

**GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN  
(GFCM)**

**WORKING GROUP ON DEMERSAL SPECIES  
Rome, Italy, 20-22 march, 2002**

**OPENING OF THE MEETING**

1. The third meeting of the SAC Working Group on Demersal Species of GFCM was held at the FAO headquarters in Rome from 20 to 22 March 2002. It was opened by the Coordinator of the Working Group, Mr H. Farrugio (IFREMER).
2. The meeting was attended by 48 scientists from 8 countries. The list of participants is attached as Appendix A.
3. The Agenda of the Working Group was adopted (Appendix B) and the list of documents was updated. The final list is attached as Appendix C.
4. Three rapporteurs Mr M.Camilleri (MCFS), Mrs.C.Mellon (IFREMER) and Mr. Enrico Arneri (IRPEM - CNR) and two chairpersons Mr F.Fiorentino (IRMA - CNR) and Mrs P.Pereda (IEO) were designated.
5. The Working Group agreed that the papers presented at the present meeting should be sent to Mr Jordi Lleonart (CSIC), Coordinator of the SAC Sub-Committee on Stock Assessment and to the GFCM Secretariat in a camera-ready format for possible insertion on a website and for possible publication in the "Studies and Reviews" publication series of GFCM.

**PRESENTATIONS TO AND DISCUSSIONS BY THE WORKING GROUP**

6. 14 technical papers were presented and discussed by the Working Group.
7. These documents covered 14 Management Units (MUs), as a whole or in part, and 7 species. The table attached in Appendix D indicates the species studied and the MUs referred to.
8. Two types of documents were presented: (i) assessment documents and (ii) assessment-related documents. The conclusions and recommendations related to the assessment presented in each document and endorsed by the Working Group are listed.
9. SAMED also made the WG Sheets TS1, TS2, and TS3 available; these sheets related to *M. merluccius*, *M. barbatus* and *N. norvegicus* (see appendix D).

**ASSESSMENT DOCUMENTS**

10. Seven documents of this type were reviewed and are referenced by a specific number (see Appendix C; by the FAO code of the species, by the number of the management unit and the year of presentation; the date indicated after the scientific

name of the species refers to the period of the study). Such references should be used when completing the standard forms adopted by the Working Group.

11. Forms D, Z and TST, related to the synthesis of the assessments and the abstracts of the working papers were discussed. These forms are presented in Appendix E.

**Document n° 1a : HKE-9-02 : Stock assessment of *Merluccius merluccius* in Geographical Sub Area (GSA) 9, 1985-2001**

12. Data derived from trawl surveys and from a catch assessment survey for the same period (1990-1998) show trends of indices of abundance which are not in agreement. It is possible that the distribution and the catchability of each species may change at different exploitation rates and hence catch per unit effort from commercial fleet data may not be a good index of abundance. These results may be also due to changes in the fleets' behaviour or to changes in the target species. Fishing pressure is not regularly distributed. It seems difficult to perform an overall stock assessment.

13. A status of growth overfishing was suspected for the species. The species did not show evident changes in abundance of young age classes which can be considered as a sign of recruitment overfishing.

14. Considering the fraction of the Spawning Biomass surviving at the current level of effort, an adequate number of spawners have to be maintained and hence, it is important to control and not encourage a more general use of gears such as long lines and trammel nets, suitable for the capture of big fish living offshore some times in non-trawlable areas).

15. Management recommendations : Areas and/or seasonal closures should be useful in order to protect nursery areas which are geographically very stable. Some considerations on the adults need to be taken with regards to the increase of fishing pressure by the fixed gears.

16. It was suggested that a reduction of effort should drive the spawning biomass to a safer level.

17. The mesh size currently in use gives rise to a far too small size of first capture (8-9 cm), which is much lower than the legal size of the species (20 cm). An increase in mesh size (about 55 mm) should produce a slight improvement in Y/R for hake, but contemporarily important losses with regards to the catch of several other species that make part of the commercial assemblages. An alternative suggestion was to increase the size of first capture which could be achieved by means of the self-regulation of the fleet by avoiding the fishing grounds where small hakes are concentrated or by the enforcement of temporal or total closures of defined areas. The first of these two options are currently applied (even if not legally regulated) in the Viareggio fishing area.

