

Notes on the Papuan genus *Saurolophorkis* (Malaxidinae, Orchidaceae) and description of a new species

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Summary: A new species of the Papuan genus *Saurolophorkis* is described. Determination key for *Saurolophorkis* species as well as descriptions and illustrations of the new species are provided.

Keywords: Malaxidinae, Orchidaceae, taxonomy, *Saurolophorkis*

Saurolophorkis was established by MARGOŃSKA & SZLACHETKO (2001) on the basis of a collection from New Guinea. Features like the form of the lip lamellae, basal callus and gynostemium appendage make this genus similar to *Pseudoliparis*. A generic status of *Saurolophorkis* is beyond any doubt. *Saurolophorkis* is easily distinguished within the tribe Malaxideae by its relatively large flowers (1 cm or more in diameter), lateral sepals connate nearly to their apices (very rare feature within the tribe), lip with a thick, densely, though minutely papillose apical margin, which is at least somewhat incurved, making the lip slightly hooded in the upper half, posterior side is also densely and minutely papillose.

The single species of the genus, *S. bisepala*, is known only from a few field records, collections and cultivations from a limited region of Papua New Guinea. It was recognized in collections of A. Gilli 531 and 169 [W!] and L.M. Masson s.n. collected in the wild and cultivated in Norfolk (#7) and in Royal Botanic Gardens Kew (#232) [both specimens in K spir. coll.]. The plants were collected at Wabag District, Enga Province, in the highland part of Papua New Guinea. Recently, O. Gardner had discovered and collected [AK!, LAE] this rare orchid in a high mountain valley of Schrader Range, Madang Province, which is located NE of the above mentioned localities.

During further studies, I discovered a sample of plants between Malaxidinae specimens of spirit the collection of the Orchid Herbarium Royal Botanic Gardens, Kew [K] without any doubt representing an unknown species of the genus *Saurolophorkis*.

Materials and methods

While working on the taxonomy of Malaxideae, I had the opportunity to study thousands specimens of orchids, dried or preserved in liquid as well as living plants (cultivated or from localities in the wild), deposited in various scientific collections. I checked bibliography and iconography, as well.

For this article, classic taxonomy with obligatory reference to the original taxonomic material such as type-specimens and protologues has been used. Herbaria acronyms are taken from Index Herbariorum (HOLMGREN et al. 1990) and authors' names abbreviations follow BRUMMITT & POWELL (1992). The studies were conducted by using the digital database *Archivum Orchidarium* (Arch. Orch.).

Results

Working on *Saurolophorkis*, a peculiar collection of N.W. Simmonds is of special interest: entry No. 521-1951 (label) of the living collection of the Royal Botanic Gardens, Kew. Living plants were collected by Simmonds from culture at Suva, Fiji, in 20.X.1951 s.n. In the following year, these plants bloomed in the Royal Botanic Gardens' glasshouse and that time, samples were preserved (26.XI.1952.).

Saurolophorkis is endemic to a few small areas of Papua New Guinea. Similarly to the closely related genus *Pseudoliparis*, it does not exceed the Solomon Islands, the eastern borderline of its occurrence. Both orchid genera have never been recorded further east. Thus, possibility of natural existence of Simmonds' plants in a place such as Fiji, isolated by several archipelagos, so far away from the genus main distribution area seems to be very doubtful.

I have carefully checked all existing sources of data such as plant accession reports of the Royal Botanic Gardens, Kew, their historical paper as well as present digital card index of cultivated orchids and the correspondence between the Gardens and N.W. Simmonds as well as Simmonds biographies, bibliographies, etc.

