

Orchids on the Island of Vis (eastern Adriatic – Croatia)

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During the period from 1998–2000, a detailed and systematic study of orchids was conducted on the eastern Adriatic island of Vis, Croatia. Twenty-three taxa were classified into 7 genera, of which 15 species and 8 subspecies have been recorded. This represents 36% of the total number of orchid species on the Croatian Adriatic islands and 22% of the total number of orchid species so far known in Croatia. There are 18 new taxa for the island of Vis, with *Ophrys bertoloniformis*, *O. mammosa*, and *O. lacaitae* being recorded for the first time within the Croatian flora. This was the first finding of *O. lacaitae* outside Southern Italy and Sicily. Almost a half of the established taxa belong to the Mediterranean floral element. The remaining species, apart from the Mediterranean and Sub-Mediterranean area, have been dispersed through other parts of Europe. The taxa *Anacamptis pyramidalis* and *Ophrys lutea subsp. minor* are the most numerous in terms of population volume.

Key words: Flora, Orchidaceae, island, Vis, Dalmatia, Adriatic Sea, Croatia

Introduction

The flora of the Mid-Dalmatian islands is relatively well researched. Floristic studies have been conducted on the neighbouring Croatian islands of Korčula, Hvar, Palagruža, Svetac, Biševo and elsewhere in Dalmatia (VISIANI 1842; STUDNICZKA 1890; FORENBACHER 1911; HAYEK 1913; MORTON 1916; PEVALEK 1930; RECHINGER 1934; HELLMAYER 1941; DOMAC 1963; TRINAJSTIĆ and REGULA-BEVILACQUA 1968; VÖTH and LÖSCHL 1978; PAVLETIĆ 1974, 1975, 1978, 1980; TRINAJSTIĆ 1976, 1979, 1985, 1993; ILIJANIĆ et al. 1982, 1984; GAŽI-BASKOVA et al. 1983; GÓLZ et al. 1986; BEDALOV 1976, 1989; HEĆIMOVIĆ 1981, 1982, 1986, 1987, 1989; JASPRICA and KOVAČIĆ 1997; PANDŽA 1998.).

The flora of the Island of Vis (position: 43° 10' N, 16° 3' E) was investigated fifty years ago by DOMAC (1955), who found 460 species of higher plants including only four species of the family *Orchidaceae*. VISIANI (1842) took over the finding of the species *Ophrys insectifera* L. on the island of Vis from HOST (1802) as *O. myodes* Jacq.

In the whole area of the Central Dalmatian islands there has been no specific research into orchid flora.

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Materials and methods

During 1998 (Mar-Apr), 1999 (Mar-Apr) and 2000 (Apr-May), I undertook a systematic study of the orchid flora on the island of Vis within the context of research into Croatian orchid flora. All relevant habitats were examined in a large number of locations and the review of the established species is the result of personal field work. The credibility of the different taxa has been supported by detailed photographic documentation.

The taxa established are listed in alphabetical order of genera and taxa within genera according to HRŠAK (2000), DEVILLERS-TERSCHUREN (1994) and DELFORGE (1995).

The floral elements have been derived according to BUTTLER (1991) without any detailed geographical distribution. The taxa discovered have been classified into the following floral elements:

- (1) Mediterranean
- (2) Mediterranean, Sub-Mediterranean
- (3) Mediterranean, Sub-Mediterranean, Atlantic
- (4) Mediterranean, Sub-Mediterranean, Mid-European
- (5) Mediterranean, Sub-Mediterranean, Atlantic-Pannonian
- (6) Mediterranean, Pannonian

Each taxon has been accompanied by the site(s), number in brackets defining the corresponding floral element and the name of the author and year if the taxon is already known.

Results and discussion

The following taxa from the *Orchidaceae* family have been established through research conducted on the island of Vis:

1. *Aceras anthroporum* (L.) W. T. Aiton; Welington, (3)
2. *Anacamptis pyramidalis* (L.) Rich.; Bandirica, Oključna, Dol, Sv. Nikola, Fortica, Stupišće, Podšpilje, Podhumlje, Žena Glava, Voščice polje, Zle polje, Plisko polje, (4), DOMAC (1955).
3. *Barlia robertiana* (Loisel.) Greuter; Sv. Duh 563 m., (2)
4. *Neotinea maculata* (Desf.) Stearn; Komiža, Kut, Podselje, (3)
5. *Ophrys apifera* Huds., Voščice polje, (4)
6. *Ophrys bertolonii* Moretti; Sv. Duh, Borovik, Marine Zemlje, Rogačić, Dol, Fortica, Stiniva, Komiža, Vis, Manjarena, Podšpilje, Podhumlje, Stupišće, Welington, Zle polje, Podselje, Milna, Žena Glava, (2)
7. *Ophrys bertoloniiiformis* O. et E. Danesch; Bandirica, (2)
8. *Ophrys fusca subsp. fusca* Link.; Podselje, Kut, (6)
9. *Ophrys insectifera* L., Voščice polje, (4) (VISIANI ex HOST 1802).
10. *Ophrys lutea subsp. minor* (Tod.) O. Danesch et E. Danesch; Fortica, Welington, Kut, Manjarena, Podselje, Milna, Dol, (3)
11. *Ophrys scolopax subsp. cornuta* (Steven) Camus; Dol-Sv. Nikola, Rogačić, Vis, Komiža, (4)

