

## World Heritage Sites

Protected  
Areas and  
World  
Heritage



## ISOLE EOLIE (AEOLIAN ISLANDS) ITALY

*For more than 200 years the Aeolian Islands have provided geoscientists worldwide with classic and accessible examples of two basic types of volcanic eruption, Vulcanian and Strombolian, which continue to enrich studies of vulcanology and of the development of volcanic land forms.*

### COUNTRY

Italy

### NAME

Isole Eolie (Aeolian Islands)

### NATURAL WORLD HERITAGE SITE

2000: Inscribed on the World Heritage List under Natural Criterion viii.

### STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

The UNESCO World Heritage Committee issued the following statement at the time of inscription

#### Justification for Inscription

**Criterion (viii):** The islands' volcanic landforms represent classic features in the continuing study of volcanology world-wide. With their scientific study from at least the 18th Century, the islands have provided two of the types of eruptions (Vulcanian and Strombolian) to vulcanology and geology textbooks and so have featured prominently in the education of all geoscientists for over 200 years. They continue to provide a rich field for volcanological studies of on-going geological processes in the development of landforms.

### IUCN MANAGEMENT CATEGORY

IV Habitat/Species Management Area

### BIOGEOGRAPHICAL PROVINCE

Mediterranean Sclerophyll (2.17.6)

### GEOGRAPHICAL LOCATION

The Aeolian Islands lie in the Tyrrhenian sea, 20 km off the north coast of Sicily and 55 km from the Italian mainland. The group consists of 7 main islands and 6 islets. Centred on 38°35'N by 14°47'E.

### DATES AND HISTORY OF ESTABLISHMENT

1966: Landscape protection decreed by and for the municipality of Lipari which includes the islands of Lipari, Alicudi, Filicudi, Panarea, Vulcano and Stromboli, (the 'Lipari Reserve');

1979: Landscape protection decreed by and for the three municipalities of Salina Island;

1984: Regional Statutory Reserve of *Le Montagne delli Felci e dei Porri* (278 ha) on Salina created by the Superintendency for Cultural Heritage & Environment of Messina.

1991: The islands of Alicudi, Filicudi, Panarea and Stromboli designated natural reserves by the Sicilian Regional Authority for Territories & Environment; Vulcano and Lipari are excluded;

1997: A Landscape Territorial Plan instituted by the Regional Authorities for Cultural Heritage and Territories & Environment to guide nature protection and development by zoning the site;

1998: The heritage management consortium *Ecosviluppo Eolie* founded by the municipalities of Lipari and (on Salina) Santa Marina Salina, Leni and Malfi;

- 2001: Territorial Agreement for the Aeolian Islands drawn up to override the Landscape Territorial Plan on mining and construction;
- 2004: The Landscape Territorial Plan finally became legally enforceable though contested by mining interests, which were legally bound to stop mining in 2007;
- 2004: The NGO Legambiente Sicilia presented a draft law for the institution of an Aeolian Islands Vulcanologic and Archaeological Natural Park;
- 2007: The National Park of the Aeolian Islands established. Pumice mining prohibited under National Law 354/1991 and new protected area boundaries drawn up for Lipari Island, excluding pumice quarries.

## LAND TENURE

The islands lie in the Sicilian province of Messina. Most land is in private ownership with some regional and state ownership of protected lands. The site was administered through the Regional Authorities for Cultural Heritage and for Territories & Environment. But from 2007 the National Park of the Aeolian Islands became the effective management authority.

## AREA

The total area of the Aeolian Islands is 1,216ha, (Nomination, 1998). Giunta\* (2005) gives 1,160 ha.

Lipari:	376 ha	Filicudi:	120 ha (95 ha)*
Salina:	268 ha	Alicudi:	52 ha
Vulcano:	210 ha	Panarea:	34 ha
Stromboli:	150 ha (126 ha)*		

## ALTITUDE

Sea level to 962m (Fossa delli Felci, Salina).

## PHYSICAL FEATURES

The Aeolian archipelago (also known as the Lipari Islands) lies in the Tyrrhenian sea between Italy and Sicily northwest of the Straits of Messina. It extends 85 km north-south and 55 km east-west and consists of seven main islands, all steep-sided volcanoes either active or dormant - Lipari, Salina, Vulcano, Stromboli, Filicudi, Alicudi and Panarea with its five offshore islets - Basiluzzo, Dattilo, Bottaro, Lisca Nera, Lisca Bianca. The island of Salina appears rather greener than the others. The volcanic chain was formed approximately a million years ago during the subduction of the African plate under Italy and never seems to have been part of the mainland: it is separated from Sicily by a trough 200m deep. The islands are the location of two of the six classic types of eruption: Strombolian and Vulcanian, which behave in different ways: Stromboli with continuous regular spurts of lapilli, bombs and blazing gas, and Vulcano with explosions of greater violence at longer intervals projecting a high cloud of ash. Both remain a risk: though Vulcano last erupted in 1888-90, Stromboli is in a permanent state of low level eruption and in 2002, 2004 and 2007 erupted with greater force, causing local tsunamis. Though only 926m above sea level, it rises some 2,000m from the sea floor. Seismic activity also occurs in the north of Salina island at Pollara and Malfa, on Alicudi and Filicudi islands and at Vulcanello on Vulcano. A geothermal field underlies the group and there are fumaroles and hot springs, particularly on Vulcano island. The volcanic soils are fertile but often on steeply sloping ground.

