SCIENTIFIC COOPERATION TO SUPPORT RESPONSIBLE FISHERIES IN THE ADRIATIC SEA

MiPAF

Food and Agriculture Organization of the United Nations

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AdriaMed

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Socio-economic aspects of the Adriatic Sea fisheries

Report of the AdriaMed Meeting on Socio-Economic Aspects of the Adriatic Sea Fishery Sector

Campobasso, Italy 28th – 29th May 2001

AdriaMed Technical Documents No.5
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Preface

The Regional Project “Scientific Cooperation to Support Responsible Fisheries in the Adriatic Sea” (AdriaMed) is executed by the Food and Agriculture Organization of the United Nations (FAO) and funded by the Italian Ministry of Agriculture and Forestry Policies (MiPAF).

AdriaMed was conceived to contribute to the promotion of cooperative fishery management between the participating countries (Republics of Albania, Croatia, Italy and Slovenia), in line with the Code of Conduct for Responsible Fisheries adopted by the UN-FAO.

Particular attention is given to encouraging and sustaining a smooth process of international collaboration between the Adriatic Sea coastal countries in fishery management, planning and implementation. Consideration is also given to strengthening technical coordination between the national fishery research institutes and administrations, the fishery organizations and the other relevant stakeholders of the Adriatic countries.

FAO-AdriaMed Project HQ
Corso Umberto I, 30
86039 Termoli (CB), Italy

Tel/Fax: ++39 0875 708252
e-mail: faoadriamed@faoadriamed.org
URL: http://www.faoadriamed.org

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Comments on this document would be welcomed and should be sent to the Project headquarters:

FAO AdriaMed
Corso Umberto I, 30
86039 Termoli (CB)
Italy
faoadriamed@faoadriamed.org

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Preparation of this document

This document is the final version of the report of the AdriaMed Meeting on Socio-economic Aspects of the Adriatic Fishery Sector, organised by the FAO-AdriaMed Project (*Scientific Cooperation to Support Responsible Fisheries in the Adriatic Sea)* in Campobasso, 28th –29th May 2001.

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ABSTRACT

The first AdriaMed Meeting on Socio-Economic Aspects of the Adriatic Sea Fishery Sector was held in Campobasso, Italy on the 28th – 29th May 2001. The meeting was attended by experts from Albania, Croatia, Italy, Slovenia. The main objective of the meeting was to contribute at establishing a network of national experts, gain a preliminary insight into the main priorities to be addressed, identify major gaps in knowledge and expertise in the field, exchange relevant information and identify the next steps to be taken. The current state of affairs regarding fishery socio-economics research in each country was reported and the suitable common socio-economic variables and indicators to be used around the Adriatic basin were discussed. The questionnaire on fishery socio economic data elaborated by the General Fisheries Commission for the Mediterranean - Scientific Advisory Committee, Sub Committee on Economic and Social Sciences (GFCM-SAC, SCESS) in May 2001 was indicated as a suitable starting point for the discussion of socio-economic variable and indicators to be applied to the Mediterranean. It was resolved that, on the basis of a modified version of the above mentioned SCESS questionnaire, the accessibility of information would be investigated in all the countries. This will constitute the first joint and concerted action of the regional network of fishery socio-economists just established. A preliminary list of each country's priorities, concerning socio-economics aspects, was identified, it includes: legislation and fiscal system, associations, problems concerning fish markets. As AdriaMed is establishing a network of fishing ports for biological sampling purpose it was suggested and agreed that these same ports could be used to collect socio-economic information, thus guaranteeing standardisation of methods.

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Report of the AdriaMed Meeting on Socio-Economic Aspects of the Adriatic Sea Fishery Sector

Campobasso, Italy, 28th – 29th May 2001

Opening of the Meeting and election of the Chairman (Agenda item n. 1)

1. The first AdriaMed Meeting on Socio-Economic Aspects of the Adriatic Sea Fishery Sector was held on 28th–29th May 2001 at the Faculty of Economics, University of Molise in Campobasso.

2. The meeting was attended by experts from Albania, Croatia, Italy, Slovenia, the host institute and from the FAO AdriaMed Project. AdriaMed staff constituted the Secretariat. The list of participants is given in Annex A of this report.

3. The meeting was opened by the Rector of the host institute Prof Cannata, who welcomed the participants to the Molise region of Italy and in particular to the University of Molise in Campobasso, expressing his honour and privilege at hosting this meeting. A brief introduction to the Faculty of Economics was given and the participants were informed of existing links between the University of Molise and other Institutes in the region, it was recalled that the University has been among the institutions who signed the protocol of understanding concerning the AdriaMed Project initiative. The importance of research and collaboration on issues regarding the socio-economic situation in the Adriatic area with particular attention to the Balkan countries was stressed.

4. The AdriaMed Project Coordinator thanked the Rector for his greeting and for the invitation to host the meeting. Thanks were also expressed to the participants for their presence. The importance of this first step in the implementation of the AdriaMed Project activity on socio-economic aspects of Adriatic fisheries was underlined. The agenda was introduced (Annex B) and the Rector of the University of Molise was nominated as Chair, with Professor Vladimir Spaho of the Tirana Agricultural University nominated as Co-chair.

