Rules for protection and conservation of marine environment and its biodiversity

Author : Giulio RELINI

Professor, Dipartimento delle Scienze della Terra, Ambiente e Vita (DISTAV) Università di Genova, Italy
Vice-Chairman of the Scientific Council of the Oceanographic Institute,
Foundation Albert I[st], Prince of Monaco

Coastal and marine area protection is usually aimed at practical goals though generally the main target is the protection of different component of biodiversity (ecosystem, species, genes).

Sustainable use of coastal and marine resources requires that some areas be retained in their natural state or as near to natural as possible. Safeguarding critical habitats for fish production, preserving genetic resources, protecting scenic areas and enjoying natural heritage all may require the protective management and appropriate rules and laws at national and international level. The main tool is the institution of marine protected areas with different degree of restrictions and types of management.

Among the high number of international agreements on nature conservation the main ones for Mediterranean are the Convention on Biological Diversity (Rio de Janeiro, 1992), the Habitat Directive (EC 43/92 147/2009), and the Protocol concerning specially protected areas and biological diversity in the Mediterranean of the Barcelona Convention (1976, updated 1995).

For European Union Countries the Marine Strategy Framework Directive (MSFD) (EC/56/2008) is very important since it is the environmental pillar of the EU integrated European Maritime Policy and aims to achieve the Good Environmental Status (GES) for European marine waters by 2020 at the latest. The main target of the above mentioned agreements are some special components of biodiversity (in particular endangered or threatened species, sensitive habitats etc.) while the target of MSFD is the whole marine environment a noteworthy change in protection strategy and management.

The Marine Strategy Framework Directive applies to all marine waters, seabed and subsoil of areas where Member States (MS) have and/or exercise jurisdictional rights.

The marine strategies shall be developed and implemented in order to protect and preserve the marine environment, prevent deterioration or, where possible restore degraded habitats, prevent and reduce inputs in marine environment in particular of pollution and so reduce or remove impacts on biodiversity, ecosystem, human health or legitimate uses of the sea.

Furthermore marine strategies shall apply an ecosystem based approach to the management of anthropic activities enabling the sustainable use of marine goods and services by present and future generations.

To determinate GES eleven descriptors are suggested (Annex I of the Directive) with 26 criteria and 56 associated indicators. MSFD envisages an updating process of marine strategies on a regular six-year cycle made of the following steps: initial assessment, determination of GES, establishment of environmental targets, monitoring programmes, programmes of measures.

As a first step in the preparation of measures MS across a marine region or sub region should undertake an analysis of the features or characteristics of their marine waters identifying the predominant pressures and impacts (Annex III) on those seas and on economic and social analyses of their use and of to determine the cost of degradation of the marine environment with reference to a set of standards for GES.

To do this, eleven descriptors, 26 criteria and 56 associated indicators have been suggested.

The process is quite complicated and difficult also because of lacking of good available data.

The initial assessment has been based on available information and data and consequentially on scarce use of indicators which will be implemented by 2018.

The eleven descriptors for GES are the following:

(1) Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.

(2) Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.

(3) Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.

(4) All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.

(5) Human-induced eutrophication is minimized, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.

(6) Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.

(7) Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.

(8) Concentrations of contaminants are at levels not giving rise to pollution effects.

(9) Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.

(10) Properties and quantities of marine litter do not cause harm to the coastal and marine environment.

(11) Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

For each descriptor a set of criteria and indicator, as above mentioned have been established. Also environmental target and associated indicator must be defined in achieving GES by 2020, taking into account the indicative lists of pressures and impacts (Annex III) of the Directive and characteristics (Annex IV).

Monitoring programmes (Annex V) must be organized also with the aim to fill the gaps in knowledge and to standardize as much as possible methodological approaches.

Finally MS has to identify the measures necessary to achieve or maintain GES taking into consideration the types of measures listed in Annex VI.

The GES evaluation is a complicated procedure and probably scientists are not ready to reply to many requests, so many improvements are necessary in addition to increased research for lacking data.