

Protected Natural Areas and sustainable use: the Spiaggia dei Conigli in the “Lampedusa Island” Nature Reserve (Agrigento, Sicily, Italy)

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ABSTRACT

The Spiaggia dei Conigli, falling within the “Isola di Lampedusa” Nature Reserve (Agrigento, Sicily, Italy) is of great naturalistic interest due to the presence of various habitats of community importance and as a regular oviposition site of sea turtle *Caretta caretta* (Linnaeus, 1758) (Reptilia Cheloniidae). Since its establishment, the Nature Reserve has activated numerous conservation and protection interventions and actions, renaturalization and re-orientation of seaside use, becoming a concrete example of integration between nature protection and territorial promotion. Over the last three years, the management body Legambiente Sicilia has strengthened the regulation of the site by initiating an action to limit attendance, in order to further reduce the impacts on habitats and species and to guarantee a more rewarding and aware of the naturalistic values of a protected natural area. The first results of this action are presented in this paper.

KEY WORDS

Lampedusa; nature conservation; protected natural areas; sustainable use.

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THE NATURE RESERVE “ISOLA DI LAMPEDUSA” AND THE SPIAGGIA DEI CONIGLI

The “Isola di Lampedusa” Nature Reserve (Sicily, Italy) was established by the Sicilian Region in 1995 (Act of the Regional Councilor for Territory and Environment n. 291 of 16/05/1995 and n. 533 of 11/08/1995) for the protection of an area of great naturalistic and landscape value, covering 367 hectares, which extends along the southern coastal strip of the island of Lampedusa (Agrigento). The protected area was entrusted to Legambiente Sicilia, which has the task of promoting scientific research, safeguarding natural environments and disseminating knowledge about natural assets (Nicolini, 2001).

The Nature Reserve falls within two Sites of the

Natura 2000 Network: the Special Conservation Area ZSC ITA040002 “Islands of Lampedusa and Lampione” and the Special Protection Area ZPS ITA 040013 “Pelagie Archipelago - marine and terrestrial area” regulated by “Pelagie Islands” Management Plan (Nicolini et al., 2009), approved by the Territory and Environment Department of the Sicilian Region with decree D.D.G. n. 861 of 11/15/2010 and by the Ministry of the Environment and Protection of the Land and Sea with Ministerial Decree dated 12/21/2015.

The area of greatest interest in the “Isola di Lampedusa” Nature Reserve is the Spiaggia dei Conigli (Fig. 1), a sandy coastal environment of considerable naturalistic interest both because it is one of the main Italian sites where regular oviposition of the sea turtle *Caretta caretta* (Linnaeus,

1758) (Reptilia Cheloniidae) occurs (Di Palma et al., 1989; Bombace et al., 2001; Prazzi et al., 2010) both for the presence of various habitats of community importance (code 1210: annual vegetation of marine deposit lines; code 2110: mobile embryonic dunes; code 2210: fixed dunes of the Mediterranean beaches; code 2230: dune meadows of the Malcolmietalia). It is a highly dynamic environment subjected to the influence of wind and sea storms, and at the same time it is an extremely vulnerable environment, subject to intense seaside-type anthropic pressure in the summer period. The Management Body of the Nature Reserve has identified one of the main objectives of the protected area in increasing environmental protection and reorienting the use of Spiaggia dei Conigli.

PROTECTION AND RENATURALIZATION ACTIONS

In 1996, when the Nature Reserve was entrusted

to Legambiente Sicilia for management, the Spiaggia dei Conigli and the entire bay were subjected to uncontrolled and aggressive mass tourism which was not regulated in any way and was not aware of the vulnerability of the places (Fig. 2): the beach was accessed by motorized vehicles, and the access route was used as an extended linear car park in contempt of the naturalness of the places; there were illegal commercial structures on the beach; visible phenomena of hydrogeological instability had been triggered along the route and on the slope above the beach (Motta & Motta, 2007), with growing threats to the reproduction of *Caretta caretta*.

