

ANNEX 22

RESOLUTION MEPC.204(62)

Adopted on 15 July 2011

**DESIGNATION OF THE STRAIT OF BONIFACIO
AS A PARTICULARLY SENSITIVE SEA AREA**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

BEING AWARE of the ecological, socio-economic and scientific attributes of the Strait of Bonifacio, as well as its vulnerability to damage by international shipping activities and the steps taken by France and Italy to address that vulnerability,

NOTING the Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas adopted by resolution A.982(24) (PSSA Guidelines) and the Revised Guidance Document for Submission of PSSA Proposals to IMO set forth in MEPC.1/Circ.510,

HAVING CONSIDERED the proposal made by the Governments of France and Italy that the Strait of Bonifacio be designated as a Particularly Sensitive Sea Area,

HAVING AGREED that the criteria for the identification and designation of a Particularly Sensitive Sea Area provided in resolution A.982(24) are fulfilled for the Strait of Bonifacio,

HAVING NOTED that the Sub-Committee on Safety of Navigation, at its fifty-seventh session, approved the Recommendation on navigation through the Strait of Bonifacio as an associated protective measure for the application of the Strait of Bonifacio as a Particularly Sensitive Sea Area aiming at improving the safety of navigation and the protection of the marine environment,

1. DESIGNATES the Strait of Bonifacio described in annex 1 as a Particularly Sensitive Sea Area pending the final adoption of the associated protective measure for the PSSA, as set out in annex 2 to document NAV 57/15;
2. INVITES Member Governments to recognize the ecological, socio-economic, and scientific attributes of the area, set forth in annex 2, as well as its vulnerability to damage by international shipping activities, as described in annex 3; and
3. FURTHER INVITES Member Governments to note the associated protective measure established to address the area's vulnerability, the details of which are contained in annex 4, which is expected to enter into force following final adoption on a date to be circulated by the Organization to all Member Government, and request ships flying their flag that they act in accordance with such measures.

ANNEX 1

DESCRIPTION OF THE STRAIT OF BONIFACIO PSSA*

Description of the Particularly Sensitive Sea Area for the Strait of Bonifacio

To avoid the risk of damage from ship groundings and pollution damage by international shipping activities and the destruction and degradation of this unique, diverse, and significant habitats and ecosystem, mariners should exercise extreme care when navigating in the area bounded by a line connecting the following geographical positions which is designated as a Particularly Sensitive Sea Area:

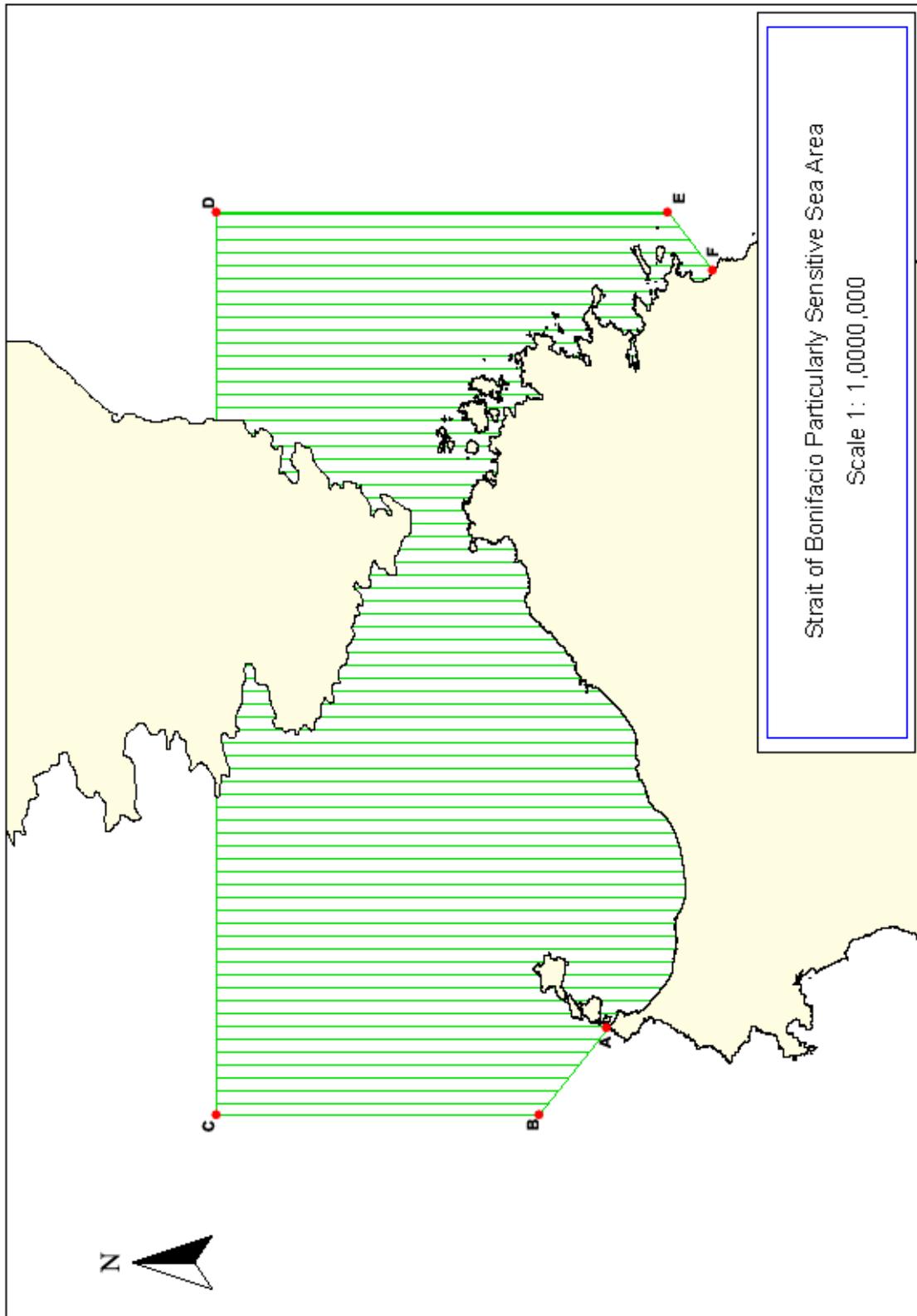
- To the north: a line linking point 41° 45' 00" N – 008° 01' 48" E to point 41° 45' 00" N – 009° 48' 30" E passing the French coast (Cap Muro to the west and Anse de Tarcu to the east);
- On the western side: a line linking points 41° 45' 00" N – 008° 01' 48" E; 41° 06' 36" N – 008° 01' 48" E and 40° 58' 00" N – 008° 12' 00" E on the Italian coast; and
- On the eastern side, a line linking points 41° 45' 00" N – 009° 48' 30" E; 40° 41' 08" N – 009° 48' 30" E and 40° 45' 56" N – 009° 41' 42" E on the Italian coast to the south.

