



**GENERAL FISHERIES COMMISSION
FOR THE MEDITERRANEAN
COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE**



Thirty-seventh Session of the Commission

Split, Croatia, 13-17 May 2013

**Report of the Workshop on fisheries data collection and management plans
in the Adriatic Sea
Split, Croatia, 20-22 March 2013**

OPENING AND ARRANGEMENT OF THE MEETING

1. The GFCM Workshop on Fisheries data collection and management plans in the Adriatic Sea was held in Split, Croatia from 20 to 22 March 2013. The workshop was organized with the help of the local host, the Croatian Institute of Oceanography and Fisheries, and hosted at the Hotel Le Méridien Lav.
2. Mr Miguel Bernal, from the GFCM Secretariat chaired the meeting. He welcome the participants and thanked them for attending and providing contributions to the meeting, as well as the Croatian authorities and the Institute of Oceanography and Fisheries for their kindness in hosting and arranging the meeting. Mrs Pilar Hernández from GFCM Secretariat was elected as rapporteur.
3. The agenda was adopted as presented in Appendix A. The meeting included two sessions, one related to data collection that occupied the first day, and a second one on management plans, occupying the two remaining days. The meeting was attended by 23 participants, 5 of which were the nominated National Focal Points from Albania, Croatia, Slovenia, Italy and Montenegro. List of participants is included in Appendix B.
4. Mr Bernal introduced the advances on the GFCM Framework Programme (FWP), explained that the workshop was integrated within a series of activities related to data collection and management plans at sub-regional scale for the Mediterranean and Black Sea, and highlighted the objectives of the workshop, listed below:
 - a. In relation to Fisheries Data Collection to:
 - Improve the efficiency of the GFCM data collection framework at sub-regional level, including improving the definition of the fisheries data to be collected by the GFCM and the efficiency of the submission tools
 - Harmonize GFCM requirements with national data collection systems

b. In relation to Management Plans, to:

- Identify the emerging issues and needs for the management of small pelagic fisheries in the Adriatic Sea (GSA 17 and 18).
- Advance towards a multi-annual management plan for small pelagic fisheries in the Adriatic Sea, by agreeing on a strategy to prepare a background document in support of a future management plan.

5. Mr Bernal stressed that the workshop and the additional planned GFCM FWP activities in relation to data collection and management plans come in an important moment, as the GFCM is taking steps to revise its data collection program, delivering the first GFCM Data Collection Reference Framework (DCRF), and to facilitate the implementation of management plans, following the approval of the GFCM “Guidelines on a general management framework and presentation of scientific information for multiannual management plans for sustainable fisheries in the GFCM area” (hereafter *GFCM guidelines for management plans*) in the 36th Session of the Commission. This is also in agreement with the increasing importance given to management in the working plan for Adriamed for 2013-2014. In this context, the importance to incorporate the opinion from the GFCM Members into the new DCRF and to work closely with the Countries and the FAO Regional projects in order to advance towards management plans was stressed.

SESSION ON GFCM DATA COLLECTION AND SUBMISSION FRAMEWORK

6. Mrs Pilar Hernández introduced the data reporting requirements of the GFCM and the compliance status of the Adriatic countries with regards to these requirements. The summary presented was the result of the assessment done at the Secretariat on the current contents of the data bases within the Information System of the GFCM. The percentages of coverage of some of the most relevant fields and the chronology of submissions by countries were presented and are summarized in Appendix C. The analysis revealed a low level of compliance with the fleet related data and with task 1, in particular the sub tasks 1.3 and 1.5, that were the less reported by all the countries.

7. Mr Paolo Carpentieri, from the GFCM Secretariat, introduced a summary of the analysis carried out based on the information provided by the Adriatic Countries on their on-going national data collection programmes. The information was collected through an online questionnaire, adopted in a dedicated preparatory meeting for this GFCM FWP activity, and sent to each country National Focal Point, identified and contracted specifically for this GFCM FWP activity.

8. All the five countries in the Adriatic Sea, Albania, Croatia, Italia, Montenegro and Slovenia, answered to the questionnaire. All the countries have a data collection programmes in force, with a great range of biological/economic/effort data gathered with certain regularity. However, important errors in the transmission of this information to the GFCM were found. The complete summary of the different data collection programmes, an overview on the typology of collected data as well as the main information gaps and difficulties encountered was disseminated among NFP for comments, and the amended versions including comments received up to April 2nd are attached as appendixes D and E.

9. Each National Focal Point then presented an overview of strengths and gaps of each national Data Collection system. Several countries presented the problems they face to deal with different requirements with different format coming from different Fisheries Organizations (i.e. EU and the GFCM), as well as the lack of sufficient dedicated personnel to deal with the collection, aggregation and transmission of data. They also commented that the required aggregation level for Task 1 is too detailed and some of the variables/data required are not clearly defined. In some cases difficulties in the internal transmission of information among different bodies involved in the national data collection and between them and the GFCM Secretariat were put forward as potential causes for the uneven compliance level.

10. Ms. Nicoletta Milone, from FAO-Adriamed, presented a historical review of actions taken at Adriatic level to improve national data collection system. Both Adriamed (since 1999) and MedFisis (between 2004 and 2010) have provided support to individual Adriatic Countries, as well as to joint initiatives (e.g. joint surveys) as part of their yearly Work Plan. These activities are planned in response of interest expressed by the Countries, as well as recommendations/regulations set-up by the GFCM and its Scientific and Advisory Committee. Both the National Focal Points and the GFCM Secretariat representatives expressed their recognition on the work done by Adriamed and the importance that this project provides to the national and regional development of data collection systems.

11. Ms. Pilar Hernández then presented a draft outline of the GFCM DCRF. A first draft had been produced by the consultant Mr Caillart who was charged to elaborate a document on which the data needed by the GFCM to undertake its mandate would be described and the necessary transmission means and timeliness should be specified. She explained that up to now the data requirements were laid down in isolated and subsequent binding decisions but that a general framework to guide countries to gather and submit fisheries data in compliance with their status as GFCM members was still lacking. She underlined the steps in the process of elaboration of the DCRF that should end up with a consolidated document to be approved by the commission. The importance of the members inputs during the sub-regional meetings planned such as the present one was stressed. The main contents of the draft document were introduced with the data grouped in five Modules : i) Nominal catches : annual catches by fleet segment, area and species, with progressive inclusion of discard data; ii) Fishing vessel statistics : add identification of fleet segment and main target species to current registry; iii) Catch and effort data : total catches for given amount of effort by fleet segment, area, species and time period raised to nominal catches; iv) Length frequency data by fleet segment, area and time period raised to nominal catches and v) Socio-economic data : fish prices and number of crew as priority, vessels costs and earning data if realistic.

12. In the following discussion the meeting agreed with the results presented by the Secretariat for both the internal (at secretariat level) and external (in the countries) assessments and confirmed that the summary documents included in appendixes C, D and E provide a good overall picture on the situation of fisheries Data Collection systems in the Adriatic Countries. The participants concurred that databases coverage is very low while recognizing that in fact most data are available within the National Administrations. Some countries (Croatia and Montenegro) explained that actions have already been taken to solve this problem and that in the short term they should be in the position to transmit all the data to the GFCM. A number of comments in relation to issues that should be taken into account in the future DCRF were done, including:

- Aggregation level for some variables in task 1 is very detailed, maybe needs to be revised and simplified
- In general for all Task 1, but specially for the biological part (Task 1.5), there is a need to focus on specific issues instead of trying to cover all aspects. The group recommended to focus on crucial parameters for assessment, and to prioritize on those species of special importance, in terms of catch, economical and/or ecological value.
- The definition of variables within each Task could also be improved, as is the case of “bycatch”, “effort” and “activity” in task 1.4 and “variable costs” in task 1.3 . A detailed and agreed glossary should be produced and made available to the Countries.
- The Group consider that the timing of the submission of data to the GFCM should be revised. A particular comment made was that due to the difficulties of getting socioeconomic data with a lag of less than 2 years and the necessity to get some other data with the shorter time lag possible (-1 year), the submission of data for the different modules could be separated. Also, reminders of submission requirements should be sent to the countries to promote compliance.

13. Based on all discussions, the group adopted a list of gaps, priorities and actions to be undertaken in the sub-region as summarized in Appendix E.

SESSION ON TESTING THE FEASIBILITY OF THE GFCM GUIDELINES FOR MANAGEMENT PLANS

14. Mr Marcelo Vasconcelos, from the GFCM Secretariat, presented an overview of fisheries management plans (FMP) and the steps to be taken in the development and implementation of a FMP according to FAO guidelines and to the GFCM guidelines for management plans. The Secretariat also described the roadmap agreed at the Preparatory Meeting of the GFCM FWP (Rome, 6-7 December 2012) and approved by the Scientific Subcommittees of SAC (Rome , 18-20 February 2013) to test the feasibility of the GFCM guidelines using the small pelagic fisheries of the Adriatic Sea (GSAs 17 and 18) as case study.

15. The Focal Point from Montenegro raised some concerns about the participation of the country in the proposed activities. It was noted that the fisheries sector in Montenegro is under a major reorganization, including at the ministerial level. In addition the country has just initiated the procedures for accession in the European Union, with a first screening meeting on the Chapter 13 (related to fisheries) held on 13-14 March 2013. As part of this process the country is being called to draft a new law on fisheries and rulebooks, which will lead to the preparation of a national management plan for fisheries, including for the small pelagic fisheries. Although the importance of proceeding with a common plan at the sub-regional level was viewed as an important exercise, the Focal Point considered that the current political situation therefore currently difficults Montenegro to agree on a sub-regional management plan. In addition it was noted that the country currently lacks adequate data on small pelagic fisheries to participate in this join initiative. Finally he stressed that the Montenegro delegation did not have the mandate to take any actions with respect to the sub-regional plan during the meeting.

16. The GFCM Secretariat reiterated the technical nature of the meeting and that the objective was to elaborate a common background document which describes the current situation of small pelagic fisheries resources in the Adriatic Sea and discusses some basic elements in support of a future management plan. The importance for the GFCM that all Adriatic countries participated in the exercise of starting the preparation of a draft common background document was stressed, and the delegation from Montenegro agreed on participating in that technical exercise.

17. A presentation by Mr Enrico Arneri (AdriaMed) provided the historical background of the stock assessment of small pelagic fish in the Adriatic Sea from the 1970s to the present. The type of data collected and the assessment methods used in GSA 17 and 18 were also presented. It was noted that until now formal assessments for small pelagics were only done for GSA 17, although preliminary assessment for GSA18 have been presented and a joint assessment exercise, based only on acoustic data, for GSA17 and 18 was presented to the GFCM in 2011. A combined assessment of both GSAs is planned for 2013.

18. During the discussions it was pointed out by the GFCM Secretariat that the Adriatic is one the best studied areas in the Mediterranean, with a significant amount of data available, including on the biomass of small pelagic stocks. Although it was acknowledged the limited amount of information from some countries (including landings data from Albania and Montenegro), the region as whole could not be considered data-poor. In this regard it was reiterated that data limitation should not prevent the elaboration of a fisheries management plan.

19. Acknowledging the historical background provided and the work carried out so far by AdriaMed in support of the assessment of small pelagic stocks in the Adriatic Sea, discussions were held on the best indicators and methods to be used in the assessment of stocks in GSA 17-18, specially considering the uncertainty on landings in GSA 18. It was underlined that despite the uncertainties in total catches, the percentage of the landings in GSA 18 compared to the total landings in the Adriatic Sea is consider to be low, therefore having a relative low effect on the total catches. Most successful assessments so far are those based on tuned vpa-based models (such as ICA), with acoustic and DEPM data being the tuning indexes. The possibility to merge fisheries independent biomass estimates (i.e. acoustics or DEPM) from the two GSAs was also discussed, the main caveat being that the acoustic surveys are done in different period of the year (summer in GSA 18 and Autumn in GSA 17). Biomass production models can also provide a good perspective of the status of the stock, specially taking into account the problematic of age reading for anchovies and in general that both sardines and anchovies are short lived species.

20. The meeting was then informed that according to the last report of the MEDITS programme¹, sprat ranked among the top three species in biomass terms in the Adriatic Sea and yet no landings were reported for the species. In follow up discussions it was indicated that landings of the species are very small in Italy. The species is not commercially important and when caught it is discarded at sea because of the small size. In Slovenia the species is caught for local market only and landings data through logbooks are available.

¹ Piccinetti, C.; Vrgoc, N.; Marceta, B. and C. Manfredi. 2012. Recent state of demersal resources in the Adriatic Sea. Acta Adriat. Monograph Series no.5. 220 p.

21. A presentation on the current stock status of anchovy and sardine in GSA 17 and 18 was delivered by the GFCM Secretariat, based on the last assessments approved by the SAC Sub-Committee on Stock Assessment. The presentation first reminded participants of the meaning and use of reference points in stock status advice. It then described the status of anchovy and sardine in GSA 17 in 2011, in relation to precautionary reference points. It was noted that the stock of anchovy is currently at intermediate levels of biomass and sustainable fishing mortality rates while the stock of sardine is at intermediate levels of biomass and high fishing mortality rates. In view of this situation the latest stock assessment advice was to avoid increases in fishing mortality of both stocks in GSA 17. Regarding GSA 18 it was noted that an approved formal assessment is not yet ready. However, surveys are being carried out, and preliminary assessment have been presented at the SAC SCSEA. It was finally noted that in 2012 the GFCM Working Groups on Stock Assessment of Small Pelagics recommended that data from GSA 18 be combined with GSA 17 in order to have a complete assessment of the stocks in the Adriatic Sea.

22. Several points were raised soon after the presentation. Participants were recalled on the difference between advice on stock status (currently in place through SAC) and advice for management actions. Advice on management actions from the SAC is usually generic (reduce fishing mortality, reduce catches), while the existence of a sub-regional management plan allows to propose specific management actions to be taken under different stock status scenarios. Some discussion ensued on key aspects needed to prepare a management plan for small pelagic fisheries in the Adriatic followed:

- Although the stock assessment advice is done separately for sardine and anchovy, the fishing fleets targeting small pelagics are the same. The fishery management plan should therefore take into consideration the technological interactions in the fishery as well as the ecological interactions, considering that the two species are ecologically linked.
- The fact that the biomass of the species fluctuate naturally, and in some cases in alternate cycles (e.g. Mucinic S. 1933). Fluctuations are difficult to predict beforehand, preventing forecasting and taking management measures in advance. On the other hand the meeting was also recalled that the management does not target the natural fluctuation but the human dimension of the fisheries. Therefore any management measures to be taken should be done on the basis of a precautionary and adaptive approach. In connection to this point participants were informed of adaptive measures that are now in place in some countries to adapt the fishing pressure to the fluctuations of stocks and fluctuation of markets related to them. In the case of Italy, for instance, the fishing licenses of pelagic trawlers have multiple species, which allow for the transfer of fishing rights between pelagic and demersal species according to the changing conditions of stocks and markets. In the case of Croatia the possibility of obtaining flexible licenses, that allow for fishing vessels to work for tuna farms, was viewed as a measure that favoured adaptation of the capture sector to the market situation yearly. In Montenegro the number of licenses issued yearly for the traditional beach seine fishery in Boka Kotorska Bay are based on the assessment of stock biomass in the Bay. It was therefore recommended that the regulations to be adopted at the sub-regional level should allow for the necessary flexibility in licensing schemes to allow for adaptations to resource availability and market conditions.

- The Focal Point from Albania noted that the Albania fishing fleet is at present unbalanced, having less than 3% of the total industrial fishing vessels targeting small pelagics. Any decisions taken at the national level to balance the situation of the fleet need also to be taken into account in a common sub-regional management plan. A mechanism must therefore exist to allow for compatibility of management advice on fishing capacity at the regional and local (national) levels.
- Currently there is no legal minimum size for small pelagic species adopted at the GFCM level, only at national or EC level. The regulations to be adopted at the sub-regional level must therefore account for differences in minimum sizes at country level and the rights of traditional fisheries for small size fish, such as the one in Boka Kotorska Bay (Montenegro).

23. Each National Focal Point presented a summary of the situation of the small pelagic fisheries in their countries, highlighting the current status of the fisheries, the legal and management frameworks, the main issues and conflicts involved in the management of the fisheries. Presentations were followed by questions and clarifications.

24. The GFCM Secretariat presented a summary review of the legal frameworks and management measures of relevance to small pelagic fisheries in the Adriatic Sea, focusing on national legislations (as reported by National Focal Points) and regional agreements. Several remarks were made during follow up discussions, which are summarized below.

- the need to clarify the contents and implications for the fisheries sector of the “Maritime Strategy for the Adriatic and Ionian Seas”, drafted in the framework of the European Integrated Maritime Policy, which was supported by all Adriatic countries in the high level conference held in Zagreb, Croatia, 6 December 2012 (“Zagreb Conclusions”).
- the need to clarify the current status of national jurisdictions in the Adriatic Sea and the extent of international (high seas) areas. There were uncertainties as to how the sub-regional management plan will deal with the different jurisdictional areas in the Adriatic Sea. The view of many participants was that since the management plan will be developed in the framework of the GFCM, reference should be made to GSAs (17 and 18) rather than to national borders and jurisdictions. Further clarifications on this issue were deemed necessary.
- with regards to the use of spatial restrictions as management measures, it was noted the existence of protected areas that are of relevance to small pelagics fisheries which are not necessarily covered by fisheries legislation (e.g. marine protected areas). With a view to have a complete picture of the management measures in place in each country, it was therefore recommended that National Focal Points make an inventory of areas where the fisheries for small pelagics is not allowed and update the country reports prepared for the case study.

25. Following a summary review of the national issues presented by the GFCM Secretariat, discussions focused on the identification of the main issues and needs to be addressed by a sub-regional management plan.

26. One of the main focus of discussion concerned some fishing practices in the Adriatic and the EU law (Regulation (EC)No 1967/2006), in particular with regards to the drop of purse seines and the depth of operation of purse seine fisheries. Because of the limited depths in the Northern Adriatic, purse seine vessels should use purse seine nets with small height and this was considered unfeasible by some participants.

27. Participants were recalled by the GFCM Secretariat that the management plan is a tool for the management of sustainable fisheries and its content and evolution should be based on sound scientific research agreed upon in the plan. It was therefore recommended that the sub-regional plan includes specific mechanisms to address technical improvement of fisheries through scientific research. It was also recommended the coordination of all the actors in the region to ensure communication of advances in this issue.

28. Participants from Croatia also proposed that research efforts be directed to the definition of spawning areas and seasons of small pelagics. It was noted that there are few data available on these areas in the Adriatic Sea, despite their importance to recruitment strength. The management plan could be the platform to obtain funds to support the collection of these data by countries, in coordination with the AdriaMed project.

ADVANCING TOWARDS A MANAGEMENT PLAN FOR SMALL PELAGICS IN THE ADRIATIC REGION

29. Following discussions, participants agreed that a sub-regional plan for small pelagics, if adopted by the GFCM, should address in priority the following issues:

- Sustainability of the resources, addressing the following aspects:
 - precautionary system to ensure good status of stocks, including ecosystem considerations.
 - evaluate the sustainability of current fishing practices.
 - regional limit of fishing capacity.
 - rules for partitioning of the exploitation of the resources.
- External risks that should be accounted for:
 - marketing conditions affecting the profitability of the fisheries.
 - the impacts and implications of natural fluctuations in stock size and productivity.

30. Participants agreed to develop a Background Technical Document in support of a Management Plan for small pelagics in the Adriatic Sea. The following steps and deadlines towards obtaining the Background Technical Document were agreed:

- Draft Background Technical Document prepared by the Secretariat based on meeting outcomes and available information (before SAC meeting, 8th April 2013)
- Draft revised by countries (before 6th May 2013)
- Revised draft submitted to Task Force (10th-11th May 2013)

- Continuous communication between GFCM and the concerned countries will be done through national focal points and through the online system established for this purpose, and in coordination with AdriaMed.
- Countries proposed that a working group be established within AdriaMed to discuss issues concerning management plans in the Adriatic Sea, including the one on small pelagics addressed by this document.

31. Participants reached an agreement with respect to the Table of Contents of the Background Technical Document (Appendix F), as well as to the content of several sections of the Document,. The agreed components will be incorporated in the first Draft to be submitted by the 8th of April.

32. Participants from Montenegro and Albania raised concerns with respect to the adoption of biomass reference points for GSA 18 considering the present limited data and the lack of an approved stock assessment and reference points for the region. The final agreed proposal after discussions was that until reference points for biomass are not available, fishing mortality should be kept at values which minimize the risk that stocks sizes fall below minimum biological acceptable level. It was also agreed that biomass reference points for the whole Adriatic (GSA 17 and 18 together) should be obtained as soon as possible in order to make the management system based on biomass operational.

33. In relation to the objective of managing fishing capacity, participants agreed that one of the first steps in the development of a plan of action for fishing capacity was to reach agreement on a common measure of fishing capacity to assess fishing capacity in the whole Adriatic as well by GSA and by country. The need for a definition of a measurement of fishing capacity for the small pelagic fisheries in the Adriatic Sea, coherent with the GFCM draft Regional Plan of Action on fishing capacity currently under discussion, was thus agreed as a first action related to this objective.

34. In relation to the scientific monitoring of the plan there was a general agreement that SAC should be responsible for advice on the status of the stocks, based on the stock assessment work initiated in the framework of the AdriaMed project. Management actions would be taken by the Countries considering the stock status advice from SAC and the agreed decision rules in the Management plan, and if necessary by GFCM Commission. This approach was considered fully compliant with the GFCM guidelines.

35. In relation to the review of the Plan, there was a general agreement that different time frames for review would be needed: the assessment of the status of stocks and the decisions regarding the management measures to be adopted should be carried out yearly; the reference points should be reviewed every three years; and the objectives and management rules should be reviewed every five years.

36. With regards to fisheries monitoring, control and surveillance (MCS), participants agreed that it is the responsibility of the countries to implement the management measures to be adopted in the plan. Countries should also make efforts to implement the existing GFCM Recommendations concerning MCS. Some discussion ensued on the control of management measures in waters beyond national jurisdictions. Participants agreed that specific mechanisms for MCS in these areas would need to be developed in the management plan.

SUMMARY OF MEETING OUTCOMES AND PROPOSED FOLLOW UP ACTIVITIES

37. The summary of the Internal and external assessments of the data collection and submission framework carried out by the Secretariat are included in appendixes C and D. Conclusions and recommendations to improve fishery data collection in the Adriatic sub-region are gathered in Appendix E with indication of the recipient for each recommendation.

38. Once revised and enriched with inputs from the subsequent sub-regional workshops (already scheduled between march and May 2013) general conclusions on data collection gaps and recommended actions will be presented to the Task Force Validation meeting. Also, a summary of recommendations on GFCM data needs will be incorporated into the process of defining the GFCM DCRF.

39. Participants agreed on the main issues that should be addressed in a sub-regional management plan for small pelagics in the Adriatic Sea, and those are reported in paragraph 29. A strategy to prepare a Background Technical Document in support of a Management Plan for small pelagics in the Adriatic Sea was also agreed and is reported in paragraph 29. The table of contents of the Background Technical Document is included in Appendix F. A draft version of the Background Document will be distributed to Adriatic Countries by the 8th of April for comments by the 6 of May and a consolidated version taking into account the comments received will be made available to the GFCM Task Force Validation meeting in May.

