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Report of the FAO/CECAF Working Group on the Assessment of Demersal Resources – Subgroup North
Banjul, the Gambia, 6–14 November 2007

Rapport du Groupe de travail FAO/COPACE sur l´évaluation des ressources démersales – Sous-groupe Nord
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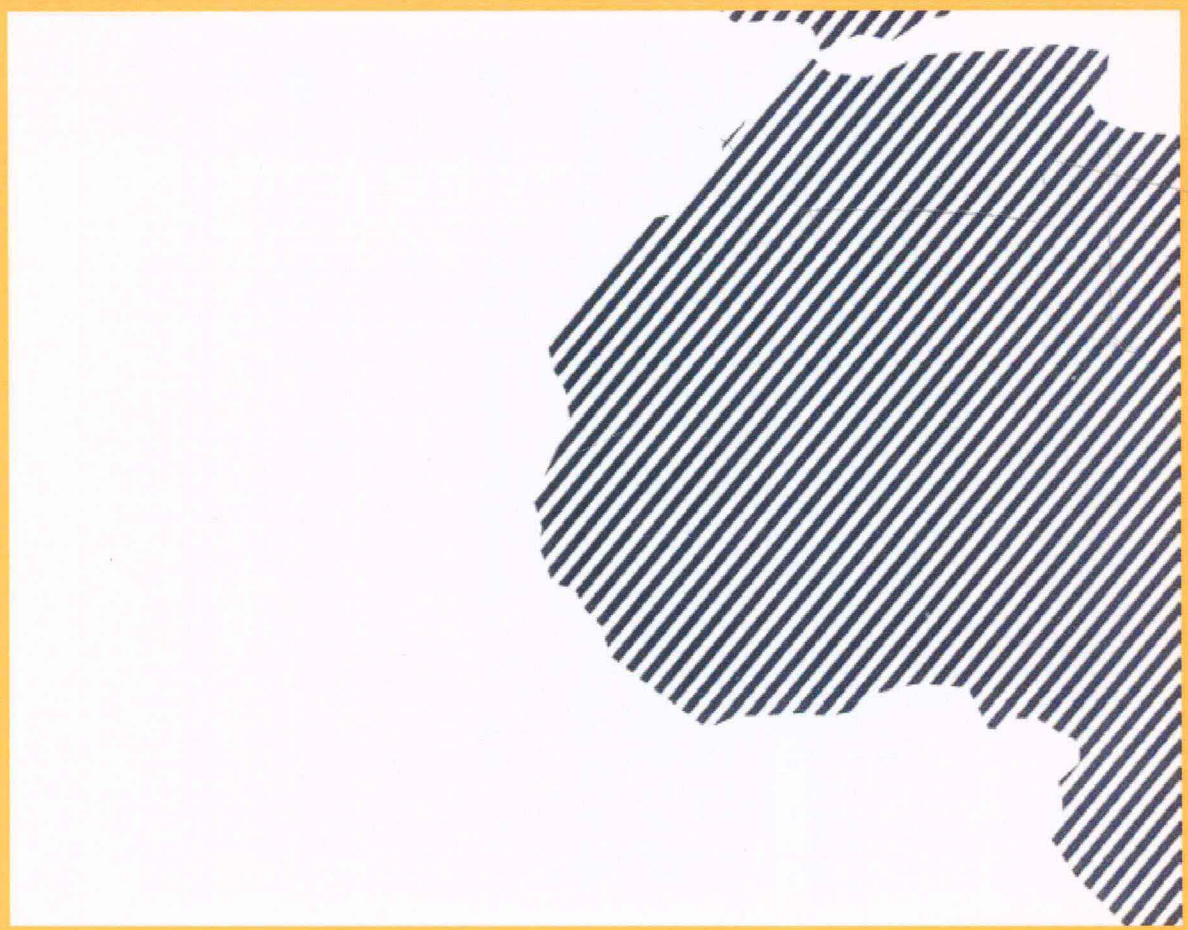

PROGRAMME FOR THE DEVELOPMENT OF FISHERIES IN THE EASTERN CENTRAL ATLANTIC
FISHERY COMMITTEE FOR THE EASTERN CENTRAL ATLANTIC

PROGRAMME POUR LE DÉVELOPPEMENT DES PÊCHES DANS L'ATLANTIQUE CENTRE-EST
COMITÉ DES PÊCHES POUR L'ATLANTIQUE CENTRE-EST

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Rome, 2012

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PREPARATION OF THIS DOCUMENT

The FAO/CECAF Working Group on demersal resources was created during the fifteenth session of the Fishery Committee for the Eastern Central Atlantic (CECAF) which was held in Abuja, Nigeria, from 1 to 3 November 2000 (FAO, 2000).