Following specific studies and monitoring on naturalistic aspects and anthropic impacts (De Domenico, 1996; Bombace & De Domenico, 1998; Nicolini et al., 2006), the Managing Institution Legambiente Sicilia immediately started a detailed action plan for the protection and management of the Spiaggia dei Conigli, including both active environmental recovery and renaturalization interventions and constant regulatory and awareness-raising actions



Figure 1. The Spiaggia dei Conigli in the “Lampedusa Island” Nature Reserve (Sicily, Italy).

to reorient bathing use (Bombace et al., 2001; Prazzi et al., 2010; La Mantia et al., 2012), also thanks to funding from the European Union with the contribution of the Sicilian Region, from the Ministry of the Environment with the contribution of the Pelagic Islands Marine Protected Area and LIFE Natura projects. Among the various actions we mention:

- a) acquisition of private land in the Conigli coastal area to the Regional Property (Territory and Environment);
- b) issuing of a specific rule to control use, providing for the pedestrianization of the paths and the prohibition of transit to motorized vehicles, as well as the complete closure of the beach in the evening and night hours during the reproduction period of *Caretta caretta*;
- c) creation of mandatory trails to avoid trampling on the habitats and to guarantee their diffusion;
- d) renaturalization of areas, previously damaged, through the planting of native species characteristic of the garrigue and Mediterranean scrub;
- e) implementation of anti-erosion interventions on the slope above the beach, using naturalistic engineering methods;
- f) monitoring and protection of *Caretta caretta* nesting;
- g) creation of information points at the entrance to the Reserve and on the beach, also with the help of volunteer camps in which hundreds of young people participated.

The structural interventions and the regulatory and awareness-raising actions carried out have enabled a progressive and important environmental redevelopment action of the entire coastal area of the Spiaggia dei Conigli and the diffusion of the natural habitats present on the Island, not just the sandy ones of the beach but also those linked to aspects of the garrigues and prairies (code 6220* Substeppe paths of grasses and annuals - *Thero-Brachypodietea*; code 5430 Friganas endemic to *Euphorbio-Verbas-cion*). Finally the renaturalization interventions have allowed the propagation and diffusion of extremely rare and endangered species, as they are present with one or a few individuals such as *Limoniastrum monopetalum* (L.) Boiss., *Coronilla valentina* L., *Erica multiflora* L., *Myrtus communis* L., *Arbutus unedo* L. (La Mantia et al., 2012).

ATTENDANCE QUOTAS IN THE SPIAGGIA DEI CONIGLI

In the summer of 2021, the Nature Reserve Managing Institution Legambiente Sicilia decided to strengthen the regulation of the beach by limiting the presence of beach users, in order to further reduce the impacts on habitats and species and to guarantee a more rewarding and aware use experience of the naturalistic values of a protected natural area.

Therefore, on the basis of direct experience conducted in previous years, and taking into account the provisions of the Management Plan of the Natura 2000 Site and the Action Plan for the protection of *Caretta caretta* in the Pelagic Islands (Balletto et al., 2003), the existing bibliography (Acosta et al., 2015) and the experiences underway in some beaches in Sardinia (AA.VV., 2013), the Managing Body has issued a new regulation for



Figure 2. The Spiaggia dei Conigli in 1996, with motorized vehicles and commercial structures. A concrete example of environmental unsustainability and widespread illegality.

limiting use during the bathing season, with the following predictions:

1) subdivision of the beach, currently in natural regression and covering a total of 3,500 m², into 3 distinct areas with different destinations (Fig. 3): A - area where it is possible to place umbrellas, covering 700 m²; B - area in which the placement of umbrellas is not permitted, covering 1,500 m²; C - areas prohibited from use even for conservation purposes, covering 1,300 m²;

2) definition of the anthropic load on the usable area (A+B), set at approximately 4 m²/person, and therefore providing for a maximum of 550 simultaneous presences in 2 daily access shifts (morning from 8.30 to 13.30, afternoon from 14.30 to 19.30), with a maximum number of accesses/day of 1,100 people.

RESULTS

The actions to limit the seaside use in the Spiaggia dei Conigli, started in the summer of 2021 (Dimarca et al., 2023) and continued in the subsequent

years 2022 and 2023, required a significant effort by the Managing Institution Legambiente Sicilia, both administrative to regulate the limited number of people in areas of maritime property previously freely accessible, and operational to manage in the field a concentrated influx of several hundred people, taking into account that during the bathing season the Reserve records over 120,000 user contacts.

