Conservation Plan POST- LIFE

# LIFE 07 NAT ES/000732

# LIFE+INDEMARES: Inventory and designation of the Natura 2000 network in marine areas of the Spanish State

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# 1. Introduction: Project LIFE+ INDEMARES: Inventory and designation of the Natura 2000 network in marine areas of the Spanish State.

## 1.1. Background

Spain has the second largest sea surface area of any country in the European Union (EU) with almost 1 million km$^2$ of important, biodiverse marine environments. Despite its importance, in 2009 less than 1% of this area was protected.

The European Commission (EC), concerned by the progressive loss of biodiversity in habitats across Europe, promoted legislation in May 1992 obliging Member States to declare spaces to protect and preserve the most threatened habitats and species of flora and fauna in Europe (Habitats Directive and Birds Directive), which make up the Natura 2000 network (N2000).

The evaluation made by the EC on the adequacy of the national proposals for areas declared part of the Natura 2000 network in the marine sector reflected large gaps for most of the habitats and marine species in all bio geographical regions, a fact which threatened habitats and endangered species and allowed the overexploitation of natural resources. Similarly, the degree of protection of the sea surface, especially in areas some distance from the coast, was very far from meeting the objective to protect at least 10% of the world's marine regions, which was established in the United Nations Convention on Biological Diversity (CBD).

To address the need for spaces conservation in the marine environment, there is an the urgent need to address the lack of scientific information on the location, distribution and characteristics of species and habitats, an activity that requires a high level of technical and material specialization and is economically very costly. In addition, it is necessary to find a consensus among the social actors who use the sea, especially fishermen, with the aim of achieving the social, economic, and environmental sustainability of their activities.

In 2009, in order to overcome these shortcomings the INDEMARES LIFE+ project was set up, with the following aims:

- The project was partly addressed to the declaration of SCIs, through the study of 10 large areas distributed across the three marine biogeographic regions of Spain. The selection of these areas, which are listed below, was based on their broad natural representation, the presence of threatened species or habitats and the existence of areas of high ecological value, with a surface area of almost 5 million hectares:

- Atlantic Region:
  - The Galicia Bank.
  - The system of submarine canyons of Avilés.
  - The mud volcanoes of the Gulf of Cadiz.
- Mediterranean Region:
  - The system of submarine canyons of the Western Gulf of Lion.
  - The Minorca Channel.

- The Ebro Delta and the Columbretes Islands.
- Seco de los Olivos.
- The Alboran Island.

- Macaronesian Region:
  - The South of Fuerteventura and Lanzarote.
  - The Conception Bank.

- Additionally, the project aimed to confirm the values of the IBA (Important Bird Areas) that were designated in the LIFE project 04NAT/ES/0049 and the declaration of the corresponding SPA.

Furthermore, the Prioritized Action Framework for the financing of the Natura 2000 network for the period 2014-2020 in Spain gave response to article 8 of the Habitats Directive (92/43/EEC) to contribute to the management and financing of the Natura 2000 Network. In Spain this PAF has been developed through a LIFE project carried out by the Fundación Biodiversidad, and has established the objectives to be attained and the measures and sources of funding necessary for the maintenance or restoration of a favourable conservation status of the habitats and the species present in the Natura 2000 network, both in the terrestrial and the marine environment. The plan was delivered to the European Commission in a draft version in March 2013 and subsequently in June 2014[1].

## 1.2. Objectives and actions of the LIFE project

The main objective of the LIFE+ INDEMARES project is to identify and designate sites of high ecological value to comply with European regulations, helping to achieve good environmental status and allowing the sustainable development of socio-economic activities in the relevant areas.

The activities carried out through the project were aimed at alleviating the lack of scientific information, declaring spaces in the Natura 2000 network, assessing and quantifying the impacts of human activities and raising public awareness of the importance of our seas, all in order to manage the most ambitious and consensually agreed N2000 network in Europe. Specifically:

- Completing the identification of the Natura 2000 marine network in Spain through characterization studies and identification of benthic habitats and the pelagic species (cetaceans and turtles) present in the lists of the Habitats Directive, as well as seabirds present in the annexes of the Birds Directive.
- Promoting the participation of all parties involved in the research, conservation and management of the sea and its resources and involving users of the sea in the project.
- Creating guidelines for the management and monitoring for the proposed sites.
- Raising awareness of the importance of conservation and sustainable use of marine biodiversity.

[1] http://www.prioridadrednatura2000.es/wp-content/uploads/2013/02/MAP_version-2.pdf

To achieve these objectives more than 40 activities have been carried out, aimed at obtaining the necessary information, both scientific and socio-economic through 147 oceanographic campaigns. In a second phase, the results were analyzed in a coherent manner in order to allow, through public participation, the development of guidelines for the management of the Natura 2000 network and the designation of spaces in this European ecological network.