At the second meeting of the Working Group it was decided to split the group into two subgroups: Subgroup North covering the northern CECAF zone between Cape Spartel and the south of Senegal, and Subgroup South covering the southern CECAF zone between the south of Senegal to the Congo River.

This document reports on the meeting of Subgroup North which was organized in Banjul, the Gambia, from 6 to 14 November 2007.

The overall objective of the Group is to contribute to the improved management of demersal resources in Northwest Africa through assessment of the state of the stocks and the fisheries to ensure the best sustainable use of the resources for the benefit of the coastal countries.

In all, 18 researchers from seven different countries participated in the meeting.

The meeting was funded by the FAO Project GCP/RAF/397/SWE: "Assistance in the Management and development of the fisheries of the Eastern Central Atlantic Area – CECAF" and organized by FAO in collaboration with the Fisheries Department of the Gambia.

FAO wishes to thank the participants of the Working Group who contributed towards this report. Our special thanks go to Stephen Cofield, Sacha Lomnitz, Marie-Thérèse Magnan and Françoise Schatto for their assistance with the final preparation of this document. Pedro Barros, Ana Maria Caramelo and Merete Tandstad were responsible for the final technical editing of this document.

PRÉPARATION DE CE DOCUMENT

Le Groupe de travail FAO/COPACE sur les ressources démersales a été créé au cours de la quinzième session du Comité des pêches pour l'Atlantique Centre-Est (COPACE) qui s'est tenue à Abuja (Nigéria) du 1er au 3 novembre 2000 (FAO, 2000).

A la deuxième réunion du Groupe de travail, il a été décidé de diviser le Groupe en deux sous-groupes: le Sous-groupe Nord couvrant la zone nord du CECAF entre le Cap Spartel et le sud du Sénégal, et le Sous-groupe Sud couvrant la zone sud du CECAF entre le sud du Sénégal et le fleuve Congo.

Ce document est le compte-rendu de la réunion du Sous-groupe Nord qui a été organisée à Banjul, Gambie, du 6 au 14 novembre 2007.

L'objectif général du Groupe est de contribuer à l'amélioration de l'aménagement des ressources démersales en Afrique du nord-ouest par l'évaluation de l'état des stocks et des pêcheries afin d'assurer la meilleure utilisation durable de ces ressources pour le bénéfice des pays côtiers.

Au total, 18 chercheurs de sept pays différents ont participé à la réunion.

La réunion a été financée par le Projet FAO GCP/RAF/397/SWE: «Assistance pour la gestion et la mise en valeur des pêches dans la région du comité des pêches pour l'Atlantique Centre-Est – COPACE» et organisée par la FAO en collaboration avec le Département des pêches de Gambie.

La FAO est reconnaissante aux participants au Groupe de travail qui ont contribué à la réalisation du présent rapport. Nos vifs remerciements vont à Stephen Cofield, Sacha Lomnitz, Marie-Thérèse Magnan et Françoise Schatto pour l'assistance apportée à l'édition finale de ce document. Pedro Barros, Ana Maria Caramelo et Merete Tandstad étaient responsables de l'édition technique finale de ce document.FAO Fishery Committee for the Eastern Central Atlantic/Comité des pêches pour l'Atlantique Centre-Est.

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CECAF/ECAF Series/COPACE/PACE Séries. No. 10/71. Rome, FAO. 2012. 302 p.

ABSTRACT

A permanent FAO/CECAF Working Group composed of scientists from the coastal countries and from those countries or organizations playing an active role in demersal fisheries in West Africa, was created by CECAF in 2000. The first meeting of Subgroup North was organized in Saly, Senegal, from 14 to 23 September 2004. This report refers to the second meeting of Subgroup North which was organized in Banjul, the Gambia, from 6 to 14 November 2007.