CLOSURE OF THE MEETING

40. Mr Miguel Bernal thanked participants on behalf of GFCM, and the government of Croatia for hosting the workshop. Ms Vidović, on behalf of the government of Croatia, thanked the GFCM for organizing the workshop and expressed the votes of successful development of the proposed activities.

Appendix A

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Appendix B

**Agenda of the GFCM Workshop on Fisheries data collection and management plans in
the Adriatic Sea
Split, Croatia. 20 to 22 March 2013**

WEDNESDAY 20th MARCH 2013

Morning (09:00 – 13:00)

1. Opening and arrangement of the meeting

- Adoption of the agenda
- Introduction of participants
- Introduction of workshop objectives

2. Advances on the GFCM data collection and submission framework

- Current status of Member States' compliance with GFCM requirements and overview of national data in the GFCM databases and Information Systems (*by GFCM Secretariat*)
- Summary of information received through the online questionnaire on on-going national data collection programmes (*by GFCM Secretariat*)
- Evaluation of strengths and gaps in relation to national data collection programs, and their capacity to reply to GFCM requirements (*One presentation per National Focal Point, based mainly on Section 4 of the online questionnaire*)

Afternoon (14:30 – 17:30)

3. Sub-regional activities to strengthen national data collection (*By FAO-AdriaMed*)

4. Review of the draft GFCM Data Collection Regulation Framework (DCRF) (*by GFCM Secretariat*)

5. Summary of identified gaps and recommendations by country and sub-region

THURSDAY 21st MARCH 2013

Morning (09:00 – 13:00)

6. Guidelines on fisheries management plans

- Overview of guidelines for the development of multi-annual management plans (*By GFCM Secretariat*)
- Roadmap for the case study on small pelagic fisheries in the Adriatic Sea (*By GFCM Secretariat*)

7. Assessment of emerging issues and needs for a sub-regional management plan

- Stock assessment of small pelagic stocks in the Adriatic: history, current status and issues (*By AdriaMed/GFCM Secretariat*)
- Fisheries status and needs at national level (*By National focal points, based on country reports*)
- Overview of adopted measures at national level (*By GFCM Secretariat*)
- Discussion and agreement on issues and needs at sub-regional level

Afternoon (14:30 – 17:30)

8. Advancing toward a sub-regional management plan for small pelagic fisheries (GSA 17 and 18)

- Discussion on general objectives

FRIDAY 22nd MARCH 2013

Morning (09:00 – 13:00)

8. Advancing toward a sub-regional management plan for small pelagic fisheries (GSA 17 and 18) (continue)

- Discussion on candidate measures at sub-regional level to address emerging issues

Afternoon (14:30 – 17:30)

8. Advancing toward a sub-regional management plan for small pelagic fisheries (GSA 17 and 18) (continue)

- Discussion on requirements for scientific monitoring

9. Proposed follow up activities

10. Closure of the meeting

Appendix C

Compliance state based on GFCM Regional Information Systems

Table 1 - Data submission by theme (all GFCM members)

[As at 19th March 2013]

THEME	SUBMISSION YEAR								
	2013	2012	2011	2010	2009	2008	2007	2006	TOT
Vessel Records	2	4							6
Fleet Register		1	10						11
AVL	2	5	14	5	2	22	9	17	76
FRA			1	1					2
MMS				2	1				3
Task 1	6	10	7	8	2	7			40
<i>Fishing Capacity</i>			7						7
Dolphin Fish		1	2	1	3	1	1		9
Registered Ports		1				2			3
TOTAL	10	22	41	17	8	32	10	17	157

The figure in each cell of the table is the cumulative number of submissions received by the Secretariat (therefore members double counting can occur)

Table 2

Data transmission protocols
made available by the Secretariat*

THEME	Excel	CSV	XML
Vessel Records	x	x	x
Fleet Register	x	x	x
AVL	x	x	x
FRA	x	x	x
MMS	x	x	x
Task1		x	x
Dolphin Fish	x		

*specifications on codifications and structures for the above-mentioned formats are made available on the GFCM website

Table 3

Data submission by
transmission protocol

[As at 19th March 2013]

TRANSMISSION PROTOCOLS	
CSV	10
Email	2
Excel	63
Excel-GFCM	48
PDF	13
Word	1
XML	19

Table 4 - Total number of data submission by theme and country*[As at 19th March 2013]*

COUNTRY	Task 1	Vessel Records	<i>Fleet Register</i>	<i>AVL</i>	<i>FRA</i>	<i>MMS</i>	Dolphin Fish	IUU	Port state measures	Fishing Capacity
Albania	2	-	1	4	-	-	-	-	-	-
Croatia	-	-	-	1	-	-	-	-	-	-
Italy	7	-	-	7	-	1	1	-	-	1
Montenegro	1	-	-	-	-	-	-	-	-	-
Slovenia	1	2	1	1	-	-	-	-	-	1

Table 5 - Last year of data submission by theme and country*[As at 19th March 2013]*

COUNTRY	Task 1	Vessel Records	<i>Fleet Register</i>	<i>AVL</i>	<i>FRA</i>	<i>MMS</i>	Dolphin Fish	IUU	Port state measures	Fishing Capacity
Albania	2013	-	2011	2009	-	-	-	-	-	-
Croatia	-	-	-	2007	-	-	-	-	-	-
Italy	2012	-	-	2010	-	2010	2009	-	-	2011
Montenegro	2008	-	-	-	-	-	-	-	-	-
Slovenia	2010	2012	2011	2008	-	-	-	-	-	2011

Table 6 - Last fleet data submission
[As at 19th March 2013]

LAST INFORMATION	Albania	Croatia	Italy	Montenegro	Slovenia
Submitted dataset(s)	RFR	AVL	AVL-MMS	-	VRs
Last submission	2011	2007	2010	-	2012
Vessel number	511	378	2,633	-	186

VRs (Vessel Records), RFR (Regional Fleet Register), AVL (Authorized Vessel List),
FRA (Fisheries Restricted Area), MMS (Minimum Mesh Size)

Table 7 - Fleet data submission (compulsory fields coverage)
[As at 19th March 2013]

COMPULSORY FIELDS	Albania	Croatia	Italy	Montenegro	Slovenia
Vessel Name	100.0%	100.0%	100.0%		100.0%
Vessel Registration Number	100.0%		100.0%		100.0%
GFCM Registration Number	100.0%	100.0%	100.0%		100.0%
Vessel Type	100.0%	100.0%	99.9%		100.0%
Operational Status	100.0%				100.0%
Port Registration	100.0%				100.0%
Year Entry Activity	10.2%				100.0%
License indicator (yes)	30.3%				75.3%
Fishing Period info (>15m)	100.0%	100.0%	100.0%		100.0%
Authorized Fishing Period (>15m)	15.7%		82.9%		
Fishing Gear 1	99.4%		82.9%		100.0%
LOA	100.0%	100.0%	100.0%		100.0%
GT	100.0%	100.0%	100.0%		100.0%
Construction Year	49.7%				100.0%
Hull Material	32.5%				98.9%
Powered (yes)	98.0%				93.5%
Engine Power Main	97.8%				93.5%
Owner Name	100.0%	100.0%	82.9%		100.0%
Owner Address	33.9%	100.0%	82.9%		100.0%
Operator Name			82.9%		100.0%
Operator Address			82.9%		100.0%
VMS indicator (>15m)	76.0%				88.0%
Minimum Mesh size			17.1%		11.3%
Fishery Restricted Area					

Table 8 - Task 1 data submission status*[As at 19th March 2013]*

Reference YEAR	Albania	Croatia	Italy	Montenegro	Slovenia
2007	-	-	x	x	-
2008	-	-	x	-	x
2009	-	-	x	-	-
2010	x	-	x	-	-
2011*	x	-	-	-	-

* Submission deadline: May 2013

Table 9 - Task 1 data fields coverage*[As at 19th March 2013]*

TASK	FIELDS	Albania	Croatia	Italy*	Montenegro	Slovenia
		2011	-	2010	2007	2008
SEGMENT	Year-Country-Segment	7		11	8	9
1.1	FSE-vessel_no	100%		100%	100%	100%
1.1	FSE-id_Capacity_Measure	100%		100%	100%	100%
1.1	FSE-Capacity_Value	100%		100%	100%	100%
1.3	FSE-Engine_Power	0%		100%	0%	89%
1.3	FSE-Employment	0%		91%	0%	100%
1.3	FSE-SalaryShare	0%		100%	0%	100%
1.3	FSE-LandingWeight	0%		100%	0%	100%
1.3	FSE-LandingValue	0%		100%	0%	100%
1.3	FSE-VesselValueTotalFleet	0%		100%	0%	100%
1.3	FSE-WorkingDaysPerYear	14%		100%	0%	100%
1.3	FSE-WorkingHoursPerDay	14%		100%	0%	100%
1.3	FSE-VariableCostsOfFishingPerDay	43%		100%	0%	89%
1.3	FSE-PercOfVCFromFuelCosts	0%		100%	0%	89%
1.3	FSE-YearlyFixedCosts	0%		0%	0%	0%
GSA-SEGMENT	Year-Country-GSA-Segment	7		56	8	9
1.1	FS-vessel_no	100%		95%	100%	100%
1.1	FS-Capacity_Value	100%		95%	100%	100%
OPERATIONAL UNIT	Year-Country-GSA-Segment-GearClass-SpeciesGroup	7		228	12	15
1.2	OU-id_Gear_Class	100%		100%	100%	100%
1.2	OU-id_group_target_species	100%		100%	100%	100%
1.2	OU-VesselNo	100%		91%	100%	100%
FISHING PERIOD - GEAR	Year-Country-GSA-Segment-GearClass-SpeciesGroup-Period-Gear	7		60	15	15

TASK	FIELDS	Albania	Croatia	Italy*	Montenegro	Slovenia
		2011	-	2010	2007	2008
1.2	FP-month_start	100%		100%	100%	100%
1.2	FP-month_end	100%		100%	100%	100%
1.2	FP-id_gear	100%		100%	100%	100%
1.2	FP-vessel_number	100%		88%	100%	100%
1.4	FP-Effort_TimeValue	0%		88%	0%	100%
1.1	FP-CapacityValue	0%		88%	0%	100%
1.4	FP-ActivityValue	0%		0%	0%	100%
1.4	FP-id_GearUnitsType	14%		0%	0%	100%
1.4	FP-OtherGearUnits	0%		0%	0%	20%
1.4	FP-GearUnitsValue	0%		0%	0%	80%
1.4	FP-TotalEffort	0%		0%	0%	100%
1.4	FP-id_CLPrecisionLevel	14%		100%	0%	100%
1.4	FP-TotalEffortUnits	0%		0%	0%	100%
1.4	FP-id_CLValueType	14%		100%	0%	100%
1.4	FP-CatchOrLandingValue	0%		98%	0%	100%
1.4	FP-id_CPUE_LPUE_PrecisionLevel	0%		0%	0%	0%
1.4	FP-id_CPUE_LPUEValueType	0%		0%	0%	0%
1.4	FP-CPUEOrLPUEValue	0%		0%	0%	53%
1.4	FP-id_DiscardPrecisionLevel	0%		0%	0%	0%
1.4	FP-DiscardValue	0%		0%	0%	0%
1.4	FP-id_ByCatchPrecisionLevel	0%		0%	0%	0%
1.4	FP-ByCatchValue	0%		0%	0%	0%
SPECIES	Year-Country-GSA-Segment-GearClass-SpeciesGroup-Period-Gear-Species	2			15	15
1.2	SP-id_species	100%			100%	100%
1.4	SP-CatchOrLandingValue	0%			0%	100%
1.4	SP-CPUEOrLPUEValue	0%			0%	13%
1.5	SP-MinLengthForCatch	0%			0%	0%
1.5	SP-MaxLengthForCatch	0%			0%	0%
1.5	SP-AverageLength	0%			0%	0%
1.5	SP-Sex	0%			0%	0%
1.5	SP-MaturityScale	0%			0%	0%
1.5	SP-AdditionalInfo	0%			0%	0%

Percentage refer to the national dataset currently stored in the GFCM Task 1 Regional Information System

*Task 1.2, 1.4 and 1.5 data for Italy have been partly imported

Appendix D

Extract from the analysis of the Questionnaires on National Data Collection and Statistical Systems (Albania, Croatia, Italy, Montenegro, Slovenia)

Questionnaire Feedback received

Albania	Yes	All sections complete
Croatia	Yes	All sections complete
Italy	Partly	4 out of 7
Montenegro	Yes	All sections complete
Slovenia	Yes	All sections complete

SECTION A

Fishery data collection structure

A1 – National institutional framework

1) Description of the Institution officially responsible for the overall fishery data collection in your country ("Fishery Data Collection Office")

...

2) Does this office collect all data related to fishery?

Albania	Partly
Croatia	Partly
Italy	Partly
Montenegro	Partly
Slovenia	No

3) Do other institutions collect fishery data?

Albania	No	
Croatia	Yes	Biological, Environmental
Italy	Yes	Economic, Biological, Survey, Social
Montenegro	Yes	Economic, Landing, Biological
Slovenia	Yes	Economic, Biological Survey, Social

...

9) *Is an appropriate training in fishery-related topics available at national level? (Yes/no/partly)*

Albania	Partly
Croatia	Partly
Italy	
Montenegro	No
Slovenia	Partly

9.1. *If no or partly, please specify in which topic your country would need this training*

Albania	It is necessary to establish the entire structure which start from data collectors to data processing in a way to flow those data to the proper unit in Fishery Directorate for different analyses
Croatia	Economic data; further training on stock assessment
Italy	
Montenegro	Socio-economic data, Logbook data collection, Small scale fishery data collection and management, Data processing for stock assessment
Slovenia	Freshwater aquaculture, otholits reading, genetics and stomach content analysis, reading acoustic survey outputs

SECTION B

Fishery data collection programme

1) Does your country collect data on fisheries through a data collection programme?

Albania	Partly	FAO AdriaMed Project
Croatia	Yes	FAO AdriaMed Project and DCF (Reg CE 199/2008)
Italy	Yes	DCF (Reg CE 199/2008)
Montenegro	Partly	FAO AdriaMed Project
Slovenia	Yes	DCF (Reg CE 199/2008)

2) Does your data collection programme incorporate the following aspects?

	Albania	Croatia	Italy	Montenegro	Slovenia
Biology	Partly	Yes	Yes	Yes	Yes
Ecology	No	Yes	Partly	Yes	Yes
Technology	No	Yes	Yes	No	Yes
Environmental science	No	Partly	Yes	Partly	Yes
Economics	Partly	Yes	Partly	Partly	Yes
Social science	No	Partly	Partly	Partly	Yes

3) Which data are currently collected within your fishery data collection programme (rate value from 0 to 5)?

	Albania	Croatia	Italy	Montenegro	Slovenia
Biological data	1	5	5	4	5
CPUE data	1	5	5	5	5
Discards data	0	3	3	3	5
Economic data fleet	3	4	5	NA	5
Economic data landing	3	5	5	NA	5
Effort data	1	5	5	5	5
Environmental data	1	3	3	3	5
Fish processing	2	3	3	NA	5
Fishing gears	3	5	4	5	5
Fleet data	4	5	5	5	5
Landing data	3	5	5	5	5
Recreational fisheries	NA	5	3	1	5
Social data	1	4	3	NA	5
VMS data	1	5		5	5

4) Are there any fishery surveys programmes currently in place in your country?

Catch data

MONTENEGRO: interview

CROATIA: logbook

ALBANIA: interview and statistical unit

ITA: sampling programme

Landing data

MONTENEGRO: logbook

CROATIA: logbook

ALBANIA: interview and statistical unit

ITA: sampling programme

Economic data on landing

CROATIA: logbook, sale notes

ALBANIA: interview and statistical unit

ITA: sampling programme

Biological data

MONTENEGRO: scientific survey

CROATIA: scientific survey

ALBANIA: interview and statistical unit

ITA: sampling programme and scientific survey

Fleet composition

MONTENEGRO: licenses

CROATIA: logbook, licenses

ALBANIA: statistical unit in FD

ITA: Census

Effort data

MONTENEGRO: logbook

CROATIA: logbook

ITA: sampling programme

9) Do you believe that all the data collected through the current surveys serve the national needs properly? (yes/no/partly)

Albania	Croatia	Italy	Montenegro	Slovenia
No	Partly	Yes	Partly	Partly

10) Do you think that other surveys would need to be better identified?

ALBANIA: Small Scale Fisheries, Discards data, Recreational fisheries, Social data, reliable data

SLOVENIA: Selectivity of fishing gears; Energy efficiency of fishing vessels

CROATIA: 1.economic data; 2.Environmental data - higher coverage; 3.fish processing data

MONTENEGRO: Small scale fishery survey; Survey on the impact of fishery on marine mammals and sea turtles (by-catch); Socio-economic survey of the fishery sector; Survey on the impact of trawl fishery on benthic biocenosis (*Posidonia*, coral riffs)

ITALIA: A second demersal survey to better identified the changes in the seasonality composition of the demersal assemblages (i.e. demographic structure; biodiversity)

...

B1 – Effort and landing data

11) Does your country routinely collect effort data?

Albania	Partly
Croatia	Yes
Italy	Yes
Montenegro	Partly
Slovenia	Yes

11.1. If yes or partly, please provide the list of effort variables collected:

Gear	Variable	Country
Dredge (for molluscs)	Dredged bottom surface	CRO
Trawl (including dredges for flatfishes)	GT*days	ALB; CRO; MON; SLO; ITA
Trawl (including dredges for flatfishes)	GT*hours	MON; SLO; ITA
Trawl (including dredges for flatfishes)	KW*days	MON; SLO; ITA
Purse seine	GT*Fishing sets/GT*days ¹	ALB; MON; SLO; CRO¹
Purse seine	Length of the net*Fishing sets	ALB; SLO; ITA

12) Does your country collect landing data for all the commercial species?
(yes/no/partly)

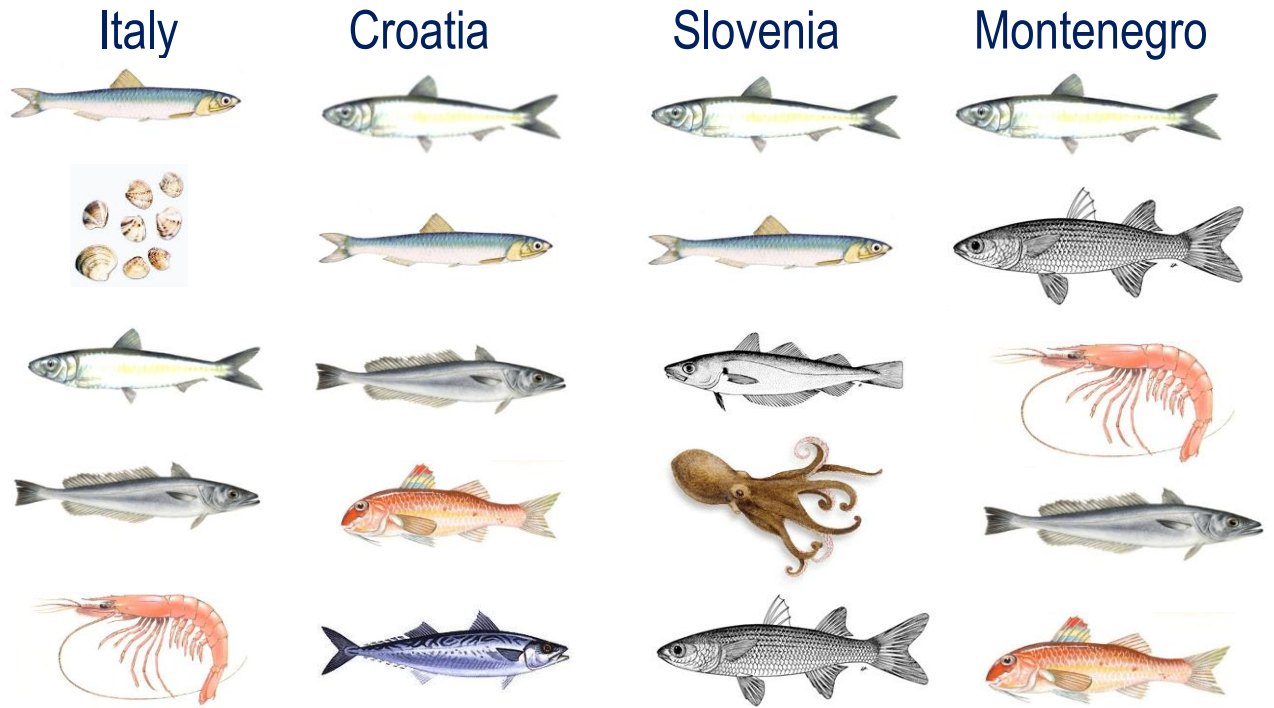
Albania	Yes	<i>the system of data collecting is applicable only for landings and for few species. In near future will be applicative a new system</i>
Croatia	Yes	<i>new programme calculates the main species as per metier</i>
Italy	Yes	
Montenegro	Yes	<i>system will be fully operated in 2014</i>
Slovenia	Yes	

13) Information on landing data [Frequency: M (monthly); Q (quarterly); A (annually) Data source: questionnaires, logbook, sales notes, etc.]:

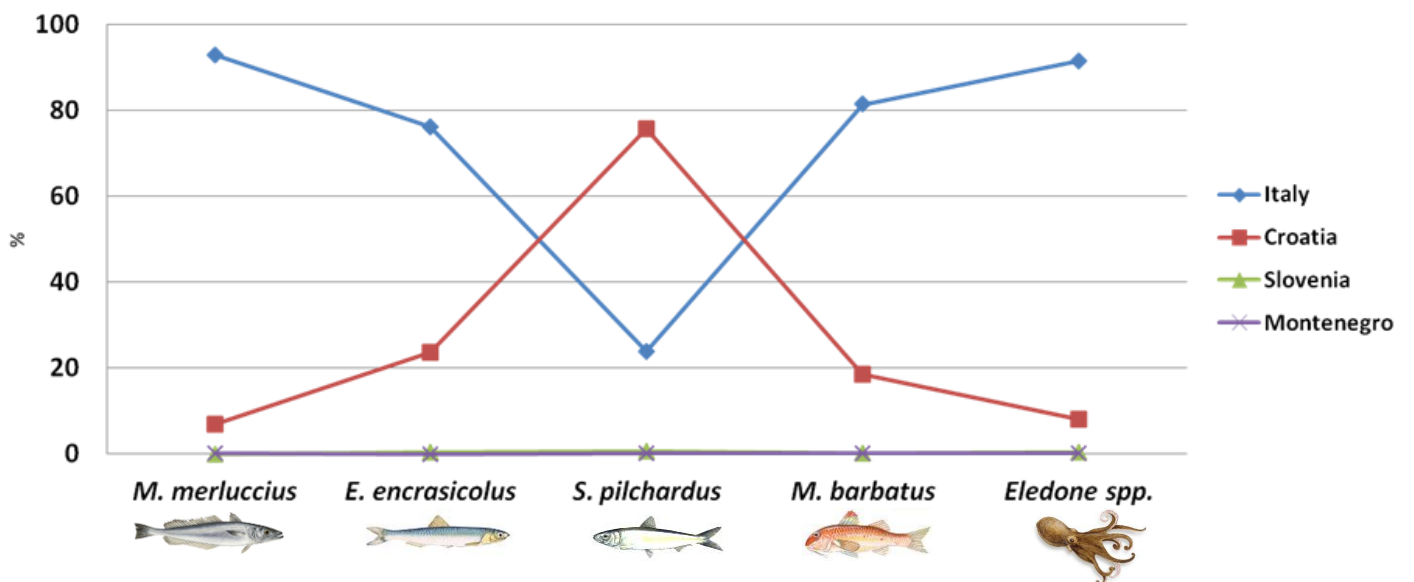
		Frequency	Disaggregation	Data source
Albania	Volume of landings per species	M	By gear	Questionnaires and few from logbook
	Prices per species	M	By gear	Logbook
Croatia	Volume of landings per species	A	By gear	Logbook
	Prices per species	M	By gear	Sales notes
Italy	Volume of landings per species	M	By fleet segment and gear	Questionnaire
	Prices per species	M	By fleet segment and gear	Questionnaire
Montenegro	Volume of landings per species			
	Prices per species			
Slovenia	Volume of landings per species	M	By fleet segment and gear	Logbook
	Prices per species	A	By fleet segment and gear	Sales notes