INDEMARES has integrated the work of well-respected institutions in the field of management, research, and conservation of the marine environment. The Fundación Biodiversidad of the Spanish Ministry of Agriculture, Food and the Environment has coordinated a multi-disciplinary team that have been directly involved in the project, 300 people belonging to the Ministry itself, the Instituto Español de Oceanografía (Spanish Institute of Oceanography), the Consejo Superior de Investigaciones Científicas (Spanish National Research Council), ALNITAK, the Coordinadora para el Estudio de los Mamíferos Marinos (Coordinator for the Study of Marine Mammals), OCEANA, the Sociedad para el Estudio de los Cetáceaos en el Archipiélago Canario (Society for the Study of Cetaceans in the Canary Archipelago), SEO/BirdLife and WWF España among many other entities such as the universities of Malaga, Autónoma de Madrid and Barcelona.

For the coordination of a such a multidisciplinary team, working with the Public Administration, scientific bodies and NGOs concerned with nature conservation, three Committees have been established (management, scientific and communication), gathered periodically to ensure that the technical and financial implementation and scientific coordination and communication have been successful.

INDEMARES had a budget of EUR 15.4 million, 50% funded by the LIFE+ program of the European Commission with the remainder provided by the project partners.

## 1.3. Results

In order to achieve such ambitious targets, INDEMARES has developed in areas scattered throughout the three Spanish marine biogeographic regions (Atlantic, Mediterranean and Macaronesian), more than 40 interventions, divided into five large blocks:

- Scientific studies, through 147 oceanographic campaigns using 23 vessels to identify, characterize and map benthic habitats and pelagic seabird populations in selected areas.
- Analysis of human activities, their interactions and impacts in the selected zones and their areas of influence.
- Actions aimed at the development of the guidelines for the management and delivery of the Standard Data Forms (SDF) for each and every one of the marine areas declared and proposed in the Natura 2000 network.
- Information, training and participation actions, in order that users of the sea are aware of the studies, proposals for designation of the Natura 2000 network sites and possible regulations, and are therefore involved in future management from the beginning. This process also helps avoid social conflicts.

- Actions taken with the aim of spreading awareness of the objectives, campaigns and results of the project among society in general with an emphasis on sectors whose activities are related to the marine environment.

Baseline information, both scientific and socio-economic, obtained in the first phase of the project has led, in a second phase, to a consistent analysis of the results and has opened the way for a process of public participation, which has in turn made it possible to produce the Natura 2000 network management guidelines and the designation of spaces in this European ecological network.

The selection of the 10 areas of study, with a surface area of almost 5 million hectares, was made based on the different biogeographic representations, the presence of vulnerable and/or threatened species and habitats as defined in the annexes of the Habitats and Birds Directives, and the existence of areas of high ecological value in a good state of environmental conservation. These areas include features such as mountains or submarine banks, canyons, areas of continental slope and shelf, volcanoes and muddy bottoms: all of which, due to their geomorphology, contain a high degree of benthic and pelagic biodiversity that in turn attracts predatory species such as cetaceans and seabirds. For these reasons, the following areas tend to be subject to overfishing and require a greater scientific knowledge in order to achieve sustainable and responsible management:

- Atlantic region: the Galicia Bank, the Avilés system of submarine canyons and mud volcanoes in the Gulf of Cadiz.
- Mediterranean region: the system of Western submarine canyons of the Gulf of Lion, the Minorca Channel, the Ebro Delta and the Columbretes Islands, the South of Almeria-Seco de los Olivos and the Alboran Island.
- Macaronesian region: the South and East of Fuerteventura and Lanzarote and the Conception Bank.

