

October 2006



GENERAL FISHERIES COMMISSION  
FOR THE MEDITERRANEAN

COMMISSION GÉNÉRALE DES PÊCHES  
POUR LA MÉDITERRANÉE



**GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN**

**SCIENTIFIC ADVISORY COMMITTEE**

**Ninth Session**

**Rome, 24-27 October 2006**

**SALIENT RESEARCH ACTIVITIES IN MEMBER NATIONS**

### **Introduction**

At its Sixth session, the SAC recalled the importance of the national reports for the work of the Committee and pointed out that these reports should be elaborated according to the standard format adopted previously by the Committee (given in Annex A) and should cover mainly progress or new research activities.

At its Eighth session, the Committee agreed on the need for Members' national reports to reach the Secretariat at least one month before a SAC session so that the Secretariat could draft a brief synthesis of information received. This initiative is aimed to place at disposal of the Members, before the SAC session, a global overview concerning the research activities and management actions achieved by the Countries. This work should also provide relevant information about the projects under development in the Mediterranean, which allows the Countries to identify the possible domains of regional cooperation and synergies.

### **General comments**

The GFCM Secretariat received 12 national reports between 22 September and 23 October 2006. A more complete synthesis could have been carried out if all reports had been transmitted within the deadlines and from all Members.

A brief synthesis of the information received is given in Annex B. It is noted that:

- In general, the reports followed the format adopted by SAC;
- Information contained in some reports is not limited to a recent period as requested by the Committee;

- Only 7 countries provided information on the **status of stocks of priority species**. The GSAs covered are mainly located in the western part of the Mediterranean;
- The assessment made, in 5 cases, was based on classical stock assessment methods; 2 cases used indicators of the exploitation;
- The diagnosis of demersal and small pelagic stock status mostly indicated a decline of biomass and/or overexploitation;
- In the 12 Countries which submitted national reports, **Fisheries Data collection** is performed through a national system. In some cases, the National Scientific Institute has a parallel and complementary system to collect specific data needed for scientific purposes;
- For the European Countries, national statistic systems are established taking into consideration the UE regulation on data collection;
- **Research in progress** is undertaken by the national fishery research institutes and, in some countries, by the universities. Private institutes also perform research activities;
- Research activities focused mainly on the main demersal and small pelagic species as well as on large pelagic species such as bluefin tuna and swordfish;
- Several UE funded Research programs are implemented among European Countries. For the coming sessions, a presentation by EC of all research projects implemented in the Mediterranean could be useful for the Committee;
- Only 6 Countries presented information on **social studies in progress**, which concentrated on social indicators and tool for bioeconomic studies;
- 8 Countries presented information on **marine environmental studies in progress** related mainly to integrated coastal management, sensitive ecosystems, marine diversity, invasive alien species, oceanographic parameters, MPAs, marine turtles, interactions between fishing activities and cetacean etc...;
- Only 4 Countries (from the southern and eastern part of the Mediterranean) presented **research suggestions for consideration by SAC**. The proposals made are related to fishing activities census, disaster control, genetics of small pelagic species and research on exotic species.

#### **Suggested action by the Committee**

Finally, the Committee is invited to consider for the future, to include in national report format an item concerning the description of fisheries which could provide general information on the fishery sectors and their evolution, including general information on the exploitation (landings, fleet, metiers, fishing grounds etc...) as well as the benchmarks in the fishery.

SAC may wish as well to identify specific areas of topics for further cooperation among interested Members.

**Annex A.****Format for the preparation of National Reports<sup>1</sup>  
(Not to exceed three pages)****1. Status of stocks of priority species**

The report should indicate the species evaluated during the inter-session period and presented (the evaluations) to the SAC Sub-Committees, expressing for each species was the stock is over-exploited, in balanced situation or under-exploited. The report should also indicate the management units covered by the assessment.

**2. Status of the statistics and information system**

Brief description of the national system of fishery statistics and/or any improvement/change occurred. Participation in regional projects and achievements/ progress in activities related to the collection and processing of fishery statistics. Type of data collected, transfer to GFCM Secretariat and other international bodies. Synergies with other applications.

**3. Status of research in progress**

A brief description of the results of the research projects in progress of interest to GFCM Sub Committees and Working Group, with particular emphasis on management oriented assessment and GFCM priority species.

**4. Status of the social sciences studies in progress or achieved during the intersessional period (economy, legislation, sociology, etc.)**

A brief description of the achievement and/or progress in activities related to the national research on the socio-economic aspects of the fishing communities and fishing sector.

**5. Marine environmental studies in progress**

Brief description of the main results from actions and studies carried out during the intersessional period which are relevant to the impact of the marine environment changes on the priority stocks and on the ecosystem alteration originated by the fisheries activities.

**6. Research suggestions for consideration by SAC**

---

<sup>1</sup> Format updated on the basis of the requirements described in the report of the twenty-fifth session of GFCM.

## Annex B. Table of analysis of National Reports

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
<b>Algeria</b>	<ul style="list-style-type: none"> <li>• Initiatives are in progress to determine the status of stocks of some priority species</li> </ul>	<ul style="list-style-type: none"> <li>• National system for fishery statistics collection including for the fleet registry;</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries research programs are undertaken by CNDPA (under the supervision of the Fisheries Department) as well as by specialized research Department of some Universities;</li> <li>• Research programs are aimed to studies on biology and ecology of demersal and small pelagic species, valorization and marketing of sea products.</li> </ul>	<ul style="list-style-type: none"> <li>• No recent studies (after 2004)</li> </ul>	<ul style="list-style-type: none"> <li>• Research program aimed to study :</li> <li>• Integrated coastal management</li> <li>• Marine and littoral diversity</li> <li>• Specific sensitive ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>• General census of the fishing activities ;</li> <li>• Socio- economic indicators;</li> <li>• Artisanal fisheries</li> </ul>
<b>Cyprus</b>	<ul style="list-style-type: none"> <li>• decline of the fishery the last 5 years;</li> <li>• <i>Mullus sp</i>, <i>Boops B.</i>, <i>P.erythrinus</i> and <i>Spicara smaris</i> continued to be overexploited</li> </ul>	<ul style="list-style-type: none"> <li>• National system managed by fisheries Department;</li> <li>• data collection through logbook, census, sampling survey;</li> </ul> <p>System will be improved in databases which should take into account the need for the data collection</p>	<ul style="list-style-type: none"> <li>• National program for collection of biological and economic data from, including MEDITS component;</li> <li>• The Fisheries Department is involved in EU Oceanographic research projects</li> </ul>	<ul style="list-style-type: none"> <li>• Socio-economic surveys are carried out.</li> </ul>	<ul style="list-style-type: none"> <li>• Projects on turtles, marine biodiversity, ecology, marine invasive alien species, and monitoring of the environmental parameters;</li> <li>• development of marine protected areas and artificial reefs</li> </ul>	None

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
		Regulation of the UE.			<ul style="list-style-type: none"> <li>• EU Projects on coastal environment such as Interreg III.</li> </ul>	
<b>France</b>	<ul style="list-style-type: none"> <li>• Hake in Golf of Leon; risk of overexploitation;</li> <li>• Anchovy: decrease of stock 2001-2005.</li> <li>• Sardine and Mackerel: opposite trend.</li> </ul>	<ul style="list-style-type: none"> <li>• Regular sampling program related to commercial landings of demersal and small pelagic species;</li> </ul>	<ul style="list-style-type: none"> <li>• program on Anchovy/sardine;</li> <li>• Studies on growth of Hake by using tagging/recapture;</li> <li>• Program MEDITS;</li> <li>• UE- SARDONE: improve stock assessment methods</li> <li>• Study on gear experimentation;</li> <li>• UE-CAFÉ: assess effect of technologic development on fishing effort;</li> <li>• Programs on bluefin tuna research</li> </ul>	No information	<ul style="list-style-type: none"> <li>• Studies related to the impact of fishing technology on the environment and the Mediterranean resources.</li> </ul>	None
<b>Greece</b>	<ul style="list-style-type: none"> <li>• Anchovy in GSA 22 (national waters): remarkable decline of the biomass in the eastern part of Aegean Sea between 2003 and 2004.</li> </ul>	<ul style="list-style-type: none"> <li>• National system for fishery statistics collection including for the fleet registry;</li> <li>• Specific landings data collection according to EC regulation</li> </ul>	<ul style="list-style-type: none"> <li>• National and regional projects including EC funded activities on :</li> <li>• Stock assessment and management, including development of related tools, of demersal and small</li> </ul>	No information	<ul style="list-style-type: none"> <li>• Research programs aimed to :</li> <li>• Small pelagics (anchovy) and environmental parameters to predict their recruitment;</li> </ul>	None

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
			<ul style="list-style-type: none"> <li>pelagic species(e.g. SARDONE);</li> <li>• Capacity, fishing mortality and effort (CAFÉ) ;</li> <li>• Integrated coastal management;</li> <li>• fishing gears technology.</li> </ul>		<ul style="list-style-type: none"> <li>• development of suitable indicators to monitor the state of the environment in relation with the fisheries activities;</li> </ul>	
<b>Italy</b>	<ul style="list-style-type: none"> <li>• No information</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries data are collected in the framework of the Italian National Data Collection Program, which is supported both from the Italian Government and the European Union;</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries research activities are carried out by several bodies, both private and public, among which are mainly involved University Departments and Research Institutes (e.g. CNR, SIBM, IREPA, ICRAM).</li> <li>• Fisheries research programs are performed through specific modules related to: <ul style="list-style-type: none"> <li>• Fishing capacity and fishing effort</li> <li>• Evaluation of catches</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Research module aimed to evaluate the economic situation of the sector :</li> <li>• Collection of economic data by groups of vessels</li> <li>• Collection of data concerning the processing industry</li> </ul>	None	None

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
			and landings including for recreational activities <ul style="list-style-type: none"> <li>• Catches per unit effort</li> <li>• Scientific evaluation surveys</li> <li>• Biological sampling of catches</li> </ul>			
<b>Lebanon</b>	None	<ul style="list-style-type: none"> <li>• Fishing vessels Census through FAO technical Cooperation Program (TCP) which provided characteristic and information about fishing fleet in Lebanon;</li> <li>• Initiation with FAO-MedFisis project, aimed at data collection on Operational Units.</li> </ul>	None	None	None	Disaster control
<b>Malta</b>	<ul style="list-style-type: none"> <li>• Trawl surveys (MEDITS in spring and GRUND in autumn) showed a generally stable status for demersal resources with no signs of over-exploitation in GSA 15;</li> <li>• contribution to the</li> </ul>	<ul style="list-style-type: none"> <li>• National fishery statistics system based on sampling network, logbooks and fish market sales;</li> <li>• Fisheries Databases developed for OUs, landings, recreational fisheries, trawl surveys (MEDITS, FEIS, MedStat)</li> </ul>	<ul style="list-style-type: none"> <li>• Research programs on acoustic, ichthyoplankton, sediments and benthos, multidisciplinary demersal studies (with support of AdriaMed);</li> <li>• funded EC program on deep red shrimps fishery.</li> </ul>	<ul style="list-style-type: none"> <li>• Carrying out census aimed to economic and social aspects.</li> </ul>	participating in EC funded program on conservation of seabird (Yelkouam Shearwater)	None

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
	regional scientific monitoring and assessment processes related to <i>Thunnus thynnus</i> , <i>Xiphias gladius</i> and <i>Coryphaena hippurus</i>					
<b>Montenegro</b>	<ul style="list-style-type: none"> <li>• With support of FAO AdriaMed project, parameters of the main demersal and small pelagic fisheries were assessed; they showed a relative stability in trend.</li> </ul>	<ul style="list-style-type: none"> <li>• Data on fishing vessels are collected by Institute of Marine Biology during the process of approval of fishing licenses and submitted to the Statistics Institute (MONSTAT).</li> </ul>	<ul style="list-style-type: none"> <li>• AdriaMed Trawl Survey during autumn;</li> <li>• Use of the DEPM to estimate the biomass of sardines;</li> <li>• Studies of biology and population dynamics of juvenile stages of sardines and anchovies in Bokotorska Bay.</li> </ul>	<ul style="list-style-type: none"> <li>• Preparing a software to collect the socio-economic parameters in the fishery sector, with the support of AdriaMed.</li> </ul>	No information	None
<b>Morocco</b>	<ul style="list-style-type: none"> <li>• LCA approach and acoustic surveys showed a decline of biomass of sardine which is qualified as fully exploited;</li> <li>• Y/R approach showed that <i>Mullus barbatus</i> is overexploited</li> </ul>	<ul style="list-style-type: none"> <li>• National fishery statistics system and census based system performed by the National Institute of fisheries research (developed in the framework of MedStat)</li> </ul>	<ul style="list-style-type: none"> <li>• National research programs aimed to study the main demersal and pelagic species fisheries and assess their exploitation state;</li> <li>• Specific studies on bivalves and coral</li> </ul>	<ul style="list-style-type: none"> <li>• National research programs focusing on socio-economic indicators for the artisanal fishery and market data of the main fishery products.</li> </ul>	<ul style="list-style-type: none"> <li>• follow up of the Cetacean of the Mediterranean coast;</li> <li>• Pilot study to minimize interactions between fishing activities and Cetacean</li> </ul>	<ul style="list-style-type: none"> <li>• Research activities on :</li> <li>• Genetic aspects of the Anchovy;</li> <li>• Study of the horse mackerel (<i>trachurus</i> sp.);</li> <li>• Small tunas fisheries.</li> </ul>

