2.5 COASTS AND MARINE ENVIRONMENT

The uses traditionally made of the sea by society exert pressure on it and have an impact that can result in over-exploitation of resources and deterioration in the quality of marine water and coastal areas. Fishing, shipping, energy production, tourism and the biotechnology industry are some of the economic sectors that take place in or affect the marine environment. Pressures exerted on seas and oceans include urban, industrial and shipping waste; alteration of marine species' populations and habitats; over-exploitation of living marine resources; underwater noise; urban pressure; and transformations deriving from climate change.

Steadily growing concern about and awareness of the need to protect seas and coastal areas mean that their conservation is now one of the main challenges and primary goals of international policy. Many international conventions and regulations have been established in response to the need for conservation. International conventions, like the OSPAR convention for the North-East Atlantic, and the Barcelona Convention for the Mediterranean sea, of which Spain is a contracting party, have been in place for many years and have resulted in an encouraging number of related programmes and measures. Within the EU, it is worth highlighting the Water Framework Directive (2000/60/EC) and the Marine Strategy Framework

Directive (2008/56/EC) on the protection of the marine environment, as well as Recommendation 2002/413/EC on the implementation of integrated management in coastal areas in Europe, and the Blue Paper on an integrated maritime policy for the European Union.

In Spain, the great potential of the country's seas as a source of resources and base for economic activity makes it essential that conservation and development go hand in hand. To achieve this, a framework is needed to guarantee sustainable management and planning through programmes designed to protect the coast and sea. Law 41/2010, of 29 December, on the protection of the marine environment, sets out the

INDICATOR	GOAL	TREND
Marine areas protected by the Natura 2000 network	Preserve the natural wealth of the marine environment	Gradual increase
Demarcated coastline	Demarcate the publicly owned shoreline to guarantee public use, regulate rational use and ensure appropriate coastal water and shoreline quality	The length of coastline demarcated is increasing and has now reached 94%
Jellyfish swarms	Monitor the presence and number of jellyfish in coastal areas	As the historical series is very short, it is not possible to identify a clear trend in sightings
Quality of coastal bathing waters	Maintain good health status of waters to ensure they remain suitable for bathing	Coastal bathing water quality remains stable

legal framework governing adoption of the measures needed to achieve or maintain the good environmental status of the marine environment, transposing the Marine Strategy Framework Directive (2008/56/EC) into Spanish law.

The aim of this law is to achieve good environmental status for the marine environment through appropriate planning and legislative protection. Under it, marine strategies become the means of implementing these planning measures and individual strategies have to be drawn up for each of the marine areas established.

These marine strategies, which the MARM is currently working on, require an initial assessment of the state of the marine environment and of its environmental status. They also require establishment of a series of environmental goals (which will include a set of indicators to monitor attainment of these goals) and programmes to monitor and measure attainment of good environmental status.

In the context of ensuring marine waters' good environmental status, it is worth noting the applicable criteria and methodological standards that, under the Commission's Decision of 1 September 2010, provide the starting point for developing coherent approaches when drawing up marine strategies.

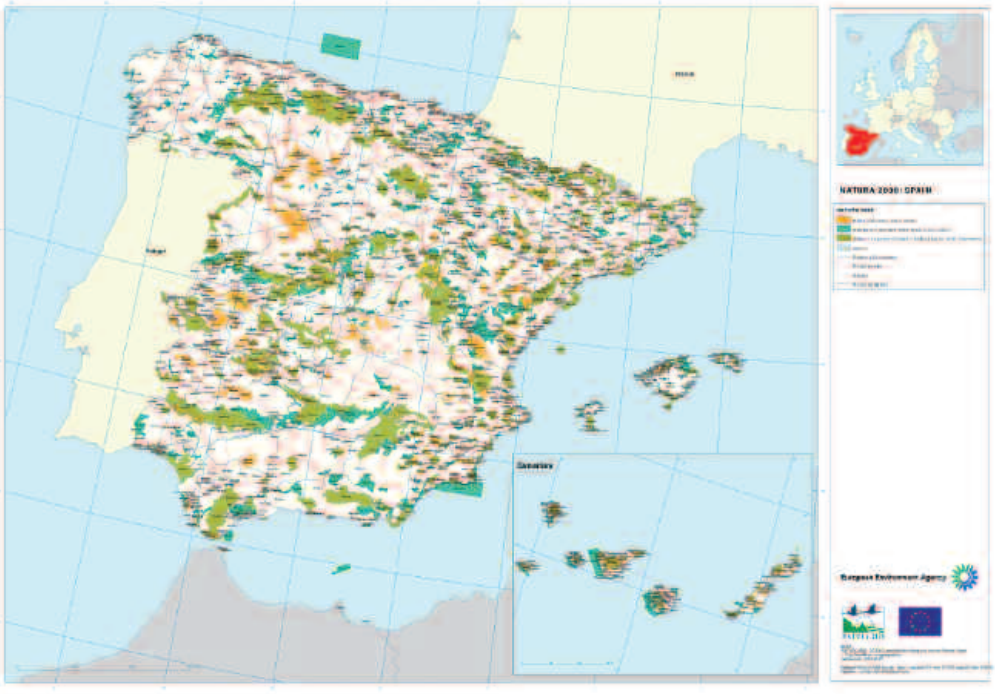
As data for the set of indicators referred to in the aforementioned Decision are not yet available, this chapter includes, as a preliminary approach to the issue, an assessment of the quality of coastal bathing waters to determine their status and evaluate compliance with the guidelines established.