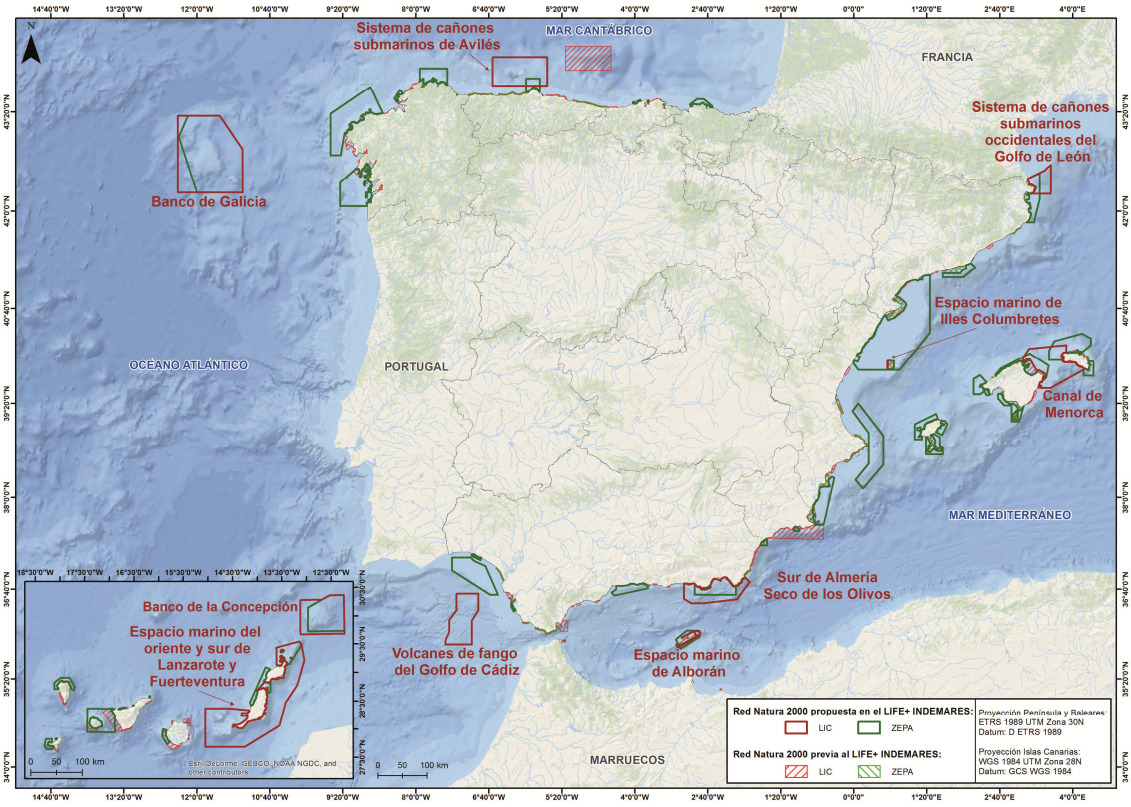


Image 1: Natura 2000 marine network

In addition to the 10 selected areas, the 147 oceanographic campaigns and other INDEMARES studies have also been directed to confirm and complete the existing scientific information needed to declare a special protection area for birds (SPA) in 39 of the 42 Important Bird and Biodiversity Areas (IBAs) described by SEO/BirdLife in the 2009 project LIFE04NAT/ES/00049.

The 55 oceanographic campaigns for the characterization of benthic habitats in 10 areas took place aboard 23 oceanographic vessels and small boats equipped with the most advanced and specialized technical and human resources available in Spain for the study of deep sea habitats. The campaigns were multidisciplinary with more than 29 types of direct and indirect measuring instruments being used, yielding precise geomorphological, oceanographic and ecological information covering more than 5 million hectares. The data collected is the widest and most detailed in Europe, with about 112 benthic habitats listed in the Spanish Inventory of Habitats and Marine Species (IEHEM) covering 1.5 million hectares of which 373,651.02 belong to 55 different habitats listed in Annex I of the Habitats Directive (HD):

- Habitat 1170: 48 habitat types, (350,519.59 ha).
- Habitat 1180: 4 habitat types, (17,999.68 ha).
- Habitat 1110: 2 habitat types, (1,501.76 ha).
- Habitat 1120: 1 habitat type, (3,630.00 ha).

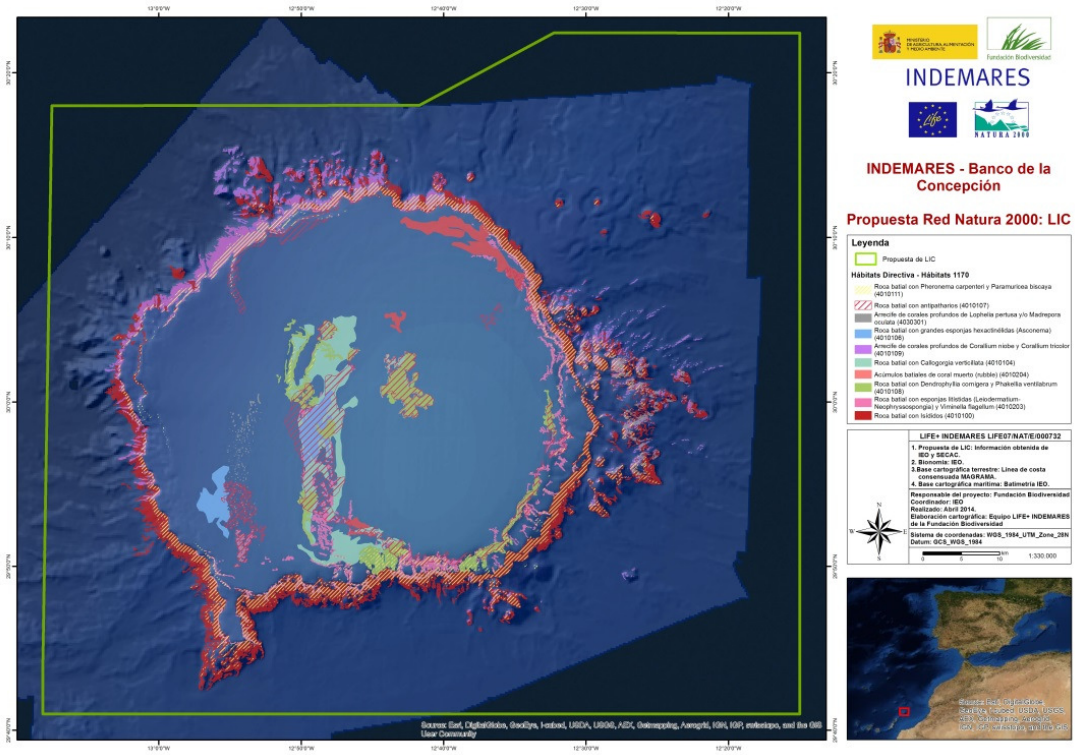


Image 2: Mapping of habitat 1170 (Reefs) in the Conception Bank SCI.

