

CYCLOPOGON DEMINKIORUM Burns-
Balogh and M.S. Foster*
A New Species from Paraguay
(Orchidaceae: Spiranthinae)

Pamela Burns-Balogh
Dept. of Botany, NHB 166, Smithsonian Institution
Washington, DC. 20560

and

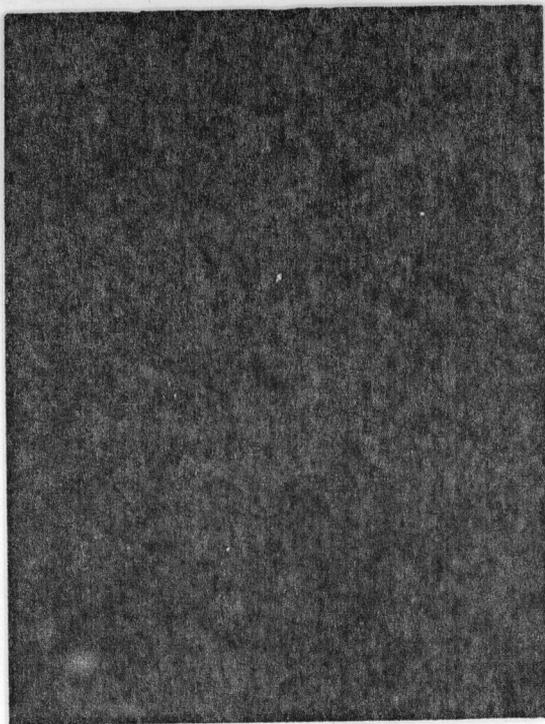
Mercedes S. Foster
Biological Survey Section, US Fish and Wildlife Service,
National Museum of Natural History,
Washington, DC. 20560

Cyclopogon deminkiorum Burns-Balogh and M.S. Foster, sp. nov., Sect. *Beadlea*.
Type: Paraguay: Itapua: El Tirol, 19.5 km NNE of Encarnacion, Foster 950,
(Holotype: US).

Flores smargadini, secundi, pubescentia piliis glandulifera septata. Planta inter *C. longibracteatus* et *C. congestus* sed sepalis lateralibus angustis falcatus differt.

Plants herbaceous, perennial; roots fleshy, fascicled, covered with a dense mat of mycorrhizae. Leaves many, basal, present at anthesis, the apex acute, the base carinate, dark green, 3-nerved, 13-15 cm long, 2.0-2.5 cm at widest point. Spike glandular-septate pubescent, ensheathed at base by bracts. Scape bracts narrowly ovate, gradually narrowing at apex to a sharp point, broadest at base, glandular-septate pubescent on outside surface, glabrous inside toward flower, emerald green, 1.0-2.0 cm long, 0.3-0.5 cm at widest point. Flowers sessile, densely glandular-septate pubescent, nearly secund on spike, 25-30 in number, emerald green. Dorsal sepal adnate to lateral petals forming a slightly inflated hood over column, ovate but narrowing about 1/3 of way to base and then expanding again at base, acute at apex, 1-nerved, emerald green, 0.6-0.8 cm long, 0.1-0.2 cm at widest point. Lateral sepals glandular-septate pubescent, erect, apices of each sepal below labellum apex, longer on lower surface producing an asymmetrically lanceolate outline, acute at apex, 1-nerved, emerald green, 0.8-0.9 cm long, 0.2 mm at widest point. Lateral petals glabrous, adnate to dorsal sepal, falcate, narrowing toward base, widest in center, and rounded at apex, double-nerved in center, white-tipped, otherwise emerald green, 0.6-0.7 cm long. Labellum glabrous, the apex recurved, fleshy, oblong in outline but narrowing about 1/2 way and expanding again to a broadly rounded apex, white, 0.9-1.0 cm long, 0.2-0.3 cm wide at center; nectary guides emerald green, prominent, nectar copious, nectar glands hook-like and thick. Column glabrous, white, 0.7 cm long; stigma 2-lobed; stylar canal entrance at base of stigma; rostellum elongate, narrow, remnant blunt, viscidium diamond-shaped, attached to apices of pollinia; anther drying brown and shriveled at anthesis exposing upper portion of pollinia; pollinarium narrowly ovate in outline, composed of four pollinia, yellow, 0.2 cm long; staminodes reduced to short wing-like projections, adherent to labellum, forming margins of clinandrium. Ovary densely glandular-septate pubescent, 3-ribbed, emerald green, 0.6-0.8 cm long.