Objectives of the Meeting (Agenda item n. 2)

5. The AdriaMed Coordinator introduced the objectives of the meeting. The participatory approach of AdriaMed was underlined, and the participants were encouraged to divulge any information available to them on the issues raised during the meeting in order to favour a positive outcome. The main aims of the AdriaMed Project were outlined, and the importance of the socio-economic aspects related to fisheries in the Adriatic Sea region was emphasised. It was further stressed that AdriaMed has the mandate to cover not only biological but also social and economic issues in coherence with the FAO Code of Conduct for Responsible Fisheries, with the recommendations of the General Fisheries Commission for the Mediterranean (GFCM and those of its Scientific Advisory Committee, SAC. In particular the participants were briefed on the outcome of the recent

meeting of the SAC Sub-Committee on Economic and Social Sciences (SCESS) held in Rome, 15th-18th May 2001, whose Report was distributed for information and discussion.

6. The participants were informed that the main objective of the meeting was not to hold a detailed discussion of socio-economic aspects of Adriatic fisheries at this stage, but to contribute at establishing a network of national experts, gain a preliminary insight into the main priorities to be addressed, identify major gaps in knowledge and expertise in the field, exchange relevant information and identify the next steps to be taken. In order to facilitate the establishment of such a network on Adriatic fishery socio-economics, efforts will be made by the Project to accrue the necessary baseline knowledge and, when necessary, to support the development of national expertise.

7. The Chair reiterated the importance of the implementation of a network of experts in socio-economic issues around the region and underlined the need to develop expertise. The Meeting was informed that the University of Molise runs courses on this issue and hopes to be able to extend them to other areas of the Adriatic region. The research carried out by the University was briefly described, along with its collaboration with the Italian Ministry of Agricultural and Forestry Policies. The Meeting agreed on the importance of exchanging information on methodologies and approaches to the socio-economic study of fisheries, as well as the key interest in gaining an insight into the current situation in all the participating countries.

Current knowledge of the socio-economics of Adriatic Sea fisheries (Agenda item n. 3)

8. The participants of the meeting proceeded to describe the current state of affairs regarding fishery socio-economics research in their country. The Chair introduced the situation in Italy, stating that the sector is governed both centrally and regionally with offices at both levels. The distinction is being made between marine capture fisheries and aquaculture. The former being a predominantly national concern whereas the latter is considered for the most part regionally. It was highlighted that there are no courses in Italian universities that deal specifically with fisheries economics. The studies which are carried out fall into one of the two following fields: those conducted by the Institute for Economic Research on Fisheries and Aquaculture (IREPA), and some social studies which include economic aspects of the fishing industry such as that focusing on the fishery of Termoli (Italy) given in Forleo (this report). It was specified that these are mostly macro-economic analyses with little in the way of case studies. Some further examples of activity in the field of socio-economic research are multidisciplinary studies focusing on local fishery areas and studies on the transformation industry in the Marche region. The Institute for Studies, Research and Information on the Agricultural Market (ISMEA) is in charge of fish market data collection. An aspect considered critical is the level of reliability of capture statistics.

9. The expert from IREPA also provided some basic information on the data collection and monitoring network established by IREPA (IREPA, this report). Data collection for Italy is currently carried out using a sampling scheme (monitoring more than 400 vessels

weekly) as opposed to a census system. This has proved an effective method, resolving problems of extra-market production and creating a direct link between the activity of fishing vessels and sales/production. Attention was drawn to this methodology as potentially applicable to other countries in the region.

10. The Meeting was then informed on the situation in Croatia. More than half the Croatians live near the sea, and many depend on fisheries for at least part of their living. Data collection is a problem, however, especially considering the large amount of landing sites and the relatively small number of ports. Little research has taken place in the last ten years, and any information in the field of fisheries socio-economics in Croatia is highly theoretical. No database exists to gather such information on a national level and any data that are currently available are recognised as not fully reliable. To compound the problem of data collection further, there are no large-scale fish markets where information can be gathered, employment and payment records are lacking, and the private processing industries are in some difficulty. On the positive side, however, there is an extensive and very active network of associations of professional fish workers, willing to collaborate with anyone who can improve the national situation.

11. A research carried out concerning some aspects of the economics of the Croatian fishery sector from 1989 – 1995 was briefly described, and it is available in Jukic (this report). It was added that difficulties in data collection are also present as a result of changes in legislation and taxation, making official information more elusive. It was observed that no comparative studies have been undertaken to date on the pre and post 1990 social and economic situation regarding fisheries.

12. The situation in Albania was summarised as an almost total lack of research, not only on the socio-economics of fisheries, but also the agricultural sector in general. An outline of the Albania fishery and aquaculture is given in Spaho *et al*. (this report). The main shortfalls are the lack of experience, data, and standardised methodology. This was further clarified as a problem of expertise: investments are often made, but the technicians available have no method of data collection and research. Some statistical studies of production have been undertaken without any analysis of the sector. A second problem was identified in the current fisheries sector legislation: the latest law, which dates back to 1996, does not reflect recent changes in the field. Problems of market were also highlighted for the Meeting. The example was given of poor quality fish products that enter the Albanian market from abroad and are sold at a lower price than the national equivalent of a higher quality. The Albanian consumer, having little purchasing power, buys the cheaper product and the national fishers are therefore penalised. It is thought that this may be partly inherent to a fiscal system in which importers often manage to avoid taxation. Another difficulty faced by fishing vessel owners, which is linked to the fiscal system, is the price of fuel. Since there is no state intervention to subsidise prices, the majority of the fishing vessels present in Albanian ports cannot fish regularly due to the high fuel costs.

