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A Sectional Classification of *Trichopilia* Lindley (Orchidaceae)

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Abstract. The generic synonyms *Helcia, Leucohyle,* and *Pilumna* are formally given sectional status within *Trichopilia.* The features of these sections and two subgroups of Section *Trichopilia* are discussed.

Key words: stat. nov. taxonomy, *Trichopilia* sections *Trichopilia, Helcia, Leucohyle,* and *Pilumna*

Introduction

Modern, or molecular, classification tends to "lump," rather than "split," and emphasizes monophyly. This makes infrageneric sections or subgenera that may aid in the identification of species especially useful. In the case of *Trichopilia,* molecular analysis, alone, hasn't yet given us a clear pattern of relationships within the genus, though clearly indicating monophyly for the genus as a whole (Williams et al. 2001, Williams pers. comm.).

Three generic synonyms (*Leucohyle, Helcia,* and *Pilumna*) represent clear syndromes of diverse features that are quite useful in the identification of species. We therefore propose to use these three, along with *Trichopilia,* as sectional names within the genus *Trichopilia.* Following a discussion of the features, we briefly characterize each of these taxonomic treatments.

Discussion: Diverse Features

The syndromes of diverse features include characters of pseudobulbs, leaves, and inflorescences.

Pseudobulbs

Shape and width are variable, but some species appear distinctive in (usually) having very narrow pseudobulbs, less than 12 mm wide. The cross sections of the pseudobulbs are round or nearly so in Sections *Helcia* and *Leucohyle* and in *Trichopilia gracilis.* In most species, the pseudobulbs are strongly compressed and more or less ancipitous, or 2-edged. The pseudobulbs usually taper to the leaf bases; but in *T. leucoxantha,* the apex is rounded; and in *T. amabilis* and *T. suavis,* the apex of the pseudobulb is usually clearly "indented." That is, normally distinct "shoulders" at each side of the leaf base often project above the abscission layer. In *T. maculata,* the pseudobulbs are oblong and appressed to the substrate. In this case, the upper surface of the pseudobulb is shallowly concave, while the lower surface is distinctly convex.

Leaves

Although leaf width also varies a good deal, the species of Section *Leucohyle* have very narrow leaves. In two species of Section *Helcia,* the leaf bases form unusually long petioles.

Inflorescences

The inflorescence is usually a few- to several-flowered raceme; but in the *tortilis* alliance, the inflorescences are (virtually always) one-flowered. The lip may be rather open, but usually enfolds the column. In two species of the Section *Helcia,* the lip is campanulate and encloses the column. In Section *Trichopilia,* the lip is infundibuliform; that is, the lip is campanulate from a relatively narrow base; and in that section, the campanulate portion of the lip forms a chamber about the column apex. Presumably, pollination in that section involves the entry of pollinators into the chamber. In the Section *Pilumna,* on the other hand, the lip is rather tightly appressed to the column, so that no chamber is formed. In some members of Section *Pilumna,* the lip is relatively open but without a distinct chamber. In Section *Leucohyle,* there is a basal callus, which is rounded in *T. mutica* and rather Y-shaped in *T. subulata.* In Section *Helcia,* there

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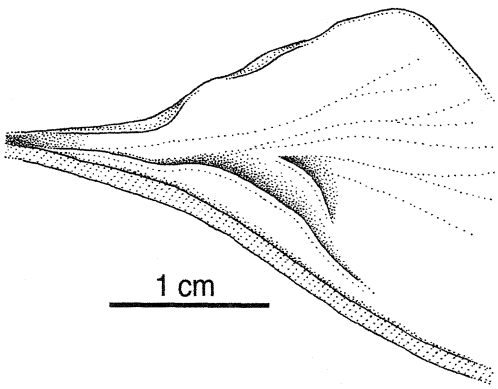

FIGURE 1. Longitudinal section of base of the lip of *Trichopilia hennisiana,* showing the median keel and one lateral keel. The lip has been cut next to (in front of) the median keel, so that two keels are visible. Other species show similar but smaller descending lateral keels medial to the osmophores.

is a subbasal, transverse callus, with several short keels distal to the callus. In most species of *Trichopilia,* there are either grooves or keels within the lip. In the *tortilis* alliance, there is a distinct median groove, while in the other groups there are generally keels. In most other groups, there is a prominent median keel beneath the column or extending distally. Lateral keels also may be found, especially in the *suavis* alliance.

There are short lateral keels in *T. dalstroemii* (Sect. *Pilumna*). In a few cases, the lateral keels are more or less equally branched, with the branches clasping the osmophores. In a few cases, the lateral keels form short, descending ridges on the inner bases of the osmophores. This is especially striking in *T. henniseana* (FIGURE 1), and less so in *T. oicophylax.* The osmophores, generally prominent in Section *Trichopilia,* are often obvious externally as bulging "cheeks."