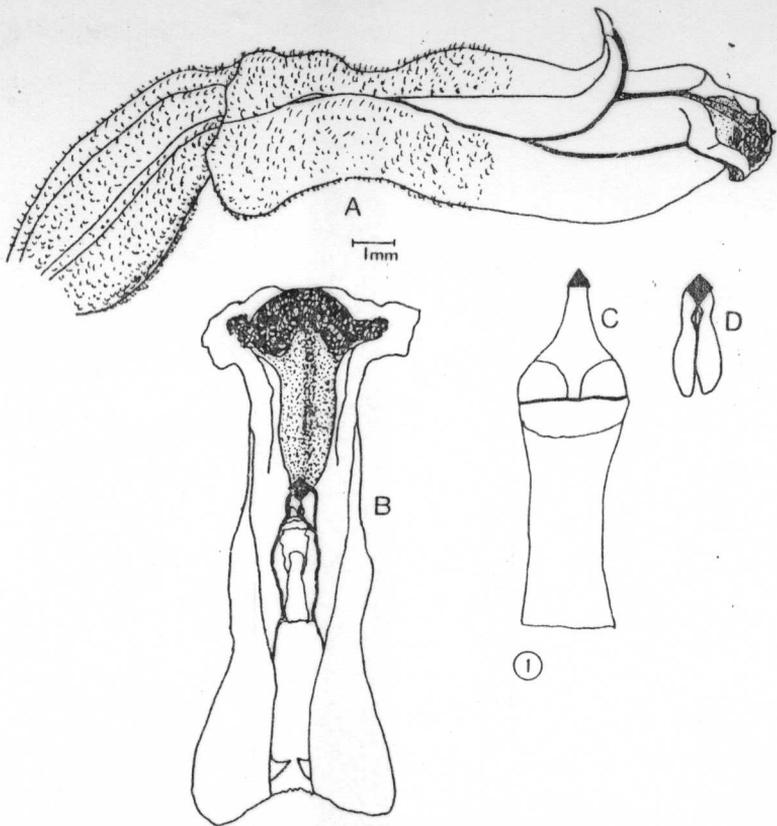
Cyclopogon Presl is a large genus composed of approximately 70 species in two sections. Section *Cyclopogon* has 2 species, each with a long nectary; Section *Beadlea* has approximately 68 species with short shallow nectaries (Balogh, 1982). In outward appearance, most species resemble the North American species of



3

Spiranthes L.C. Rich. The pollinarium of *Cyclopogon* is very small and resembles that which is found in the genus *Pelexia* Poit. ex Lindl. Garay (1982) treated most species in *Cyclopogon* as members of the genus *Beadlea* on the basis of similarities in the form of the nectary. Balogh (1982), however, showed that the characteristics of the nectary vary throughout the *Pelexia*, *Sarcoglottis*, and *Cyclopogon* alliances and, thus, are not useful for defining genera. *Cyclopogon* differs from *Pelexia* and *Sarcoglottis* in a number of characters, the most important of which are the shallow nectary, short hook-like nectar glands, and flowers that resemble *Spiranthes*. *Cyclopogon* is a widespread neotropical genus distributed from southern Florida, throughout the Caribbean Islands, Mexico, and Central and South America. The largest concentration of species is found in Brazil (Hoehne, 1945). The favored habitats include cloud forests, temperate forests, and grassy fields. Most species bloom from October to May.

After examining the literature on South American Spiranthininae (see references listed in Literature Citations), specimens from the major USA herbaria (US, NY, MO, F, SEL.) and microfiche of specimens in major European herbaria (see Appendix), we conclude that the nearest allies of *Cyclopogon deminkiorum* are probably the Brazilian *C. longibracteatus* (Barb. Rodr.) Schltr. and *C. congestus* (Vell.) Hoehne (Hoehne, 1945). *Cyclopogon congestus* occurs in Rio de Janeiro, Brazil and Uruguay, while *C. longibracteatus* occurs in Caldas and Minas Gerais, Brazil. Neither allied species has yet been reported for Paraguay. *C. deminkiorum* is similar to *C. congestus* in the construction of the nearly secund spike, drooping flowers, shape of the stigma, its hook-like nectar glands, and lateral sepals which tuck under the labellum. However, *C. deminkiorum* is also similar to *C. longibracteatus* in the shape of the labellum and dorsal sepal. *Cyclopogon deminkiorum* differs from both in having narrow, falcate lateral petals. In view of the intermediate