In addition, thanks to the INDEMARES studies, it has become necessary to propose to the EC the inclusion of 3 new habitats, which occupy an area of 362.689.84 ha, in Annex I of the Habitats Directive. This proposal is based mainly on the representativeness of these habitats in the waters of southern Europe, their ecological importance and vulnerability and, according to the Scientific Committee of the project, requires at least the same measures of conservation and monitoring as the habitat already contained in the Directive: sedimentary anthozoa, maërl and rhodolith beds and gravel bottoms. To do so, a report has been developed that outlines the reasons why the listings of the directive should be expanded and includes a description of the three proposed habitats.

Studies on cetaceans and turtles have been carried out through 39 oceanographic sighting campaigns based on linear transects and using visual methods and photo identification. These studies have provided estimates of the presence and abundance of such pelagic species, as well as the identification of their most important areas of distribution. In addition, through laboratory experimentation, tools for the mitigation of impacts produced by human activities such as tourism, defence, transport and fishing have been developed in relation to this group of animals, which will facilitate decision making regarding the establishment of management measures that allow the combination of these activities with the conservation of important areas for the species in question.

As for seabirds, 53 oceanographic campaigns based on visual studies and tagging with GPS have allowed the advancement of knowledge about the usage patterns of the 16 species of seabirds in Annex I of the Birds Directive within their areas of distribution, as well as the impact of fishing activity. During the oceanographic campaigns about 250,000 seabirds were registered and 794 specimens were tagged with remote tracking devices resulting in 859,973 pieces of location data. This information has made it possible to confirm the results of the inventory of marine IBAs.

The documentation generated from the oceanographic results includes a full report of each of the campaigns carried out and a final document, which includes, for each of the declared areas, all the information obtained, ranging from raw data and study methodology to management proposals, ecological values, fisheries impact data, legislative frameworks, etc.

Several types of analysis have been combined in order to assess the impact of human activities. Human activities and their associated trends have been monitored on the basis of a compilation of all the information on human use in the 10 areas of study and in their areas of influence. From these studies of human activities the essential information required for the proper management of the areas has been generated:

- Spatial distribution and intensity of fishing activities.
- Geo-referenced threats matrix.
- Cost/benefit analysis of the establishment of the Natura 2000 network.

In addition, an estimate has been made, based on previous studies in other similar marine areas in Europe, of the cost/benefit of introducing the N2000 network in each space. As the definitive management plans have not yet been put into practice, the current estimate will need to be expanded. An assessment has been made of the impact of fisheries based on the results of the footprint analysis of professional and recreational fishing, made for each of the 49 spaces of the N2000 network resulting from the project. Books on fishing, the geo-referenced information of blue boxes (Vessel Monitoring System (VMS)), and interviews and surveys with the fishermen have been used among other sources of information to compile the data. In addition, by way of a pilot experience, a study has been carried out in four reference areas on the most likely evolution of an accidental hydrocarbons spillage. The minimum time it would take a spill to reach the coast has been calculated from the results of drift simulations for any given weather situation giving the ability to calculate necessary response times.

This information has been integrated into a pioneering Geographic Information System (GIS) that will form part of the Nature Data Bank of the MAGRAMA. More than 600 layers of information have been received that, once treated and analysed, have formed a GIS of 374 layers. Thanks to the resulting maps and their analysis, data of great importance relating to all the actions of the project has been generated. Worthy of particular mention is the large amount of visual information available, expressed in more than 500 maps. This information has been instrumental to the completion and submission to the EC of 49 Standard Data Forms (SDFs) in addition to the development of 50 management guidelines documents for all areas in order to establish the pillars for the future management of the Natura 2000 marine network.

The results of the scientific studies and analysis of human activities have served as the basis to develop 50 management guidelines documents, one for each of the proposed spaces in the N2000 network. In addition, to supplement the information in these guidelines, the contributions received in the context of 9 public participation workshops that have taken place in each of the studied areas with members of the general public, fisheries and local governments, have been taken into account. These conferences were attended by more than 650 participants from local authorities, social partners and fishermen's associations and had the objective of presenting the project and soliciting in person, the views of the various sectors. The information resulting from the study of the interactions between seabirds and human activities collected during the oceanographic campaigns was also included.

Lastly, one of the main objectives of INDEMARES has been the identification and testing of new management tools for the Natura 2000 marine network. Using the 'Mitiga' laboratory, new monitoring techniques have been developed as well as risk mitigation strategies for protecting populations of cetaceans, turtles and seabirds which may be threatened by the maritime transport, defence, fisheries, energy and tourism industries. The project took place at the sectorial level in order to bring innovative management tools for the conservation of the sea in Natura 2000 areas. Satellite communication and monitoring systems, cameras, sensors, hydrophones, buoys and gliders, AIS, etc. have been tested both in the Alboran Sea, the Canary Islands, the Minorca Channel and the Creus Canyon. Small, lightweight GPS recorders have also been successfully tested and have proved adequate for monitoring small seabirds, allowing first-hand knowledge of the distribution and movements of such species.

