



Food and
Agriculture
Organization
of the
United Nations

*SCIENTIFIC COOPERATION TO SUPPORT
RESPONSIBLE FISHERIES IN THE ADRIATIC SEA*

MiPAF

Italian Ministry
of Agriculture
and
Forestry
Policies

AdriaMed

GCP/RER/010/ITA

The FAO-AdriaMed Project and its activities of interest to the
SAP BIO Project

Paper presented at First Meeting of the Advisory Committee of the project for the preparation
of a Strategic Action Plan for the conservation of biological diversity (SAP BIO) in the
Mediterranean Region

Tunis, 22th-23th February 2001

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ADRIAMED Project

Abstract

The establishment of collaboration with the Mediterranean Action Plan (MAP) is part of the implementation strategy of the FAO-AdriaMed Project. This paper provides general information on the AdriaMed Project in order to identify possible areas of cooperation with the SAP BIO Project. The overall aims and objectives of the Project concerning collaboration among the participating countries are indicated as well as aspects relating to fisheries research and the process of strengthening scientific cooperation. A brief introduction to the Adriatic Sea environment is given together with a short overview of Adriatic Sea capture fisheries. Some AdriaMed regional scientific programmes and activities are pointed out as of likely relevance to the SAP BIO. Finally, the initial steps for cooperation between AdriaMed and the SAP BIO Projects are identified and proposed.

The FAO-AdriaMed Project

The FAO Regional Project “Scientific Cooperation to Support Responsible Fisheries in the Adriatic Sea” was born to promote cooperative fishery research and management between the participating countries (Albania, Croatia, Italy and Slovenia). The coastal states are aware of the need to pursue fishery exploitation at safe, economically productive levels coherent with the Code of Conduct for Responsible Fisheries adopted by FAO in 1995.

The Project focuses on two main aspects. The first is the development and sharing of a common pool of knowledge to encourage and sustain the process of international collaboration between the coastal countries on issues related to fishery management planning and implementation. The second is to strengthen technical coordination among the national fishery research institutes and administrations, as well as between them and the resource users.

AdriaMed activities include inter alia: the identification and implementation of a coordinated programme of research and scientific activities; the organization of international and regional meetings and training sessions; the establishment of a computerized communication network and of a File Transfer Protocol (FTP) service. AdriaMed also facilitates studies as required to resolve technical issues of relevance to improved fishery management in the Adriatic, as raised by the GFCM or by the countries participating in the project.

The Adriatic Sea

The Adriatic Sea comprises the largest shelf area of the Mediterranean. In the Northern and Central Adriatic the bottom depth is no more than about 75 and 100 m respectively, with the exception of the Pomo/Jabuka pit (200-260 m) in the central basin.

The eastern and western coasts are very different. The former is high, rocky, articulated with many islands. The western coast is flat and alluvial with raised terraces in some areas. The Adriatic Sea may be seen as characterised by northern, central and southern basins with decreasing depth from the south toward the north. Along the longitudinal axis of the Adriatic geomorphological and ecological changes can be observed, resulting in the remarkable differences of the northern and southern ends.

The northern basin is the shallowest area with an average depth of 30-40 m, the oceanography and ecology of this area are strongly influenced by the basin morphology, meteorology and riverine inflow. This is the most productive area of the Adriatic and one of the highest of the whole Mediterranean.

The Adriatic Sea is characterised by environmental conditions which differ substantially from north to south. In the northernmost part the riverine inflow (*e.g.* the Po river) plays a determinant role and, in general, strong frontal systems in winter and marked vertical stratification in summer occur. The thermocline of the southern basin is influenced by the Ionian Sea water masses; through the Channel of Otranto relatively fresh and cold water leaves the Adriatic and warmer, saltier water enters from the Ionian Sea. In both lower and central basins the deep sea water circulation is influenced by the bottom morphology.

The Adriatic Sea capture fisheries

Commercial capture fisheries of the Adriatic Sea are based on the exploitation of demersal and small pelagic resources mostly shared by the fishing fleets of coastal states. The most important commercial species whose stocks are shared were jointly identified and agreed upon by regional experts within the AdriaMed Working Groups on shared demersal and small pelagic resources of the Adriatic Sea (the relevant documents are available from www.faoadriamed.org/html/av_documents.html).

Although an in-depth analysis of Adriatic capture fisheries is complex and out of the scope of this note, some observation on fishery production during the last quarter century can be made. The performance of demersal and pelagic fishery showed different patterns. The combination of environmental and socio-economic factors is thought to have had strong impact on pelagic fishery.

The drastic drop of anchovy landing in 1987 is believed to be due to very low recruitment levels in the two preceding years. However, the role played by fishing mortality or environmentally-induced changes (or both) is not clear. Economic and market factors may be thought to be behind the current low levels of pelagic landing in the East Adriatic, particularly

in Albania. The kind of foreign market demand, increased operational costs and international competition make fishing for small pelagics poorly profitable at the moment.

