

C. Mele, F. Caforio & S. Marchiori

Remarkable species occurring in the Alimini Lakes (Apulia South Italy), an area proposed as a Site of Community Interest

Abstract

Mele, C., Caforio, F. & Marchiori S.: Remarkable species occurring in the Alimini Lakes (Apulia South Italy), an area proposed as Site of Community Interest. — *Bocconea* 19: 253-260. 2006. — ISSN 1120-4060.

The Alimini Lakes site is an extremely interesting area from the environmental point of view, located near Otranto, in the Province of Lecce, Apulia, Italy. In this work the floristic diversity of the site is analysed, remarking its peculiarities and the natural habitats of Community Interest.

Introduction

In the framework of a wider research aiming at assessing the flora of the Salento region (Apulia, South Italy), surveys carried out at the Alimini Lakes provided several data significant from both ecological and chorological point of view and useful information on the present plant cover and its origins as well.

An updated plant list has been worked out: both the species once reported for the area but not found in this study, and the new findings have been pointed out.

The analysis of the floristic data shows many interesting species from the conservational point of view: some of these have already been listed in the National (Conti & al. 1992) and Regional Red Data Book (Conti & al. 1997), other should be added to these lists. Besides, several endemics have been found, as well as a number of *Orchidaceae*, which are protected by the CITES convention.

The results of this work show that the Alimini Lakes site is probably unique among the Italian wetlands. Besides its floristic diversity and its great importance from the naturalistic, historic, climatic point of view, it is definitely a peculiar area in comparison with the rest of the Salento territory.

Because of these peculiarities, and because of the presence of some interesting habitats, the Alimini Lakes were proposed as a SCI (Site of Community Interest) and will become a Regional Natural Reserve.

Study area

The Alimini Lakes are two elongated water bodies that lay parallel to the coastline in N - S direction, slightly slanted westwards, and separated from the Adriatic sea by a wide belt of sand dunes. They are located between $18^{\circ}26'30''$ and $18^{\circ}26'40''$ E, and $40^{\circ}9'54''$ and $40^{\circ}13'20''$ N (Macchia 1967a), about 40 km south of Lecce and 8 km north of Otranto (Fig. 1). Their morphology is rather flat, with the maximum elevation of 5 m a.s.l. On the whole the site extends approximately 520 hectares (Lorenzoni 1979). The larger lake, named Alimini Grande, extends more than 130 hectares, while the smaller one, named Alimini Piccolo or Fontanelle, is a 105 hectares depression, deepened due to karstic events.

Although very close each other, the two lakes have different environmental conditions. The bigger one has brackish waters, rocky shores and little marsh vegetation, whereas the smaller is a freshwater lake, with muddy banks covered with hydrophilic vegetation.

Materials and methods

This work is the result of a series of floristic collections carried out during the vegetative seasons from 1998 onwards. Every plant specimen was identified by means of analytical keys, mainly working on fresh materials (Fiori 1924-29; Tutin & al. 1964-1980; Zangheri 1976; Pignatti 1982).