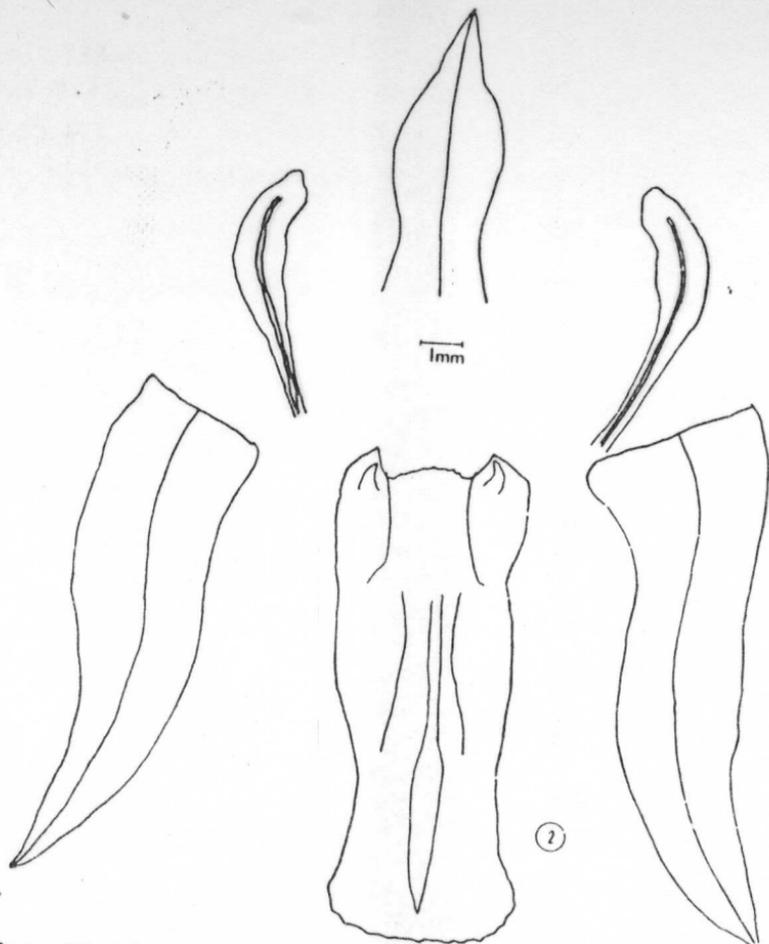


Figures 1-3. Floral Morphology of *Cyclopogon deminkiorum*. 1. a) flower; b) labellum in natural state; c) column structure; d) pollinarium. 2. Perianth layout of *C. deminkiorum*. 3. Photograph of the inflorescence of *C. deminkiorum*.

nature of *C. deminkiorum*, we consider it as a species separate from *C. longibracteatus* and *C. congestus*. Distinguishing characteristics of *C. deminkiorum* are found in figures 1-3.

This species, found in association with another newly described species of the subtribe Spiranthinae, *Sarcoglottis tirolensis* Burns-Balogh and M.S. Foster (1984), was growing in an area of forest near the Hotel El Tirol de Paraguay, 19.5 km NNE of Encarnacion, Dpto. de Itapua. Both temperature and rainfall fluctuate seasonally in this moist temperate forest. Rainfall averages 173.4 cm per year (n=10 years). Monthly precipitation is greatest from October through December (mean = 17.1, 16.5, and 16.3 cm/month, respectively, n=11) and least in July (10.9 cm, n=12). Temperatures are greatest from November through February with mean monthly maxima exceeding 35° C. May through September are the coldest months when mean monthly minima fall below 4° C; frosts occasionally occur. The forest covers moderately steep hillsides (elevation ca. 170-260 m) and level areas and has a canopy of about 15 m. Although the forest has not been heavily logged, it has been increasingly disturbed in recent years from selective cutting and clearing for agriculture or expansion of the hotel. This factor plus a relatively open understory often encourages terrestrial orchid growth.

Cyclopogon deminkiorum was located during visits to El Tirol in September – October, 1981 and 1982. In both instances, plants were growing on the forest



floor with their roots firmly implanted in the soil to a depth of about 10 cm. These plants were taken back to the United States and cultivated in the greenhouse of Dr. Roy McDiarmid. Spikes appeared in 1983, 1984, and 1985, which permitted an ongoing study of this species. We were fortunate in being able to describe this species in its living condition.

ACKNOWLEDGEMENTS

We name this species after Oetje and Henri de Mink, owners of Inter Documentation Company, Leiden, Netherlands, for their generosity in providing microfiche of pertinent journal articles and herbarium specimens to Burns-Balogh. We thank Dan Nicolson for supplying the Latin diagnosis, R.C. Banks, V.A. Funk, and two anonymous reviewers from the Dept. of Interior for reviewing the manuscript. We extend our sincerest thanks to Armando and Miguela Reynaers, owners of El Tirol, for allowing Foster to conduct research on their property and to Roy McDiarmid for maintaining the species in cultivation. We also thank Minister of Agriculture, Ing. Hernando Bertoni, and Ing. Hilario Moreno of the Servicio Forestal Nacional for providing plant collecting permits. Rainfall data were taken from records maintained at Hotel El Tirol, and temperature data were obtained from the Meteorological Service of the Paraguayan Ministry of Defense for Capitan Miranda, a town about 4 km SW of El Tirol.