As no new artificial reefs were installed in 2010, there were no year-on-year variations in the information contained in this indicator.

Marine areas protected by the Natura 2000 network

In May 2010, Spain contributed almost 6% of the EU's Marine Sites of Community Importance

NATURA 2000 NETWORK IN SPAIN (2010)



Source: EEA, March 2011

In May 2010, Spain's 97 marine areas assigned Site of Community Importance (SCI) status under the Habitats Directive covered a total of 7,926 km^2. This put Spain, which is home to 5.96% of the EU's overall SCI area, in fifth position in the EU ranking by SCI area behind France, Germany, Denmark and Holland.

On the same date, Spain had 1,034 km^2 of marine Special Protection Area (SPA) included in the Natura 2000 network, positioning it 12th in the EU-27 ranking.

SITES OF COMMUNITY IMPORTANCE (HABITATS DIRECTIVE)

	No of marine sites	Marine area (km²)	%
Spain	97	7,926	5.96
EU-27	1,412	132,923	100.00

Source: Eurobarometer. Natura 2000 network (data as at May 2010)

SPECIAL PROTECTION AREAS (BIRDS DIRECTIVE)

	No of marine sites	Marine area (km²)	%
Spain	33	1,034	1.01
EU-27	700	102,663	100.00

Source: Eurobarometer. Natura 2000 network (data as at May 2010)

If all of the areas classed as Protected Area (PA) and those belonging to the Natura 2000 network are taken into account, in 2010 Spain's marine protected area exceeded one million hectares (1,088,260 ha). Considered separately, the marine area classified as PA in 2010 totalled 267,736.64 ha, while that included in the Natura 2000 network stood at 1,048,879.18 ha. The sum of these two figures does not add up to the aforementioned total due to the overlaps caused by the fact that many of these protected areas belong to both protection categories.

Under the framework established by the Convention on Biological Diversity, participating states are obliged to create coherent networks of protected areas covering both terrestrial and marine environments. Law 42/2007, of 13 December, on natural heritage and biodiversity, establishes Marine Protected Area as one of the natural protected area categories and specifies that these should be integrated into the Network of Marine Protected Areas. Law 41/2010 formally establishes the Network of Marine Protected Areas and sets out its targets, the areas it covers and the mechanisms via which these should be designated and managed.

The Network of Marine Protected Areas will not only include protected areas for which the State has jurisdiction, but also areas that are declared and managed as such by regional governments as per Article 36.1 of Law 42/2007, of 13 December. It will also cover areas protected under the provisions of regional fishing legislation proposed by regional governments, subject to their authority to create additional regulations to protect the environment within their jurisdiction.

NOTES

- The Natura 2000 network is an ecological network made up of designated areas pursuant to the Birds Directive (which establishes Special Protection Areas for wild birds — SPAs) and the Habitats Directive (which establishes Sites of Community Importance — SCIs — and Special Areas of Conservation — SACs).
- For each area belonging to the Natura 2000 network, the national government has submitted a standard data form containing a detailed description of the site and its ecology. The European Topic Centre on Biological Diversity (ETC/BD), which has its headquarters in Paris, is in charge of validating this data and creating a Europe-wide database.
- Under Spanish legislation, natural protected areas are defined by Law 42/2007, of 13 December 2007, on Natural Heritage and Biodiversity (see chapter on Nature and Biodiversity).

SOURCES

- Natura 2000 network barometer. DG ENV. European Commission.
- Holder of copyright of the map: EEA.