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
<b>Spain</b>	<ul style="list-style-type: none"> <li>• State of exploitation of some demersal species was assessed by VPA:</li> <li>• Red shrimp in GSAs 6 and 5: fully exploited.</li> <li>• Deep-water pink shrimp in GSA 6: fully exploited probably close to overexploitation.</li> <li>• Red mullet in GSA 6: overexploited.</li> <li>• Striped mullet GSA 5: fully exploited.</li> <li>• Hake in GSAs 5, 6 and 7: over-exploited.</li> <li>• Hake exploited by the French and Spanish fisheries in GSA 7: overexploited.</li> <li>• Anchovy and Sardine: low levels of biomass and/ or declining biomass and recruitment in GSAs 1 and 6.</li> </ul>	<ul style="list-style-type: none"> <li>• National fishery statistics system established in compliance with current EU legislation;</li> <li>• Data are collected in all places in which a first sale of the fishery products is performed and recorded in the centralized database of General Secretariat of Maritime.</li> </ul>	<ul style="list-style-type: none"> <li>• Research program performed by IEO and aimed to monitor the fisheries of the main commercial species, based on relevant data collected under the guidelines of the National Program supported by the EU;</li> <li>• Research project on Red seabream in Gibraltar strait;</li> <li>• The 12th trawl survey of MEDITS and ECOMED;</li> <li>• Research programs on Tuna and tuna like species as well as the BFT farming;</li> <li>• Integrated approach to the biological basis of age estimation in commercially important fish species.</li> </ul>	No information	<ul style="list-style-type: none"> <li>• The IEO has carried out:</li> <li>• surveys monitoring oceanographic conditions in GSAs 1, 5 and 6;</li> <li>• activities related to Marine Protected Areas;</li> <li>• study of the interactions among the oceanographic parameters and their variability and the main fisheries resources;</li> <li>• Tuna larval surveys in the Balearic archipelago;</li> <li>• experimental program to reduce the impact of long line on incidental catch and mortality of marine turtles (<i>Caretta caretta</i>).</li> <li>• Ecological and oceanographical studies.</li> </ul>	None

Member country	Status of stocks of priority species	Status of the statistics and information system	Status of research in progress	Status of the social sciences studies in progress or achieved during the intersessional period	Marine environmental studies in progress	Research suggestions for consideration by SAC
<b>Tunisia</b>	None	<ul style="list-style-type: none"> <li>• National fishery statistics (DGPA) in charge of data collection on landings and fleet;</li> <li>• Scientific databases are set up in the framework of the activities undertaken by INSTM and with the support of FAO regional project</li> </ul>	<ul style="list-style-type: none"> <li>• 3 main Research Programs :</li> <li>• « Programme National Mobilisateur (PNM) » for stock assessment of marine resources (1996 – 1999) ;</li> <li>• « Programme de Recherche sur Contrat (PRC) » for stock assessment of marine resources (1999 – 2002) ;</li> <li>• Research actions related to the follow up of the main fisheries and their state, gears selectivity etc.. (ESREB, ESSATEL ERACHID) (2002 – 2006).</li> </ul>	<ul style="list-style-type: none"> <li>• Activities related to the socio-economic indicators;</li> <li>• Use of bioeconomic models applied to shrimp.</li> </ul>	<ul style="list-style-type: none"> <li>• Main research on:</li> <li>• Inventory of biological diversity and ecosystems;</li> <li>• models and tools applied to research on coral.</li> </ul>	<ul style="list-style-type: none"> <li>• Regional research program on the exotic species</li> </ul>
<b>Turkey</b>	<ul style="list-style-type: none"> <li>• Catch figures covering the years 2000-2005 indicates that marine fishing yield has not changed significantly</li> </ul>	Fisheries statistics are collected by Turkish Statistical Institute (TURKSTAT) and Ministry of Agriculture and Rural	no research on priority species has been conducted	none	Monitoring of production areas for mussels and areas for aquaculture continues	None

---

<b>Member country</b>	<b>Status of stocks of priority species</b>	<b>Status of the statistics and information system</b>	<b>Status of research in progress</b>	<b>Status of the social sciences studies in progress or achieved during the intersessional period</b>	<b>Marine environmental studies in progress</b>	<b>Research suggestions for consideration by SAC</b>
	in the last years.	Affairs Harmonization of national fisheries information system (FIS) with that of the EU is underway				

## **Annex C. National Reports<sup>2</sup>**

### **ALGERIE**

Les travaux de recherche du domaine marin et des activités liées à la pêche sont menés par différentes équipes rattachées à trois ministères :

- 1- Ministère de la Pêche et des Ressources Halieutiques (MPRH),
- 2- Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (MESRS),
- 3- Ministère de l'Aménagement du Territoire et de l'Environnement (MATE)

#### **1. ETAT DES STOCKS DES ESPECES PRIORITAIRES**

Il est à signaler la non participation de l'Algérie aux travaux des sous-comités et des organes de préparation de la 9<sup>ème</sup> session du CSC (ateliers et groupes de travail). Cependant, des études d'évaluation des ressources halieutiques sont entreprises, notamment :

- la prospection et l'évaluation des ressources pélagiques de la plate forme continentale ainsi que celles des ressources démersales des fonds chalutables effectuées respectivement en 2003 et 2004 par le navire *Vizconde de Eza*.
- le schéma directeur de développement des activités de la pêche et de l'aquaculture à l'horizon 2025. (2006)
- le plan d'aménagement des pêcheries algériennes (2006-2009)
- l'étude du corail rouge : évaluation et cartographie (2006-2007)

#### **2. STATUT DU SYSTEME D'INFORMATION ET STATISTIQUE**

##### **2.1. Système statistique actuel du secteur de la pêche**

###### **2.1.1. Description**

Le dispositif de collecte des données statistiques nationales des pêches couvre essentiellement les lieux de débarquements. Quotidiennement des agents relèvent la production totale de tous les senneurs et partielle (échantillonnage) de quelques chalutiers et petits métiers. En absence des agents, ces informations sont récoltées, indirectement, auprès des professionnels ou des mandataires. Les données relatives à l'effort de pêche (flottille, collectif marin) sont obtenues auprès de l'autorité maritime locale et du service des gardes côtes.

###### **2.1.2. Acheminement et traitement de l'information**

Les données récoltées sont transmises aux directions des pêches de wilaya qui, à leur tour, les transmettent sur une double base périodique (canevas décadaire, canevas mensuel, semestriel) à la direction centrale où un service effectue le traitement et l'analyse.

###### **2.1.3. Faiblesse du système**

- Modalités d'intervention des agents statisticiens non définies,
- méfiance et réticence de coopération des professionnels (garantir le secret professionnel),
- certains abris de pêche et plages d'échouage ne sont pas couverts par ce système,
- les horaires de certains débarquements (en particulier pour les chalutiers et les petits métiers) sont inconnus et irréguliers,
- connaissance insuffisante des indicateurs socio-économiques et institutionnels.

---

<sup>2</sup> National reports in language of submission

## 2.2. Amélioration du système

La mise en place d'une nouvelle base de données au niveau de la centrale et des directions de pêche de wilaya, les modalités d'intervention des agents statisticiens, l'élaboration de documents et formulaires de collecte et de transmission des informations statistiques, l'installation de réseaux extra net, la construction et l'aménagement de halles à marrées ainsi que le recensement général des activités de la pêche maritime (effectué en 2004) permettront une collecte rapide et fiable.

## 2.3. Transmission des données aux organismes internationaux

Les données collectées sont transmises annuellement à certains organismes internationaux notamment la production des thonidés pour l'ICCAT, les captures par espèces et la production aquacole pour la FAO.

Notons enfin que des documents portant sur les statistiques de pêche 2000-2005, les résultats du recensement général des activités de la pêche 2004 ont été publiés.

## 3. ETAT DE LA RECHERCHE

Parmi les travaux de recherche nous citerons quelques projets effectués ou en cours de réalisation.

### 3.1. Projets MPRH entrepris par l'Unité de recherche du Centre National d'Etudes et de Documentation pour la Pêche et l'Aquaculture (CNDPA) :

- Biologie et estimation de la biomasse exploitable de la sardine (*Sardina pilchardus*) et de la sardinelle (*Sardinella aurita*) le long des côtes algériennes.
- Maîtrise des techniques de transformation et valorisation des produits de la pêche à faible valeur marchande.
- Commercialisation des produits de la pêche.

### 3.2. Projets MESRS

#### 3.2.1. Entrepris par le Laboratoire Halieutique de la Faculté des Sciences Biologiques de l'Université des Science et de la Technologie Houari Boumediene (USTHB) :

- Biologie, Ecologie et Exploitation des espèces démersales pêchées sur la côte algérienne. (2000-2003)
  - Biologie et exploitation de certaines espèces démersales de poissons et crustacés fréquentes et abondantes sur les côtes algériennes. (2004-2006)
- Pour ces deux projets, les espèces étudiées sont *Pagellus acarne*, *Lithognathus mormyrus* et *Boops boops* pour la famille des Sparidae, *Helicolenus dactylopterus dactylopterus* pour les Scorpaenidae, le genre *Spicara* pour les Centranchantidae, *Mugil cephalus*, *Chelon labrosus*, *Liza aurata* et *Liza ramada* pour les Mugilidae, quelques espèces de raies et de requins pour les Sélaciens, *Aristeus antennatus* et *Parapenaeus longirostris* pour les crevettes.

#### 3.2.2. Entrepris par le Laboratoire Bio Ressources Marines de l'Université d'Annaba :

- Caractéristiques biologiques, pêcherie et potentiel piscicole de la lagune du Lac\_Mellah. (1999-2003).
- Ichtyofaune côtière du golfe d'Annaba : inventaire et biologie halieutique. (1997 – 2003).
- Biologie, dynamique et évaluation des ressources ichtyologiques côtières de l'Est algérien. (2003–2007).
- Ichtyofaune côtière du Golfe d'Annaba : diversité génétique et biologie halieutique. (2004-2008).

- Bases scientifiques de l'élevage des sparidés et des soléidés : biologie, génétique et parasitologie. (2006-2008).

### 3.2.3. Entrepris par l'Institut des Sciences de l'Aménagement du Littoral (ISMAL) :

- Identification, inventaire et cycle annuel de l'ichtyofaune de la baie de Bou Ismail.
- Fonds meubles des côtes algériennes : bionomie benthique, biodiversité et bio surveillance.
- Exploitation et biologie des ressources accessibles aux engins de pêches des petits métiers et développement de la pêche des petits métiers et de la pêche artisanale.
- Inventaire taxonomique et évaluation de l'ichtyofaune continentale algérienne.

## 4. ETUDES EN SCIENCES SOCIALES ACHEVEES OU EN COURS (ECONOMIE, LEGISLATION, SOCIOLOGIE, ETC.)

Les travaux en sciences sociales ont été présentés dans le rapport national du 7<sup>ème</sup> CSC (en 2004). Les études de recherche touchant les aspects socio-économiques du secteur de la pêche n'ont pas été entamées.

## 5. ETUDES DANS LE DOMAINE DE L'ENVIRONNEMENT MARIN

### 5.1. Etudes menées par le MPRH

Etude de salubrité et classification des zones de pêches et d'aquaculture : identification et classification des zones productives marines, évaluation du degré de pollution marine dans les baies et les bassins (des zones de pêche), identification des sources et des types de pollution sur le milieu et les ressources halieutiques, évaluation sanitaire des produits de la mer, étude de l'impact de l'activité de la pêche et de l'aquaculture sur le milieu marin et continental, classification des sédiments et des eaux des ports et abris de pêche selon le degré de pollution, conception et réalisation de la cartographie des zones salubres et insalubres marines.

### 5.2. Etudes menées par le MESRS

- Etude de la pollution et de la fertilité des côtes algériennes.
- La pollution dans les ports algériens.
- Formes naturelles et anthropisation du littoral ouest algérois.
- Analyse de la pollution et des polluants organiques et inorganiques dans l'environnement marin.
- Etude d'aménagement et de pollution des sédiments des ports algériens.
- Aménagement du littoral : Erosion, dynamique et gestion des zones côtières.
- Aspects juridiques de la gestion de l'environnement côtier.
- Ecosystème à *Posidonia oceanica* : approche structurale, fonctionnelle et appliquée.
- Evaluation de la qualité du milieu marin par la mise en place d'un réseau de surveillance des herbiers à *Posidonia oceanica*.
- Inventaire, conservation et gestion de la biodiversité marine et littoral.
- Etudes sur la mise en place de réserves marines.

### 5.3. Etudes menées par le MATE

- Etude de classement des Iles Habibas (secteur ouest algérien, Wilaya d'Oran) et de l'Ile Rechgoune (secteur ouest algérien, Wilaya de Aïn Témouchent) en réserve naturelle marine
- Plan d'aménagement côtier pour les trois secteurs algériens (ouest, centre et est)
- Etude d'aménagement de la zone naturelle Chenoua et Anse de Kouali (secteur centre algérien, Wilaya de Tipaza) et de la réserve naturelle marine des Iles Habibas et de l'Ile Rechgoune
- Etude de réalisation de trois musées marins (ouest : Oran, centre : Tipaza et est : Annaba)

**6. PROPOSITIONS DE RECHERCHE POUR LE CSC :**

Actualisation des différents programmes réalisés dans le cadre du projet Copemed :

- Enquête- cadre pour le recensement des activités de pêche
- Indicateurs socioéconomiques des pêcheries algériennes
- Pêche Artisanale.