The INDEMARES LIFE+ project, with the declaration of 10 SCIs and 39 SPAs has more than fulfilled the objective of identifying and designating places of high ecological value to comply with European regulations, helping to achieve high environmental standards and sustainable development of commercial activities in the relevant areas.

INDEMARES has integrated the work of reference institutions in the field of management, research and conservation of the marine environment to put Spain in the vanguard of marine conservation across Europe, not just in the more than 7 million hectares proposed for N2000 network designation, but as a result of laying the foundations for the future management of these areas. The main result of the INDEMARES project is the declaration of the 39 marine SPAs (Special Protection Areas for birds) covering 4.9 million hectares and 10 SCI (Sites of Community Importance) covering 4.3 million hectares, representing 7.3 million hectares in total, since some areas overlap. This area, added to the area declared prior to the project beginning, will mean the protection of 8.4% of the sea surface pertaining to the Spanish state moving towards the fulfilment of the Convention on Biological Diversity.

Although the assessment of other future benefits of the project requires the application of management measures, it is possible to list some of the potential benefits of the results of the project:

- Collaboration in the fields of science, management and conservation toward a common goal: the sustainability of marine resources.
- Integration of factors related to the conservation of biodiversity and its uses in a coherent network of protected marine areas.
- Creating a positive perception of the Natura 2000 network among members of the fishing industry.
- Implementation of pioneering methodologies in marine research, agreed through various protocols.
- Conservation of habitats and species of high ecological value.
- Reserve effect of protected areas and fauna overflow effect, resulting in an increase in fishing catches and lower search costs as well as an improvement in the product quality, lower discards, and an enhanced valorisation of fishery products.
- Protection of the structure, functions and integrity of ecosystems with a resulting increase in the ecosystem resilience.
- Increase in the aesthetic and recreational values leading to an increase in economic alternatives such as tourism.
- Increased knowledge and awareness among the general public relating to the natural values of our seas.

The proposal of the Ministry of Agriculture, Food and Environment for the 49 new protected areas Natura 2000 is a direct result of the studies developed in INDEMARES. Therefore, it can be argued that the future of marine conservation in Spain has its foundations in INDEMARES, something the EC has acknowledged on several occasions. In the recent HOPE Conference (Healthy Oceans Productive Ecosystems), INDEMARES was highlighted as one of the most relevant European marine projects.

## 1.4. Results of project dissemination and promotion

There has also been a major effort to raise awareness of the need to protect our resources, especially in the fisheries sector. In addition to participation days, INDEMARES has attempted to raise levels of awareness by producing a series of products that allow the general public to expand their knowledge of the value of our seas: 10 written studies on each of the proposed areas, a publication on the N2000 marine network in Spain, a documentary about the development of the project, the development of a leaflet about the importance of the protection of seabirds, including an illustrative sheet showing the most representative species, the edition of a summary report of the project (Layman report), the placement of 15 information panels in each of the declared areas. Various information and training materials have also been produced and distributed among the different sectors, especially the fishing industry, with the aim of promoting best practices in the event of the accidental capture of turtles, birds and other species of interest.

Public events with very diverse audiences, from universities and schools to public institutions, social partners and national and international scientific congresses, have also taken place:

- Participation in more than 200 conferences and national and international congresses.
- 50 acts of information dissemination and awareness-raising.
- More than 1,000 press reviews and 45,000 citations on the Internet.
- Approximately 800,000 visits to the project website.

## 2. Analysis of the current situation

The results achieved by INDEMARES are summarized as follows:

- **Oceanographic campaigns** results:
  - 55 characterization campaigns of benthic habitats carried out:
    - 4.4 million hectares (MHA) characterized,
    - 4 types of Directive listed habitats (1170, 1180, 1110 and 1120) protected, 112 different habitats found in the Spanish Inventory of Marine Habitats, 3 new habitats described for inclusion in Annex I of the Habitats Directive.
    - 10,000 species characterised, more than 50 species new to science.
  - 29 marine bird census campaigns with more than 250,000 seabirds identified belonging to 48 different species.
  - 24 marking campaigns involving 794 seabirds belonging to 6 different species.
  - 39 cetacean census campaigns with more than 30 species observed and catalogued.
- **Socio-economic study** results:
  - Footprint analysis of professional and recreational fishing spaces in the 49 declared spaces.
  - Cost-benefit analysis of the positive effects of N2000 network for the studied spaces.
  - Creation of human activity impact matrixes for the declared areas.
  - Testing of tools to mitigate the impacts of tourism, defence, fisheries and transport.
  - Production of 50 management guidelines documents.
- Results on the proposals of **Natura 2000 marine network in Spain:**
  - 9 seminars with the participation of more than 300 people in the fishing industry, administration and local social agencies.
  - **Declaration of 39 SPAs, with a surface area of more than 4.9 million hectares**.
  - **Proposal to the EC for 10 SCI, representing more than 4.3 million hectares.**
- **Publications and outreach materials:**
  - 1 publication "The Marine N2000 network: in Spain".
  - 10 information leaflets on the proposed SCI.

- Dozens of scientific articles.
- 10 press releases.
- 1 Marine SPAs brochure.
- 1 Layman report.
- Children's publication "Os Bolechas".
- Documentary "Conserving the unknown?"
- 5 short films about INDEMARES.
- Marine mammals DVD.
- 15 descriptive panels.
- Training plan for fishermen.

