

## **PACHYGENIUM, A NEW GENUS OF THE SUBTRIBE CYCLOPOGONINAE (ORCHIDACEAE)**

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**Abstract:** A new genus *Pachygenium* (Schlecht.) Szlach., Tamayo & Rutk. (Orchidaceae, Cyclopo goninae) is proposed. It differs from the closely related *Pelexia* Poit. ex Lindl. in its saccate spur and the basal part of the lateral sepals, the strongly incurved lower part of the lip, the truncate apex of the stigma, and massive rostellum and viscidium. 38 new combinations are validated.

**Key words:** Magnoliophyta, Liliopsida, Orchidaceae, Cyclopo goninae, *Pachygenium*, *Pelexia*, taxonomy, Neotropics, nomenclature

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The genus *Pelexia* Poit. ex Lindl. (Cyclopo goninae), with its nearly 70 species, poses a serious problem for taxonomists working on the New World Orchidaceae. Schlechter (1920), as the only modern orchidologist, proposed the infrageneric classification of *Pelexia*, split into five sections. The taxonomic status of two of them has already been changed: *Cogniauxiocharis* Schlecht. was incorporated into *Pteroglossa* Schlecht. (Garay 1982), and *Potosia* Schlecht. was raised to the rank of a separate genus (Tamayo & Szlachetko 2000). The species remaining in *Pelexia* make this genus highly heterogeneous and difficult to define.

In our opinion a large subgroup of *Pelexia*, called *Pachygenium*, does merit the status of genus. *Pachygenium* differs in numerous features from *Pelexia s.str.* The leaves of *Pachygenium* are gathered in the lower part of the stem but do not form a rosette as *Pelexia s.str.* does. The leaf blade transforms gradually into an indistinct petiole, whereas in *Pelexia s.str.* the petiole is very narrow and the leaf blade wide, ovate to elliptic, and much broader than the petiole. The spur is saccate and usually reaches the middle of the ovary. The spur of *Pelexia s.str.* is narrowly cylindrical, acute to subacute, often the same length or even longer than the ovary and pedicel. The lateral sepals of

*Pachygenium* are saccate at the base, a feature lacking in *Pelexia s.str.* The lip base is strongly incurved, making the auricles perpendicular to the ovary axis and arching the lip claw. The lip base and auricles in *Pelexia s.str.* are parallel to the ovary. The two groups have different types of gynostemium. In *Pachygenium* the stigma apex is truncate, the massive rostellum is ribbon-like with a narrow base, and the viscidium is usually very solid and transversely elliptic; the rostellum is truncate after removal of the pollinarium. In the gynostemium of *Pelexia s.str.* the stigma apex is obtuse to rounded, the rostellum is thin and delicate, and its remnant is acute. The viscidium is small and delicate.

***Pachygenium*** (Schlecht.) Szlach., Tamayo & Rutk., *stat. et comb. nov.*

Basionym: *Pelexia* Poir. ex Lindl. sect. *Pachygenium* Schlecht., Beih. Bot. Centralbl. **37**(2): 398–399. 1920.

LECTOTYPE (nov.): *Pachygenium oestriferum* (Reichenb. f. & Warm.) Szlach., Tamayo & Rutk. [*Spiranthes oestrifera* Reichenb. f. & Warm.].

This genus is characterized by the following combination of features: the leaves are gathered in the lower part of the stem; the leaf blade is usually lanceolate and merges gradually into the indistinct

petiole; the spur is saccate and reaches usually halfway up the ovary; the lateral sepals are saccate at the base and abruptly recurved just above it; the lip base is strongly incurved, and consequently the auricles are positioned perpendicularly to the ovary axis; the lip claw is arched; the stigma apex is truncate; the massive rostellum is ribbon-like with a narrow base; the viscidium is usually very solid and transversely elliptic; the rostellum is truncate after removal of the pollinarium.

The following species belong to this genus:

***Pachygenium albicans*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos albicans* Cogn., Bull. Soc. Bot. Belg. **44**: 293. 1907.

***Pachygenium aphyllum*** (Vell.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Serapias aphylla* Vell., Fl. Flum. **9**: t. 57. 1827.

*Pelexia aphylla* (Vell.) Schlecht., Beih. Bot. Centralbl. **37**(2): 400. 1920.