13. The problem of national expertise and of professional skills in the Albanian fishing sector was further detailed, and it was commented that there used to be a school for fish

workers in Dürres but is no longer operative. The national universities would like to run degree or post degree courses. The current political and economic situation in the country makes it difficult to organise this. An informal request for assistance from FAO and the Italian universities was launched in order to receive support or join inter-university initiatives to increase expertise in the Albanian fishery sector. This is of particular relevance, considering that there are only about 70 experts at present, many of whom are over 50 years old. Thus it is necessary to plan for the future.

14. In Slovenia very little research is carried out in fisheries due to the limited coastline and consequent relevance of the fishing sector. The National Institute of Biology of Ljubljana is studying biological aspects of fisheries. Socio-economic aspects, however, are not specifically considered.

15. With reference to the issue of professional skills raised in Para. 13, the Meeting was informed about a diploma course entitled "Management of Fishery Enterprises" which was run in Termoli (Italy) by the Molise University in the recent past. The first two years of the course were successful. Plenty of young fishers attended and were highly motivated to learn about economically efficient fishing practices and related legislation. By the third year, however, organisational problems had arisen; the course participants were frequently working at sea during the night and were unable to follow the course profitably during the day.

16. Some discussion ensued on statistics of socio economic aspects of fisheries. The AdriaMed staff explained the Project's support to the Albanian fishery sector. It consists of technical assistance to build up the national expertise in charge of data collection and information systems, and in supporting the national fishery statistics system. A similar AdriaMed support is under implementation in Slovenia. Reference was also made to the FAO-FISHSTAT database and the FAO experience of bio-economic modelling, a useful tool that is accessible to the countries participating in the Project.

17. The discussion progressed to the issue of data collection. It was remarked that social data are often easy to collect, while economic information, such as that on landings and earnings, is not so freely given by fishing communities. Another difficulty is the discrepancy in some countries between the income from fisheries quoted in the Gross Domestic Product and the real value of the fishery sector, the actual proportion of the population which is supported, at least partially, by fisheries. This highlights one of the main problems around the Adriatic basin *i.e.* the reliability of data and lack of correct official statistics. There was some debate on the necessary steps to be taken, whether it is important to attempt to gather all possible information at this stage or whether to concentrate initially on the official data available. It was agreed that a perfect description of the socio economic conditions around the basin would be very difficult to obtain. It is first necessary to obtain a general idea of the current situation and the data available before a detailed survey is carried out.

18. The Albanian experts gave some further information concerning the socio-economics of fisheries in Albanian. Privatisation has raised potential earnings. There has been,

however, an increase in workers in the sector, many of whom were not originally fishers. In fact, 57% of the current fish workers used to be part of the agricultural workforce but moved to fisheries due to the higher earnings, thus creating a change in the social structure.

19. The Meeting was informed that similarly in Croatia, due to economic forces, many people who were not involved in fisheries in the past have turned to the sector in a part time or somehow recreational way to supplement their incomes. These fishers fall into more than one category: educated people without a background in fisheries who now work on vessels, those who fish locally in their spare time to increase earnings, and recreational fishers who also supply restaurants, all of which is not in any way registered but which, considering the country's coastline, accounts for a significant proportion of the sector. This phenomenon could be hopefully quantified during the review of the artisanal fishery in the sub region. This task is one of the planned actions.

20. It was thus agreed that, due to regional differences and lack of information, it is not possible to generalise excessively about the socio-economics of the Adriatic fishery sector. The expert from IREPA added that in Italy there are also numerous differences between the regional and local administrative offices and these are regularly monitored within the National Observatory of the Italian fleet. It considered, however, that a common structure among the Adriatic countries is possible at a basic level even if at lower analytical level.

Suitable common socio-economic variables and indicators to be used around the basin (Agenda item n. 4)

21. The Secretariat introduced this agenda item, informing the meeting participants of the newly defined GFCM-SAC Geographical Management Units of the Mediterranean, particularly of those in the Adriatic Sea. Attention was drawn to the AdriaMed Occasional Paper "The Geographic Management Units of the Adriatic Sea" (GCP/RER/010/ITA/OP-02, Annex C to this report) presented at the meeting of the SAC Working Group on Management Units (Alicante, Spain, 23-25 January 2001), and specifically to Figure 5, which shows the boundaries of Adriatic Sea Management Units 37.2.1.a and 37.2.2.b as originally indicated by the GFCM and with the presently proposed revision. These revisions, if approved by the 26th Session of the GFCM in September 2001, will be the units of reference for all management strategies.

22. Reference was then made to the Report of the GFCM-SAC SCESS Meeting, held 15th – 18th May 2001, a copy of which was distributed to the participants. The questionnaire on page eight was indicated as a suitable starting point for the discussion of socio-economic variables and indicators to be applied to the Mediterranean region and, therefore, also for the Adriatic Sea. The participants were asked to comment on the availability of these data and any problems they foresee, not in the collection of the data themselves but in their current accessibility. Further, a modified version of the above-mentioned SCESS

questionnaire was presented by Forleo, which consisted of the original questionnaire with additional variables for both sociological and economic aspects (Annex D).

23. It was remarked and agreed that once the gaps in the data currently available are ascertained, the possibility of carrying out the necessary data collection can be considered. It would first be necessary, however, to understand what sources are available to gather existing data and, therefore, which sections of the table could in theory be completed. Then, the possibility of conducting interviews and other means of collecting local data can be take into account. At this stage the participants were requested just to provide a general appraisal of the possibility of obtaining the data requested on the SAC-SCESS questionnaire.