Norman Willison Simmonds (1922–2002) was a respected botanist, geneticist and plant breeder, an expert in a range of tropical crops, especially plants such as bananas, sugar cane or potatoes. For a long time, he was connected with the Imperial College of Tropical Agriculture (ICTA) in Trinidad. During this period, he made two main collecting trips. The first one was to East Africa in 1948 and second to the SE Asia-Pacific region in 1954–55. During the latter one, he visited Pacific Islands (from Hawaii through Fiji), Papua New Guinea, Malaysia, Thailand and North India. The visit on Papua New Guinea was significant for him, because he believed that ancient Polynesian introductions of many banana groups (plantains) had their sources and beginning just in the New Guinea area. Despite of his main area of interest, he has collected many other local plants, but rather not in deep and highland interior of the island. Therefore, I suspect, he cannot be considered as personal collector of the orchid plants from their place of origin. Additionally, he could not gather the plants in 1951 (according to the samples label), which means three year before (!) his travel to SE Asia-Pacific region. A lack of the part of original card-index related to this period and this orchid in Royal Botanic Gardens, Kew made the problems unsolved.

However, I could not find any direct proof. It seems that the orchid plants were really collected by someone in Papua New Guinea and later on cultivated at Fiji. Donation of the orchid plants to Royal Botanic Gardens, Kew is ascribed only to Simmonds. This may be true.

Recently, I have discovered a collection of plants between *Malaxis* specimens in the National Herbarium Netherlands in Leiden [L], which without any doubt belong to the same species as plants from the Simmonds' spirit collection in Kew [K]. The plants were collected in Papua New Guinea, Western Highlands Province, near Minj, along Korubun Creek, and later cultivated in Botanical Garden in Leiden.

On a basis of distinct morphological features, these plants ought to be recognized as a new species of *Saurolophorkis*.

Taxonomical treatment

Saurolophorkis Marg. & Szlach., Pol. Bot. J. 46(1): 7–9. 2001.

Type species: *Saurolophorkis cordanthemum* Marg. & Szlach.

Plants terrestrial, usually forming more or less distinct clusters in small, few-planted, more or less scattered colonies. Rhizome usually reduced, creeping, branched, stem-like. Shoot consisting of an ovoid pseudobulb which is up to 3 cm long and 1 cm in diameter, ovoid to oblong-ovoid nearly conical, erect, few-noded, completely covered by the leaf bases and basally by scales, with 2–3 leaves clustered in its apical part. Leaf blades slightly oblique, ovate, broadly ovate to nearly cordate, somewhat attenuate, acuminate at apex, rounded at base, rather plicate. Inflorescence cylindrical, at least one time as high as the leaf tops, additionally elongating with age, erect. Sterile bract single and recurved with anthesis. Floral bracts lanceolate to oblong-triangular, acuminate, 1-veined, equal to or exceeding the stalked ovary, becoming reflexed with age. Buds distinctly cordate. Flowers large for the subtribe, 1–1.5 cm in diameter, somewhat fleshy. Main veins of tepals frequently with secondary branching. Dorsal sepal broadly ovate, broadly rounded at base, 5-veined. Lateral sepals oblique, broadly semi-ovate, both 5-veined, connate nearly to their apices. Petals attenuate at base, 1-veined, recurved at anthesis. Lip 3-lobed, hippocrepiform; mid-lobe entire, its margin thicker, densely and minutely papillose, at least somewhat incurved (upper half of the lip slightly hooded), whole posterior surface of the mid-lobe minutely papillose, mid-lobe separated from the lateral lobes by a distinct constriction and curvature; distal margins of lateral lobes usually distinctly obliquely rounded; auricles exceeding the gynostemium base, oblong, broadly rounded at their apices; central part of lamina flat, glabrous, lacking central cavity, ornamented only with two characteristically developed lateral lamellae which are swollen, highest at their apex and base, they end far short of the mid-lobe apex and just short of the mid-lobe base, the lamellae are situated along the 2 external of 3 main veins, which a narrow crevice in between. Gynostemium massive, erect, with an appendage on the dorsal part; appendage large, erect, prominent; staminodes subequal to the anther, erect, ovate, obtuse; rostellum erect, thin, truncate; stigma transversely elliptic, in a deep pocket, opening transversely by a deep cleft; anther erect, broadly ovate.

Saurolophorkis bisepala (Gilli) Ormerod ex Szlach. & Marg.

Pol. Bot. J. 46(2): 114. 2001.

= *Microstylis bisepala* Gilli, Ann. Naturhist. Mus. Wien 84: 36–37. 1980 (1983). Type: Papua New Guinea. Busch am Bach bei Pompobus, 1950 m, 22.II.1974., *A. Gilli 531* [holotype W!].

