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Limodorum brulloi (Orchidaceae), a new species from Calabria (S Italy)

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RÉSUMÉ

BARTOLO, G. & S. PULVIRENTI (1993). *Limodorum brulloi* (Orchidaceae), une nouvelle espèce de Calabre (sud de l'Italie). *Candollea* 48: 485-491. En anglais, résumés français et anglais.

Limodorum brulloi est une espèce nouvelle endémique de la Calabre (Sud de l'Italie), où elle a été trouvée dans les sous-bois des hêtraies. Son écologie et ses affinités taxonomiques sont examinées. En outre des clés de détermination pour le genre *Limodorum* sont fournies.

ABSTRACT

BARTOLO, G. & S. PULVIRENTI (1993). *Limodorum brulloi* (Orchidaceae), a new species from Calabria (S Italy). *Candollea* 48: 485-491. In English, French and English abstracts.

Limodorum brulloi is a new species, endemic from Calabria (S Italy), where it grows in the beech underwood. Its ecology as well as taxonomical affinities are examined too. Besides the keys to the species of *Limodorum* are given.

KEY-WORDS: Taxonomy — ORCHIDACEAE — *Limodorum brulloi* — South Italy.

Introduction

In this paper an orchid belonging to the genus *Limodorum* Boehmer, collected in some mountain places of S Calabria, is examined. From the literature data this genus consists of two species, as *Limodorum abortivum* (L.) Swartz and *Limodorum traburtianum* Batt., which are well differentiated morphologically (FERLAN, 1959; RENZ, 1972; BUTTLER, 1986; BAUMANN & KUNKELE, 1988; DEL PRETE & TOSI, 1988; BAUMANN & HOFFMANN, 1985; DAISS & al., 1990; SCRUGLI & al., 1991). In particular, *L. abortivum* is the most widespread species, with a Circum-Mediterranean and C-European distribution, while *L. traburtianum* has a more reduced distribution, occurring in various isolated localities of W-Mediterranean area and of S-Atlantic Europe. Morphologically the two species differ in several characters, but mainly in the spur, which is very long (up to 25 mm) in *L. abortivum*, while is absent or very reduced (max. 3 mm long) in *L. traburtianum*.

Calabrian specimens were previously attributed by HEINRICH & al. (1986) to *L. traburtianum* just for the occurrence of a short spur. But a detailed examination of the morphological characteristics, carried out on numerous living plants coming from various localities of S Calabria, has demonstrated that there are relevant differences between Calabrian populations and those ones referable to true *L. traburtianum* and *L. abortivum*. In particular, they regard the flower morphology, viz. peduncle length, size and shape of tepals, staminodes number, spur length. Therefore

the Calabrian populations belong to a yet undescribed species, which we are pleased to dedicate to the Sicilian botanist, Salvatore Brullo, author of numerous taxonomical contributions on the Mediterranean flora.

Limodorum brulloi Bartolo & Pulvirenti, **spec. nov.** (Fig. 1).

Typus. — Calabria: Gambarie d'Aspromonte, lungo la strada per Monte Basilicò, 19.7.1992, *Bartolo & Pulvirenti* s.n. (holotypus CAT).

Planta elata 20-50 cm alta, rhizomate crasso, fasciculate. Caulis viridi-violaceus, aphyllus, squamis vaginatis 4-6. Inflorescentia densa, (10-)14-(18-)22 cm longa, 6-16(-18) floribus. Bracteeae 1-3 cm longae, viridi-violaceae, ovario breviores vel subaequales. Pedicelli 1-2 cm longi. Flores albido-violacei, cleistogami, inaperti vel raro laeviter aperti, ad altum spectantes, secus axem approximatae. Sepala albido-viridia, purpureo-violacea apice, lineari-oblonga, obtusa vel rotundata apice; sepala lateralia 16-20 mm longa, 5-6.5 mm lata; sepalum medium 18-20 mm longum, 5.5-6.5 mm latum. Petala lilacina, oblongo-subpandurata, trinervata, obtusa vel obtusiuscula apice, 15-16 mm longa, 3.5-4.5 mm lata. Labellum porporino-violaceum, 15-20 mm longum, 5-7 nervatum, in hypochilium et epichilium manifeste divisum in parte media. Hypochilium 6-7 mm longum et latum; epichilium subrotundum vel ovato-subrotundum, irregulariter undulatum, 8-11 mm longum et 6-10 mm latum. Calcar sacciforme, 4-6 mm longum in inferioribus floribus, 1-4 mm longum in superioribus floribus. Gynostemium 12-14 mm longum, 5 staminodiis petaloideis per 2/3 longitudinis adnatis. Anthera papillosa, ovoidea, 2-3 mm longa.