The Particularly Sensitive Sea Area is bounded by the points A, B, C, D, E, and F as set out in the chartlet below.

*

The text in this annex is taken from the submission by France and Italy contained in documents MEPC 61/9 and MEPC 61/INF.26.

CHARTLET



ANNEX 2

ECOLOGICAL, SOCIO-ECONOMIC, AND SCIENTIFIC ATTRIBUTES OF THE STRAIT OF BONIFACIO PSSA*

1 Ecological criteria

1.1 The ecological significance of the Strait of Bonifacio region was internationally recognized when it was granted the status of specially protected area of Mediterranean importance (SPAMI) at the sixteenth session of the Conference of Contracting Parties to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution, which took place from 3 to 5 November 2009 in Marrakesh.

1.2 The ecological significance of the French part of the Strait of Bonifacio is recognized by a number of official listings involving a total of 104,000 ha of mainly marine environment:

- Listing as a nature reserve by a decree of 23 September 1999 (80,000 ha);
- Listing as a Natura 2000 site, these being a network of European Union areas which, owing to their great environmental value, need the protection of States:
 - a special protection area under directive No. 79/409/EEC (Birds), "Lavezzi Islands, Strait of Bonifacio", covering 98, 941 ha, designated by inter-ministerial decree of 30 October 2008;
 - three sites of Community importance under directive 92/43/EEC (Habitat) concerning the conservation of natural habitats and wild fauna and flora:

Strait of Bonifacio, Monk Islands (94, 612 ha);
Cerbical Islands and coastal strip (3,698 ha);
Pertusato/Bonifacio plateau and Lavezzi Islands (6,071 ha).

1.3 The ecological significance of the Italian part of the Strait of Bonifacio is recognized by several listings, as follows:

The La Maddalena archipelago national park, by decree of the President of the Republic dated 17 May 1996, covering 5,100 ha on land and 15,046 ha at sea;

The Asinara national park, by decree of the President of the Republic dated 13 October 2002, covering 5,170 ha on land;

The Isola Asinara protected marine area, by ministerial decree of 12 August 2002, covering 10,732 ha at sea;

The Tavolara Punta Coda Cavallo protected marine area, by ministerial decree of 12 December 1997, amended by ministerial decree of 28 November 2001, covering 15,357 ha;

*

The text in this annex is taken from the submission by France and Italy contained in documents MEPC 61/9 and MEPC 61/INF.26.

Listings of Natura 2000 sites, as follows:

Six special protection areas under directive No. 79/409/EEC (Birds):

Isola Asinara (9,669 ha)
Isola Piana – Golfo dell'Asinara (399 ha)
Stagno di Pilo, Casaraccio e Saline di Stintino (1,290 ha)
Arcipelago La Maddalena (20,955 ha)
Isole del Nord-Est tra Capo Ceraso e Stagno di San Teodoro (18,174 ha)
Capo Figari, Cala Sabina, Punta Canigione e Isola Figarolo (4,053 ha)

Twelve sites of Community significance under directive No. 92/43/EEC (Habitat), in connection with the conservation of natural habitats and wild fauna and flora:

Coste e Isolette a Nord Ovest della Sardegna (3, 731 ha)
Isola Asinara (9,669 ha)
Isola Piana (510 ha)
Stagno di Pilo e di Casaraccio (1,879 ha)
Stagno e ginepreto di Platamona (1,618 ha)
Foci del Coghinas (2, 267 ha)
Isola Rossa – Costa Paradiso (5,409 ha)
Monte Russu (1,971 ha)
Capo Testa (1,217 ha)
Arcipelago La Maddalena (20,955 ha)
Isola Tavolara, Molara e Molarotto (3,764 ha)
Capo Figari e Isola Figarolo (851 ha).

