

A REVISION OF EPIDENDRUM SUBGENUS EPIDANTHUS (ORCHIDACEAE)

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Barringer, Kerry (Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, NY 11225). A revision of *Epidendrum* subgenus *Epidanthus* (Orchidaceae). *Brittonia* 43: 240–252. 1991.—*Epidendrum* subgenus **Epidanthus** (L. O. Williams) Barringer (Orchidaceae) is a group of small, slender-stemmed epiphytes formerly classified in the genus *Epidanthus* L. O. Williams. The seven species are distributed from southern Mexico to Columbia in wet forests, usually above 1000 m in elevation. Species of subgenus *Epidanthus* are distinguished from the rest of *Epidendrum* by their linear leaves, slender stems, and two pollinia. The new species ***Epidendrum aurigineum*** is described and the new name ***Epidendrum insolatum*** is created for *E. crassum* (Dressler) Mora-Retana & J. García.

Key words: Orchidaceae, *Epidendrum*, subgenus *Epidanthus*.

Epidendrum subgenus *Epidanthus* (L. O. Williams) Barringer contains seven species of delicate, epiphytic orchids native to Colombia, Central America, and southern Mexico. All species have distichous, linear to narrowly elliptic leaves and terminal racemes of small flowers. The flowers have trullate to cordate labella which are fused to the column and pollinaria with two pollinia connected to the viscidium by caudicles. Plants are found in wet, montane forests, usually above 1000 meters elevation, where they grow among mosses and liverworts on the branches of trees.

The species of subgenus *Epidanthus* were previously classified as the genus *Epidanthus* L. O. Williams. Williams (1940) transferred the first species of *Epidanthus* from *Epidendrum*, citing two features of the pollinarium as the distinctive features of the new genus. First, the species of *Epidanthus* all had two pollinia, not four as in most species of *Epidendrum*. Second, in all species of *Epidanthus* then known, the pollinia were attached to the viscidium by broad, strap-shaped bands of tissue that Williams interpreted as stipes. Stipes are formed from columnar tissue and are often considered to be a diagnostic feature of the vandoid orchids. In contrast, the epidendroids often have strap-like extensions of the pollinium itself, called caudicles, attached to the viscidium (Dressler, 1981b).

Williams' (1940) interpretation of the pollinium led him to believe that *Epidanthus* was only superficially similar to *Epidendrum*. Following Schlechter's (1926) classification of the orchids, he felt *Epidanthus* should be placed with the vandoid orchids in the tribe Kerosphaereae, series Acranthae, near the subtribe Polystachyeae. Later, he classified *Epidanthus* in its own subtribe, the Epidantheae, which he placed near the Polystachyeae, again citing pollinarium characters (Williams, 1951).

This interpretation and classification was followed by Garay (1977) in his synopsis of the subtribe Epidanthinae. Garay transferred three more species of *Epidendrum* to *Epidanthus* and described the related genus *Neowilliamsia* Garay. Garay also suggested that the genus *Kalopternix* Garay & Dunsterv. should be included in the subtribe because of its two, stipitate pollinia (Dunsterville and Garay, 1976).

Brieger's (1976) eclectic treatment of the genus added *Epidanthus stangeanum* (Reichb. f.) Brieger, probably based on *Epidendrum stangeanum* Reichb. f. The basionym was not cited however, invalidating the combination. Brieger stated that this species had broad caudicles and should be considered in *Epidanthus*, but other characters indicate that it does not belong in the group. *Epidendrum*

stangeanum has a creeping rhizome and pseudobulbous stems. The stems are unifoliate and the leaves may be up to 12 cm long. Finally, the flowers have an ecallose lip and four pollinia.

Dressler (1982, 1983) was the first to section developing flowers and show that the "stipes" of *Epidanthus* and *Neowilliamsia* developed within the anther and were not stipes but caudicles. He considered *Epidanthus* and *Neowilliamsia* to be related to *Epidendrum* in the tribe Epidendreae (Dressler, 1981b, 1982). He also noted that, though there are few characters that distinguish *Epidanthus* from *Epidendrum*, *Epidanthus* is a distinctive natural group.

Hágsater (1985) included the species of *Epidanthus* in *Epidendrum*. He advocates a broader circumscription of that genus, similar in many ways to that of Ames, Hubbard, and Schweinfurth (1936). He delimited a number of informal groups within *Epidendrum* and placed the *Epidanthus* species in his *Epidendrum paranthicum* group. He noted that all the species of *Epidanthus* have the slit rostellum that is one of the chief diagnostic characters of *Epidendrum*. He also pointed out that the only distinguishing characters of *Epidanthus* were the habit and the pollinia with broad caudicles.

Following Hágsater (1985), the species treated here are included within the broadly defined *Epidendrum*. They share with that group erect stems without pseudobulbs and with distichous leaves, petals and sepals free, lip generally 3-lobed and adnate to the column at the base, column unwinged and without a column foot, rostellum slit, and pollinia with caudicles. Within this huge genus, the species form a distinctive group characterized by their small stature, thin stems, linear to narrowly elliptic leaves, narrowly triangular midlobe of the lip, and two pollinia.

Since Lindley (1841, 1853), *Epidendrum* has been divided into subgenera. Many of these subgenera have been recognized as genera in the past and their status is still controversial (Hágsater 1985). Until an acceptable infrageneric classification of *Epidendrum* s.l. is produced, the only comparative category available is the subgenus.

Taxonomy

***Epidendrum* subgenus *Epidanthus* (L. O. Williams) Barringer, stat. nov.**

Epidanthus L. O. Williams, Bot. Mus. Leaflet 8: 148. 1940. TYPE: *Epidanthus paranthicus* (Reichb. f.) L. O. Williams.

Epiphytic or rarely terrestrial; roots flexuous, glabrous, usually developing from the nodes; stems decumbent, often caespitose, simple or branched, without pseudobulbs, leafy above, terete, glabrous. Leaves distichous, conduplicate, jointed at the base of the blade; sheaths tight, persistent, striate, with a short tooth opposite the lamina; blade flat to terete, narrowly elliptic, linear, or acicular, membranaceous to coriaceous, glabrous, the base sometimes narrowed, the apex rounded to acute, flat to cymbiform. Raceme terminal, distichous, usually fractiflex; bracts slightly sheathing the rachis. Flowers resupinate, solitary in the axils of bracts; ovary sessile or subsessile, often slightly winged; sepals subequal, free, spreading, lanceolate, acute to acuminate, sometimes apiculate; petals equal, spreading, recurved, or porrect, narrowly ovate to narrowly obovate, rounded to acute; lip simple or 3-lobed, adnate to the base of the column, the lateral margins or lobes often incurved around the column, the callus absent or semicircular to v-shaped, usually thick, the midlobe or apex triangular, acute, reflexed; column short, terete, footless, the rostellum short, emarginate, split, the viscidium small, semiliquid, often borne under the caudicles, the clinandrium winged, the stigma unlobed, the anther terminal, operculate, incumbent, 2-celled, the pollinia 2, subglobose with

broad caudicles or lachrymiform with terete caudicles. Capsule fusiform, often slightly 3-winged.