## CYPRUS

### 1. INTRODUCTION

The authority responsible for all fishery matters of Cyprus is the Department of Fisheries and Marine Research (DFMR) of the Ministry of Agriculture, Natural Resources and Environment. The activities of the DFMR concern the research, development and management of fisheries and aquaculture, marine ecology, the protection of endangered species and habitats, physical and chemical oceanography and the prevention and combat of marine pollution. Furthermore, the Department promotes supporting programmes for the fishermen. It is also responsible for the enforcement of the relevant Legislation.

### 2. STATUS OF THE STOCKS OF PRIORITY SPECIES

The fishery sector of Cyprus is comprised of two main sub-sectors, the marine capture fishery and aquaculture. Recreation and the processing/marketing can be considered as sub-sectors with minor importance.

The Cyprus marine capture fishery consists of the inshore, the trawl and the polyvalent fishery. The sport fishery is also included in the capture fishery, although its catch is not yet reflected in the statistics.

From the study of the detailed data collected is derived that the tendency of the Cyprus fishery is in decline; the trend is clearly obvious the last five years.

In 2005 the stocks of the species *Mullus surmuletus*, *Mullus barbatus*, *Boops boops*, *Pagelus erythrinus* and *Spicara smaris* continued to be overexploited to various degrees.

### 3. STATUS OF THE STATISTICS AND INFORMATION SYSTEM

The National system of fishery statistics is managed by the DFMR. Fishery statistical data are collected by:

- Direct Reports (logbook reports)
- Legislative procedures (registration data)
- Interviews (census)
- Sampling Surveys (fishing fleet, scientific surveys)

Direct reports include the trawl and the polyvalent fishery reports, the inshore fishery production reports, and others.

The statistical data reports are collected by the Fisheries Inspectors employed in the District Units, which are located at the main fishing ports of Cyprus or by Inspectors based at the Head Office in Nicosia and are sent to the Statistics Section of the Department for computer processing and analysis. The data are then stored by the Statistics Section of the Department of Fisheries and Marine Research (DFMR) in a database.

The fishery statistics and information system satisfies in a great degree the needs of Cyprus regarding fishery data. The system is expected to be further upgraded through the introduction of an improved database, which is needed for the Data Collection Regulation of the European Union.

### 1. STATUS OF THE RESEARCH IN PROGRESS

Research on the inshore and trawl fishery of Cyprus is conducted by the Department for more than two decades, in order to carefully follow the state of the most commercially important stocks. The

data are collected by commercial trawlers surveys. They are also collected from the inshore boats' catch by random visits to all fishing stations of the coast under the effective Government control.

The species being assessed every year are: *Mullus surmuletus*, *Mullus barbatus*, *Spicara smaris*, *Boops boops* and *Pagellus erythrinus*. These species represent more than 60% of the total catch of demersal species of Cyprus.

Assessment of the stocks are carried out by monitoring the structure of the fish populations, age analysis, as well as forecasts with regards to the development of fisheries stocks, the MSY of the fishery and other parameters.

Since 2005, Cyprus implements Council Regulation (EC) No 1543/2000 establishing a community framework for the collection and management of the data needed to conduct the common fisheries policy. In this respect, a National Programme for the collection of biological and economic fisheries data is implemented annually. The Programme includes, among others, the collection of discard data, biological sampling for creating/reviewing age-length keys and estimating biological parameters (i.e. growth, maturity) for a number of species.

Furthermore, the National Programme includes the implementation of the International Bottom Trawl Survey in the Mediterranean (MEDITS) around the Cyprus seas under Government control. The aim of the survey is to collect biological data from the Cyprus demersal species, for creating time series of abundance and biomass indices, and length frequency distributions. The trends of these data will provide information on the status of the Cyprus fishery resources, which may contribute to their management.

Other research activities:

The DFMR participates in many EU Oceanographic research projects, most of them aiming to develop the operational Oceanography in the Mediterranean Sea.

Finally, research in Aquaculture is being done in the Department's experimental stations. The research projects of Aquaculture include reproduction, development of brood stock populations and good quality and quantity of eggs and larvae of species cultured.

## **2. STATUS OF THE SOCIAL SCIENCE STUDIES IN PROGRESS**

The DFMR carries out socio-economic surveys to assess the economic situation of the fisheries sector in Cyprus.

The sources for collecting the socio-economic data are the Inshore Fishery Production Reports, Logbooks, the Fishing Licenses and the Sales Notes from the fishmongers for verifying the quantities of production and the value of production of the Inshore Fishery. Moreover, an important tool that is used for the economic analysis is the face-to-face interviews. The interview-questionnaire method is conducted in cooperation with the National Statistical Service.

Some of the target variables are income, gross value of landings, production cost, financial position of fishermen, investments, live/weight prices per species and number of persons employed.

## **3. MARINE ENVIRONMENTAL STUDIES IN PROGRESS**

Research on the marine ecology is undertaken through various National and EU funded projects.

National Projects include:

- The turtle project, which aims to the protection and conservation of marine turtles and their biotopes.
- Research in marine biodiversity and identification of natural sites of ecological interest.
- Studies on the ecological relationships among marine macrobenthos and the ambient environment, especially in areas affected by activities such as aquaculture, as well as studies on marine invasive alien species.
- Wetland monitoring is an on ongoing activity, which focus on the ecology and monitoring of the environmental parameters of the Larnaca Salt lake complex and Akrotiri wetlands.
- Studies on the development of marine protected areas, including the development of artificial reefs.

The EU Projects are the following:

- Life, focus on the protection and management of some proposed areas for the NATURA 2000.
- Interreg III A Greece - Cyprus, on the development of an assessment system for the environmental impacts from aquaculture.
- Interreg III A Greece - Cyprus, Research on the anthropogenic impacts on the quality of the coastal environment and application of environmental quality indicators within the framework of Water Framework Directive (2000/60/EC).

Also a Project on the development of Integrated Water Monitoring Programmes and Tools for Cost – Effective Monitoring and Assessment to Support sustainability of Water Resources and the Implementation of Water Framework Directive 2000/60/EC in Cyprus, is implemented in collaboration with the Water Development Department and the State General Laboratory within the framework of the Transition Facility.

- MEDPOL / UNEP, Monitoring on the quality of the coastal waters, including assessment of pollutants (heavy metals etc.) in fish.

## FRANCE

En France, les travaux de recherche halieutique pour la Méditerranée sont essentiellement réalisés au sein du laboratoire « Ressources Halieutiques » et du service « Technologie des pêches » de l'IFREMER, regroupés au sein du Centre de Recherche Méditerranéen et Tropical de Sète.

### 1. ETAT DES STOCKS D'ESPECES PRIORITAIRES

Espèces démersales :

Une nouvelle évaluation du stock partagé franco-espagnol de merlu du golfe du Lion a été réalisée cette année, en particulier au moyen du logiciel XSA d'analyse de population virtuelle (VPA) appliqué à la série de données de la période 1998-2004. Cette analyse a été calibrée en utilisant des séries de CPUE établies à partir de données sur les flottilles professionnelles et de données provenant des campagnes de chalutage expérimental MEDITS. L'analyse a aussi pris en compte les hypothèses et observations récentes sur la croissance de cette espèce. Le rendement par recrue (Y/R) a également été étudié. Ce stock apparaît comme étant très fortement exploité, avec une tendance à la baisse du recrutement et une surexploitation de croissance associée à un risque de surexploitation de recrutement.

Les chercheurs de l'IFREMER ont participé à l'analyse des données recueillies dans l'ensemble des secteurs couverts par les campagnes MEDITS. Les résultats traduisent en général un accroissement de la proportion de poissons de petites tailles dans le bassin nord-occidental de la Méditerranée au cours de la décennie 1994-2004. Ils montrent aussi que le recrutement de nombreuses espèces est très variable d'une année à l'autre.

Petits pélagiques :

L'analyse des résultats des évaluations directes par échantillonnage a montré une tendance forte à la baisse du stock d'anchois de 2001 à 2005. Toutefois, les résultats préliminaires de la campagne PELMED06 laissent augurer une augmentation de la biomasse d'anchois en 2006 avec une forte proportion d'individus d'âge 1. Pour la sardine, l'effet inverse a été constaté, avec une très forte estimation de la biomasse en 2005 et une prévision plus modeste en 2006. On a également noté les signes d'un accroissement de la biomasse de maquereau européen durant la période étudiée.

### 2. ETAT DES STATISTIQUES ET DES SYSTEMES D'INFORMATION

Comme les années précédentes, l'échantillonnage des débarquements par la flotte chalutière de plusieurs espèces démersales, ainsi que l'échantillonnage des petits pélagiques ont été réalisés régulièrement lors du débarquement des navires dans les ports du littoral français. Ces données ont été saisies dans la base de données de l'Ifremer.

Les campagnes de chalutage MEDITS menées à partir du navire océanographique « L'EUROPE » et destinées à fournir des données pour l'évaluation directe des ressources démersales en Méditerranée le long des côtes françaises, se sont poursuivies en 2006 pour la 12ème année consécutive. (toutes les espèces capturées sont comptées et pesées et 36 d'entre elles sont sexées, le stade de maturité des individus est déterminé et les individus sont mesurés par sexe et stade de maturité).

Par ailleurs il est toujours pratiquement impossible d'échantillonner les tailles des thons rouges capturés par la flottille française, à cause du transbordement des poissons vivants directement depuis les sennes jusqu'aux cages pour engraissement.

### 3. ETAT DES RECHERCHES EN COURS

Le laboratoire IFREMER de Sète a poursuivi en 2005 la réalisation de son programme national pluriannuel d'étude de la sardine et de l'anchois dans le golfe du Lion. Ce programme consiste en une évaluation annuelle des populations par échantillonnage et en études sur le comportement et la variabilité spatio-temporelle des espèces.

Les travaux du projet MERLUMED se sont poursuivis en 2005. Son objectif est de modéliser la contamination chimique par certains contaminants dans le réseau trophique du merlu du golfe du Lion. Cette action s'inscrit dans le cadre du programme de recherche pluridisciplinaire MEDiCiS pour la protection de l'écosystème marin contre les pollutions induites par l'émission de substances chimiques.

Une étude de la croissance du merlu du golfe du Lion par marquage/recapture est également en cours à partir du laboratoire IFREMER de Sète. En effet l'âge et la croissance de cette espèce ont été étudiés jusqu'à présent à partir d'observations sur les otolithes, dont il est très difficile d'interpréter les macrostructures. Aussi bien en Atlantique qu'en Méditerranée de récentes expériences de marquage indiquent que les courbes de croissance utilisées actuellement surestiment les âges correspondant aux tailles des petits individus.

Les opérations de marquage ont commencé dans le golfe du Lion en 2005 au cours de deux petites campagnes de mise au point de la technique et de choix du matériel de pêche. En avril-mai 2006, une campagne a permis de marquer et de relâcher en mer 4170 merlus vivants. Cinq mois plus tard (début octobre 2006), 5 % de ces poissons ont déjà été récupérés. Une seconde campagne de marquage de 25 jours est programmée pour avril-mai 2007.

Dans le cadre des travaux du groupe MEDITS, les chercheurs de l'IFREMER poursuivent le développement d'une méthode d'analyse permettant d'élaborer des diagnostics sur l'impact des pêcheries multisécifiques sur les écosystèmes, de caractériser la variabilité spatiale et d'identifier des tendances dans les séries d'indices d'abondance. Des résultats préliminaires dans ce domaine ont été obtenus en 2006 à partir des données globales obtenues durant la période 1994-2004.

Enfin l'IFREMER a participé cette année à l'élaboration d'un projet communautaire pour l'étude des stocks d'anchois et de sardine en Méditerranée nord-occidentale, Adriatique et Mer Egée. Il s'agit du projet SARDONE, orienté vers l'amélioration des méthodes d'évaluation des biomasses et des recrutements des stocks, des connaissances sur l'écologie des larves et des juvéniles et sur l'amélioration de la sélectivité des engins de pêche.

L'équipe de Technologie des pêches de Sète participe à ce programme en réalisant des campagnes orientées vers la capture du merlu sur le plateau et le talus continental. Le chalut spécial à grande ouverture verticale qui a été développé à cet effet a donné de bons résultats. (filet divisé horizontalement en deux parties et permet de collecter séparément les individus passant par la moitié supérieure et ceux passant par la moitié inférieure.

En collaboration avec les organisations professionnelles, l'IFREMER a poursuivi ses travaux sur le développement des techniques de pêche aux nasses comme alternatives à la pêche aux filets maillants et au chalut sur la pente continentale. Le type de nasses expérimenté est inspiré des nasses norvégiennes pliantes utilisées pour la capture des gadidés profonds. Leur conception ont été améliorée pour répondre aux conditions d'utilisation de la pêche des petits métiers provençaux. Si le modèle choisi a permis de bons rendements en congre et mostelle, l'IFREMER s'attachera à tester d'autres modèles ciblant davantage la capture d'espèces de haute valeur marchande comme la dorade rose, le cernier et la langouste.

Avec la participation de plusieurs instituts européens, le projet communautaire CAFE a pour objectif d'examiner les relations entre capacité, effort et la mortalité par pêche au travers de l'étude de différents cas de pêcheries mixtes et de proposer de nouvelles mesures de gestion établies à partir de l'analyse de différents scénarios. L'ifremer, qui participe à ce projet notamment aux côtés du NCMR,

a choisi comme étude de cas, la flottille de chalutiers mixtes du golfe du Lion dont l'activité repose à la fois sur la pêche des petits pélagiques et celle d'espèces démersales, comme le merlu. L'Ifremer s'attachera en outre à tenter d'évaluer l'importance des effets du progrès technologique sur l'effort de pêche exercé sur ces 2 groupes d'espèces.

