Biodiv. Res. Conserv. 24: 13-18, 2011

DOI 10.2478/v10119-011-0020-z

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A new taxon of Malgasian *Liparis salassia* (Orchidaceae, Malaxidinae) from Le Réunion

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Abstract: A new variety of *Liparis salassia* (Pers.) Summerh. from Le Réunion Island is proposed and illustrated.

Key words: *Liparis salassia*, Orchidaceae, Malaxidinea, morphology, taxonomy

1. Introduction

The genus *Liparis* L.C.Rich. is a large, mainly pantropical genus of ca. 300 species, with some representatives in temperate regions of the northern and southern hemispheres. Plants are autotrophic (except e.g. *Liparis aphylla* Romero & Garay), terrestrial, lithophytic or epiphytic, forming colonies of various sizes. In spite of clear and distinct differences, different orchids are sometimes included in the genus.

Species of *Liparis sensu stricto* generally have shoots 1– to multi-nodal: pseudobulbous (below or above ground), erect, globoid or ovoid to elongate up to fusiform, or elongate and forming a creeping stem, leafy throughout. The plants have single to many leaves. The leaf blade(s) is erect to sometimes held horizontally, somewhat thick to membranous, conduplicate to more or less distinctly plicate when mature, ranging from cyperus-like, grass-like, lanceolate, oblong, elliptic, ovate to cordate. Inflorescence is always erect, with raceme usually lax, few- to many-flowered. Floral bracts basally imbricate a floral pedicel and erect. Flowers are small to medium-sized, from 0.5 to over 2 cm in diameter, resupinate, opening successively, many at a time. Lip is flat to downward curved, arcuately or geniculately bent, with basal calli usually present and basal auricles present, developed to various degrees. Lip lamina margins can be entire, crispate, crenulate to fimbriate, often eroding with age (irregularly crenulate). Gynostemium is elongate, slender, arcuate, with staminodes relatively small, erect. Stigma is elliptic, deeply concave, whereas rostellum truncate, apically curved-down with small viscidia. Anther is relatively small (with base above the stigma apex), distinctly dorsiventrally flattened, slightly broader than long. Pollinia 4, binate, laterally flattened, hidden in the locules.

Le Réunion (in the past Île Bourbon) belongs to the Mascararene Islands and is situated about 780 km E of Madagascar. Le Réunion is the largest (2,512 km2) and the highest (inactive volcano Piton des Neiges, 3,069 m.) in the Archipelago and of all the oceanic islands in the Indian Ocean. As a result of diversified land relief, unique weather and a wide range of different habitats, the Island has the most diverse flora in the Archipelago. More than 500 species of flowering plant have been described from the island. Among them, 6 genera and about 160 species are endemic (ca. 30% of the entire vascular flora).

More than 160 native species of orchids have been already described from the island and about 60 taxa are waiting for recognition of their taxonomic status. All these orchids represent 39 genera of the order Orchidales. About 20% of them are endemic to Le Réunion. It should be stressed that many species (45) are threatened, endangered or vulnerable (2010 IUCN evaluation). On the whole island, 49 species of the vascular flora (5.4%) have already disappeared and 275 (30.4%) are in danger. Intensive research and specific conservation provisions must be made against this situation.

2. Materials and methods

In the course of research on the taxonomy of Malaxidinea, hundreds of dried herbarium and liquid preserved specimens, deposited in various herbaria, as well as live plants from the different parts of orchid species occurrence and the pertinent bibliographic materials were studied (Margońska). While working on the orchid flora of Réunion, hundreds of field records were verified and permanently monitored (Szelengowicz). In the study, the conventional taxonomy method, with the obligatory reference to an original taxonomic material, such as, type-specimens and protologues, has been used. The herbaria acronyms follow *Index Herbariorum* (Holmgren *et al*. 1990). The nomenclature of authors' name abbreviations follows Brummitt and Powell (1992).