The overall objective of the Group is to contribute to the improved management of demersal resources in Northwest Africa through assessment of the state of stocks and fisheries to ensure the best sustainable use of the resources for the benefit of coastal countries. The study zone for the Working Group is the CECAF zone of the Central-East Atlantic Ocean between Cape Spartel and the south of Senegal.

For reasons of heterogeneity, the species and stocks assessed by the Working Group were divided into four groups: hake, other demersal fish, shrimps and cephalopods. For each of these groups information is provided on the fisheries; sampling schemes and sampling intensity, biological characteristics, stock identity, trends (catch, effort, biological data and abundance indices), assessment, management recommendations and future research.

Approximately 22 different stocks-units were analysed and the results discussed. The quality and trends in basic data (catch, effort, length distribution) collected by each different country and the sampling system, represented some of the main discussion topics of this Working Group.

The results of the assessments confirm the conclusion reached at the last meeting in 2004 that most of the stocks assessed are overexploited. A summary of the assessments and management measures is given at the end of this report.

RÉSUMÉ

Un groupe de travail permanent FAO/COPACE, composé de scientifiques des États côtiers et des pays ou organisations qui jouent un rôle actif dans les pêcheries démersales de l'Afrique occidentale a été créé par le COPACE en 2000. La première réunion du Sous-groupe Nord a été organisée à Saly, Sénégal, du 14 au 23 septembre 2004. Ceci est le rapport de la deuxième réunion du Sous-groupe Nord a été organisée à Banjul, Gambie, du 6 au 14 novembre 2007.

L'objectif général du Groupe est de contribuer à améliorer l'aménagement des ressources démersales en Afrique du nord-ouest par l'évaluation de l'état des stocks et des pêcheries afin d'assurer une meilleure utilisation de ces ressources au bénéfice des pays côtiers. La zone d'étude pour le groupe de travail est la zone COPACE de l'océan Atlantique Centre-Est, entre le Cap Spartel et le sud du Sénégal.

En raison de l'hétérogénéité des espèces et des stocks, le Groupe de travail sur les démersaux a été divisé en quatre groupes: merlus, autres démersaux, crevettes et céphalopodes. Pour chacun de ces groupes, des informations sont données sur les pêcheries; système et intensité d'échantillonnage, caractéristiques biologiques, identité du stock, tendances (capture, effort, données biologiques et indices d'abondance), évaluation, recommandations d'aménagement et de recherche future.

Environ 22 stocks-unités différents ont été analysés et les résultats ont été discutés. La qualité et les tendances des données de base (captures, effort et distribution de taille) collectées par chaque pays et le système d'échantillonnage étaient parmi les principaux thèmes de discussion de ce Groupe de travail.

Les résultats des évaluations confirment les conclusions de la réunion 2004, à savoir que la plupart des stocks évalués sont surexploités. Le résumé des évaluations et des mesures de gestion est présenté dans les tableaux à la fin de ce rapport.

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TABLE DES MATIÈRES

1. INTRODUCTION

The FAO/CECAF Working Group on the assessment of demersal resources, Subgroup North met in Banjul, the Gambia, from 6 to 14 November 2007.

The overall objective of the Group is to contribute to improved management of demersal resources in Northwest Africa through assessment of the state of the stocks and the fisheries to ensure the best sustainable use of the resources for the benefit of the coastal countries.

For reasons of heterogeneity of the species and stocks, the Working Group decided to divide the resources in four subgroups: Hake, Other demersal fish, Shrimps and Cephalopods. A total of 22 species/species groups were analysed by the Working Group.

The meeting was funded by the FAO Project GCP/RAF/397/SWE: "Assistance in the Management and development of the fisheries of the Eastern Central Atlantic Area – CECAF" and organized by FAO in collaboration with the Fisheries Department of the Gambia.

In all, 18 researchers from seven different countries, SRFC[1] and FAO participated at this meeting. The Working Group is chaired by Said Benchoucha of the National Institute for Fisheries Research (INRH) in Morocco.