## 2.1 SWOT analysis:

| SWOT | Strengths | Weaknesses |
|---|---|---|
| Internal analysis | 1. Emphasis has been placed on investigation into management decision-making.<br>2. Information of great scientific importance has been obtained on deep habitats, their distribution and conservation status in 10 marine SCIs. Detailed maps have been produced showing the location of marine habitats.<br>3. Information of great scientific importance on the uses by and the areas of distribution of seabirds has been obtained in 39 marine SPAs and the presence and distribution of cetaceans in 10 marine SCIs.<br>4. New survey methodologies and impact mitigation strategies have been tested.<br>5. Participatory project between management and research public entities, conservation organizations and private companies.<br>6. Management guidelines for each of the 49 declared areas have been developed.<br>7. The first steps have been taken to involve the fishing sector in the future management of the N2000 network areas.<br>8. Diagnosis of the pressures and threats (DPSIR) for each of the 49 designated sites in the N2000 network has been established.<br>9. Availability of technical resources and expertise in the investigative process. | 1. Although there have been great advances, it is necessary to increase knowledge about marine habitats and species.<br>2. Need for impact assessment studies, risk maps, cost-benefit analysis of in the economic sectors relevant to studied areas.<br>3. Need for a more participatory approach including social partners and users of the protected marine spaces. Possible lack of participation of a very heterogeneous fisheries sector.<br>4. Difficulty in communicating to the general public and to the productive sectors the importance of protecting the marine environment.<br>5. Administrative difficulties relating to LIFE funds. |
| | **Opportunities** | **Threats** |
| External analysis | 1. Appropriate legislation and ambitious international challenges, such as the need to protect at least 10% of the marine regions by 2020.<br>2. Availability of financing instruments for new marine projects.<br>3. Involvement of the public, state and community administrations in the protection of the sea.<br>4. Spain is at the cutting edge of protecting marine areas and has innovative mechanisms for tracking and monitoring.<br>5. General interest in the exchange of experiences between entities, agents and experts.<br>6. Existence of tools and instruments for adequate participation and governance.<br>7. Possibility of management using the internal zoning of the protected marine areas. | 1. The need to establish management plans to estimate the real costs and benefits of the N2000 network and implement species recovery plans.<br>2. Aspects of surveillance carried out in the marine areas must be constantly updated in the light of technological advances and coordination between various agents.<br>3. Need for an improvement in the mechanisms and governance structures for the management and conservation of the marine environment.<br>4. Current mechanisms for knowledge transfer and cooperation between local parties and social research groups could be improved.<br>5. Shortcomings on the part of the administration in the education and training of technicians and managers of the marine environment.<br>6. Low representation of marine habitats in Annex I of the Habitats Directive.<br>7. Low level of awareness of the values and potential of the Natura 2000 marine network and lack of participatory processes for the local population and other users of the sea.<br>8. Difficulty of directing financial resources from other European management funds to the management and conservation of the Natura 2000 network in previous programs (2000-2006 and 2007-2013).<br>9. New opportunities for compatible economic development have not been sufficiently developed. |

**Table 1: SWOT analysis post INDEMARES**

In view of the results obtained through INDEMARES, a SWOT analysis (Table 1) has been established containing the internal strengths and weaknesses generated during the project as well as external opportunities and threats. This information reflects the current situation in terms of the results obtained and at the same time sets the context

for future actions. In terms of the **strengths generated by the project**, it should be noted that the foundations have been laid for the future management of marine areas declared in the Natura 2000 network, the scientific knowledge necessary for the development of very comprehensive management guidelines has been developed for each of the 49 proposed sites, the pressures and threats of human activities are known for each area and the conservation objectives for each of the habitats and species have been identified. We have identified the relevant social actors and established procedures for public participation in each of the proposed sites, explaining the natural values which have been protected in their work areas as well as the reasons for and the procedures of participation and involvement necessary to transform the guidelines into management plans. Detailed information about the location of the protected habitats will facilitate the establishment of very precise management methods and this in turn will facilitate the compatibility of these measures with human activities that have no impact on the habitats in question.

Also, during the project a series of **weaknesses** have been identified which, despite presenting an obstacle to the achievement of one or more of the objectives, have not prevented their attainment. Mainly these weaknesses are associated with administrative issues, in contrast to the difficulty of measurement in the assessment of impact risk maps and costs-benefits analysis of the economic sectors in the project locations. Without doubt, the need for a more participatory approach that includes social partners and users of the protected marine areas can alleviate the potential lack of participation of a very heterogeneous fisheries sector. Finally, the difficulty of communicating the importance of protecting the environment to the general public and to the productive sectors, due to general ignorance of marine habitats, should also be noted. These weaknesses however have not been an impediment to achieving all of the expected results.