Etymology: "Epid," from *Epidendrum* L., and "anthos," Greek for flower, in allusion to the *Epidendrum*-like flowers and to the earlier classification of the species in *Epidendrum* (Williams, 1940).

Species of *Epidendrum* subgenus *Epidanthus* are found from southern Mexico south to Colombia in wet, upland forest between 800 and 2700 meters. They form an inconspicuous part of the vegetation, usually occurring as epiphytes on moss covered branches. Plants usually form clumps and blooming appears to be synchronous within a clump. No data are available on the pollination or fragrance of these species.

Key to the Species

Two additional species of *Epidendrum*, *E. selaginella* Schltr. and *E. miserrimum* Reichb. f., are sometimes confused with species of subgenus *Epidanthus* because of their small size. These species are also included in the key.

- 1 Leaves ovate to narrowly ovate; pollinia 4.
 - 2 Leaves ovate, amplexicaul, subcoriaceous, the margins revolute; lip acuminate. (Nicaragua, Costa Rica, Panama). *E. selaginella*
 - 2 Leaves narrowly ovate, not amplexicaul, fleshy, the margins involute; lip acute to obtuse. (West Indies, Nicaragua, Costa Rica, Panama, Venezuela). *E. miserrimum*
- 1 Leaves acicular to linear or narrowly elliptic; pollinia 2. (subgenus *Epidanthus*).
 - 3 Lip simple, raceme strongly fractiflex; leaf blade 1.4–2.1 cm long. (Costa Rica). 2. *E. goniorhachis*
 - 3 Lip 3-lobed; raceme slightly fractiflex.
 - 4 Sepals 5–6 mm long; leaf apex cymbiform. (Costa Rica and Panama). 7. *E. talamancaum*
 - 4 Sepals 2–5 mm long; leaf apex flat or terete, acute to rounded.
 - 5 Leaf blades thick, narrowly elliptic; flowers orange; raceme yellow to yellow-green. (Panama). 3. *E. insolatum*
 - 5 Leaf blade membranaceous to subcoriaceous, linear.
 - 6 Lip 1.0–2.0 mm long; sepals 2.0–2.5 mm long; leaf apices rounded to obtuse. (Costa Rica and Panama). 6. *E. sancti-ramoni*
 - 6 Lip 2.0–3.3 mm long; sepals 3–5 mm long; leaf apex acute to subacute.
 - 7 Flowers whitish; petals auriculate at base. (Costa Rica and Panama). 4. *E. muscicola*
 - 7 Flowers yellow-green to yellow or orange; petals exauriculate.
 - 8 Lip 3–5 mm long, the callus slightly notched. (Mexico to Nicaragua). 5. *E. paranthicum*
 - 8 Lip 2–3 mm long, the callus apiculate. (Colombia). 1. *E. aurigineum*

1. *Epidendrum aurigineum* Barringer, sp. nov. (Fig. 1)

TYPE: COLOMBIA. **Antioquia:** Guatapé, Verada Santa Rita, 1850 m, 25 June 1987, *Albert de Escobar, Uribe, Vallejo, & Vasquez 7774* (HOLOTYPE: MO!).

Planta epiphytica scandens. Caulis ad 10 cm longus. Folia linearia 1.5–2.0 cm longa, 1 mm lata persistentia. Inflorescentia racemosa leviter fractiflexa 7 cm usque longa. Flores auriginei, petalis reflexis exauriculatis 2–3 mm longis labio trilobato 2.5–3.0 mm longo 1.5–2.0 mm lato; pollinia subglobosa caudiculis planis.

Epiphyte; stems scandent, to 10 cm long, 1 mm diam., terete, the internodes 1.0–2.5 cm long. Leaves with sheaths 3–6 mm long, slightly keeled; blade linear, 1.5–2.0 cm long, 1 mm wide, slightly thick, persistent, the base slightly narrowed, the apex flat, acute, the midvein visible below. Raceme green to yellow-green, to 7 cm long, slightly fractiflex; internodes to 3.5 mm long, slightly flattened; bracts ovate-lanceolate, 2.0–2.5 mm long, slightly amplexicaul at the base, acute to

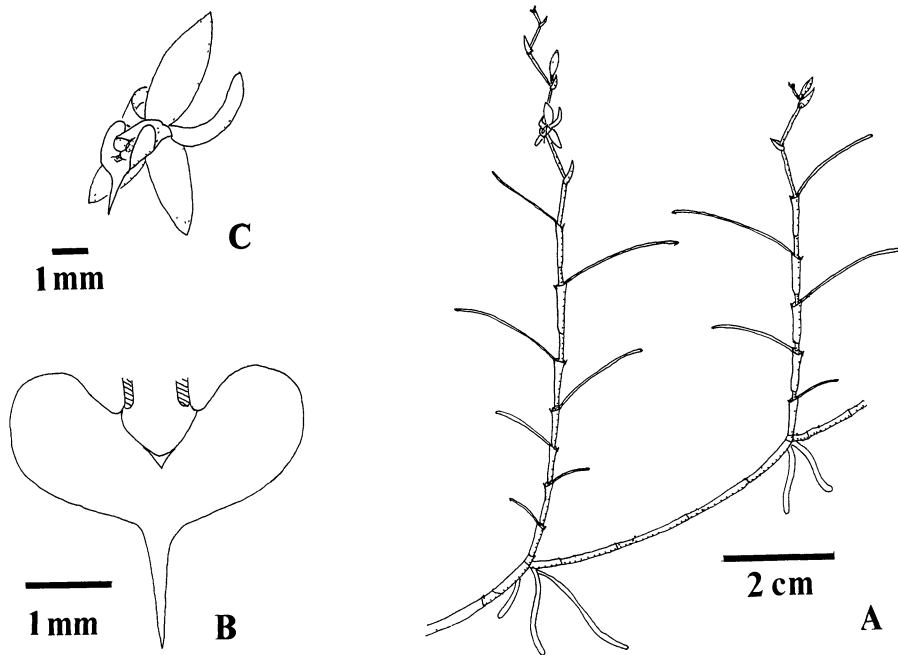


FIG. 1. *Epidendrum aurigineum*. A. Habit. B. Lip. C. Flower.

acuminate. Flowers yellow to orange, unspotted; ovary subsessile, to 1 mm long; sepals lanceolate, 3 mm long, 1.0–1.5 mm wide, acute, slightly keeled, the apex flat, the upper sepal slightly recurved, the lateral sepals spreading; petals reflexed, linear-lanceolate, 2–3 mm long, 1 mm wide, acute, the base adnate to the column, exauriculate; lip 3-lobed, 2.5–3.0 mm long, 1.5–2.0 mm wide, the lateral lobes to 1 mm wide, rounded, upright, the midlobe subulate, 1 mm long, acute; column to 1 mm long, ridged above, the clinandrium slightly winged, the pollinia subglobose, the caudicles flat, broad. Capsule not seen.

Etymology: “Aurigineus,” Latin for yellowed, golden, or jaundiced, in reference to the yellow to yellow-orange flowers.

