

Miramare

Legal status	Marine Protected Area
Foundation year	1986
Foundation text	Interministerial decree
Management body	Ministry for the Environment and Protection of the Territory and the Sea - WWF
Superficy	127 ha
Management category (IUCN, 1994)	IV



Territory

The protected area is located at the foot of the Miramare promontory, a section of coast between the tourist port of Grignano and the Barcola riviera, a summer resort for local residents.



© Archives Miramare MPA

Miramare has been a SPAMI since 2008 thanks to its important biocenosis, its measures (management, protection), and very clear and adapted resources, based on a serious knowledge.

Physical features

The environment of the area is a section of shore made up of rock at the coast itself, becoming blocks, pebbles and sandy bottoms that are increasingly muddy progressing offshore. The seabed consists of rock, pebbles and sand down to a depth of about 8 meters, and then mud, to a maximum depth of 18 meters. The coast is made up of limestone rock typical of the Carso, a territory of which the Miramare promontory represents a small extension of the coastline.

Specificities and importance

There is a significant tidal zone which encompasses endemic species, such as *Fucus virioides* and other species at the boundaries of their diffusion zone.

The most representative habitats are the mediolittoral rock biocenosis, in particular the association with *Lithophyllum bissoides* and *Fucus virioides*; the biocenosis of the well sorted fine sands; the biocenosis of the surface muddy sands in calm waters, in particular the association with *Zostera noltii*; the biocenosis of the coarse sands and gravel affected by bottom currents with the Maërl facies; the association of the infralittoral algae with *Cladocora caespitosa*, *Cystoseira crinita* and *C. compressa*, and finally the biocenoses of the bathyal muds.

The flora is very strong heterogeneous, with establishment of pre-coralligenic sciaphila populations, *Peyssonnelietum squamariae*, and almost single-type situations typical of port waters, with *Ulva laetevirens*, *Gracilaria armata*. A residual meadow of *Cymodocea nodosa* is present.

The species found are characteristic of the main habitat and biocenoses in the Reserve : calm mode muddy sands, coastal terrigenous muds, coastal deposit, well sorted, *Posidonia* meadows, photophilic algae et mud deposit...

Fish commonly found include the *Blennoïdes*, all seabreams types, *Dicentrarchus labrax* and *Corvina nigra*. The main crustaceans observed include: *Eriphia spinifrons*, *Maja squinado*, *Maja verrucosa*, *Homarus gammarus*.



© Archives Miramare MPA

Threats and pressures

The biodiversity is exposed to the classic threats of two contexts (urban and industrial pressure), where contamination by heavy metals is common to all mobile sediments (muds) of the Gulf of Trieste.

Possible impact could result from illegal fishing whether as a sport/hobby or as underwater fishing.

A further phenomenon typical of the waters of the Gulf of Trieste is their low transparency, due to the high levels of production, increased by suspended matter brought in by the rivers and discharges. These affect the development of the vegetation, in particular the marine phanerogams.



Management

A management plan was established in 1989 and is monitored every year.

The State Reserve currently comprises a zone 'A' of integral reserve with an area of 30 ha; this is surrounded by a section of sea of 97 ha, zone 'B', subject to Port Authority Order.

Twelve people are employed in the area, 8 collaborate with, allowing it to be run properly.

The funding is adequate; this derives mainly from the Italian Ministry for the Environment, integrated by the Regione Friuli-Venezia Giulia, by WWF-Italy and from autonomous incomes (visiting and educational activity, services provided to the local scientific community such as on-the field support to monitoring activity).

The area falls under the protection of the Port Authority Police, which provides regular patrolling activity. Miramare MPA is completing the installation of a video-surveillance network operated by "Web-cameras" with 3 observation points

In view of the logistics and secure conditions for instrumentation and equipment, the zone has been used over the years as an experimental training ground by research institutes and universities. A lot of Scientific and monitoring activities have been done through institutional collaboration.

Biophysical, socio-economic and governance data are collected after the indication of IUCN-WWF guidebook "How is your MPA Doing?" in order to assess MPA's management effectiveness.

The institutional goals of the Miramare Marine Protected Area include provision of opportunities for establishing programmes for education about the environment and for training in natural resource management. Within the Reserve, therefore, a Centre for Education in Marine Environment (CEAM) was opened in 1989. The Centre's goals are to organise and execute educational programmes for schoolchildren at all levels, to give them an opportunity to discover and study the marine ecosystem.

To encourage a 'contact' with the seabed underfoot, visitors walk bare-foot on a floor covered in sand, shells and marine plants. The educational facilities at Miramare begin at the Visitors Centre, a 'communicate through play' area that takes the visitor on a virtual trip to the various habitats of the Reserve

