NOTES ON COSTA RICAN PTERICHIS (ORNIDACEAE) – NEW TAXA AND ADDITIONS TO NATIONAL ORCHID FLORA

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ABSTRACT. A new species of the orchid genus Pterichis, P. hererrae, and a new variety of P. habenarioides, P. habenarioides var. costaricensis, are described and illustrated based on Costa Rican material. Information about new Costa Rican records of P. pauciflora and P. parvifolia is provided. An updated key to Costa Rican species of Pterichis is presented.

KEY WORDS: Costa Rica, new species, Orchidaceae, Pterichis, taxonomy

Introduction. The Neotropical orchid genus Pterichis was described by John Lindley (1840) based on Peruvian P. galeata. The author considered this species similar to Sarcoglottis C. Presl, but subsequent morphological (Pfitzer 1887) and molecular (eg. Salazar et al. 2003) studies revealed that the two genera are not closely related. Another orchid genus which Lindley found similar to his newly established Pterichis in the gynostemium structure was Cryptostylis R. Br., but this genus was classified by Szlachetko & Rutkowski (2000) in different subfamilies based i.a. on their anther form and position. Molecular data (Salazar et al. 2009) indicates that Pterichis is sister to other Cranichidinae (e.g., Cranichis Sw., Ponthieva R. Br. and Baskervilla Lindl.).

Morphologically representatives of Pterichis are easily distinguished from other cranichid orchids based on their floral characters. The abbreviate, massive gynostemium is observed also in Cranichis, Fuertesiella Schltr., Pseudocentrum Lindl. and Ponthieva. From the two latter genera Pterichis differs in the petals and lip being free from the column part and from other two by the scape developing separately from leaves.

Plants of Pterichis produce tuberous, clustered roots. The non-resupinate flowers are arranged into a loosely to subdensely flowered raceme (rarely congested). The tepals of Pterichis are subsimilar, with the petals narrower than the dorsal sepal and often adnate to it. The sessile lip is concave, usually with a pubescent disc and ornamented with swollen cells or knob-like projections along the margins. The gynostemium is short and erect, and the motile anther is much longer than the rest of the column. Four oblong-ovoid pollinia are produced. The rostellum is narrow, delicate, filiform and the hamulus is finger-like (Szlachetko & Rutkowski 2000).

The plants of Pterichis grow terrestrially and they are usually found in grassy slopes or shrubby paramo above 2800 m of elevation. Most of the currently recognized 25 species are distributed along the Andes; however, some species occur in Jamaica, Panama and Costa Rica (Cribb 2003, Dueñas Gómez & Fernández Alonso 2009).


The Costa Rican populations are found in the elevations above 2250 m, often in wet montane forest and paramo.

During recent studies of herbarium specimens a new species of Pterichis was found and is described here. Moreover, an unusual form of P. habenarioides recognized in Costa Rican material is proposed here as a new variety. Two species of Pterichis, P. pauciflora Schltr. and P. parvifolia (Lindl.) Schltr. are reported here for Costa Rica for the first time.

Material and Methods. Dried herbarium specimens of Pterichis, over 180 in total, deposited or borrowed from AMES, COL, CUVC, F, FLAS, FMB, HUA, K,
MO, NY, P, PSO, SEL, VALLE and W were examined. Every studied specimen was photographed and the data from the labels were recorded. The presence and shape of the leaf as well as the length and the surface of the scape were studied. The examination of the vegetative structures included the form and number of the tubular sheaths enveloping the scape and the form of the floral bracts and ovaries. From each specimens 3-5 flowers were examined. The perianth parts were studied after rehydrating flowers in boiling water.

**NEW TAXA**

*Pterichis herrerae* Kolan., *sp. nov.*

**TYPE:** Costa Rica. Puntarenas. Cantón de Buenos Aires, Ujarrás, cumbre y ladera Atlántica de Cerro Dúrika, 9°22’35”N 83°18’24”W, 3280 m, 12 Oct 1989, *G. Herrera* 3665 (holotype, F!; isotypes, F!, MO, SEL). Fig. 1–2.

**DIAGNOSIS.** This species resembles *P. habenarioides* and *P. triloba* (Lindl.) Schltr., but it is distinguished by the cordate lip base, obliquely ovate, rounded lip lateral lobes and lip margins ornamented with prominent, knob-like projections.

*Plant* up to 32 cm tall. *Leaf* basal, long-petiolate; blade 9.5 cm long, linear-lanceolate, acute; petiole 12 cm long. *Scape* up to 27 cm long, with 4 glabrous, tubular sheaths, pubescent in the upper part. *Spike* 2.7–5.0 cm long, pubescent, subdensely 4–10-flowered. *Flowers* green with yellowish-green lip. *Floral bracts* up to 8 mm long, 3 mm wide, pubescent, narrowly ovate, subobtuse. *Ovary* 9 mm long, pubescent. *Dorsal sepal* 7.0 × 1.5 mm, externally sparsely ciliate, lanceolate, obtuse, 3-veined. *Petals* 6.8 × 1.2 mm, adnate to dorsal sepal, sparsely ciliate along margins, linear-lanceolate, unguiculate at the base and constricted in the upper third, acute, 3-veined. *Lateral sepals* 6.5 × 2.5 mm,
Figure 2. The holotype of *Pterichis herrerae*. Courtesy of the Field Museum of Natural History.
externally sparsely ciliate, obliquely ovate, subacute, 2-veined. 