Epidendrum aurigineum is the only species of subgenus *Epidanthus* known to occur in South America. It is known from two collections made in wet forest near Guatapé in Antioquia, Colombia (Fig. 2). It appears to be most closely related to *Epidendrum insolatum* Barringer, but can be distinguished from that species by its scandent stems, linear leaves. It is also similar to *Epidendrum paranthicum* Reichb. f. but has a smaller lip and grows far outside the known range of that species.

Additional specimen studied: COLOMBIA. **Antioquia:** Guatapé, Verada Santa Rita, 1850 m, 11 Oct 1985, Escobar & Vallejo 5934 (MO).

2. *Epidendrum goniorhachis* Schltr.

Epidendrum goniorhachis Schltr., Beih. Bot. Centralbl. 36: 462. 1918.

Epidendrum fractiflexum F. Lehm. & Kränzlin, Bot. Jahrb. Syst. 26: 468. 1899, non Barb. Rodr. (1881). TYPE: COSTA RICA. **Cartago:** Aguas Calientes near Cartago, 1400–1500 m, 5 Jan 1882, F. Lehmann 1077 (HOLOTYPE: G; ISOTYPE: AMES!; PHOTO: F ex G!).

Epidanthus goniorhachis (Schltr.) L. O. Williams, Bot. Mus. Leaflet. 8: 150. 1940.

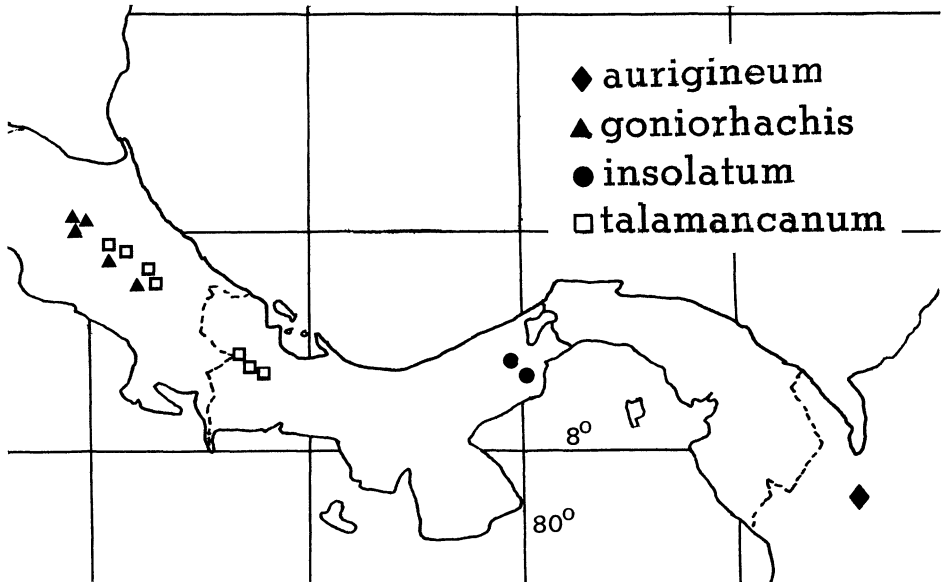


FIG. 2. Distributions of *Epidendrum aurigineum*, *E. insolatum*, *E. goniorhachis*, and *E. talamancanum*.

Epiphyte; stems caespitose, to 15 cm long, 0.7–1.0 cm diam., terete, the internodes to 1 cm long. Leaves with sheaths 7–10 mm long, keeled, the mouth slightly expanded; blade linear, 1.4–2.1 cm long, 1 mm wide, subcoriaceous, persistent, the base not constricted, the apex flat, rounded, the midvein visible. Raceme green, to 8 cm long, strongly fractiflex; internodes to 4 mm long, flattened, slightly winged; bracts ovate, 1–3 mm long, slightly sheathing at the base, acute. Flowers yellow to yellow-brown, with purple spots; ovary sessile, 0.7–1.5 mm long; sepals spreading, lanceolate, 2.5–3.0 mm long, 0.5–0.7 mm wide, keeled, acute, the lateral sepals narrower than the upper sepal; petals porrect, parallel to the column, narrowly elliptic, 1.5–3.0 mm long, 0.4–0.6 mm wide, exauriculate, strongly keeled, the apex rounded; lip simple, narrowly trullate. 2.5–3.5 mm long, to 1 mm wide near the base, acuminate, the callus absent, the base cuneate; column yellow, 1 mm long, ridged above, the column wings absent, the clinandrium simple. Capsule ellipsoid, 4–6 mm long, slightly 3-winged, the dried flower parts persistent at the apex.

Etymology: “Gonios,” Latin for bent and “rhachis,” Latin for inflorescence, in reference to the strongly fractiflex inflorescence.

Epidendrum goniorhachis is native to the wet forests of Costa Rica’s Cordillera Central (Fig. 2). It is generally found as an epiphyte at elevations between 1000 and 1500 m. It blooms between August and January, but few blooming plants have been collected during the wettest part of the wet season. This species can be distinguished from all other species of subgenus *Epidanthus* by its strongly fractiflex raceme and its yellow-brown flowers with simple lips.

The name *Epidendrum goniorhachis* Schltr. was published as a new name to replace *Epidendrum fractiflexum* F. Lehm. & Kränzlin, a later homonym of *Epidendrum fractiflexum* Barb. Rodr. from Brazil.

Additional specimens studied: COSTA RICA. Alajuela: Orillas, San Pedro de San Ramón, 1100 m, 5 Jul 1921, *Brenes* 79 (NY); La Palma de San Ramón, 1150 m, *Brenes* 2251 (CR, F); San Pedro

de San Ramón, 1120 m, 1 Nov 1922, *Brenes 2912* (NY); La Palma de San Ramón, 1190 m, 1 Nov 1922, *Brenes 414* (84) (AMES, CR, F); La Palma de San Ramón, 26 Jul 1924, *Brenes ser. 3 961* (NY); near San Ramón, 1928–29, *Brenes 3433* (NY). **Cartago:** near Quebrada Casa Blanca, Tapanti, 1350 m, *Grayum 3963* (MO); vicinity of Orosi, 30 Mar 1924, *Standley 39846* (AMES); El Muñeco, on the Río Navarro, 1400–1500 m, 6–7 Mar 1926, *Standley & Torres 51299* (AMES), *Standley & Torres 51323* (AMES). **Heredia:** La Estrella, 23 Jul 1925, *Lankester 1019* (AMES); La Peña de Zarcero, 4 Apr 1938, *Smith H584* (AMES). **San José:** La Hondura, 1200 m, 3 Aug 1976, *Solomon 2486* (MO).

3. *Epidendrum insolatum* Barringer, nom. nov.

Epidanthus crassus Dressler, *Orquidea* (Mex.) 9: 15. 1983. TYPE: PANAMA. Coclé: N of Aseradero, El Copé, 9–10 km N of El Copé, Atlantic slope, 800–900 m, 1 Sep 1977, *Dressler 5686* (HOLOTYPE: US!; ISOTYPES: F!, MO!, PMA).

Epidendrum crassus (Dressler) Mora-Retana & J. García, *Brenesia* 33: 124. 1990 [1991], non *Epidendrum crassum* C. Schweinf. (1952).