1.1 Terms of reference

The terms of reference of the Working Group which were adopted by the CECAF Sub-Committee (FAO, 2001) were:

1. To update (to 2006) the catch and effort statistics by country and by species.
2. To consolidate and update biological information on catches, in particular length and age, if available. To proceed with a review of the trends and quality of the available data.
3. To select the most reliable data sources and assessment methods.
4. To assess the current state of the different stocks in the subregion using the available catch and effort information, the biological data and the data from the research surveys.
5. To present the different stock management options for the various stocks, pointing out the long and short-term effects.
6. To identify gaps in the data which need to be remedied during future Working Group meetings.

1.2 Participants

Eduardo	Balguerias (10–14 Nov.)	Spain
Pedro	Barros	FAO/Rome
Said	Benchoucha (Chairman)	Morocco
Ana Maria	Caramelo	FAO/Rome
Famara	Darboe	The Gambia
Jessica	Olaussen (6–10 Nov.)	FAO/Ghana
Lourdes	Fernández Peralta	Spain
Hammou	El Habouz	Morocco
Mohamed Moustapha	Ould Bouzouma	Mauritania
Khallahi	Ould Brahim	Mauritania
Asberr	Mendy	The Gambia
Amina	Najd	Morocco

[1] Subregional Fisheries Commission (SRFC)/Commission sous-regionale des pêches (CSRP).

Ana	Ramos	Spain
Pedro	Pascual (6–10 Nov.)	Spain
Birane	Samb	Senegal
Aboubacar	Sidibé	SRFC
Abdellatif	Boumaaz	Morocco
Merete	Tandstad	FAO/Rome
Djiga	Thiao	Senegal

Names and full addresses of all participants are given in Appendix 1.

1.3 Definition of working area

The assessment area of the Working Group is the northern CECAF zone of the Centre-East Atlantic Ocean, between Cap Spartel and the south of Senegal.

1.4 Structure of the report

Separate sections have been devoted to each of the four groups: hake, other demersal fish, shrimps and cephalopods. Table 1.4.1 provides the definition of the units analysed by group.

For each of these groups, information is given on the fisheries, sampling schemes and sampling intensity, biological characteristics, stock identity, trends (catch, effort, biological data and abundance indices), assessment, management recommendations and future research.

1.5 Follow-up on research recommendations

Several recommendations were made by the 2003 and 2004 sessions of the Working Group with respect to research to be pursued. The actions adopted for the realization of these recommendations are presented in Table 1.5.1. The Group noted that work has been started to improve the statistical and biological sampling systems in the countries of the subregion. Studies on biological aspects of certain species analysed within the framework of the Working Group had also been initiated. Some recommendations, for various reasons, were not taken into consideration.

For most recommendations follow-up activities had been initiated, although many of them require continuation to be useful for the assessments.

1.6 Trends in catches

Total catch of the demersal resources analysed in this Working Group was 155 000 tonnes in 2006. Total catches of these resources for the period 1990 to 2006 fluctuated with an average of around 220 000 and an average of 167 000 tonnes over the last 5 years. A general decreasing trend has been seen since 1999 (Figure 1.6.1).

In 2006, the most important group of species in the region is cephalopods (with 58 percent of total) and the octopus (*Octopus vulgaris*) represents 42 percent of the total catches of demersal resources in 2006. Total catches of octopus have seen a decreasing trend over the last years going from 159 000 tonnes in 1999 to 65 000 tonnes in 2006 (Figure 1.6.1). Total annual cuttlefish (*Sepia* spp.) catches varied around 29 000 tonnes for the period 1990–1999 followed by a peak of 40 000 tonnes in 2000, then a decrease to 22 000 tonnes in 2006.

The average catches of demersal fish (excluding hake) over the last five years have been estimated at around 25 000 tonnes. The red pandora (*Pagellus bellottii*), widely distributed in the West African zone, was the most important species in terms of catches of the demersal fish studied by the Working Group until 2003. After this year catfish (*Arius* spp.) starts to be the most important of the species analysed. Average landings of catfish over the last five years have been around 11 000 tonnes (Figure 3.1.1a).

Catches of hake (*Merluccius merluccius*, *M. senegalensis* and *M. polli*) during the last five years have been between 13 000 and 23 000 tonnes, with an average of 19 000 tonnes.