LITERATURE CITATIONS

- Balogh, Pamela Burns. 1982. Generic redefinition in subtribe *Spiranthinae* (Orchidaceae). *American J. Bot.* 69:1119-1132.
- Burns-Balogh, P. and M.S. Foster. 1984. A new species of *Sarcoglottis* (Orchidaceae) from Paraguay. *Selbyana* 7:359-360.
- Correa, M. 1955. Enumeracion y Descripcion de las Especies-Orchidaceae-Spiranthinae. *Darwiniana* 11:27-29.
- Cogniaux, A. 1904-1906. *Orchidaceae*. in Martius' *Flora Brasiliensis*. Vol. III. Pars. VI. pp. 154-226.
- _____. 1907. *Orchidees du Bresil*. *Bull. Soc. Bot. Belgique*. XLIII (extract). pp. 285-295.
- Dodson, C. and P.M. Dodson. 1980-1982. *Orchids of Ecuador*. Fascicles 1-4. *Icone Plantarum Tropicarum*. The Marie Selby Botanical Gardens. Sarasota.
- Foldats, E. 1969. *Orchidaceae*. in *Flora de Venezuela*. XV. Instituto Botanico Direccion de Recursos Naturales Renovables.
- Garay, L. 1978. *Orchidaceae*. In *flora of Ecuador*. *Opera Botanica* 9:262-273.
- _____. 1982. A generic revision of the *Spiranthinae*. *Bot. Mus. Leaflet*. 28:298-301.
- Hauman, L. and G. Vanderveken. 1917. *Catalogue des phanerogames de l'Argentine*. pp. 322-325. Buenos Aires.
- Hoehne, F. 1945. *Orchidaceae*. in *Flora Brasiliica*. Vol. XII. genus 29-*Cyclopogon*.
- Kraenzlin, F. 1911. Beitrage zur Orchideenflora Suedamerikas. *Kongl. Svensk. Vetenskap. Handl.* 46(10):1-105, Tafel I-II. (IDC H-542 microfiche).
- Rodriguez, J.B. 1877-1881(82). *Genera et species orchidearum novarum*. Sebastianopolis. (IDC 11,667 microfiche).
- Schlechter, R. 1919-22. *Die Orchideenfloren der Suedamerikanischen Kordillerenstaaten*. *Fedde Repert Sp. Nov. Regni Veget.* 6:52-54 (I. Venezuela); 7:216-218 (II. Colombia); 8:116-118 (III. Ecuador); 9:129-131 (IV. Peru); 10:61-63 (V. Bolivia). (IDC 281.)
- _____. 1929. *Figuren-Atlas zu den Orchideenfloren der Suedamerikanischen Kordillerenstaaten*. *Fedde Repert. Sp. Nov. Regni Veget.* 62: Tafel 21, 77, 108. (IDC 281.)
- Schweinfurth, C. 1958-1961, suppl. 1970. *Orchids of Peru*. *Fieldiana: Botany*. Vol. 30 (1-4), suppl. vol. 33.
- _____. 1957. *Orchidaceae of the Guayana Highland*. *Mem. N.Y. Bot. Gard.* 14(3):69-214.
- Vasquez, R. and C. Dodson. 1982. *Orchids of Bolivia*. Fasc. 6. *Icones Plantarum Tropicarum*. The Marie Selby Botanical Gardens. Sarasota.

APPENDIX HERBARIUM MICROFICHE

- Lindley, J. (KEW). IDC 7395 fiche 87-93.
- Smith, J.E. (Linnean Soc.). IDC 5073 fiche 691.
- Reichenbach, H. (Vienna). IDC 8802 fiche 37-42.
- Thunberg, C. (Uppsala). IDC 1036 fiche 902.

* "This article was written by employees of the U.S. Government as part of their official duties and, therefore, may not be copyrighted."



BEECH LEAVES

This year I repotted almost all my orchids. By chance I happened upon a Beech forest in April and brought back two large bags of leaves. I made a medium of these leaves, some charcoal and some perlite. In some I included some moss, in others I added some fine fir bark. My plants have never grown so well! This is the first time I have ever tried Beech leaves.

I don't know how difficult they are to get across Canada — virtually impossible in Newfoundland — but Mrs. Kathy Hooper of Hampton, New Brunswick, is willing to bag them and ship within Canada next Spring.

— Peter Bell