Epiphyte; stems caespitose, to 6 cm tall, 1.5–2.0 mm diam., terete, the internodes to 5 mm long. Leaves with sheaths 5–7 mm long, cylindric, without keels; blade narrowly elliptic, 0.9–3.2 cm long, 1–2 mm wide, thick, fleshy, persistent, the base not narrowed, the apex terete, rounded, the midvein visible below. Raceme yellow to yellow-green, to 6 cm long, slightly fractiflex; internodes to 4 mm long, slightly flattened; bracts ovate, 1.5–5.0 mm long, slightly amplexicaul at the base, acute. Flowers dull orange, unspotted; ovary subsessile, to 1 mm long; sepals lanceolate, 2–3 mm long, 1.0–1.5 mm wide, acuminate, keeled, the apex cymbiform, the upper sepal recurved, and lateral sepals spreading; petals spreading to reflexed, narrowly lanceolate, 1.5–2.3 mm long, 0.5–0.7 mm wide, acute, the base free from the column, exauriculate; lip 3-lobed, 2.5–3.0 mm long, 1.7–2.0 mm wide, the lateral lobes to 1 mm wide, rounded, upright, the callus semicircular, slightly concave, weakly apiculate, the midlobe subulate, 1 mm long, acute; column dull orange, to 1.2 mm long, ridged above, the column wings obtuse, the clinandrium slightly winged, the pollinia subglobose, the caudicles flat, broad. Capsule ellipsoid, immature capsules 3–5 mm long.

Etymology: From the latin “insolatus,” exposed to the sun, in reference to the habitat.

Epidendrum insolatum is found growing in the wet forests below 1000 m in Coclé, Panama (Fig. 2). It grows on branches at the tops of the trees where it is exposed to the sun. The thick leaves and stems probably allow it to survive in this habitat between rains. It is the only species known to grow below 1000 meters. It is distinguished from all other species of subgenus *Epidanthus* by its caespitose habit, thick leaves, orange flowers, and yellow to yellow-green inflorescences.

Additional specimen studied: PANAMA. Coclé: NW of El Valle de Antón, 550–600 m, 17 Mar 1977, *Dressler 5620* (PMA).

4. *Epidendrum muscicola* Schltr.

Epidendrum muscicola Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 19: 214. 1923, as “*muscicolum*.”

TYPE: COSTA RICA. Alajuela: Los Angeles de San Ramón, 1050 m, Jul 1922, *Brenes 44* (HOLOTYPE: B, destroyed; LECTOTYPE fide Barringer (1986): AMES 28844!; ISOTYPE: AMES!, CR 25799!, NY!).

Epidendrum linifolium Ames, *Sched. Orchid.* 7: 7, t. 20. 1924. TYPE: COSTA RICA. Heredia: La Palma, 8 July 1923, *Stork 417* (HOLOTYPE: AMES 27168!).

Epidanthus muscicola (Schltr.) L. O. Williams, *Bot. Mus. Leaf.* 8: 151. 1940.

Epiphytic or terrestrial; stems scandent, to 20 cm tall, 1.0–1.5 mm diam., the internodes 0.7–2.0 cm long. Leaves with sheaths 10–17 mm long, slightly flattened; blade linear to acicular, 1.5–3.5 cm long, 1–2 mm wide, subcoriaceous, persistent,

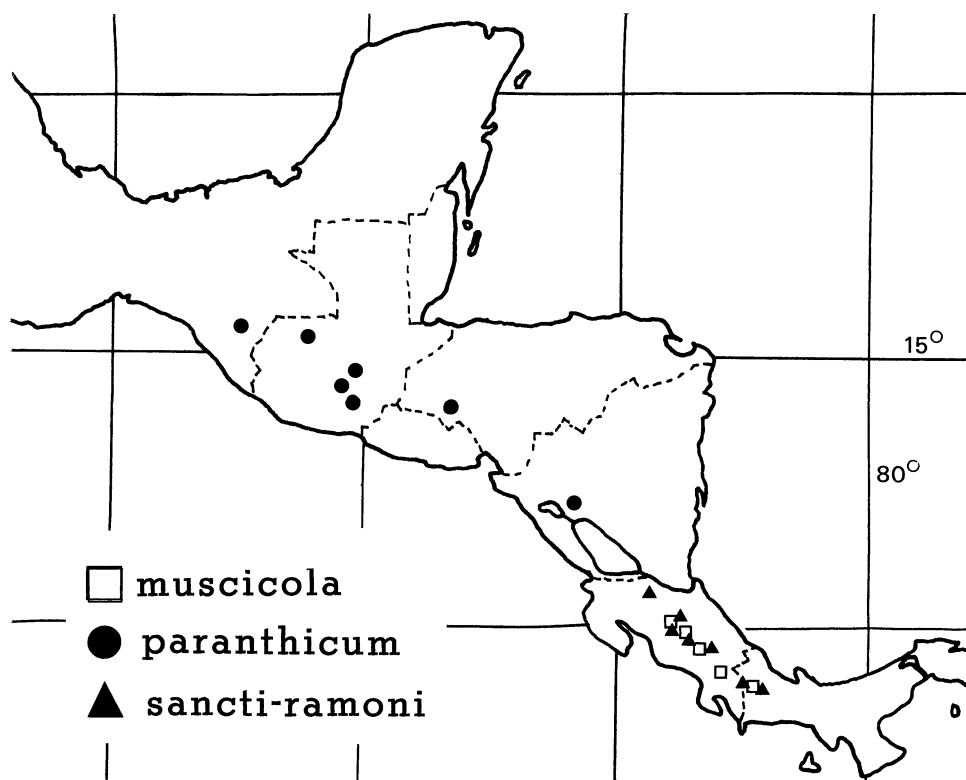


FIG. 3. Distributions of *Epidendrum muscicola*, *E. paranthicum*, and *E. sancti-ramoni*.

the base not constricted, the apex flat, subacute, the midvein not visible. Rachis green, to 3.5 cm long, flexuous, slightly fractiflex, slightly flattened; bracts lanceolate, 2.0–2.5 mm long, acuminate. Flowers whitish, unspotted; ovary subsessile, 2–3 mm long; sepals reflexed, oblong-lanceolate, 3–5 mm long, slightly thick, acute to acuminate, the lateral sepals oblique; petals porrect, parallel to the column, linear, 3–5 mm long, less than 0.5 mm wide, the base auriculate along the upper edge, the apex acute; lip 3-lobed, 3.0–3.3 mm long, 1.0–1.5 mm wide, lateral lobes obtuse, the callus slightly thick, semicircular, often apiculate, the midlobe subulate, 2 mm long, reflexed; column white, 1.25 mm long, the clinandrium hooded, subcrenulate, the pollinia subglobose, the caudicles flat, broad. Capsule ovoid, 5–7 mm long, slightly winged, the dried perianth parts persistent.

Etymology: “Musci,” Latin for moss, and “colus,” Latin for inhabit, in reference to its tendency to grow among mosses and liverworts.

Epidendrum muscicola is known from Costa Rica and Panama in wet forests between 1000 and 1500 m (Fig. 3). It is a variable species, but can be distinguished from all other species of subgenus *Epidanthus* by its relatively long, linear leaves and auriculate petals.