## 3. Scope and objectives of the POST-LIFE Conservation Plan

The next step will be the preparation of management plans for all declared areas. In this sense and in the context of the call from the EC for proposals for LIFE 2014 Integrated Projects (IP), the Fundación Biodiversidad of the Ministry of Agriculture, Food and Environment, has submitted a proposal, INTEMARES, whose objectives pursue innovative, demonstrative and participatory management of the Natura 2000 network in the marine environment under the competence of the General State Administration (AGE). This network is comprised of 98 spaces, 49 of which are a direct result of INDEMARES, and it includes special protection areas for birds (SPA), and sites of Community importance (SCI) in various stages of approval, representing more than 8.4% of the marine surface. Equally, the proposal seeks to respond to the objectives and measures laid down in the Prioritized Action Framework (PAF) of the Natura 2000 network through complementary use of different structural funds (EMFF and ESF).

Therefore the primary objective that is required to be achieved in the next few years is the development of the Prioritized Action Framework for the Natura 2000 network in the marine environment and to reach the point whereby the Spanish State has a consolidated network of Natura 2000 marine spaces managed in an effective and integrated manner, with the active participation of the sectors involved, with research

as a basic tool for decision-making and the opportunity to contribute to a model of development based on sustainability and innovation. To achieve this goal, a series of aims, listed below, have been established:

### 3.1. Improving the knowledge required for management.

A series of studies have been proposed to provide a solid scientific and technical basis for decision-making in relation to the management of the 98 marine spaces of the Natura 2000 network. The studies will fall under the competency of AGE and will complement and integrate existing information, including other marine LIFE projects and in particular, the results of the LIFE+ INDEMARES:

- Development of a cost/opportunities study of the Natura 2000 network in the marine environment.
- Completion of the studies relating to pressures and human activity impacts on the types of habitats and the species of community interest in the marine spaces of the Natura 2000 network.
- Analysis of the use of new technologies for the monitoring and control of marine spaces, complete mapping and assessment of the resources and services of marine ecosystems and their relationship to human activities with impact on the sea (fisheries and maritime transport, among others).

The steps necessary to expand knowledge about marine habitats and species will also be studied. Such studies will be especially focused on the habitat types and species for which there is currently insufficient information available:

- Studies of habitats to complete the existing information and the zoning and establishment of priorities in the areas already declared.
- Study to improve the connectivity of the Natura 2000 network in the marine environment.
- Oceanographic campaigns for the declaration of new marine spaces depending on habitats and species.
- Analysis of the feasibility of measures for the conservation of habitats and species in the marine environment.

New marine locations will be included that have not yet been studied.

### 3.2. Completing the Natura 2000 network in the marine environment and ensuring the effective management of included areas.

In order to complete the Natura 2000 marine network through effective management it has been proposed to begin by laying the groundwork for the overall planning of the Natura 2000 network in the marine environment through:

- Updating of the guidelines of the Natura 2000 network in the marine environment.
- Detection of shortcomings in the network at the level of bio-geographical/marine regions.
- Design and establishment of the Governance Framework in the Natura 2000 network in the marine environment and the public participation plan.

- The legal analysis of the structure of the General State Administration (AGE) in relation to the Natura 2000 marine network in order to create an appropriate institutional structure for the planning and effective management of this network.
- Design and development of a Training Plan for the implementation of the Prioritized Action Framework for the Natura 2000 network in Spain.
- Mapping and assessment of the resources and services of marine ecosystems and their relationship to human activities with impact on the sea (fisheries and maritime transport, among others).
- Design of an integrated system of scientific monitoring and adaptation of the marine spaces of the Natura 2000 network, including ecological-biological, fishing-productive, socio-economic and management descriptors.

In addition, a set of measures enabling detailed planning for the conservation of marine species and Natura 2000 spaces should be established:

- Management plans for Natura 2000 network sites.
- Development of plans and strategies for the conservation and recovery of species.
- Declaration of SAC, approval of SPA management plans and approval of plans and strategies for the conservation and recovery of threatened species.

### 3.3. Ensuring the maintenance or restoration of the favourable conservation status of the habitat types and species of community interest.

Over the next few years innovative, pilot or demonstration measures should be developed for the conservation and recovery of the high environmental status of the habitats listed in Annex I of the Habitats Directive, as well as of the species listed in Annex II of the Habitats Directive, in Annex I of the Birds Directive and for migratory birds with a regular presence. For this reason it is necessary to:

- Review and evaluate the state of the art measures for conservation and restoration in the marine environment.
- Discuss the feasibility of measures for the conservation of habitats and species in the marine environment.
- Improve the monitoring and follow up of Natura 2000 sites and the conservation status of the habitat types and species of community interest.

### 3.4. Providing education and adequate training for the achievement of the conservation objectives established in Natura 2000 sites, as well as promoting information, awareness and cooperation among agents involved in conservation.

The strategic steps that lay the groundwork for the overall planning of the Natura 2000 network in the marine environment through the design and development of a training plan for the implementation of the Prioritized Action Framework for the Natura 2000 network in marine environment in Spain should be studied. In this sense and in order to carry out this objective, measures will be needed that encourage promotion of communication and dissemination through the establishment of a communication strategy plan.

Such communication activity plans and training exercises are key to ensuring the effective implementation of an innovative participatory approach.

### 3.5. Promoting and exploring opportunities that enable the marine spaces of the Natura network to serve as reference areas for a new production model in the framework of a blue, low-carbon economy.