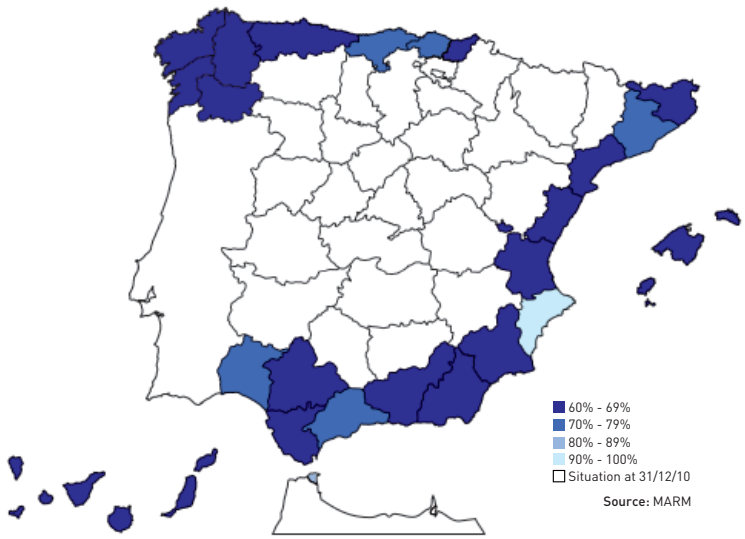
FURTHER INFORMATION

- **http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm**
- **http://www.eea.europa.eu/data-and-maps/data/natura-2000/**

Demarcated coastline

94% of Spain's coastline is now demarcated

LENGTH OF DEMARCATED COASTLINE



In 2010, 94% of Spain's coastline was demarcated. It is worth pointing out that coastal demarcation has not occurred uniformly — although only 4,659 kilometres were demarcated between 1988 and 2003, the rate subsequently increased and 3,830 kilometres have now been done since 2004. In fact, in 2009 alone a further 768 kilometres were demarcated and in 2010 another 589 kilometres of coastline were included. In total, this adds up to almost 8,500 km of coastline.

Under Spain's Shores Law, demarcation is the administrative procedure used to mark the boundary of the publicly owned shoreline. This declares the existence, length and boundaries of the assets within the publicly owned shoreline on a particular section of coast.

This mechanism is applied via a procedure that requires rigorous technical assessments, declarations by private individuals (who are personally notified) and reports by other authorities.

Demarcation is essential to achieving the goals set out in the Shores Law, namely guaranteeing public access and use, regulating rational use of its assets and ensuring appropriate coastal water and shoreline quality.

Protection of Spain's coasts is the constitutional duty of both national and regional government. The principal piece of legislation in this regard is Law 22/1988, of 28 July, on Coasts, which regulates land use in coastal areas.

This law establishes the boundaries of the publicly owned shoreline and stipulates that adjacent privately owned land should be subject to regulations that impose certain minimal restrictions on ownership that complement the regulations implemented by regional government. These restricted coastal strips are classified as:

a) *transit easement* (a 6-metre strip, extendable to 20 metres), which should remain permanently open to pedestrian transit;

b) *protection easement* (a strip 20–100 metres wide, depending on zoning under the planning regulations in force when the law came into effect, and extendable to 200 metres). Various uses are forbidden in this strip, particularly residence and occupancy, which is designated for use by public services and facilities;

c) *sea access easement*, which covers land adjacent to or contiguous with the publicly owned shoreline and is of the length and width required to ensure public access to and use of the sea.

The Law also defines an *area of influence* that extends a minimum of 500 metres inland from the shoreline, within which minimum development is permitted so as to ensure respect for the environment and protection of the coastline.

Therefore, creation of demarcation boundaries, in other words physically separating the shoreline from surrounding privately owned land, is fundamental to application of legislation to protect the coastline.

NOTES
- The MARM is currently carrying out demarcation and is processing and approving the records that define the boundary of the publicly owned shoreline.
- To raise awareness about this task, the Directorate-General for Coastal and Marine Sustainability has launched a project that will produce maps and aerial photographs of coastal areas showing the boundaries of the publicly owned shoreline and the privately owned land affected by protection easement. This information can be accessed either via the MARM's on-line viewer (http://sig.marm.es/dpmt/) or via the on-line Land Register managed by the Ministry of Economy and Finance (www.sedecatastro.gob.es).