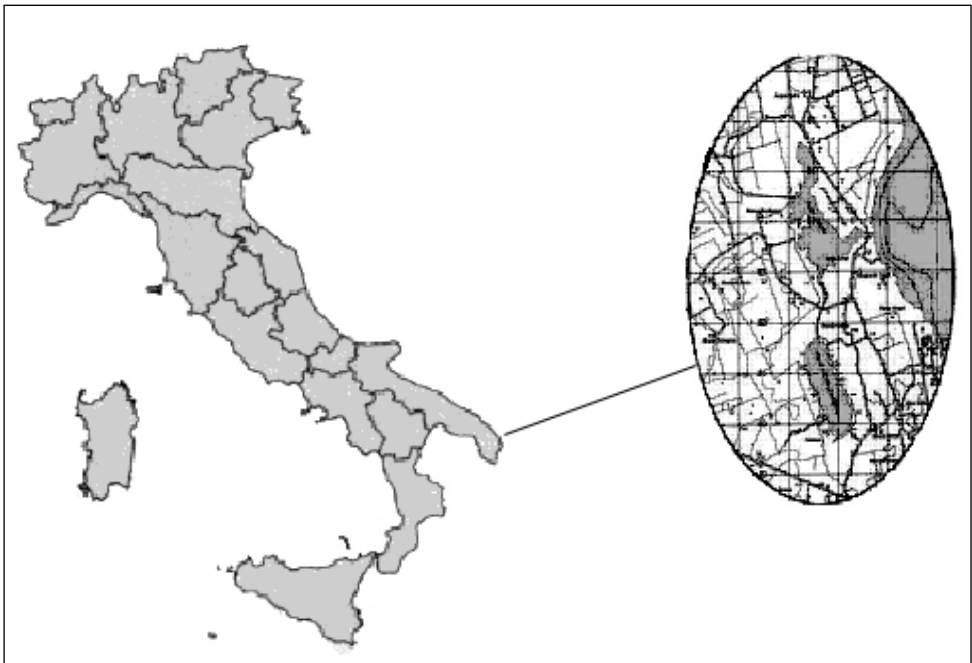


Fig. 1. Location of the site.

Results

The vascular flora of the Salento region amounts to 1377 subgeneric taxa, belonging to 574 genera of 111 families (Marchiori & Tornadore 1988). In the Alimini area we confirmed the occurrence of 762 subgeneric taxa, belonging to 402 genera of 91 families. 11 taxa belong to the *Pteridophyta*, 751 to the *Spermatophyta*. Among these, 5 *Gymnospermae* and 746 *Angiospermae*, divided into 532 *Magnoliatae* and 214 *Liliatae*.

Comparing the floristic diversity of the Alimini Lakes site with the diversity of the whole Salento region, the number of *taxa* found in the site appears considerably high if you consider the small surface of the place: this is due to the presence in the Alimini Lakes site of almost every possible habitat of the Salento peninsula.

The chorological analysis revealed the occurrence of many endemics that are listed below with their distribution according to Pignatti (1982).

***Erodium nervulosum* L'Hér.**

Endemic to Southern Italy, quite common along the roadsides and fallow fields.

***Helianthemum jonium* Lacaita**

Endemic to Apulia and Lucania: occurring along the coasts of the Gargano peninsula, in the Basilicata Region and in a small site in the Emilia-Romagna Region. This species characterizes garrigues and poor soils (sand, lithosoils).

***Micromeria canescens* (Guss.) Benth.**

Endemic to Southern Italy, common in the garrigues of the studied site.

***Centaurea deusta* subsp. *divaricata* (Guss.) Matthas & Pignatti**

Endemic to Salento, Calabria (S. Italy) and NW-Sicily. In the study area it can be found in fallow fields, garrigues and field margins around the lakes.

Centaurea deusta* Ten. subsp. *deusta

Endemic to Central and Southern Italy, typical of fallow fields and xeric grasslands.

***Iris pseudopumila* Tineo**

It occurs in Apulia, Sicily and former Yugoslavia: it is generally found in xeric grasslands and garrigues.

***Crepis bursifolia* L.**

Neo-endemic to South-Western Italy, now in strong expansion. This plant prefers both cultivated and fallow dry fields and according to Fiori (1924-1929) this species was sporadic in the peninsular Italy, with few findings, quite far one from the other (Argentario, Viterbo, Gaeta), while it was common in Sicily and naturalized near Marseille. Pignatti (1982) reports some findings in the Lazio region, and a naturalizing process in Spain, Tunisia, Dalmatia. *C. bursifolia* is now established in Salento, with some findings in Lecce (Marchiori & al. 1993).

***Crepis apula* (Fiori) Bab.**

Endemic to Apulia, Basilicata (Metaponto) and Calabria (Sila). It prefers sandy shores and gravels.

***Anthemis hydruntina* Groves**

This suffruticous chamaephyte, discovered by Groves in 1887 on the low hills around the Alimini Lakes, was recently found near Cannole, a site very close to its “locus classicus”. The surveys in the Alimini Lakes site allowed us to find two new localities near the Strittu Canal and the Fontanelle Lake. This species is listed in the National Red Data Book (Conti & al. 1992, 1997)

***Thymus spinulosus* Ten.**

Endemic to Southern Italy, frequent on dry and rocky slopes. It grows in cushions, forming garrigues on calcareous soils and fossil dunes.