Examined specimens

Calabria: Gambarie d'Aspromonte, presso Vallone del torrente Listi (S. S. 183), 27.7.1991, *Bartolo* s.n. (CAT); Gambarie d'Aspromonte, presso piano Petronà, 29.7.1991, *Bartolo* s.n. (CAT); Gambarie d'Aspromonte, 1 km N-E Cippo Garibaldi, 16.7.1992, *Bartolo & Pulvirenti* s.n. (CAT); Gambarie d'Aspromonte, strada per monte Basilicò, 19.7.1992, *Bartolo & Pulvirenti* s.n. (CAT)..

Ecology

Limodorum brulloi is an orophilous species which results confined to the Aspromonte mountain (S Calabria) at 1200-1400 m, where it grows in the termophilous beech-wood. It is a species quite rare, occurring exclusively in shady places of underwood, on siliceous substrata, together with other orchids, viz. *Epipactis meridionalis* Baumann & Lorenz, *Epipactis helleborine* (L.) Crantz, *Epipactis microphylla* (Ehrh.) Swartz, *Neottia nidus-avis* (L.) L. C. M. Richard.

Relationships

Inside the genus *Limodorum*, the new species shows a flower morphology very peculiar, which allows to differentiate it very well from the other two known species (cf. Fig. 2 and Tab. 1). In particular, *L. brulloi* results characterized by very long peduncles, bracts shorter than the ovary, sepals linear-oblong and obtuse or rounded, petals oblong-subpandurate and obtuse or obtusiuscule, lip straight, gynostegium with 5 staminodes, while *L. abortivum* and *L. traburtianum* show peduncles very short, bracts normally longer than the ovary, sepals ovato-lanceolate and acute, petals linear-lanceolate and acuminate, lip curved, gynostegium with 2 or 3 staminodes. Moreover, *L. brulloi* for its large lip, divided in hypochile and epichile, is more related to *L. abortivum* than to *L. traburtianum*, since the latter has a very narrow and entire lip. But for the spur size *L. brulloi* shows a certain similarity with *L. traburtianum*, even if in the latter the spur is much shorter (cf. Tab. 1).

According to FERLAN (1959) the genus *Limodorum* consists of species truly autogamous for the occurrence of a friable pollen masses without caudicle and viscidium. The self-pollination



Fig. 1. — *Limodorum brulloi* Bartolo & Pulvirenti
A, habit; B, flower and bract; C, flower pieces; D, gynostegium lateral view; E, gynostegium frontal view.