Some of the variability of this species in the southern part of its range may be due to hybridization with *Epidendrum talamancanum*. Putative hybrids have been collected near the Fortuna Dam and Lake in Chiriquí, Panama. These hybrids can differ from typical *E. muscicola* in having the auricles at the base of the petals reduced or absent, larger, yellow or yellowish flowers, and a sprawling habit. They can differ from *E. talamancanum* in having narrower leaves, smaller flowers,

whitish flowers, auriculate petals, and in growing below 1500 meters. The lack of any consistent pattern of variation in these specimens and their occurrence in areas where both *E. muscicola* and *E. talamancanum* grow is taken as further evidence that they are hybrids. The putative hybrids appeared after disturbance of the forest during road and dam construction. It will be interesting to see if the hybrids persist and if backcrossing will change either of the parent species.

Additional specimens studied: COSTA RICA: **Alajuela:** La Palma, 8 Aug 1924, *Brenes 968* (NY); La Palma de San Ramón, 1250 m, 8 Aug 1924, *Brenes 2274* (CR, F); La Palma de San Ramón, *Brenes 1301* (F); La Palma de San Ramón, 1175 m, 26 Sep 1924, *Brenes 1084* (NY); near San Ramón, 1928–1929, *Brenes 3432* (NY); La Palma (Piedades Sur) de San Ramón, 30 Jan 1932, *Brenes (620) 16201* (AMES, NY); Alfaro Ruiz, El Silencio de Zarcero, 1425 m, 29 Aug 1938, *Smith H1137* (AMES); Alfaro Ruiz, San Luis de Zarcero, 1575 m, 4 Nov 1938, *Smith H1314* (AMES). **Cartago:** Tapantí Watershed Preserve ca 20 mi SW of Paraiso, 5 Feb 1979, *Croat 47030* (MO); Reserva de Tapantí, Nov 1982, *Gómez 18804* (US); 5.5 km S of Tapantí, 1400 m, 8 Oct 1967, *Lent 1397* (CR, F); near Río Dos Amigos, 8 km S of Tapantí, 1600 m, 17 Oct 1971, *Lent 2206* (MO); La Estrella, 26–27 Mar 1924, *Standley 39570* (AMES), *Standley 39591* (AMES); Estrella, 5200 ft, 22 Jul 1932, *Stork 3290* (AMES); 15 km S of San Isidro de Cartago on the Interamerican Highway, 1880 m, 24 Aug 1975, *Uteley & Uteley 2947* (CR, F, NY). **Heredia:** Fila Division, Cuerci, 2800 m, 13 Sep 1969, *Gómez 2351* (CR, F); Vara Blanca de Sarapiquí, N slope of Central Cordillera between Barba and Poas Volcanoes, 1860 m, 3 Oct 1937, *Skutch 3377* (AMES, MO, NY). **San José:** La Palma, NE of San Jeronimo above La Hondura, 1500 m, 27 May–2 June 1968, *Burger & Stolze 5284* (F, NY, MO); La Palma, Mar 1923, *O. Jimenez 2015* (AMES); La Hondura, 1300–1700, 2–4 Mar 1924, *Standley 36308* (AMES, US), *Standley 36605* (AMES, US); La Palma, about 1600 m, 3 Feb 1924, *Standley 32967* (US); La Palma, about 1600 m, 17 Mar 1924, *Standley 38255* (AMES, US), *Standley 38317* (AMES, US), *Standley 38326* (AMES). **Puntarenas:** cloud forest above Wilson's Finca, S of San Vito de Java, 5000 ft, *Raven 20870* (F, NY). PANAMA. **Chiriquí:** Vicinity of Gualaca, ca 7.8 mi from Planes de Hornito, La Fortuna, 4400 ft, 12 Jul 1980, *Antonio 5197* (MO); Fortuna Dam area to N of reservoir near Quebrada Bonito, 1100 m, 8°45'N, 82°13'W, 30 Jul 1984, *Churchill 5814* (MO); La Fortuna hydro-electric project, along trail behind camp, 1200–1400 m, 21 Mar 1978, *Hammel 2143* (MO).

Putative hybrids between *Epidendrum muscicola* and *E. talamancanum* studied: PANAMA. **Chiriquí:** along the road between Gualaca and the Fortuna Dam site at 5.9 mi NW of Los Planes de Hornito, 1370 m, 9 Apr 1980, *Antonio 4120* (MO); 1 km N of Fortuna Lake, 8°45'N, 82°13'W, 1200 m, 21 Mar 1985, *Hampshire & Whiteford 829* (MO); slope NW of confluence of Río Hornito and Río Chiriquí, 8°44'N, 82°13'W, 1050–1100 m, 11 Nov 1980, *Stevens 18296* (MO).

5. *Epidendrum paranthicum* Reichb. f.

Epidendrum paranthicum Reichb. f., Bot. Zeitung (Berlin) 10: 732. 1852. TYPE: GUATEMALA, *Warszewicz s.n.* (HOLOTYPE: W, herb. Reichenbach 50434; TRACINGS: AMES!).

Epidanthus paranthicus (Reichb. f.) L. O. Williams, Bot. Mus. Leaflet 8: 150. 1940.

Epiphyte; stems scandent, to 25 cm tall, 1 mm diam., terete, the internodes to 1.0–1.6 cm long. Leaves with sheaths 7–10 mm long, cylindrical, not keeled; blade linear, 1.0–2.5 mm long, 1.0–1.5 mm wide, subcoriaceous, persistent, the base not constricted, the apex flat, acute, the midvein not conspicuous. Raceme green, to 7 cm long, slightly fractiflex, terete; bracts lanceolate, 3–5 mm long, slightly amplexicaul at the base, keeled, acuminate. Flowers yellow to yellow-green, unspotted; ovary subsessile, to 2 mm long; sepals reflexed, oblong-lanceolate, 3–4 mm long, 1.2–1.5 mm wide, carinate, acute; petals linear-lanceolate, 2.0–2.5 mm long, 0.7–1.2 mm wide, slightly keeled, acute; lip 3-lobed, 3–5 mm long, 2.5–3.0 mm wide, the base cordate, the lateral lobes oblong-ovate, upcurved around the column, the callus fleshy, semicircular, its apex slightly notched, the midlobe narrowly triangular, acuminate; column yellow, 0.7–1.0 mm long, the clinandrium slightly 3-lobed, the pollinia subglobose, the caudicles flat, broad. Capsule ovoid to ellipsoid, 3–5 mm long, oblique at the apex.

Etymology: The meaning of “paranthicus,” is not known. Perhaps it is derived from “para,” Latin for similar, and “anthos,” Latin for flower.

Epidendrum paranthicum is found from southern Mexico south to Nicaragua and grows in wet forest around 1000 m (Fig. 3). *Epidendrum sancti-ramoni* Kränzlin, which occurs from Costa Rica to Panama, was previously included with this species but *E. paranthicum* can be distinguished by its longer leaves and yellow to yellow-green flowers.