Verbascum niveum* Ten. subsp. *niveum

Endemic to Southern and part of Central Italy. Its natural habitat are xeric grasslands.

***Phleum ambiguum* Ten.**

Endemic to Liguria and Southern and Central Italy, frequent in xeric pastures.

***Stipa austroitalica* Martinovsky**

Endemic to few regions in Southern Italy: Apulia, Basilicata, Sicily. It dwells in xeric pastures.

***Ophrys garganica* E. Nelson**

Locally abundant in Sicily and in all Southern and Central regions of Italy, except Umbria (Rossi 2002), it occurs in arid grasslands, garrigues and rocky fields, on dry or humid calcareous soils up to 1200 m of altitude.

***Ophrys apulica* O. & E. Danesch**

Species distributed in Southern Italy, Sicily and on the island of Korkula (former Yugoslavia). It was found for the first time in the pine woods of San Cataldo, near Lecce, and afterwards in other localities of Southern Italy (Apulia, Molise, Basilicata, Calabria and Sicily). It occurs in xeric pastures, poor garrigues, bushes and dry woods, up to 900 m above sea level, on dry, calcareous soils (Rossi 2002).

***Ophrys candica* E. Nelson**

Distributed in the Central-East Mediterranean in the islands of Crete and Rhodes, and in Apulia, Basilicata and Calabria as far as Italy. Listed in the Regional Red list (Conti & al. 1992, 1997).

In the studied site there is also a considerable number of species listed in the National Red Data Book (Conti & al. 1992, 1997) :

***Aegilops geniculata* subsp. *biuncialis* (Vis.) Asch. & Graeb.**

Rather frequent in the Eastern Mediterranean this species is extremely rare in Italy, where it is found only in two sites of Apulia: Leucaspide near Taranto (Groves 1887) and recently in the Alimini Lakes site.

***Erica manipuliflora* Salisb.**

This is an Eastern Mediterranean whose western distribution limit lies in the Salento. It is part of a set of species occurring in both Apulia and the Balkan peninsula (Brullo 1986). It is frequent along the coastal garrigues between Brindisi and Otranto (Eastern Coast of the Salento peninsula) and between Punta Pizzo and Gallipoli (Western Apulian Coast).

Nymphaea alba* L. subsp. *alba

This species is a rooted hydrophyte occurring in stagnant and oligotrophic waters. The only recent record in Apulia is from the Fontanelle Lake (Accogli & al. 1997): only two specimen were spotted near the eastern sector of the lake, just by the margins of the thick cane field. It is critically endangered on a regional basis.

***Orchis palustris* Jacq.**

This species is uncommon in Italy and very rare in Southern Italy. In Apulia it has been recorded near Lesina and in some wetlands of the Salento peninsula. In the Alimini Grande Lake few specimens were found along the shores of the Traugnano pond.

***Periploca graeca* L.**

North-Eastern Mediterranean species occurring in woods, thickets and river banks. It is rare in Italy, being found along the Tuscan coast, between Livorno and Viareggio, in the Rosarno wood in Calabria (Macchia 1967b). In Apulia, it has been recorded in the Alimini Lakes area, the Rauccio wood near Lecce, the Cesine site on the east coast and in the Tamari swamp. It is locally exclusive of those habitats that are swampy during the Winter season and damp during Summer.

The following species are listed in the Regional Red List (Conti & al. 1997):

***Allium atroviolaceum* Boiss.**

Species of great phytogeographic interest, located in various sites in Apulia; it was found for the first time near Casamassima in the Province of Bari (Garbari 1975), and later found in other localities.

***Cytinus ruber* (Fourr.) Komarov**

Parasite on *Cistus* sp. pl. In the Salento Region, it occurs in the Rauccio wood, at Punta Palascia near Otranto, along the western coast around Nardò (quite abundant near Torre Colimena). As far as the Alimini Lakes site is concerned, it is located in the maquis around the two lakes.