B2 – Biological data and assessment

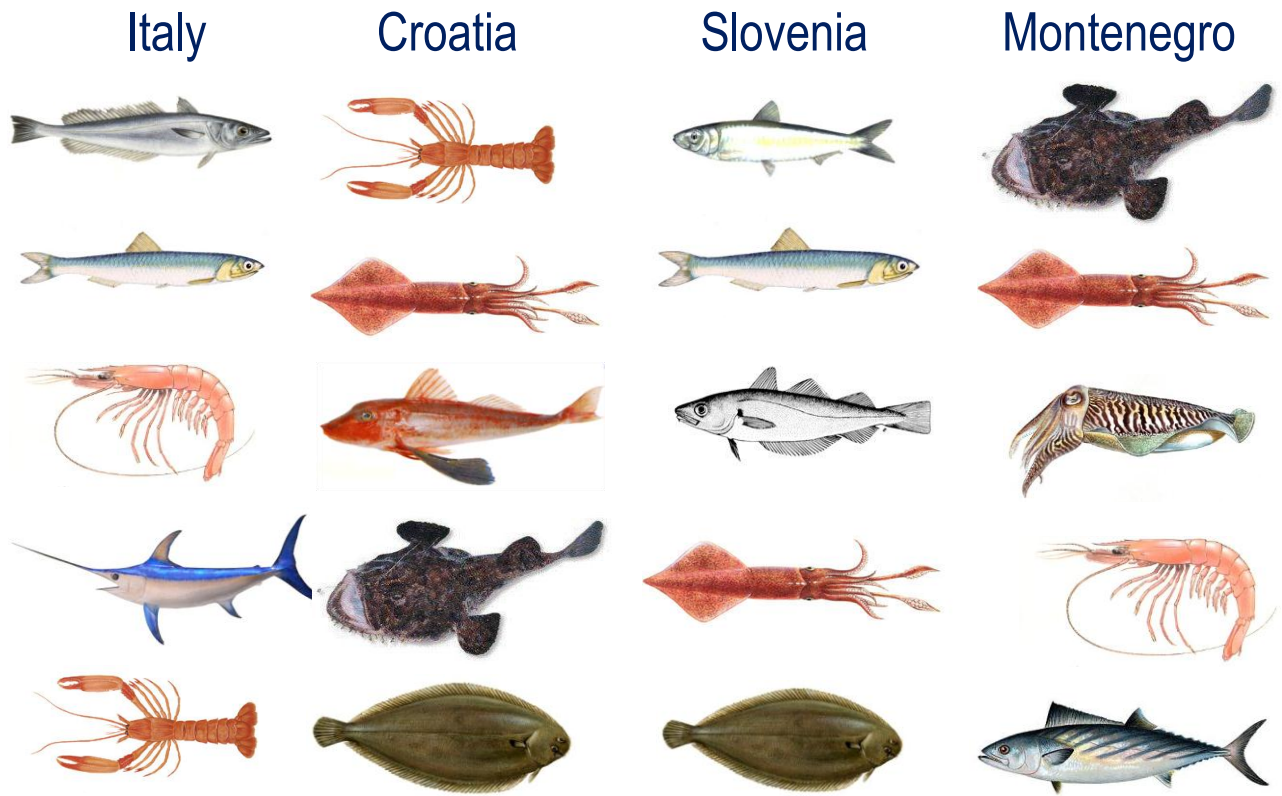
14) Main commercial species per country (tot landing):



Contribution in terms of tot landing (as %)



14) Main commercial species per country (tot value):



...

16.1 Please list the species for which biological information/variables (length, age, weight, sex and maturity)* are collected:

Engraulis encrasicolus



	Albania	Croatia	Italy	Montenegro	Slovenia
Length	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes
Weight	Yes	Yes	Yes	Yes	Yes
Sex	Yes	Yes	Yes	Yes	Yes
Maturity	Yes	Yes	Yes	Yes	Yes

Sardina pilchardus



	Albania	Croatia	Italy	Montenegro	Slovenia
Length	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes
Weight	Yes	Yes	Yes	Yes	Yes
Sex	Yes	Yes	Yes	Yes	Yes
Maturity	Yes	Yes	Yes	Yes	Yes

Merluccius merluccius

	Albania	Croatia	Italy	Montenegro	Slovenia
Length	Yes	Yes	Yes	Yes	
Age	Yes	Yes	Yes	Yes	
Weight	Yes	Yes	Yes	Yes	
Sex		Yes	Yes	Yes	
Maturity		Yes	Yes	Yes	

Eledone spp.

	Albania	Croatia	Italy	Montenegro	Slovenia
Length		Yes	Yes	Yes	
Age				Yes	
Weight	Yes	Yes	Yes	Yes	
Sex		Yes	Yes	Yes	
Maturity		Yes	Yes	Yes	

17) List the species for which assessment has been carried out over the last 3 years:

GSA 17

<i>Solea vulgaris</i>	ITA	SLO	CRO
<i>Engraulis encrasicolus</i>	ITA	SLO	CRO
<i>Sardina pilchardus</i>	ITA	SLO	CRO
<i>Mullus barbatus</i>	ITA		CRO
<i>Squilla mantis</i>	ITA		
<i>Merluccius merluccius</i>	ITA		CRO
<i>Nephrops norvegicus</i>			CRO
<i>Pagellus erythrinus</i>			CRO
<i>Spicara smaris</i>			CRO

GSA 18

<i>Engraulis encrasicolus</i>	ITA	MON
<i>Sardina pilchardus</i>	ITA	MON
<i>Mullus barbatus</i>	ITA	MON
<i>Nephrops norvegicus</i>	ITA	
<i>Squilla mantis</i>	ITA	
<i>Merluccius merluccius</i>	ITA	MON
<i>Parapenaeus longirostris</i>	ITA	MON
<i>Boops boops</i>	ITA	MON

18) Please specify the number of fisheries stock assessments carried out in your country over the last 3 years:

	ITA	SLO	CRO
Total number of stocks for which an assessment has been carried out	37	3	8
Potential number of stocks in your country	87		15
Percentage of stocks covered by each assessment	42%		50%
How many assessments have been presented to GFCM?	25	3	4
How many assessments have been validated?	25	3	4
How many assessments have been presented to other organizations/meetings?	22	3	4

	ITA	MON
Total number of stocks for which an assessment has been carried out	37	6
Potential number of stocks in your country	87	15
Percentage of stocks covered by each assessment	42%	50%
How many assessments have been presented to GFCM?	25	4
How many assessments have been validated?	25	2
How many assessments have been presented to other organizations/meetings?	22	

19) Does your country routinely carry out scientific/experimental surveys at sea to collect biological and environmental information?

				Environmental data
Albania	MEDITS	Acoustic + Ichthyoplanktonic- survey		NA
Croatia	MEDITS	MEDIAS	SOLEMON	Yes
Italy	MEDITS	MEDIAS	SOLEMON	Yes
Montenegro	MEDITS	MEDIAS		Partly
Slovenia	MEDITS	MEDIAS		No

B3 - Economic and social data

21) Does your country routinely collect economic and social data?
(yes/no/partly)

Albania	Partly
Croatia	Partly
Italy	Yes
Montenegro	Partly
Slovenia	Yes

21.1. If yes or partly, please list them:

GROUP	VARIABLE	COUNTRY
EFFORT	Days at sea	CRO; SLO; MON; ITA; ALB
	Fishing hours	SLO; MON; ITA
	Main gear used	CRO; SLO; MON; ITA; ALB
SOCIAL	Engaged crew, total number	CRO; SLO; ITA
	Engaged crew, Part time	CRO; SLO; ITA
	Engaged crew, Full time	SLO; ITA
	Age of the crew	
	Education level of the crew	
	Household members engaged in fishing	
INCOME	Gross value of landing	CRO; SLO; ITA; ALB
COSTS	Energy cost (fuel and oil)	SLO; ITA; ALB
	Wages and salaries of crew	SLO; ITA
	Repair and maintenance costs	SLO; ITA
	Commercial costs	SLO; ITA
	Other operational costs	SLO; ITA
	Fixed costs	SLO; ITA
	Investments in physical capital	SLO; ITA
	Depreciation costs	SLO; ITA
PRODUCTION PER SPECIES	Volume of landings per species	CRO; SLO; ITA; ALB
	Value of landings per species	CRO; SLO; ITA; ALB
	Average price per species	CRO; SLO; ITA

22) *Type of surveys carried out* [Temporal disaggregation: M (month); Q (quarter); Y (year); Type of data collection: census, sample survey; Data source: questionnaires (Q), logbook (L), sales notes (SN), etc; Fleet segment coverage: all segments, main segments, few segments]

COUNTRY	VARIABLE	TEMPORAL	TYPE OF DATA COLLECTION	SOURCE	FLEET COVERAGE
ITALY	Effort	M	Sample survey	Q	all segments
	Social data	Y	Sample survey	Q	all segments
	Income	Y	Sample survey	Q	all segments
	Costs	Y	Sample survey	Q	all segments
	Production per species	M	Sample survey	Q	all segments
MONTENEGRO	Effort	M	Census	L	all segments
SLOVENIA	Effort	Y	Census	L	all segments
	Social data	Y	Census	Q	all segments
	Income	Y	Census	Q	all segments
	Costs	Y	Census	Q	all segments
	Production per species	Y	Census	Q	main segments

SECTION C

Fleet monitoring

1) Is the logbook the primary source for the following information?

	ALB	CRO	ITA	MON	SLO
Fishing gear type	Yes	Yes	Partly	Yes	Yes
Time of fishing	Yes	Yes	Yes	Yes	Yes
Fishing area	Yes	Yes	Yes	Yes	Yes
Number of fishing operations	Yes	Yes	Partly	Yes	Yes
Effort	Yes	Yes	Partly	Yes	Yes
Landing by species	Yes	Yes	Partly	Yes	Yes
Total landing	Yes	Yes	Partly	Yes	Yes

...

3) Indicate if a vessel monitoring system (VMS) has already been implemented in your country for:

	ALB	CRO	ITA	MON	SLO
The entire fishing fleet	No	No		No	
Part of the fishing fleet (specify)	Yes	Yes	Yes	Yes	Yes
None of the fishing fleet	Partly				

MONTENEGRO: > 10 m LoA

ALBANIA: > 12 m length

SLOVENIA: All vessels > 15 m LOA and some vessels using trawls. Until the end of the year all vessels using trawls will be equipped with VMS.

CROATIA: All vessels > 15 m covered by VMS (plan to cover all vessel sizes)

ITALY: > 12 m length

6) The fishery data collected through the logbook can be considered as:

	ALB	CRO	ITA	MON	SLO
Reliable	Partly	Partly	Partly	Partly	Yes
Complete	Partly	Partly	Partly	Partly	Yes
Relevant	Partly	Yes	Partly	Partly	Yes

MONTENEGRO: Lack of fishery inspection control, and lack of Rulebooks.

CROATIA: Errors in entry or validation.

ITALIA: information not sufficient to perform statistical analysis on fisheries

SECTION D

National data collection programmes and GFCM requirements

1) Does your current data collection programme provide data complying with the GFCM requirements for data and information (e.g. Vessel records, Task 1, etc..)? (yes/no/partly)

ALB	CRO	ITA	MON	SLO
Yes	Partly	Partly	Yes	Partly
Fleet segmentation, fishery gears are in compliance with GFCM	Data are collected according to EU DCF aggregation level.	Not collecting data on the aggregation level according to the GFCM segmentation		Fleet segmentation, fishery gears are in compliance with GFCM. The main problem is lack of full socioeconomic data

2) At present, which of the following data/information have been reported by your country to fulfil the GFCM requirements?

Data	ALB	CRO	ITA	MON	SLO
Dolphin fish					
IUU					
Port State Measures					
Task 1					
Task 1.1 (Fleet and area)	2012		2012	2008	2010
Task 1.2 (Main resources and activity variables)			2012	2008	2010
Task 1.3 (Economic variables)			2012		2010
Task 1.4 (Effort variables)			2012		2010
Task 1.5 (Provisional biological parameters)			2012	2008	2010

<i>Vessel record</i>	2012			2008	2012
<i>VMS</i>					2009

3) List any problem encountered by your country in compiling and/or submitting the requested data/information to GFCM:

	ALBANIA
Dolphin fish	
IUU	
Port State Measures	
Task 1	
Task 1.1 (Fleet and area)	
Task 1.2 (Main resources and activity variables)	
Task 1.3 (Economic variables)	
Task 1.4 (Effort variables)	
Task 1.5 (Provisional biological parameters)	
Vessel record	
VMS	VMS system is installed, started working but momentarily is not operative for the lack of maintenance funds

	CROATIA
Dolphin fish	n/a
IUU	There were no problems, but IUU activities have not been detected
Port State Measures	There have been no recorded landings from vessels not flying the flag of Croatia in Croatian ports. 3 Croatian ports are open for landings from other flags.
Task 1	Difficulties in administrative changes as well as changes of the software for data processing; difficulties in recruiting enough staff; this problem is linked with all the issues below.
Task 1.1 (Fleet and area)	
Task 1.2 (Main resources and activity variables)	
Task 1.3 (Economic variables)	
Task 1.4 (Effort variables)	
Task 1.5 (Provisional biological parameters)	
Vessel record	

VMS	The FMC is operational
	ITALY
<i>Dolphin fish</i>	
<i>IUU</i>	
<i>Port State Measures</i>	
<i>Task 1</i>	
<i>Task 1.1 (Fleet and area)</i>	
<i>Task 1.2 (Main resources and activity variables)</i>	
<i>Task 1.3 (Economic variables)</i>	Economic data should be required by GSA because the economic and biological data should be available at the same geographical level
<i>Task 1.4 (Effort variables)</i>	Some data requirements should be better defined
<i>Task 1.5 (Provisional biological parameters)</i>	At present, no predefined procedure exists to extract task 1.5 data from the centralized database of the Fishery Statistics Office. Data are extracted by the database and then processed in the format required by the GFCM. A specific routine should be implemented to extract all task 1 data and to validate them.
<i>Vessel record</i>	
VMS	
	MONTENEGRO
<i>Dolphin fish</i>	Don't have any landing records on dolphin fish, it is not commercially important species in Montenegro
<i>IUU</i>	Rulebooks are in preparation
<i>Port State Measures</i>	There is no fishery ports, fishermen use commercial ports for their vessels (for landing operations)
<i>Task 1</i>	
<i>Task 1.1 (Fleet and area)</i>	Lack of administrative staff for data compilation
<i>Task 1.2 (Main resources and activity variables)</i>	Lack of administrative staff for data compilation

<i>Task 1.3 (Economic variables)</i>	Lack of administrative staff for data compilation
<i>Task 1.4 (Effort variables)</i>	Lack of administrative staff for data compilation
<i>Task 1.5 (Provisional biological parameters)</i>	Lack of administrative staff for data compilation
<i>Vessel record</i>	Data are collected during the fishery licences issuing.
<i>VMS</i>	Established in 2012 for vessels >10 m LoA

	SLOVENIA
<i>Dolphin fish</i>	We don't catch dolphin fish.
<i>IUU</i>	We don't suspect any IUU activities.
<i>Port State Measures</i>	Fishing vessels that are not flying our flag can't land in our ports. Our ports are allowed only for Slovenian vessels.
<i>Task 1</i>	The GFCM segmentation and input of the data must be done manually.
<i>Task 1.1 (Fleet and area)</i>	
<i>Task 1.2 (Main resources and activity variables)</i>	
<i>Task 1.3 (Economic variables)</i>	
<i>Task 1.4 (Effort variables)</i>	
<i>Task 1.5 (Provisional biological parameters)</i>	
<i>Vessel record</i>	
<i>VMS</i>	Our Fisheries Monitoring Centre is operating at the Ministry of Agriculture and Environment

...
11) Please indicate if your national codification is compliant or not (yes/no/partly) with the GFCM codification.

	ALB	CRO	ITA	MON	SLO
Fleet segmentation	Yes	Yes	Partly	Yes	No
Geographical sub-areas	Yes	Yes	Yes	Yes	Yes
Statistical grid	Yes	Yes	Yes	Yes	Yes
Fishing gear	Yes	Yes	Yes	Yes	Yes
Fishing gear class	Yes	Yes	Yes	Yes	Yes
Species	Yes	Yes	Yes	Yes	Yes
Group of species	Yes	Yes	Yes	No	Yes

...
14) Should the GFCM data collection be revised in order to tackle new issues?
(yes/no/partly)

ALBANIA: "No"

CROATIA: "DCR=GFCM Task 1, the reason is the methodology. More workshops."

ITALY: At present, no predefined procedure exists to extract task 1.5 data from the centralized database of the Fishery Statistics Office. Data are extracted by the database and then processed in the format required by the GFCM. A specific routine should be implemented to extract all task 1 data and to validate them.

MONTENEGRO

SLOVENIA: "Task 1, the reason is in order to harmonise it with DCF."

GFCM COMMENTS on the Questionnaires

There are countries in which the VMS have already been implemented, however till now no data have been sent to the GFCM (following the GFCM Rec. 33/2009/7)

There are countries that routinely carried out scientific surveys at sea, however they do not provide any biological data to the GFCM

There are countries that referred to “be complying with the GFCM requirements for data and information”, however they do not provide any data to the GFCM.

There are countries in which biological/economic/effort data are available through the collection programme currently in place, however the requested information are not provided to the GFCM Task 1.

Appendix E

Gaps, Priorities and Actions to be Undertaken to Improve Fisheries Data Collection in the Adriatic Sea

The outcomes of the discussions held with regards to the most relevant current requirements of the GFCM reporting and submission framework are summarized here.

1. Task 1

Data requested in task 1 are poorly covered in the area. In some countries biological/economic/effort data are available through the collection programme currently in place, however the requested information is not provided to the GFCM. The main reason identified behind this lack of compliance is that format and aggregation level are too detailed and requires specific time allocation and there is a lack of dedicated staff.

Recommendations:

– To SAC and GFCM Secretariat

Revise the aggregation level.

Improve the definition of variables.

Harmonize with other data collection frameworks.

– To national authorities

In case of National data collection programs already existing, each country could develop their own routines to “translate” the information into the GFCM submission scheme.

Priority: High

Task 1.1 (capacity by fleet segment)

It is mostly filled, no real problem

Task 1.2 (fleet categorization by gear class and group of target species)

It is mostly filled, no real problem

Task 1.3 (socio-economic data by fleet segment)

The current level of aggregation is considered feasible, but in some countries few socio-economic variables are collected. In countries where this information is collected total landings and economic value are gathered at segment and species level which is compatible with the GFCM, but countries operating in more than one GSA would prefer to report also by GSA

Recommendations:

– To SAC and GFCM Secretariat

The number of variables for task 1.3 should be reduced to a minimum to be agreed upon by the SAC (SCSI) with the inputs from members.

Task 1.4 (catch and effort by species by OU and fishing period)

Some countries do not collect these data at what prevent a correct assessment or collect them by species at the level of metier (i.e.: EU definition of fleet segment and gear class)

Recommendations:

- **To SAC and GFCM Secretariat**

Reporting aggregation level should be revised to encompass the most common data collection level in most countries. In parallel an in deep analysis of the purpose of this task should be carried out.

Task 1.5 (biological information of catches by species in each OU and fishing period)

Lack of consistency with the data needed for stock assessment.
Time gap between reference and reporting years (n-2) is too long.

Recommendations:

- **To SAC and GFCM Secretariat**

Aggregation level should be the same as for task 1.4. The purpose of task 1.5 should be revised (i.e.: stock assessment or rough overview of the population status).

Different categories of priority species should be established at sub-regional level for which different variables should be requested:

First: species for which stock assessment should be carried out.

Second: species for which minimal biological information is required; (this list should include also endangered or /and alien species).

Separate this task from the general submission scheme.

- **To national authorities**

Reinforce Adriamed support on the collection of task 1.3 and task 1.4 and 1.5 where it has been initiated, is crucial and must continue.

2. Vessel records

Data are available in all countries but in some cases they are not submitted to the GFCM, the reasons could not be elucidated.

Recommendations:

- **To SAC and GFCM Secretariat**

Yearly data calls and reminders on compliance should be sent on a regular basis.

- **To national authorities**

The available information must be sent to GFCM and must be regularly updated. It is crucial for the purpose of developing multiannual management plans.

Priority: high

3. VMS

VMS equipment has been installed and data are available in all the countries (with different limits for LOA) however till now data have not been sent to the GFCM. Some participants expressed lack of clear understanding of the data to be sent.

Recommendations:

- **To SAC and GFCM Secretariat**

Yearly data calls and reminders on compliance should be sent on a regular basis.

- **To national authorities**

The information on address and contacts of the Fisheries Monitoring Centres must be sent to GFCM and the current status of VMS implementation at national level should be reported to the COC

4. IUU

Not considered relevant in the area.

Recommendation:

Even if low or negligible, it should be reported

Priority: Medium

5. Registered ports

In some countries registered ports don't exist neither for landing nor for inspections.

Recommendation:

- **To national authorities**

Funds for infrastructure should be allocated for the purpose and information, when available should be sent to GFCM

Priority: Medium

Some general comments were raised dealing with additional information not gathered within the current scheme, in particular on artisanal (small scale) as well as recreational fisheries. Special focus should be put on the socio-economic aspects of both sectors including the tourist industry and the economic activities generated around them within the framework of an integrated maritime approach.

Appendix F.**Table of Contents of a Background Technical Document in support of a Management Plan for small pelagics in the Adriatic Sea.**

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 - 1.2.Fisheries resources
 - 1.3.Fishing activities
 - 1.4.Market situation
 - 1.5.Fisheries governance and management frameworks
 - 1.6.Description of the process leading to the plan
 - 1.7.Management priorities and issues
2. Objectives
 - 2.1.General objectives
 - 2.2.Operational objectives
3. Indicators and reference points
4. Technical views on fisheries management requirements
 - 4.1.Scientific basis for decision rules
 - 4.2.Scientific monitoring
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5. Suggestions regarding the review of a management plan for the fishery

Appendix G

Background Technical Document in Support of the Management Plan for Small Pelagics Fisheries in the Adriatic Sea

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Summary

This document makes a synthesis of available information on small pelagic fisheries in the Adriatic Sea (GSA 17 and 18) based on information sourced from the literature and on information obtained through the application of a questionnaire to GFCM National Focal Points. The synthesis covers aspects related to the status of small pelagic resources, catches and fishing fleets, national fisheries legislation and management plans and discusses on the main issues affecting the sustainability of the fisheries at the national and sub-regional level. Building on this synthesis, and based on the outcomes of the GFCM Framework Programme (FWP) Workshop On Fisheries Data Collection and Management Plans in the Adriatic Sea, Split, Croatia, 20-22 March 2013, the document presents the minimum elements for the development of a management plan for small pelagics in the Adriatic Sea, including objectives, management measures, decision rules and other necessary actions concerning the monitoring, evaluation and review of the plan.