1.4 The European Commission approved the above-mentioned list of sites of Community importance by its decision of 22 December 2009 in relation to the Mediterranean biogeographical region enforceable under Directive No. 92/43/EEC.

1.5 The following information is taken from the declaration forms of the Natura 2000 sites mentioned above and from the biological evaluation of the Strait of Bonifacio nature reserve for the 2007-2011 management plan.

1.6 This sector is also covered by the Pelagos Agreement for the Creation of a Mediterranean Sanctuary for Marine Mammals, signed in Rome on 25 November 1999 by France, Italy and the Principality of Monaco. The aim of the agreement is to maintain a level of conservation beneficial to marine mammal populations, and to that end monitor the cetacean populations, strengthen the application of the existing external legislation for certain types of fishing and to reduce pollution, regulate the numbers of tourists who come to observe cetaceans, and improve the information provided for the public. The bottlenose dolphin is a regular visitor to the edges of this area.

1.7 The exceptional ecological wealth of the area comprises a wide range of marine environments, including:

- inclines and rocky shallows harbouring varied fauna and flora;
- well preserved Posidonia beds;
- near Figari, a rare estuary system in which areas emerge at low tide on the island.

1.8 Species and habitats whose rarity or significance are recognized at national, Community or international level find the environmental conditions ideal here.

Uniqueness or rarity

1.9 The Strait of Bonifacio area contains 37 per cent of species of Mediterranean importance (SPAMI Annex II and III, Barcelona Convention). The flora includes some 15 endemic species (Corsican or Corsican-Sardinian or Corsican/Sardinian/ Balearic), with one endemic to the island of Lavezzu.

1.10 The area contains between 40 and 50 per cent of the sites for *Silene velutina*, a small endemic flower whose distribution is limited to the extreme south of Corsica and the north of Sardinia. Another protected plant belonging to the first rank in terms of floral heritage is *Limonium lambinonii*, which is endemic to Lavezzu island.

1.11 The leatherback turtle has not been seen here since the 1960s, but the loggerhead turtle has been spotted more regularly in the Strait of Bonifacio in the past decade. In October 2001 its nests were even discovered on the beaches of Palombaggia, south of the Cerbicale archipelago.

1.12 While the alga *Goniolothon byssoides* is difficult not to notice, sightings are very rare. It appears to be vulnerable, given the small number of sites where it can be found. Also, its pads detach very easily, making it highly vulnerable to trampling by fishermen and swimmers (Boudouresque *et al.*, 1990). Verlaque (1991) noted its presence around the Lavezzi Islands.

Critical habitat

1.13 This area offers great potential for the conservation of a large number of nationally important habitats and species. Certain species (the European shag, the giant limpet *Patella ferruginea*) are present in numbers which provide the nucleus of genetically stable populations that may be considered source populations capable of providing the starting point for colonization (natural or artificial) of potential habitats, to differing degrees, depending on the manner in which the larvae and individual representatives of those species are distributed. This area of the Strait of Bonifacio is thus of vital importance for declining populations or small sub-populations of species. For example, conservation of the national gene pool of threatened meta-populations of species such as the giant limpet could allow it to be reintroduced into areas of the Mediterranean where it is now extinct.

1.14 The care of this area is also very important to marine avifauna. This is a major site for the European shag (*Phalacrocorax aristotelis aristotelis*) and for sizeable numbers of Cory's shearwater (*Calonectris diomedea*). The Strait of Bonifacio is also a main point for the passage, roosting and feeding of the Yelkouan shearwater. The whole area is a feeding ground for these species.

1.15 The European shag population does not exceed 10,000 pairs across the whole of its small area of distribution in the Mediterranean. The Strait of Bonifacio has high priority in the conservation of this species. In 2001, the nesting population of the Strait of Bonifacio represented more than 50 per cent of the French population and 7 per cent of the world population. The main problems for this species are disturbance to nesting sites, accidental capture during small-scale fishing and the disappearance of habitats owing to the expansion of tourism.

1.16 The nesting population of Cory's shearwater accounts for 40 per cent of the national nesting total. With 345 pairs, the Lavezzi island colony is the most numerous in France. This species is on the decline owing to the introduction of allochthonous species (dogs, cats and rats), the removal of eggs from certain colonies and the development of tourism, which disturbs colonies and destroys habitat.

1.17 With around 200 nesting pairs within the perimeter of the area, the population of the highly unobtrusive storm petrel (*Hydrobates pelagicus*) represents around one third of the French Mediterranean population and between 15 and 18 per cent of the French population including Atlantic birds. Europe's smallest marine bird (15 cm) is in steep decline in the Mediterranean, mainly owing to the introduction of predators such as the black rat (*Rattus rattus*). The colonies are now highly localized and concentrated, making them very vulnerable.

Dependency

1.18 The main ecosystems of the Strait of Bonifacio area, whether deep-sea or coastal, are closely interconnected: pelagic open-water systems, gulfs, intertidal zone, supralittoral environments, islets and lagoons.

