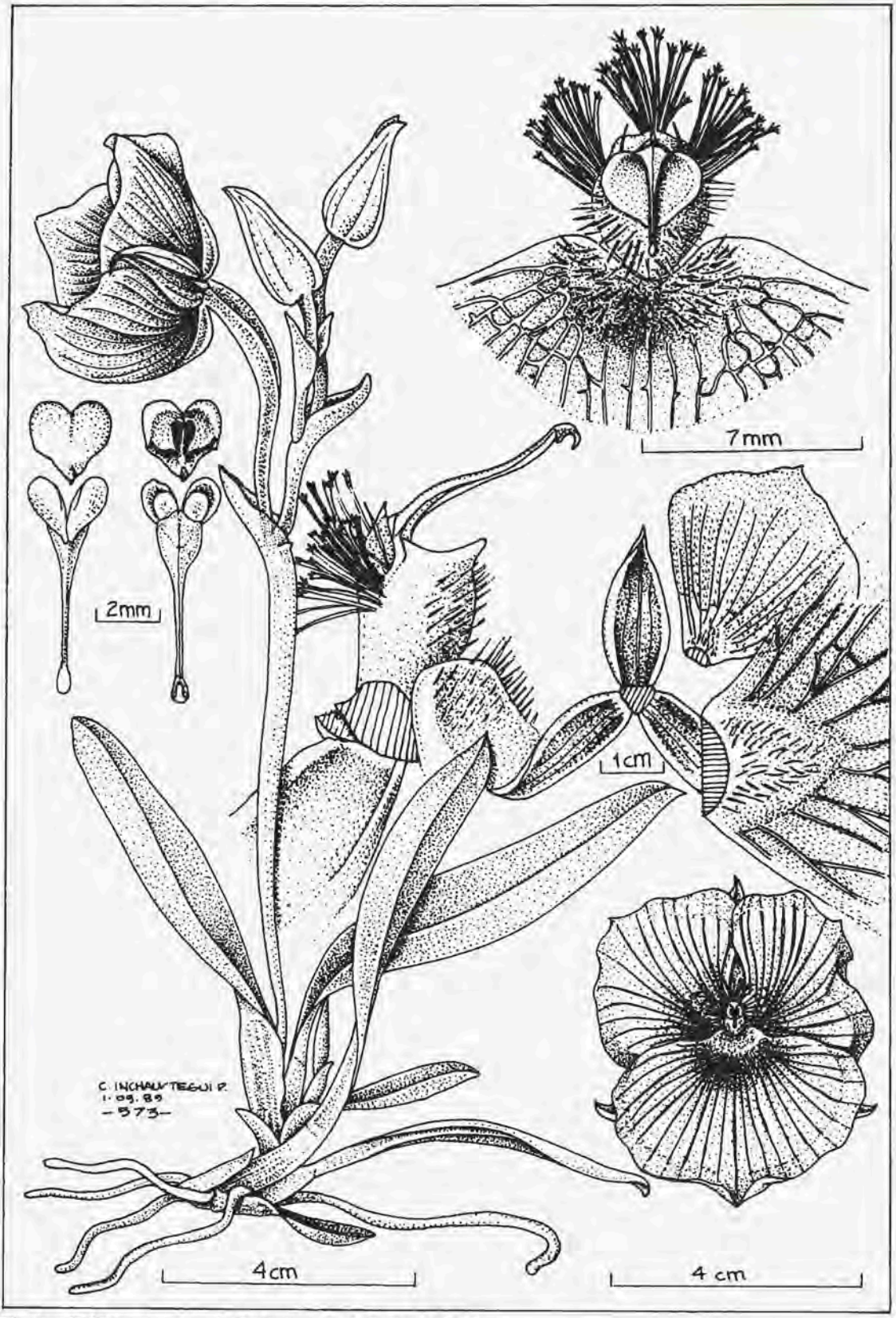

Fig. 3.— *Telipogon campoverdei* D. Bennett, Jr. & R. Fernández G.