1. Background information

1.1. Environmental and geographical settings

The Adriatic Sea is a semi-enclosed sea within the Mediterranean Sea, extending from the Strait of Otranto (where it connects to the Ionian Sea) to the northwest and the Po Valley. The countries with coasts on the Adriatic are Italy, Albania, Montenegro, Bosnia-Herzegovina, Croatia, and Slovenia. The Adriatic's shores are populated by more than 3.5 million people; the largest cities are Bari, Venice, Trieste (Italy) and Split (Croatia). Fisheries play a small but important role in the economy of the Adriatic countries. Available estimates indicate that the sector is responsible in general for less than 1% of the GDP of the countries. Fisheries and supporting sectors employ a significant number of people in coastal towns (over 50 000 people, according to available estimates), supply local and export markets of fish products, besides being an important component of the historical tradition of coastal communities in the Adriatic.

The Adriatic collects a third of the freshwater flowing into the Mediterranean, having a lower salinity than the rest of the Mediterranean Sea. The surface water temperatures generally range from 24 °C (75 °F) in summer to 12 °C (54 °F) in winter. The prevailing currents flow counterclockwise from the Strait of Otranto, along the eastern coast and back to the strait along the western (Italian) coast. Tidal movements in the Adriatic are slight, although larger amplitudes are known to occur occasionally. The main source of freshwater runoff is the Po River, located in the northwest Adriatic. This and other oceanographic conditions cause a decreasing trend in nutrient concentration and production from north to south and from west to east (Coll et al., 2013).

For fisheries statistical and management purposes, the Adriatic is divided in two GFCM Geographical Sub-Areas, the northern (GSA 17) and southern (GSA 18) Adriatic Sea. This division reflects the distinctive environmental characteristics of the two areas; the northern Adriatic being shallower and more productive than the southern Adriatic. The northern area has a mean depth of 75 m, and a maximum depth of 280 m, while depths beyond 1000 m are found in the southern Adriatic. The substrate is characterized by muddy to sandy bottoms.

The Adriatic is characterized by high biodiversity, including numerous commercially exploited species of fish and invertebrates (Coll et al., 2013). Small pelagic fish, mainly sardine and anchovy, constitute the principal component of the catches (Arneri 1996, Mannini and Massa 2000). The demersal fisheries mainly comprise juveniles of several target species, e.g. hake and red mullet. Invertebrates (cephalopods, crabs and scallops) also constitute an important proportion of the catch. The north-central Adriatic Sea is also a strategic area for marine vertebrate conservation, supporting important populations of seabirds, marine mammals and turtles (Coll et al., 2013).

Biological production in the Adriatic Sea is affected by diverse environmental factors, including wind mixing, river runoff, eutrophication and increase in water temperature (Arai, 2001; Agostini and Bakun 2002; Santojanni et al. 2006; Coll et al., 2007). Temporal variations in some of these factors have been associated, for instance, with fluctuations in the biomass of anchovy and sardine (Santojanni et al. 2006). Both species experienced marked declines in biomass between the late 1980s and early 1990s, which can be partially attributed to changes in environmental conditions affecting stock productivity.

1.2. Small pelagic fisheries resources

Small pelagic fish species are widely distributed in the Adriatic Sea and play an important role in the commercial fisheries of all countries located along the coast of the Adriatic Sea. The main species of small pelagic fish are sardine, *Sardina pilchardus*, anchovy, *Engraulis encrasicolus*, Atlantic mackerel, *Scomber scombrus*, chub mackerel, *Scomber japonicus* and sprat, *Sprattus sprattus*. Other species also occasionally caught in small pelagic fisheries in the Adriatic Sea are the horse mackerel *Trachurus trachurus*, Mediterranean horse mackerel *Trachurus mediterraneus*, Mediterranean sand smelt *Atherina hepsetus*, Blotched pickarel *Spicara maena* and bogue *Boops boops*.

Small pelagic fishes are the main fisheries resources of the Adriatic Sea, accounting for a large share of the total catches. The group represented approximately 46% of the total marine catches of the Adriatic from 2000 to 2010, being 99% of this total accounted for by sardine and anchovy (Figure 1). Sardine and anchovy are the most abundant and economically important small pelagic species in the Adriatic Sea, with stock regularly assessed by GFCM and FAO-ADRIAMED Working Group on Small Pelagics.

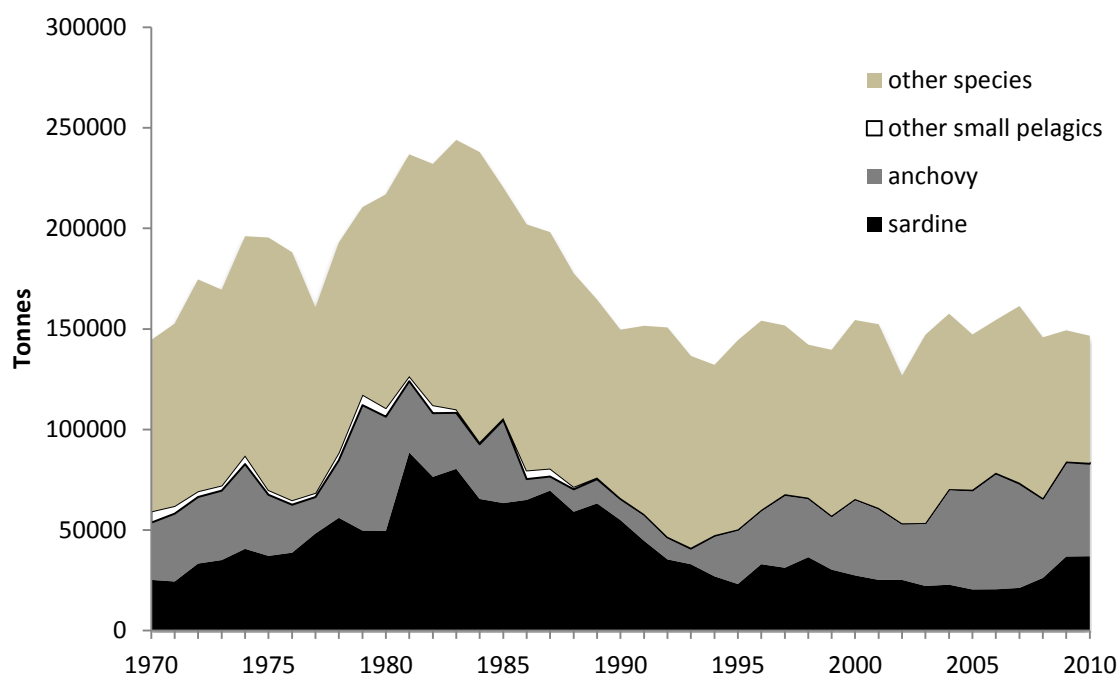


Figure 1. Catches of marine species in the Adriatic Sea (source FAO FishStat).

Figures 2 and 3 show the trend in reported catches of sardine and anchovy by country in the Adriatic Sea. Historically the eastern Adriatic countries targeted mainly sardine, but since the mid-1990s there has been an increase in anchovy catches in the east, specifically by Croatia. Total catch of sardine (Figure 2) increased steadily between 1970 and 1981 when a maximum was recorded at 88,518 tonnes. This was followed by a sharp decrease between 1982 and 1995 (the war in the former Yugoslavia from 1990 to 1995 was one important factor that affected the fisheries from eastern Adriatic countries in that period). Catches remained below 40,000 tonnes since then, with two peaks in 1998 and 2010 of about 36,000 tonnes. Data from the northern and central Adriatic sea (GSA 17) for 2011 (Carpi et al., 2012a) indicate that catches have continued to increase in more recent years. The eastern Adriatic fishery (represented by the Yugoslavian Federal Republic until the independence of Croatia and Slovenia in 1991) experienced a marked decline between 1990 and 1995, followed by a period on increasing catches by Croatia until 2010. Italy accounted for a large share of the catches until the early 1990s, declining in importance since then. In 2010 Italy reported 6,880 tonnes of sardine, Croatia 29,600 and Slovenia 403 tonnes. Catches by Montenegro (and Serbia and Montenegro) have been below 100 tonnes, with Montenegrin catches in 2010 of 35 tonnes.

Anchovy catches increased between 1970 and 1974, reaching about 42,900 tonnes, decreased to 18,100 tonnes in 1977, increasing sharply in the following two years (Figure 3). The fishery attained its maximum historical level in 1979 when 62,462 tonnes were landed. Catches collapsed afterwards, reaching the historical minimum of 7,055 tonnes in 1987. The collapse of the fishery was followed by a period of relative stability in catches,

which oscillated around 10,000 tonnes/year from 1988 to 1992. The fishery experienced a recovery since then, reaching a peak of 57,650 tonnes in 2006. Catches declined after that, being at about 46,000 per year in 2009 and 2010. Data from the northern and central Adriatic Sea (GSA 17) for 2011 (Carpi et al., 2012b) indicate that catches have continued to decline in more recent years.

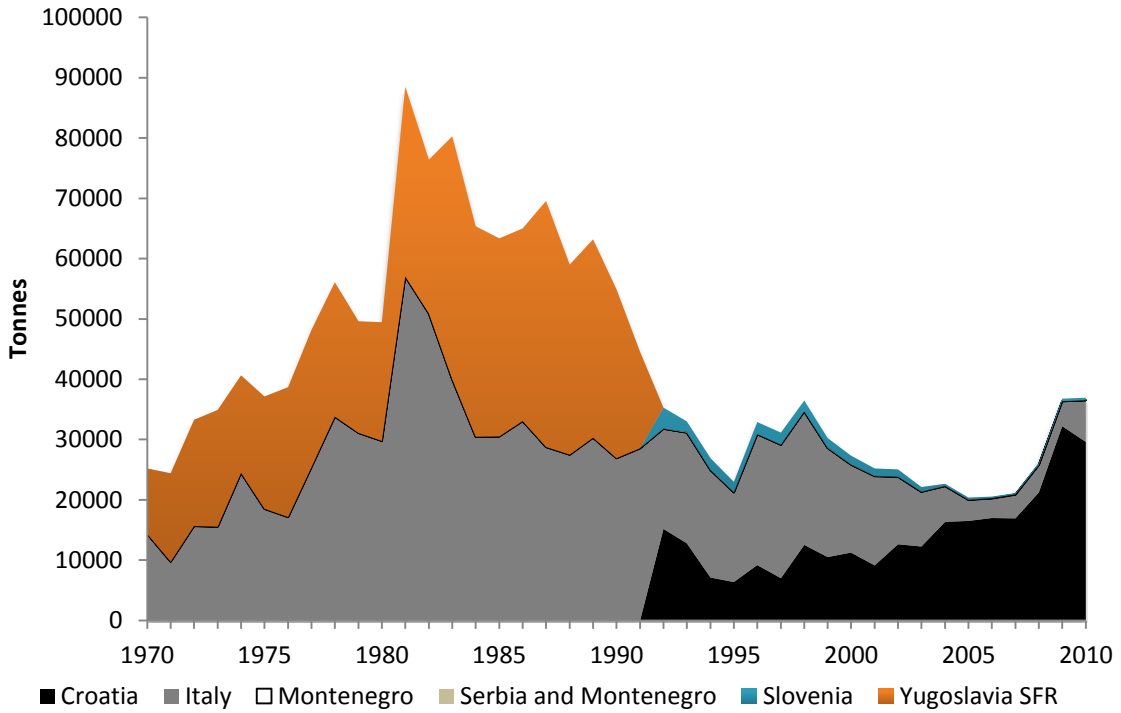


Figure 2. Catches of sardine by country in the Adriatic Sea (source FAO-FishStat).

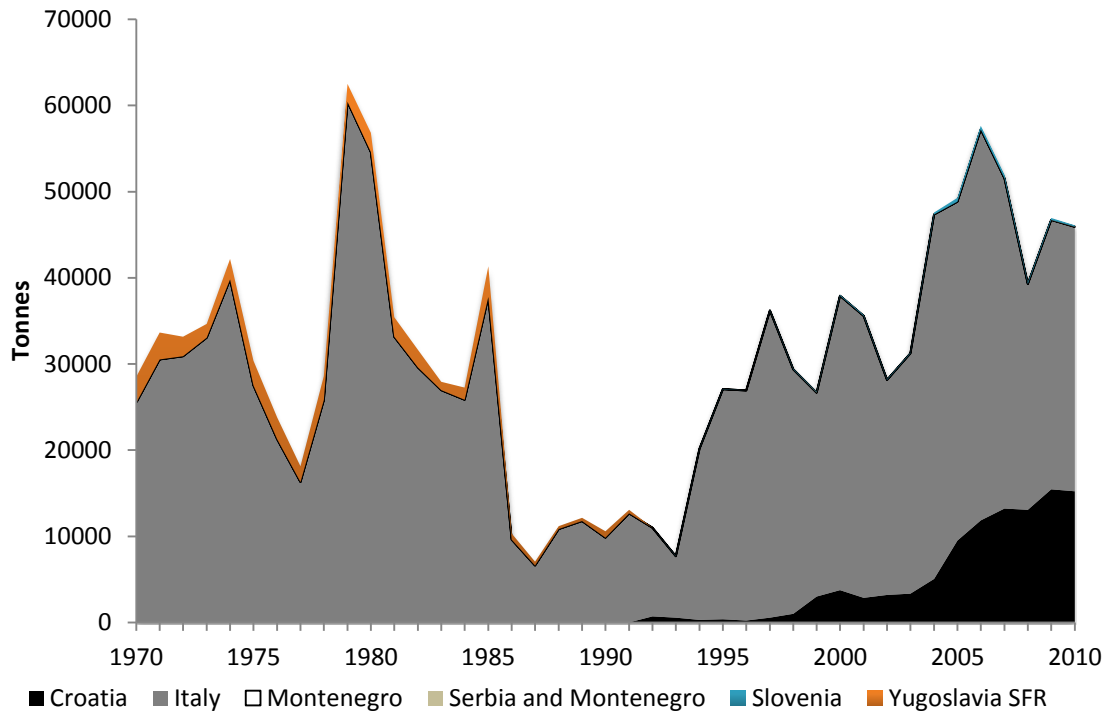


Figure 3. Catches of anchovy by country in the Adriatic Sea (source FAO FishStat).

Brief descriptions of the species biology and population status are provided below. The report concentrates on anchovy and sardine considering their overall importance. Table 1 summarizes the available biological data about the small pelagic species and stocks in the Adriatic Sea.

Table 1. Summary information on biology and population status of small pelagic resources in the Adriatic Sea (sources: Morello and Arneri, 2009; Carpi et al., 2012a,b; FishBase).

Species	Max. size (cm)	Size at maturity (cm)	Max. age (years)	Spawning season	Stock status
Anchovy, <i>Engraulis encrasicolus</i>	18.5	8.0	> 4.0	April - October	GSA 17: Sustainably exploited. Moderate exploitation rate and intermediate stock abundance. GSA 18: Moderately exploited with uncertain in exploitation rate.

Sardine, <i>Sardina pilchardus</i>	21.5	8.0	>6.0	October - May	GSA 17: Fully exploited. Moderate exploitation rate and intermediate stock abundance. Steep increase in stock abundance in last years. GSA 18: Moderately exploited with uncertain in exploitation rate.
Atlantic mackerel, <i>Scomber scombrus</i>	60	28	17	–	Unknown
Chub mackerel, <i>Scomber japonicus</i>	64	26	18	–	Unknown
Sprat, <i>Sprattus sprattus</i>	16	8 - 12	6	–	Unknown
Horse mackerel, <i>Trachurus trachurus</i>	37 - 40	21 - 30	5 - 10	–	Unknown
Med. Horse mackerel, <i>Trachurus mediterraneus</i>	42	20	12	–	Unknown
Med. sand smelt, <i>Atherina hepsetus</i>	20	–	–	–	Unknown
Blotched pickarel, <i>Spicara maena</i>	25	9	5	–	Unknown
Bogue, <i>Boops boops</i>	36	13	6	–	Unknown

Anchovy, *Engraulis encrasicolus*

Whether anchovy in the Adriatic Sea is part of one or two stocks is uncertain. The hypothesis of two distinct populations is based on morphometric and allozymic differences between northern and southern Adriatic anchovy (Bembo et al., 1996). This hypothesis has not been supported by more recent genetic data (Magoulas et al. 2006). For stock assessment purposes, anchovy caught in the northern-central Adriatic (GSA 17) has been considered part of a single stock and has been assessed separately from the stock in GSA 18. Given the lack of clear indication of a southern stock in GSA 18, and considering that the spatial distribution of anchovy extends across GSA 17 and 18, the recommendation of the GFCM SCSA and SAC is that future assessments take into account combined data from these two GSAs. A first attempt to assess the stock of small pelagics (anchovy and sardine) in the whole Adriatic was carried out by Leonori et al. (2011). The authors noted however that some work has still to be done in order to make a reliable assessment of the stock in the combined areas, including better information on catches in GSA 18, which are currently considered unrealistic. Therefore the information presented below is based on the last available stock assessment of the species in each GSA.

The trend in biomass of the anchovy stock in GSA 17 shows that the stock declined from 1976 to 1987, experienced an increasing trend with some fluctuations in following decades, reaching high values again in 2005 (Figure 4; Santojanni et al., 2011b). The stock experienced a declining trend from 2005 to 2009 and since then there has been an increasing trend in biomass (Figure 5; Carpi et al., 2012b). The biomass in 2011 (333404 tons) was higher than the proposed Blim (179 000 tons) and Bpa (250 600 tons) reference points (Carpi et al., 2012b). The exploitation rate (F/Z) has fluctuated around the Patterson’s threshold of 0.4 during the last decade (Figures 6 and 7). In view of the above results, the stock has been assessed in recent years as fully or sustainably exploited (Santojanni et al., 2011b; Carpi et al., 2012b). Considering that the stock display large fluctuations in recruitment and that the exploitation rate is close the precautionary threshold of 0.4, the current advice from SAC is not to increase the fishing mortality on the species.

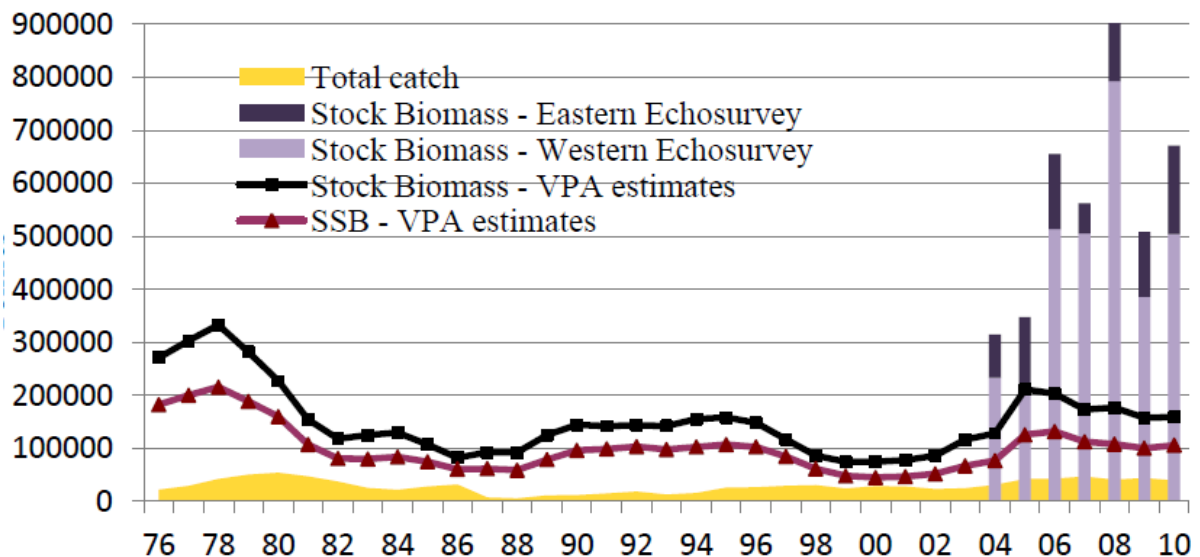


Figure 4. Trends in population biomass (estimated by acoustic surveys and VPA) and catches of anchovy in GSA 17 from 1976 to 2010. Data in tonnes. Source: Santojanni et al. 2011b.

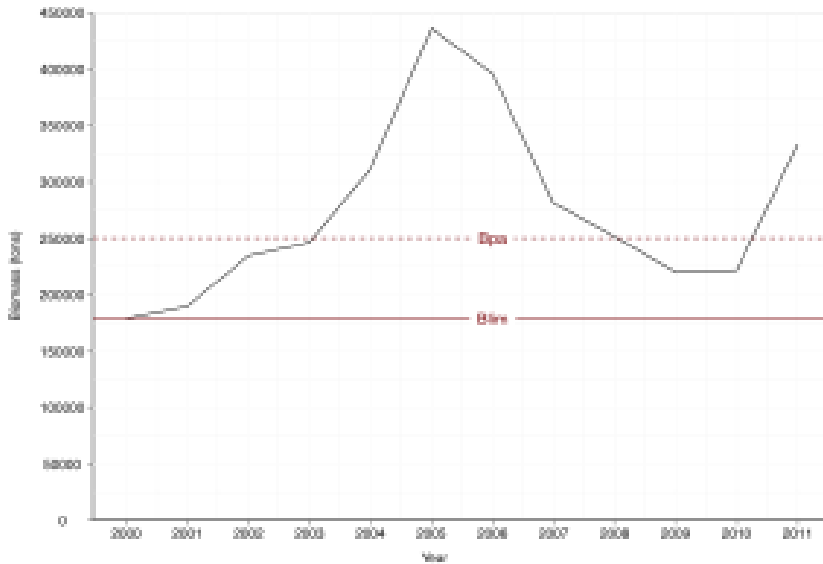


Figure 5. Estimated anchovy stock biomass in GSA 17. Blim is the biomass at the limit reference point and Bpa is the biomass at the precautionary reference point (source Carpi et al. 2012b).