## CLIMATE

The climate is Mediterranean, moderated by the sea. The average annual rainfall varies from 600-700mm and the average annual temperature varies between 14-18°C.

## VEGETATION

The terrain provides a variety of microclimates that host many species found on mainland Italy and Sicily. Most areas are dominated by a man-modified landscape of former vine and olive orchards and xeric grassland. The many abandoned terraces are reverting to Mediterranean maquis and the vegetation is dominated by plants typical of this vegetation. 900 species are recorded, including 33 endemics, among them *Silene hicesiae* (CR), *Cytiscus aeolicus*, *Daucus foliosus*, *Anthemis aeolicus* and *Centaurea aetolica* and three other rarities: *Bassia saxicola*, *Dianthus rupicola* and *Ophrys lunurata* (Pasta, 1998). The island richest in species is Panarea, the smallest and probably

the least exploited in the past. The now depleted climax woodland was formed by two plant communities: *Oleo-Euphorbietum dendroidis* and *Erico arboreae-Quercetum ilicis* or *Erico-arboreae-Quercetum virgilliana*. The holm oak *Quercus ilex*, *Quercus virgilliana*, sweet chestnut *Castanea sativa* and European fan palm *Chamaerops humilis* occur sparsely. In the past Aleppo pine *Pinus halepensis* and maritime pine *Pinus pinaster* grew naturally but are now found only in plantations with alien species such as *Eucalyptus*, *Acacia* and *Alnus*.

## **FAUNA**

The most interesting characteristic of the Aeolian fauna is the presence of continental European species at the southern limit of their distribution. 74 species endemic or sub-endemic to Italy are listed, 31 are local to the Aeolian islands and several are confined to a single island. Mammals include one endemic sub-species of garden dormouse *Eliomys quercinus liparensis* and seven species of bats. Seven reptile species are present, including the recently described Aeolian wall lizard *Podarcis raffonei* (CR) in four sub-species, two sub-species of the Italian wall lizard *Podarcis siculus*, and Hermann's tortoise *Testudo hermanni*. The invertebrate fauna is relatively well known. Over 40 birds are recorded, 10 breeding species on the islands are recorded in the Red List for Sicily: Cory's shearwater *Calonectris diomedea*, Mediterranean shearwater *Puffinus yelkouan*, European storm petrel *Hydrobates pelagicus*, Eleanor's falcon *Falco eleonora*, lesser kestrel *F. naumanni* (VU), peregrine *F. peregrinus*, woodchat shrike *Lanius senator*, Eurasian roller *Coracias garrulus*, pallid swift *Apus pallidus* and Dartford warbler *Sylvia undulata*. Migratory species include Eurasian crane *Grus grus*, grey heron *Ardea cinerea*, pelican *Pelecanus* spp. and geese *Anser* spp.

## **CONSERVATION VALUE**

The Aeolian islands are internationally known for their volcanic geodynamism. They also have noteworthy archaeological, ethno-anthropological and natural features. The Park lies within a Conservation International-designated Conservation Hotspot and a WWF marine and freshwater Global 200 Eco-regions.

## **CULTURAL HERITAGE**

Archaeological remains reveal a Neolithic trade in obsidian. There is a Bronze Age necropolis (Aeolus was supposed a late king of this period or a founding ruler of the Aeolians). And different layers reveal subsequent occupations by Greeks, Phoenicians, Romans, Arabs, Normans and Spanish who built the castle of Lipari in the 16th century. The islands were terraced for the cultivation of wheat and olives but the people were very poor and these were abandoned, especially in the late 19th and early 20th centuries when there was large-scale emigration mainly to the Americas. The traditional ancient industry was pumice mining.

## **LOCAL HUMAN POPULATION**

There are several settlements of which the municipality of Lipari which includes all the other islands except Salina, is the largest with a population of 11,000. Salina has three communes: Santa Marina Salina, Malfa and Leni with total population of 4,000. The property itself has few inhabitants owing to the steepness of the slopes and risk of volcanic activity.

## **VISITORS AND VISITOR FACILITIES**

In 1999 there were 200,000 visitors to the islands per year which the municipality would like to increase by the construction of a cruise liner port and luxury hotels in Lipari town. There is a visitors' centre and an excellent Vulcanological Museum in Lipari Castle but there are no signs, maps or brochures to inform a public unaware of the benefits of World Heritage status.