Pollinaria offer a number of useful features (FIGURE 2). In most cases, pollinaria may be assigned to a group at a glance. In Section *Pilumna,* the viscidium is transversely oblong, usually wider than any part of the stipe and often subequal to the stipe in length. In Section *Pilumna, Trichopilia fragrans* (Lindl.) Rchb.f. and *T. nobilis* (Rchb.f.) Rchb.f. are often treated as "varieties," but the pollinaria are very different (FIGURE 2D, F); that is, assuming that the flowers sampled were correctly identified. In Section *Helcia,* the viscidium is obtriangular or obovate, tapering to an acute base. In Section *Leucohyle,* the viscidium is quite small and ovoid or oblong; while in Section *Trichopilia,* the viscidium is small, oblong, and much narrower than the widest part of the stipe. The stipe is oblong or obovate in Section *Pilumna*; while in Section *Trichopilia,* the stipe is basally very narrow and expands to a usually concave apex. The apex of the stipe may be rounded, concave, or somewhat intermediate between rounded and concave.

TAXONOMIC TREATMENT OF NEW SECTIONS

This treatment divides the genus *Trichopilia* into the following four sections.

Section *Leucohyle* (Klotzsch), stat. nov. *Leucohyle* Klotzsch, Ind. Sem. Hort. Berol. App. 1. TYPE: *Leucohyle warscewiczii* Klotzsch (=*Trichopilia subulata* (Sw.) Rchb.f.).

Pseudobulbs narrow, conic. ***Leaves*** narrow. ***Lip*** open, more or less ovate, with a basal callus. ***Pollinaria*** with narrow, oblanceolate stipe, from a tiny oblong viscidium; apex rounded or truncate.

SPECIES INCLUDED: *Trichopilia brasiliensis* Cogn., *T. mutica* Rchb.f., and *T. subulata* (Sw.) Rchb.f.

DISTRIBUTION: West Indies, Central America to Brazil.

Section *Helcia* (Lindl.), stat. nov. *Helcia* Lindl., Bot. Reg. 31: misc. p. 17 (1845). TYPE: *Helcia sanguinolenta* Lindl. Syn.: *Neoescobaria* Garay.

Pseudobulbs conic. ***Lip*** open or campanulate, with subbasal callus. ***Pollinaria*** with broad stipe, from a wide, basally narrowed or acute viscidium; apex rounded or shallowly concave.

SPECIES INCLUDED: *Trichopilia brevis* Rolfe, *T. callichroma* Rchb.f., and *T. sanguinolenta* (Lindl.) Rchb.f.

DISTRIBUTION: Andean South America.

Section *Pilumna* (Lindl.), stat. nov. *Pilumna* Lindl., Bot. Reg. 30: misc. p. 73 (1844). TYPE: *Pilumna fragrans* Lindl.

Pseudobulbs compressed or (rarely) subterete. ***Lip*** basally cuneate or unguiculate, with median keel (rarely with 2 short lateral keels), blade closely appressed to column, or more or less open. ***Pollinaria*** with stipe oblong or broad from a wide viscidium, apex rounded or subtruncate.

SPECIES INCLUDED: *Trichopilia aenigma* Garay, *T. boliviensis* Klikunas & Christenson, *T. dalstroemii* Dodson, *T. fragrans* (Lindl.) Rchb.f., *T. nobilis* (Rchb.f.) Rchb.f., *T. gracilis* C.Schweinf.?, *T. grata* Rchb.f., *T. laxa* Rchb.f.,