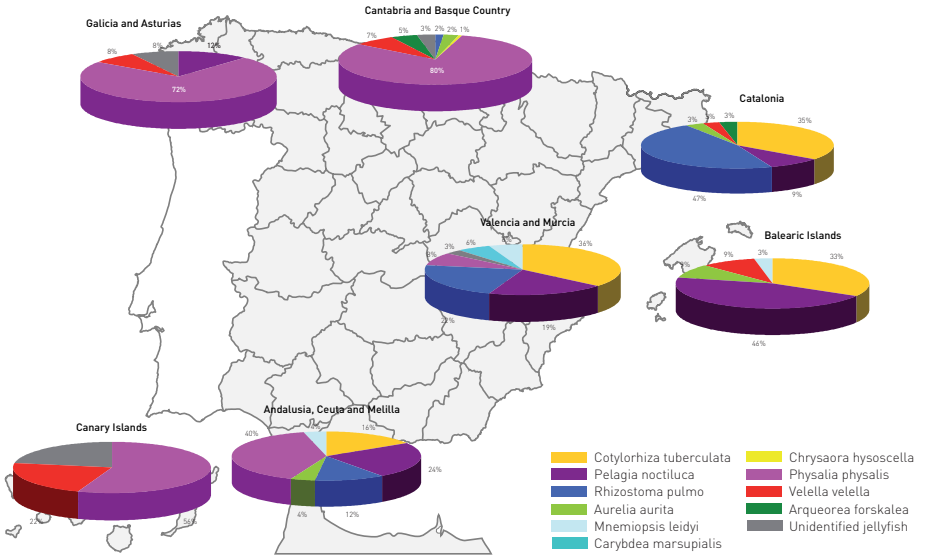
SOURCES
- http://www.marm.es/es/costas/temas/gestion-del-dominio-publico-maritimo-terrestre/default.aspx

FURTHER INFORMATION
- **http://www.marm.es**
- **http://www.marm.es/es/costas/temas/default.aspx**

Jellyfish swarms

Large swarms of gelatinous planktonic organisms continue to be found along Spain's coastline, particularly during summer months

SIGHTINGS OF GELATINOUS PLANKTONIC ORGANISMS IN SPANISH WATERS, BY AREA (2010)



Source: Directorate-General for Coastal and Marine Sustainability, MARM.

The presence of gelatinous planktonic organisms (including jellyfish and other cnidaria, ctenophora, salpae and pelagic molluscs) in the sea is a natural phenomenon. Their presence in Spanish coastal waters is the result of distribution patterns particular to individual species, their abundance and favourable weather conditions (rain, wind, marine currents, etc.). In many cases, these organisms' appearance is seasonal and their numbers may vary widely from year to year and season to season (although the Mediterranean species are more predictable and usually appear at the start of spring and the end of summer).

Among the cnidaria, there have been sightings of box jellyfish (*Carybdea marsupialis*); hydrozoa (*Olindias phosphorica*, *Aequorea forskalea*, *Physalia physalis* and *Velella velella*); true jellyfish (*Pelagia noctiluca, Rhizostoma pulmo, Chrysaora hysoscella, Cotylorhiza tuberculata* and *Aurelia aurita*); and ctenophora (*Mnemiopsis leidyi*). All of the cnidaria have specialised cells called cnidocytes or cnidoblasts that, on contact with human skin, release a toxin that produces the jellyfish's characteristic sting, often

a cause of alarm among bathers in the summer. It is worth noting that the ctenophore *Mnemiopsis leidyi* does not belong to the cnidaria, does not contain the aforementioned cells and, therefore, does not sting.

Analysis of sightings on the Mediterranean coast shows that the jellyfish found most frequently in this area include *Rhizostoma pulmo, Cotylorhiza tuberculata, Carybdea marsupialis* and *Mnemiopsis leidyi*. Others, such as *Pelagia noctiluca* and *Aurelia aurita*, although sighted mainly on the Mediterranean coast, have also been detected in colder waters in the Bay of Biscay. Some species, such as *Velella velella*, are found all along the Spanish coastline. The cold-water species *Physalia physalis*, known as the Portuguese man-of-war, has been seen in the Canary Islands and in the Bay of Biscay, while sightings have also been recorded in Andalusia and on Spain's south-east coast.

After the initial 2007 Pilot Campaign and the 2008 and 2009 Jellyfish Campaigns, the Ministry of the Environment and Rural and Marine Affairs continued the series with the summer 2010 campaign, the results of which are available on its website. As well as containing scientific information, this website provides reports on results, a sightings viewer and a pilot scheme to predict the appearance of jellyfish. These data can be accessed at http://www.marm.es/es/costas/campanas/campana-medusas/default.aspx.

The data collected show that species sighted regularly all year round included *Pelagia noctiluca, Rhizostoma pulmo, Cotylorhiza tuberculata, Physalia physalis* and, to a lesser extent, *Velella velella*, while other organisms were found in Spanish waters much less frequently. This could indicate that these waters are natural habitats for some species, while in other cases sightings could be linked to seasonal natural or anthropic phenomena.