The deepwater rose shrimp (*Parapenaeus longirostris*) and the Southern pink shrimp (*Penaeus notialis*) are considered to be important in the region. The average catch over the last five years of *P. longirostris* was estimated at 15 000 tonnes and of *P. notialis* at around 5 000 tonnes.

1.7 Demersal surveys

From September 2004 to November 2007, 25 scientific surveys were carried out in the study area. Morocco and Mauritania carry out several demersal surveys each year. Morocco has carried out six surveys targeting hake and shrimps in the area between Tangiers to the south of Agadir since the last FAO/CECAF Working Group meeting in 2004 (2005:2, 2006:2 and 2007:2). These surveys covered the area from the coast to 1 000 m depth. In the area between Cape Bojador and Lagouira, nine surveys targeting cephalopods were undertaken (2005:3, 2006:3 and 2007:3). These surveys covered the coastal area, to 100 m depth. All of the above surveys are carried out by the Moroccan R/V CHARIF AL IDRISSI. During these surveys, although targeting specific species groups, all demersal fish species, shrimps and cephalopods were sampled.

Mauritania has carried out a total of seven surveys since the last Working Group meeting using the R/V AL AWAM. Four of these surveys were demersal surveys aimed at studying the distribution and abundance of all demersal groups, covering the shelf and slope from 10 to 700 m depth (2005:1, 2006:1 and 2007:2). Four specialized surveys to monitor the closed season (start and end) for cephalopods were also carried out in the area between 20°N and 20°45'N (10–100 m depth) (2005:1, 2006:1 and 2007:2).

From 2004 to 2006, Spain conducted three deep water research surveys in the northern area of CECAF using the research vessel VIZCONDE DE EZA. In addition one survey is planned for November 2007. The 2004 survey covered the northern area of Morocco between Cap Spartel and Agadir, at depths from 500 to 2 000 m. The 2005 survey covered the same depth zone in the area between Agadir and Cap Juby and the 2006 survey the area from Cape Bojador to Cape Blanc, at depths of 200–2 000 m. The 2007 survey will cover Mauritanian waters from 400 to 2 000 m. All these surveys are multipurpose surveys aimed at mapping the distribution, abundance and biodiversity of demersal fish, cephalopods and shrimps as well as megabenthos. Bathymetric maps were also established using a multibeam echosounder.

The last demersal surveys carried out in Senegal with the R/V ITAF DEME were in 2004.

1.8 Data quality

Trends and quality of the basic data (catch, effort and length frequencies) collected by each country, were one of the main topics of discussion during the 2007 Working Group meeting. Although some improvements have been noted in recent years, there are still problems with the sampling of catches and with the basic data. There are also uncertainties surrounding stock definition. The quality of the data series could therefore be improved in the future.

1.8.1 Sampling schemes and sampling intensity

Sampling of biological parameters (including length and weight) is mostly carried out during the research surveys. Morocco and Mauritania make various surveys during the year and all hauls are sampled. In 2004, Morocco established a sampling plan at landing ports. This plan was specifically targeted at shrimps and hake. Shrimps are always frozen on board. In theory the data from the landings of the different commercial categories could be used. However, these commercial categories are not standardized, so till now this data has not been used to estimate length composition of the landings.

The landings of black hake by the Spanish fleet are done at Vigo where there is no sampling scheme in place. Thus there are no data on landings. On the other hand, the landings of the ice trawlers in Cadiz are thoroughly sampled by the Spanish Oceanographic Institute (IEO).

For octopus, data from the commercial fisheries of Morocco and Mauritania are used. In Morocco these data are supplied by the ministry and in Mauritania by the producers' organization, Mauritanian Commercial Fish Company (SMCP). However there is still a lack of information about the Spanish freezer trawlers in Mauritania and the artisanal fishery of Mauritania.

The landings of demersal fish are sampled in Morocco and for the artisanal fishery, in Senegal. In Mauritania no sampling is carried out on the landings of the national fleet, or on the catches of the foreign fleet.

Specific recommendations for each species are reported in the respective sections.

1.9 Methodology and software

A total of 22 species/species groups were analysed by the Working Group (Table 1.4.1).