L'IFREMER a également mené des travaux de recherches sur le thon rouge dans le cadre de deux programmes nationaux (le Programme nationale sur les écosystèmes côtiers, PNEC, et le programme MERCATOR) et d'un programme européen (FEMS). Les deux premiers programmes, coordonnés par le laboratoire de Sète de l'IFREMER, ont pour objectifs d'analyser d'une part l'impact des structures physiques des masses d'eau sur la distribution spatiale du Thon rouge en Méditerranée et d'autre part d'élaborer des modèles statistiques pour reconstruire avec précision les trajectoires issues des marques actives pop-up. L'ensemble de ces travaux donne lieu à publications. Le programme FEMS, co-financé par l'UE et coordonné par le CEPAS-Lowesoft (Angleterre), vise à élaborer des modèles de simulation permettant de quantifier l'impact de certains processus biotiques ou abiotiques sur la procédure de gestion de certains stocks de poissons pélagiques et démersaux de l'Atlantique Nord. Le volet se rapportant au Thon rouge de Méditerranée et de l'Atlantique Est consiste à évaluer l'impact des fluctuations périodiques séculaires sur l'évaluation et la gestion de ce stock. En 2006, l'IFREMER Sète a été fortement impliqué dans les travaux préparatoires et l'évaluation quadri-annuelle de l'ICCAT du stock de thon rouge de l'Atlantique Est & Méditerranée.

#### **4. ETAT DES ETUDES EN SCIENCES SOCIALES EN COURS OU REALISEES PENDANT L'INTERSESSION**

#### **5. ETUDES EN COURS SUR L'ENVIRONNEMENT**

Le service de Technologie des pêches a poursuivi ses actions en matière d'étude de l'impact des techniques de pêche sur l'environnement et les ressources en Méditerranée.

Dans ce cadre, le projet NASMED vise d'une façon générale, l'examen des possibilités de développement de la pêche aux nasses et casiers comme alternative à la pêche aux filets calés et au chalut de fond pour la pêche dans des zones écologiquement sensibles, notamment dans les canyons. Il recherche plus particulièrement l'adaptation de la flottille des fileyeurs-palangriers provençaux à cette technique, en termes d'ergonomie et de stratégie. Il s'appuie sur la réalisation de campagnes expérimentales mettant en œuvre une sélection de navires de petite pêche et équipés de nasses pliables adaptées à la pêche profonde.

## GREECE

### 1. STATUS OF STOCKS OF PRIORITY SPECIES

**Anchovy** (*Engraulis encrasicolus*), a shared stock in the Aegean Sea (GSA 22), has been assessed by samplings only in the territorial national waters. The biomass of anchovy was estimated in June 2003, June 2004 and June 2005 with the concurrent application of the Daily Egg Production (DEPM) and the Acoustic methods. Spawning stock biomass (SSB) based on the DEPM was 40042 t in 2003, 22799 t in 2004 and 20533 t in 2005. Stock biomass based on acoustics was 47838 t, 46508 t and 31852 t in 2003, 2004 and 2005, respectively. Results showed a remarkable decline of anchovy biomass in the eastern part of the Aegean Sea between 2003 and 2004 and in the western part of the surveyed area between 2004 and 2005.

### 2. STATUS OF THE STATISTICS AND THE INFORMATION SYSTEM

There is not any change of the National System of fisheries statistics during the last year. Fishery statistical data are collected by Administration under various Ministries.

Fish landing data are collected by the National Statistics Service (Ministry of Finance). In addition landing data are collected according to Reg. (EC) 2847/1993 by the Ministry of Rural Development and Food and transmitted to DG FISHERIES. In particular, catch data for large pelagics, eg. tunas and tunas like, are collected under the above mentioned regulation for the need of monitoring bluefin (*Thunnus thunnus*) quotas.

Fleet registry including vessel technical characteristics are collected by the Ministry of Mercantile Marine, which is on line with the Ministry of Rural Development and Food and Local Prefectures allowing for updating either in terms of vessels or equipment.

The fisheries data arrive to the FAO through the National Statistics Service. Fisheries data are also collected in the framework of the Greek National Fisheries Data Collection Programme funded by the Greek government and the European Union according to the Reg. (EC) 1543/2000. All data collected are stored in a data base and they are available on request by DG FISHERIES

### 3. STATUS OF RESEARCH IN PROGRESS

- **December 2005- December 2007 Small pelagic: Improvement of in year management of small pelagic fish in Aegean Sea. Study EU-DG XIV, Project FISH/2004/03-35**

The aim of this project is the improving of the *in year* management of small pelagic in Aegean Sea (Eastern Mediterranean Sea) and the identification of appropriate areas for the management of fishing effort. This includes compiling and analysing all relevant data concerning anchovy and sardine stocks in the Aegean Sea that have been collected within the framework of several past European and National projects (1995 to 2000) as well as data that are currently being collected. The results will be used in an effort to adequately assess the stocks through an Integrated Catch at Age analysis and will be presented along with different management options in the scientific meetings of the GFCM. In addition, modern geostatistical techniques will be applied to estimate the spatial characteristics of species aggregations, for the optimization of sampling design in research surveys and improvement of precision of the abundance estimates. Data from past and ongoing research surveys (acoustics and ichthyoplankton) in the Aegean Sea will be analysed in an effort to define the effect of area topography on pelagic fish spatial structure.

- **September 2006- March 2008 Comparison of the main anchovy stock population features between two areas (Greece: Aegean Sea) and (Montenegro: Adriatic).**

This project aims at comparing the main anchovy population features related to the status of the stocks in the Aegean Sea (Greece) and the Adriatic (Serbia-Montenegro). Comparison of the main anchovy population features will be achieved by analyzing and comparing a) acoustic data related to the spatial structure characteristics of anchovy population and b) histological data related to the reproductive biology of anchovy. The proposed study aims in the scientific and technological

collaboration between the two countries in order to improve the existing knowledge concerning the main features of the anchovy population that characterize the status of the stocks.

- **Improving assessment and management of small pelagic species in the Mediterranean (Acronym SARDONE). Proposal/Contract no.:FP6 - 44294**

The project aims at developing a series of tools which will enable a better understanding, stock assessment and fishery management of small pelagic fish resources (anchovy and sardine) of the Mediterranean. The three major stocks and fisheries i.e. the NW Mediterranean, the Adriatic and the Aegean have been chosen. Investigations will aim at detecting nursery areas, at developing echo-surveys for recruitment strength estimation, at filling the complete gap in knowledge on the ecology of late larvae and juveniles, at improving the selectivity of current fishing gear, at assessing the impact of fry fisheries on the stocks, at exploring the application of novel stock assessment methodologies to Mediterranean small pelagic stocks.

- **Capacity fishing mortality and effort**

*Proposal acronym* CAFÉ

Contract No: 022644 - EU Specific Targeted Research Project (STREP)

Starting date: 1/2/06, Duration: 36 months

The project will examine the relationship between capacity, fishing effort and fishing mortality for six case studies; North Sea, Biscay & East Mediterranean pelagic fisheries; and North Sea, western (Biscay & Celtic Sea) and north west Mediterranean demersal fisheries. The project goal is proposing a series of new effort and capacity control measures and scenarios. These will be tested and compared to current measures using operational models. At all stages explicit measures will be taken to quantify structural and parametric uncertainty. The final outcome will be a comprehensive review of possible management measures and their likely effect in conserving fish stock resources.

- **National fisheries data collection programme 2002-2006: in application of regulation EC 1543/2000**

Regulation (EC) No 1543/2000 establishes a Community framework for the collection and management of data needed to evaluate the situation of the fishery resources and the fisheries sector. Member States set up national programmes for the collection and management of fisheries data in accordance with Community programmes. The Greek National data collection programme has been established on the minimum community programme (MP) covering the information strictly necessary for the scientific evaluations, as well as the extended programme (EP), which also includes information likely to improve in a decisive way the scientific evaluations.

- **Development of an integrated management system to support the sustainability of Greek Fisheries Resources (IMAS FISH)**

This project was submitted as part of the Third Community Support Framework (Natural Environment and Sustainable Development). The aim of the project is to provide necessary information for the support of sustainable management of the biological resources of Greek seas. The final product will be used to manage a data bank of fishery data and will show the results of the statistical analysis, advanced modelling and predictions made with the help of a GIS system.

- **Operational Evaluation Tools for Fisheries Management Options (EFIMAS)**

The objective of the EFIMAS project is to develop an operational management framework allowing the evaluation of the trade-off between different management objectives when choosing between different management options. The evaluation framework will inform an exploratory, adaptive decision-making process. Evaluation tools will be developed to appraise the biological, social and economic effects of fisheries management measures in the EU, and these will be applied to important fisheries. The tools will take account of the dynamics in the fisheries systems, as well as of uncertainties including also risk assessment.

- **Fisheries independent survey based operational assessment tools (FISBOAT)**

The purpose of this project is to develop fish stock assessment tools based on survey data only and evaluate how these perform in producing advice within defined management procedures. The project spans several disciplines (i.e., population biology, survey methods, stock assessment, management), with the objectives of (1) producing a comprehensive diagnostic of population status using survey-based population demography and biological indices and (2) evaluating its performance in a management context.

- **NECESSITY (CONTRACT No SSP8-CT-2003-501605)**

**Main Objectives**

- To develop effective and acceptable gear modifications and alternative fishing tactics in co-operation with the fishing industry to reduce the by-catch and mortality of non-target fish species in European Nephrops fisheries, and determine the biological effects and socio-economic repercussions of using these.
- To develop effective and acceptable gear modifications, acoustical deterrents and alternative fishing tactics in co-operation with the fishing industry to reduce the by-catch and mortality of cetaceans in European pelagic fisheries.
- To determine the biological effects and socio-economic repercussions of using these.

- **BEACHMED-e, ICZM-MED: Concerted actions, tools and criteria for the integrated coastal zone management of the Mediterranean.**

The ICZM-MED is a sub-project of the BEACHMED-e “Strategic management of beach protection measures for the sustainable development of the Mediterranean coastal areas” The main objective of this BEACHMED sub-project is to promote the integrated coastal zone management in different Mediterranean pilot sites from five regions, from three Mediterranean countries (Greece, Italy and France) and to contribute towards the setting up of a Mediterranean and national integrated management strategy.

- **Fisheries and population structure of *Scomber* spp. in the Mediterranean and S. Iberian Atlantic waters (SCOMBER, STUDIES 99/034)**

The fisheries and population structure of *Scomber scombrus* and *S. japonicus* were studied in well-defined and separated areas of the Mediterranean (Greece, Italy, Spain) and S. Iberian Atlantic waters (Portugal). In general, for all countries, *S. japonicus* seems to be more abundant than *S. scombrus*, but the economic importance of *S. scombrus* is higher than that of *S. japonicus*. In Greece, the maximum production appears for both species in June. The recruitment of the two *Scomber* species seems to be extended. The estimates of the growth parameters ranged between the study areas. The spawning period for *S. scombrus* is in winter and for *S. japonicus* in spring-summer. According to morphometric studies the most differentiated group for both species corresponded to Kavala individuals (Northern Aegean Sea). The genetic analysis, suggests that a single panmictic population exists for *S. japonicus* in the Mediterranean. In contrast, the populations of *S. scombrus* are split with the Greek and Italian populations forming the East-Central Mediterranean genetic stock and the Spanish and Portuguese populations forming the Western Mediterranean genetic stock. In addition, it has been shown that the Mediterranean populations of *S. scombrus* are genetically distinct from the North Atlantic ones. The discrepancy observed between the morphometric and genetic analyses implies that environmental parameters may influence the morphology of the two species as well as their biology, as this is inferred by the differences observed in the spawning season in the different localities examined.

- **Genetic catalogue, biological reference collection and online database of European Marine fishes (FISHTRACE).**

The main aim of FishTrace is to catalyse the cooperation and pooling of data and material corresponding to the genetic identification and characterisation of European marine fish species. FishTrace promotes common protocols, interconnects expertise and stimulates interoperability between complementary resources with the aim of generating an accessible DATABASE to

researchers and control laboratories with standardised data of European marine fishes. A large number of the approximately 220 targeted fish species has already been collected, taxonomically and genetically characterized and the data were loaded on the database. Following the internal validation of the entered information, the loaded data will be accessible by the public.

- **Depiction and feasibility study of fishing gears used in coastal fisheries**

Technical characteristics of fishing gears used in coastal fisheries in Greece such as nets, long-lines, traps and hooks have been revised and a data base has been established giving information per fishing port, gear category and target species. A feasibility study is also carried out for the main coastal gear categories and their socioeconomic dependency on fisheries.

#### 4. MARINE ENVIRONMENTAL STUDIES IN PROGRESS

- **Critical Interactions BETWEEN Species and their Implications for a PreCAUTIONARY Fisheries Management in a variable Environment - a Modelling Approach (BECAUSE) SSP8-CT-2003-502482**

The principle objective of this program is the identification and quantification of critical biological interactions between and within commercial target fish species and non-commercial top predators leading to a description of food web structures and the derivation of precautionary reference points for ecosystem oriented fisheries management. These precautionary reference points and limit values accounting for interacting mechanisms with the environment are necessary for the development of adaptive strategies in fisheries management.

- **Developing Indicators of Environmental Performance of the Common Fisheries Policy (INDECO)**

The program aims to develop suitable indicators for monitoring the state of the environment in relation to fisheries activities. The development of such indicators will deal with the single species population level, with the community level and then with the ecosystem level, while socio-economic indicators will be also built up. These indicators will be used to construct models for monitoring the impact of fisheries on the environment. The course of the works and the results achieved will be announced during two annual conferences, the second of which will be organized in Athens in May 2006.