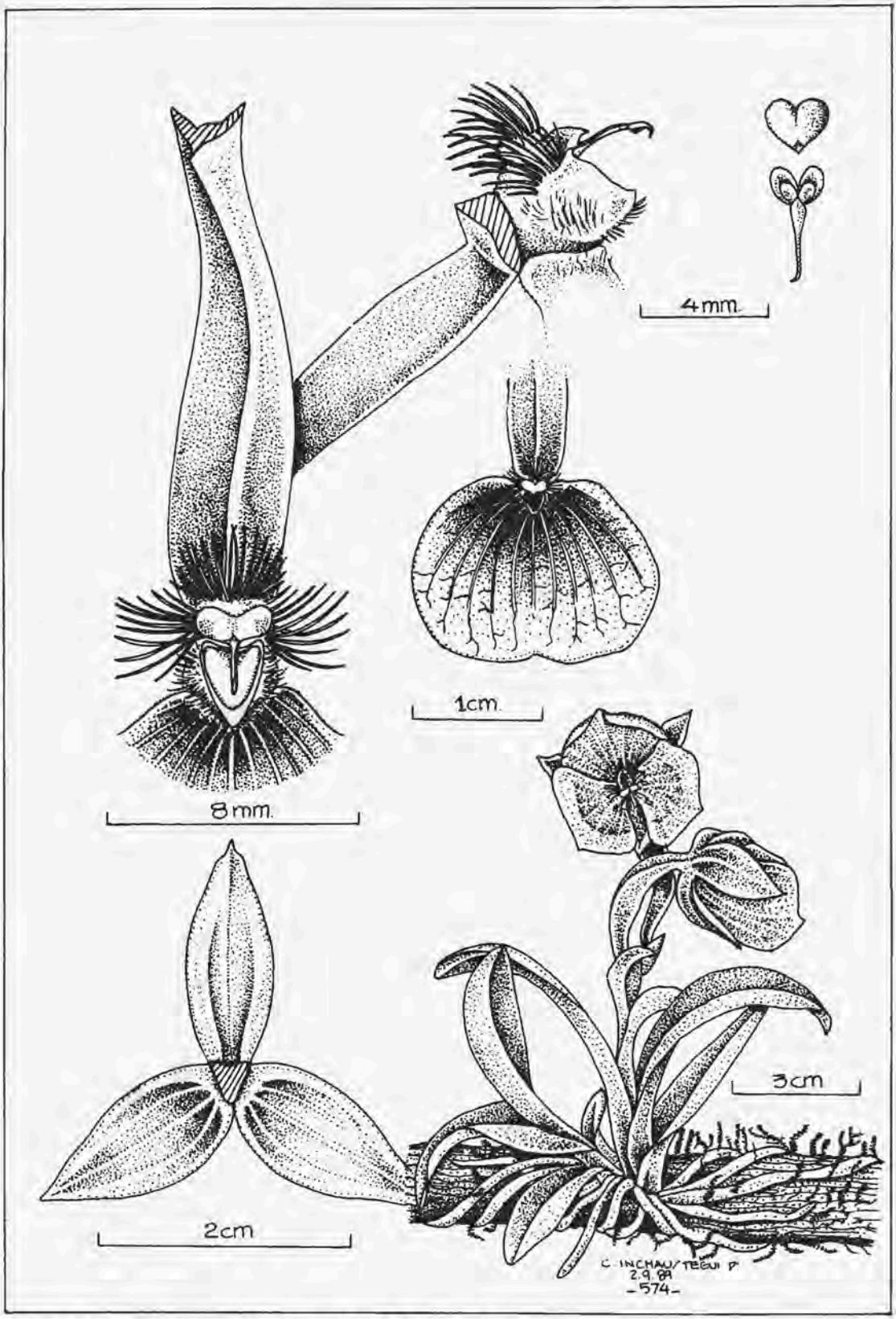

Fig. 4.— *Telipogon atropurpurea* D. Bennett, Jr. & R. Fernández G.

TELIPOGON ATROPURPUREA Bennett & Fernández, sp. nov. (Fig. 4)

LATIN DIAGNOSIS: Species insignis floribus suis campanulatis atropurpureis, a speciebus nobis notis bene distincta; differt a *T. obovati* sepalis 3-nervatis ramosis, petalis obovatis 11-nervatis ramosissimis, labelo transversis obovatis 11-nervatis ramosissimis, columna setosa, floribus atropurpureus puris.

ETYMOLOGY: The name is given in reference to the very distinctive dark purple coloration of the flowers.

TYPE: ***PERU:*** **PIURA:** Huancabamba, near Laguna Huaringas, 3000 m, collector J. Campoverde, plant loaned by I. Rolando, 7 September 1989, *Bennett 4562* **(Holotype-USM).**

Epiphyte. **Plant** small to medium size for the genus. Rhizome short, leaves articulated to sheathing base. Inflorescence axillary, peduncle subequalling or slightly exceeding the leaves, floral bracts ovate-lanceolate, carinate acute, 1.7 x 0.9 cm fully expanded, very close on a short rachis, 2 to 3-cup-shaped flowers. **Leaves** oblanceolate, articulated to sheathing base, 3.5-6.1 x 1.0-1.2 cm. **Sepals** dark purple, keel greenish, the **petals** and the **lip** very dark purple, veins darker purple, the **column,** bristles and setae intense purple. **Sepals** 1.4 x 0.75 cm, 3-veined, prominently navicular, tips compressed laterally, margins lightly revolute, **dorsal sepal** more deeply concave, sigmoid, the **lateral sepals** lightly oblique, ovate-lanceolate, acuminate; **petals** 1.95 x 1.9 cm, shallowly concave, wide obovate, 11-veined with slender lateral branching, base sparsely setose, apex abruptly acute; **lip** 1.7 x 2.2 cm, lightly fleshy, shallowly concave, broadly transverse obovate, basal margin with a row of short papillae, base ecallose mid-vein raised; **column** very short, stout, 0.5 cm long and broad, with long, acicular **setae** on the dorsal surface, the sides and below with sparse shorter setae, the **stigma** narrowly cordate; the **ovary** trialate, recurved 90°.