The strategic measures that lay the groundwork for the overall planning of the Natura 2000 network in the marine environment must take into account the development of a cost/opportunities study of the Natura 2000 network in the marine environment. This study will explore the opportunities offered by the marine spaces to promote economic activities that are compatible with the Natura 2000 marine network (tourism, biotechnology, new food and health products) and serve as reference areas for the promotion of a new 'blue' economic model.

To help provide innovative approaches in the field of technologies and governance the use of new technologies for the monitoring and control of marine spaces should be explored along with the creation of a network of marine guardians through citizen participation. In this sense the establishment of public-private partnerships for the conservation of the Natura 2000 network in the marine environment should be seen as an innovative methodology to be taken into account.

### 3.6. Involvement of relevant socio-economic sectors and users of the sea in the management of the protected spaces.

The involvement of socio-economic sectors and users of the sea in the management of protected spaces must make use of different mechanisms for public participation that go beyond formally regulated procedures; in this sense the previously mentioned Governance Framework of the Natura 2000 network in the marine environment is of particular relevance as is the development of the cost/opportunity study of the Natura 2000 network in the marine environment as well as the establishment of mechanisms of participation. In addition, it is necessary to demonstrate the positive effects of integrated management and disseminate them in a way that can be applied in other regions of the EU.

Finally, there is a need to train the managers of Natura 2000 network declared areas and promote governance mechanisms of these spaces through the Governance Framework. Also necessary is a legal analysis of the structure of the General State Administration (AGE) in relation to the management of the Natura 2000 marine network in order to create an appropriate institutional structure for the effective planning and management of this network. A training plan should therefore be designed for the implementation of the Prioritized Action Framework for the Natura 2000 marine network in Spain aimed at the public authorities of sea related sectors as well as legal staff.

## 4. Future actions

It is imperative to maintain the goals that have been achieved through the project:

- The emphasis on scientific research has generated a database of unique knowledge that will help greatly to address the management plans, the dialog with the users and the habitat conservation.

- The project has enabled the coordination and creation of a team of multidisciplinary researchers, with excellent levels of cooperation with other groups of researchers such as geologists, taxonomists, computer scientists, etc., giving rise to a team of professionals ideally prepared for the study of marine ecosystems.
- The joint work between researchers from different types of organization and interests, the administration, environmental organizations and users, applying the same methodologies and with the same objective. It is very important that this coincidence of scientific and social objectives continues in the future to cement the success of marine environment protection.
- The consensus of a large proportion of the parties with an interest in the marine environment should be continued in the future. This key moment in the development of national and international legislation as well as international conventions oblige us to create marine spaces that are protected and managed in a sustainable manner. For this reason, not only material and human resources are required, but also the appropriate legal means to ensure the long-term conservation of marine habitats and species.
- A continuous plan of dialog, information and training at all scales should be established, including not only the fishing industry, but also public managers themselves, the local social agencies (schools, tourism, transport, energy, defence, extractive sector and exploitation of resources). For this, it is necessary for the competent authorities to encourage the development of management plans in a comprehensive manner, identifying the needs of each sector and setting priorities in relation to the degree of impact. An appreciation of the marine resource should be encouraged allowing the operators directly involved to view marine protection as a goal and a benefit and not as prejudicial and/or an external imposition.
- Maintain the generation of top-level scientific publications thanks to the extensive samples and the knowledge gained.
- The scale of the project and the need to explore semi-deep areas in Spain has permitted the extensive use of advanced methodologies and equipment for ocean exploration including equipment such as ROVs, submarines, sophisticated image analysis techniques, habitat mapping, etc., a trend which must be continued in the future. The use of the above methodologies has allowed us to increase the importance of day to day exploration of the oceans using non-intrusive methods, employing methods that allow us to study the sea without destroying it and follow the marine communities and habitats with the same, or perhaps better, reliability that scuba diving allows in shallower areas. A methodological system parallel to LIFE is being prepared that can become a benchmark for this kind of study in the immediate future.
- It has also been of enormous value to be able to demonstrate the great worth of underwater documentary pictures as an instrument of study and as an educational resource but also for gathering evidence of bad practice. The image allows us to move forward in terms of the dilemma of objectivity of the information, necessary to negotiate with and provide information to the sectors involved in protected marine areas.

- The generation of sub-projects based on the application of acquired knowledge. Another success of the project that is worthy of mention is the continuity of the ECOSAFIMED project, a project funded by the EU ENPI after a very competitive process and which, thanks to what has been learned, has shown that good economic and scientific management is achievable as is the excellent harmony between the three partners: ICM-CSIC, IEO-Baleares and the Fundación Biodiversidad. It is also worth noting the ease with which the INDEMARES model has been exported to other teams and countries such as Italy and Tunisia. The objective of this project is to contribute to the promotion of sustainable small-scale fishing practices in the Mediterranean and to promote the exchange of information between countries. It also facilitates the Action Plan (2008/56/EC) for an integrated maritime policy in the Mediterranean through the promotion of sustainable fishing practices on benthic communities and promotes the exchange of information on best practices among stakeholders in order to achieve the conservation of marine habitats.