3. Results

The genus *Liparis* is represented on the island by several species. One of them is *Liparis salassia* (Pers.) Summerh. This taxon is not common but well known, also recorded from Comoros, Madagascar and Mauritius. When working on the orchid flora of Le Réunion, Michel Szelengowicz (2005) discovered a population of several *Liparis salsssia* plants with an unusual set of floral structures at Takamaka, on a small shelf at the base of a cliff. These plants have sepals initially connate from their base across most of their length, as anthesis progresses only at the basal part, and the lip piriform in outline. Throughout anthesis, the lip lamina has permanently incurved margins of epichyle. As a result, teeth of epichyle are directed towards the middle part of the lamina.

The population, has been monitored by Szelengowicz each year since 2005. Consistently, over the years of the study, all plants in the population have the same form of flowers throughout anthesis. Therefore, we are confident, that this unique form of a flower is a permanent trait. Later on, an additional population of the same plants was recorded nearby – about 50 m from the first, type locality.

Based on these results, we propose these plants as a new variety of *Liparis salassia* (Pers.) Summerh.

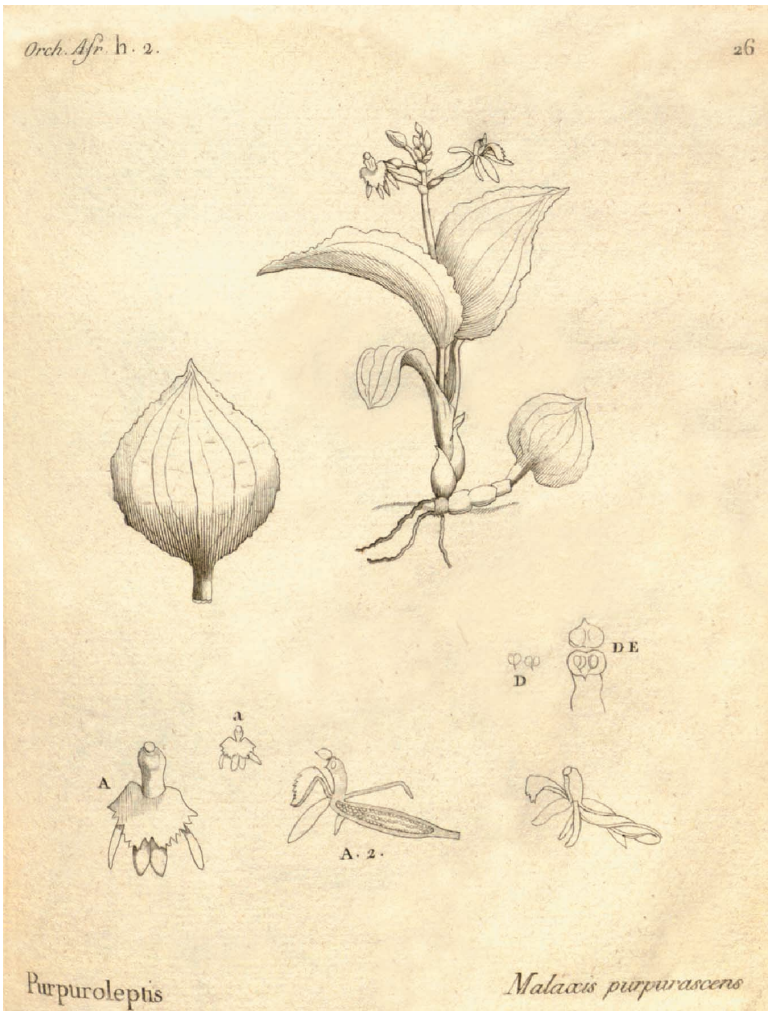

Fig. 1. Typical plants of *Liparis salassia* (Pers.) Summerh. The original icon from Thouars (as *Malaxis purpurescens* Thou., 1822) (photograph by H. B. Margońska 2007)

Liparis L. C. Rich. *nom. cons.*
Orch. Europ. Annot. 21, 30, 38. 1817 (repr. in Mem. Mus. Hist. Nat, Paris, **4**: 43. 1818);
Generitype: *Liparis loeselii* (L.) L. C. Rich. (*Ophrys loeselii* L.).