- **Association of Physical and Biological processes acting on Recruitment and Post-Recruitment stages of Anchovy (ANREC, QLRT-2001)**

The main objective of ANREC is the understanding of the small pelagic fishes (anchovy) recruitment in relation to physical and biological parameters and the capability of predicting the effects of environmental and biological variability in recruitment. The site chosen for this study is the northeastern Aegean Sea (Thracian Sea). CPUE monthly values from 2000 to 2004 were not normally distributed showing a great influence of environmental and biological factors. The most distinct hydrological feature in the area of interest is the intrusion of the less saline (29-34) nutrient-rich Black Sea Water (BSW), which occupies the first 20-40 m of the water column. Furthermore, Thracian Sea is receiving freshwater inflows from rivers and lakes and thus can be characterized as a large water mass with great oceanographic complexity. The highest freshwater amounts and nutrients concentrations have been observed during wet season (November – April). The study has also revealed a genetic homogeneity in the populations of anchovy in the Thracian and Marmara Seas. The main spawning area is the Thracian Sea which seems to be of particular importance, due to its higher productivity and nutrient inflow. This area is also important for the juvenile stages.

## ITALY

### 1. STATUS OF THE STATISTICS AND INFORMATION SYSTEM

Fisheries data are collected in the framework of the Italian National Data Collection Program, which is supported both from the Italian Government and the European Union (Regulation 1543/00-1639/01-1581/04).

Regulation (EC) No 1543/2000 establishes a Community framework for the collection and management of data needed to evaluate the situation of the fishery resources and the fisheries sector. Member States set up national programmes for the collection and management of fisheries data in accordance with Community programmes. The Italian National data collection programme has been established on the minimum community programme (MP) covering the information strictly necessary for the scientific evaluations, as well as the extended programme (EP), which also includes information likely to improve in a decisive way the scientific evaluations.

The following modules are included in the Italian National Program:

#### **Module of evaluation of inputs: fishing capacity and fishing effort**

Module C - Fishing capacity

Module D - Fishing effort

#### **Module of evaluation of catches and landings**

Module E - Catches and landings

Commercial landings for all stock

Discards sampling

Recreational fisheries

Module F - Catches per unit effort

Module G - Scientific evaluation surveys

Required and achieved Priority 1 surveys

MEDITS

Tuna tagging

Swordfish tagging

Required and achieved Priority 2 surveys

GRUND

Module H - Biological sampling of catches: composition by age and by length

Module I - Other biological sampling

#### **Module of evaluation of the economic situation of the sector**

Module J - Collection of economic data by groups of vessels

Module K - Collection of data concerning the processing industry

#### **Database development and data management**

#### **National and international co-ordination**

### 2. STATUS OF RESEARCH IN PROGRESS

Research activities on marine living resources are carried out in Italy by several bodies, both private and public, among which are mainly involved University Departments and Research Institutes (e.g. CNR, SIBM, IREPA, ICRAM).

During 2006 the following main activities have been performed:

**Module C****COLLECTION OF DATA CONCERNING FISHING CAPACITY**

To determine the fishing capacity of the Italian fleet, total number of vessels and average value of the following parameters for each segment: gross tonnage, maximum continuous engine power of main engine in kW, and age of vessel, calculated on the basis of hull age, have been evaluated.

**Module D****COLLECTION OF DATA RELATED TO FISHING EFFORT**

Collection of data related fishing effort has been evaluated taking into account fuel consumption (expressed by volume - litres and cost euro/litre), fishing effort by type of technique (measured by the weighted sum of the fishing days associated with an area and a specific period) and specific fishing effort (defined as the effort associated with species of special interest).

**Module E****COMMERCIAL LANDINGS FOR ALL STOCK**

Landings (quantity and value) of all stocks (including those listed in appendix XII of the implementing regulation 1639/01) has been evaluated.

**DISCARDS**

According to DCR, a discard pilot study on all fishing segments (excluded trawlers) was carried out in 2005. During 2006 is going on a discards study on trawlers.

The first objective of both these studies was to estimate discards (weight and number) of each target species listed in appendix XII, by commercial fishing segment and Geographical Sub Areas (GSA) within one year-period.

**RECREATIONAL FISHERY**

A specific pilot study was carried out in 2003 for overall evaluation of recreational bluefin tuna fishing. Routine data collection started in 2005 and is continuing in 2006 following the same methodology.

**Module F****CATCHES PER UNIT EFFORT**

Italian national programme for 2002 included a review of the utility of the CPUE time series and effort data which have been used during the years 1995 to 2000 by scientific assessments working groups. This review has been forwarded to the Commission, together with the Italian proposals on CPUE data series on the basis of the results gained from the study.

STECF analysed the results of the study and suggested that the Italian national programme should contain data series for catches and effort for the following fleet:

1. bluefin tuna traps (MP)
2. bluefin tuna purse-seiners (MP)
3. swordfish long line (MP)
4. demersal trawl fishery (EP)

**Module G****MEDITS**

The Medits survey program intended to produce basic information on benthic and demersal species, on the basis of an annual survey, in terms of population distribution, abundance, and size composition of an aggregate of 30 species. The survey cover all the trawlable areas over the shelves and the upper slope from 10 to 800 m depth of the sampled area.

The experimental design of sampling followed the modalities and the operational procedure set by the MEDITS project, updated to the current National Program. 750 hauls, in agreement with the Italian

National Programme, are carried out during the period of the survey. These are allocated within the following bathymetrical strata: 0-50 m, 50-100 m, 100-200 m, 200-500 m and 500-800 m.

### **TUNA TAGGING**

The main objectives of the present research programme were to investigate the bluefin tuna pre and post-spawning migratory movements in the Mediterranean, with particular reference to the events occurring in the eastern Mediterranean and their interaction with the rest of that sea and the Atlantic Ocean, and to improve the knowledge on the existing relationships between environmental parameters and CPUE series, according to the decision taken at the meeting held in Bari on 4-6 April 2005 by the Planning Group on Tuna Tagging.

### **SWORDFISH TAGGING**

The Italian programme of swordfish tagging started in July 2005. Five study areas in which the tagging operations had to be located, have been identified: Ligurian Sea, Sardinian seas, Sicily seas (in particular South Tyrrhenian and Sicily Strait), Ionian Sea and South Adriatic. In fact displacement of fish along the Italian coasts and in particular in a south – north direction (which have relevance in fishery activities of different fleets) are one of the objective of tagging.

### **GRUND**

The 2005 Italian data collection programme retained the GRUND project with no modifications with respect to 2004 survey.

The total number of hauls has been the same of those in the MEDITS project for Italian seas (750).

The number of operational units is seven (like the FAO/GFCM Geographical sub-areas), with a single motor vessel for each area using nets and mesh sizes similar to those employed for commercial fishing in the area; this means that full data comparability will be achieved within each large FAO/GFCM Geographical sub-areas and the data will also be comparable with that of commercial trawling in the same area.

The GRUND survey program intended to produce basic information on benthic and demersal species in terms of population distribution as well as demographic structure, on the continental shelves and along the upper slopes at a global scale around the Italian seas. These surveys began in the Adriatic in 1982 and were extended in 1985 to all Italian seas, where the composition of catches and the biological parameters of fish populations are recorded with commercial nets and fishing vessels.

## **Module H**

### **BIOLOGICAL SAMPLING OF CATCHES: COMPOSITION BY AGE AND BY LENGTH**

The present project concerned the sampling of organisms exploited by commercial fisheries. The data collected must allowed evaluation of the composition of the Italian landings by size and in some cases by age. The biological sampling was co-ordinated by SIBM (Italian Society of Marine Biologists) and conducted by the scientific institutions designated by the relevant Italian Administration separately for each Geographical sub-areas (GSA) and by major groups of species: small pelagic species, large pelagic species, demersal species.

The structure of the biological sampling program is very complex owing to the number of species examined, the type of fishing techniques and Geographical Sub Area (GSA) involved.

For the sake of getting a good level of accuracy, mainly as regards the seasonality of the landing by fishing techniques, the sampling design was a *two-stage stratified random scheme*, with strata represented by a combination of geographical sub-areas (GSA) and fishing segments. Therefore, in each stratum, the sampling fishing days has been the primary sampling units and the commercial fishing vessels the secondary sampling units. The survey has covered a one-year period, subdividing the whole time in quarters, in order to detect seasonal differences in the demographic structure and composition of the landings.

**Module I****OTHER BIOLOGICAL SAMPLING**

Other biological samplings have to be carried out at three-year intervals for all species. Since these samples were collected in 2002, it has been repeated in the 2005 National Programme.

With the aid of the data collected, it has been possible to plot growth curves (by length and weight) and to define the relationship between age or length and sex and sexual maturity for a set of commercial species. These biological parameters has been determined on samples already taken for the determination of length and age.

The survey has covered a one-year period, subdividing the whole time in quarters, in order to detect seasonal differences in the demographic structure and composition of the landings.

**Module J****COLLECTION OF ECONOMIC DATA BY GROUPS OF VESSELS**

The parameters to be evaluated for analysis of the economic situation of the sector are those reported in appendix XVII of the implementing regulation (1639/01). Definitions and specifications of these parameters will follow the recommendations of the expert working group on economic data collection, Paris May 2004 and of the SGECA meeting, October 2004. Each parameter is estimated for each group of vessels as defined in appendix III of the Implementation Regulation. Economic data will be provided by FAO statistics divisions (level 2 appendix I - 1639/01).

The reference period will be one year, except for production and average price by species, which will be estimated quarterly.

**Module K****COLLECTION OF DATA CONCERNING THE PROCESSING INDUSTRY**

A specific pilot study was carried out in 2003 for overall evaluation of Italian fish processing industry. On the basis of the results of this study a routine data recording system started in 2006. In particular, the pilot study suggested that the economic unit of observation more indicated to collect the information is the local unit, even if data related to the profit and loss account are available only at level of company. Therefore, the survey unit will be the company that will collect data on products from its local unit.

## LEBANON

### 1. STATUS OF STOCKS OF PRIORITY SPECIES

None.

### 2. STATUS OF THE STATISTICS AND INFORMATION SYSTEM

Lebanon's first ever fishing vessels census was achieved through FAO Technical Cooperation Programme (TCP) that formulated and financed TCP/INT/2904 "Enabling Participation in the Fishery Statistics and Information System in the Mediterranean". Census design and software development (fishing vessel census) was through collaboration between the Department of Fisheries and Wildlife of the Ministry of Agriculture and MedFisis staff. A Computerized Fishing Vessel Register was available in 2005 indicating a fleet of 2,662 fishing vessels.

The data collected fell into the following criteria:

- Identification: vessel name, registration number, etc
- Characteristics: Length, GT, GRT, electronic equipment, winches, etc
- Fishing operations: Year before the interview was taken, target species, gear used, number of sorties, etc
- Ownership & Crew: nationality, number of crew, etc
- Fishermen Organizations: cooperatives & syndicates.
- Documents: navigation license, fishing license, seaworthiness certificate, etc
- Fishermen remarks.

This software allows for availability of Periodic Statistical National and International Reports e.g. FAO Fishstat FF-1, FAO Fishstat FF-2, and MedFisis Fleet Summary, and a variety of statistical analysis e.g. Distribution by port, vessel type, vessel type and length, port and vessel type, gear class, manufacturing country and length, vessel type and usual number of crew, electronic equipment, and a Global statistic summary.

The census included a survey of Lebanese fishing ports and landing sites. The data collected were port identification, position, characteristics, and services.

This Register was put into efficient use after the July 2006 War, whereby the database was used for distribution of aid and cash for affected fishermen.

The software is supposed to be upgraded after EastMed onset to cater for new needs e.g. GFCM-15m vessels list. No systematic data updating was performed due to lack of computers at the regional fisheries centers. It is estimated that we lost about 200 vessels and one major fishing port during July 2006 War.

Lebanon, with the assistance of the MedFisis project, has reached a point where it will be able to initiate introducing the OU concept in its data collection system.

### 3. STATUS OF RESEARCH IN PROGRESS

None.

### 4. STATUS OF THE SOCIAL SCIENCES STUDIES IN PROGRESS OR ACHIEVED DURING THE INTERSESSIONAL PERIOD (ECONOMY, LEGISLATION, SOCIOLOGY, ETC.)

None.

**5. MARINE ENVIRONMENTAL STUDIES IN PROGRESS**

None.

**6. RESEARCH SUGGESTIONS FOR CONSIDERATION BY SAC**

Disaster control/mitigation task force/centre similar to ADPC (Asian Disaster Preparedness Center).

## MALTA

### 1. STATUS OF STOCKS OF PRIORITY SPECIES

Two annual trawl surveys (MEDITS in spring and GRUND in autumn) have continued to be carried out by the Malta Centre for Fisheries Sciences (MCFS) in GSA 15, obtaining biomass indices for major demersal species from 45 stations. Biological parameters were also collected through laboratory processing of fish samples and all data has been stored in the trawl survey database and information system, SEATRIM, which provides outputs relevant to stock assessment. The results imply a generally stable status for demersal resources with no signs of over-exploitation in GSA 15. A joint study conducted in GSA 15 and GSA 16 on *Merluccius merluccius*, identified concentrations of all life stages and essential habitats of this species<sup>3</sup>.

The MCFS has continued to collaborate and contribute to the regional scientific monitoring and assessment processes related to *Thunnus thynnus*, *Xiphias gladius* and *Coryphaena hippurus*, specifically through its biological and statistical sampling schemes within the framework of the EC data collection regulations 1639/2001 and 1581/2004 (DCR). Fishery and biological data on swordfish and tuna were submitted to ICCAT using Task 1 and Task 2 tables.