After reviewing the available data, the Working Group concluded that the only class of methods that could be applied to all stock units were Production Models. Keeping consistency with the methods used in previous Working Groups, the dynamic version of the Schaefer (1954) model was used. To assess the current state of the stocks and estimate the model parameters, an Excel spreadsheet implementation of the dynamic version of this model, with an observation error estimator (Haddon, 2001), was used (Appendix 2). The model was fitted to the data using the non-linear optimizer built into Excel, solver tool. For some stocks it was possible to use length-based models (see below).

Reference points for management advice
To ensure consistency in the management advice, the 2007 Working Group decided to use the same Biological Reference Points (BRPs) as those adopted by the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa. Hence the indices B/B_{MSY} and F/F_{MSY} were used as Limit Reference Points, while the indices $B/B_{0.1}$ and $F/F_{0.1}$ were chosen as Target Reference Points. A more detailed explanation of these reference points and of their use in fisheries management is given in the 2006 Report of the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa (FAO, 2006).

Projections
Simple medium-term projections of future yields and stock development were made according to predefined scenarios using the Schaefer model fitted to the historical data, using a spreadsheet implementation that allowed uniform input and output for all stocks (Appendix 3). A time horizon of five years was used for the projections.

All projections took as their departure point the estimated stock status at the last year of data available. Future management strategies were defined as changes in fishing mortality and/or catch relative to those estimated for the last year of data available.

For each stock, two scenarios where analysed. The first was *status quo* considering future yields and stock development if the current fishing mortality in the fishery is continued. The second scenario considered constant fishing mortality level, corresponding to the catch level recommended for next year for each stock.

Length structured methods
For some of the stocks, like the white hake (*Merluccius merluccius*) and the deepwater rose shrimp (*Parapenaeus longirostris*) of Morocco, the Cassava croaker (*Pseudotolithus senegalensis*) and the catfish (*Arius* spp.) of Mauritania, Senegal and the Gambia, some data on catch length distributions and

growth parameters were available. Therefore, a Length Cohort Analysis (LCA) (Jones, 1984) was applied to these stocks, in order to estimate the fishing mortality level (F-level) in the fishery, and the relative exploitation pattern in the last few years. A length-based Yield per Recruit Analysis was then run on these estimates, to estimate the Biological Reference Points F_{Max} and $F_{0.1}$. Both the LCA and the Yield-per-Recruit Analysis were implemented in Excel spreadsheets. For more information on these methods, readers are referred to Sparre and Venema (1998).

2. HAKE

2.1 Fisheries

The geographic and bathymetric distributions of the different hake species as well as their corresponding fisheries differ from one country to another in the subregion.

In Morocco, the only hake species caught by the coastal fishery is the white hake (*Merluccius merluccius*). The number of coastal Moroccan trawlers targeting this species is 300 units. They generally operate to the north of Morocco. This species is also caught by about twenty longliners belonging to joint Hispano-Moroccan companies operating in Morocco since the end of 2001, by a fleet of Moroccan longliners and by 200 coastal trawlers operating to the south of Morocco and catching very small quantities of this species. European Union activity in Moroccan waters ceased at the end of 1999. It should be noted that a new fishing agreement between the European Union and Morocco was signed, but this agreement forbids the fishing of white hake and only allows black hake to be caught after the summer of 2007.

In Mauritania, the hake fishery concentrates on black hake (*Merluccius senegalensis* and *M. polli*). Black hake is targeted by Spanish and Mauritanian fresh fish trawler fleets, as well as Spanish bottom longliners. At some periods in the year, Spanish freezer-trawlers catch large amounts of black hake under different licences (black hake fishery and demersal fishery), but it is difficult to determine the actual composition of these catches. Some fresh fish hake trawlers from other countries also take small quantities of catch. This species also makes up a non-negligible part of bycatch from the cephalopod, shrimp and pelagic trawlers.

Over the last few years, Spanish hake trawlers have been operating more and more in deep Mauritanian waters, reaching depths of 1 000 m. In 2005 and 2006, only a few longliners were active.

In Senegal, the Spanish trawlers are the only fleet targeting black hake. In 2006, this fleet remained inactive as the fishing agreement between the European Union and Senegal came to an end in July and has not been renewed.

2.2 Sampling intensity

Table 2.2.1 shows sampling intensity of white hake.