OBSERVATIONS: Distinguished by the obovate petals and lip each with 11-veins having slender lateral branches, dark purple cup-shaped flowers, veins darker purple and intense purple pubescence.

HABITAT: Cool, wet cloud forest.

FLOWERING SEASON: Probably throughout the year if growing conditions favor continuous growth.

ILLUSTRATION VOUCHER: Bennett 4562.

ACKNOWLEDGEMENTS

We wish to thank Dr. Ramón Ferreyra for his assistance in the Latin diagnoses, Dr. Isaías Rolando for providing plant material, Architects Roxana Esparza and Carlos Incháustegui D. for the illustrations of *Telipogon antonietae, T. genegeorgei, T. campoverdei* and *T. atropurpurea.* We thank Dr. Gerardo Lamas for reading and commenting on the manuscript.

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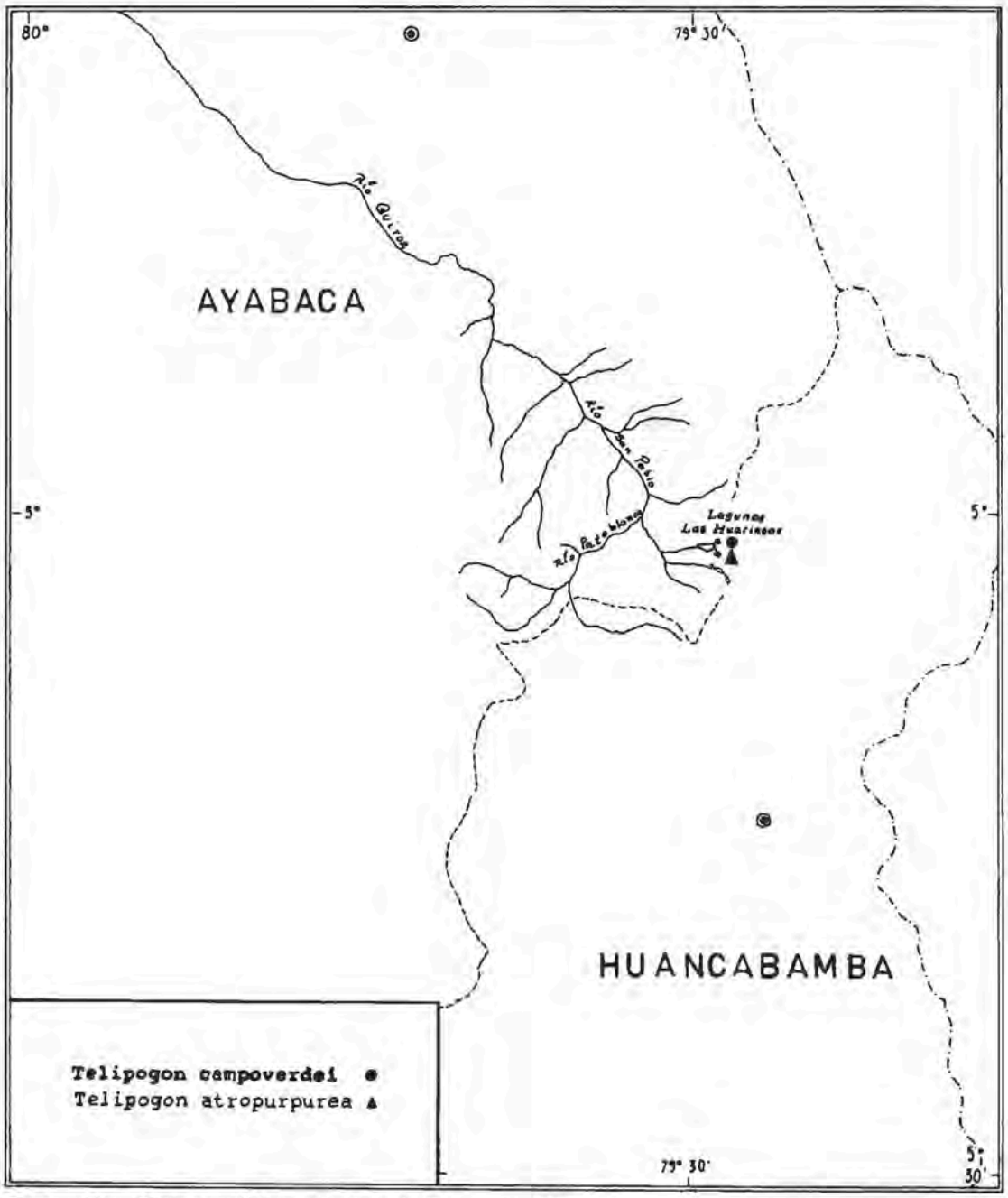