1.19 Being an open system, the marine environment does not experience fragmentation of habitats to the same degree as the land environment. In the Strait of Bonifacio the long-protected areas of the Lavezzi, the fish confinement areas and the decreed biotopes of the Monk and Bruzzi islands shelter balanced populations which embrace all age-groups and assure the reproduction of larvae (fish, crustaceans, ...) and their diffusion to more recently established nature reserves. Plankton production and the gathering of animal larvae condition the introduction of both marine and littoral trophic chains. By virtue of its geographical position and the existence of violent currents which facilitate larva distribution, the Strait of Bonifacio could play a not inconsiderable role in coastal fishing management in the north-western Mediterranean.

1.20 While the plankton-eating organisms are an indispensable resource for large pelagic species, seriolae and tuna, not to mention cetaceans (particularly bottlenose dolphins), they are also attractive to the marine birds present (European shag, Cory's shearwater, seagulls).

Representativeness

1.21 Beds of *Posidonia oceanica*, high-priority protected habitats, are widely represented. A *Posidonia* bed is a very valuable ecosystem from the biodiversity point of view, and is also very important to fishing, coastal protection and the enrichment of certain other coastal ecosystems. It is an excellent indicator of the overall quality of the natural environment. In many parts of the Mediterranean, it has been seriously affected by human activities, and some beds are in serious decline. Beds of *Posidonia oceanica* are characteristic of the infralittoral stage in the Mediterranean. Those in the Strait of Bonifacio area cover more than 5,000 ha and are in excellent condition. They play a leading role in the area's productivity and provide sites for breeding, spawning and raising young.

1.22 The alga *Lithophyllum lichenoides* found in belts in the intertidal zone is included in annex I of the "Habitat" directive. This species is well represented along the battered granite and limestone coasts of the Strait of Bonifacio. The oldest and largest belts are found along the cliffs at Bonifacio and in the Lavezzi Islands.

1.23 Like other algae typical of sheltered sites in the infralittoral stage, certain types of *Cystoseira* have become rare because its habitat is suffering from pollution or eutrophication or has been destroyed by coastal management. Overgrazing by sea urchins, whose predators have been partially eliminated by man, also has to be taken into account. The *Cystoseira* are very well represented in the strait and certain species such as *C. Funkii* are seen on rare occasions at near-surface depths (Ballesteros & Pineda, 2003).

Diversity

1.24 The number of species recorded to date in the Strait of Bonifacio is 1,745. Among the 977 species of fauna are 18 mammals, 165 birds, seven reptiles, two amphibians, 187 fish, 11 protochordates, 13 echinoderms, 262 insects, 11 arachnids, six bryozoans, 103 crustaceans, 143 molluscs, seven annelids, 23 cnidarians and 19 spongarians.

1.25 Considering the faunistic taxons as a whole, it should be noted that:

- Twenty-three animal species are of Community significance. Care of this area is particularly important for two amphibians (*Discoglossus sardus* and *Hyla arborea sarda*), the bottlenose dolphin (*Tursiops truncatus*), chiroptera, marine molluscs, the fish *Aphanius fasciatus*, the loggerhead turtle *Caretta caretta*, the gecko *Phyllodactylus europaeus*, the lizards *Podarcis tiliguerta* and *Lacerta bedriagae* and the snake *Coluber viridiflavus*. Among the animal species of Community significance whose capture in natural surroundings and cultivation can be managed, only the red coral *Corallium rubrum*, can be and is being cultivated;
- Seventy-seven taxons are listed in the "Birds" directive (all annexes combined). Among these birds are 16 species nesting in the area (including 10 from annex I), 24 regular migrants, 30 occasional migrants and five accidental migrants;
- The taxons strictly protected under the Berne Convention (annex II) amount to 139, with 70 other species being considered as protected species whose exploitation must be regulated (annex III);
- Three migratory species are in danger of extinction, namely the Audouin's gull *Larus audouinii* and the loggerhead and leatherback turtles *Caretta caretta* and *Demochelys coriacea*, which require strict protection under annex I of the Bonn Convention. Sixty-seven other species (reptiles, mammals and birds) are considered to be in a poor state of conservation under that convention. All these species are also listed under the Berne Convention;
- Thirty-seven rare species are listed in the three annexes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington Convention), for example the peregrine falcon *Falco peregrinus*, the loggerhead turtle *Caretta caretta*, the bottlenose dolphin *Tursiops truncates*, and Hermann's Tortoise (*Testudo hermanni*);
- Thirty-three species are identified as endangered or threatened under the Barcelona Protocol concerning specially protected areas of Mediterranean importance (SPAMI) (annex II) and 14 as requiring control over their exploitation. These species are also listed in the annexes to the Berne Convention. Among the exploited species, we note two large fish: the swordfish *Xiphias gladius* and the red tuna *Thunnus thynnus*;