2.2.1 Catch and effort

In Morocco, since 2001, the National Fisheries Office (NFO) has installed a system of daily sampling of landings at the main ports. The landings are registered by day, vessel, occupation and species at each port and transmitted daily to the NFO headquarters in Casablanca. In 2003, the system was operational in all Moroccan ports. Thus data concerning landings and effort since 2003 are available to the INRH in a database of basic data. Effort for the period 1990–2002 was estimated from that of the ocean-going shrimpers or by examining a sample taken from the sales records of a single port (Larache). A correction factor for effort during this period was calculated by taking the average variation between the actual effort aimed at this species between 2003 and 2006 and the estimated effort for the same period then multiplying this factor by the effort of the same series (1990–2002). The corresponding catches per unit of effort (CPUEs) were thus recalculated for the whole data series.

Catch and effort data from the Spanish trawlers and longliners targeting black hake in Mauritanian and Senegalese waters are available until 2006 in the IEO database. Sampling from the landing ports and effort from the logbooks are compared in order to obtain a control figure for total landings. It should be highlighted that these are fresh fish fleets which carry out many trips which makes following them up difficult. In addition several effort data are missing compared to registered catches over the last few years. Effort is estimated from monthly CPUEs obtained from actual data from each fleet. From the work carried out by the Working Group to validate black hake statistics in the CECAF zone (see Appendix 4), the IEO detected an overestimation of the trips of the trawlers for the years 1990, 1991 and 1992. The effort data relative to these years has been corrected based on the CPUEs of typical vessels chosen for their fishing strategy and regularity. This series was then used as an abundance index to carry out the assessment.

As the two black hake species are not separated in the catch statistics, the proportions of the two species in the Spanish hake trawler catches were calculated based on the results from several trips on board this fleet between 2002 and 2007 by scientific observers from the IEO.

Mauritania does not carry out catch and effort sampling in its ports, but since 1990, it has been obligatory for vessel captains to keep a logbook which provides information on effort deployed by their vessels as well as the quantities of catch in the Mauritanian Exclusive Economic Zone (EEZ). The data collected by this system are stored in a database managed by the Mauritanian maritime surveillance organisation. A copy of this database is sent to IMROP (Institut mauritanien des recherches océanographiques et des pêches) for its use. This database has been particularly useful to the Working Group in its assessment of black hake (see Appendix 4).

A study of the percentage of discards on the Spanish hake trawlers in Mauritania in 2002 and 2003 (IMROP/IEO, 2003) concluded that there are, on average, between 45 and 50 percent of discards in this fishery. The IEO is continuing its studies into the discards of this fleet with the goal of obtaining correct weighting processes for catch and effort and to obtain definitive results by analysing their variability.

2.2.2 Biological parameters

In Morocco, sampling of landings of the commercial fishery to study the biological characteristics of white hake has been carried out in some ports since 1989. Since 2002, sampling has been done regularly in the ports of Larache and Agadir which are considered to be reference ports for landings of this species.

As well as sampling the landings of the commercial fishery, scientific surveys carried out by INRH allow data to be obtained on the demographic structure and biology of white hake (sex-ratio, first sexual maturity, length-weight relationship, growth, etc.). Distribution maps of abundance indices and the percentage of juveniles in the white hake population are also provided by these surveys. In all, 43 surveys have been carried out by INRH from 1987 to 2007 using two research vessels, the IBN SINA from 1982 to 1986 and the R/V CHARIF AL IDRISSI. These surveys covered the trawlable zones between Tangiers and Agadir. In general, 80 to 90 trawls are carried out during each survey following a stratified random sampling plan.

Sampling intensity of white hake in Morocco during the surveys is high at 51 to 77 percent of total catch whilst coverage is 100 percent (all the trawls are sampled). In contrast sampling intensity of landings of the coastal fishery is weak at only 0.01 percent of total catch.

Between 2003 and 2007, IMROP carried out several surveys using the R/V AL AWAM, as part of its mandate to study demersal resources in the Mauritanian EEZ. These surveys were carried out at depths of between 10 and 700 m during the cold and warm seasons. The surveys covered the entire EEZ. Data on catch rates and length frequencies were collected for a variety of species of which black hake *Merluccius senegalensis* and *Merluccius polli* were included.