Liparis salassia (Pers.) Summerh., Kew Bull. 1953: 133. 1953. *Epipactis salassia* Pers., Syn. 2: 513. 1807. *Serapias salassia* (Pers.) Steud., Nomencl. Bot.: 767. 1821. *Ophrys salassia* (Pers.) Comm. Ex A. Rich., Mem. Soc. Hist. Nat. Par. 4: 47. 1828. *Neottia salassia* (Pers.) Steud., Nom. Ed. 2, 2: 189. 1841. HOLOTYPE: Isle de Bourbon, Mount Salassi, leg. Herb. *Jussieu s.n.* (P!).
Malaxis purpurescens Thou., Hist. Orchid.: t.26 & 27. 1822. *Liparis purpurascens* (Thou.) Lindl., Bot. Reg.: sub t. 882. 1825. *Leptorkis purpurascens* (Thou.) Kuntze, Rev. Gen. Pl. 2: 671. 1891.
Holotype: Mascarenes, *Thouars s.n.* (P!). (Fig. 1)
Plants 7-15(-23) cm tall. Pseudobulbs ca. 4-9(-12) cm long and 0.3-0.6(-0.8) cm in diameter, close together, fusiforme to cylindrical, mostly covered by shoot basal, tubular scales and leaf bases, green. Leaves 3-4, gathered at apical part of the shoot; blade ca. 1-5(-6) cm long, ca. 0.8-4.7(-5.8) cm wide, broadly ovate to cordate, slightly attenuate, acuminate, margins undulate, shining green with dark brown, purple to red nervation, shortly petiolate. Inflorescence 3-6(-11) cm long, usually intense purple, red flushed; rachis of raceme ca. 0.6-1.5(-3), 5-10(-15)-flowered, dense, subcorymbose. Pedicel with ovary ca. 0.5-1.5 (ca. 2 cm when fruiting) cm long, elongating with age. Flowers 1.2-1.4 cm in diameter, paler as anthesis progresses, from yellow to pale yellow, with intense, wine red to purple venation (Fig. 2). All tepals thin and delicate, nearly translucent, lustrous. Sepals 3-nerved. Dorsal sepal 0.5-0.76 cm long, 0.17-23 cm wide, oblong to lanceolate, obtuse to subapiculate. Lateral sepals 0.46-0.64 cm long, 0.2-0.34 cm wide, oblique, oblong ovate to oblong obovate, obtuse to subapiculate, connate at least at basal part. Petals 0.5-0.74 cm long, 0.03-0.055 cm wide, linear to narrowly oblanceolate, subobtuse to subacute and erose, 1-nerved. Lip 0.45-0.55 cm long when spread, 0.55-0.65 cm arcuately curved-down before of its half of length, canaliculate along the main nerve in the basal part; basal calli 2, oblong- lamellate; basal auricles small but distinct; lamina broadly obovate, distally inside of gentle and wide indentation with prominent apicululus, margins of epichyle distinctly toothed which triangular; central thickening elongate, oblanceolate. Gynostemium 0.3-0.48 cm long, elongate, apically arcuate, with obscure, ovate thickenings in front at the base of the column part; staminodes erect, short, broadly triangular, obtuse to round; connective erect to recurved with age, apically attenuate, subacute to subobtuse.
General distribution: Comoros, Madagaskar, Réunion, Mauritius. Alt.: 1000-1500 m.
Ecology: Terrestrial, epiphytes (semi-epiphytic on moss-covered trunks of trees), sometimes lithophytes; forming more or less scattered colonies; preferring higher elevations and cooler, wetter to moist conditions; in wet to moist soils and humus, in leaf litter and/or between mosses, grasses, herbs; in evergreen forest. In Ile de la Réunion the species is recorded as epiphyte on old trunks with moss and at the base of arborescence ferns: *Cyattea excelsa* (endemic to Réunion and Mauritius) and *Cyattea borbonica* (endemic to Madagascar, Réunion and Mauritius). Flowering at January-February, April-May.