**Document n° 1b : NEP-9-02 : Stock assessment of *Nephrops norvegicus* in GSA 9, 1985-2001**

18. The assessment was based on 27 Grund trawl surveys, 8 Medits trawl surveys

and other data collected during other EU financed projects such as NEMED. The biological parameters in the analysed areas were found to be very similar except for natural mortality. A general increase in CPUE and landings over the years was reported. The dominant length class mode for both males and females was 30-35cm and an expected rise in fishing mortality was reported upwards from this length class. From yield per recruit estimations the resource was found to be in underexploited or slightly overexploited conditions. The fishing pressure is not regularly distributed in the area due to vessel characteristics, resource availability and market demand. There are noticeable differences in fishing pattern. An increase in total mortality has been detected in recent years and it was suggested that the situation must be kept in check. Despite a reduction in fishing effort on juveniles it was pointed out that the size at first capture is too low. No specific limitation is recommended.

**Document n° 1c : MUT-9-02 : Stock assessment of *Mullus barbatus* in GSA 9, 1985-2001**

19. Only a very slight increase in CPUE over the years was detected for this species. It was reported that fishing effort levels and catch rates differ by area within this GSA but in general there was an increase in biomass over time. A reduction in fishing effort particularly on spawning stock was suggested since the resource is fully or overexploited. Management measures should include area closures, temporal closures, effort limitation, a minimum landing size, gear modifications, quotas and market restrictions. A total closure of the 3 miles in order to protect juveniles immediately after recruitment on the area is recommended.

20. A proposal to include variance coefficients when quoting biomass figures in the future was put forward by the working group. Some participants also expressed the fact that the description of proposed management measures should be accompanied by a quantitative component eg. the percentage of reduction in fishing effort; the size of the closed area.

**Document n° 2 : *Aristeomorpha foliacea* in GSA 11**

21. The distribution of *Aristeomorpha foliacea* in Sardinian waters was illustrated. It was reported that there were more cohorts of females (3-4) than of males (2). A high total mortality  $Z$  for this species was attributed to low recruitment as proved by an analysis which followed cohorts through time. An increase in fishing effort (+19%) on this species was also reported and exploitation was approaching  $E_{max}$ . However, considering that the biomass remained relatively constant and that the species is relatively short lived, the increase in total mortality  $Z$  was attributed to natural causes.

**Document n° 6 : HKE-7-02 : Stock assessment of French-Spanish shared stock of *Merluccius merluccius* in GSA 7, 1998-2001**

22. The assessment was based on the commercial catches of French and Spanish trawlers, French gillnets and Spanish longlines. The catches by year and gear, as well as the size composition and biological parameters for the specimen caught were analysed. The results seem to highlight a growth overfishing scenario and a reduction in fishing

mortality was suggested to increase the yield per recruit. A decrease in spawning stock biomass was also detected and the risk of recruitment overfishing was quite evident. A series of simulations of transition analysis with time with decreasing fishing effort and improving trawl selectivity showed short term losses but medium term gains in yield. In conclusion it was suggested that growth overfishing could be reduced by increasing the current size at first capture to reach the legal size of 20 cm (whilst improving trawl selectivity) and reducing trawling effort. On the other hand the risk of recruitment overfishing could be diminished by reducing the longline and gillnet fishing effort. In addition, protecting juveniles outside the current trawl protected areas, as well as improved statistics and more sampling activities were seen as other positive options for improving the status of the stock and the quality of the assessment respectively. An overall 20% reduction in fishing effort was suggested as an immediate measure.

23. The problem of masking of medium-large sized fish in trawls by the predominance of small fish was pointed out by the working group. It was also pointed out that the low catches of large fish by other gears exerting a high effort is an indicator of low abundance of the large size classes.

**Document n° 8 : ARA-1/5/6-02 : Stock assessment of *Aristeus antennatus* in the GSAs 1, 5 and 6**

24. The assessment was carried out in the Alboran Sea, Alicante Gulf and Balearic Islands. Whilst there was a high variability in monthly landings and trawling practices by region, the differences in length and CPUE between ports were not significant. It was also reported that male and female Y/R were very different to each other. The VPA revealed that the mean age of the catch was greater than the mean age of the stock, however, the Y/R curves in all areas point to an overfishing scenario. Moreover, a very high fishing effort on the spawning stock biomass was detected. It was suggested that the optimum effort should be half or three quarters of the current fishing effort on females and males respectively. The maximum yield was close to 12g per recruit for females and 5g for males.