= *Saurolophorkis cordanthemon* Marg. & Szlach. (Figs 1 & 2), Pol. Bot. J. 46(1): 9. 2001. Type: Papua New Guinea, leg. *Hunt 232*, 22.X.1975., cult. Kew EN 270-75.02524 [holotype K spir. coll. 37517!]. Paratype: Papua New Guinea. Nonchege, 5-7000', *L.M. Mason et al. s.n.*, 23.VII.1954., cult. Norfolk No.7. [K spir.coll. 23181!]. Stated here!

Description. Plants 10–35 cm tall, pale to silvery-green and bluish-grey. Inflorescence 9–27 cm long. Flowers 1.2–1.7 cm in diameter, only slightly fragrant, green, apple-green to blue-green, fawn to brownish-tinged with age, with the lip centre and gynostemium dark green-blue. Dorsal sepal 0.65–0.9 cm long, 0.65–0.72 cm wide, apiculate. Lateral sepals 0.6–0.8 cm long, 0.49–0.52 cm wide, apiculate. Petals 0.67–0.75 cm long, 0.18–0.23 cm wide, linear-lanceolate,

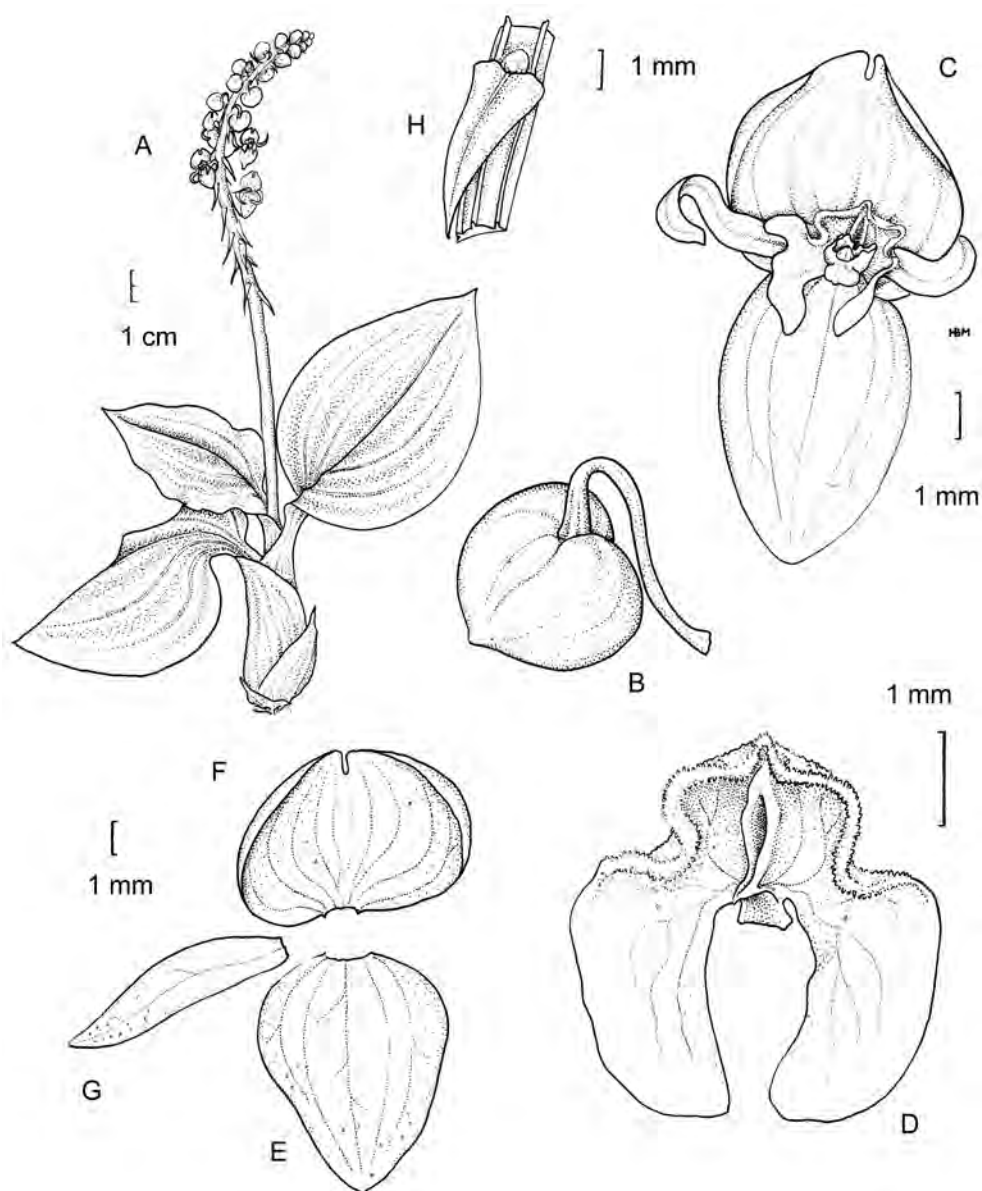


Figure 1. *Saurolophorkis bisepala* (from the type of *S. cordanthemum*). A – habit; B – bud; C – flower; D – lip; E – dorsal sepal; F – united lateral sepals; G – petal; H – floral bract. (MARGOŃSKA & SZLACHETKO 2001, drawings H.B. Margońska)

acute. Lip 0.4–0.54 mm long, 0.37–0.5 mm wide, broadest at about or above its base; mid-lobe about $\frac{1}{3}$ of the lip length, semi-ovate, to semi-elliptic; lateral lobes semi-ovate, auricles usually $\frac{1}{2}$ – $\frac{3}{5}$ of the whole lip length; lamina lateral lamellae the most swollen at their apical half, apiculate and connate at the apices. Gynostemium 0.2–0.22 cm long. Gynostemium appendage 0.05–0.05 cm erect, 0.065–0.07 cm long and 0.07–0.08 cm wide, medium-sized, glabrous, with triangular basal part, distally flattened and arcuately recurved, resembling the fin of a fish. Anther green.

Distribution. Papua New Guinea. Endemic. Alt.: 1500–2160 m.