***Pachygenium arrabidae*** (Reichenb. f.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos arrabidae* Reichenb. f., Linnaea **22**: 815. 1849.

*Spiranthes arrabidae* (Reichenb. f.) Warm., Kjoeb. Vidensk. Meddel.: 94. 1884. – *Pelexia arrabidae* (Reichenb. f.) Garay, Bot. Mus. Leafl. Harvard Univ. **28**(4): 343. 1982.

***Pachygenium bonariensis*** (Lindl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes bonariensis* Lindl., Gen. Sp. Orchid. Pl.: 475. 1840.

*Stenorrhynchos bonariensis* (Lindl.) Cogn., Fl. Bras. **3**(4): 164. 1895. – *Pelexia bonariensis* (Lindl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 400. 1920.

***Pachygenium burgeri*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia burgeri* Schlecht., Rep. Sp. Nov. Reg. Veget. **35**: 34. 1925.

***Pachygenium collocliae*** (Szlach.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia collocliae* Szlach., Nord. J. Bot. **15**(2): 174. 1995.

***Pachygenium comosum*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos comosus* Cogn. in Kuntze, Rev. Gen. Pl. **3**: 299. 1898.

***Pachygenium dolichorhizum*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia dolichorhiza* Schlecht., Rep. Sp. Nov. Reg. Veget. **41**: 325. 1920

***Pachygenium ekmanii*** (Kraenzl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos ekmanii* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 22. 1911.

*Pelexia ekmanii* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 401. 1920. – *Spiranthes ekmanii* (Kraenzl.) Haum., Ann. Soc. Cienc. Argent. **90**: 127. 1920.

***Pachygenium fiebrigii*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia fiebrigii* Schlecht., Beih. Bot. Centralbl. **37**(2): 402. 1920.

***Pachygenium hirtum*** (Lindl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes hirta* Lindl., Gen. Sp. Orchid. Pl.: 476. 1840.

*Pelexia hirta* (Lindl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 402. 1920.

***Pachygenium hysterantherum*** (Barb. Rodr.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes hysteranthera* Barb. Rodr., Gen. Sp. Orchid. Nov. **1**: 188. 1877.

*Stenorrhynchos hysterantherum* Barb. Rodr., Gen. Sp. Orchid. Nov. **1**: index 10. 1877. – *Pelexia hysteranthera* (Barbr. Rodr.) Schlecht., Beih. Bot. Centralbl. **37**(2): 402. 1920.

***Pachygenium itatiaiae*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia itatiaiae* Schlecht., Rep. Sp. Nov. Reg. Veget. **27**: 300. 1930.

***Pachygenium laminata*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia laminata* Schlecht., Anex. Memn. Inst. Butantan **1**(4): 22. 1922

***Pachygenium longibracteata*** (Pabst) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia longibracteata* Pabst, Bradea **1**(47): 468. 1974

***Pachygenium longifolia*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos longifolium* Cogn., Fl. Bras. **3**(6). 1905.

*Pelexia longifolia* (Cogn.) Hoehne, Fl. Bras. **12**(2): 249. 1945.

***Pachygenium loefgrenii*** (Porsch) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos loefgrenii* Porsch., Österr. Bot. Zeitschr (1905): 151: 1905.

*Pelexia loefgrenii* (Porsch) Schlecht., Beih. Bot. Centralbl. **37**(2): 403. 1920.

***Pachygenium luetzenburgii*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia luetzenburgii* Schlecht., Rep. Sp. Nov. Reg. Veget. **27**: 269. 1921.

***Pachygenium minarum*** (Kraenzl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos minarum* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 22. 1911.

*Pelexia minarum* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 403. 1920.

***Pachygenium oestriferum*** (Reichenb. f. & Warm.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes oestrifera* Reichenb. f. & Warm., Otia Bot. Hamburg. **2**: 86. 1881.

*Stenorrhynchos oestrifera* (Reichenb. f. & Warm.) Cogn., Fl. Bras. **3**(4): 663. 1895. – *Pelexia oestrifera* (Reichenb. f. & Warm.) Schlecht., Beih. Bot. Centralbl. **37**(2): 404. 1920.

***Pachygenium orobanchoides*** (Kraenzl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos orobanchoides* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 24. 1911.

*Pelexia orobanchoides* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 404. 1920.