Representative specimens: GUATEMALA. **Alta Verapaz:** road from Chamá to Cobán, 3000 ft, 1 Aug 1920, *Johnson 557* (AMES); mountains along road between Tactic and the divide on road to Tamahú, 1500–1600 m, 1–7 Apr 1941, *Standley 90783* (AMES, F); near Chirriacté on Petén highway, *Standley 91983* (F); Pansamalá, 1300 m, Jun 1886, *Türkheim 927* (AMES, US); Cobán, 1500 m, Aug 1912, *Türkheim II-1915* (AMES, NY, US). **Chiquimula:** Cerro Tixixí, 3–5 miles N of Jocotán, *Steyrmark 31559* (F). HONDURAS. **Comayagua:** El Comal, San Luis, 4500 ft, 23 May 1932, *Edwards 165* (AMES); Montana La Choca near Quebrada El Zope, 1500 m, 15 Apr 1957, *Molina 8171* (F, MO, NY). MEXICO. **Chiapas:** Lake Tziscaco, E of Comitán, 91°35'W, 16°06'N, 1300 m, 4 Jun 1937, *Monzón & Nagel 6736* (AMES); Lake Tziscaco, E of Comitán, 1350 m, 8 Dec 1937, *Monzón & Nagel 7146* (AMES). NICARAGUA. **Jinotega:** along highway 3, 1.9 km NW of Aranjuez road entrance, 1460–1480 m, 13°02'N 85°56'W, 30 Jun 1978, *Stevens 9225* (AMES). **Matagalpa:** La Galia, Cordillera Central, N of Santa Maria de Ostuma, 1600 m, 12 Mar 1967, *Molina 20564* (F, NY); Cordillera Pariense, between Santa Lastenia & Disparte do Potero, 1300–1500 m, *Molina & Molina 30487* (F); Cordillera Central, Santa Maria de Ostuma, 1600 m, 15 Jan 1965, *Williams et al. 2761* (F, NY).

6. *Epidendrum sancti-ramoni* Kränzlin (Fig. 4)

Epidendrum sancti-ramoni Kränzlin, Vierteljahrsschr. Naturf. Ges. Zürich 74: 137. 1929. TYPE: COSTA RICA. **Alajuela:** hills of Tremendal near San Ramón, 1500–1600 m, 10 May 1913, *Tonduz 17617* (HOLOTYPE: B, destroyed; LECTOTYPE, here designated: AMES 22654!; ISOTYPE: AMES 22205!).

Epiphyte; stems caespitose, to 30 cm tall, to 1 mm diam., slightly flattened, the internodes 7–9 cm long. Leaves with sheaths 5–9 mm long, slightly flattened; blade narrowly elliptic to linear, 9–15 mm long, 1–2 mm wide, subcoriaceous to membranaceous, fugaceous, the base not constricted, the apex flat, rounded to obtuse, the midvein visible. Raceme yellow-green, to 4.5 cm long, slightly fractiflex; internodes to 5 mm long, slightly winged; bracts ovate, 1.5–2.0 mm long, slightly sheathing at the base, slightly keeled, acute. Flowers white to cream; ovary sessile to subsessile, 1–2 mm long; sepals lanceolate, 2.0–2.5 mm long, slightly keeled, the apex cymbiform; petals spreading, narrowly lanceolate, 1.5–2.0 mm long, 0.3–0.4 mm wide, the apex rounded, often apiculate; lip yellow, sometimes marked with red-purple, 3-lobed, 1.0–1.5 mm long, the base cordate, the lateral lobes ovate, the callus acute, sometimes slightly toothed, the midlobe narrowly triangular, 0.5–0.7 mm long; column yellow, 0.5–0.7 mm long, ridged above, the clinandrium entire, the pollinia subglobose, the caudicles broad, flat. Capsule fusiform, mature fruit not seen.

Etymology: The name refers to San Ramón, Costa Rica, the type locality for the species.

Epidendrum sancti-ramoni is found in the wet forests of Costa Rica and Panama between 1000 and 1700 m (Fig. 3). It blooms throughout the year, but flowering seems to be more common in the wet season between December and June. This species has been lumped with *Epidendrum paranthicum*, but it can be distinguished from that species by its shorter, thicker leaves and its smaller, white to cream-colored flowers. *Epidendrum sancti-ramoni* may also be distinguished by its tendency to drop its lower leaves, leaving the lower portion of the stem covered by persistent leaf sheaths.

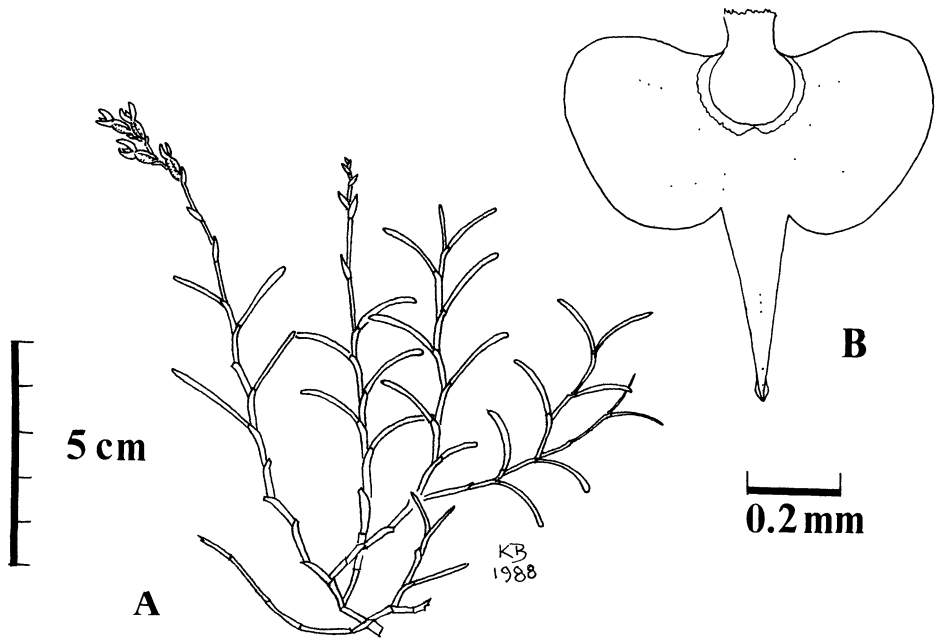


FIG. 4. *Epidendrum sancti-ramoni*. A. Habit. B. Lip.