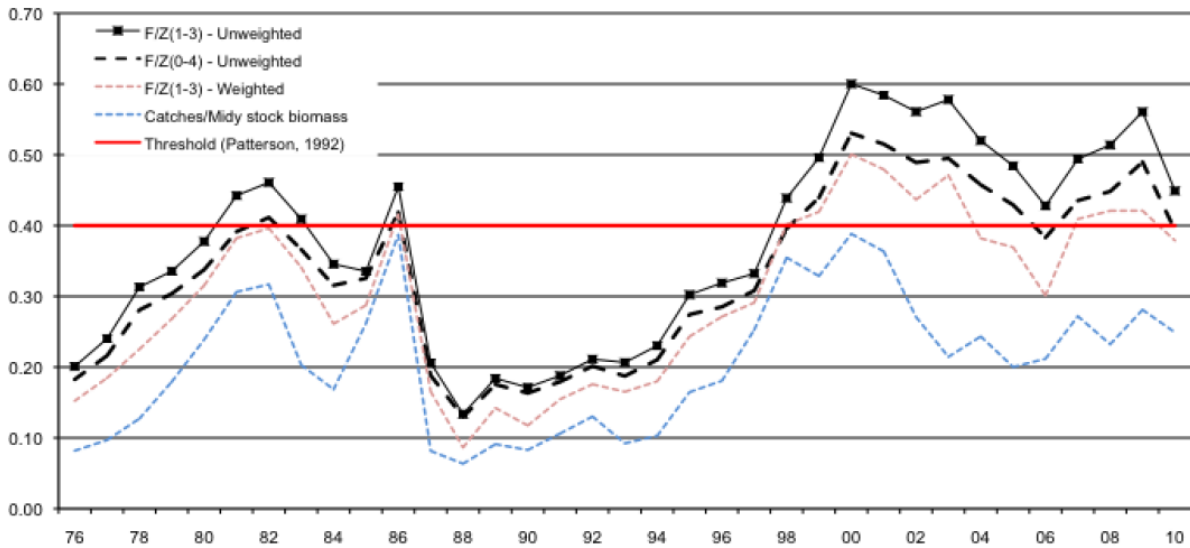


Figure 6. Trend in exploitation rate (F/Z) from 1976 to 2010 estimated using VPA. Red line indicates the Patterson’s precautionary exploitation rate of 0.4. Source: Santojanni et al., 2011b.

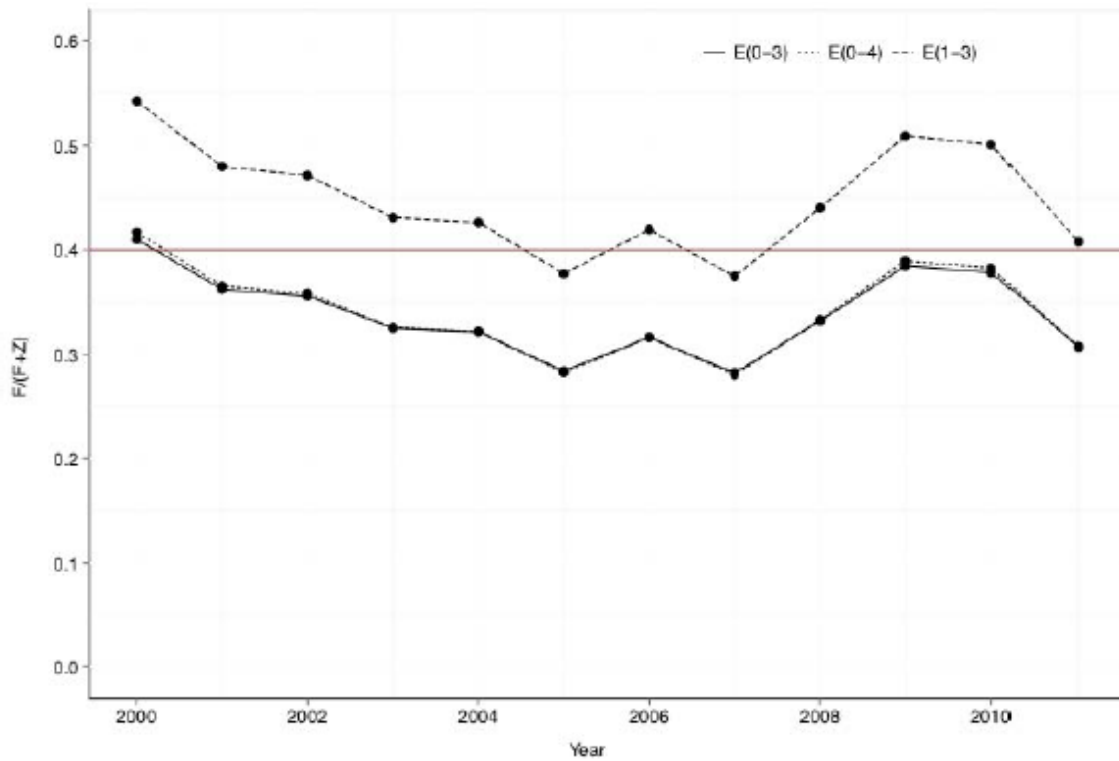


Figure 7. Exploitation rate (F/Z) for anchovy in GSA 17 against Patterson’s threshold exploitation rate of 0.4. (Carpi et al. 2012b).

Anchovy in GSA 18 is assessed based on catch and biomass estimates from the east and west sides of the area. Stock biomass in both sides has shown a decrease in recent years. The biomass in the western side is at an intermediate level compared to the historical values and the exploitation rate (0.17) is well below Patterson’s precautionary threshold of 0.4 (Leonori et al. 2011; Figure 8). In the eastern side, biomass is at a low level but fishing effort is also very low. Considering the above information the stock was considered moderately exploited by SAC in 2012. It should be noted however that the lack of better information on anchovy catches in GSA 18 increases the uncertainties in the estimated exploitation rates in the area.

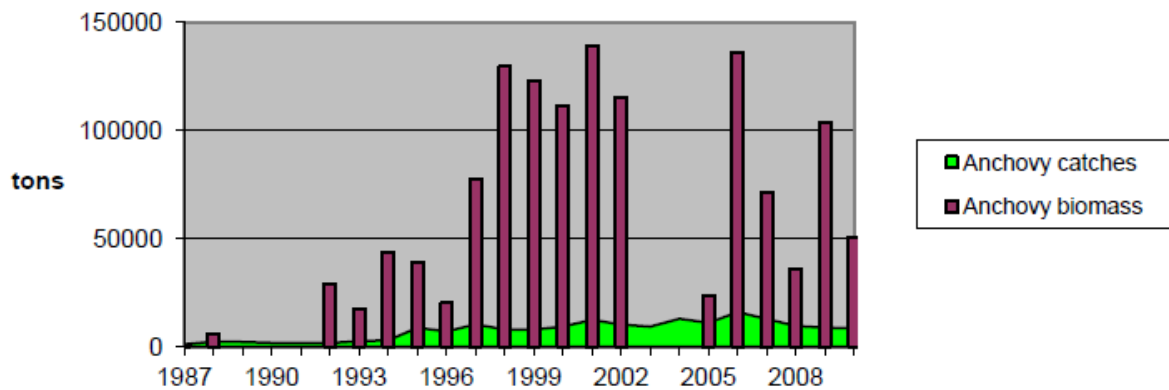


Figure 8. Trends in anchovy catches and biomass in western GSA 18 (Leonori et al., 2011).

Sardine, *Sardina pilchardus*

Available genetic data indicates that sardine in GSA 17 constitute a single stock (Carpi et al., 2012a). The situation in GSA 18 is less clear. Stock assessment of sardine has been done until recently considering stocks in GSA 17 and GSA 18 separately. However in 2012 the Working Group on Stock Assessment of Small Pelagics recognized that spatial distribution of shared stock of sardine is not limited to GSA17 area only, but it is extended in GSA18 area also. The Working Group also noted that an important nursery area of sardine is located in Gulf of Manfredonia (GSA18) where sardine is exploited by a fry fishery. It was therefore recommended that future assessments take into account combined data from GSA 17 and 18. A first attempt to assess the stock of small pelagics (anchovy and sardine) in the whole Adriatic was carried out by Leonori et al. (2011). The authors noted however that some work has still to be done in order to make a reliable assessment of the stock in the combined areas, including better information on catches in GSA 18, which are currently considered unrealistic. Therefore the information provided below is based on the most recent stock assessment of the species in each GSA.

Biomass of the stocks in GSA 17 decreased continuously from the 1980s to 2000 (Figure 9). In the most recent years, a moderate recovery of the stock has been observed (Figures 10), accompanied by parallel increases in recruitment and catches (Carpi et al., 2012b). The stock biomass in 2011 (215 050 tonnes) was higher than the proposed limit and precautionary reference points ($B_{lim} = 78\ 000$ tonnes and $B_{pa} = 109\ 200$ tonnes). The exploitation rate (F/Z) has been around Patterson's threshold of 0.4 during the last decade, but since 2009 it has been consistently above that level (Figure 11). In spite of the apparent high exploitation rates, the increasing trend in biomass led Carpi et al. (2012) to conclude that the stock is currently fully exploited and that no further increases in fishing mortality should be allowed.

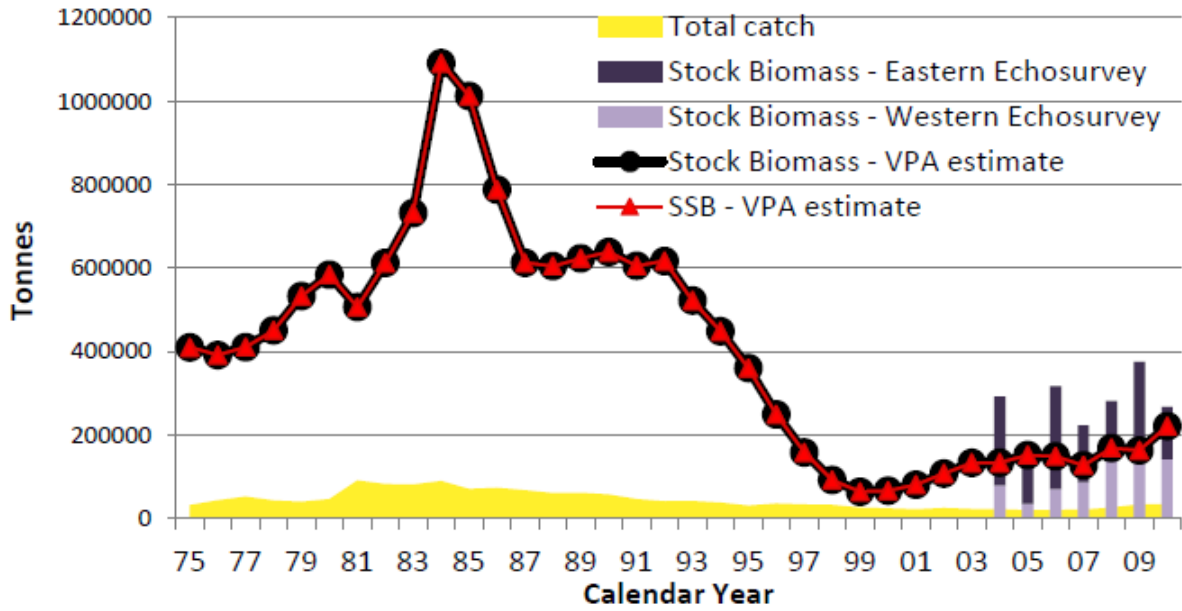


Figure 9. Trend in catches and biomass of sardine in GSA 17. Source: Santojanni et al. (2011a)

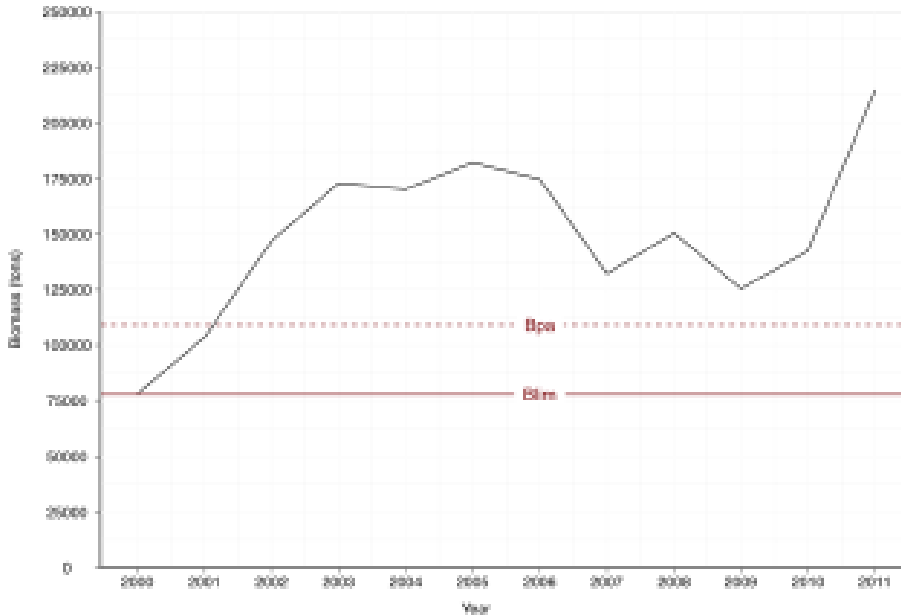


Figure 10. Trends in biomass of sardine in GSA 17. Blim is the biomass at the limit reference point and Bpa is the biomass at the precautionary reference point (source: Carpi et al., 2012b).

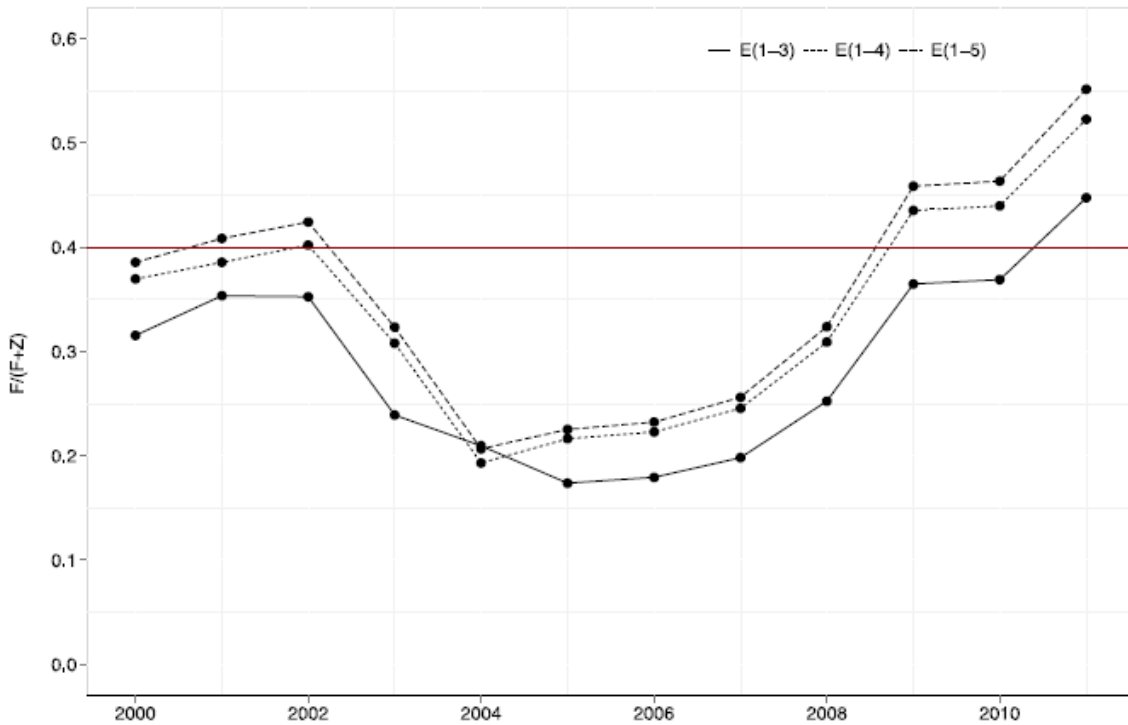
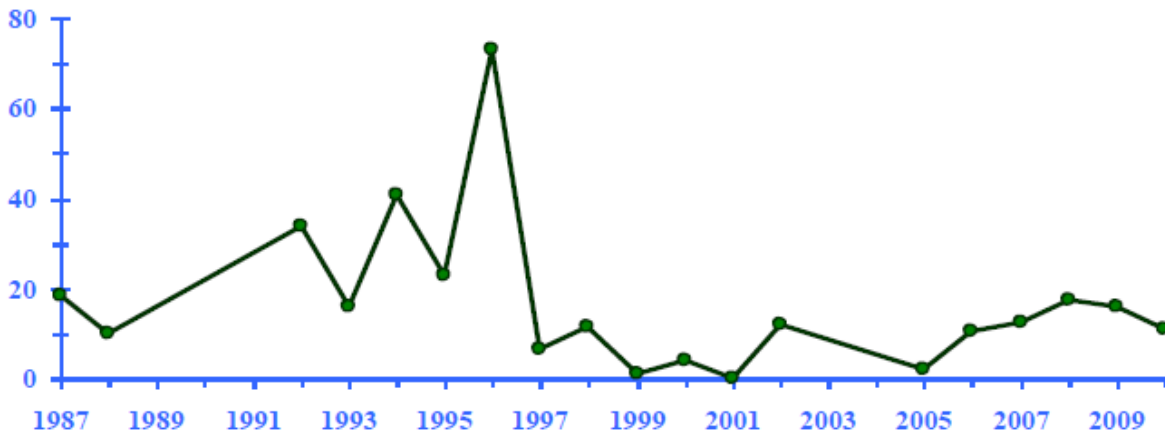


Figure 11. Trends in exploitation rate (F/Z) of sardine in GSA 17 based on data from different age classes. The horizontal line indicates the Patterson's exploitation rate reference point of 0.4 (source Carpi et al. 2012).

The biomass of the stock in western GSA 18 increased from mid-1980s to mid-1990s and abruptly declined afterwards reaching the lowest level in 2001 (Leonori et al., 2011; Figure 12). Since then the stock biomass has been oscillating at low levels. A slight increasing trend was observed from 2005 to 2008 in both western and eastern GSA 18. Since 2009 the stock has been declining in both areas. No reference points have been proposed for the stock. Because fishing pressure is low on both sides of GSA 18, the stock has been considered moderately exploited in the area.



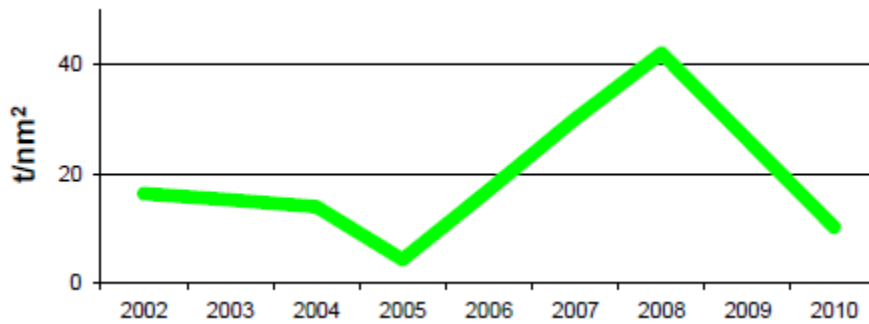


Figure 12. Trends in sardine biomass density (tonnes/nm²) in western (upper) and eastern (lower) GSA 18. Eastern data from Montenegro only (source Leonori et al., 2011).

Ecosystem interactions

As forage fish, anchovy and sardine play an important role in transfer of energy from lower to higher trophic levels in pelagic food webs. In the Adriatic Sea juvenile and adult anchovy and sardine are prey of hake, mackerel, large pelagic fish (including juvenile Bluefin tuna), marine birds and dolphins (Coll et al., 2007; Morello and Arneri, 2009). Although the impacts of changes in biomass of anchovy and sardine on other ecosystem components has not been quantified it is expected that, given their role and dominance as main forage fish species in the Adriatic Sea, biomass removals by fisheries will cascade through the food web.

1.3. Small pelagic fisheries

Albania

The Albanian fishery for small pelagics (mostly sardine) started in 1951 in the Gulf of Valona, when 226 tonnes were reported, and expanded considerably during the 1980s with the introduction of midwater pelagic trawlers (Morello and Arneri, 2009). During the 1990s many vessels switched to bottom trawling, because of the higher economic returns. By 2001 only 10% of the Albanian fleet was dedicated to the sardine fishery (Adriamed, 2001; Morello and Arneri, 2009). By that time the small pelagic fisheries were considered largely underexploited and the modernizing of the fleet was viewed as a priority (FAO, 2013).

According to the most updated data (2011) on the fleet provided by the National Focal Point, the fleet is currently made up of purse seiners (7), seiners and seven multipurpose vessels, being seiners with less than 12 meters, the dominating fleet segment (Annex 1). The number of fishers directly employed in these fisheries is about 100. Catch data is also not available (including in FAO FishStat), but it is likely to be about 800 tonnes per year.. In 2004 the total catches of sardine from purse seiners operating from the port of Vlora was about 40 tonnes (Albanian Fishery Policies Directorate, AdriaMed, MedFisis. 2006).

Croatia

The Croatian fleet is distributed between Umag in the north and Dubrovnik in the south, and the main fishing grounds are between Istria and the mid-Dalmatian islands (Morello and Arneri, 2009). The fleet is mainly composed of purse seiners, which traditionally targeted mainly sardine. According to the assessment made by Adriamed (2001), there were 289 vessels operating in Croatia, the majority of them were purse seiners with less than 12 meters. The opposite situation was found in 2011, when there were 39 purse seine vessels with less than 12 meters and 209 vessels with more than 12 meters (Annex 1). The fleet operates year round (with the exception of the closed period between 15 December and 15 January) in GSA 17. Sardine is the main species in the catches, with recorded landings of 44 614 tonnes in 2011. Anchovy landings were 14 163 tonnes in 2011. The larger purse seiners accounted for more than 99% of the reported catches of both species. The value of the catches by fleet segment in 2011 was estimated at about 27 million Euro (205 719 500 HRK) and 98 thousand Euro (745 500 HRK) for the large and small purse seiners, respectively (considering an average ex vessel price of sardine and anchovy of 3.5 HRK/kg or 0.46 Euro/kg).

The Croatian fishing fleet of the vessels authorized for fishing small pelagics is not homogeneous in terms of its characteristics and its fishing capacity. Smaller vessels (of up to 18 m), which are mostly multi-purpose fishing vessels, participate with only 10% in the total catches employing approximately 700 people. The category of vessels of 18-24 m make up 31% of the total catches, employing approximately 550 people. In the category of vessels over 24 m, somewhat less than 60% of the total catches is realized and approximately 650 people are employed.

Italy

The Italian pelagic fleet is distributed in ports along the Adriatic coastline from Trieste to Vieste (Adriamed, 2001) and operates in GSA 17 and 18. The fleet is composed primarily of 'lampara' vessels (purse seiners operating at night with the use of light attraction) and midwater pelagic pair trawlers ('volante'), which were introduced in 1959 and presently is the dominating fleet (Morello and Arneri, 2009). As of 2010 the fleet was composed of 131 mid-water pair trawlers (operating in pairs) and about 49 purse seiners (Annex 1). The actual number of vessels authorized to potentially be operative to use these gears in the fleet register through the fishing license is much higher. Total catches (not discriminated by species) of purse seiners in 2010 were 5,747 tonnes (65% in GSA 17) and of mid-water pair trawlers 44,393 tonnes (80% in GSA 17).

A "bianchetto" (fry) fishery, targeting juvenile clupeid fishes, had also some importance in Italy, being concentrated in the Apulian coast (Gulf of Manfredonia). According to Morello and Arneri (2009), the fishery had a long tradition with products fetching high prices in domestic markets. The fishery was conducted mainly with bottom trawls with fine cod-end meshes (5 mm). About 200 vessels were involved in this fishery in early 1990s, with catches in the order of 6 tonnes per day (Morello and Arneri, 2009) for a

fishing season of approximately two months. The magnitude of catches was uncertain due to poor monitoring (Morello et al., 2011). This fishery is closed from 1st of June 2010, according to the Mediterranean EU Regulation (n. 1967/2006 , art. 9 and 13), and it is not anymore allowed.