24. The experts from Albania commented that economic data are more readily available than social data; however, neither provide a clear picture of the present situation. There are no employment offices in Albania to supply data on the number of workers on a given vessel or who work at a given port, information which in any case changes frequently. Fishery inspectors have the duty to collect most of the relevant fishery statistics information, including the number of crew on board the fishing vessels. However, fishery inspectors are much constrained in their work by a number of different logistic factors. Insurance offices may have a limited amount of data, and some further information is probably available on investments made in the sector, such as the value of vessels and gear, as well as the price of fuel.

25. As far as Croatia is concerned, the Meeting was informed that even official fleet details to some extent might be incomplete or not updated, not to mention the more specific information. The main problems were identified as a lack of consistency in the registration of vessels and their classification as well as the problem of recording time spent at sea which is not standardised or reported according to an established system. On the other hand, information such as size and power of vessels would be more easily accessible. Vessel age would not be available in all cases because boats which are not new often enter the country and are registered from that moment, not from the date of construction. Further, it was observed that while capture is easier to evaluate, its financial value however is not.

26. Concerning Slovenia it was commented that the national fleet is very small; so, in theory, data would be easier to access. Central offices would be able to supply some employment information, and licences are issued enabling the authorities to have some basic data about the vessels. The accessibility of further information will be verified.

27. Unlike the rest of the basin, in Italy much if not all of the data requested are available. It was therefore resolved that the accessibility of information would be investigated in all the countries. It was recognised, however, that these data may be fragmentary and their quality would need to be ascertained. A bibliographical database of all relevant, available information was suggested; this idea was generally supported.

Preliminary identification of each country's priorities concerning socio-economics in the fishery sector (Agenda item n. 5)

28. The Albanian experts opened this agenda item by listing the priorities in Albania as a result of discussion with the Fisheries Directorate in Tirana. These are listed and expanded as follows: Fishery legislation updating; Organisational structures; Strengthening of fiscal regulations; Improvement of relations between central and regional government; Training; Problems concerning fish markets.

    28 a. One of the main difficulties in the sector is the legislation concerning fisheries. Due to the rapidly changing situation in the country, especially at an economic level, it is considered necessary to update the existing law to reflect these circumstances.

    28 b. In order to make intervention by public and private institutions easier and to encourage development of all aspects of the fisheries sector, it is necessary to create favourable conditions which make such progress possible. This would involve improved efficiency in fishery organisations.

    28 c. The need for changes in the control of this sector at a fiscal level was expressed, with intervention specifically concerning fisheries. State pressure on fiscal regulation is considered necessary in order to make the existing system work. The example was given again of foreign importation undercutting the local market due to slack control on taxation.

    28 d. An improvement in communications and thus in efficiency of relations between local and central authorities would be advantageous.

    28 e. The problem in the area of training was described. The Meeting learned that it is not only difficult to attract people to the socio-economic field, but to the fisheries in general (mechanics, fishers). If the attraction were to be successful, vocational training could be provided and thus increase national expertise. Another problem is a lack of expertise to teach courses, especially concerning marine capture fisheries.

    28 f. It is considered necessary to build the necessary structures to house fish markets for effective distribution of fish products, because fish processing industries are also lacking in Albania. If fishing activity were encouraged and facilitated, the much needed stimulus for the creation of such structures would be provided.

29. The Meeting was given some further information regarding Project intervention in these areas. Concerning the issue of fisheries legislation, through the Project component AdriaFILEG, AdriaMed will organise an *ad hoc* regional Working Group on national fisheries legislation involving the Fisheries Directorates and those involved in formulating and drafting fisheries legislation. With reference to the second point

(Organisational structures), it was mentioned that the regional meeting of fishery associations will be organised by AdriaMed in mid July 2001. Concerning training, the Project agreed on its fundamental importance and agreed to take the issue of socio-economic training into due account; the Project is already organising training in other, strictly biological, areas.

30. It was therefore agreed that the two fundamental priorities regarding socio-economic aspects are the problems of training and market. The other issues are strategically important but relevant to the country's limitations and, as such, will be considered individually.

31. On the issue of training, the Secretariat commented that FAO recently published statistics which showed fisheries to be one of the most dangerous occupations (70 people die per day in incidents related to fisheries). It is therefore extremely important that crews receive adequate training in safety as well as in other aspects of the job.

32. The Croatian experts indicated the following topics as national priorities for the fisheries socio-economics sector:

32 a. Legislation and fiscal system: the fishery sector is not satisfied with the current laws which regulates fisheries in Croatia, nor with the fiscal system. Much discussion is underway to change the current law which dates back to 1996 and which is no longer considered relevant.

32 b. Associations: these are very strong in Croatia and as a result the debate on the laws and other aspects of fisheries is active; the associations played an important role in the discussion with the relevant national authorities.

32 c. Markets: the future development of this aspect of fisheries in Croatia greatly depends on Government investment.

32 d. A further priority would be the widening of the socio-economic analysis of the sector to include aquaculture and fish processing, not only marine capture fisheries.

32 e. A difficulty faced by the fishing fleet is maintenance. There are no structures to carry out this work, much of which is done by the owners themselves. Problems are encountered in purchasing spare parts which are difficult to find, and there is no funding available. Interest rates for loans are also very high.