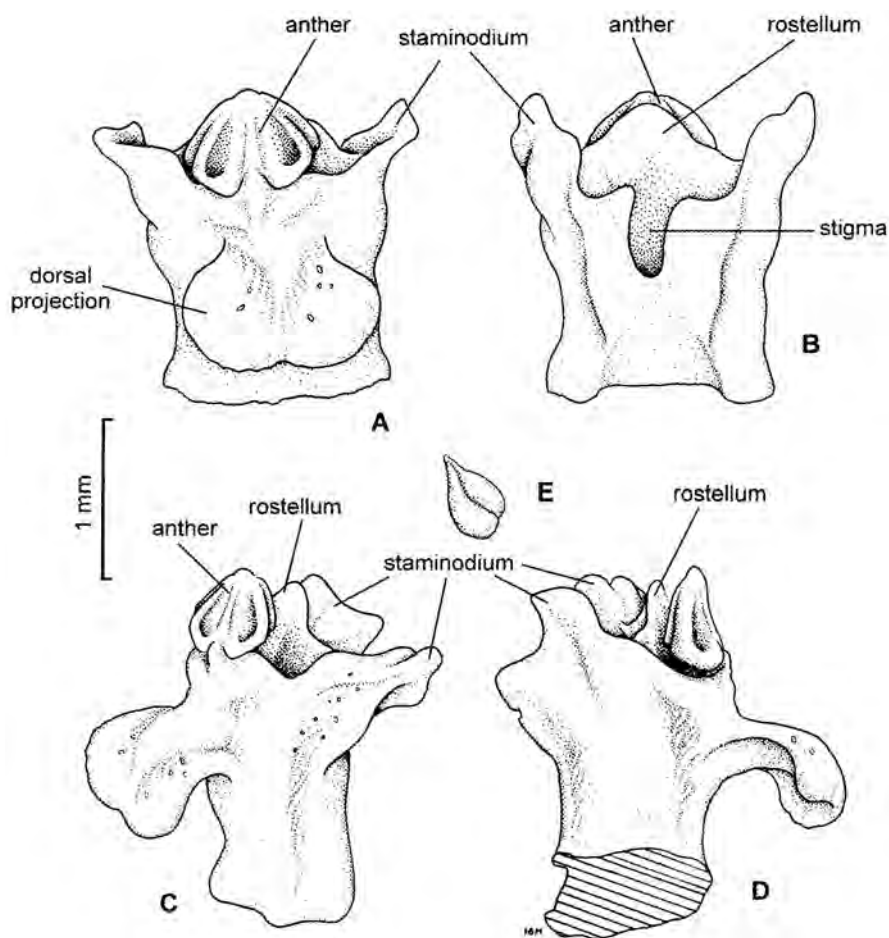


Figure 2. *Saurolophorkis bisepala* (from the type of *S. cordanthemum*). Gynostemium A – anterior view, B – posterior view, C & D – side views; E – pollinia. (MARGOŃSKA & SZLACHETKO 2001., drawings H.B. Margońska)

Ecology. Epiphytic to semi-epiphytic, on trunks or branches of trees and bushes; in dense clusters, forming colonies; in humus and leaf litter, among mosses; in shady, wet places; in forest and scrub. Noted as rare. Flowering and fruiting January–February.

***Saurolophorkis papuana* Marg., sp. nov. (Fig. 3)**

Type. Papua New Guinea, Western Highlands Province, near Minj, Korubun Creek, 1800 m, lat. 5°58' S, long. 144°33' E, leg. *E.F. de Vogel, W. Bandish, A. Vogel & B. Gravendeel s.n.*, cult. at Leiden Botanical Garden Hort. Leiden No. 20032236 [holotype L 20 500 barcode 0661500!, isotype L spir. coll.].

Diagnosis. *Petala oblanceolata, labellum latius infra basim, columnae appendix magna fere totae columnae magnitudinis dimidium vulgo constituens, tota appendicis antica crista aliquantum complanata papillosa apice recurvata.*

Description. Plants 10–20 cm tall, pale to silvery-green. Leave blades up to 9 cm long and 4 cm wide. Inflorescence 6–17 cm long. Flowers 1–1.35 cm in diameter, dull grass-green, apple-green to blue-green, yellowish-tinged with age, with the lip centre and gynostemium dark green. Dorsal sepal 0.6–0.74 cm long, 0.4–0.69 cm wide, obtuse. Lateral sepals 0.52–0.66 cm