- There are 148 wildlife taxons protected at national level, of which the great majority comprises birds (121 species). Nineteen of these nest in the Strait of Bonifacio area. Thirteen mammals present are protected at national level: seven cetaceans, four bats, the hedgehog *Ericeanus europeus italicus* and the weasel *Mustella nivalis corsicana*. Also protected are four land reptiles, two amphibians, two marine turtles and one fish, namely the Mediterranean shad (*Alosa fallax nilotica*). Among the marine species the needle-spined sea urchin *Centrostephanus longispinus*, the Mediterranean slipper lobster *Scyllarides latus*, the pen shell *Pinna nobilis* and the limpet *Patella ferruginea* are protected;
- In the context of the International Union for Conservation of Nature (IUCN) Red List, the leatherback turtle *Demochelys coriacea*, observed only a few times in the past 50 years, is classified as critically endangered and four species, the fin whale *Balaenoptera physalus*, the loggerhead turtle *Caretta caretta*, the dusky grouper *Epinephelus marginatus* and the common seabream *Pagrus pagrus*, as endangered. Nine species are considered vulnerable, i.e. as facing a high risk of extinction in the wild. These include the gecko *Phyllodactylus europaeus*, the long-fingered bat *Myotis capaccini* and certain threatened cartilaginous fish: the great white shark *Carcharodon carcharias*, the basking shark *Cetorhinus maximus*, the manta ray *Mobula mobular*, the liver-oil shark *Galeorhinus galeus*, and the angel shark *Squatina squatina*. Lastly, the status of 161 species is considered to be of concern (10 mammals, 143 birds, one amphibian, two reptiles and four fish);
- Seventy species feature in the red lists of the French Natural History Museum in Paris. The endangered species number 13 including the loggerhead turtle *Caretta caretta* and the Mediterranean slipper lobster *Scyllarides latus*. The following are considered to be vulnerable in France: the pen shell *Pinna nobilis*, the limpet *Patella ferruginea*, the brown meagre *Sciaena umbra* and the nursehound *Scyliorhinus stellaris*.

1.26 Among the floral taxons:

- Eight are included in annex I of the Berne Convention, including *Silene velutina* and *Posidonia oceanica*;
- Five algae are also included in SPAMI Annex III;
- Fifteen plant species are protected at national level, including 12 terrestrial species. The marine species include *Posidonia oceanica* and another marine phanerogam, namely the seagrass *Cymodocea nodosa*, which is also well represented in the Strait of Bonifacio;
- Four species are considered to be vulnerable by the IUCN: *Helicodiceros muscivorus*, *Drimia fugax*, *Nananthea perpusilla* and *Silene velutina*. They all enjoy protected status.

1.27 The diversity and complementarity found among the various littoral ecological compartments can be considered a major asset for this area. There are around fifty elementary habitats, with ecosystems ranging from coastal scrub to salt grass and from lagoons to the depths of the circalittoral zone.

1.28 The coastal, littoral and salty habitats, such as the mobile and fixed dunes of the Mediterranean shores where *Crucianella maritima* is found, and halophilous scrub, conceal all the floral taxons of major heritage importance.

1.29 At sea, the major "reefs" type of habitat brings together rocky habitats of the mediolittoral zone as well as all the fauna and flora of the intertidal zone. Biocoenoses of photophilous algae and coral are also integrated into this major type of habitat. All the types of gorgonia, cystoseira and the large bryozoans are also important elements of the area's rich heritage and require special protection against the impact of underwater activities and of global changes relating to rise in sea temperature.

Productivity

1.30 The large expanse of sea and strong currents, as well as the richness of the fish stocks, widely recognized by Mediterranean ichthyologists, give this protected marine area a major role in the dispersion of larvae throughout the western Mediterranean. That role is essential for the threatened species in a good state of preservation in the Strait of Bonifacio, such as the dusky grouper *Epinephelus marginatus*, but also for other species of importance in the heritage and fishing contexts.

Spawning or breeding grounds

1.31 The waters of the lagoon habitats (Pisciu Cane, Testarella and Ventilègne), rich in nutritive salts carried from the drainage basins across which they pass, stimulate the growth of lagoon phytoplankton. These lagoons nourish and shelter many marine species. The dense plant growth, adapted to the complementary influences of sea and land, is home to many aquatic and avian species. These biotopes provide ideal shelter for nesting and reproduction and are an important source of food. Yellow-legged gulls, grey herons, little egrets and even young ospreys are regularly observed there. The mosaic of vegetation and the presence of smooth stretches of standing water make it possible for certain wintering or migrating anatidae to come here on an irregular basis (mallard ducks, pintails, Northern shovellers, common teals and garganeys ...), as well as migrating shorebirds (common snipes, jack snipes, sandpipers, black-tailed godwits, little stints). Mallards, moorhens and water rails occasionally nest on Testarella lake. As mentioned above, the Posidonia beds play a major role in the area's productivity and provide areas for breeding, spawning and the raising of young.

Fragility

1.32 Many habitats are important, in terms of heritage, by virtue of their representativity in the Mediterranean context and the direct and indirect threats they face.

1.33 For 15,000 years man has been exerting his influence as an integral part of the ecological system of the Strait of Bonifacio. Man-induced factors (sample-captures, alteration or destruction of habitat, disturbances, introduction of species...), whether old or more recent, direct or indirect, are exerting an increasing impact as methods of navigation and sampling techniques evolve. Those factors are responsible for the disappearance of the monk seal (*Monachus monachus*) and the reduced populations of the limpet *Patella ferruginea*, a process which has been affecting that mollusc since prehistoric times, and the grouper *Epinephelus marginatus* for 30 years.

1.34 It is also quite clear that climate change, especially the increases in air and sea temperatures, as well as fishing activities across the Mediterranean, is exerting an ever increasing influence on the overall functioning of the Strait of Bonifacio.