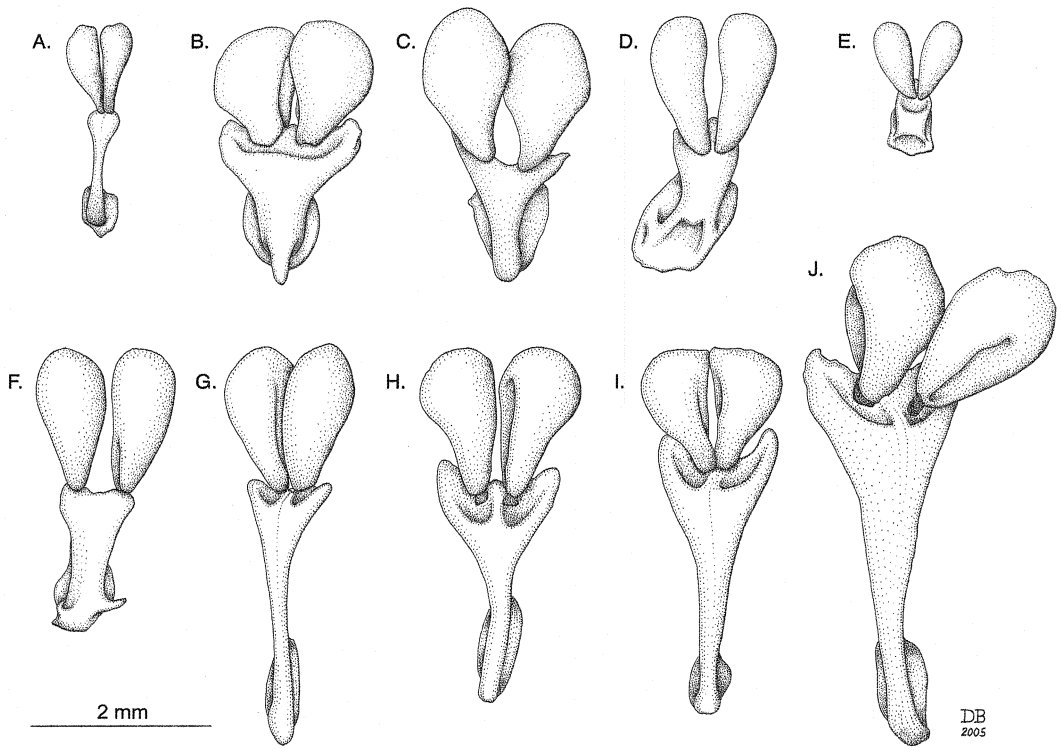

FIGURE 2. Representative pollinaria of *Trichopilia*. **A.** *Trichopilia* (*Leucohyle*) *subulata*. **B.** *Trichopilia* (*Helcia*) *callichroma*. **C.** *Trichopilia* (*Helcia*) *sanguinolenta*. **D.** *Trichopilia* (*Pilumna*) *fragrans*. **E.** *Trichopilia* (*Pilumna*) *laxa*. **F.** *Trichopilia* (*Pilumna*) *nobilis*. **G.** *Trichopilia* (*T. tortilis* alliance) *galeottiana*. **H.** *Trichopilia* (*T. tortilis* alliance) *maculata*. **I.** *Trichopilia* (*T. suavis* alliance) *leucoxantha*. **J.** *Trichopilia* (*T. suavis* alliance) *hennisiana*.

T. mesoperuviana Klikunas & Christenson, *T. santos-limae* Brade, *T. undulatissima* D.E.Benn. & Christenson, and *T. wageneri* Rchb.f.

DISTRIBUTION: West Indies and South America to Brazil.

Section *Trichopilia*. TYPE: *Trichopilia tortilis* Lindl.

Pseudobulbs more or less compressed. ***Lip*** infundibuliform, that is, campanulate from a narrow, clasping base, the lip forming a distinct "chamber" about column apex, with prominent osmophores. ***Pollinaria*** with stipe basally narrow from a small, oblong viscidium, apex rounded or usually concave.

Within Section *Trichopilia,* a distinctive and surely monophyletic subgroup includes the type species, and we call this the *tortilis* alliance, which is characterized by one-flowered inflorescences and a median groove in the lip.

SPECIES INCLUDED: In the *tortilis* alliance are *Trichopilia eneidae* Dressler, *T. galeottiana* A.Rich. & Galeotti, *T. maculata* Rchb.f., *T. marginata* Henfr., and *T. tortilis* Lindl.

DISTRIBUTION: Mexico and Central America.

The rest of Section *Trichopilia* is more diverse, and may be characterized as the *suavis* alliance, having, normally, 2 to several flowers on each inflorescence and with one to three keels within the lip.

SPECIES INCLUDED: In the *suavis* alliance are *Trichopilia albida* H.Wendl., *T. amabilis* Dressler, *T. concepcionis* Kraenzl., *T. hennisiana* Kraenzl., *T. juninensis* C.Schweinf., *T. leucoxantha* L.O.Williams, *T. oicophylax* Rchb.f., *T. olmosii* Dressler (may = *T. modesta* E.Cooper?), *T. occidentalis* Christenson, *T. rostrata* Rchb.f., *T. similis* Dressler, *T. steinii* Dodson, and *T. turialbae* Rchb.f.

DISTRIBUTION: Central and South America to Peru.

There is a natural hybrid between these two alliances: *Trichopilia* ×*crispa* (*T. marginata*

×*suavis,* syn. *T.* ×*ramonensis,* see Morales 2002), usually having a wide, shallow groove with a low median keel.

Key to Sections

1. Leaves narrow, less than 1 cm wide, fleshy . . . . Section *Leucohyle*
1′. Leaves more than 1 cm wide, oblong or elliptic-lanceolate, coriaceous or subcoriaceous.
   2. Pseudobulbs conic, rounded in section; lip free from the column . . . . . Section *Helcia*
   2′. Pseudobulbs ellipsoid, ancipitous; lip somewhat adnate to the column.
      3. Lip strongly appressed to the column, not forming a chamber around the column, without prominent "cheeks" (osmophores) . . . . . Section *Pilumna*
      3′. Lip campanulate from a narrow, tubular base, forming a definite chamber, generally with prominent "cheeks" . . . . . Section *Trichopilia*
         4. Inflorescence of only 1 flower; lip with a median groove . . . *tortilis* alliance
         4′. Inflorescence usually of 2–several flowers; without a median groove, usually with a median keel . . . . . *suavis* alliance

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