



Actions to achieve this target generally focus on better assessment of fish stocks and development of regulatory measures, such as issues related to illegal, unreported and unregulated fishing, fishing practices and equipment, as well as better monitoring of fishing vessels and bycatch. Activities to ensure the health of fish stocks include fish size regulations, seasonal or periodic fishing bans, the establishment of marine protected areas, and the restoration of fish habitats.

The fisheries ecosystem approach proposes the development of integrated fisheries management based on the FAO Code of Conduct for Responsible Fisheries (1981). It is conceived as a new direction for the management of fishing activity, aimed at reversing the order of priorities in management, starting with the ecosystem instead of the target species. This implies considering not only the exploited resource but also the ecosystem (including the ecological interdependencies between species and their relationship with the environment) and the socioeconomic aspects related to the activity. In this way, traditional methods of fishery evaluation and management are not left aside, but the holistic approach implies the search for a better biosocioeconomic balance in order to contribute to sustainable development.

Within the Technical Guidelines for Responsible Fishing, prepared by FAO as practical steps to apply the aforementioned Code of Conduct, there are several examples of guidelines dedicated



In addition, it should be noted that all these organizations, except NEAFC, have a scientific committee that advises them on these aspects and in which Spanish scientists from the Spanish Institute of Oceanography (IEO) participate.

NEAFC is advised from the scientific point of view by the International Council for the Exploration of the Sea (CIEM/ICES), with a large Spanish participation.

These scientists rely on data provided by scientific observer programs aboard straddling fishing vessels. It should be noted that this Spanish scientific observation program exists in all the international fishing grounds in which the Spanish fleet fishes, even when the Organization that regulates this activity does not make it mandatory. In this way, data is collected on target species, but also on accompanying species and indicators of the presence of ecosystems. In addition, within the NAFO area, Spain carries out annual research campaigns with an oceanographic vessel in which these parameters are collected in greater detail.

The work currently being carried out by NAFO on models of ecosystem productivity deserves a particular mention. This organization has a Working Group of its Scientific Council, on ecosystem science and advice (ESA) and a Working Group on the ecosystem approach within the framework of fisheries management (EAFFM/). Scientists, fishing administrations and the fishing industry participate in this Working Group that meets once a year.

In relation to the Regional Fisheries Organizations aimed at the management of Highly Migratory Species only the Commission for the Conservation of Atlantic Tunas (ICCAT) has expressly included the ecosystem approach in its regulation. Both because of the quantitative importance of the fisheries subject to management and conservation, and because it is the regional fishing organization with the largest number of contracting parties, the involvement of this commission in the ecosystem approach is very relevant and it has taken place in two phases.

Initially, in 2015, ICCAT approved the Resolution on the Application of an Ecosystem Approach to Fisheries Management (Resolution-15).



environmental status of marine biodiversity in EU waters under the protection of the Natura 2000 Network. Likewise, this network of MPAs has increased exponentially in recent years, promoted by different countries and the European Regional Marine Conventions, achieving significant progress towards global objectives. However, scientific needs and priorities together with clear, achievable and measurable objectives are needed to lay the foundations for establishing an ecologically coherent network of Marine Protected Areas.

Marine reserves of fisheries interest are created on the basis of the best scientific information, fisheries surveys and bionomic mapping, in order to support traditional artisanal fisheries. They are an example of an ecosystem approach to fisheries with 36 years of experience in 2022 that show not only improvements in fishery resources with higher abundances of fish species, and of other species, also structuring, but also larger sizes, i.e. more fertile spawners that favour recruitments. As a result of the creation and provision of resources in each marine reserve (human and material), this "reserve effect" can be observed within each reserve with the integral reserves, where no scientifically motivated uses are authorised, and which are the maximum exponent of maximum protection and the results of the catches in the marine reserves and their surroundings. The export of eggs and larvae has also been observed in the case of the Columbretes Islands reserve and the red lobster. Likewise, an increase or even improvement of the "good environmental status" has been observed in the reserves.