32 f. Concerning training, it was remarked that no formal instruction has ever existed for fishers; all knowledge is informally passed on. There is no lack of personnel in the sector; it is feared, however, that as tourism returns to the country, many workers will move to this more lucrative area. To anticipate this situation, it would be opportune to set up some vocational courses in fisheries.

32 g. It was further commented that some technical data on the socio-economic situation in the Croatian fishery sector are available. Should it prove necessary, however, to carry out further data collection, either by survey or questionnaire, a glossary of the terms used would be required to standardise the information and, most importantly, training should be given to those who carry out the research.

33. Concerning the glossary, the Meeting was informed by the Secretariat that the GFCM-SAC SCESS is in the process of compiling this, and the experts present were advised to attend the Sub-Committee working group meetings.

34. For the Slovenian fishery socio-economic sector, it was stated the following:

34 a. Legislation in this area is out of date, although some new laws are being prepared.

34 b. Data collection: no log book system exists, and all vessel owners report to the national statistics office. The inevitable is that data are fragmentary.

34 c. Market: much fishery is small-scale artisanal, the product of which is sold directly to restaurants, thus making it difficult to quantify. The commercial fleet also sells directly to the private sector because there are no organised fish markets.

35. The application of European Union (EU) directives on fisheries was briefly discussed and the recommendations therein were considered valid, even though the majority of the AdriaMed countries are not in actual fact members of the EU. Both biological and economic legislation and analytic methodology applied by the EU were considered relevant to the whole Adriatic area because data collection and methodology standardisation are among AdriaMed Project's main aims (AdriaMed statistical programme refers).

36. It was proposed and agreed that one person per country verify the extent to which the data requested on the GFCM-SAC SCESS questionnaire (see Para 22-27) are available. It was decided that the version to be used is that prepared by the SAC Sub-Committee with the additional tables which had been proposed and discussed during the present meeting. Guidelines to complete the forms would be made available in a short time and distributed to the participants. This would provide preliminary information on the data available, sources and accessibility.

Possibilities for the establishment of a regional socio-economics network for Adriatic fisheries (Agenda item n. 6)

37. The Secretariat made the Meeting aware that the AdriaMed Project has already identified and is establishing a network of fishing ports for biological sampling purposes. In order

to optimise Project resources, these same ports could be used for a survey to collect socio-economic information, thus guaranteeing standardisation of methods and greater financial viability. It was suggested that a simple programme for data collection could be drawn up and presented to the Coordination Committee at its next meeting in November 2001. It was also pointed out that, for the implementation of any data collection scheme, the advanced experience in both the fishery social and economic fields of the Faculty of Economics of the University of Molise, and of IREPA respectively (this latter gained over more than 20 years of experience in the fishery and aquaculture economics) should be taken into account.

38. It was concluded and agreed that, as a follow-up of this meeting, the initial regional network of fishery socio-economists could be considered as established. The aim of such a network of experts is that of circulating and sharing the information with the assistance and coordination of AdriaMed. The filling of the socio-economic questionnaires, as previously agreed, will constitute the first joint and concerted action of the network. The formulation of the work programme to be implemented at the selected fishing ports will make the successive important steps.

39. As far as the bibliographic database is concerned, this agrees with the Project's inventory phase, all information collected will be shared between the countries. The bibliography could be united to that of the SAC SCESS at Mediterranean level, thus increasing dissemination. At this stage, however, it is probably better to concentrate on the Adriatic.

Other matters (Agenda item n. 7)

40. It was explained to the participants of the meeting that a draft of the report would be prepared. The support papers distributed informally, however, during the meeting should be sent to the Project in a suitable digital format, including any modifications considered necessary. The end of June was agreed as a deadline.

Date and venue of next meeting (Agenda item n. 8)

41. The next meeting will be called in the near future to formulate a detailed work plan to be implemented at selected fishing ports of the Adriatic Sea. Date and venue will be specified in due time.

Closing of the Meeting

42. The meeting closed with thanks expressed by the Project to the University of Molise for hosting the meeting.

Annex A: List of participants

Angelo Belliggiano
University of Molise, Campobasso
Faculty of Agriculture
Via De Sanctis
86100 Campobasso
Italy
Email: belliggi@unimol.it

Giovanni Cannata
University of Molise, Campobasso
Via F. De Sanctis
86100 Campobasso
Italy
Tel: +39 0874 404322
Email: rettore@unimol.it

Angela Di Nocera
University of Molise, Campobasso
Faculty of Economics
Via De Sanctis
86100 Campobasso
Italy
Email: dinocera@unimol.it

Maria Forleo
University of Molise, Campobasso
Faculty of Economics
Via F. De Sanctis
86100 Campobasso
Italy
Tel: +39 0874 404454
Fax: +39 0874 311124
Email: forleo@unimol.it

Maja Fredotovic
Faculty of Economics
University of Split
Radovanova 13
21000 Split
Croatia
Tel/Fax: +385 21 341866

Nikolina Jukić-Peladić
University of Ancona
Faculty of Agriculture
Via Brecce Bianche
60133 Ancona
Italy
Tel: +39 071 2204993
Fax: +39 071 2204858
Email: rackog@yahoo.it

Bahri Musabelliu
Tirana Agricultural University
Tirana
Albania
Tel: +355 4 227804
Fax: +355 4 232552
Email: bmusabe@agri-univ-tirana.edu.al