## **SCIENTIFIC RESEARCH AND FACILITIES**

The islands have been well studied, documented and monitored since the 18th century and are the *locus classicus* for Vulcanian and Strombolian types of eruption. The easily accessible occurrence within a small area of so many volcanic processes and landforms, even to sea cliffs that reveal sections through the islands' volcanic history, provides a natural vulcanological museum and study site. The group has been famous in geoscience education for over 200 years and continues to provide a rich field for vulcanological studies and related geomorphology. Eruptions are monitored on Vulcano island by the Ministry of Civilian Protection. The flora was first scientifically studied in 1828 and again from 1888-1909. The avifauna has been sporadically studied during the last 150 years. Lipari Castle is the headquarters of the Eolian Museum which contains excellent archaeological and vulcanological collections. A Provincial Scientific Council advises on the

Reserves and World Heritage site though the ordering of research projects remains ad hoc (UNESCO, 2007). A huge body of scientific observations exists, and many scientific papers have been published on aspects of the islands.

## **MANAGEMENT**

The site is managed under the overlapping authorities of national, regional, provincial and municipal jurisdictions, making the creation of an integrated management structure difficult. There are some 20 governmental and non-governmental stakeholders concerned with the management and planning for aspects of the islands. Their coordination is complicated whenever conservation is seen to conflict with the local economy which still seen to depend partly on pumice-mining and would welcome more tourism. The Regional Authority for Cultural and Environmental Heritage has co-operated with the Regional Authority for Territories & Environment in environmental impact assessment and the production of a Landscape Territorial Plan which is designed to guide protection of the natural and cultural environments and, more controversially, to control developments by zoning the site. The site on Lipari is zoned between Zone A nature reserves in areas of greatest scientific importance, and Zone B surrounding natural areas. Zone C areas are undesignated buffer zones. However, the site's boundaries are fragmented and convoluted and mines encroach on it.

Each island is involved in environmental issues through a regional or territorial environmental council but Vulcano and Lipari have no legally defined reserves and on both, there is some urban and suburban development in the A and B zoned areas. Several features have been monitored to assess the state of conservation: volcanic activity, erosion control, urbanisation by local communes and tourism, particularly high season vehicle traffic in the historical centre of Lipari. The work is done by staff from local universities and the Regional Tourism Authority. In 2007 the four municipalities drew up a new plan for urban development. However, no integrated management plan was approved and no protection assured for several threatened species (UNESCO, 2007). By 2010 an exhaustive report on the state of conservation, and preparations for a management plan had been submitted though detailed operational plans were still lacking. The report indicated that the National Park of the Aeolian Islands, established in 2007, will now be the effective management authority for the site, a change which has made it possible for the state to channel regional funds to the property (UNESCO, 2010).

## **MANAGEMENT CONSTRAINTS**

The islands are in places scarred by quarries and waste dumps, eroded cliffs and unsightly new housing. Pumice mining was made officially illegal in mid 2007, quarries on the site were closed down, resumption of quarrying prohibited and the removal of stockpiles mandated under National Law 394/1991. But in 2007 it continued with the permission of the Mining Authority of Catania in the PUMEX site on Lipari in the form of 'removal of stored material' employing 40 men next to and even within the property. An ecological assessment is required by the Sicilian regional industry authority before effective removal and restoration by the municipality can begin (UNESCO, 2010). Meanwhile, tourism has become the dominant industry. This has led to the abandonment of local farming and changes in the landscape: terraces originally built for olives have disappeared on Lipari and Vulcano, though not on Salina, Stromboli, Filicudi or Alicudi (which had respectively 800 goats and 90 goats in 2007). Proposals for large hotels and an airport have been rejected but the Port of Lipari which is under municipal control and outside the jurisdiction of the Landscape Territorial Plan, is to be expanded to take large cruise ships, and increased numbers of tourists (UNESCO, 2007).

## **STAFF**

In 1999 there was no reserve staff on any of the island nature reserves, and no administration on Alicudi or Filicudi. The mountain reserve on Salina had a small staff from the Regional Forestry service. Rehabilitation of mine sites is the responsibility of the Regional Authority for Industry.

## **BUDGET**

State, regional and EU funds for protection and specific projects have been channelled through the Regional Authority for Territories & Environment and funding for cultural monuments through the Messina Superintendency for Cultural Heritage & Environment. Since 1999, €150,000 (US\$165,000) has been paid for unaccepted management plans, and in 2006 €250,000 (US\$300,000) was granted towards production of a new draft management plan to the Regional Authority for Territories & Environment through the Regional Authority for Cultural and

Environmental Heritage. €300,000 (US\$330,000) has been the stable level of funding for the site in the past. In 2009 €500,000 of Sicilian Region UNESCO funds were released to increase world heritage awareness in the region (UNESCO,2010).

## LOCAL ADDRESSES

Assessorato Territorio e Ambiente della Regione Sicilia, Messina, Sicily.

Soprintendenza per I Beni Culturali ed Ambientali di Messina, Viale Bocchetta, Messina, Sicily.

Commune di Lipari, Piazza Municipio, Lipari, Isole Eolie, Sicily.

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## DATE

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