Finally, in the reserves, a slowdown in the abandonment of small-scale fishing activity has been observed, with new young fishermen entering, although the pace is still slow, which is a sign of their effectiveness in supporting traditional small-scale fisheries. Other benefits of the reserves are their role as a sentinel against global impacts of climate change and their role in raising awareness of the need to care for the sea with responsible use and codes of conduct for informed activities. Science is fundamental to the basis and monitoring of these marine reserves as well as communication actions in the framework of SDG 14 and the 2021 decade of Ocean Science and Sustainability, to which the International Year of Sustainable Fisheries and Aquaculture will be added in 2022.

3.2. Good Practices on commercial fishing fleet /national fisheries management through the ecosystem approach

In relation to measures to mitigate accidental catches, it should also be noted that Spain has approved the National Plan for the reduction of Accidental Catches in Fishing Activity. The plan is structured as a guide to assess and monitor the problem of accidental catches in the Spanish fleet and propose technical solutions that allow the catches of sensitive species included in national and European regulations to be reduced or eliminated, where possible.

It is worth mentioning the measures adopted for the mitigation of cetaceans bycatch in



affected populations. All these measures will be aimed at reducing accidental catches to the minimum possible levels, and always below the maximum biological withdrawal values for each species.

Among the measures implemented are those related to closures for bottom trawling in the Mediterranean, which contribute to the recovery of stocks but also to habitats, in the context of the Mediterranean Multiannual Plan. They are all included in Order APA/2020/ and its amendments Order APA/753/2020 and Order APA/1397/2021.

4. Future challenges

4.1. Reinforcement of the role of the RFMOs

RFMOs have shown great progress in ad hoc implementation of the ecosystem approach in fisheries management. While it is true that few RFMOs have yet implemented a long-term vision of ecosystem assessment, they have made considerable progress on the ecological component of target species, the ecological component of bycatch, as well as the components of the properties of each ecosystem, the trophic relationships and their habitats.

According to the 14th round of the Informal Consultations on the performance evaluation of the role of RFMOs in May 2019, recommendations were shared to improve the management of fish stocks, minimize the effects of bycatch, and the protection habitats of special interest.

Spain is aware that we face common challenges such as the coordination of all marine ecosystem research activities, the development of mechanisms to better integrate ecosystem research and advice in fisheries management decision-making.

4.2. Strengthening the scientific base and data for decision making

Spain considers essential to strengthen the binomial between science and fishing to promote cooperation in marine and fishing research, which implies an improvement in scientific knowledge and requires investment in blue science and innovation.

Scientific knowledge and innovation are essential tools to fight climate change and guarantee sustainable fishing and the eradication of illegal fishing. Fishing decisions must be based on the best available scientific knowledge. To this end, intense work is being done to acquire the necessary data in sufficient quantity and quality on the state of the different fisheries, but also on the environment in which they develop, and on the socioeconomic situation of the fishing sector and related industries.

Therefore, the commitment to scientific knowledge as a basis for decision-making in fisheries management is clear and one of the main pillars of action, even more so in the framework of the United Nations Decade of Ocean Science and Sustainable Development (2021

4.3. Environmental Impact Assessment (EIA)



Strengthening the implementation of the Environmental Impact Assessment (EIA) will be a key tool to guarantee the biological sustainability of fisheries, the preservation of the aquatic ecosystem and the quantitative and qualitative protection of fishery resources, including marine genetic resources. Therefore, EIA will help ensure the protection, maintenance and recovery of natural habitats.

In this regard, the systematic implementation of an EIA in fishing-related activities has been carried out in recent years, not only by many RFMOs but also in the EU Member States, where advanced measures have been adopted, in the EIA framework and the Directives on Strategic Environmental Assessment and Impact Assessment.

4.4. Lasting social commitment and gender approach

Our challenge is to make a better ocean for our future generations, which is why we will not stop defending the commitment of fishermen and women and their local communities, the fishing industry and fishing sector to supply us with healthy quality food and to reinforce the social and gender of fishing through sustainable fishing that takes into account the ecosystem approach.