1.35 Increase in seawater temperature triggers significant changes in the ways that pelagic communities (tropicalization of plankton production) or benthic communities function in the north-west Mediterranean. It benefits tropical species, such as the yellowmouth barracuda *Sphyraena viridensis*, to the detriment of certain Mediterranean species that cannot support the rise in temperature. In this regard, the spectacular rise in mortality rates since 1998 among gorgonias is cause for concern.

1.36 Man-induced activities also generate cascade effects. Such occurrences may be confined to the territory of a protected marine area or affect its periphery. Thus, the destabilization of *Posidonia oceanica* owing to increased numbers of unregulated anchorages or sediment erosion is leading to a reduction in the populations of species associated with this habitat, in particular the pen shell *Pinna nobilis*. Failure to manage household waste and the existence of open-air public landfill sites for over 30 years have brought about an increase in the population of yellow-legged gulls (*Larus cachinnans*) and a serious deterioration in the micro-insular systems of southern Corsica (destabilization of vegetation by the action of nitro-phosphates on floristic corteges, and inter-species competition between the very rare Audouin's gull (*Larus audouinii*) and the yellow-legged gull, to the latter's advantage).

1.37 Waste from purification plants undergoing repair is also likely to affect the existing habitats. Large-scale recreational use of the location also produces effluent and larger waste products, particularly plastic bags, which become mixed in with schools of jellyfish and are then consumed by loggerhead turtles and bottlenose dolphins, causing obstruction of their digestive systems.

1.38 The habitat known as "silty sands in sheltered areas (Mediterranean) biocoenosis" in the large creeks and shallow bays of Lavezzi, Cavallu, Ventilegne, Santa Manza, Porto Novo and Rondinara remain under the influence of the nutrients and pollutants which arrive from the drainage basins, bringing the risk of hypoxia or anoxia owing to the low water renewal rate. This habitat can also prove to be a good indicator of anthropization level in the drainage basins themselves.

1.39 The habitats of submerged or semi-submerged sea caves are extremely sensitive to the impact of man. The Sdragonato cave and undersea caves used in diving are areas of particular sensitivity.

1.40 In France, the belts of *Lithophyllum lichenoides* have receded in polluted areas. The situation of the algal limestone belts, like that of *L. lichenoides* at the mediolittoral level, and their porous structure, makes these formations highly vulnerable to surface pollution by effluents, oily film on the water and other agents. The loss of even a little salinity in the water prevents them from forming. There could also be a threat from phosphate ions and detergents (LABOREL, unpublished, in Boudouresque *et al.*, 1990). A belt appears to take an exceptionally long time to build up (several centuries) and it is imperative to protect the existing ones (Boudouresque *et al.*, 1990).

2 Scientific and educational criteria

2.1 Baseline for monitoring studies

2.1.1 In considering the importance of preserving the habitats and meta-populations mentioned above, their vulnerability must be assessed with caution. Long-term observation of reliable scientific indicators will help distinguish between natural cycles and genuine man-induced disturbances.

2.1.2 This area can also play a role in the transfer of ecological engineering in relation to sustainable resource management. The length of time that protection measures have been in place in southern Corsica, differences in regulations and hence in the pressures from fishing activities inside this protected area in Corsica and in Sardinia, the conservation of reference areas (areas of strict protection) and finally the long-standing acquisition of reliable scientific data are factors which can be used in establishing sustainable development models for Mediterranean coastal areas.

ANNEX 3

VULNERABILITY TO DAMAGE BY INTERNATIONAL SHIPPING ACTIVITIES*

1 Natural factors

1.1 Hydrographical

1.1.1 The hydrographical conditions in the Strait of Bonifacio are strongly influenced by the region's landscape and climate. In particular, there are frequent very strong currents (3-4 knots) largely determined by the winds. These strong currents have already, on two occasions, caused the South Lavezzi signalling buoy to shift. They derive from cyclonic and anti-cyclonic conditions and are responsible for surface changes among the Tyrrhenian and Algero-Provencal water masses. Movements originating in the Atlantic and Tyrrhenian systems, being less subject to the vagaries of the weather where water masses of permanent density are concerned, also affect the bathymetric layer between 50 and 100 m. This situation explains (Romano, 2004), at least for surface waters, the existence of strong currents, especially as the strait between Corsica and Sardinia is characterized by a rise in depths.

1.1.2 The tides are semidiurnal with diurnal inequality, with a tidal range of less than 0.5 m.

1.2 Meteorological

1.2.1 Having a sub-humid Mediterranean climate, with temperate winters, the Strait of Bonifacio region is also particularly windy. Data recorded by the Pertusato semaphore station on the Bonifacio plateau show that the wind blows on 328 days per year (171 days of wind >16 m/s or 57.6 km/h). There is high frequency of winds of a speed faster than 8 m/s, almost exclusively from two directions: west (280°) and east (80°).

1.2.2 Given the hydrographical, topographical and meteorological conditions (shoals, strong winds and currents), the major risk to the Strait of Bonifacio area relates to accidental pollution from all forms of navigation in the Strait itself (several merchant ships have sunk in the past 30 years), and also on its periphery. The risk of collision with a bottlenose dolphin is also a threat identified by the Pelagos sanctuary for Mediterranean marine mammals.