Fig. 5.— Map of Province of Huancabamba in the Department of Piura.

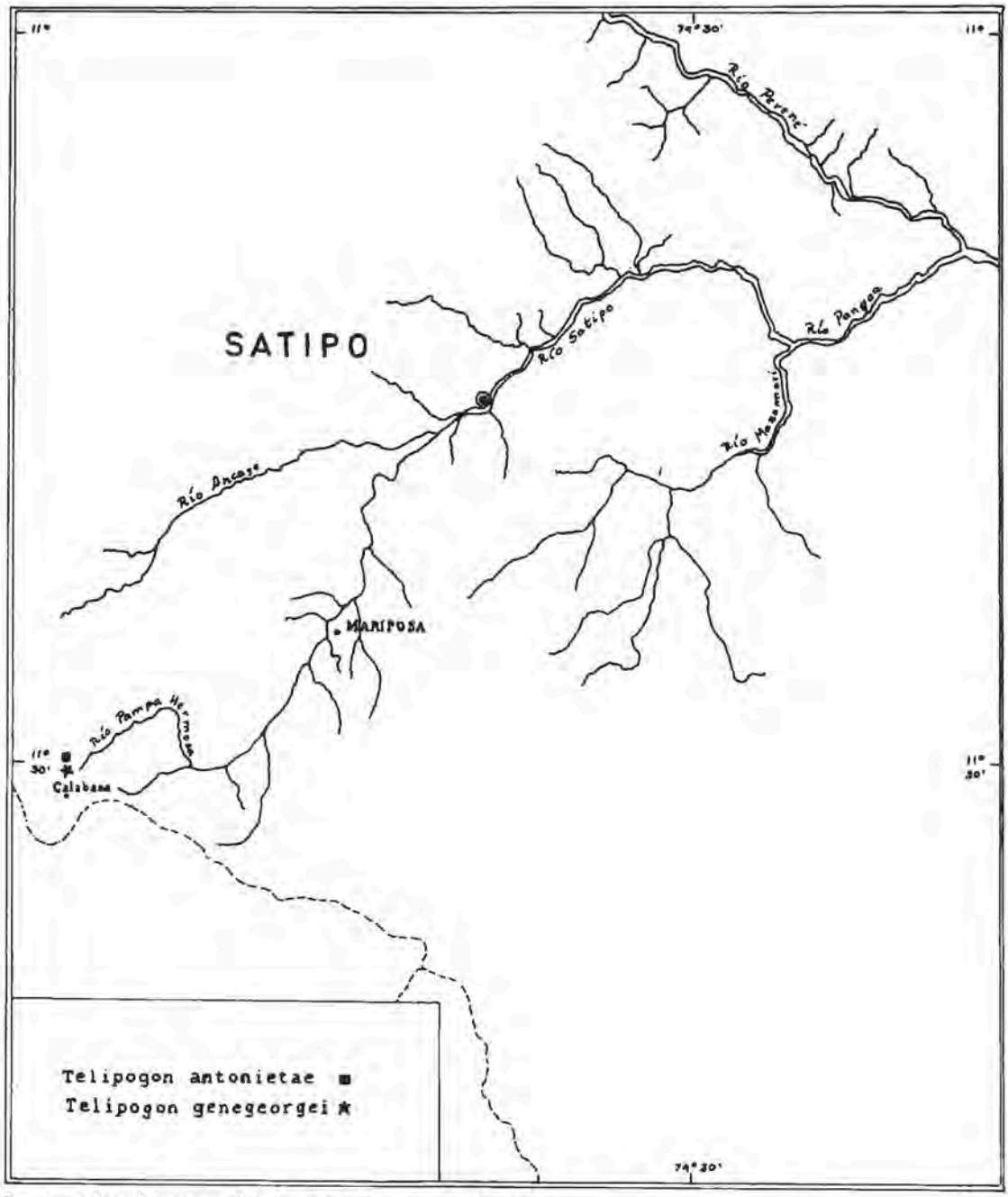

Fig. 6.— Map of Province of Satipo in the Department of Junín.