Additional specimens studied: COSTA RICA. **Alajuela:** road heading NW of San Ramón, between Río Cataratta and Los Angeles, 1100 m, 17 Jun 1983, *Barringer & Utley 3190* (F); Tablazo, 1900 m, Dec 1908, *Brade 1312* (AMES); Piedades de San Ramón, 1100 m, 20 Jun 1909, *Brenes s.n.* (US); San Pedro de San Ramón, 1075 m, 1 Nov 1922, *Brenes 524* (AMES, CR, F); hills of Tremendal, 950–1050 m, 27 Apr 1923, *Brenes 542* (AMES); Monteverde, 1520–1560 m, 17 Apr 1977, *Dryer 1308* (CR, F); Viento Fresco, 1600–1900 m, 13 Feb 1926, *Standley & Torres 47748* (AMES, US), *47761* (AMES), *47986* (US); Tremendal near San Ramón, 1500–1600 m, 10 May 1913, *Tonduz 17617* (AMES, F, US); La Palma de San Ramón, 1200–1300 m, 27 Jun 1972, *Utley et al. 361* (MO, US). **Cartago:** Estrella, 5000 ft, Apr 1888, *Cooper 420* (US); Tablazo, 28 Apr 1946, *Echeverria 384* (CR 30059, F); La Estrella, 9 Jan 1923, *Lankester 383* (AMES), *386* (AMES); 8 km S of Cartago by air, Finca El Chaparal, 4.5 km S of bridge on Agua Caliente at Lourdes, 1500 m, 9°49'N 83°55'W, 21 April 1983, *Liesner & Judziewicz 14641* (MO); El Muñeco, S. of Navarro, 1400 m, 8–9 Feb 1924, *Standley 33814* (AMES), *33871* (AMES, F, US), *33916* (AMES); Alto de las Estrella, 26–27 Mar 1924, *Standley 39269* (AMES), *39503* (AMES), *39570* (AMES, US), *39484* (AMES, US); San Cristobal road, 27 May 1928, *Stork 2209* (AMES); 2nd range of mountains S-SW of Cartago, 5200 ft, 18 Mar 1952, *Stork 4537* (AMES, MO); Tablazo, 1800 m, 27 Jul 1927, *Valerio 12* (US); Tablazo, 1800 m, 30 Oct 1927, *Valerio 52* (AMES); Cascajal, Coronados, 1800 m, 27 Nov 1930, *Valerio 52* (AMES); Tapantí above Río Grande de Orosí, 20 Jan 1968, *Wilbur & Stone 9827* (MO). **Guanacaste:** SE slopes of Volcán Miravalles, near Río Naranjo, 2200–3200 ft, 19 May 1972, *Wilbur & Almeida 16648* (MO). **Heredia:** Hacienda Montecristo, 1420 m, 29 Nov 1936, *Solis-R. 370* (CR, F, MO); Yerba Buena, NE of San Isidro, 2000 m, 22–28 Feb 1926, *Standley & Valerio 50062* (AMES); Cerros de Zurquí, N of San Isidro, 2000–2400 m, 3 Mar 1926, *Standley & Valerio 50364* (AMES), *50791* (AMES, US), *50824* (AMES); Cerro de las Caricias, N of San Isidro, 2000–2400 m, 11 Mar 1926, *Standley & Valerio 52341* (AMES, US), *52377* (AMES, US). **San José:** Las Nubes, 6500 ft, 24 Jan 1940, *Hunnewell 16578* (AMES), Las Nubes, 1500–1900 m, 20–22 Mar 1924, *Standley 38560* (AMES, US); Zurquí, 2000–2500 m, 13 Feb 1926, *Standley & Valerio 48348* (AMES). **PANAMA. Chiriquí:** Fortuna Dam and along Quebrada Bonita to W of road, 1100 m, *Churchill et al. 4868* (MO); Fortuna 1000–1200 m, 8°45'N 82°15'W, 24 Sep 1976, *Correa et al. 2638* (MO); Escopeta, above San Felix, 13 km N of Río San Felix, 800–1200 m, 15 Mar 1976, *Croat 33462* (MO); Boquete, Bajo Chorro, 6000 ft, 14 Jan 1938, *Davidson 121* (F, MO, US); Cerro Colorado, 8 km from intersection of ridge road on road to Escopeta, 14 Aug 1977, *Folsom et al. 4782* (MO); La Fortuna Hydroelectric Project, along Río Chiriquí, 1025 m, 24 Mar 1978, *Hammel 2298* (MO); La Fortuna Hydroelectric project, along Río Hornito drainage back to end of road, 25 Mar 1978, *Hammel 2324* (MO); near Las Nubes, 2.7 mi NW of Río

Chiriquí Viejo, W of Cerro Punta, 2200 m, 27 Feb 1973, *Liesner 296* (MO); 5 km SW of confluence of Río Hornito and Río Chiriquí, 1050–1100 m, 8°44'N 82°13'W, 11 Nov 1980, *Stevens 18296* (MO).

7. *Epidendrum talamancanum* (Atwood) Mora-Retana & J. García (Fig. 5)

Epidendrum talamancanum (Atwood) Mora-Retana & J. García, *Brenesia* 33: 124. 1990 [1991].
Epidanthus talamancanum Atwood, *l.c. Plant. Trop.* 14: t. 1315. 1989. TYPE: COSTA RICA. San José: Villa Mills, *L. O. Williams 19876* (HOLOTYPE: SEL)

Epiphyte; stems scandent, to 30 cm long, 1.0–1.2 mm diam., terete, the internodes to 1–3 cm long. Leaves with sheaths 0.5 to 1.7 cm long, keeled; blade linear, 1–4 cm long, 1.5–2.0 mm wide, glabrous, subcoriaceous to membranaceous, persistent, the base slightly narrowed, the apex cymbiform, obtuse, the midvein visible below. Raceme green, to 10 cm long, slightly fractiflex; bracts ovate-lanceolate, 3–5 mm long, amplexicaul at the base, acuminate. Flowers white to ivory, unspotted; ovary sessile, 3–4 mm long, striate; sepals lanceolate, 5–6 mm long, 1.5–2.2 mm wide, keeled, the apex cymbiform, acute; petals porrect, linear to narrowly oblanceolate, 3.5–5.5 mm long, 1 mm wide, the base adnate to the column, exauriculate, the apex long-acute; lip 3-lobed, 4.0–5.5 mm long, 3.0–3.5 mm wide, the lateral lobes 1.0–1.5 mm wide, rounded, upright, the callus semi-circular with a thin margin, the midlobe subulate, 3 mm long; column yellow or white, 2–2.5 mm long, ridged above, the column wings obtuse, the clinandrium slightly hooded, the pollinia lachrymiform with slender, terete caudicles. Capsule brown, ellipsoid, 8–10 mm long, slightly 3-winged, the dried flower parts persistent at the apex.

Epidendrum talamancanum is found above 2000 m in the Cordillera Central and Cordillera de Talamanca of Costa Rica and in the Cordillera Chiriquí of adjacent Panama (Fig. 2). Flowering material has been collected in February, June, and July. It is most closely related to *E. paranthicum* Reichb. f. and can be distinguished from that species by its larger habit and flowers and its porrect petals. It has been confused with *E. muscicola* Schltr. and can be distinguished from that species by its larger habit, exauriculate petals, and wider leaves.

The most distinctive feature of this species is the lachrymiform pollinia with slender, terete caudicles. Pollinia of this type are not unusual in *Epidendrum*, but only occur in this species within the subgenus *Epidanthus*.

Specimens of what appear to be hybrids between *Epidendrum talamancanum* and *E. muscicola* have been collected in northern Panama. See the discussion following *E. muscicola*.