2 Vessel Traffic characteristics

2.1 In 2009, Bonifacio Traffic (the Franco-Italian service) received 2,984 mandatory ship reports. Among them were 180 abnormalities (breaches of IMO Assembly resolution A.766(18)) of which 108 were for transport of dangerous goods, amounting to 147,013 tonnes (141,867 tonnes in 2008). The offences included 55 cases of sending a mandatory report after entering the system, 19 relating to ships found to be following a route that was not recommended (down by 33% on 2008) and 108 relating to ships carrying dangerous goods (+9%).

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2.2 In 2009 a total of 157 ships carrying dangerous goods passed through the Strait of Bonifacio:

- 70 container ships;
- 61 ro-ro ships;
- 13 bulk carriers;
- five chemical carriers;
- three oil tankers;
- three gas tankers;
- two ferries.

2.3 The 2,984 vessels which navigated in the Strait of Bonifacio in 2009 were distributed as follows:

European Union

Italy 831; France 371; Malta 251; Netherlands 152; Portugal 78; United Kingdom 67; Cyprus 50.

Non-EU

Turkey 100; Antigua 183; Bahamas 165; Panama 143.

2.4 The status that the Strait of Bonifacio enjoys as an international strait and the provisions of IMO resolution A.766(18) contribute to making it, although it is apart from the major shipping routes (3,000 ships per year) and its dangerousness is well known, an area in which the coastal authorities are confined to the role of spectator, waiting for a maritime accident to happen.

ANNEX 4

ASSOCIATED PROTECTIVE MEASURE FOR THE STRAIT OF BONIFACIO PSSA

Description of the Area

The Strait of Bonifacio separates the Italian island of Sardinia from the French island of Corsica; they are only 11 km apart. The Strait takes its name from Bonifacio, the southernmost town of Corsica. It enables passage from the Sea of Sardinia in the west to the Tyrrhenian Sea in the east. Its width varies from eight to ten nautical miles and its maximum depth is 100 m.

At the eastern end lies the Italian archipelago of La Maddalena, and Cavallo island and the Lavezzi Islands, belonging to France. This is a sensitive area for navigation. In the northern part of the Strait, ships have to avoid the reefs of Perduto and the Lavezzi Islands, while in the south lie the Sardinian islands of Razzoli and Persa. Navigation is possible along a narrow three-mile wide stretch and ships are asked to take a recommended route wide just over one mile.

Recommendation on navigation through the Strait of Bonifacio*

1 Use of ships' routeing

Vessels navigating in the Strait shall exercise full diligence and regard for the requirements of the existing recommended two-way route in the Strait of Bonifacio. Due to the narrowness of the Strait, masters of vessels shall ensure that an appropriate monitoring of the ship's route is done on board in order to avoid groundings and collisions.

2 Ship reporting and navigation information

Ships of 300 GT and over entering the Strait shall participate in the mandatory ship reporting system (BONIFREP) established by the competent authorities as described in IMO's publication on Ships' Routeing (Section G I/8).

3 Pilotage

Masters of vessels passing through the Strait are recommended to avail themselves of the services of a qualified pilot.

3.1 Categories of ships concerned

Ships for which the IMO Assembly recommends in its resolution A.766(18) of 17 November 1993 to Governments to prohibit or at least strongly discourage the transit in the Strait of Bonifacio: laden oil tankers and ships carrying dangerous chemicals or substances in bulk, as listed in the annex to resolution MEPC.49(31) adopted on 4 July 1991.

* The text on this APM is directly taken from document NAV 57/15, annex 2.

3.2 Description of the applicable procedure for requesting a pilot

Vessels wishing to order a Bonifacio Strait pilot should, as much as possible, send by e-mail or by fax the following information to the service named "Bonifacio Strait pilotage":

- ship's name and call sign;
- type of vessel and gross tonnage;
- draught;
- destination port/name and address of the local agent;
- boarding position and ETA.

24 hours prior to arrival, vessels should inform or confirm their ETA to the head office of the Bonifacio Strait pilotage service.

Once on Bonifacio Strait road, vessels should confirm their ETA 2 hours prior to arrival calling "Bonifacio Traffic" on VHF 10.

3.3 Description of the pilotage service

The pilotage area covers the Strait and its approaches. Usually the vessels entering the Strait board their pilots out of the "BONIFREP" zone.

The boarding positions are the following (WGS 84):

- Eastern boarding position: 41° 24'.80 N 009° 30'.00 E;
- Western boarding position: 41° 17'.28 N 008° 58'.50 E.

4.1 Relevant rules and regulations in force in the area

The Strait of Bonifacio falls into the category of "Straits used for international navigation" regulated by the "United Nations Convention on the Law of the Sea" (UNCLOS) better known as the Montego Bay Convention (10 December 1982).

The maritime traffic is represented mainly by merchant ships that cross the Strait along east-west direction (several dozens of ships per day). Considering the traffic that occurs in the direction north-south, it concerns mainly passenger ships (approximately ten daily connections) is very intense and growing during the summer, especially between Bonifacio (Corsica) and Santa Teresa di Gallura (Sardinia). In addition, there are about 5,000 pleasure craft crossing this area during the summer season.

Regulation applied to navigation on the Strait of Bonifacio is based on resolution A.766(18) adopted in 1993 by IMO. This text urges ships carrying hazardous materials to avoid along this seaway. It has been complemented by circulars of IMO SN/Circ.198 and 201 (26 May 1998) concerning "routeing measures other than traffic separation schemes" and "mandatory ship reporting systems" applicable to the Bouches of Bonifacio from 1 December 1998 at 00:00 a.m.