NOTES

- In order to determine the true scale of the problem of proliferating numbers of jellyfish in Spain's coastal waters, detect their presence as early as possible and inform the public, since 2007 the Ministry of the Environment and Rural and Marine Affairs has run an annual campaign each summer, known as the Jellyfish Campaign, to study, detect and track jellyfish swarms and waste. This campaign is carried out in Galicia and Asturias; Cantabria and the Basque Country; Catalonia; Valencia and Murcia; Andalusia; Ceuta and Melilla; the Balearic Islands and the Canary Islands.
- The sightings data shown in the charts are based on observations made offshore and within 100 metres of the coast.
- The indicator measures sightings of gelatinous planktonic organisms. These comprise organisms that live freely in the water column and are composed of over 90% water. This group is made up of various types of animal, all of which are characterised by their transparency and fragility. It comprises cnidaria (including organisms such as jellyfish, hydrozoa, and box jellyfish), ctenophora, salpae and pelagic molluscs. Most of these organisms travel wherever the waves and wind take them, although some species are capable of limited movement.

SOURCES

- Directorate-General for Coastal and Marine Sustainability, MARM.

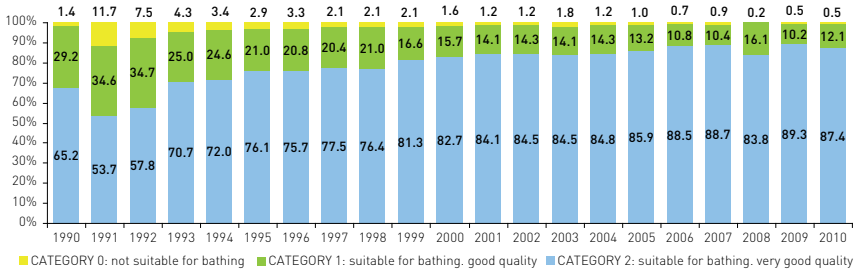
FURTHER INFORMATION

- http://www.marm.es
- http://www.planmedusas.es

Quality of coastal bathing waters

Coastal bathing water quality remained at similar levels to the previous bathing season, with waters not suitable for bathing staying at 0.5%

QUALITY OF COASTAL BATHING WATERS
Percentage of sampling points by category



Source: MSC

During the 2010 bathing season, coastal bathing water quality remained at similar levels to the previous bathing season. Waters classed as not suitable for bathing stayed at 0.5%, while there were variations in the percentage of bathing waters classified as good quality (12.1%) and those rated as being very good quality (87.4%).

NOTES

- In accordance with the terms of Directive 76/160/EEC, concerning the quality of bathing water, the Ministry of Health, Social Policy and Equality submits an Annual Summary Report of Bathing Water Quality in Spain to the European Commission. This describes the key findings of hygiene monitoring of such waters carried out by regional governments and the Autonomous Cities of Ceuta and Melilla in accordance with Royal Decree 734/88 of 1 July.
- On 15 February 2006, the new Bathing Water Quality Directive (2006/7/EC) was approved. Among other aspects, this Directive modifies the current bathing water classification system, establishing four assessment categories (excellent, good, sufficient and poor), reducing the number of parameters considered and defining water quality at each point using a three-year average. This Directive was transposed into Spanish law by Royal Decree 1341/2007.
- Under the new Directive, classification should be performed using data from the current season together with the data for the last three years. The new classification is as follows: poor, sufficient, good and excellent.
- However, this new classification cannot be carried out until the 2011 bathing season, when it will also include the data for the previous three years (2008, 2009 and 2010). Until then, the former classification will be used. The Hygiene Classification of Bathing Water at Sampling Point follows the criteria below:
  - **CATEGORY 2:** Water suitable for bathing, very good quality. Such water simultaneously meets the following conditions:
    1. At least 95% of samples must not exceed the mandatory value for *Escherichia coli.*
    2. At least 80% of samples must not exceed the guide value for *Escherichia coli.*
    3. At least 90% of samples must not exceed the guide value for intestinal enterococci.
  - **CATEGORY 1:** Water suitable for bathing, good quality. Such water meets condition 1) of Category 2, but not conditions 2) and/or 3) of Category 2.
  - **CATEGORY 0:** Water not suitable for bathing. Such water does not meet condition 1) of Category 2.

SOURCES

- Data provided by the Sub-Directorate-General for Environmental Health and Health and Safety at Work. MSPSI.

FURTHER INFORMATION

- http://nayade.msc.es/Splayas/home.html
- http://ec.europa.eu