Additional specimens studied: COSTA RICA. **Heredia:** near Porosatí on the S slope of Volcán Barva, 2400 m, *Burger & Stolze 6087* (CR, F, MO); Alto del Roble, 1 km N of Cerro Chompipe, ca 11 km NNE of Heredia, 2100 m, 10 Jul 1970, *Lellinger & White 1058* (F, US); road between San Rafael and Río Vueltas, N of Cerro Chompipe, 2070–2100 m, 10°05'N 84°04'W, 4 Sep 1979, *Stevens 14031* (MO); near Porosatí, above San José de la Montaña, 2000 m, 2 May 1978, *Todzia 281*. **Limón:** Cordillera de Talamanca, Atlantic slope, Valle de Silencio, along Río Terbi, 0.5–1.5 km W of the Costa Rica-Panama border, 2300–2400 m, 9°N 82°57'W, 9 Sep 1984, *Davidse et al. 28776*. **San José:** La Palma, NE of San Jeronimo above La Hondura. 10°2'N, 84°0'W, 1500 m, 27 May–1 June 1968, *Burger & Stolze 5364* (F, MO, NY); km 57, Pan American Highway up Talamanca range, 2700 m, *Lent 1166* (F); N of El Copey, above Los Lotes, near Finca La Cima, 2100–2400, 21–22 Dec 1925, *Standley 42630* (US), *42737* (US); Carretera Interamericana, ca 8.5 km E of road to La Cima, 2600–2650 m, 9°40'N 83°51'W, 30 Jul 1979, *Stevens 13391* (MO); 3 mi N of El Copey, 7000 ft, 19 Apr 1928, *Stork 1606* (AMES); the Bog, N of Cerro de la Muerte, 2600 m, *Williams et al. 24170* (CR, F). **PANAMA. Chiriquí:** between Linares farm and top of Cerro Hornito, 1750 m, 27 Dec 1977, *Folsom et al. 7245* (MO); Ridges and summit of Cerro Hornito above Los Planos de Hornito, 2100 m, 8°42'N 82°06'W, 14 Mar 1982, *Knapp et al. 4203* (MO); Cerro Hornito, 40 km NW of Gualaca, 2238 m, 27 Jul 1975, *Mori & Bolton 7517* (MO); Bugaba, Santa Clara, to Cerro Pando, 8°50'N 82°44'W, 28 Feb 1985, *van der Werff & Herrera 7210* (MO).

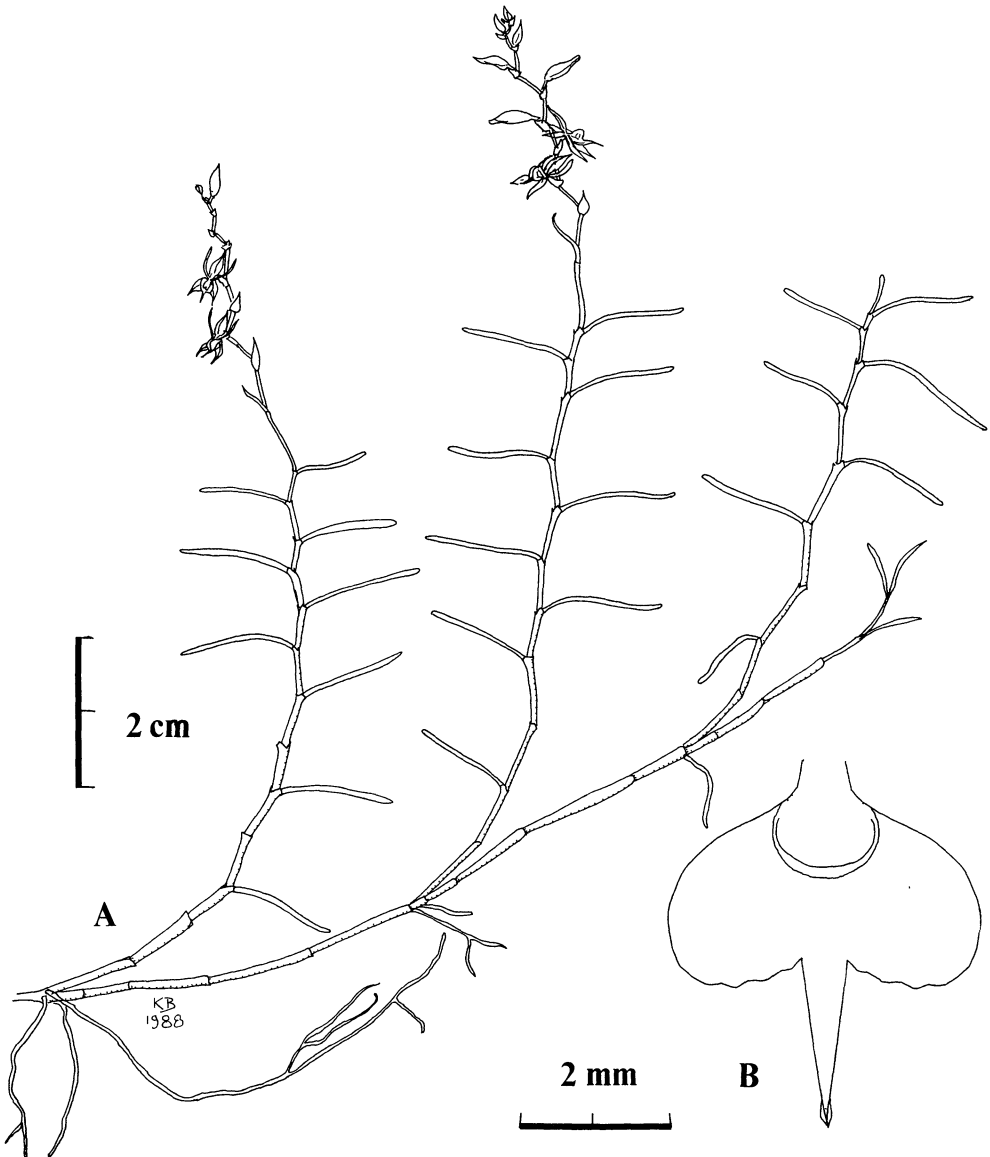


FIG. 5. *Epidendrum talamancanum*. A. Habit. B. Lip.

Excluded Names

- Epidanthus alfaroi* (Ames & C. Schweinf.) Garay, *Orchid Digest* 41: 22. 1977. TYPE: COSTA RICA. La Fuente, 1200 m, 23 Aug 1925, *Alfaro 174* (HOLOTYPE: AMES 31331!). = *Neowilliamsia alfaroi* (Ames & C. Schweinf.) Dressler (*Epidendrum alfaroi* Ames & C. Schweinf.) (Dressler, 1981a).
- Epidanthus ciliipetalus* Garay, *Orquidologia* 4: 157. 1969. = *Epidendropsis flexuosissima* (Schltr.) Garay & Dunsterville (*Epidendrum flexuosissimum* Schltr.) (Dunsterville & Garay 1976).
- Epidanthus nervosiflorus* (Ames & C. Schweinf.) Garay, *Orchid Digest* 41: 22. 1977. TYPE: COSTA RICA. Cartago: Estrella, 5500 ft, 27 Mar 1924, *Lankester 790* (HOLOTYPE: AMES 28296!). = *Neowilliamsia nervosiflora* (Ames & C. Schweinf.) Dressler (*Epidendrum nervosiflorus* Ames & C. Schweinf.) (Dressler 1981a).
- Epidanthus stangeanum* (Reichb. f.) Brieger, *Orchidaceen*, ed. 3. 1(8): 511. 1976, nom. illegit. = *Epidendrum stangeanum* Reichb. f.

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