Lip about 5 × 7 mm, 3-lobed, cordate at the base; middle lobe about 1/4 of the lip length, reflexed, triangular-ovate, acute, densely glandular-pubescent; lateral lobes obliquely triangular-ovate, rounded; disc 5-veined, veins branching, margins ornamented with knob-like projections and swollen cells in the basal part. 

Gynostemium 2.5 mm long. 

Fruit not seen.

Etymology. Dedicated to collector of the type specimen.

Distribution and ecology. So far this species is known exclusively from Costa Rican province of Puntarenas, where it was found growing terrestrially at the altitude of over 3200 m. Flowering occurs at least in October.

Taxonomic notes. This species resembles P. habenarioides (F.Lehm. & Kraenzl.) Schltr. and P. triloba (Lindl.) Schltr. (Fig. 3). From the latter species P. herrerae is easily distinguished by the cordate lip base (vs. truncate in P. triloba), the 5-veined lip disc (vs. 7-veined) and presence of numerous (over 30 in total) knob-like projections along the lip margins (vs. 8–10 projections on each side). The floral bracts of P. habenarioides are glabrous, its dorsal sepal is ovate-lanceolate (vs. lanceolate in P. herrerae), the petals are obovate-lanceolate, not unguiculate (vs. linear-lanceolate above, unguiculate basally), and the lip is transversely triangular-elliptic in outline (vs. cordate in P. herrerae). Another similar species is the South American P. diuris Rchb. f., which has petals free from dorsal sepal, the lip base is truncate and disc lacks any knob-like projections.

Pterichsis habenarioides var. costaricensis Kolan., var. nov.

Diagnosis: Distinguished from P. habenarioides var. habenarioides by the glabrous dorsal sepal and petals, the sparsely ciliate, 2-veined lateral sepals, and the lateral lobes of the lip form auricles.

Type: Costa Rica. Limon. Cordillera de Talamanca, Atlantic slope, Kámkuk massif, páramo north-east of the main Kámkuk peak, 9°16’30”N 83°01’00”W, 3000–3300 m, 17–19 Sep 1984, G. Davidse & G. Herrera 29296 (holotype, F!; isotype: CR). Fig. 4–5.
Plants up to 40 cm tall. Leaf basal, petiolate; blade 5.5-6.0 cm long, linear-lanceolate, acute; petiole 4.5-6.5 cm long. Scape up to 36 cm long, scape with 3-4 tubular sheaths. Flower greenish-yellow, lip yellow with green or brown veins. Floral bracts up to 13 mm long, 4 mm wide, pubescent. Ovary up to 13 mm long, pubescent. Dorsal sepal 6.5 mm long, 1.5 mm wide, glabrous, lanceolate, obtuse, 3-veined. Petals 5.9 × 1.2 mm, adnate to dorsal sepal, glabrous, ligulate-lanceolate, obtuse, 2-veined. Lateral sepals 5.5 × 1.8 mm, ovate, obtuse, sparsely ciliate, 2-veined. Lip 6 mm long and about the same wide, indistinctly 3-lobed; middle lobe broadly ovate, short, densely glandular-pubescent, obtuse, reflexed; lateral lobes obliquely ovate, rounded; disc 5-veined, lateral veins branching, ornamented with numerous swollen cells along the margins. Gynostemium 2.5 mm long. Fruit not seen.

Figure 4. Pterichsis habenarioides var. costaricensis A. Lateral sepal. B. Petal. C. Dorsal sepal. D. Lip, flattened. E. Habit. Scale bar = 3 cm. Drawn by N. Olędrzyńska from the holotype.
Figure 5. The holotype of *Pterichis habenarioides* var. *costaricensis*. Courtesy of the Field Museum of Natural History.
ETYMOLOGY: In reference to the origin of the type specimen.

DISTRIBUTION AND ECOLOGY. So far this variety is known exclusively from Cordillera de Talamancan. The population was found growing in Blechnum-shrub association in Chusquea-Hypericum paramo. Flowering occurs in September.

EXAMINED SPECIMENS OF **P. habenarioides var. habenarioides**:

NEW RECORDS


TYPE(Garay 1978): Ecuador. Loja, in Andibus orientalis, 3000–3400 m, Lehmann 7111 (holotype: B†, lectotype, K!).