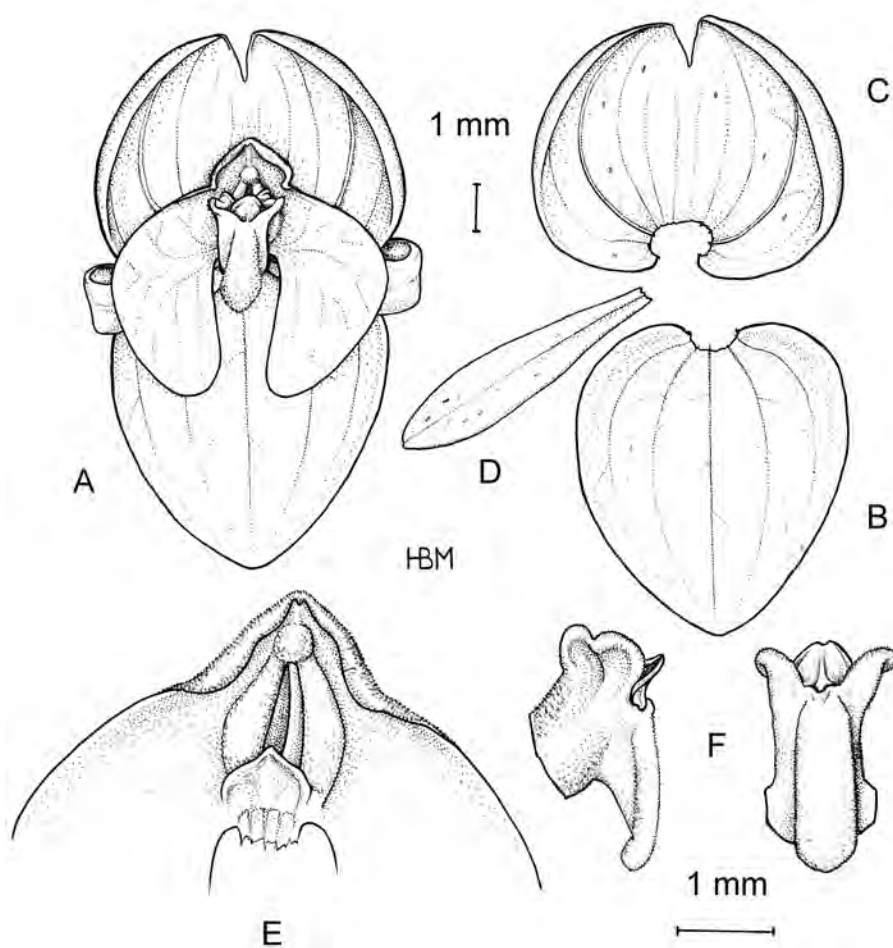


Figure 3. *Saurolophorkis papuana* (from the type). A – flower; B – dorsal sepal; C – lateral sepals; D – petal; E – the upper part of the lip; F – gynostemium, lateral and front view. (drawings H.B. Margońska)

long, 0.32–0.48 cm wide, apiculate to obtuse. Petal 0.55–0.68 cm long, 0.12–0.15 cm wide, oblanceolate, acute to retuse, attenuate at base. Lip 0.38–0.5 mm long, 0.38–0.53 mm wide, broadest below its base; mid-lobe less than $\frac{1}{3}$ of the lip length, semi-ovate to triangular; lateral lobes semi-elliptic, auricles usually $\frac{1}{2}$ – $\frac{3}{5}$ of the whole lip length; lamina lateral lamellae the most swollen at their basal half, globose and connate at the apex. Gynostemium 0.17–0.19 cm long. Gynostemium appendage 0.09–0.1 cm erect, 0.15–0.17 cm long and 0.08–0.09 cm wide (anterior ridge), very large, constituting nearly $\frac{1}{2}$ of the whole gynostemium size, prominent, triangular, slightly recurved only at its apex, its whole anterior ridge (from base of the anther to appendage apex) somewhat flattened, papillose. Staminalodes external surface papillose. Anther greenish-yellow.

Distribution. Papua New Guinea. Western Highlands Province.

Paratypes. Papua New Guinea, *sine prec. loc., dat. and coll.*, noted as ‘cult. at Suva, Fiji’, 30.X.1951, donator *N.W. Simmonds s.n.* [K entry No. 521-1951], cult. Royal Botanic Gardens, Kew 26.XI.1952. [K 23180! spir. coll.]; Papua New Guinea, Western Highlands Province, near Minj, Korubun Creek, 1800 m, lat. 5°58' S, long. 144°33' E, leg. *E.F. de Vogel, W. Bandish,*

A. Vogel & *B. Gravendeel s.n.*, cult. at Leiden Botanical Garden Hort. Leiden No. 20032236 [L 90 500! no barcode, Leiden Hortus spir. coll., L spir. coll.].

Ecology. In primary montane forest, 25 m high, with little undergrowth, very disturbed, on steep mountain slope. The plants were recorded as fairly easy to be cultivated. In Leiden Botanical Garden their blooming were noted in August–September.

Etymology. The epithet refers to the orchid's place of origin.

Note. The most impressive floral feature of the newly discerned representatives of the genus *Saurolophorkis* is the prominent and specific gynostemium appendage.

Key to *Saurolophorkis* species

1. Petals linear-lanceolate, lip broadest at about or above its base, gynostemium appendage glabrous, distally flattened, resembling the fin of a fish *S. bisepala*
- Petals oblanceolate, lip broadest below its base, gynostemium appendage large, constituting usually nearly ½ of the whole gynostemium size, appendage whole antherior ridge somewhat flattened, papillose, recurved at its apex *S. papuana*

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