### 2. STATUS OF THE STATISTICS AND INFORMATION SYSTEMS

Catch, effort and landing data are collected through a monthly port sampling scheme, logbooks and fish market sales vouchers reaching the precision levels as laid down in the DCR.

The integrated electronic database system for fisheries data MALTASTAT was further developed by the MCFS through the support of local and external expertise. MALTASTAT is not limited to a series of databases referring to the Fishing Vessel Register and Catch and Effort Statistics, but also includes other applications that are needed for monitoring and management of fisheries and fisheries resources. It also addresses all commitments related to data submissions which Malta has as a European Union Member State and as a member of FAO, GFCM and ICCAT. Currently, the MALTASTAT set of databases cover the domains listed below:

- National Management and Monitoring System with I/O interfacing protocols
- National Reference and Codification System with regional association
- Register of fishing vessels
- Operational Units Management Systems
- Catch and Effort database; logbook (vessels above 10m)
- Catch and Effort database; sampling scheme (vessels under 10m)
- Fisheries Economics database
- Recreational Fisheries database (to be further developed)
- Fish market sales voucher database (to be further developed)
- Biological survey database (to be further developed)
- Malta Centre for Fisheries Sciences Portal (to be further developed)
- MALTASTAT LAN Management and Control System (to be further developed)

Other databases developed outside the framework of MALTASTAT but which have been integrated into the system are:

- SEATRIM; database for trawl survey data (MEDITS)
- National Fisheries and Ecosystem Information System (FEIS)

---

<sup>3</sup> Delineating habitats used by different life phases of Hake in the Strait of Sicily, F. Fiorentino, G. Garofalo, T. Fortibuoni, T. Bahri, M. Camilleri, A. Drago, M. Gristina and F. Massa. (Presented at the meeting of the SAC Sub-Committee on Stock Assessment, 2006).

### **3. STATUS OF RESEARCH IN PROGRESS**

In 2006 routine scientific data collection programmes have been well established by the MCFS and are in full compliance with DCR requirements. Data collection schemes related to the fleet, catch, effort, recreational fisheries, economics, biology, biomass of demersal resources and the processing industry are being successfully implemented.

During the intersessional period, acoustic, ichthyoplankton, sediment and benthos surveys were conducted through the support of the MedSudMed project and the study on “Spatial pattern of fisheries demersal resources, environmental factors and fishery activities in GSA 15” is currently being finalised<sup>4</sup>.

The MCFS is also participating as a partner in a EU funded research project entitled “Status of deep-sea red shrimps in the Central and Eastern Mediterranean Sea” (EU - Call for Proposals FISH/2004/03). In addition, student research projects (in collaboration with the University of Malta) focussing on the stomach contents of demersal shark species and the influence of biotic and abiotic environmental factors on the population dynamics of *Coryphaena hippurus* are also underway at the MCFS.

### **4. STATUS OF THE SOCIAL SCIENCES IN PROGRESS OR ACHIEVED DURING THE INTERSESSIONAL PERIOD**

Besides the routine fisheries economics data collection scheme within the framework of the DCR, the MCFS is currently supporting the Maltese National Statistics Office in carrying out a census mainly aimed at obtaining data on employment in the fisheries sector and social aspects.

### **5. MARINE ENVIRONMENTAL STUDIES IN PROGRESS**

The MCFS is participating as a partner in a European Union funded research project (EU LIFE-NATURE) managed by Birdlife (Malta) entitled “Monitoring and Conservation of the Yelkouan Shearwater in Malta”. It is monitoring the incidental catches of this species with various types of fishing gear.

Research on the interaction between environmental parameters and demersal stocks has been included in point 3 above.

---

<sup>4</sup> Spatial pattern of fisheries demersal resources, environmental factors and fishery activities in GSA 15; Camilleri M., Drago A., Fiorentino F., Garofalo G., Gristina M, Fortibuoni T., Dimech M., Schembri P.J., Massa F., Coppola S., Bahri T. and Giacalone V. (Presented at the transversal session of the SAC Sub-Committees, 2006)

## MAROC

### 1. INTRODUCTION

L'étude des pêcheries de la Méditerranée marocaine est assurée par les Centres régionaux de l'Institut National de Recherche Halieutique (INRH), basés à Nador et Tanger.

Les programmes de recherches mis en place, couvrent principalement les travaux d'évaluation des ressources exploitées (marines et littorales), l'analyse socio-économique des pêcheries, le suivi des paramètres océanographiques ainsi que les études de biodiversité marine.

### 2. ETAT DES STOCKS DES ESPECES PRIORITAIRES

Le suivi d'évaluation des ressources halieutiques est assuré depuis 1985, d'une part par méthode indirecte, et ce par l'analyse des débarquements des ressources d'intérêt commercial et des données d'échantillonnage biologique. D'autre part, par méthode directe à l'aide des campagnes de prospection (acoustique et chalutage), à travers l'analyse des indices d'abondance et la distribution des ressources.

#### 1. Evaluation par méthode indirecte

Ces évaluations concernent principalement les stocks de la sardine et de rouget de vase. Pour le stock de la sardine, l'évaluation basée sur l'analyse des fréquences de tailles (LCA), a permis de constater que la pêche cible essentiellement les individus adultes (tailles de 17 à 19 cm), ainsi qu'une fraction composée par les immatures. L'analyse du rendement par recrue (Y/R), a montré que ce stock paraît actuellement en situation de pleine exploitation.

Pour le cas du rouget de vase, la même approche a permis de constater que le niveau d'effort de pêche actuel, dépasse l'optimum et par conséquent, le stock serait dans une situation de surexploitation.

#### 2. Evaluation par méthode directe

##### o Campagnes de prospection acoustique

Au cours de la période 2005-2006, deux campagnes de prospection acoustiques ont été réalisées ; l'analyse des données collectées sur les espèces des petits pélagiques (sardine, anchois, le maquereau, les sardinelles, et le chinchard), ont permis de conclure pour le stock de la sardine une réduction des indices d'abondance ; en outre, les valeurs estimées des biomasses montrent une régression en 2006 de l'ordre de 33 % en comparaison aux valeurs enregistrées de 2003. Pour le cas du chinchard, la biomasse a connu un accroissement entre les années 2003 et 2006, de l'ordre de 13 %.

##### o Campagnes de prospection par chalutage

Les données de la campagne de 2006, ont permis de constater une grande diversité des espèces benthiques, avec toutefois des rendements faibles au niveau de toutes les strates bathymétriques. Ainsi, en terme de distribution spatiale, deux groupes de poissons peuvent être distingués : un premier groupe d'espèces à affinité côtière, relativement abondantes à moins de 100 m de profondeur, composé par le pageot acarné, le rouget de vase, la bogue, le saurel, la seiche, et le pageot commun ; le deuxième groupe composé des espèces de grandes profondeurs, qui s'observent jusqu'à 500 m, est constitué par le merlu blanc, le merlu bleu et la crevette rose.

### 3. STATUT DU SYSTEME D'INFORMATION ET STATISTIQUE

Globalement, Il est à signaler que le système statistique au niveau national s'est relativement amélioré. En effet, ce système mis en place récemment en Méditerranée marocaine, permet l'estimation des débarquements et de l'effort de pêche des principales espèces exploitées. L'initiation en 2004 du projet MedStat Maroc pour la collecte des données, a également permis de renforcer le système mis en place.

Dans le cadre de développer un système statistique de l'INRH à l'échelle de la Méditerranée, deux études pilotes ont été réalisées avec la FAO en 2002 et 2005. La première étude a pour objectif de disposer d'une manière régulière de l'estimation mensuelle de la capture et de l'effort de pêche par métier ; tandis que celui relatif à la deuxième étude était d'essayer d'extraire des coefficients de corrélation entre les données collectées et les données issues du système MAIA de l'ONP.

Dans la perspective d'établir un système performant en matière de développement d'un système statistique en Méditerranée, propre à l'INRH, l'appui d'un autre projet dans ce domaine est vivement souhaitable.

Les opérations d'échantillonnage biologique des principales espèces sont plus régulières au niveau des ports de Nador, Al Hoceima et Tanger et assurent à côté des campagnes de prospection, une collecte d'une base de données biostatistiques, nécessaires à l'estimation des paramètres biologiques de base pour les analyses de l'état d'exploitation.

#### 4. ETAT DE LA RECHERCHE

En matière de recherche, des programmes d'étude ont été établis sur les ressources d'intérêt commercial. Ces programmes concernent :

- **L'étude de la pêche des grands pélagiques** : Ce programme concerne l'échantillonnage biologique de l'espadon et du thon rouge, principalement au niveau des ports de Nador et Tanger. Il porte également sur l'analyse des données de captures et d'effort de pêche, ainsi que la détermination de certains paramètres biologiques, notamment, la structure démographique des débarquements, les relations taille-poids, le sexe ratio, etc.
- **L'étude du corail rouge** : Les gisements de cette espèce s'observent dans les régions d'Al Hoceima (Topos et Tofino), et de Belyounech (Cap de Sebta). La biomasse était évaluée sur la base des rendements moyens par surface balayée. Le mode d'exploitation instauré s'étalera sur 4 à 5 ans par la fixation d'un quota annuel pour l'ensemble de la flottille opérante.
- **La pêche de crevette rose, biologie et dynamique du stock (en cours)** : L'objectif principal de ce programme est de connaître la situation actuelle de cette pêche par l'analyse des données sur les captures et l'effort de pêche .
- **Biologie et dynamique des populations de l'anchois blanc de la lagune de Nador** : Cette espèce exploitée principalement au niveau de la lagune de Nador, est connue sous le nom 'changuetes' ou 'boqueron blanco'. Celle-ci est de couleur blanche argentée est de taille petite, et fréquente la lagune presque toute l'année avec une certaine abondance relativement importante entre les mois de septembre et mars.  
Une étude a été menée dans l'objectif d'analyser les différenciations biologiques de cette espèce et d'émettre les éléments de son niveau d'exploitation.
- **Activité des palangriers en Méditerranée marocaine** : Dans le cadre du programme d'abandon progressif de l'utilisation du filet maillant dérivant (FMD), prévue en janvier 2009, l'INRH lance une étude en Méditerranée marocaine sur les principales caractéristiques de cette activité ainsi que l'évaluation de l'impact du FMD sur la biodiversité marine et les répercussions socio-économiques liées à cette décision.
- **Evaluation des gisements de la petite praire** : Dans ce cadre, une campagne de prospection a été réalisée. Les résultats de cette étude en termes de cartes de répartition et de biomasse sont en cours d'achèvement.

- **Evaluation des champs d'algues :** Les principaux objectifs de ce programme sont, la détermination de la nature des champs d'algues, la cartographie des limites des champs à intérêt économique ainsi que l'évaluation de leurs biomasses.

## **5. ÉTUDES EN SCIENCES SOCIALES ACHEVÉES OU EN COURS (ÉCONOMIE, LÉGISLATION, SOCIOLOGIE, ETC.)**

Les principales activités socio-économiques sont focalisées sur les points suivants :

- **La commercialisation des produits halieutiques**

Les études de la commercialisation des produits halieutiques deviennent de plus en plus importantes dans la gestion des pêches. Dans ce contexte, plusieurs programmes de recherche sont mis en place par l'INRH afin de cerner tous les aspects touchant les circuits de distribution des principales espèces, notamment la commercialisation et les fluctuations des prix. Deux études concrètes ont été réalisées sur les petits pélagiques et l'espadon.

Ces études contribuent à comprendre les caractéristiques de la commercialisation, principalement : les circuits, les intervenants, l'évolution des prix.

- **Etude des indicateurs socio-économiques**

l'INRH est entrain de mettre en place un programme de suivi et de collecte de données socio-économiques, en respectant les recommandations de la CGPM. Ce suivi nous permettra d'avoir une image claire sur la situation du secteur de la pêche en Méditerranée marocaine.

- **Etudes des aspects socio-économiques des pêcheries artisanales**

La pêche artisanale en Méditerranée marocaine, est une activité qui assure une main d'œuvre importante et des apports considérables en devises, par l'exportation de la majorité de ces produits.

Vu la dispersion de cette activité le long du littoral, un programme de recherche est établi pour réaliser des études ponctuelles au niveau des zones et des pêcheries les plus importantes et les plus sensibles.

## **6. ÉTUDES DANS LE DOMAINE DE L'ENVIRONNEMENT MARIN**

- **Programme d'étude des cétacés :**

Ce programme consiste en la recherche et le suivi des cétacés vivants en Méditerranée par les études acoustiques et de surveillance de ces populations. Il sera basé sur la mise en place d'un réseau d'échouage des mammifères marins. Pour renforcer l'application de ce programme, un atelier de formation sur les techniques de conservation des tortues marines était organisé par le Centre des Activités Régional/ les aires Spécialement Protégées à Chypre en août 2006.

- **Cartographie du milieu lagunaire « lagune de nador »**

Les campagnes de prospection des champs algales effectuées durant les années 2003, 2004 et 2005 au niveau de la lagune de Nador, ont permis de déterminer les caractéristiques physiques et chimiques de ce milieu paralique. Les données recueillies, ont été intégrées dans le Système d'Information Géographique « SIG » pour archivage, suivi et établissement des cartes de répartition de la température, de la salinité, du pH, des éléments nutritifs et de la bathymétrie de la lagune.