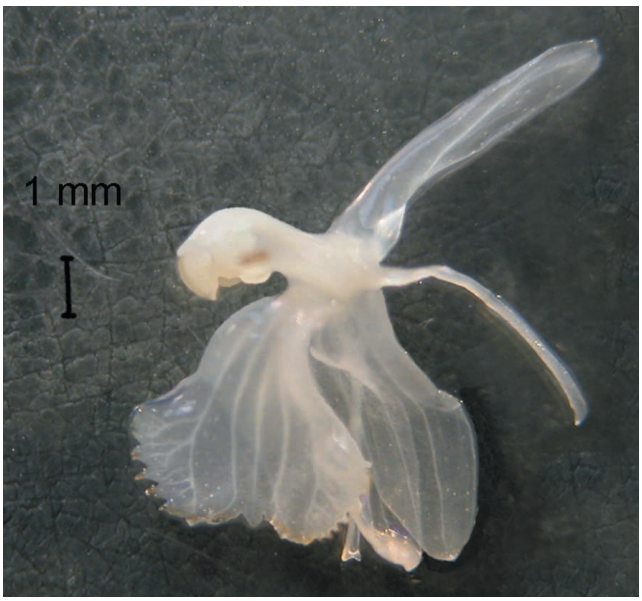

Fig. 2. *Liparis salassia* (Pers.) Summerh. Typical flowers (photograph by H. B. Margońska – Hermans 3197 spir. coll. K)

Liparis salassia (Pers.) Summerh. var. *mierosławskiana* Marg. & Szelen. *var. nov.*
Plantae habitus in specie typicus. Sepala lateralia primo e basi pro parte maxima deinde, cum anthesis progressa est, tantum basi connate. Labellum ambitu pyriforme. Per anthesin labelli lamina cum epichili laterales distalesque margines incurvatas, itaque epichili dentes laminae medium spectantes.

Type: Ile de la Réunion, East cost, at Takamaka, on a small shelf at the base of a cliff with water falls, 650-750 m, 03.2011., *Michel Szelengowicz* 0311 (HOLO-UGDA-HBM, ISO- UGDA-HBM spir.coll.) (Fig. 3).
Plants 7-15(-23) cm tall. Pseudobulbs ca. 2-3 cm long and 0.4-0.6 cm in diameter (Fig. 4). Leaves 3-4; blade ca. 3-6 cm long, ca. 2-4 cm wide. Inflorescence 3-6 cm long, usually purple, red flushed; raceme ca. 6-13-flowered. Pedicel with ovary ca. 1-2 (-3 cm when fruiting) cm long. Flowers 0.9-1.1 cm in diameter (Fig. 5). Dorsal sepal 0.48-0.52 cm long, 0.15-0.17 cm wide. Lateral sepals

Fig. 3. *Liparis salassia* (Pers.) Summerh. var. *mierosławskiana* Marg. Flower (photograph by H. B. Margońska 2011 – ISO-UGDA-HBM spir. coll.)

Fig. 4. *Liparis salassia* (Pers.) Summerh. var. *mierosławskiana* Marg. Plants (photograph by M. Szelengowicz 2010)

0.38-0.42 cm long, 0.18-0.22 cm wide, initially connate from their base across most of their length, as anthesis progresses only at the basal part. Petals 0.47-0.5 cm long, 0.03-0.05 cm wide. Lip 0.39-0.42 cm long when spread, 0.48-0.53 cm wide when spread; basal calli 2, oblong- lamellate; basal auricles small but distinct; lamina piriform in outline, 5-7-nerved, margins of epichyle distinctly toothed, the teeth attenuate, throughout whole anthesis permanently incurved to middle part of lamina; central thickening elongate, oblanceolate. Gynostemium 0.28-0.32 cm long, morphologically as type-variation.