***Linum maritimum* L.**

Hygrophyte frequent in the marshy habitat. It occurs in few sites in the Salento region, near the Rauccio wood and the Alimini Lakes; in the rest of Apulia, it was only found near the Lesina lagoon. It is rare throughout Southern Italy, but more common in northern areas.

***Utricularia vulgaris* L.**

It was once reported in the Gargano promontory, near the S. Egidio Lake, but not been anymore, except for the Alimini lakes (Macchia 1967a).

***Vitex agnus-castus* L.**

This species is quite unfrequent in Apulia, although it can become locally abundant in areas like the marshy depression behind the dunes of the Alimini site.

Ceratophyllum submersum* L. subsp. *submersum

This species inhabits still and slow flowing waters, where it forms dense populations. Previously reported in the Gargano promontory in the Umbra Forest and Pescara Lake (Beccarisi & al. 2003), recently it has also been found in Salento.

Among our findings, there is a considerable number of *Orchidaceae*, that are protected as a family by the CITES convention: *Anacamptis pyramidalis* (L.) L. C. Rich., *Limodorum abortivum* L., *Ophrys sphegodes* Mill. subsp. *sphogodes*, *Ophrys bertolonii* Moretti, *Ophrys lutea* subsp. *minor* Tod., *Ophrys tenthredinifera* Willd., *Serapias parviflora* Parl., *Serapias lingua* L., *Orchis morio* L., *Orchis papilionacea* L., *Orchis coriophora* L., *Orchis lactea* Poir.

We should also remark some new sightings for the Salento region: *Hibiscus trionium* L., *Cuscuta cesatiana* Bertol., *Juncus fontanesii* J. Gay.

According to the Habitat Directive (92/43/CEE) concerning the census of the priority habitats, the Alimini Lakes site presents four habitats of priority importance.

Coastal lagoons

This habitat is typical of the Alimini Grande Lake, and is made of several types of brackish water meadows, that can be referred to the following associations: *Cymodoceetum nodosae* Br. Bl. 1952, *Zosteretum noltii* Harms 1936 belonging to the class *Zosteretea marinae* Pign. 1953, and *Chaetomorpha-Ruppiaetum* Br. Bl. 1952 of the class *Ruppiaetea* J. Tx. 1960

Dune juniper thickets

This is a well preserved habitat, that is spread for hundreds of meters along the dune belt. It is a thick maquis with *Juniperus oxycedrus* subsp. *macrocarpa* (Sibth. & Sm.) Ball, ascribed to the association *Asparago acutifolii-Juniperetum macrocarpae* O. De Bolos 1964, class *Quercetea ilicis* Br. Bl. 1947.

Dunal pine woods

The vast pine woods established in the area, mainly on sandy soil, however not autochthonous, is referred to this type of habitat because of a sclerophyll underbrush, that can be thick and impervious. Such vegetation, which is clearly evolving towards more natural conditions, and is ascribed to the class *Quercetea ilicis* Br. Bl. 1947.

Mediterranean salt steppes

This habitat is found on saline and periodically flooded soils nearby the Traugnano pond, on the eastern shore of the Alimini Grande Lake; it hosts two different associations, both belonging to the class *Juncetea maritimi* Br. Bl. 1952: *Schoeno-Plantaginietum crassifoliae* Br. Bl. (1931) 1952, whose characteristic species are *Schoenus nigricans* L. and *Plantago crassifolia* Forssk.; *Plantagini crassifoliae-Caricetum extensae* Gehu & Biondi 1988, whose characteristic species are *Plantago crassifolia* Forssk. and *Carex extensa* Good.

Conclusions

For all above cited peculiarities, the Alimini Lakes site has been recently proposed as a SCI (Community Interest Site). It is also included among the seven areas due to become Regional Nature Reserve.

The first proposals aiming at protecting this area were put forward in the early Nineties by private boards, in order to establish either the so-called “Adriatic Park”, “Regional Park” (including the entire site), or several single natural reserves.