## **7. PROPOSITIONS DE RECHERCHE POUR LE CSC**

### **Projet de Recherche n°1 : Etude génétique de l'anchois de la lagune de Nador**

L'importance de cette étude est justifiée à partir des résultats encourageants tirés des études biologiques (croissance et reproduction) de l'anchois de la lagune de Nador. Elle a pour objectif d'établir une carte génétique de l'anchois de la lagune de Nador et la comparer avec la carte génétique de l'anchois commun.

### **Projet de Recherche n°2 : Etude des populations du chinchard des cotes méditerranéennes marocaines**

Suite à l'accroissement spectaculaire des débarquements du chinchard accompagné par une apparition massive des juvéniles, constatée surtout au niveau de la région Est de la méditerranée marocaine au cours de ces dernières années, l'INRH prévoit la mise en place d'une étude spécifique qui permettra de déterminer les facteurs majeurs qui ont induits cette abondance du chinchard.

### **Projet de Recherche n°3 : Etude sur les thonidés mineurs**

Les principales espèces des thonidés mineurs en Méditerranée marocaine sont : la bonite à dos rayé (*Sarda sarda*), la palomette (*Orcynopsis unicolor*), l'auxide (*Auxis thazard*), la thonine commune (*Euthynnus alletteratus*).

Par manque d'informations statistique et biologique, ces espèces ne font l'objet d'aucune évaluation de l'état de leurs stocks, et par conséquent aucune réglementation n'est en vigueur pour leur gestion. La CGPM est appelée à s'intéresser à ces ressources compte tenu de leur importance pour les activités des flottilles artisanales aux petits métiers.

## REPUBLIC OF MONTENEGRO

In 2006, the Institute of Marine Biology-Kotor has been performing research activities on marine fisheries in Republic of Montenegro, within the frame of National monitoring of demersal resources (Institute and Ministry of Agriculture, Forestry and Water Management of Montenegro, Ministry of Education and Science) and FAO AdriaMed project.

Estimate of parameters of population dynamics (length-weight ratio, growth, mortality, selectivity) of economically important species of demersal stock, as well as catch per unit of effort CPUE (kg/h), were used to determine that stocks of Hake *Merluccius merluccius*, Red Mullet *Mullus barbatus* and Pink shrimp *Parapenaeus longirostris*, are stable. The same parameters were used to estimate biomass and MSY of these stocks.

The estimates of biomass of small pelagic fish, sardines, *Sardina pilchardus* and anchovies, *Engraulis engrasicolus*, show a stable state. As we have results of only three years of studies, it is too early to try to determine a trend. Comparing of the two methods, echo-survey and DEPM (AdriaMed project), used to estimate the biomass of anchovies in summer 2005, has shown a partial difference in the estimates, which is realistic if environmental factors are considered. During these studies, hydrographic parameters are also determined (with CTD probe).

Data on ships, boats and fishing tools are collected by Institute of Marine Biology during the process of approval of fishing licenses. The fishermen fill in the catch diaries and send them to the Ministry. The data are then sent to the Statistics Institute (MONSTAT). Also used is software ATrIS (AdriaMed Trawl Survey Information System).

AdriaMed Trawl Survey will continue to be performed during the autumn of 2006. Also planned is estimate of biomass of sardines, *Sardina pilchardus*, according to DEP method. The studies of biology and population dynamics of juvenile stages of sardines and anchovies in Bokotorska Bay have already started.

Strategy for development of the fishery sector in Republic of Montenegro is prepared and will be official by the end of 2006. The development of this Strategy was financed by European Agency for Reconstruction (EAR). One of the main directions used in preparing this strategy is the need to redefine the fishery policies according to the demands of international integration processes – STO and EU, by matching the objectives of common fishery policies in EU (Common fishery policy-CFP). The goal of this document is to be a platform for further reforms and to be used by Government of Republic of Montenegro as a base for future fishery policies.

Currently a special software is prepared that will be used to collect the socio-economic parameters in sector of marine fishery in Montenegro, together with employing the person who will perform these activities (AdriaMed).

## SPAIN

### 1. STATUS OF STOCKS OF PRIORITY SPECIES

The state of exploitation of some of the main demersal species was assessed by VPA tuned with standardised CPUE from the commercial fleet and abundance indices from trawl surveys.

Red shrimp (*Aristeus antennatus*) exploited by the Spanish trawl fishery: in the geographical sub-areas GSA 06 (Northern Spain) and GSA 05 (Balearic Islands) is fully exploited.

Deep-water pink shrimp (*Parapenaeus longirostris*) from the trawl fishery off the geographical sub-area Northern Spain GSA – 6 fully exploited probably close to overexploitation

Red mullet (*Mullus barbatus*) exploited by the trawl fishery off the whole geographical sub-area 06 (Northern Spain) is overexploited. Growth overfishing has been detected. Striped red mullet (*Mullus surmuletus*) exploited by the trawl fishery in the Balearic Islands (GSA 05) is fully exploited.

Hake (*Merluccius merluccius*) exploited by the trawl fishery off Mallorca (Balearic Islands, GSA05) is over-exploited by growth over-fishing. Hake exploited by the trawl fishery off the geographical sub-area GSA 06 (Northern Spain) is over-exploited (growth over-fishing), current biomass lower than 10% of virgin biomass, with a possible risk of recruitment over-exploitation. Decreasing trend in landings, total biomass and SSB is observed. Hake exploited by the French and Spanish fisheries developed in the Gulf of Lions (GFCM GSA 07) is overexploited (growth overexploitation) with a risk of recruitment overexploitation; a declining trend in average recruitment was detected.

Anchovy (*Engraulis encrasicolus*) stock assessment in the GFCM Geographical Sub-Area GSA 01, Northern Alboran Sea, shows low levels of biomass, recruitment and catch from 2003 to 2005. In GSA 06 (Northern Spain) a declining trend in catches and CPUEs and low levels of recruitment in the last two years indicate that the state of the stock is worrying. For sardine (*Sardina pilchardus*) in the Northern Alboran (GSA 01) the biomass, catches and CPUEs estimated are higher in 2005 than 2004. Nonetheless, in the Northern Spain sub-area (GSA 06), a declining trend in catches during the last decade is observed as well as a declining trends in biomass and recruitment from 1992 onwards.

### 2. STATUS OF THE STATISTICS AND INFORMATION SYSTEM

The Spanish fisheries statistics and information system is established under the RD 2064/2004, in compliance with current EU legislation (Regulation CE 2847/93, Regulation CE 2846/98 and Regulation CE 2371/2002). Data are collected in all places in which a first sale of the fishery products is performed. Data of landing by species, commercial category, price, identification of the fishery vessel, fishery ground, landing port and date are recorded on a daily basis. Data are primarily collected and processed by fisheries offices of the autonomous governments, and recorded in the centralized database of General Secretariat of Maritime Fisheries is the Unit Of the Spanish Ministry in charge of collecting all the information related to fisheries and transmitting to the Commission, Fisheries Organizations and any other National or International institutions.

### 3. STATUS OF RESEARCH IN PROGRESS

During 2005, the IEO has monitored the fisheries of the main commercial species at the principal landing sites. For these species not only data on landings and effort are recorded but also biological information under the guidelines of the National Program supported by the EU for the collection and management of fisheries data in accordance with Community programmes (Reg. (EC) 1543/2000 and Reg (EC) 1639/2001). Data information is managed in the frame of the SIRENO database developed by the IEO. The target demersal species sampled are Hake, Red mullet, Stripped red mullet, Anglerfish (2 species), Horse mackerel (2 species), Common octopus, *Eledone cirrhosa*, red shrimp (*Aristeus antennatus*) and *Parapenaeus longirostris*, while the target of small pelagic species are

Anchovy and Sardine, and the target of large pelagic species are Albacore, Bluefin tuna and Swordfish.

A research project on the Red Seabream (*Pagellus bogaraveo*) fishery in waters off the Strait of Gibraltar, is focusing in the location of nursery and recruitment grounds, growth, and fishing mortality studies. The duration of this project is going to be 5 years (2003-2008).

The 12th international bottom trawl survey MEDITS was carried out with the aim of estimating relative abundances indexes for the main demersal species; this survey is also an activity related with the National Program. Two other bottom trawl surveys, initiated in 2001, were performed: BALAR survey off Mallorca and Menorca (GSA5), areas not covered by the MEDITS survey, and the LEDER survey off Alicante (GSA6). ECOMED, an acoustic survey to estimate small pelagic biomass in GSA1 and GSA6 was carried out in autumn 2005.

During this intersessional period, two selectivity experience for deep crustacean trawl fisheries were carried out. One of them using 40 mm and 50 mm square mesh in the codend confirmed the results of previous experiences proving that the use of square mesh will improve the exploitation pattern for the main commercial species. The second one, was performed using a 15 mm and 20 mm selection grids, showing that the use of square mesh in the codend is more efficient than the selection grids.

The bluefin tuna, swordfish, albacore and small tuna (Atlantic bonito, bullet tuna, little tunni, and skipjack tuna) are the main objective tuna and tuna-like species target by the Mediterranean tuna research program of the IEO. The main objective of biological sampling of Tuna species is to support research on stock structure by means of genetic analyses (tissue) and microconstituents analyses (otoliths); research on reproduction (gonads) and research on growth (spines, vertebrae and otoliths).

For 2005-2006, 12,529 BFT were sampled by means of onboard observers or landing samplers net of the IEO. 144 full sets of samples were collected in Spanish BFT fisheries (mainly Long-Line and Sportive fisheries). Full sets consists of samples for stock structure (genetic & microconstituents), growth (spines &/or otoliths), maturity, fecundity and feeding analysis. In addition 84 sets of incomplete samples were also collected to reinforce the consistence of the conclusions in certain studies. A special emphasis was applied to collect samples in certain size classes (90-130 cm FL) where the previous annual sets were deficient. In this sense recreational fishery monitoring was very valuable.

Research on BFT farming, has been carried out since 2002. In 2006, an observer program on board the Spanish purseiners started in the Mediterranean, which includes collecting information on the origin of the catch transferred to the cages as well as biological sampling in tuna farms.

In 2006, 22 BFT were tagged with Pop-Up Archival tags on bluefin farms in Spain and Malta within the tagging program with participation of University of Bari (Italy), IEO (Spain), MCRF (Malta) and COPEMED.

Research activities on Albacore (*Thunnus alalunga*, ALB) were developed on board of recreational vessels (Biomed 06 biological Survey) and long-line fishery vessels targeting ALB. Small tuna were also monitored and sampled in tuna traps.

Regarding Swordfish, an experimental selectivity survey (RAI-AP 52/2004) was developed in the Mediterranean Sea. The selectivity factors used during the development of this survey resulted in a reduction of the percentage of juvenile swordfish (LJFL < 100 cm) of about 17.66 % as compared with the professional Spanish longline fleet (47.51%). During the experimental survey, about 44% of the total catch belonged to species different from the target one. The percentage was very similar for both longline styles (traditional longline and american style longline). 28% of the total catch, with no commercial value, was sent back to the sea.

The Department of Renewable Resources of the ICM-CSIC Institute of Barcelona is working at present on the following topics: Response of benthonic communities and sediment to different regimes of fishing disturbance in European coastal waters. Integrated approach to the biological basis of age estimation in commercially important fish species. Cephalopod stocks in European waters: review, analysis assessment and sustainable management. Probabilistic assessment, management and advice

model for fishery management in the case of poor data availability. Integral study of a Mediterranean submarine canyon (Blanes Canyon): approach to the shrimp exploitation. Study of benthopelagic boundary layer in two areas of western Mediterranean.

#### **4. MARINE ENVIRONMENTAL STUDIES IN PROGRESS**

During this intersessional period, the IEO has carried out a series of quarterly surveys monitoring oceanographic conditions off Málaga (GSA1), Murcia (GSA6) and Mallorca (GSA5). Other research activities are related to Marine Protected Areas. In this case, three topics are studied: quantification of exported biomass from the MPAs to adjacent areas, evolution of the resources in areas previously exploited and currently protected and monitoring of artisanal fisheries. Moreover, a study of the interactions among the oceanographic parameters and their variability and the main fisheries resources in the continental shelf and the slope of the GSA05 has been developed under the cooperative IEO-CSIC project IDEA.

The tuna larval surveys being carried out from 2001-2005 in the Balearic archipelago under the framework of the IEO project TUNIBAL suffered external sources of finance and ship time cutbacks during 2006. Nevertheless, to keep on the monitoring of tuna larval surveys, the 2006 TUNIBAL survey was overlapped with the monitoring of a physical oceanographic survey off the Balearic channels carried out during bluefin spawning season.

In order to reduce the impact of long line on incidental catch and mortality of marine turtles (*Caretta caretta*) two experimental gears were used. The CPUE for both longline types combined was about 0.69 individuals per 1000 hooks, which represented a reduction of about 60% as compared with the incidence of the professional Spanish longline fleet in the Mediterranean. The differences observed amongst both longline types in the experimental survey were related to: hook depth, bait type, bait size and fishing areas. Regarding hook type, the results of the experimental survey showed that circular hooks do not significantly decrease the impact of incidental catch of marine turtles when compared with other hooks but since hook position is directly related to the survival of the individuals caught, it is evidenced that *Caretta caretta* mortality decreases for individuals caught by circular hooks (the turtles are hooked mainly in the mouth). In the other hand, the vast majority of turtles were caught in shallower hooks with an average depth of about 40 m.

The Department of Renewable Resources of the ICM-CSIC Institute of Barcelona is working at present on the following topics: Study of the effect of the global change in marine communities of the north-western Mediterranean. Association of physical and biological processes acting on recruitment and post-recruitment of anchovy. Analysis of the space structure of the first stadiums of development of the hake, anchovy and sardine in the NW Mediterranean. Interaction between hydrography and the trophic availability.