Dejan Pehar
Ministry of Agriculture, Forestry And Food
Dunajska Cesta, 58
Ljubljana
Slovenia
Tel: +386 1 478 9099
Fax: +386 1 478 9021
Email: dejan.pehar@gov.si

Rosaria Sabatella
IREPA - Institute for Economic Research
on Fisheries and Aquaculture
Via S. Leonardo
Traversa Migliaro
84131 Salerno
Italy
Tel: +39 089 338978
Fax: +39 089 330835
Email: rsabatella@irepa.org

Vladimir Spaho
Zootechnology Department
Tirana Agricultural University
Tirana
Albania
Tel: +355 4227804/4225325/353870
Email(to the attention of Vladimir Spaho):
mlamaj@agri-univ-tirana.edu.al

Piero Mannini
FAO AdriaMed Project
Corso Umberto I, 30
86039 Termoli (CB)
Italy
Tel/fax: +39 0875 708252
Email: piero.mannini@fao.org

Fabio Massa
FAO AdriaMed Project
Corso Umberto I, 30
86039 Termoli (CB)
Italy
Tel/fax: +39 0875 708252
Email: fabio.massa@fao.org

Annex B: Agenda

1. Opening of the Meeting and election of the Chairman
2. Objectives of the Meeting
3. Current knowledge of the socio-economics of Adriatic Sea Fisheries
4. Suitable common socio-economic variables and indicators to be used around the basin
5. Preliminary identification of each country's priorities concerning socio-economics in the fishery sector
6. Possibilities for the establishment of a regional socio-economics network for Adriatic fisheries
7. Other matters

Annex C: The Geographical Management Units of the Adriatic Sea

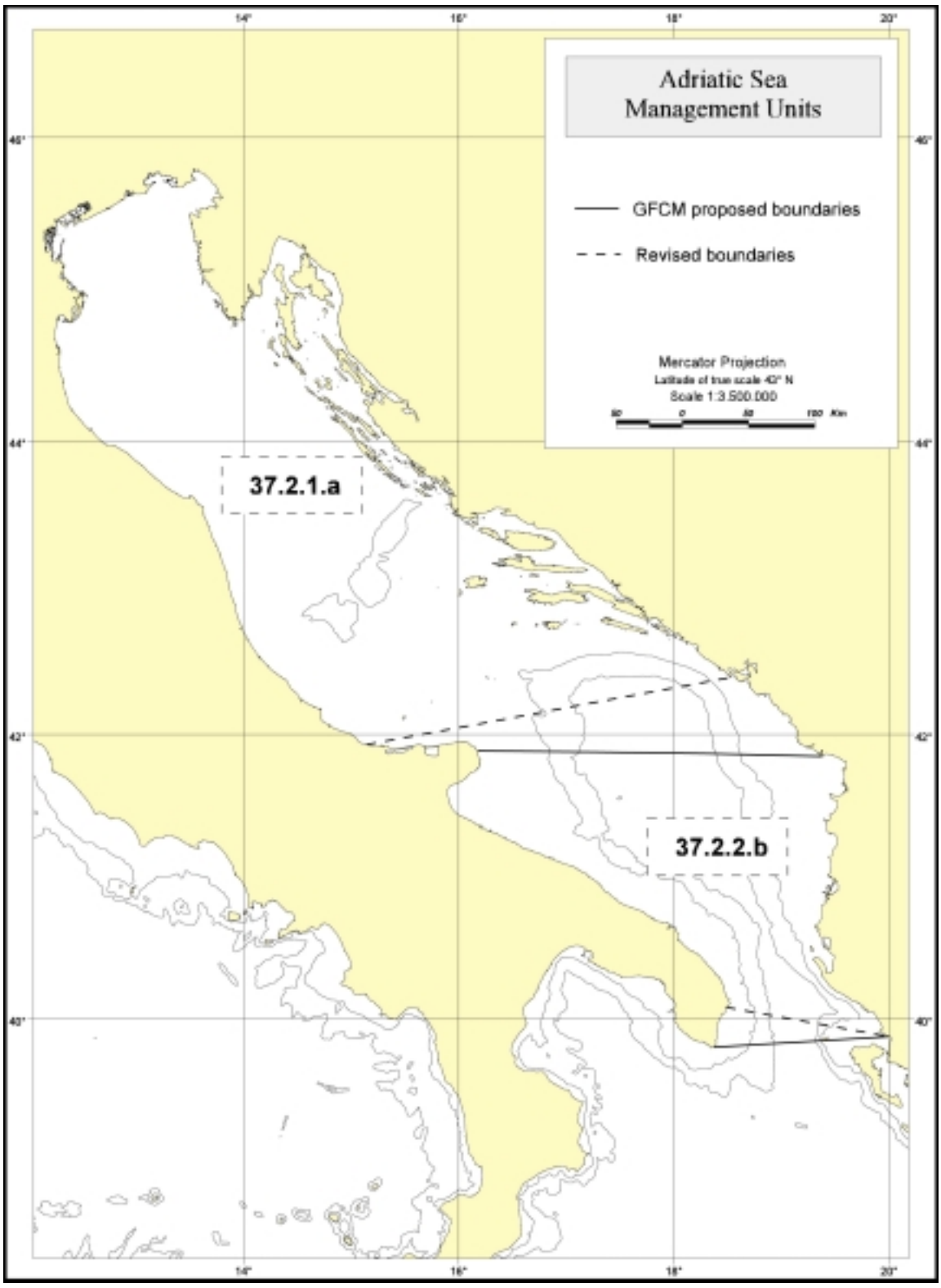

Figure 5. Map showing the boundaries of Adriatic Sea Management Unit 37.2.1.a and 37.2.2.b as originally indicated by the GFCM (solid line) and with the presently proposed revision (dotted line). (Source: AdriaMed. 2001. The geographical management units of the Adriatic Sea. Paper presented at the GFCM-SAC Working Group on Management Units (Alicante, 23th-25th January 2001, GCP/RER/010/ITA/OP-02).