Montenegro

Montenegro has a small fleet targeting small pelagic resources (Annex 1). Most of the catches are originated from small-scale beach seine fisheries in the Boka Kotorska Bay and from the fishery with small purse seiners in coastal waters (< 70 m depth). These fisheries target both sardine and anchovy. Common associated species include *Atherina hepsetus*, *Boops boops*, *Trachurus* sp., *Scomber* sp, *Sarda sarda*, *Argentina sphyrena* and *Spicara* sp. The small-scale beach seine fishery, present in several parts of the Eastern Adriatic coast, is traditional for centuries in the Boka Kotorska Bay. Montenegrin industrial fishing of sardine and anchovy is still undeveloped; the three existing large purse seiners are currently not active due to market constrains and lack of skilled fishers. Likewise, the only pelagic trawler is also inactive. Total catches of sardine and anchovy in recent years has been at about 32 tonnes/year and 12 tonnes/year, respectively. At an average ex-vessel price of 4 Euro/kg for sardine and 3 Euro/kg for anchovy, the total annual value of the catches is in the order of 164 000 Euro. Participate in the fishery a total of 181 fishers, including those involved in the large purse seine and pelagic trawler fisheries currently out of activity.

Slovenia

Sardine and anchovy are the dominant fish species landed in Slovenian fisheries. Between 2006 and 2010 the total landed catch of these species constituted, on average, 72.8% of the total catch landed in that period (sardine 40.4% and anchovy 32.5%). Until recently a large share of the catches of these two species was made by a pair of fishing vessels that employ a midwater pair trawl. These vessels were responsible for 55.2% of the entire landed catch between 2005 and 2010. Fishing vessels employing purse seines accounted for 24.5% of the total landed catch in the same period. The pair trawlers stopped operation in 2012 as a result of the implementation of the measure for permanent cessation of fishing activities (see Fisheries governance and management section). The current (2012 data) fleet is therefore composed of 4 purse seiners (> 12 m).

The purse seine fleet operates exclusively in shallow waters of the northern part of GSA 17 (most of the fishing areas are shallower than 25 meters). In fact, the operation of this fleet is currently constrained by the Council Regulation (EC) No 1967/2006 provision regarding the size of purse seines and the depth of fishing areas (see section on Main issues affecting the sustainability of the fishery). The demands of the Council Regulation are in practice unachievable by Slovenian purse seiners because of the shallow depth of the fishing areas. The fishery occurs mainly from May to August. Besides anchovy and sardine, the other associated species in the catch include Mugilidae, *Liza aurata*, *Lithognathus mormyrus* and *Trachurus trachurus*. Purse seine landings in 2012 were in the order of 107 tonnes, worth 270.000 Euro. The number of fishers employed in the small pelagic fisheries is unknown.

1.4. Market situation

Albania

Catches of small pelagics are used for local consumption and to export to EU countries. There are eight processing industries which process mainly anchovy and sardine (giving the low catch volumes by national fleets, industries must rely on imported fish). These plants employ approximately 1200 people.

Croatia

Catches of small pelagics are mainly used for human consumption and as tuna-farming feed. Fresh fish is not marketed nor consumed in large quantities, being used for tuna farming and domestic consumption. Most products for human consumption are salted or canned. A large portion of catches is exported, either as frozen or salted products, to EU countries, Bosnia and Herzegovina, Serbia and Montenegro. Some quantities are frozen for baitfish and exported to Spain and Italy.

Small pelagic fish is the predominant raw material in the traditional processing industry, which was once based mainly on canning. Over the last 5 years canning has experienced a decrease, compensated by an increase in the production of salted fish (anchovies) and frozen fish assortment. As per the National Classification of Activities (NCA) (DA 152), in 2011 there were 76 fish processing companies in Croatia, out of which 70 were active. Only two were large companies according to the national classification (one in the Zadar County and one in the Split - Dalmatia County). Most of the companies employ up to 50 employees. Based on the number of companies and their size it is estimated that about 1600 people are employed in processing industry (including salting), whereas additional 1700 are employed seasonally. These figures exclude people registered in some other types of activities as their primary activity, including trade, production and fisheries. Small pelagics are among the most significant food products (in value) exported by Croatia. According to data from 2010, the top five products were bluefin tuna (total export value was about 67 million USD, the majority exported to Japan), salted anchovies (23 million USD, out of which 17 million USD was exported to Italy), canned sardines (19 million USD), farmed fresh sea bass (10 million USD), and fresh anchovies (6 million USD).

Italy

Most Italian catches are intended for human consumption. Italy is the largest consuming country of anchovies in Europe, with 14 thousand tonnes of preserved anchovies (€ 113 million) consumed in 2010 (CBI, 2011). The per capita consumption of prepared and preserved anchovies in Italy was 2.4 kg in 2009, compared to an average of 0.4 kg per capita in the EU (CBI, 2011; Eurofish, 2012). The country is also the largest producer and importer of processed anchovies in the EU. In 2010 Italy produced 9 800 tonnes of prepared and preserved anchovies, corresponding to 42% of all preserved anchovies produced in Europe. In the same year the country imported 8 200 tonnes of preserved

anchovies in (€ 45 million), which accounted for 32% of the total EU import of processed anchovies. Imports from non-EU countries amounted to 7 500 tonnes. Among the main suppliers were Morocco, Albania and Tunisia (CBI, 2011; Eurofish, 2012).

Montenegro

Catches are only used for local consumption, being sold normally as fresh product in the market. Only small part of sardine catch is used for the (artisanal) preparation of salted sardine. The only fish processing company in Montenegro (funded in 1947) is currently inactive. In the past the industry produced eight different types of canned fish and employed approximately 40 people. Plans are in place to restart the operation of the plant.

Slovenia

Catches are mainly used for local consumption and for sale on local markets (including Trieste market). The country has 15 fish processing industries (not only dedicated to small pelagics) that employ 250 people; however, in a predominant part, they import fish and materials for processing.

1.5. Fisheries governance and management frameworks

The following sections summarize the main legal frameworks governing the small pelagic fisheries at national and regional level. Annex 2 summarizes the main management measures in place for the small pelagic fisheries in the Adriatic Sea.

1.5.1. National jurisdictions

None of the Adriatic coastal States have decided to establish an EEZ. All the five countries have declared a Territorial Sea extending to 12 nautical miles from the coast. In 2003 Croatia defined a Zone of Ecological protection and Fisheries extending, beyond the 12 nm, the sovereign rights of the country for the purpose exploring and exploiting, conserving and managing the living resources as well as the jurisdiction with regard to marine scientific research and the protection and preservation of the marine environment. Italy has also adopted legislation for the establishment of Ecological Protection Zones (EPZs) beyond the Territorial Sea (Law No. 61 of 8 February 2006). Within the EPZs the country exercises powers related to the prevention and control of pollution, the protection of marine mammals, biodiversity and the archaeological and historical heritage. The EPZs are to be established by decrees and so far none has been established for the Adriatic Sea. In 2005, Slovenia defined an EPZ extending beyond the 12 nm (Law of 4 October 2005), although a dispute is pending with Croatia and will be decided by arbitration. Although some maritime areas in the Adriatic Sea are under disputes by coastal States, these are generally minor compared to the areas with agreed jurisdictions (Vivero, 2010). In effect a large area of the Adriatic Sea falls under the UNCLOS

definition of high seas, which are open to all States, whether coastal or landlocked. The existence of high seas areas in the Adriatic Sea requires strong cooperation among coastal States, and a key role for the GFCM, to ensure the sustainable use of fisheries resources.

1.5.2. National legal frameworks

Albania

The recently promulgated Law on Fisheries (No. 64 of 31/05/2012) provides the legal framework for fisheries in the country. The implementation of the new fisheries law is under final approval, and four new Decisions of Council of the Ministers are under finalization:

- **Establishing a National framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Albanian Fisheries Policy**, based on Council Regulation (EC) No 199/2008 of 25 February 2008 and Commission Decision of 18 December 2009 adopting a Multiannual Community Programme for the collection, management and use of data in the fisheries sector for the period 2011-2013.
- **Establishing a control system for ensuring compliance with the rules of the management fisheries policy**, based on Council Regulation (EC) No 1224/2009 of 20 November 2009 and Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 and replace DCM No. 1062 date 16.7.2008 based on Council regulation 2847/1993.
- **Establishing management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea**, based on Council Regulation (EC) No 1967/2006 of 21 December 2006 and replace ministerial regulation No. date 11.11.2009
- **Establishing a system to prevent, deter and eliminate illegal, unreported and unregulated fishing** based on Council Regulation (EC) No 1005/2008 of 29 September 2008 and Commission Regulation No. 1010 date 22 October 2009 laying down detailed rules for the implementation of Council Regulation (EC) No 1005/2008 and replace MOEFWA Regulation Nr. 9 date 25.1.2010.

Since the new Law on Fisheries is recently in force, and the sets of by-laws are under finalization, there are very few specific management measures in place for small pelagic fisheries at the moment. These include the requirement for fishing licenses and the prohibition of fishing with bottom trawls, dredges, traps, purse seines, boat seines, shore seines and other similar nets on the seafloor/seabed rich in vegetation, especially of *Posidonia oceanica*, and other marine phanerogams. Exceptions to the previous measure are purse seine, boat seine and similar nets that during the fishing operation do not touch the meadows. Specific measures in support of fisheries Monitoring, Control and

Surveillance are also established by the Law on Fisheries and are summarized in the Table 1.

Albania has adopted a Fishery and Aquaculture Management Plan that includes among its objectives and proposed actions:

- Fleet rehabilitation;
- Prioritize the increase in the exploitation of small pelagic resources, by stimulating private initiatives, for the purpose of increasing domestic consumption and export by processing industries.

The Fishery and Aquaculture Management Plan includes several priority policies aimed at:

- Improving management to achieve a sustainable balance between resource availability and fisheries exploitation, re-dimensioning fleet capacity and fleet balance in a way to ensure biodiversity and resource conservation.
- Supporting the improvement of fishery fleet and Fishing Ports Infrastructure.
- Establishing a national Program on data collection and processing.
- Building up the **Monitoring, Control and Surveillance (MCS) system**, (including both enforcement and voluntary compliance) in a way of strengthening the surveillance and monitoring system in fisheries and enabling the sector to apply the satellite-based VMS and to combat Illegal, Unreported and Unregulated fishing (IUU).

Specifically for small pelagic fishing vessels, the plan recognizes that:

- To fulfil the domestic demand for fresh consumption and for the existing processing industry it is necessary the development of the small pelagic fleet through the modernization of existing fishing vessels and the building/adding of new vessels.

Albania presented its application for membership of the European Union on 28 April 2009. The Stabilization and Association Agreement between the EU and Albania was signed in June 2006 and entered into force in April 2009. Adjustments in the national legal framework are therefore expected to occur to make the country comply with EU *acquis*, including the Common Fisheries Policy.

Croatia

The fisheries sector is regulated by the Marine Fisheries Act (Official Gazette No. 56/10, 127/10, 55/11 and 50/12) and Freshwater Fisheries Act (Official Gazette No. 106/01, 7/03, 174/04, 10/04- corrigendum and 49/05 - consolidated text) and by regulations based upon them. The market of fishing products and the fisheries support sectors are regulated by the Act on structural support and markets (Official Gazette No.153/09).

The key Ordinances governing fisheries are the one on commercial fishing at sea (Official Gazette No. 63/10, 141/10, 148/10, 52/11, 144/119), on gears and tools for commercial fishing at sea (Official Gazette No. 148/10, 25/11) and the order on protection of marine organisms (Official Gazette No. 63/10, 68/10, 145/10, 18/12, 29/12). The Ordinance on commercial fishing at sea provides for the general framework, the Ordinance on gears provides for technical characteristics of the gear, while the Order on protection provides for the minimum landing sizes. Furthermore, there are ordinance that govern the licensing of fishing vessels (Ordinance of the vessel licenses for commercial fishing at sea Official Gazette No. 144/10, 123/11, 53/12, 98/12, 113/12, 15/13) and vessel register (Ordinance of the Fishing Fleet Register, Official Gazette No. 148/10, 100/12).

The country is currently in the process of adoption of a management plan for pelagic species exploited with purse seine nets. The plan is currently being discussed and is expected to be adopted during the course of the year. The management plan is based on the scientific findings of the Institute of Oceanography and Fisheries in Split and the fishery-related data collected in the framework of data collection programme (logbook data as collected by the Ministry of Agriculture, Directorate of Fisheries). The formal forum for discussion is the Drafting Group for the preparation of the management plans, which includes representatives of the Chamber of trade and crafts, Chamber of commerce, Croatian Agriculture Extension Institute, scientific institutions and the administration. The management plan is being drafted in accordance with the Council Regulation (EC) no. 1967/2006, and takes into account the state of the resources. The goal of the plan is to keep the resources within biological limits that can secure sustainable exploitation of the stocks, while increasing overall profitability of the sector. The main measures proposed include management by way of authorization, limiting of fishing mortality by introducing fishing stops (closed areas and seasons), and reducing the activity of the fleet by way of introduction of permanent cessation.

The main goal and indicators being proposed in the management plan are as follows:

Goal	Specific goal	Indicator
Biological: to keep fishing at or above level necessary to maintain productivity and recovery of exploited stocks.	Directing the activities of the fleet towards the achievement of safe biological limits of sardine and anchovy stocks, measured in relation to Patterson's exploitation level and trend of recruitment in whole GSA 17.	Sardine biomass index. Anchovy biomass index. Exploitation level. Trend of recruitment.

Economic: to improve economic conditions associated with the sector.	Increasing the profitability of vessels using “srdelara” purse seine net.	The average value of the catch at first sale/vessel.
Social: to provide sufficient employment for participants using this type of fishing gear	Providing employment and enabling the diversification of activities for fishermen who are no longer engaged in this type of fishing.	Number of participants in fishery and fish-processing industry.

Italy

Management instruments

The characteristics of the national fishing industry brought to the introduction of a conservationist policy based on a generalized licensing scheme, considered the most suitable tool for management the industry and the resource

The actual management system has been influenced above all by the following aspects:

- ✓ multispecificity and multigear features of the industry;
- ✓ technological interactions among different fishing gears catching the same species (for example small-scale artisanal fisheries and bottom trawlers);
- ✓ competition with other uses (sport and recreational fisheries, tourism);
- ✓ biological structure of Mediterranean stocks (species with a limited recruitment age and a short life cycle);
- ✓ fragmentation of the production and low concentration of the landings (total landings are scattered over 100 species).

In addition to the licensing scheme, other management measures are introduced (technical measures, limitation of fishing times and other input and output measures). These measures are applied to the whole fishing fleet. In addition to these general measures, some specific instruments are implemented for specific fisheries such as clam, tuna and sardine juveniles.

In 1982 a new law was approved and considered the fishing industry as a whole to be managed through a planning document drawn each three years and a generalized licensing scheme was put down to manage the industry and the resources.

All vessels, fishing by means of all possible gears are required to possess a license, which is centrally managed by the Direction of Fishery of the Ministry of Agriculture Policy. Licenses are issued by the Ministry to the ship-owner; the license specifies detailed terms and conditions for the operations, including limitations of fishing areas, gear use and

fishing categories (overseas and ocean-going fishing, Mediterranean fishing, in-shore coastal fishing, local coastal fishing, service boats). On the license all the characteristics of the vessel used for the fishing activity are reported in order to identify the vessel (among these, the name of the vessel, the UE number, GT, kW, LOA). Consequently, one fishing license corresponds to one fishing vessel.

Licenses are valid for eight years and are renewed on the request of the ship-owner. In the last years no new license has been issued due to limit imposed by the administration. A different situation is designed for the clam fishery; no other clam licenses shall be issued prior to January 1st 2009.

The system gives the possibility to reissue an old license in some specific situation, such as:

- ✓ licenses can be reissued when old licenses attached to vessels of identical or larger tonnage and power have been withdrawn. The permanent decommissioning of a higher percentage of tonnage and power is required in case of trawlers, i.e. in case of licenses falling within those segments where overcapacity has been assessed. The percentage is set within the measures foreseen in each plan.
- ✓ licenses can be reissued in case smaller vessels are decommissioned, aiming at the building of a new one whose dimension is not larger than the sum of those withdrawn.
- ✓ in specific case; for example, as a consequence of the ban of driftnets, the national plan for the withdrawal and the re-conversion of *spadare* has provided for a re-conversion option; in the case the ship-owners had no other fishery authorization they were entitled to apply for a purse-seiner or a new authorization for small-scale fishing gears.

At the moment, the licensing scheme is used to limit fishing effort by controlling inputs, but other auxiliary measures, either based on input or output control, have been introduced. This is the case of time restriction that can be considered a traditional management tool in the Italian fisheries. Year by year, a temporary closure is established for bottom and pelagic trawlers. The duration of the period is variable from one year to another. The closure calendar is chosen from year to year and is related to the spawning season. Given the strong multispecificity of the Mediterranean fisheries, the closure will affect some species more than others (in particular, positive outcomes are registered for red mullets but not for European hake and Norway lobster). Moreover, the biological outcome of this measure was rather positive in the more productive areas (eastern fishing grounds, which are known to be richer and with a large continental shelf), while less efficient in the less productive areas (western fishing grounds and short continental shelf). In order to consider such differences, the closure is subdivided in two or three periods of time. Usually the fishing closure in the Adriatic Sea goes from mid-July to mid-August, in the lower Adriatic and Ionian from mid-August to mid-September and in the Tyrrhenian Sea from mid-September to mid-October. This measure secures a premium per day/vessel, financed during the last years through the EC financial instrument. The race to fish after the closure has been limited by reducing activity to 3 fishing days for a 60-day period after the closure is over. Other specific regulations

concerning fishing time apply to pair-trawlers and purse seiners (Ministerial decree March 18th 2002), that cannot fish during the weekends.

The Mediterranean Regulation (Reg. (CE) 1967/06) which entered into force on January 2007 replaced the previous “Regulation on technical Measures in the Mediterranean” dating from 1994, represents an important evolution of the Mediterranean management system. The aim of the Regulation is to ensure the sustainable exploitation of resources through an ecosystem approach to fisheries management by implementing technical measures (i.e. minimum distances from the coast, minimum mesh sizes, maximum overall dimensions of fishing gears, minimum size of organisms, etc.), and to promote a different approach to fisheries management based on a decentralized decision-making process and on setting up multi-annual management plans both at national and community level (see section 1.5.3).

Technical measures foreseen in the Mediterranean Regulation touch different issues, including: protection of sensitive habitats, prohibition to use dangerous fishing practices, improvement of the selectivity of trawlers, minimum hook size, limitation of the maximum dimensions of passive fishing gears, limitation of the active fishing gears operations (e.g. trawlers, purse seines, dredges etc.) in coastal areas (distance to coast, depths etc.), limitations on the minimum size of fish and other marine organisms which can be caught and prohibition to use professional fishing nets for recreational fishing.

The necessary flexibility to adapt the basic principles to the various local fisheries and situations is ensured by a 'bottom-up' integrated approach. Unlike the top-down rules applied in other sea basins, Mediterranean Member States are requested to draw up National Management Plans for the fisheries in their territorial waters. The management plans address fisheries conducted by trawl nets, boat seines, shore seines, surrounding nets and dredges, and they have to fulfill the requirements set out. National management plans are important to decentralize important issues while keeping common standards for all the Mediterranean Sea and a way to start implementing a long-term approach to fisheries management.

Montenegro

The legal frameworks within which marine fisheries operate in Montenegro are given by the Law on Marine Fisheries and Mariculture (Official Gazette of Montenegro, 56/2009). The Law lays down the principles that govern the exploitation of marine aquatic resources, the strategy for their implementation, including guidance to the use of fisheries management plans for designated fisheries, and measures aimed at strengthening fisheries monitoring, control and surveillance. The Law also foresees the establishment of a National Fishery Council with the involvement of all interested stakeholders, fishers, research institutions and the Ministry of Agriculture and Rural Development (MoARD), which is responsible for the preparation and implementation of law and rulebooks, strategy and management plans, licensing and the monitoring of fisheries activities in Montenegro.

In addition to the Law on Marine Fisheries and Mariculture, specific by-laws (rulebooks) provide more specific norms concerning different fisheries management and technical aspects:

- Order on prohibition of catch and trade in fish juveniles, undersized fish and other marine organisms (January 18, 2010)
- The Rulebook on construction–technical basis, mesh size, method of use and purpose of certain net types and other means for commercial fishing (Official Gazette of Montenegro, 8/2011)
- Rulebook on requirements, fishing tools and gear, period of fishing and method of issuing licenses for small scale commercial fishing by certain employed persons and pensioners (Official Gazette of Montenegro, 8/2011)
- Rulebook on the form of the permit, procedure of issuing of permit, method of payment of fees for commercial fishing and more detailed conditions for transfer of permits for commercial fishing (Official Gazette of Montenegro, 8/2011)
- Rulebook on requirements, restrictions and order in fishing efforts in certain fishing areas (Official Gazette of Montenegro, 8/2011)
- Rulebook on the register of fishing vessels (Official Gazette of Montenegro, 8/2011)
- Rulebook on method of use, maintenance, protection, marking and length of coast, name and place of the fishing sites (posts) (Official Gazette of Montenegro, 8/2011)

Since 2007 Montenegro has been negotiation with the European Union on the Stabilization and Association Agreement (SAA), which includes specific provisions for the country's future EU membership. The Agreement was ratified on May 1st, 2010. In this regard, Montenegro's priority is to comply with the European Community requirements in terms of the SAA and to move gradually towards full harmonization of its laws with those in the Community and to strengthen the administrative capacity to undertake the tasks and obligations required in terms of food safety and fisheries.

With a view to redefine the fisheries policy in compliance with requirements of the integration processes and establishing of a sustainable and efficient sector that shall be competitive at the wider market, a fisheries development strategy was drafted in partnership between the Ministry of Agriculture, Forestry and Water Management of Montenegro and the European Agency for Reconstruction. The document entitled "Montenegro's Fisheries Development Strategy and Capacity Building for Implementation of the EU Common Fisheries Policy" was published in 2006. One the focus area of Montenegro's Fisheries Development Strategy is "to develop fisheries partnership agreements in the exploitation of pelagic species". The Strategy recognizes that there opportunities for the exploitation of small pelagic resources (sardine and anchovy) but that the country has little experience and capacity to harvest these stocks. One approach envisaged by the country is to develop the small pelagic fishery is through

Fishery Partnership Agreements by which foreign vessels would pay a license fee for access to the fishery in Montenegrin waters. This approach is no further developed in the Fishery Development Strategy.

The country is currently preparing a national management plan for small pelagic fisheries.

Slovenia

As a member of the EU Slovenia is obliged to follow the rules of the EU Common Fisheries Policy, including the measures laid down in the Council Regulation EC 1967/2006 which defines conservation and management measures in the Mediterranean, the Control Regulation (Council Regulation 1224/2009) and IUU Regulation (Council Regulation 1005/2008). The Marine Fisheries Act (ZMR-2) from 2006 is the main legal act that sets the basis for all activities related to marine fisheries in Slovenia, including the implementation of the EU Common Fisheries Policy. For the implementation of ZMR-2, government acts have been adopted – the most important are Regulation on the traceability of catches, Regulation on implementation of EU Regulations on IUU fishing, and Regulation on sanctions for infringements of the rules of the Common Fisheries Policy. In some aspects, Slovenian national legislation is more stringent than EU legislation. For example, Slovenian fishermen have to fill in fishing logbooks for all the species and quantities of fish caught for all fishing vessels for every fishing trip (including vessels below 10 meters of length).