**Plant** 14–62 cm tall, erect. **Leaf** basal, petiolate; petiole 2–3 cm long; blade about 5 × 1–2 cm, linear to oblong-lanceolate, acute. **Scape** up to 58 cm tall, erect, minutely puberulent in the upper part, with 3–6 tubular, pubescent sheaths. **Spike** 2–4 cm long, pubescent, loosely to subdensely 5–10-flowered. **Flowers** yellowish-orange to yellowish-brown according to the herbarium label. **Floral bracts** up to 8 mm long, ovate-lanceolate, glabrous. Pedicellate ovary 9–11 mm long, densely glandular. **Dorsal sepal** 6.0–6.8 × 1.7–2.2 mm, ovate-lanceolate to ovate, obtuse, almost glabrous, 3-veined. **Petals** 6.0–6.5 × 1.0–1.2 mm, adnate to dorsal sepal, obliquely linear-lanceolate, acuminate, margin sparsely ciliate, l-veined. **Lateral sepals** 5.5–6.5 × 1.5–2 mm, obliquely ovate-lanceolate to ovate, concave, acuminate, glabrous or sparsely ciliate externally, 3–4-veined. **Lip** 5.0 × 4.5–7.0 mm, indistinctly 3-lobed; basal part triangular-elliptic; apical lobe triangular, obtuse, reflexed, glandulose-papilllose; disc 7-veined, margin ornamented with swollen cells. **Gynostemium** 2.3 mm long. **Fruit** not seen.

REPRESENTATIVE SPECIMENS: Costa Rica. Puntarenas. Cantón de Coto Brus. P.N. La Amistad, Cuenca Térraba-Sierpe, Cerro Echandi, 9°01’57”N 82°49’19”W, 3000–3150 m, 13 Aug 1997, Gamboa & al. 1718 (FLAS!); Cartago. Carretera Panamericana Sur, 2700 m, 17 Jul 1963, A. Jimenez 849 (F!, Fig. 6).

DISTRIBUTION AND ECOLOGY. Until now this species was reported from Ecuador and Colombia. In Costa Rica it was found growing terrestrially in paramo, forest edges and vegetation with Sphagnum at the altitude


TYPE: Ecuador. Loja. Hartweg 50 (K-Lindl!).

Plant about 37 cm tall. Leaf basal, petiolate; petiole 6.5–9 cm long, canaliculated; blade up to 11.0 × 0.6–1.0 cm, linear-lanceolate, subacute. Scape about 25 cm tall, pubescent, with 5 sheaths decreasing in size distally along the scape, pubescent in upper half. Spike 8–9 cm long, pubescent, loosely several-flowered. Flowers greenish with yellow lip with brownish veins. Floral bracts up to 9 mm long, glabrous, ovate-lanceolate, acute. Pedicellate ovary up to 13 mm long, pubescent. Dorsal sepal 7 × 2 mm, ovate-lanceolate, sub acuminate, obtuse, glabrous, 3-veined. Petals 7.0 × 1.5 mm, ciliate along margins, unguiculate in lower fifth, obliquely oblong-lanceolate, subacute, 2-veined. Lateral sepals 5.5 × 2.5 mm, glabrous, obliquely ovate, sub acuminate, 2-veined. Lip about 5–6 × 7 mm, 3-lobed, base truncate; middle lobe reflexed, densely glandular-pubescent, ovate-triangular, subobtuse; lateral lobes obliquely ovate; disc 5-veined, lateral lobes branching, margin ornamented with a row of prominent papillae. Gynostemium 2 mm long. Fruit not seen.

Representative specimen: Costa Rica. San Jose and Cartago. Below the highest point of Interamerican Highway, northwest of La Asuncion, 9°34’N 83°45’W, 3000–3200 m, 27 Oct 1975, W. Burger & R. Baker 9505 (F!, Fig. 7).

Distribution and ecology. Until now this species was reported from Peru, Ecuador and Colombia. In...
Costa Rica it was found in steep wet grassy slope at an altitude of about 3000-3200 m. Flowering occurs at least in October.


**Acknowledgments.** Anna Król, Natalia Olędrzyńska and Sławomir Nowak are thanked for preparing illustrations. The Curators and staff of the cited herbaria are thanked for providing access to their collections. I am grateful to Professor Dariusz L. Szlachetko for his valuable comments on the manuscript. The research described here was financed by the Faculty of Biology, University of Gdańsk (538-L150-B065-13).

**Key to Costa Rican species of Pterichis**

1. Petals free from dorsal sepal .............. *P. galeata*
   1a. Petals adnate to dorsal sepal .............. 2
2. Lateral lobes of the lip not forming auricles ............ *P. habenarioides* var. *habenarioides*
   2a. Lateral lobes of the lip forming auricles ............ 3
3. Petals glabrous ............ *P. habenarioides* var. *costaricensis*
   3a. Petals ciliate on margins .............. 4
4. Petals sessile, 1-veined .............. *P. pauciflora*
   4a. Petals unguiculate, 2-veined .............. 5
5. Petals constricted in the upper third, sepals externally ciliate *P. herrerae*
   5a. Petals not constricted in the upper part, sepals glabrous .............. *P. parvifolia*

**Literature cited**


**Figure 1. Pterichis parvifolia** A. Lateral sepal. B. Petal. C. Dorsal sepal. D. Lip. Scale bars = 3 mm. Drawn by N. Olędrzyńska from Burger & Baker 9505 (F).