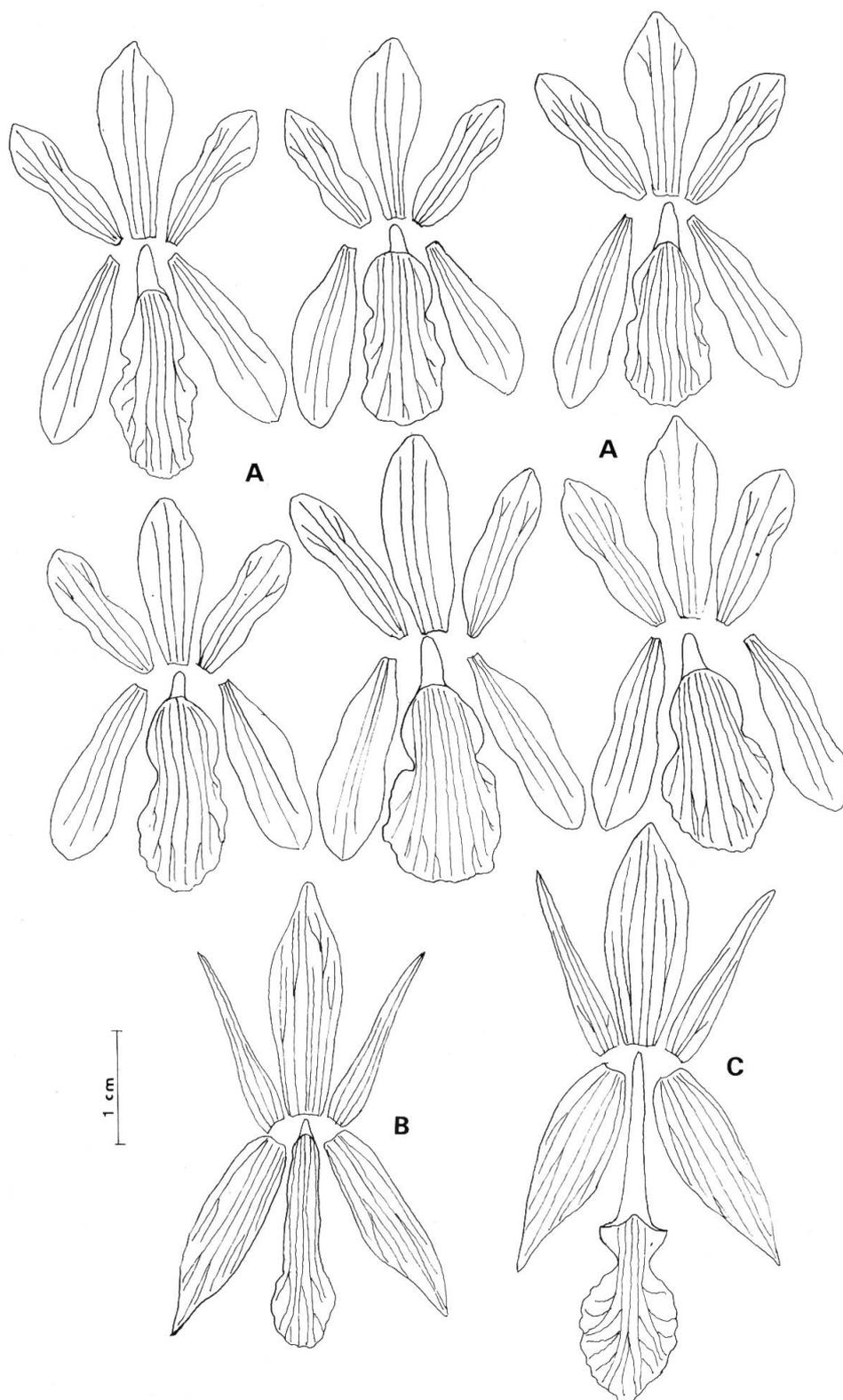


Fig. 2. — Variability of flower pieces of *L. brulloi* (A), flower pieces of *L. traburtianum* (B), and *L. abortivum* (C).

Character	<i>L. abortivum</i>	<i>L. traburtianum</i>	<i>L. brulloi</i>
Inflorescence ...	lax, up to 40 cm long, with 4-25 flowers	fairly dense, up to 20 cm long, with 10-20 flowers	fairly dense up to 18(-22) cm long, with 6-16 flowers
Flower peduncle	0.5-1 cm long	0.3-0.6 cm long	1-2 cm long
Bract	longer than the ovary or subequal	longer than the ovary or subequal	shorter than the ovary (sometimes subequal)
Sepals	violet, ovato-lanceolate, acute at the apex, 20-25 mm long and 5-11 mm wide, the laterals 4-5-nerved and the central 5-nerved	violet, ovato-lanceolate, acute at the apex, 15-22 mm long and 4-7 mm wide, the laterals 3-4-nerved and the central 5-nerved	witshes, purplish-violet at the apex, linear-oblong, obtuse or rounded at the apex, 16-20 mm long and 5-6.5 mm wide, all 3-nerved
Petals	linear-lanceolate, acuminate, 15-18 mm long and 2-3 mm wide, 2-3-nerved	linear-lanceolate, acuminate, 11-17 mm long and 1-3 mm wide, 2-3-nerved	oblong-subpandurate, obtuse or obtusiuscule at the apex, 15-16 mm long and 3.5-4.5 mm wide, 3-nerved
Lip	14-22 mm long, curved, throttled in the 1/3 inferior; hypochile 3-4 mm long, 5-7 mm wide; epichile ovate or ovate-triangular, undulate, 10-17 mm long and 7-12 mm wide	13-18 mm long, curved in the terminal part, whole, linear-spatulate, 3-5 mm wide, dentate margin in the distal part	15-20 mm long, straight, lightly throttled in the medial part; hypochile 6-7 mm long, 6-7 wide; epichile subrounded, undulate, 8-11 mm long and 6-10 mm wide.
Spur	10-25 mm long	0-3 mm long	4-6 mm long, sometimes 1-3 mm in the upper flowers
Gynostegium ...	up to 12 mm long, with 2 staminodes adnate no sheathing	12-17 mm long, with 3 staminodes, adnate and sheathing in the lower 1/2-2/3	12-14 mm long, with 5 staminodes, adnate and sheathing in the lower 2/3

Table 1. — Morphological differences among the species of genus *Limodorum*. Measurements are based on living and herbarium materials.