Annex D: Sources and accessibility of socio-economic data in AdriaMed countries

Table 1. Socio-economic data* (modified from GFCM-SAC Sub-Committee on Economic and Social Sciences)

Items	**Source Name**	**Source Type**					**Level of desegregation**						**Years**	**Frequency**	**Measurement Unit**
		PB	PR	C	S	other	N	R	P	F	V	other			
1. Fleet • Number • Gross Tonnage • Horse Power • Length • Age • Type															
2. Exploitation strategy • Time at sea (days/year, hours/day) • N° of fishing operations/day • Duration of one fishing operation (hour)															
3. Employment • Direct employment (crews on board) • Indirect employment (shipbuilding, ship maintenance, ship chandlers, etc.)															
4. Investment • Vessel value ex novo (included equipment and gears) • Investment grants															
5. Income data • Landings weight by species and by area (specifying live weight, landed weight, etc.) • Landings value by species and by area															
6. Fixed costs • Insurance • Tax • Financial charges • Other fixed costs															
7. Salary share (%)															
8. Variable costs • Daily cost of gasoline • Ice and food • Maintenance and repairing (included spare parts) • Taxes and other charges • Subsidies • Other variable costs															

*Table 1 according to the GFCM – SAC, SCESS (May, 2001).

Table 2 to Table 4 proposed during the meeting reported in this document.

Table 2. Other economic data

Items	Source Name	Source Type					Level of desegregation						Years	Frequency	Measurement Unit
		PB	PR	C	S	other	N	R	P	F	V	other			
9. Fishing gear type															
10. Exploitation strategy • Time at sea (days/week) • N° of fishing operations /month • Duration of one trip • Total time of work (hours/day) (at sea, at port, at market, other) • Fishing inactivity time (specify duration according to inactivity type)															
11. Vessel • Hull construction material • Distance of usual fishing area (miles)															
12. Vessel property • Kind of company • Owner/fisherman															
13. Employment • Direct full time employment (crews on board) • Direct part time employment (on board) • Direct occasional workers (on board)															
14. Investment • Vessel value at purchasing time															
15. Equipment cost • Catching equipment cost • Navigation equipment cost • Freezing method cost • Communication engine cost															
16. Market • share of sale for geographical area • share of fish sold into the local fish market • share of sale for operator															

Table 3. Sociological data

Items	Source Name	Source Type					Level of desegregation						Years	Frequency	Measurement Unit
		PB	PR	C	S	other	N	R	P	F	V	other			
17. Personal data • Age • Educational level • Previous job • Part time job • Household members by numbers, age, gender • Household members Job: • actual • expected • Fish consumption (weekly) • Minimum earnings to family livelihood															
18. Fishing strategy • Decision level (community, vessel owner, crew members, etc.) • Objectives (profit, household survival, cost efficiency, etc.)															
19. Crew • Crew by status • Crew by age and gender • N° of relatives • Kind of payment (salary, % of sales, other) • Time of payment (week/month; beginning/end of period) • Shared cost															
20. Membership • Type (owner association, trust union, other local institution) • Purposes and activities • Decision making (mechanism, power, enforcement, etc.)															

Table 4. Macro variables

Items	Source Name	Source Type					Level of desegregation						Years	Frequency	Measurement Unit
		PB	PR	C	S	other	N	R	P	F	V	other			
21. Foreign trade data • Export for species • Quantity • Value (FOB) • Import for species • Quantity • Value (CIF) • Country destination/origin															
22. Macroeconomic variables • Unemployment rate • GDP (by sector) • Population (by gender, age, education) • …															

Sources in <u>symbol</u> and <u>detail</u>

Symbols: Public (PB) or private (PR) sources, census (C) or sampling (S), etc.

Level of desegregation

Symbols: Regional (R), national (N) level, by fishing port (P), by fleet (F), by fishing vessel (V), etc.

A survey on socio-economic profiles of Sea fishing area: The case study of Termoli

Maria Forleo*

Abstract

The results of a study aiming to analyse the fishery sector in Molise (Italy) are reported. The study was conducted by the Department of Economic, Management and Social Studies of the University of Molise in 1996. Economic and social aspects have been analysed, in particular a survey on the professional figures (fishermen and ship owners) has been carried out, based on a direct interview survey. The need to improve the information on the socio-economic aspects of the fishery sector is underlined.

1. Introduction

The present paper originates from some studies on the fishing industry conducted in the maritime area of Termoli on the Adriatic Sea coast of Italy. These studies were started in 1996 by the Department of Economic, Management and Social Studies of the University of Molise, with the aim of analysing the local fishing situation from a social and economic point of view.

Since any other source of detailed and adequate information on the local fishing systems, relating both to the economic and the social aspects, was lacking, the researches have been carried out with the purpose of meeting first of all a fact-finding requirement and then interpreting the conditions and the economic and social trends of the maritime area under study.