Unlike pelagic fishery, landing of demersal resources has been sustained throughout the period considered. The reasons for this continuity of resources in spite of high levels of fishery exploitation, mainly concentrated on juveniles is still matter of research. Seemingly, Eastern Adriatic demersal fishery production has not faced the crisis of the pelagic fishery sector. Overall landing trends of the most valuable species such as Mediterranean hake, surmullets and Norway lobster has been stable or even increasing. It is possible that the market demand (mainly from abroad), probably coupled with the availability of resources which have been not too intensively exploited in the past, makes demersal fishery an economically more viable enterprise than small pelagic fishing.

AdriaMed activities of possible relevance to SAP BIO

The regional experts collaborating within the AdriaMed framework have jointly identified, during the Working Group meetings, a number of research priorities mostly concerning shared demersal and small pelagic fishery resources of the Adriatic Sea. Consequently, research programmes were formulated and proposed and some are under implementation or planned with the Project's assistance. Some of these may be regarded as of some relevance to the SAP BIO objectives and are briefly described below.

The Pomo/Jabuka Pit critical habitat

The Pomo/Jabuka Pit in the Central Adriatic is known as one of the most important critical habitats of the Adriatic Sea. More than forty species are reported to be regularly exploited in this area, twenty-three of which make the bulk of demersal fishery catch. Particularly significant is the high occurrence of species of remarkable commercial importance such as Mediterranean hake, Norway lobster and cephalopods. Moreover, the Pomo/Jabuka Pit serves as an important nursery area for the hake stock of the Central Adriatic.

In order to identify appropriate management options (and if necessary research needs) for this area, *ad hoc* group of scientists with particular knowledge of the Pomo/Jabuka Pit ecology and fishery productivity is being established by the AdriaMed Project with the task of critically reviewing and appraising the existing information which historically has been accrued by, for the most part, Croatian and Italian research.

Genetic structure of stocks

The role of the analysis of the genetic structure of fish and invertebrate populations in providing information on geographic limits of stocks and gene flow among sub-populations is widely recognised. The knowledge of patterns of intraspecific genetic homogeneity/heterogeneity of key fishery resources is an important tool for stock assessment and fishery management. The occurrence of possible sub-populations of the same species but

which have some genetic differences should be considered and the possibility of managing them as separate stocks taken into account.

A research programme on the genetic structure of some shared stocks of fish and invertebrates of the Adriatic is being established within the Project framework. The programme is articulated in a sampling phase covering the whole Adriatic and in DNA marker variation analysis. The molecular genetic analysis will consist of the isolation and optimisation of specific micro-satellite markers and the screening of stock genetic variation.

Support to the protection and enhancement of the sturgeon stock in Albania

The Albanian delegation attending the 25th session of the GFCM, held in Malta, September 2000, raised the issue of the risk of extinction in the national waters of *Acipenser sturio* and requested the support from the AdriaMed Project on this matter. The area concerned extends from the Lake Shkodër to the Adriatic Sea including the important habitat of the Drin and Bojana rivers where small scale fishery is practised and where the species *A. sturio* is present and accidentally caught. Although the capture of the sturgeon has been banned since 1945, unintentional capture is the norm and nowadays once the fish are caught they are not released or used for restocking.

The Albanian Ministry of Agriculture and Food and the Fishery Research Institute of Dürres are concerned about the seemingly evident risk of extinction of the sturgeon local population. Action is planned by the relevant national authorities to rebuild a natural broodstock for fish fry restocking purposes, not only in the catch area but also for other areas in Albania where the sturgeon was previously present; to support fishers and raise awareness among the local fishing community about the programme. The AdriaMed Project is considering possible ways to support this effort and participate in preparation of the programme concerning the establishment of a natural brood stock of *A. sturio*.

AdriaMed cooperation with SAP BIO Project

Apart from the results of the AdriaMed programmes outlined in the previous section, the SAP BIO Project when necessary and convenient could benefit from the scientific network established by AdriaMed in the Adriatic region. Currently the following institutes are part of the network: Fishery Research Institute (Dürres, Albania), Institute of Oceanography and Fisheries (Split, Croatia), Marine Fishery Research Institute (Ancona, Italy), Laboratory of Marine Biology (Bari, Italy), Laboratory of Marine Biology and Fisheries (Fano, Italy), National Institute of Biology (Ljubljana, Slovenia).

Also, AdriaMed will support the establishment of close links between its National Focal Points and SAP BIO National Correspondents so as to ensure the flow of information and the optimisation of activities. Tentatively at this stage, cooperation between the two Projects may be envisaged regarding some of the expected output and activities such as those reported in the document UNEP(DEC)/MED WG 175/3 under section 6 at point (b), (e) and (h).