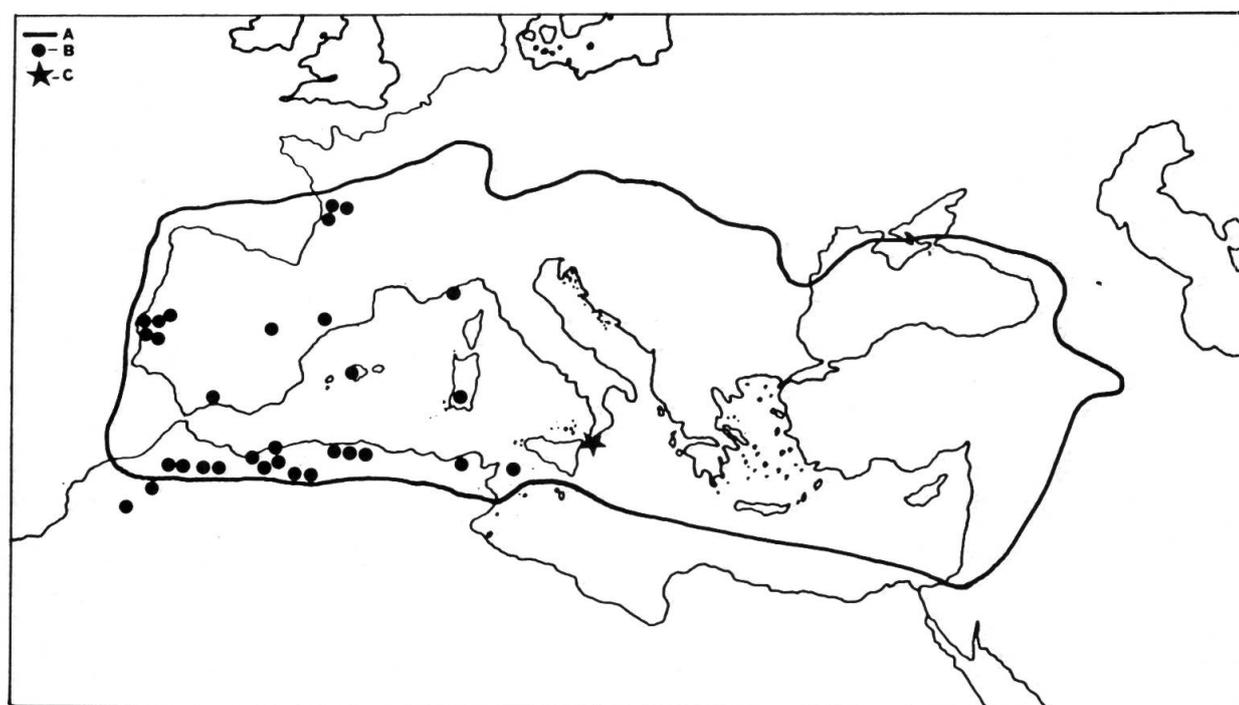


Fig. 3. — Geographical distribution of *Limodorum* species.
A, *L. abortivum*; B, *L. traburtianum*; C, *L. brulloi*.

happens normally at the anthesis, while is rare the cleistogamy, which is induced by mechanical factors. Effectively this reproduction mechanism occurs normally in *L. abortivum* and *L. traburtianum*, which show frequently open flowers; while *L. brulloi* is prevalently cleistogamous, with closed or barely open flowers. Although the species of the genus *Limodorum*, consist of autogamous populations, with a generally quite discontinuous distribution and often with a marked geographical isolation, they show on the whole a considerable steadiness and morphological uniformity. Effectively, this anomaly is merely apparent, because, as pointed out by FERLAN (l.c.), *Limodorum* species are perennating plants with a very long life and scarce germinability of seeds. According to literature data, that brings about the appearance of mutant characters in a ephemeral or occasional way in isolated individuals.

For its chorological peculiarity, the genus *Limodorum* can be considered an old taxon belonging to the Mediterranean element, represented now by species quite stable and well differentiated morphologically. Among those *L. brulloi* results the species better characterized and isolated taxonomically, while *L. abortivum* and *L. traburtianum* show closer relations between themselves and they often grow together in the same territory. Besides, *L. brulloi* results sympatric with *L. abortivum* and allopatric respect to *L. traburtianum* (cf. Fig. 3). Therefore, *L. brulloi* for both its rarity and peculiar ecology (being a nemoral orophyte localized in the beech-wood) as well for its very peculiar flower morphology, could be supposed as the oldest species of the genus, with, at present, a relict distribution.

Key to species

1. Peduncle 1-2 cm long; bracts shorter than the ovary; sepals linear-oblonge, obtuse or rounded; petals oblong-subpandurate, obtuse, 3.5-4.5 mm wide; lip straight; gynostegium with 5 staminodes **L. brulloi**
- 1a. Peduncle max. 1 cm long; bracts subequal or longer than the ovary; sepals ovato-lanceolate, acute; petals linear-lanceolate, acuminate, 1-3 mm wide; lip curved; gynostegium with 2-3 staminodes 2
2. Lip subdivided in hypochile and epichile which is 7-12 mm wide; spur 10-25 mm long; gynostegium max. 12 mm long, with 2 staminodes **L. abortivum**
- 2a. Lip whole, 3-5 mm wide; spur 0-3 mm long; gynostegium 12-17 mm long, with 3 staminodes **L. traburtianum**

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