



## *Epipactis hyblaea* (Orchidaceae; Epidendroideae; Neottieae) a new species from Sicily

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### Abstract

A new species of *Epipactis* from Sicily is described and illustrated. It shows closer relationships mainly with *E. distans*, species widespread in northern Mediterranean territory from SE Spain to N Croatia and also some Central and Northern European territory, with an isolated population in N Calabria. Numerous morphological features, as well as ecological requirement and phenology allow to distinguish very well the two taxa at specific level. Besides, the conservation status, habitat and a distribution map of this new species are presented.

**Key words:** Orchidaceae, *Epipactis*, Hyblaean Mountains, Sicily, Italy

### Introduction

During study of the genus *Epipactis* Zinn (1757: 85) in Sicily and southern Italy (Bartolo *et al.* 1996a, 1996b, 2003, 2005, 2006; Brullo *et al.* 2013), a peculiar population was recently found in the Hyblaean territory (southeastern Sicily). Previously in this area only *E. microphylla* (Ehrhart 1789: 42) Swartz (1800: 232) was recorded by Gussone (1844–45), Bartolo & Pulvirenti (1997, 2005), Minissale *et al.* (2007) and Zimmiti (2007, 2009, 2013), but this is rare and localized in holm oak woods limited to the bottom of narrow valleys or gorges. In one of these stands, *E. microphylla* occurs together with few individuals of another *Epipactis* belonging to the *E. helleborine* (Linnaeus 1753: 949) Crantz (1769: 467) group. The plants grow on humus-rich soils of a holm oak forest, in mesic conditions on northern slopes of a narrow calcareous valley along a tributary of the Anapo River (Syracuse). This small population is geographically isolated, since the other *Epipactis* of this group occurring in Sicily are found exclusively in the northern part of the island. It also seems well differentiated from the other *Epipactis* species previously recorded from Sicily (Baumann & Lorenz 1988, Bartolo 1991, Grasso 1994, Bartolo & Pulvirenti 1997, 2002, 2005, Künkele & Lorenz 1995, Lorenz & Lorenz 2002, Cristaudo & Galesi 2004, Falci & Giardina 2004) and is morphologically more similar to *E. distans* Arvet–Touvet (1872: 11) from Calabria and other places in the Italian Peninsula (Klein 1997, Benito Ayuso *et al.* 1999, Grünanger 2009, Lindig & Lindig 2012). The relevant morphological features similar to *E. distans* (= *E. orbicularis* Richter 1887: 190) are mainly the habit and shape of leaves. In fact, both have small leaves, subequal or slightly longer than the internodes (the lower are often orbicular), whereas in the other taxa of *E. helleborine* group, the leaves are large and usually much longer than the internodes. However, the typical populations of *E. distans* differ from the Hyblaean ones in many morphological characters of habit, leaves, bracts and flower parts. Based on these differences, the Hyblaean population can be treated as a species new to science.

*Epipactis hyblaea* Brullo & Zimmiti, *sp. nov.* (Figs. 1,2,3)

**Type:**—ITALY. Sicily: Siracusa, lecceta fresca su substrato calcareo all'interno della Riserva Naturale Orientata “Pantalica, Valle dell'Anapo e Torrente Cava Grande”, 24 May 2012, Zimmiti *s.n.* (holotype, CAT).

**Diagnosis:**—Similar to *E. distans* from which it differs in having stem usually solitary, higher number of basal sheaths, smaller median cauline leaves, which are erect-divaricate to patent and laxly denticulate at margin, sepal smaller, green, ovate to ovate-lanceolate, petal smaller, hypochile larger, epichile longer with more numerous evident plicae in the protuberances, small ovary with longer pedicel; in addition, it is early flowering and grow in shady underwood habitats.

*et al.* 2011). In particular, within this genus it is possible to recognize several aggregate species, exhibiting among them significant morphological differences regarding leaves, flower structure and pollination systems. As emphasized by the authors cited above, the outcrossing (allogamous) species are usually characterized by a widespread distribution and show a remarkable variability in the vegetative and reproductive structures, whereas selfing (autogamous) species, represented often by endemics, have a circumscribed distribution and low infraspecific variation (Tranchida–Lombardo *et al.* 2011). Based on data from the literature (Rossi & Klein 1987, Bartolo *et al.* 1996a, 1996b, Baumann & Lorenz 1988, Bongiorno *et al.* 2007, Hollingsworth *et al.* 2006, Tranchida–Lombardo *et al.* 2011, Brullo *et al.* 2013), active speciation is currently observed within populations belonging to *Epipactis helleborine* group, occurring mainly in stands located at the margin of the distribution area of this genus, as for instance southern Italy and Sicily.

*Epipactis hyblaea* has an especially close relationship with *E. distans*, a species distributed, according to Benito Ayuso *et al.* (1999) and Müller (2011) mainly in the southern Europe (southwestern Spain, southern France, northern Italy, Switzerland, Austria, Czech Republic, Slovakia, Slovenia and Hungary, with scattered stands in Germany, Croatia, Corsica, Greece, Poland, Sweden and Lithuania). The latter species is recorded in Italy in various localities of the northern territories (Grünanger 2009), while more recently Lindig & Lindig (2012) have found a small population in northern Calabria on Mt. Pollino, where it grows on limestone limited to sunny places at 1100–1200 m (Fig. 4).

Based on living material and data from the literature, *E. hyblaea* is morphologically well differentiated from *E. distans* in several features of leaves and flowers, as well as phenology and ecological requirements (Table 1). In particular, the most relevant features that allow it to be distinguished from *E. distans* are, in the latter: fewer basal sheaths, larger median cauline leaves, which are erect to suberect and densely denticulate at the margin, smaller hypochile, smaller epichile with evanescent plicae in the protuberances and larger ovary with shorter pedicel; in addition it is later flowering and grows usually in sunny habitat.

For *E. distans*, there are various conflicting opinions, mainly regarding taxonomic rank and the correct binomial (Klein 1997, Baumann *et al.* 2002, Ströhle 2003, Kreutz 2004, Perazza & Decarli Perazza 2005, Delforge 2004, 2006). In order to clarify the nomenclature state of *Epipactis distans*, the following is provided:

***Epipactis distans* Arvet–Touvet (1872: 11).**

*Epipactis helleborine* (Linnaeus) Crantz subsp. *distans* (Arvet–Touvet) Engel & Quentin (1996: 205). Neotype (designated by Klein 1997): FRANCIA. Frankreich, Drôme, La Bâtie–des–Fonds, 15 July 1991, *Tyteca s.n.* (BR).

*Epipactis orbicularis* Richter (1887: 190); *Epipactis latifolia* (Linnaeus) Allioni (1785: 152) subsp. *orbicularis* (K. Richter) Richter (1890: 284); *Helleborine orbicularis* (K. Richter) Druce (1909: 547); *Epipactis latifolia* (Linnaeus) Allioni var. *orbicularis* (K. Richter) Camus (1929: 474); *Epipactis helleborine* (Linnaeus) Crantz var. *orbicularis* (K. Richter) Vermeulen (1958: 105); *Epipactis helleborine* (Linnaeus) Crantz var. *orbicularis* (K. Richter) Janchen (1959: 859), comb. illeg.; *Epipactis helleborine* (Linnaeus) Crantz subsp. *orbicularis* (K. Richter) Klein (1997: 74). Lectotype (designated by Klein 1997): AUSTRIA. Österreich, Niederösterreich, Semmering, 26 July 1886, *Richter s.n.* (WU–Halácsy).

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