France and Italy have implemented these provisions through the establishment of the rule "Bonifacio Traffic", that represents a more restrictive device; inasmuch as the French and Italian ships carrying hazardous materials are banned entirely from transit of the "Bouches of Bonifacio".

For this reason, in 1993, both Italy, with the Decree of 26 February 1993 of the Italian Ministry of Merchant Marine, and France, by ordinance of 15 February of the Prefecture of Toulon, have banned the transit of tankers flying Italian or French flag that carrying hydrocarbons and other hazardous and noxious substances, as defined by international conventions in force in both countries¹.

On the basis of these decrees, the prohibition of navigation in the Strait does not apply to merchant ships flying flags of third countries and to Italian and French ships empty or those that carry different cargoes, which, even if properly ballasted, however represent an environmental risk factor in case of accident for the presence of fuel in their tanks. This ban has led to a reduction of marine traffic, but at the same time, it leaves the possible passage of ships flying other flags and often these ships are in unsafe conditions (especially the lack of double hull or similar technologies) and poor maintenance.

Moreover, the arrêté n° 84/98 of 3 November 1998 of the Prefecture Maritime of Toulon² (amended by the arrêté 56/2003 of the Prefecture Maritime of Toulon) disciplines the navigation in the Strait of Bonifacio to prevent accidental episodes of marine pollution.

It institutes areas of caution at the extreme of bearings recommended double sense of movement, and the creation of the system of monitoring of ships from a radius of 20 miles from the Strait of Bonifacio. In parallel, the Decree of Italian Ministry of Transport and Navigation on the organization of traffic in the Bonifacio's Strait establishes the same procedures contained in the Decree n° 84/98.

Furthermore, a technical agreement between Italy and France to implement the reporting system of the ships in the Bouches of Bonifacio (Bonifacio Trafic) was signed in Rome on 3 June 1999.

Moreover, in order to restrict dangerous maritime traffic through Bonifacio Strait, it was drawn up in Italy the "*Accordo volontario per l'attuazione di una serie di interventi finalizzati al conseguimento di più elevati standard di sicurezza ambientale in materia di trasporti marittimi di sostanze pericolose*" (Voluntary agreement to carrying out a series of interventions aimed at the achievement of higher security environmental standards concerning the maritime transport of dangerous substances), signed by the Italian Ministry of the Environment, Land and Sea, by the Italian Ministry of Transportation and Navigation, by Confindustria, by Assoport, by some environmental organizations and by unions (Rome, 1 June 2001).

Inter alia, the sixth article of the agreement foresaw the commitment by companies to use from 1 July 2001 ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 solely based on contracts that explicitly exclude the transit in the Strait of Bonifacio, against a number of other compensations by government, including the engagement in an international venue for the encouragement of a PSSA in the Strait of Bonifacio.

¹ Particularly, the Decree n°1/93 (signed in Toulon on 15 February 1993) of the Prefecture maritime de la Méditerranée, applicable only to French ships, prohibits in the Bouches of Bonifacio the circulation of tankers that carrying hydrocarbon and ships carrying hazardous or toxic materials. The annex of the Decree lists the hydrocarbons and the substances in question, in reference to the MARPOL Convention. At the same time, the Decree of the Italian merchant marine of 26 February 1993 prohibits the movement of Italian tanker carrying hydrocarbon and ships carrying hazardous or toxic materials.

² Arrêté Prefectoral n. 84/94 del 3 novembre 1998 della Prefettura Marittima di Tolone – "Réglementant la navigation dans le Strait of Bonifacio en vue de prévenir les pollution marines accidentelles".

Particularly, the sixth article of the Voluntary Agreement provides that:

"6.1 – Confindustria and the interested industrial sectors undertake to promote immediately the insertion in the charter party for the use of ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 of clauses that expressly exclude the transit in the Strait of Bonifacio.

6.2 – From 1 July 2001, Confindustria and the interested industrial sectors, also on behalf of firms and associated companies, undertake to use ships carrying dangerous substances listed in Annexes I and II of MARPOL 73/78 solely based on contracts that explicitly exclude the transit in the Strait of Bonifacio

6.3 – The government engages to act in all EU and international venues to achieve the elimination of dangerous substances traffic in the Strait of Bonifacio, starting by defining by IMO the Strait of Bonifacio as Particularly Sensitive Sea Area (PSSA). Moreover, the government engages to promote every type of voluntary adherence of the EU member and candidate states to the above-mentioned elimination of dangerous substances traffic in the Strait of Bonifacio."

In the end, by the Decree of the Italian Ministry of Infrastructures and Transport of 29 July 2008 "definition of the control of maritime traffic area in the Bouches of Bonifacio and activation of the relevant control centre at the Harbour Office of La Maddalena", was activated the centre VTS (Vessel Traffic Services) of the Bouches of Bonifacio, whose international name is "Bonifacio Trafic" and whose headquarters is located at the area Guardia Vecchia, under the authority of the Harbour Office – Coast Guard of La Maddalena.

Existing routing measures and mandatory systems are set out in the chartlet, below.

CHART OF THE EXISTING ROUTING MEASURES AND MANDATORY SHIP REPORTING SYSTEM