A fisheries management plan addressing trawl nets, boat seines, shore seines, surrounding nets and dredges was developed in accordance with Council Regulation (EC) No 1967/2006 of 21 December 2006. The management plan also takes into account Article 9 of the Marine Fisheries Act (OGRS, 115/2006). The first draft of the fisheries management plan was sent to European Commission in September 2007. This version was subsequently supplemented in April 2008 and October 2009 in response to the opinions produced by the Scientific, Technical and Economic Committee for Fisheries (STECF). An updated draft of the management plan was submitted to the Commission in August 2011 which was supplemented in line with the opinion adopted by the STECF at its plenary session held in November 2009. The most recent draft of the management plan was updated as a result of technical meetings held between the representatives of Commission and Slovenia in September and December 2012. In the Slovenian Fisheries Management Plan, also static gears used by Slovenian fishermen are included – bottom-set nets and trammel nets.

The objective of the Fisheries Management Plan (FMP) is to adjust the fishing capacities and fishing opportunities for those fishing vessels targeting stocks that need protection and conservation. Management measures are also required for those groups of fishing vessels targeting species whose stock levels are not known at the regional level. The plan recognizes the need to establish restrictions on fishing effort for these vessels.

Considering that the stock of sardine and anchovy in GSA 17 are fully exploited, and that the recommendation of GFCM-SAC is to avoid increasing fishing mortality for these

species, the proposed FMP lays down measures to limit the fishing effort of fishing vessels targeting these species (purse seiners and midwater pair trawlers).

To achieve the objective of adjusting fishing capacities and fishing opportunities, the plan proposes the use of various management measures to reduce fishing effort:

- Permanent cessation of fishing activities (scrapping). This voluntary measure started to be implemented in the second half of 2012. As a result of this measure the national capacity ceiling (expressed in GT) was reduced to 37,6%. Due to the implementation of this measure there is not any longer a fleet segment using midwater pair trawls, which was responsible for the lion share of the total Slovenian landings until recently (over 50%, almost exclusively pelagic fish).
- Temporary cessation of fishing activities. Measure not implemented yet.
- Temporary non-issuing of licenses for commercial fishing. In the period 2012–2013 no new fishing licenses were issued with permission to use midwater pair trawls, purse seines, among other gears.
- Revision of licenses for commercial fishing. Fishing licenses of the fishing vessels that show no signs of engaging in the activity will be reviewed. The fishing licenses of vessels that had not been active in the three-year period will be deleted.

Slovenia submitted, as part of the national management plan, a request for derogation of Council Regulation EC 1967/2006 regarding the size of the purse seines. The depth of the sea in the area where Slovenian fishermen use purse seines is approximately 22 meters. Considering the provision of Paragraph 3 of Article 13 of Council Regulation EC 1967/2006, the total drop of the purse seine at this depth would be 31 meters, and the functional drop of the net in the sea would be approximately 16 meters. Taking into account the ratio of drop (functional drop) and length of the net, which is 1:4 in Slovenia and also elsewhere in the Adriatic, the maximal length of the net would be 64 meters. Based on a recommended ratio between the size of the net and the size of the vessel of 15:1², it is argued that fishing with a net shorter than 250 meters is impossible since it does not allow for the circular maneuver of the vessel to set the net. This issue is not solved yet and represents one of the major issues for the purse seine sector in Slovenia.

1.5.3. Regional legal frameworks

European Union

The European Common Fisheries Policy (CFP) is the main framework for all fisheries legislation at the EU level, being applicable to all EU member countries (including Italy and Slovenia in the Adriatic Sea). The core principles and mechanisms of the CFP are contained in the Council Regulation (EC) No 2371/2002. Currently under reform, a new text of the CFP is expected to be adopted by the European Commission during 2013.

² Prado and Dremiere, 1990, <http://www.fao.org/docrep/010/ah827e/ah827e00.htm>

The CFP provides measures concerning the conservation and the management of exploitation of living aquatic resources, the limitation of the environmental impact of fishing, the conditions of access to waters and resources, fleet capacity, control aquaculture, common organization of the markets and international relations. Community fishing vessels all enjoy equal access to waters and resources except in the 12-mile zone, which falls within the sovereignty of the Member States.

Specific provisions are aimed at limiting fishing mortality and the environmental impacts of fishing activities, including measures such as the adoption of recovery plans for stock that are outside safe biological limits, the adoption of multi-annual management plans to maintain stocks within safe biological limits, limiting catches and fishing effort and adopting technical measures to promote more selective fishing or fishing with lower impacts on the ecosystem.

Under the CFP, Member States have also an obligation to adjust their fishing capacity in order to balance fishing capacity with fishing opportunities. Because of the poor status of resources in European waters, the total capacity of the Community fleet has been frozen since 31 December 2002. Therefore a new fishing vessel cannot join the fleet unless another of the same capacity (measured in tonnage (GT) and engine power (kW)) has left it. The only increases in tonnage possible without an associated exit from the fleet are alterations to vessels intended to improve on-board health and safety.

With a view to simplify the EU fisheries regulatory framework, and taking into account the specificities of Europe's seas and oceans, there has been a trend of combining fisheries management measures in regional regulations. The Mediterranean regulations were adopted in 2006 with the publication of the European Commission Council Regulation (EC) 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea. Council Regulation (EC) 1967/2006 establishes a series of technical management measures of relevance to small pelagic fisheries which are summarized in the Table 1.

Concerning management plans, Article 18 of Council Regulation (EC) 1967/2006 indicates that the Council may adopt community-level management plans in particular in areas totally or partially beyond the territorial waters of Member States. Article 19 makes it compulsory the adoption of management plans for fisheries conducted by trawl nets, boat seines, shore seines, surrounding nets and dredges within territorial waters of member States. In effect, under these provisions, all types of known fisheries for small pelagic fish resources conducted EU member States shall have a national management plan. Also, considering that small pelagic fisheries in the Adriatic operate also beyond territorial waters, a community-level management plan should also be considered by EU members States fishing in the Adriatic Sea.

Other specific Council Regulations of relevance to fisheries management include:

- Council Regulation (CE) 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and

- unregulated fishing (complemented by Commission Regulation (EC) No 1010/2009).
- Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.
 - Council Regulation (EC) No 1224/2009 of 20 November 2009 concerning the establishment of a Community system for control, inspection and enforcement (hereinafter referred to as Community control system) to ensure compliance with the rules of the common fisheries policy.
 - Commission Regulation (EU) No 468/2010 of 28 May 2010 establishing the EU list of vessels engaged in illegal, unreported and unregulated fishing.

Other two EU policies of particular relevance to the fisheries sector are: the Integrated Maritime Policy (IMP) and the Marine Strategy Framework Directive (MSFD).

The IMP, elaborated in the Communication COM (2007) 575 “An Integrated Maritime Policy for the European Union”, seeks to provide a more coherent approach to maritime issues, with increased coordination between different policy areas. By accounting for the inter-connectedness of industries and human activities centred on the sea (shipping and ports, wind energy, marine research, fishing, tourism, etc.), the IMP sets up an integrated approach to the management of maritime activities, in a similar fashion to the ICZM approach to coastal zones. The IMP covers five cross-cutting policies: Blue growth; Marine data and knowledge; Maritime spatial planning; Integrated maritime surveillance; and Sea basin strategies.

Under the policy on Sea basin strategies, one important development for the Adriatic Sea was the Communication COM(2012)713 adopted by the Commission on December 2012 entitled "A maritime strategy for the Adriatic and Ionian Seas". This Communication presents an assessment of the needs and potential of sea-related activities in the Adriatic and Ionian area (including maritime transport, coastal and maritime tourism, aquaculture and fisheries) and establishes a framework on future steps to take towards a coherent maritime strategy and corresponding action plan (expected to be developed in 2013). One of the pillars of the framework is “sustainable and responsible fishing activities”. It recognizes that a maritime strategy to the Adriatic and Ionian Sea should “enhance efforts towards long-term sustainable and responsible fisheries so that fishing activities can continue to provide an economic resource for coastal areas”. To this end the following priority areas are recognized:

- Achieving the sustainable management of fisheries, including the development of multiannual plans and measures such as Marine Protected Areas in their wider sense;
- Contributing to the profitability and sustainability of fisheries, by strengthening stakeholders' involvement in fisheries management and other actions;
- Improving the culture of compliance, saving resources, facilitating the transfer of information and enhancing cooperation for the control of fishing activities;
- Developing scientific cooperation on fisheries.

The Communication was formally launched at the International conference "Setting an Agenda for Smart, Sustainable and Inclusive Growth from the Adriatic and Ionian Seas", Croatia, 6 December 2012, which was attended by authorities and stakeholders from Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Montenegro, Serbia and Slovenia. The "Zagreb Conclusions", adopted at the end of event, confirmed wide support to the framework proposed in the Communication and to the development of a Maritime Action Plan to the region. With regards to the goal of enhancing efforts towards long-term sustainable fisheries, attention was given to:

- effective implementation of the principles of the reformed Common Fisheries Policy;
- cooperation on scientific issues for the fisheries management on the regional and seabasin level, such as the General Fisheries Commission for the Mediterranean and FAO regional projects (Adriamed and Eastmed).

The 2008 Marine Strategy Framework Directive (MSFD; DIRECTIVE 2008/56/EC) is the environment pillar of the IMP. Its overarching aim is to achieve good environmental status (GES) for EU marine waters by 2020. For that purpose, it foresees the development and implementation of marine strategies to:

- protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected;
- prevent and reduce inputs in the marine environment, with a view to phasing out pollution as defined in Article 3(8), so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea.

According to the MSFD "marine strategies shall apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations".

The Directive recognizes the Adriatic Sea as one geographical sub-region of the Mediterranean Sea where a marine strategy shall be developed in coordination among Member States, and where practical and appropriate, through existing regional institutional cooperation structures.

A common plan of action for all marine strategies is lay down in the MSFD, establishing a program of actions between 2012 and 2016 for the assessment of the environmental status of the region, the establishment of targets and indicators of good environmental status, the establishment of a monitoring programme, and for the development and implementation of a programme of measures designed to achieve or maintain good environmental status of the marine waters in region. The Directive recognizes among the qualitative descriptors to be used for determining the good environmental status that "populations of all commercially exploited fish and shellfish are within safe biological

limits, exhibiting a population age and size distribution that is indicative of a healthy stock”. The definition of targets for this descriptor will have direct relevance to the objectives and reference points adopted in fisheries management plans. Likewise the programme of measures to be designed to achieve or maintain a good environmental status will have to be coherent with any existing management plans.

The General Fisheries Commission for the Mediterranean (GFCM)

The GFCM is the regional fisheries management organization for the Mediterranean and Black Sea, whose goal is to promote the development, conservation, rational management and best utilization of living marine resources in its area of competence. The GFCM has adopted many recommendations of relevance to the management of small pelagic fisheries, including:

Recommendation GFCM/2008/1 on a regional scheme on port state measures to combat illegal, unreported and unregulated fishing in the GFCM area. The objective of this Recommendation is to contribute to the long-term conservation and sustainable use of living marine resources in the GFCM Area through strengthened, harmonized and transparent port State measures to prevent, deter and eliminate illegal, unreported and unregulated fishing.

Recommendation GFCM/33/2009/5 on the establishment of the GFCM Regional Fleet Register. The recommendation establishes a Regional Fleet Register (RFR) to host information on all vessels, boats, ships, or other crafts that are equipped and used for commercial fishing activity in the GFCM Area. The RFR is meant to serve as a tool for the management at regional level of the capacity of fishing fleets and their activity.

Recommendation GFCM/33/2009/6 concerning the establishment of a GFCM record of vessels over 15 metres authorized to operate in the GFCM area amending the recommendation GFCM/2005/2. The recommendation establishes a record of fishing vessels larger than 15 metres in length overall authorized to fish in the GFCM Area. Vessels larger than 15 metres in length overall not entered into the record are deemed not to be authorized to fish for, retain on board, transship or land species covered by the Commission. The record of vessels authorized to fish is meant to serve as a tool to help combat IUU fishing in the GFCM area.

Recommendation GFCM/33/2009/7 concerning minimum standards for the establishment of a Vessel Monitoring System (VMS) in the GFCM area. According to this recommendation, all Parties and Cooperating non-Contracting Parties shall implement not later than 31 December 2012, a satellite-based VMS for its commercial fishing vessels exceeding 15 meters of length that have been authorized to fish in the GFCM area. The specific requirement of the VMS are lay down in the recommendation.

Recommendation GFCM/33/2009/8 on the establishment of a list of vessels presumed to have carried out IUU fishing in the GFCM area amending the recommendation GFCM/2006/4. Parties and Cooperating non-Contracting Parties are requested to transmit every year to the Executive Secretary information on vessels presumed to be carrying out IUU fishing activities in the GFCM Area during the previous year. This information is to be used by the Secretary to build an IUU Vessel List. The recommendation lays down the conditions and requirements for inclusion and deletion of vessels form the list, as well as, the measures to be adopted against vessels included in the list.

Recommendation GFCM/34/2010/1 concerning the establishment of a GFCM logbook. Masters of fishing vessels more than 15 meters in overall length (LOA) authorized to fish in the GFCM area and registered on the GFCM Record of Vessels are required to keep a bound logbook of their operations, indicating particularly quantities of each species caught and kept on board, above 50kg in live weight, whether the catches are weighed or estimated, the date and geographical position of such catches and the type of gear(s) used in accordance with the minimum specifications and information set out in the recommendation.

Recommendation GFCM/34/2010/2 on the management of fishing capacity. One important aspects of this recommendation is that it recognizes the need for a Regional Plan of Action to manage fishing capacity at regional level. According to the recommendation the levels of the overall fishing capacity in the GFCM area shall be determined based on a Regional Plan of Action considering the national and regional fishing capacity management plans and scientific advice. In spite of that it is recommended a freeze in the fishing capacity of vessels more than 15 meters. The recommendation further defines fishing capacity and reiterates the need for keeping an updated list of vessels greater than 15 meters authorized to fish in the GFCM area, based on information submitted by Members and cooperating entities.

Since the adoption of Recommendation GFCM/34/2010/2 several technical meetings were held with the objective of drafting a Regional Plan of Action for the Management of Fishing Capacity (RPOA) in the GFCM area. A draft RPOA was presented during the 36th Session of Commission in 2012, when the text was amended with proposals made Member countries. The decision to adopt the RPOA (as published in Appendix L of the report of the 36th Session) was deferred to the 37th Session of the Commission, to be held in May 2013.

Guidelines on a general management framework and presentation of scientific information for multiannual management plans for sustainable fisheries in the GFCM area

The 36th Session of the Commission discussed and approved general guidelines for the development of multiannual management plans. Some key aspects of the guidelines are highlighted below.

The guidelines recognize the role of GFCM in developing and adopting multi-annual management plans for fisheries exploiting demersal and small pelagic stocks, in particular when shared among GFCM Members, and operating in one or more adjacent GSAs. This should not affect the possibility of countries developing their own national management plans, provided that the objective and measures in the national plans are not less strict or in contradiction with GFCM measures.

According to the guidelines the objective of the management plans should be “to counteract and prevent overfishing while providing high long-term yields and maintaining, to the extent possible, the stocks size of harvested species at levels which

can produce the maximum sustainable yield and with a low risk of stocks falling outside safe biological limits”. The plans should be also “coherent with the precautionary and/or ecosystem approach and minimize the impact of fishing on sensitive habitats”.

The guidelines provide also a suggestion of an specific objective of the management plan which may be to keep “the fishing mortality and/or the exploitation rate and/or levels of biomass on the most relevant key stock(s) at levels able to deliver long-term high yields while reducing the risk that stock sizes fall below minimum biological acceptable level in order to avoid undermining their production potentials”.

The guidelines also indicate that the objectives of the management plan should be attained on the basis of specific reference points (target, and whenever possible, threshold and/or limited reference points). Definitions are provided for these different biological reference points.

Regarding the implementation of management plans, the guidelines concentrate mainly on the role of the GFCM Scientific Advisory Committee (SAC), which according to it should be responsible for:

- providing a list of reference points frequently used in fisheries management and in line with the objectives of a multiannual plan;
- choosing the threshold reference point to be used;
- providing advice on the specific objectives of the management plan and on the range of management actions to be employed to achieve these objectives;
- providing to the GFCM a set of management scenarios for each of the multiannual management plan to be adopted, evaluating the socioeconomic impacts and the effects on stocks of the adopted management measures.
- providing advice on the status of exploited stocks and pressure exerted by fishing activities and monitor the achievement and maintenance of the objective(s) of a management plan so that, whenever the case, required adaptation of the multiannual management plan could be attained.

Where the advice from SAC indicates that the specific targets of the multi-annual plan are not being met the GFCM should decide a revision of management measures to ensure the sustainable exploitations of the stock(s).

UNEP Mediterranean Action Plan for the Barcelona Convention

The Mediterranean Action Plan (MAP) is a regional cooperative effort involving 21 countries bordering the Mediterranean Sea, as well as the European Union. It was established in 1975 under the umbrella of UNEP’s Regional Seas Programme. The Parties to MAP adopted in 1976 the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention). In addition to Barcelona Convention, seven Protocols, addressing specific aspects of Mediterranean environmental conservation, complete the MAP legal framework:

- Dumping Protocol (from ships and aircraft)

- Prevention and Emergency Protocol (pollution from ships and emergency situations)
- Land-based Sources and Activities Protocol
- Specially Protected Areas and Biological Diversity Protocol
- Offshore Protocol (pollution from exploration and exploitation)
- Hazardous Wastes Protocol
- Protocol on Integrated Coastal Zone Management (ICZM)

The Convention's main objectives are:

- to assess and control marine pollution
- to ensure sustainable management of natural marine and coastal resources;
- to integrate the environment in social and economic development;
- to protect the marine environment and coastal zones through prevention and reduction of pollution, and as far as possible, elimination of pollution, whether land or sea-based;
- to protect the natural and cultural heritage;
- to strengthen solidarity among Mediterranean coastal States;
- to contribute to improvement of the quality of life.

Parties to the Convention adopted in 2008 decision IG17/5 establishing a vision, goals, and roadmap for the implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment for the promotion of sustainable development. The roadmap defines as steps:

- i) Definition of an ecological Vision for the Mediterranean.
- ii) Setting of common Mediterranean strategic goals.
- iii) Identification of important ecosystem properties and assessment of ecological status and pressures.
- iv) Development of a set of ecological objectives corresponding to the Vision and strategic goals.
- v) Derivation of operational objectives with indicators and target levels.
- vi) Revision of existing monitoring programmes for ongoing assessment and regular updating of targets.
- vii) Development and review of relevant action plans and programmes;

With regards to the first step of the roadmap, Decision IG17/5 agreed on the following ecological vision for the Mediterranean:

“A healthy Mediterranean with marine and coastal ecosystems that are productive and biologically diverse for the benefit of present and future generations”.

Decision IG17/5 also agreed on the following strategic goals for marine and coastal areas (as established in the second step of the roadmap):

- a) To protect, allow recovery and, where practicable, restore the structure and function of marine and coastal ecosystems thus also protecting biodiversity, in order to achieve and maintain good ecological status and allow for their sustainable use.
- b) To reduce pollution in the marine and coastal environment so as to minimize impacts on and risks to human and/or ecosystem health and/or uses of the sea and the coasts.
- c) To prevent, reduce and manage the vulnerability of the sea and the coasts to risks induced by human activities and natural events;

The third step of the roadmap was carried out by the Secretariat in the Initial Integrated Assessment of the Mediterranean Sea and Coastal Areas (UNEP(DEPI)/MED WG.363/Inf.21). The assessment identified the following pressures and impacts common to all sub-regions of the Mediterranean (including the Adriatic Sea):

- coastal development and sprawl;
- overfishing and incidental or by-catch;
- destructive fishing;
- contamination of sediments and biota caused by pollution;
- nutrient over-enrichment;
- disturbance and pollution caused by maritime industries;
- invasive species spread;
- degradation of transitional or estuarine areas.

At the 17th Meeting of the Parties to the Convention (February, 2012), Decision IG20/4 was adopted defining ecological and operational objectives, indicators and a timetable for implementing the ecosystem approach roadmap. One of the adopted ecological objectives, concerning the harvest of commercially exploited fish and shellfish, is:

“Populations of selected commercially exploited fish and shellfish are within biological safe limits, exhibiting a populations age and size distribution that is indicative of a healthy stock”

Specific operational objectives and indicators associated to this and other ecological objectives were also adopted in Decision IG20/4. Other elements of the roadmap, including the determination of Mediterranean Good Environmental Status (GES), are expected to be concluded in 2012-2013, while the full implementation of the roadmap is expected to be completed by 2017.

United Nations Convention on the Law of the Sea (UNCLOS)

Article 63 on “Stocks occurring within the exclusive economic zones or two or more coastal States or both within the exclusive economic zone and in an area beyond and adjacent to it” emphasizes the need for coordinated action among coastal States sharing fishing stocks:

“1. Where the same stock or stocks of associated species occur within the exclusive economic zones of two or more coastal States, these States shall seek, either directly or through appropriate subregional or regional organizations, to agree upon the measures necessary to coordinate and ensure the conservation and development of such stocks without prejudice to the other provisions of this Part.

2. Where the same stock or stocks of associated species occur both within the exclusive economic zone and in an area beyond and adjacent to the zone, the coastal State and the States fishing for such stocks in the adjacent area shall seek, either directly or through appropriate subregional or regional organizations, to agree upon the measures necessary for the conservation of these stocks in the adjacent area”.

1.6. Management priorities and issues

1.6.1. National issues

Albania

One of the objectives of the Albanian fisheries management plan is to increase the exploitation of small pelagic resources, through the development and modernization of the national fleet, to fulfill the domestic demand for consumption and the installed capacity of processing industries. This objective assumes that there is an unrealized potential for exploiting small pelagic resources by the country, which can only be achieved through the rehabilitation of the fleet. Moreover, the country views this objective as a way to balance the fishing fleet (currently focused mainly on demersal resources) and diversify fishing opportunities.

Other issues that need consideration, particularly at the national level are:

- Limited collection of fisheries data (including catches). A fishery monitoring programme is under development (awaiting promulgation of specific by-law).
- Inadequate means for fisheries monitoring, control and surveillance, leading to IUU fishing of moderate to high intensity.
- Lack of infrastructure for vessel repairing and building (ship yards and slip ways).
- Lack of governmental incentives and financial assistance to the sector (e.g. fuel subsidies)

Custom barriers for processed small pelagic catches destined for export to the EU.

Croatia

The low profitability of the sector caused by market constrains. The overall market situation in Croatia is considered far worse than in the EU member countries around the basin, which results in low profitability of the sector and results in dissatisfaction among stakeholders. Average prices are considered too low (the ex vessel price of sardine in Croatia is 0.46 Euro/kg). The gear and operational changes expected to occur with the alignment of national legislation with the EU norms is also expected to affect the fishing possibilities and increase economic losses. Some stakeholders propose that a reduction in fishing and an increase in the size of the fish being marketed would be needed to increase prices and profitability.

The natural fluctuation in stock size and catches. Because such fluctuations cannot be easily foreseen or estimated the market has to be able to accommodate the unexpected changes in supply. This implies significant structural changes in other parts of the market chain, not only in the capture sector. It also implies that fisheries development should be based on management adaptation to natural fluctuations of stocks.