## TUNISIE

### 1. INTRODUCTION

Les résultats des travaux de recherche dans le domaine de l'étude des pêcheries et de l'environnement marin constituent un support inéluctable pour la préservation et l'exploitable durable et soutenue des principaux stocks et des écosystèmes des eaux tunisiennes. Au niveau national les différentes activités de recherche sont effectuées par l'Institut National des Sciences et Technologies de la Mer (INSTM), plus particulièrement le Laboratoire des Ressources Marines Vivantes (LRMV) et le laboratoire de biodiversité et biotechnologie marine (LBBM) et ceci en collaboration très étroite avec l'université tunisienne, les services du Ministère de l'Agriculture et la Profession (Union Tunisien de l'Agriculture et de la Pêche (UTAP)).

### 2. STATUT DU SYSTEME D'INFORMATION ET STATISTIQUE

Tout d'abord, il est important de noter que la collecte, l'archivage et l'élaboration des bases de données des statistiques de la pêche (production, effort, flotte) sont assurés par les services du Ministère de l'Agriculture, plus particulièrement la Direction Générale de la Pêche et de l'Aquaculture (DGPA). Le Ministère dispose actuellement d'une base de données informatisées et l'information (selon l'espèce, l'engins, les unités de pêche, ...) remonte à l'année 1995. Par ailleurs, il y a lieu de mentionner que, dans le cadre des activités du projet FAO/COPEMED, nous avons pu former un ingénieur en informatique (gestion de base de donnée) et un statisticien ainsi que l'acquisition de certain matériel informatique.

Au niveau recherche, nous disposons de certaines bases de données relatives à celles des campagnes de prospection benthiques, au phytoplancton, ainsi qu'à certains autres types de données environnementales. De plus, dans le cadre des activités du Projet FAO/MEDSUDMED, nous avons installé au niveau de l'observatoire de la Mer de l'institut, le système d'information FEIS et nous l'avons alimenté par les principales bases de données existantes.

### 3. ETAT DES ACTIVITES DE RECHERCHE

Il faut rappeler que les plus importantes activités de recherche sont structurées selon des programmes bien élaborés, continus dans le temps et financés par le Ministère de tutelle. Nous citons particulièrement :

- Le Programme National Mobilisateur (PNM) : Evaluation des Ressources marines des côtes tunisiennes (1996 – 1999).
- Le Programme de Recherche sur Contrat (PRC) : Evaluation des Ressources marines des côtes tunisiennes (1999 – 2002).
- Les Actions de Recherche (ESREB, ESSATEL et ERACHID) (2002 – 2006).

Au courant de l'année 2006, le LRMV de l'INSTM a achevé les activités de recherche programmées dans le cadre de ces trois dernières actions. Les données ont été traitées et les rapports finaux ont été élaborés et transmis au Ministère de la Recherche Scientifique, de la Technologie et du Développement des Compétences. Ces travaux, seront incessamment évalués par le Comité National d'Evaluation des Activités de la Recherche Scientifiques (CNEARS). Nous donnons, dans ce qui suit un récapitulatif des principaux résultats obtenus :

- **Pour l'action ESREB** : Evaluation des Stocks des Ressources et des Ecosystèmes Benthiques. Les résultats obtenus ont concerné trois volets :
  - Composantes Coquillages : Les résultats obtenus ont concerné l'évaluation des principaux stocks de coquillages exploitables au niveau des côtes tunisiennes (Zone Estran, lagune de Bizerte et partie marine côtière (0 – 20 m). Ces résultats ont été

complétés par l'étude biologique de 6 espèces de coquillages (2 espèces de murex, le couteau, la pintadine, l'haricot de mer et la datte de mer)

- Composante Poissons, Crustacés et Céphalopodes : Les travaux de recherche réalisés sont, en fait, une continuité de ce qui a été entrepris lors des programmes de recherche précédents (PNM et PRC). Tout d'abord nous avons renforcé la base de données relatives aux espèces classiques (merlu, rouget blanc, rouget rouge, pageot, marbré, sole, crevette royale, seiche, poulpe, ...). Ce renforcement a été dirigé plutôt aux structures démographiques des captures et ceci grâce à un réseau d'enquêteurs permanent mis en place depuis 2003 au niveau des plus importants ports tunisiens. Par ailleurs, lors de ce programme, nous nous sommes intéressés aux nouvelles espèces qui n'ont pas eu la chance d'être étudiées lors des programmes précédents. C'est ainsi que nous avons obtenu des résultats sur la biologie et l'état d'exploitation de plusieurs espèces telles que le denté du Maroc, 4 espèces de sélaciens, la crevette blanche, la langoustine et certaines espèces de crevettes de profondeurs. Tout cela a été, bien entendu, couplé par la réalisation des campagnes de prospection annuelles sur toutes les côtes tunisiennes à bord du bateau de recherche Océanographique Hannibal. Les résultats relatifs à l'abondance et la répartition des principales espèces benthiques exploitées ont été cartographiés.
  - Pour la composante socio-économique, nous lui avons réservé un paragraphe à par (voir page suivante).
- **Pour l'action ESSATEL** : Estimation des Stocks de Sardine, Anchois, Thon et Environnement Littoral.

Cette action de recherche s'est plutôt penché vers l'étude des espèces pélagiques et s'est également articulées sur 3 composantes (œufs et larves, petits pélagiques et grands pélagiques).

- Composantes œufs et larves : Les résultats obtenus ont concerné l'abondance et la distribution géographique des œufs et des larves des deux plus importantes espèces de petits pélagiques à savoir l'anchois *Engraulis encrasicolus* et la sardine *Sardina pilchardus* au niveau du golfe de Tunis et du golfe de Hammamet.
  - Composante des petits pélagiques : pour ces espèces, nous avons renforcé les études biologiques des principales espèces (anchois, sardine, sardinelle, bogue, maquereau, saurels, ...). Ces études biologiques ont été couplées par la réalisation de campagnes annuelles de prospections hydro-acoustique pour évaluer le stock des plus importantes espèces et localiser leur zone de concentration.
  - Composante des grands pélagiques : Cette composante s'est surtout penchée vers l'étude biologique des principales espèces de grands pélagiques des côtes tunisiennes (thon rouge, espadon, coryphène et sériole). Nous avons également pu obtenir certaines informations intéressantes sur l'exploitation de ces espèces et sur les structures démographiques de leurs captures.
- **Pour l'action ERACHID** : Essais Répulsifs Acoustiques et CHalutage : Innovation et Développement.

Cette action de recherche s'articule également sur trois composantes à savoir :

- Le chalutage pélagique
- L'étude de la sélectivité de certains engins côtiers de la pêche à la crevette
- L'étude de l'interaction entre filets de pêche et dauphins.

Les principaux objectifs de cette action consistent à développer les techniques de la pêche pélagique (à corde et à grands maillages), mettre au point des techniques de pêche plus sélectives et plus rentables pour l'exploitation des crevettes dans les zones côtières et préserver les écosystèmes marins en particulier les espèces menacées tel que les dauphins.

Enfin, il est important de signaler que la Tunisie maintient une collaboration très étroite avec les pays méditerranéens riverains dans le domaine de l'étude des pêcheries et des écosystèmes marins, particulièrement dans le cadre des activités du projet FAO/MedSudMed au niveau de la région du canal de Sécile.

#### 4. ETUDES EN SCIENCES SOCIO-ECONOMIQUES

Il faut, tout d'abord rappeler que la Tunisie a réalisé un travail très intéressant sur les indicateurs socio-économiques des pêcheries du golfe de Gabès. Très récemment ce travail a été étendu pour les pêcheries de la région Nord et Est du pays. De plus, en 2006, nous avons pu achever un travail sur l'application des modèles bio-économiques de la pêche de la crevette royale dans la région du golfe de Gabès. Ces travaux entrent dans le cadre des activités de l'action de recherche ESREB déjà mentionnée.

#### 5. ETUDE DANS LE DOMAINE DE L'ENVIRONNEMENT MARIN

Dans le cadre des activités du laboratoire de Biodiversité et de Biotechnologie Marines de l'Institut National des Sciences et Technologies de la Mer (INSTM), trois projets de recherche exécutés de 2002 à 2006 sur le Budget National de Recherche ont concerné l'environnement marin :

- **Projet SINDBED** : Statut et Inventaire de la Diversité Biologique et des Ecosystèmes Dégradés.

L'objectif principal de ce programme de recherche se résume en un inventaire des espèces menacées, des espèces exotiques et des végétaux marins avec étude de leur statut en vue de la conservation de la diversité biologique. La collection de référence, vitrine pour cette biodiversité, sera enrichie.

Comme résultats et, pour les espèces menacées (tortues, cétacés et élastombranches), le projet a contribué énormément à la mise en œuvre des plans d'action méditerranéens, relatifs à ces groupes systématiques, élaborés dans le cadre de la convention de Barcelone ratifiée par la Tunisie. Au cours de la réalisation de ce projet, un réseau national des échouages a été lancé. Par ailleurs, pour les espèces exotiques, il est à noter l'ampleur du phénomène surtout du côté de la Mer Rouge. Une attention particulière est à porter aux eaux de ballast. En ce qui concerne l'inventaire des algues, nous avons acquis une masse de données sur la systématique. La base de données TunAlgoBase rend disponible rapidement une grande quantité de données concernant les macroalgues des côtes tunisiennes. Enfin, nous avons pu rassembler plusieurs connaissances sur les structures des herbiers, la cartographie, la phénologie et les épiphytes.

- **Projet MORGEN** : Modèles et Outils de Recherche sur les Gisements de l'Ecosystème Coralligène du Nord.

L'objectif principal du programme de recherche consiste à identifier et classer le macro et le mégabenthos de la biocénose coralligène de certains bancs marins tunisiens, ainsi que d'autres biocénoses pertinentes (tel la biocénose du détritique côtier) tout en poursuivant l'inventaire des éponges de Tunisie et l'étude du corail rouge (tel que cela a été recommandé par la commission d'évaluation du premier Programme de Recherche sur Contrat).

Entant que résultats obtenus, l'action MORGENE a permis d'identifier et de classer le macro et le mégabenthos de la biocénose coralligène de certains bancs marins tunisiens, ainsi que d'autres biocénoses pertinentes (tel la biocénose du détritique côtier) tout en poursuivant l'inventaire des éponges de Tunisie et l'étude du corail rouge.

- **Projet ESSAMEC** : Ecotoxicologie et Suivi de la Santé des Animaux Marins et des Eaux Continentales.

Il s'agit d'étudier l'impact de la qualité du système aquatique sur les ressources vivantes et renforcer la bio-surveillance :

- Par analyses des polluants chimiques et utilisation des bio-marqueurs.
- Par analyses du phytoplancton toxique et de la toxicité cyanobactérienne en eau douce.
- Par le contrôle pathologique (microbiologique, parasitologique) des organismes marins (les bivalves).

## **6. PROPOSITION DE RECHERCHE POUR LE CSC**

L'INSTM continue à bien collaborer et effectuer des travaux de recherche dans le cadre du Projet FAO/MEDSUDMED et ceci au niveau de ces trois composantes.

Par ailleurs, il faut noter qu'une accélération très importante de l'entrée d'espèces exotiques en Méditerranée a été enregistrée ces dernières années. Ce phénomène biogéographique a des retombés sur l'environnement marin et la pêche. A cet effet, nous proposons des projets de recherche à l'échelle régionale concernant ce phénomène. Une attention particulière doit être réservée aux eaux de ballast.

## **TURKEY**

### **1. STATUS OF STOCKS OF PRIORITY SPECIES**

Scientific stock assessment studies are currently not in place in Turkey, as a part of fisheries management system. This makes it difficult to classify the status of stocks as overfished, fully fished or underfished.

Catch figures covering the years 2000-2005 indicates that marine fishing yield has not changed significantly in the last years.

### **2. STATUS OF STATISTICS AND INFORMATION SYSTEM**

A work aiming at harmonization of national fisheries information system (FIS) with that of the EU is underway. For collection of landing data at ports, 30 offices have been erected alongside coastline of Turkey. The pilot implementation of the FIS is expected to be tested within next year. Fisheries statistics are collected by Turkish Statistical Institute (TURKSTAT) and Ministry of Agriculture and Rural Affairs. Data collected include marine, freshwater and aquaculture. Data on inland and aquacultural production are collected from 81 Provincial Directorates of MARA. Data, collected either at field by surveys or collected by MARA are published annually by TURKSTAT, after collecting and evaluating the findings.

### **3. STATUS OF RESEARCH IN PROGRESS**

MARA is planning to conduct studies, in particular, on assessment of fish stocks at national level in the coming years. Although no research on priority species has been conducted, several studies on diversification of species in aquaculture have been carried out. These include Turbot (*Psetta maeotica*), common dentex (*Dentex dentex*) and sturgeon (*Acipenser spp*).

### **4. STATUS OF SOCIAL SCIENCES STUDIES IN PROGRESS OR ACHIEVED DURING THE INTERSESSIONAL PERIOD (ECONOMY, LEGISLATION, SOCIOLOGY, ETC.)**

Review of Turkish legislation on fisheries has been conducted. Amendments to Turkish Law on Fishery have been made. The proposed amended law has been send to parliament for approval. A study on the current status of Turkish fisheries has been done recently. Based on the findings of this study a sector strategy and a sector plan will be developed.

### **5. MARINE ENVIRONMENTAL STUDIES IN PROGRESS**

Monitoring of production areas for mussels and areas for aquaculture continues.

### **6. RESEARCH SUGGESTIONS FOR CONSIDERATION BY SAC**