**Document n° 9 : The Pomo/Jabuka Pit critical area : cooperative approach for the identification of fisheries management options**

25. Analysis of length frequency data and indices of abundances (N/km<sup>2</sup>) from MEDITS 1996-2001 for two target species: hake (*Merluccius merluccius*) and Norway lobster (*Nephrops norvegicus*) pointed out that these two populations in Pomo/Jabuka Pit represent common and shared stocks. In the case of the hake population, the area is the main nursery ground in the Adriatic Sea (in which GSA, Northern or Southern?).

26. Analysis of available and long-term series reliable ("grey literature") statistical data described the economic importance of the area for the Adriatic trawl fisheries, and after being applied into the holistic model, a high level of population exploitation, i.e. beyond MSY and  $f_{opt}$ , was highlighted.

27. The results of Y/R model analysis indicated that in the case of both species a eumetric catch could be achieved, either by a cod-end mesh size increase (*N. norvegicus* and *M. merluccius*) or a decrease of fishing effort (*M. merluccius*).

28. Recommendations : according to the Y/R curve an increase in the mesh size, or alternatively a decrease in fishing effort is necessary. The possibility of closing the area during part of the year could be useful.

29. Discussion : the WG highlighted that fitting the surplus production model without using the running average of effort could give a too optimistic result. It was also suggested that using a Hilborn and Walters dynamic approach could give a more realistic view of status of the stock.

**Document n° 10 : SAL-12/13/14-02 : Ecobiology and stock assessment of *Sarpa salpa* in GSAs 12, 13 and 14**

30. The Y/R curves obtained for this species seemed very similar between the management unit 12 and 13 (fully exploited). In the GSA 14 the stock of this species seemed to be slightly underexploited.

**Document n° 11 : PAC-3-02 : Stock assesement of *Pagellus acarne* in GSA 3**

31. The results of an assessment of *Pagellus acarne* in Moroccan waters was presented. The assessment was based on data obtained between 1998-2000 during which time an increase in fishing effort coupled by a decrease in CPUE was observed. An effort reduction between 30-40% was recommended in the light of the results obtained from the Yashimoto and Clarke model.

**ASSESSMENT RELATED DOCUMENTS**

**Document n° 3 : Medits results in the Alboran Sea (GSA 1 and 3)**

32. This paper related to the distribution of a selection of demersal resources in the Alboran Sea. It was reported that the biomass distribution depended quite significantly on oceanographic features. *P. longirostris* was found to be very scarce on the Northern side of the Alboran Sea (GSA 1) and nurseries were concentrated on the Southern side (GSA 3). The abundance of *P. acarne*, *M. surmuletus* and *M. barbatus* varied not only geographically, but also with depth and time. No differences in this regard were observed, but for *M. merluccius*.

**Document n° 4 : Spatial and seasonal of juvenile concentrations in the Gulf of Saronikos and the Cyclades islands**

33. The juveniles of hake occur throughout the year at all depths. Their spatial distribution is largely depended on the oceanographic conditions. Due to the occurrence of juveniles during spring of some other commercial species such as *Mullus surmuletus* in the catch of beach seiners, the decrease of the fishing season for this gear has already enforced.

### **Document n° 5 : Hake discards in the NW Mediterranean**

34. Discards of small fish (less than 15mm) were significant in all sampled ports in the western Mediterranean especially in Sete and Porto Santo Stefano. The abundance in the resource and magnitude of discards varied by season and area. The variation in discard quantity by area was attributed to the local practice of fishermen and market demand. It was recommended that discards should be taken into account when carrying out future assessments.

### **Document n° 7 : Standardized measures of relative abundance of demersal fish in Greece.**

35. This paper was presented during the SAMED workshop and was not discussed by the present working group. However, this paper has been included in Annex E of this report.

### **RESULTS OF THE EU SAMED (STOCK ASSESSMENT IN THE MEDITERRANEAN) EU PROJECT :**

36. Within the framework of the activity of the Sub-Committee on Stock Assessment of the Scientific Advisory Committee of GFCM-FAO, the Seminar “Stock assessment and production of demersal resources in the Mediterranean” was held at the FAO Headquarters between 18-19 March 2002.

37. The main aims of the Seminar were:

- to present the results obtained within the framework of the MEDITS and SAMED EU projects;
- to promote the exchange of experiences among fishery researchers;
- to stimulate discussion on the contribution of different complementary approaches to the stock assessment.