***Pachygenium orthosepalum*** (Reichenb. f. & Warm.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes orthosepala* Reichenb. f. & Warm., Otia Bot. Hamburg **2**: 85. 1881.

*Pelexia orthosepala* (Reichenb. f. & Warm.) Schlecht., Beih. Bot. Centralbl. **37**(2): 404. 1920.

***Pachygenium ovatifolia*** (Correa) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia ovatifolia* Correa, Darwiniana **10**: 162. 1953

***Pachygenium paludosa*** (Correa) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia paludosa* Correa, Darwiniana **10**: 166. 1953

***Pachygenium paraguayensis*** (Garay) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia paraguayensis* Garay, Bot. Mus. Leafl. Harvard Univ. **28**(4): 345. 1982.

*Stenorrhynchos vaginatus* Cogn., Bull. Soc. Roy. Belg. **43**: 270. 1906. – *Pelexia vaginata* (Cogn.) Schlecht., Beih. Bot. Centralbl. **37**(2): 406. 1920.

***Pachygenium parvum*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos parvum* Cogn., Fl. Bras. **3**(6): 537. 1906.

*Pelexia parva* (Cogn.) Schlecht., Beih. Bot. Centralbl. **37**(2): 404. 1920.

***Pachygenium phallocalosa*** (Alves) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia phallocallosa* Alves, Folia Geobot. Phytotax. **26**(2): 176. 1991

***Pachygenium pteryanthum*** (Reichenb. f. & Warm.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes pteryantha* Reichenb. f. & Warm., Otia Bot. Hamburg. **2**: 86. 1881.

*Stenorrhynchos pteryanthum* Cogn., Fl. Bras. **3**(4): 171. 1895. – *Pelexia pteryantha* (Reichenb.f. & Warm.) Schlecht., Beih. Bot. Centralbl. **37**(2): 405. 1920.

***Pachygenium robustum*** (Kraenzl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos robustus* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 25. 1911.

*Pelexia robusta* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 405. 1920.

***Pachygenium saltensis*** (Griseb.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes saltensis* Griseb., Goett. Abh. **24**: 338. 1879.

*Stenorrhynchos saltensis* (Griseb.) Cogn., Fl. Bras. **3**(4): 166. 1895. – *Pelexia saltensis* (Griseb.) Schlecht., Beih. Bot. Centralbl. **37**(2): 405. 1920.

***Pachygenium sceptrum*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia sceptrum* Schlecht., Anex. Memn. Inst. Butantan **1**(4): 21. 1922.

***Pachygenium sheviakii*** (Szlach.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia sheviakii* Szlach., Nord. J. Bot. **15**(2): 173. 1995.

***Pachygenium tamanduense*** (Kraenzl.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos tamanduensis* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 24. 1911. – *Pelexia tamanduensis* (Kraenzl.) Schlecht., Beih. Bot. Centralbl. **37**(2): 406. 1920.

*Stenorrhynchos holosericeum* Kraenzl., K. Svensk Vet. Akad. Handl. **46**(10): 27. 1911.

***Pachygenium tenuior*** (Schlecht.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Pelexia tenuior* Schlecht., Rep. Sp. Nov. Reg. Veget. **16**: 324. 1920.

***Pachygenium vaginatum*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos vaginatus* Cogn., Bull. Soc. Bot. Belg. **43**: 270. 1907.

***Pachygenium ventricosum*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos ventricosus* Cogn., Bull. Herb. Briss.: 932. 1903.

*Pelexia ventricosa* (Cogn.) Schlecht., Beih. Bot. Centralbl. **37**(2): 406. 1920.

***Pachygenium viridis*** (Cogn.) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Stenorrhynchos viridis* Cogn., Fl. Bras. **3**(6): 538. 1906.

*Pelexia viridis* (Cogn.) Schlecht., Beih. Bot. Centralbl. **37**(2): 407. 1920.

***Pachygenium yungasensis*** (Rolfe) Szlach., Tamayo & Rutk., *comb. nov.*

Basionym: *Spiranthes yungasensis* Rolfe, Mem. Torrey Bot. Club. **4**: 266. 1895.

*Pelexia yungasensis* (Rolfe) Schlecht., Beih. Bot. Centralbl. **37**(2): 407. 1920.

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