12. *Ophrys sphegodes* Mill.; Podšpilje, Podselje, Podhumlje, Fortica, Kut, Milna, Bandirica, Welington, Žena Glava, Borovik, Hum, Vis, Komiža, (5)
13. *Ophrys sphegodes subsp. atrata* (Lindl.) E. Mayer; Bandirica, Zle polje, Voščice polje, Plisko polje, Dol, Fortica, Borovik, Marine Zemlje, Podselje, Milna, Fortica, Sv. Nikola, Borovik, Marine Zemlje, Podselje, Podhumlje, Milna, Žena Glava, Komiža, Sv. Mihovil, Manjarena, (2)
14. *Ophrys sphegodes subsp. litigiosa* (E. G. Camus) Bech.; Plisko polje, Milna, (3)
15. *Ophrys sphegodes subsp. mammosa* (Desf.) Soó ex Nelson; Bandirica, (1)
16. *Ophrys lacaitae* Lojac., Zle polje, Voščice polje, južni. rub Pliskog polja, (1)
17. *Orchis coriophora* L.; Stupišće, Stončica. (4)
18. *Orchis coriophora subsp. fragrans* (Pollini) K. Richter; Stupišće, (4) (DOMAC 1955).
19. *Orchis italica* Poir; Bandirica, Milna, (2)
20. *Orchis morio* L.; Stiniva, (4) (DOMAC 1955).
21. *Orchis provincialis subsp. pauciflora* (Ten.) Camus; Sv. Duh 563 m, (2)
22. *Orchis quadripunctata* Cirillo ex Ten.; Sv. Duh 563 m, Stupišće, Welington, (2) (DOMAC 1955).
23. *Serapias parviflora* Parl.; Manjarena, Komiža, Sv. Mihovil, Kut, Podšpilje, Podselje, Stiniva, Welington, Fortica, Milna, (3)

The list of species shows that on the island of Vis 23 taxa have been established, from seven genera, including 15 species and 8 sub-species. Five species had already been known from earlier research. 18 taxa have been listed for the first time for this island. Among them are *Ophrys bertoloniiiformis*, *O. mammosa* and *O. lacaitae*, new among the Croatian orchid flora.

The finding of *Ophrys lacaitae* is the first appearance of this taxon outside South Italy and Sicily, where this species had so far only been known. It is represented with a numerous and vital population on two locations on the island of Vis, blooming from the end of April to mid June. Considering that it is the only known finding place in Croatia, the rapid anthropogenic succession which it is exposed to, and its distinguished aesthetic values, this species should be listed in the Red Book of Croatian Flora and its habitat protected.

The existence of the species *Ophrys lacaitae* and *O. bertoloniiiformis* on the island of Vis indicates the geological history and the connection of flora on this island with the flora of the neighbouring Italian Peninsula, despite the insular isolation.

The species *Ophrys lutea subsp. minor* and *Anacamptis pyramidalis* are represented on the island of Vis in large populations, while the species *Ophrys bertolonii* is very dispersed but the population density is lower. The populations of other species are small or very small.

The unique finding of *Barlia robertiana* on the highest parts of the island (Sv. Duh, 563 m) also calls for attention.

Almost a half of all the species on the island of Vis are spread over the Mediterranean and Sub-Mediterranean area (11 sp.) while other species, apart from these areas, also inhabit other parts of Europe.



Fig. 1. *Ophrys lacaitae* Lojac., Vošćice polje, May 5, 2000. Labellum length: 15 mm

The taxa *Ophrys fusca* subsp. *fusca*, *O. bertolonii*, *O. sphegodes* subsp. *atrata* and *O. sphegodes* on the island of Vis are distinguished by their significant individual variability.

The habitats of the orchids from Vis are mainly garrigue and sparse maquis, rocky ground, sparse grassland and degraded and abandoned agricultural land with crops on terraces. The majority of the habitats are of anthropogenic significance so the appearance and maintenance of the orchid population mainly depends on the speed and type of succession of the Mediterranean vegetation and soil coverage.

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