E t y m o l o g y : Dedicated to Adam Piotr Mierosławski (1815-1851), Polish engineer and mariner, who lived in St. Denis at Ile de la Réunion, captain of Le Cygne de Granville, Bright Planeta and his 2 own ships, Moja Polska and Le Pilote, rediscoverer of Île Saint-Paul and Île Amsterdam, active participant in national

Fig. 5. *Liparis salassia* (Pers.) Summerh. var. *mierosławskiana* Marg. Flowers (photograph by M. Szelengowicz 2010)

Fig. 6. *Liparis salassia* (Pers.) Summerh. var. *mierosławskiana* Marg. Habitat (photograph by M. Szelengowicz 2011)

and revolutionary uprisings in Europe in the years 1848-1849.

Ecology: The new taxon is terrestrial to occasionally epiphytic; on shady and damp places with small ravines in megatherme-hygrophille, small trees forest of low altitude (Fig. 6), with mesopherme forest plants species: *Anthirea borbonica* (Rubiaceae) an endemic of Réunion and Mauritius, *Doratoxylon apetalum* (Sapindaceae) endemic of Madagascar and of the Mascareignes, *Nuxia verticillata* (Loganiaceae) endemic of Réunion, and above all *Calophyllum tacamahaca* (Guttiferaceae) endemic of Réunion and Mauritius. Others orchids present at the localities: *Calanthe candida*, *Polystachia cultriformis*, *Angraecum cucullatum*, *Bulbophyllum conicum* and *B. clavatum*. The habitat is distinctly degraded (by deforestations, big electricity undertakings (E.D.F.)) and strongly invaded by exotic species, like: *Psidium cattleianum* (Myrtaceae), *Rubus alceifolius* (Rosaceae) etc. Flowering is recorded only in February and March. No insects or other animals have never been seen visiting the plants. The pollinia are always entire (not eaten) and there is probably no nectar. This plant is most likely self pollinated (autogamic). When the cap of the anther is opened, the pollinia slip towards the stigmas by a rocking motion (field observations by M. Szelengowicz).

Distribution: The variation is very rare and known so far from the type collection and a neighbouring population only.

Representatives verified: Ile de la Réunion, East cost, at Takamaka, on a small shelf at the base of a cliff with water falls 650-750 m, 03.2005., *M. Szelengowicz 0305* (icon deposited with a digital set of plant illustration at the Mascareignes National Botanical Conservatory), 2009., *M. Szelengowicz s.n.* (UGDA-HBM spir.coll.), 2010., *M. Szelengowicz s.n.* (UGDA-HBM spir.coll.); about 50 m lower than the type locality, 02.2007., *M. Szelengowicz 0207* (icon deposited with a digital set of plant illustrations at Mascareignes National Botanical Conservatory), 03.2011., *M. Szelengowicz B0311* (UGDA-HBM, UGDA spir.coll., icon deposited with a digital set of plant illustrations at Mascareignes National Botanical Conservatory). (all as paratypes)

This taxon is know only from two nearby localities and should be treated as critically endangered due to its rarity and the threat of disturbance.

Acknowledgments.We are grateful to the Curators of AMES, AAU, B, BM, BRLU, C, FI, G, K, MO, P, US, WAG,WU and W-R for making specimens available and/or their hospitality during the first author's personal visits. We are obliged to keepers of all visited scientific libraries, as well. We are indebted to Dr. Guy R. Chiron for the Latinization of the diagnosis. This article was prepared thanks to the Polish Ministry of Science and Higher Education grant No. N304 029 32/1584(Margońska). The studies were conducted also using the first author's digital database – *Archivum Orchidalium* (Margońska).

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