In addition to the above issues, several conflicts were noted in the country report that can be regarded as factors affecting the overall sustainability of the fishery:

- The increasing interaction between tunas and the small pelagic fisheries affecting negatively the latter. According to the information provided, in recent years there have been numerous incidents where large pelagic species (primarily tuna) have destroyed the gears and the nets or have completely prohibited the catches being made.
- Conflicts between fisheries and tourism. During the summer months and touristic season the fleet is using landing places in small touristic towns, which is sometimes regarded as non-desirable. The solution to these conflicts would involve significant investments in infrastructure or different logistics during the summer (which are economically not viable) and/or better management of the use the coastal areas.
- Conflicts involving the compliance with established rules and with the rules to be introduced to align the national legislation with the EU norms (as per forthcoming accession of Croatia to the EU). Although the nature of the latter were not specified, it is expected that Croatian purse seiners would be negatively affected by the adoption of the EC 1967/2006 rules concerning the size and depth of operation of purse seines. With regards to the compliance with established rules, it was noted the use of explosives in fishing and the inadequate penalties.
- Conflicts between smaller and larger purse seine fleets resulting from differences in operational characteristics and economics of the fleets.
- Conflicts between primary producers (fishers) and processors regarding prices and buy-offs of the products. In connection to this, it was noted for instance by a stakeholder that the lack of association of fishermen cooperatives and producer organizations often lead to a situation of “fishing and buying fish at all costs”.
- Conflicts among stakeholders because of the connection of some vessels to tuna farms.

Italy

Conflicts at the commercial level, resulting from the sale of products caught from purse seiners or pelagic trawls (e.g. excessive landings in some days causing a generalized drop in prices)

Moderate level of IUU fishing.

The economic crises of the sector, caused by different factors:

- increase of the fuel cost
- the economic and financial crises
- difficult access to credit
- international competition in the seafood sector
- loss of jobs

Risk of future overfishing of stocks without a shared plan among countries.

Montenegro

The main issue of relevance to Montenegro is that the country has some unrealized potential for exploiting small pelagic resources in its territorial waters, while the local fleet has only limited capacity to harvest these stocks. The development and modernization of the purse seine fleet is viewed as a necessity to increase the socioeconomic benefits from these resources.

Other issues of relevance to the sustainable development of small pelagic fisheries are listed below. In principle, they are mainly of the concern to the country and should be addressed in a national management plan (currently under development):

- Formal process of stakeholder consultation not yet implemented.
- Lack of socio-economic information about the sector (a study in under way).
- Lack of infrastructure for landing.
- Lack of trained fishers to operate the purse seine vessels. Existing purse seiners have to bring trained crew from abroad, which increases the production costs.
- Provision of supplies (equipment) deficient in the country.
- Lack of an organized market (difficulty of selling in low season; difficulty of keeping up with demand in high season; industry reliance on imported fish). In this regard it is also highlighted the need to expand and modernize the processing companies.

Slovenia

The main issue that influenced the development of the Slovenian Fisheries Management Plan is the exploitation status of sardine and anchovy in GSA 17. According to the most recent stock assessment for sardine and anchovy, confirmed in the session of the SCSA, Rome, Italy, 18-20 February 2013, sardine are considered fully exploited in GSA 17 and anchovy are considered sustainably exploited (see Small pelagic resources section). Because of that, and in view of the susceptibility of the stocks to environmental fluctuations, it has been recommended by the GFCM-SCSA that fishing mortality should not be allowed to increase. In response to this situation, Slovenia in accordance with fisheries management plan implemented the measures to limit the fishing effort of fishing vessels concerned mainly with these species (purse seiners and midwater pair trawlers). In one year (between years 2011 and 2012) Slovenia reduced the landing of anchovy and sardine for more than 85 %. This issue (need to limit fishing effort) is of relevance to the sub-region as it affects all countries sharing the resource.

Another issue of relevance to Slovenia purse seine fisheries, and to the purse seine fisheries from other countries operating in the northern Adriatic, relates to incongruence between Council Regulation (EC) 1967/2006 concerning the allowed size of purse seines and the reality of the purse seine fisheries that operate in the northern Adriatic Sea. Specifically, the rules limiting the drop of the purse seine net (drop maximum of 120 m; and fishery only allowed in depths less than 70% of the drop) in practice precludes the activity of purse seiners in waters less than about 80 metres, which includes the entire Northern Adriatic Sea. Slovenia submitted, as part of the national management plan, a request for the derogation of this rule for purse seiners targeting mullets. The issue is however also important for all purse seine fisheries that operate in the northern Adriatic (GSA 17). In this regard, it was suggested by Slovenian stakeholders that management plans distinguish “small” and “large” purse seine fisheries, making specific provisions adequate for each type of fishery. Sub regional management plan should clearly distinguish between two issues regarding purse seines. One is related to the northern part of Adriatic (Gulf of Trieste) where the sea is very shallow and the problem is that the drop of the net as defined in the Council Regulation (EC) 1967/2006 actually precludes any fishing activities with that fishing technique. In area of Gulf of Trieste use of this type of purse seines is part of fishing tradition and also the environmental impact of such fisheries is smaller than the use of other gears (for example pelagic pair trawlers) targeting the same stock.

Other issue regarding purse seines is related to use of purse seines where the drop of the nets is too small for the depth of the sea where fishing activities are performed. These two issues should be tackled separately.

Another issue discussed in the Slovenian management plan is the current need to renew the fishing fleet, which is considered outmoded and poorly equipped. Bringing vessels technologically up to date would lead to improvement in vessel safety, in the quality of products and in energy efficiency. The renewal of the fleet will require funds and investments, which are currently lacking. The plan therefore concludes: “Only under

conditions whereby the fleet were renewed and brought technologically up to date would they be able to think about other socio-economic objectives, such as an increased number of employees, higher added value, increased profits, etc.”.

Another issue is related to the establishment of the national border on sea between Republic of Slovenia and Republic of Croatia. Until the final decision of the International Arbitration Court, Slovenian fishers cannot operate in the entire extent of marine areas where they historically operated under the common state.

Consultations with national stakeholders pointed at two additional issues of relevance to the small pelagic fisheries. The first is the increasing incidence of young fish (sardine and anchovy) in the catches, which is affecting the commercialization of the catches (fishes of small sizes are not interesting for the market). The issue demonstrates the type of interactions expected when a stock is shared among different countries and reaffirms the need for account for all sources of mortality in the management of these stocks. The second issue relates to conflicts in the use of fishing areas in Slovenian territorial waters by active and passive fishing gears. According to information provided by the national focal point, this issue is currently regulated through the national Rules on detailed marking of fishing gear and to ensure sustainable use of fish (OJ RS, no. 87/2008). To avoid the conflicts between active and passive fishing gears, these types of gears are temporally and spatially separated by the norms in place.

1.6.2. Emerging issues at the sub-regional level

Based on the analysis of national issues and priorities, the following priority issues were identified by countries as the focus for a sub-regional management plan for small pelagic fisheries in the Adriatic Sea.

- Sustainability of the resources, addressing the following aspects:
 - precautionary system to ensure good status of stocks, including ecosystem considerations.
 - evaluate the sustainability of current fishing practices
 - regional limit of fishing capacity
 - rules for partitioning of the exploitation of the resources

- External risks that should be accounted for:
 - marketing conditions affecting the profitability of the fisheries.
 - the impacts and implications of natural fluctuations in stock size and productivity.

2. Objectives

2.1. General objectives

The general objectives of the sub-regional plan for small pelagic fisheries in the Adriatic Sea are:

- 1) To manage the small pelagic fisheries in the Adriatic Sea to provide significant social and economic benefits to range States, in accordance with established national goals, while maintaining stocks within safe biological limits.
- 2) To manage the fishing capacity of range States to ensure equal opportunities for the sustainable development of fishing activities, while avoiding a situation of overcapacity that may threaten the conservation and rational use of fisheries resources.

2.2. Operational objectives

In relation to General Objective (1):

Operational objective (a):

- To maintain the biomass of sardine and anchovy above agreed precautionary biological reference points ($B > B_{pa}$)

In the absence of a reference point for biomass, fishing mortality should be kept at values which minimize the risk that stock sizes fall below minimum biological acceptable level.

In relation to General Objective (2):

Operational objective (b):

- To develop a plan of action for the management of the fishing capacity of the small pelagic fisheries in the Adriatic Sea.

The Plan of action should be developed in accordance to FAO International Plan of Action on the Management of Fishing Capacity (IPOA-Capacity) and to any adopted Regional Plan of Action for the Management of Fishing Capacity (RPOA-Capacity) for the Mediterranean.

3. Indicators and reference points

In situations where stock biomass is used as indicator of status of the stock, the following reference points will be used:

B_{lim} : a biomass level which is considered undesirable and which management actions should avoid with high probability.

B_{pa} : a threshold level of biomass established to reduce the probability that the limit reference point will be exceeded.

In situations where fishing mortality is used as interim indicator of status of the stock, a precautionary fishing mortality rate (F_s) should be defined and used as reference point.

The actual estimation methods and values of B_{lim} , B_{pa} and F_s to be used are to be defined. The definition of the above reference points should give due consideration to the role of small pelagics in the food web of the Adriatic Sea.

4. Technical views on fisheries management requirements

4.1. Scientific basis for decision rules

In relation to Operational objective (a), the following actions could be implemented:

- The harmonization of management measures at the sub-regional level, considering the currently adopted measures at national and supra-national level summarized in Annex 2.
- The improvement of the knowledge base, including through data collection and scientific research, to take actions to maximize the benefits from small pelagic fisheries resources.
- Scientific research aimed at improving the biological knowledge on the impacts of existing fishing practices (e.g. impact of fishing activities in the ecosystem, including sea bed) and the need to revise existing management measures.
- The adoption of decision rules with pre-agreed measures to be adopted under different conditions of the stock in relation to agreed biological reference points.

The decision rules for the small pelagic fisheries in the Adriatic Sea should follow the general framework defined in the table below. The specific technical measures to be adopted under each stock status scenarios are to be defined. In the definition of the technical measures, the following aspects are to be taken into account: i) that the status of the stocks be based on a single stock assessment combining data from GSA 17 and 18; ii) that B_{pa} is used as a precautionary biological reference point; iii) that interim reference points based on fishing mortality be used for GSA 18, until the status of the stock is assessed; and iv) that reference points and measures considers the multispecies, multigear nature of the fishery.

	Stock status scenarios		
	$B > B_{pa}$ (or $F < F_s$)	$B_{lim} < B < B_{pa}$ (or $F > F_s$)	$B < B_{lim}$
Management measures to be adopted	Harmonization of current measures	+ additional measures	+ additional measures

In relation to Operational Objective (b), the following actions could be implemented:

- 1) Definition of a common measure for fishing capacity of the small pelagic fisheries in the Adriatic Sea.
- 2) Assessment of the current level of fishing capacity in the region (global, by GSA and by country).
- 3) Definition, based on the best available scientific knowledge, of a sustainable level of fishing capacity taking into account natural fluctuations in productivity and stock biomass.
- 4) Design of a plan of action for the management of fishing capacity, in coherence with the IPOA and RPOA-Capacity and with measures adopted at national level.
- 5) Until the plan referred in 4 is implemented, fishing capacity should be managed in a way that does not endanger the sustainability of the fishery.

4.2. Scientific monitoring

The Scientific Advisory Committee (SAC) of the GFCM should be responsible for advice on status of stocks based on assessment initiated in the frame of FAO-AdriaMed project.

Adequate annual scientific monitoring of fisheries and exploited stocks should be ensured so that SAC is in a position to provide scientific advice.

4.3. Views in relation to fisheries monitoring

To ensure compliance with the measures to be adopted in the management plan, the following actions are to be implemented:

- Concerned Parties should make efforts to implement GFCM recommendations related to MCS listed in section 1.5.3 and Annex 2 of this document.
- Actions towards harmonization of MCS measures adopted at the Adriatic scale.

- Strengthen national capacities for fisheries monitoring, control and surveillance.
- Concerned Parties are responsible for implementing the adopted management measures in their jurisdictional waters and by vessels flying their flag beyond national jurisdiction.
- Development of a specific mechanism for MCS in areas beyond national jurisdictions covered by this management plan.

5. Review of the management plan

The contents of the management plans should be periodically reviewed in order to accommodate changes in the fisheries system. The review should be carried out as follows:

To be done by SAC:

- Status of stocks assessed yearly.
- Reference points reviewed every 3 years.

To be done by Concerned Parties:

- Management action taken yearly based on stock status and according to the management plan decision rules.

To be done by Concerned Parties and GFCM:

- Objectives of the plan and management rules revised every 5 years.

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Annex 1. Characteristics of the small pelagic fisheries in Adriatic countries. Fleet segments and fishing gears are according to GFCM Task 1 terminology. Target and associated (bycatch) species are listed in order of volume in the catches.

Fleet segment	Fishing gear	Area of operation (GSAs, depth)	Number vessels	Fishing period	Main target species	Associated species
Albania						
Purse seiners (>= 12 m)	–	GSA 18	7	–	Pelagic fish	–
Seiners (< 12 m)	–	GSA 18	299 (gillnetters and seiners)	–	Pelagic fish	–
Seiners (>= 12 m)	–	GSA 18	7	–	Pelagic fish	–
Multipurpose vessel (>=12 m)	–	GSA 18	7	–	Pelagic and demersal fish	–
Croatia						
Purse seiners (6 – 12 m)	Purse seines	GSA 17	39	15/01 – 15/12	<i>S. pilchardus</i> <i>E. encrasicolus</i>	–
Purse seiners (>12 m)	Purse seines	GSA 17	209	15/01 – 15/12	<i>S. pilchardus</i> <i>E. encrasicolus</i>	–
Italy						
Purse seiners (> 12 m)	Purse seines	GSA 17	42	–	<i>E. encrasicolus</i> <i>S. pilchardus</i>	<i>Sarda sarda</i> , <i>Trachurus trachurus</i> , Mugilidae.
Purse seiners (> 12 m)	Purse seines	GSA 18	7	–	<i>E. encrasicolus</i> <i>S. pilchardus</i>	<i>Trachurus trachurus</i> , <i>Scomber japonicus</i>
Pelagic trawlers (>6m)	Mid water pair trawls	GSA 17	98	–	<i>E. encrasicolus</i> <i>S. pilchardus</i>	<i>Boops boops</i> , <i>Trachurus trachurus</i> , <i>Scomber scombrus</i> , Mugilidae
Pelagic trawlers (>6m)	Mid water pair trawls	GSA 18	33	–	<i>E. encrasicolus</i> <i>S. pilchardus</i>	<i>Trachurus trachurus</i> , <i>Scomber japonicus</i> , Mugilidae
Montenegro						

Polyvalent small-scale vessels without engine (< 12m)	Beach seine	GSA 18, < 30 m	4	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Atherina hepsetus</i> , <i>Boops boops</i> , <i>Trachurus sp.</i>
Polyvalent small-scale vessels with engine (<6 m)	Beach seine	GSA 18, < 30 m	10	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Atherina hepsetus</i> , <i>Boops boops</i> , <i>Trachurus sp.</i>
Polyvalent small-scale vessels with engine (6 - 12 m)	Beach seine	GSA 18, < 30 m	4	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Atherina hepsetus</i> , <i>Boops boops</i> , <i>Trachurus sp.</i>
Purse seiners (6 – 12 m)	One boat operated purse seines	GSA 18, < 70 m	11	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Atherina hepsetus</i> , <i>Boops boops</i> , <i>Trachurus sp.</i> , <i>Scomber sp</i> , <i>Sarda sarda</i>
Purse seiners (>12 m)	One boat operated purse seines	GSA 18, < 120 m	3	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Boops boops</i> , <i>Trachurus sp.</i> , <i>Scomber sp</i> , <i>Sarda sarda</i>
Pelagic trawlers (> 6m)	Midwater trawls	GSA 18, < 200 m	1	Jan - Dec	<i>S. pilchardus</i> , <i>E. encrasicolus</i>	<i>Boops boops</i> , <i>Trachurus sp.</i> , <i>Scomber sp</i> , <i>Sarda sarda</i> , <i>Argentina sphyrena</i> , <i>Spicara sp</i>
Slovenia Purse seiners (> 12 m)	Purse seines	GSA 17, < 25 m	4	Jan-Dec (mainly May to Aug.)	<i>E. encrasicolus</i>	<i>Mugilidae</i> , <i>Sardina pilchardus</i> , <i>Liza aurata</i> , <i>Lithognathus mormyrus</i> and <i>Trachurus trachurus</i>

Annex 2. Summary of management measures and recommendations relevant for the small pelagic fisheries in the Adriatic Sea adopted by countries, the EU and the GFCM.

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
Spatial restrictions	<p>Fisheries in the Bay of Boka Kotoroska only allowed in designed sites (fishing posts). Beach seines can be pooled out only on designated places</p> <p>Specific rules to avoid conflicts among users of fishing posts are also in place.</p> <p>Prohibited fishing with bottom trawls, pelagic trawls and purse seines in Bokakotorska Bay.</p> <p>Purse seines (70 m in height and 400 m in length) only allowed in the entrance of the Bokakotorska Bay.</p>	<p>Prohibited fishing above seagrass meadows. Exception for purse seine, boat seine nets that during fishing operation do not touch the meadows.</p>	<p>Prohibited commercial and leisure fisheries in Portorož and Strunjan Fishing Reserves. Exceptions: fishing aggregations of the winter mullet shoals (special licenses required) and leisure fishing from the shoreline.</p>		<p>Prohibited use of purse seines 300 meters of the coast with reached depths over 30m.</p> <p>Special protected areas with a specific fishing regulations:</p> <p>1. Special habitats of fish and other marine organisms, and regulation of fishing in Velebit Channel, Novigrad and Karin Sea , Prokljan Lake, Marina Bay and Neretva Channel.</p> <p>2. National Parks: Mljet, Brijuni,</p>	<p>Prohibited use of purse seines at depths less than 70 % of the overall drop of the net.</p> <p>Prohibited use of purse seines 300 meters of the coast or within the 50 metres isobaths.</p> <p>Prohibited towed gears within 3 nautical miles of the coast or within the 50 m isobaths.</p> <p>Prohibited fishing above seagrass beds, coralligenous habitats and mäerl beds*.</p>	

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
					Kornati 3. Special Marine Reserve: Malostonski Zaljev i Malo more 4. Nature Park: Lastovo, Telašćica		
Temporal restrictions	Prohibited fishing and marketing pelagic fish four days prior to the full moon and four days after the full moon. For the Beach seine fishery in the Bay of Boka Kotorska: fishing only at night and up to seven hours by daylight.		Voluntary temporary cessation of fishing (not yet implemented).	Closure for pelagic trawlers fishing sardine on August (in 2011 extended from August to September). Specific regulations apply to pair-trawlers and purse seiners (Ministerial decree March 18th 2002), that cannot fish during the weekends.	Fishing closure for purse seiners from 15th December to 15th January.		
Gear restrictions	For the Beach seine fishery in the Bay of Boka Kotorska: min. mesh size (12 mm); max. length ropes				Min. mesh size for purse seine net of 14 mm. Permitted use of	Min. mesh size for trawl nets (20 mm) and for surrounding nets (14 mm)	

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
	(500 m); towing by moving fishing vessel not allowed. Minimal mesh size pelagic trawls and purse seines: 20 mm.				artificial light in the purse seine fishery.	Surrounding nets: max. length 800 m and max. drop 120 m	
Minimum size	<i>E. encrasicolus</i> : 6 cm in Bay of Boka Kotorska, 11 cm elsewhere. <i>S. pilchardus</i> : 6 cm in Bay of Boka Kotorska, 12 cm elsewhere. <i>S. japonicus</i> : 25 cm <i>S. scombrus</i> : 20 cm <i>T. trachurus</i> : 20 cm <i>T. mediterraneus</i> : 20 cm <i>A. hepsetus</i> : 8 cm <i>B. boops</i> : 13 cm <i>S. maena</i> : 14 cm <i>S. sarda</i> : 45 cm Undersized fish can be up to 20% of total weight of the catch. If catch of undersized fish in one towing > 50%				<i>E. encrasicolus</i> : 9 cm. <i>S. pilchardus</i> : 10 cm	<i>E. encrasicolus</i> : 9 cm. <i>S. pilchardus</i> : 11 cm; not applicable to fries of sardine landed for human consumption if authorized by national management plan provided that the stock is within safe biological limits. <i>Scomber</i> spp.: 18 cm <i>Trachurus</i> spp.: 15 cm	

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
	of total weight, fishing stops in the area.						
Participatory restrictions	Fishing permit required	Fishing license required. Fisheries beyond territorial waters only with special authorization	Fishing licenses required. Licenses lost if inactive in three years. Temporary non-issuing of new licenses.		Fishing licenses required.	Fishing licenses required. Issuing of special fishing permits required within national management plans.	
Limits to fishing capacity			Fleet capacity frozen since 31/12/ 2002. Voluntary permanent cessation of fishing activity (scrapping).			Fleet capacity frozen since 31/12/ 2002.	Recommended freeze in the fishing capacity of vessels more than 15 meters.
MCS measures	Vessels authorized to fish registered in Registry of Vessels of the administrative authority. VMS required for vessels with more than 10 m.	Required registration of vessels in Registry of Fishing Vessels. Vessels in IUU black list excluded from	Only Slovenian vessel authorized to land in national ports. VMS required for vessels of more than 15 m of length; all		All vessels above 15 m covered by VMS (plan to cover all vessel sizes). All vessels over 15 m equipped with electronic	Catches of pelagic trawlers and purse seiners only allowed in designated ports. Obligatory registry of fishing vessels more than 15 m authorized to fish in GFCM area.	Vessel information submitted to GFCM Regional Fleet Register. Record of fishing vessels larger than 15 metres authorized to fish in the GFCM

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
	First landing only in places meeting the prescribed technical conditions for inspection.	the Registry of Fishing Vessels.	trawlers also to be equipped with VMS.		logbooks.		Area.
	Required notification and record of transshipment within national vessels.	First landing in Albanian ports. Transshipment only with prior authorization.	ERS for vessels of more than 15 meters of length.		Catch certification for exports to EU.	Logbook required for vessels above 10 m.	Satellite-based VMS required for vessels >15 meters authorized to fish in the GFCM area.
	Logbook required for vessels with more than 10 m.	VMS required for vessels > 12 m.	Fishing logbooks have to be submitted for all quantities and species of fish caught, for all vessels for every fishing trip.			Any amount greater than 50 kg of live-weight equivalent retained on board must be recorded in the logbook.	Required submission of data on vessels engaged in IUU fishing (IUU Vessel List).
	Port State measures to prevent, deter and eliminate IUU fishing.	Logbook required for vessels with more than 10 m (catch above 10 kg must be recorded).				Daily electronic completion and transmission of fishing logbook data for vessels with more than 12 m.	Required logbook for vessels exceeding 15 meters authorized to fish in GFCM area. Logbook shall register quantities of each species caught and kept on board, above 50kg in live weight.
		Landing and transshipment only in designated ports.				Transshipment at sea prohibited; only allowed with specific authorization.	Port State measures to prevent, deter and eliminate IUU fishing.
		Catch certification of products in				Recommended not issuing licenses to vessels that carried out IUU fishing.	
						Compulsory use of remote VMS for vessels with more than 12 m.	

Management measures	Montenegro	Albania	Slovenia	Italy	Croatia	Council Regulations (valid for Italy and Slovenia)	GFCM
		trade (to combat IUU)				Monitoring and control of fishing capacity. Traceability of products at all stages of production, processing and distribution.	