38. Twenty communications regarding the SAMED results were presented and discussed. The communications were related to the following topics:

- a) Biological and demographic parameters of demersal resources, based on data coming from direct or indirect methods.
- b) Production models (analytical and/or global) for analysing the current state of the resources.
- c) Spatio temporal pattern of recruitment in Mediterranean demersal resources.

In order to ensure wide diffusion of the Seminar outcome, the publication of a special issue of the FAO journal “Studies and Reviews” was decided upon. For this purpose an Editorial Board, composed of John Pope, Giuseppe Lembo and Jorge Csirke was appointed.

39. Following the Seminar, an overview of the SAMED results was also presented during the Working Group on Demersals. Although the SAMED Project was not yet concluded, a great effort was made to make the WG the Sheets TS1, TS2, and TS3 available; these sheets related to *M. merluccius*, *M. barbatus* and *N. norvegicus* for 14,

13 and 10 GSAs, respectively. The sheets B and Z will be sent to the Co-ordinator of the Sub-Committee on Stock Assessment in the forthcoming days.

40. As a general outcome of the SAMED analysis it was highlighted that the values of Z for the examined species were, in several GSAs, much higher than M, implying a fully or an overexploited status of resources. Owing to the fact that neither target, nor limit reference points were discussed and adopted, indications on the levels of reduction of fishing mortality were not quantified. Hence the need of a discussion on the reference points was warmly recommended.

41. However, it was suggested that management options such as the protection of recruits by closure of nursery areas and closed season should be implemented. Finally, it was demonstrated that for the first time data collected using a standard methodology, for six years trawl surveys, were elaborated adopting common protocols in order to contribute in giving assessments of the status of the resources.

## **GENERAL DISCUSSION**

42. The working group recalled the request by the GFCM to focus assessment-related work on shared stocks. However, it was noted that only few works of this kind have been presented until now at the working group (hake stock in the Gulf of Lions, Adriatic fisheries). The main problem was associated with the uncertainty of identifying the shared stocks of the priority species listed by the GFCM. It was pointed out that, in fact, Adriamed had worked on the identification of shared stocks in the Adriatic and 13 shared Adriatic demersal species had been included in Annex E of the report of the meeting of the Sub-Committee on Stock Assessment 2001. It was stated that whilst stock assessment work carried out by the working group should focus on those shared stocks for which data already exists, FAO regional projects such as Adriamed, Copemed and MedSudMed are very likely to make major contributions in the near future.

## **GENERAL CONCLUSIONS AND RECOMMENDATIONS**

43. The conclusions and recommendations of the stock assessments included in this report have been agreed upon by this working group.

44. As a result of the discussions and reviews of the documents made available to it, the Working Group agreed on the following conclusions and recommendations:

- Distribute copies of the documents and standard forms, or send them to everybody in electronic format before the meeting.
- As agreed during the previous meetings, priority should be given to papers dealing with shared stocks and priority species of regional or sub-regional concerns.
- Avoid papers which were not assessments, or are not dealing with methodologies directly linked with assessments.

- Assessments should be presented using the standard forms. The data and parameters that might be needed to redo the calculations should be included in these forms. Any kind of proposal aiming to the improvement of the forms is welcome
- Since the WG has not yet agreed on a common standard evaluation method, assessments should be done using the longest reliable data series available and the most appropriate methods.
- The identification of biological reference points is recommended and should be included in the agenda of the next SCSA meeting.
- The eligibility of a new method used should be discussed by the working group and agreed upon or otherwise.
- Scientists are invited to analyse the effects of alternative exploitation strategies on the resources, using simulation methodologies.
- The Working Group regretted the absence of experts from the Eastern Mediterranean and Black Sea region and called on these countries to make an effort to send scientist to the Working Group session.

The address of the web site where the complete set of documents should be put is:

<ftp://cucafera.icm.csic.es/pub/scsa>

#### COORDINATION OF THE DEMERSALS WORKING GROUP

45. Considering that the current coordinator of this working group could no longer take on this responsibility, the working group unanimously agreed that Mr. Enrico Arneri (IRPEM - CNR) would act as the new coordinator of the demersals working group.

46. The working group acknowledged the sterling work carried out by the outgoing coordinator Mr. Henri Farrugio and thanked him for his great efforts in undertaking this important task.

#### DATE AND PLACE OF THE NEXT MEETING

47. The next meeting will be held early in March 2003. The location of the meeting will be identified by the Scientific Advisory Committee.