This action has also guaranteed important results on both a management and naturalistic level, establishing a model of responsible tourist use based on increasing nature protection, as an alternative to the mass tourism that characterizes the rest of Lampedusa. The results of the first 3 years are summarized below:

- a) halving of simultaneous presences on the beach: from over 1,200 to max 550;
- b) increase in areas destined for exclusive conservation: from 450 m² to 1,300 m²;
- c) increase in areas removed from trampling: from 13% to 37% of the beach;
- d) consequent spread of the vegetation of the beaches and dunes in the areas protected from use and foot traffic (Fig. 4).

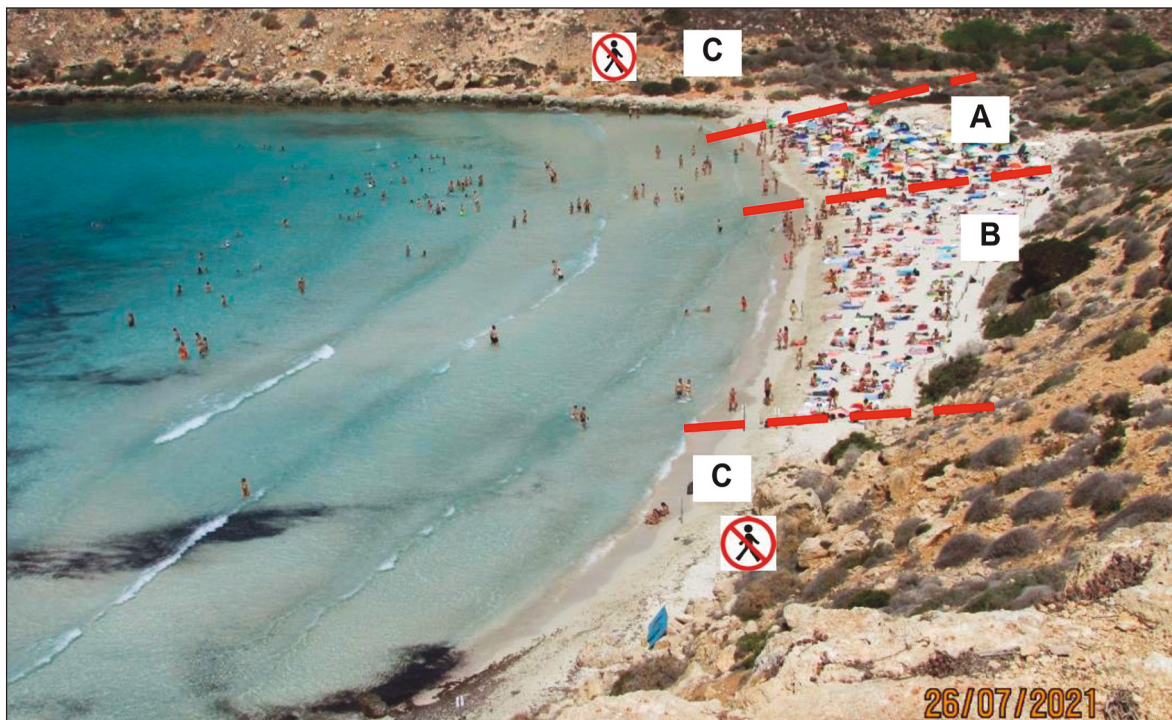


Figure 3. Subdivision of the Spiaggia dei Conigli (Sicily, Italy) into 3 distinct areas with different intended uses.



Figure 4. Spread of coastal habitats in the areas removed from use.

CONCLUSIONS

The results achieved, both in terms of nature conservation and the promotion of responsible tourist use, were very significant, demonstrating that it is possible to implement, using the management tools specific to a protected natural area, actions of radical reorientation of seaside use, in terms of growing sustainability.

Today in Sicily access restrictions in protected natural areas are practiced only in the “Isola di Lampedusa” Nature Reserve and in the “Vendicari Wildlife Oasis” Nature Reserve (Siracusa) managed by the Regional Department of Rural Development, while this management measure should be extended and made mandatory in the protected areas and in the sites of the Natura 2000 Network, both by providing for a limited number in sensitive and fragile areas, and by estimating the human load for all activities that can cause impacts.

It is therefore hoped that from these experiences, awareness can be developed of the important role that natural protected areas can and must play in promoting forms of tourism based on the protection of natural resources, and of the need for growing

regulation of beaches, even outside natural protected areas, providing specific provisions to protect the coastal flora and vegetation and the reproduction sites of fauna species such as the Kentish plover *Charadrius alexandrinus* (Linnaeus, 1758) and the Sea turtle *Caretta caretta*.

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