The Otranto municipality is still very committed in this direction, and has started a series of actions to find regional and national funds to establish the “Alimini Lakes Environment and Landscape Recovery Plan”. According to the project this is a natural park of 2600 hectares, which presents optimal conditions to combine development and nature protection at the same time and to promote economic activities such as aquaculture, rural tourism, excursion tours, nature watching and so on.

This goal is to be reached by means of the Regional Nature Park, not casually design for a site that, according to the Ramsar convention, will be included among the International Interest Wetlands.

References

- Accogli, R., Albano, A., Annese, B., Marchiori, S., Medagli, P. & Mele, C. 1997: Precisazioni sulle stazioni salentine di alcune specie rare o endemiche. – Atti 92° Congr. Soc. Bot. Ital. Cagliari 2-4 ottobre 1997.
- Beccarisi, L., Caforio, F., Medagli, P. & Mele, C. 2003: *Ceratophyllum submersum* L. subsp. *submersum*. Segnalazioni Floristiche Italiane: 1081. – Inform. Bot. Ital. **35(1)**: 108.
- Brullo, S., Minissale, P., Signorello, P. & Spampinato, G. 1986: Studio fitosociologico delle garighe ad *Erica manipuliflora* del Salento (Puglia meridionale). – Arch. Bot. Biogeogr. Ital. **62**: 201-214.
- Conti, F., Manzi, A. & Pedrotti, F. 1992: Libro Rosso delle Piante d'Italia. – Roma.
- , — & — 1997: Liste Rosse Regionali delle Piante d'Italia. – Roma.
- Fiori, A. 1924-29: Nuova Flora Analitica d'Italia. – Firenze.
- Garbari, F. 1975: Il genere *Allium* L. in Italia. VIII. *Allium atroviolaceum* Boiss., specie nuova per la nostra flora. – Inform. Bot. Ital. **7**: 352-356.

- Groves, E. 1887: Flora della costa meridionale della Terra d'Otranto. – Nuovo Giorn. Bot. Ital. **19**: 110-219.
- Lorenzoni, G. G. 1979: Laghi Alimini. Scheda 17-20. Pp. 441-442 in: Gruppo di Lavoro Conservazione della Natura della Società Botanica Italiana. Censimento dei biotopi di rilevante interesse vegetazionale meritevoli di conservazione in Italia, **2**. – Camerino.
- Macchia, F. 1967a: Vegetazione e Flora dei Laghi Alimini. – Atti Relaz. Acc. Pugliese Scienze, n.s. Cl. Sc. Fis. Med. Nat., **25(2)**: 221-267.
- Macchia, F. 1967b: Il ritrovamento della *Periploca graeca* L. nei Laghi Alimini ed ancora sul suo indigenato in Italia. – Atti Relaz. Acc. Pugliese Scienze, n.s. Cl. Sc. Fis. Med. Nat., **25(2)**: 49-61.
- Marchiori, S. & Tornadore, N. 1988: Aspetti quantitativi e qualitativi della flora del Salento (Puglia Meridionale – Italia). – Thalassia Salentina **18**: 21.
- Marchiori, S., Medagli, P., Sabato, S. & Ruggiero, L. 1993: Remarques chorologiques sur quelques taxa nouveaux ou rares dans le Salento (Pouilles, Italie). – Inform. Bot. Ital. **25(1)**: 37-45
- Pignatti, S. 1982: Flora d'Italia. – Bologna.
- Rossi, W. 2002: Orchidee d'Italia. – Quad. Cons. Natura, 15, Min. Ambiente – Modena.
- Tutin, T. G., Heywood, V. H., Moored., M., Valentine, D. H., Walters, S. M. & Webb, D. A. 1976: Flora Europaea, **4**. – Cambridge.
- Zangheri, P. 1976: Flora Italica – Padova.

Address of the authors:

Concetta Mele, Faustina Caforio & Silvano Marchiori,

Di.S.Te.B.A.- Università degli Studi di Lecce, Via Prov.le Lecce-Monteroni, 73100
Lecce, Italy.