A particular attention has been given to the social aspects. This attention is due to the fact that, among the main profiles of analysis of the fishing industry, the social profile is the one where awareness is understood to be more incomplete: the social aspect is scarcely studied at both the level of individual local realities of fishing and at the level of the aggregate industry; moreover, in many cases the researches are socio-economic analyses where single social phenomena are usually investigated in connection with their economic relevance.

Official statistical data on this industry and on the individual maritime areas, even if with several limits on their date and their completeness, are as generally available as for the economic sphere, while the social sphere is only marginally represented through aggregate information on the work-force. For this reason, when the connection between social and economic phenomena is investigated, official statistical data are not suitable even for a tentative research.

*University of Molise, SEGES Department, Agricultural Economics Area - Via De Sanctis, 86100 Campobasso, Italy; e-mail: forleo@unimol.it

This paper presents how the socio-economic thematic has been approached during the first part, basically explorative, of the research and then briefly discusses the evidences that have arisen on the topic[1].
Based on the previous observations, the direct survey methodology used for the research has been considered essential for an effective knowledge of the phenomena to be investigated. Several initial contacts with local institutions, mainly the trade unions, were preliminary to the direct survey. These contacts were intended to explain the research objectives, to discuss the planned analysis project, to evaluate interest and possible terms of cooperation. These contacts proved extremely useful in obtaining a general understanding of the reality of Termoli, with reference to the main fishing systems which are used there, each of them having specific technical, economic, social and organizational features.
Talks with local operators gave the opportunity to identify the economic activities and the professional profiles in the fishing activity in this harbour. In this regard it ought to be underlined that catching is the unique fishing activity in Termoli, while processing is completely absent; commerce suffers because of the pulverization of the local system and by the strong competition from adjoining maritime areas. Therefore, the research focused only on the activity of catching at sea, according to the systems that are used at present by the fleet of the Termoli maritime area.
One of the specific objectives of the researches which have been done has been a study on the professional figures who operate in the sea fishing industry, with reference to the main typologies of fisherman and ship owner. To that end, the contacts established with the respective trade associations allowed identifying all the people belonging to the different typologies at the individual level, whether associated or not.
On the other hand, the association channel has proved useful in circulating a trusting and collaborative attitude in the relationship between researchers and industry operators.
The small size of the Termoli fleet in terms of quantity permitted proceeding to a survey on the universe of boats with reference to the ship owners group; while, as far as fishermen are concerned, logistical problems limited the research to a sample of people resident there. The fishing operators have each been approached by an interview supported by a questionnaire especially designed, divided on the basis of each professional category and according to the following structure:

- Respondent's personal data: age, education, marital status
- Family data: components, age, education, work
- Boat characteristics
- Fishing methods
- Work and crew related data
- Economic and legal profile of the relationship between fishermen and ship owner
- Category, harbour and industry related issues.

As a preliminary the questionnaire has been tested on a few subjects and then distributed with the proper improvements to the business operators. The basic features of the fishing company have been defined according to the subject matters of the questionnaire, with reference to factors of business, work and capital, and the environment where the company operates.

[1] The following considerations offer a summary of the survey findings, detailed discussions can be found on the survey reports available at the SEGES Dept. of the University of Molise.

Harbour, commercial and processing facilities, and the trade associations are indirectly dealt with on the basis of the assessments the respondents have offered.

2. The structure of sea fishing in Termoli maritime area

To give a picture of the Termoli maritime area aggregate reality, a short discussion of the local sea fishing features precedes the analysis of the direct survey findings. These features have been gathered from data available through official sources, mainly the Harbour Master's Office.

Companies and people employed in the fishing sector

Fifty six companies operating within the limits of the Termoli harbour are exclusively dedicated to the fishing activity in sea and lagoon waters; 51 of the 56 companies have a total of 191 people, while the remaining 5 companies did not give information about their work force; 35 out of 51 companies employ from 2 to 4 people.

The relevance of these figures is better understood if they are compared with the corresponding figures concerning companies and people working in the Termoli harbour area. A total of 490 people are working not only in the fishing industry, but also in retail and wholesale commerce, in harbour services and in shipyards. Thirty nine percent of these 490 people are working in fish catching at sea. Even more noteworthy is the fishing companies' weight: they constitute 56% of the companies operating in the Termoli harbour. These figures are not very substantial when compared to other regional industries; however, they point out the relevance of marine capture fishery with respect to other fishing related activities in Termoli. The limited numbers of wholesale companies (about 20 companies with 40 people), the lack of processing companies (with a loss of added value to companies operating outside the region), and the relative weight of connected activities (2 shipyards are operating in Termoli, with 75 people) make the fishing system in Termoli and in the whole region substantially dependent on fish catching at sea.

A small size company profiles the average fishing company in Termoli. The fishing fleet comprises a great number of boats representing individual companies; therefore, in many cases the ship owner is also a crew member. There are no shipping activities of capitalistic or co-operative type.

The fishing fleet

According to the data of the local Harbour Master's Office[2], the motor ships of Termoli fishing fleet is not of big tonnage. This aspect is pointed out by the percentage distribution of units in different classes of gross tonnage: the cumulative percentage of units with a gross tonnage up to 10 tons is something more than 40% boats; the percentage is 63% for units with less than 50 tons, while the remaining 37% refers to units with less than 200 tons; no boats registered over 200 tons.

The fishing techniques utilized by Termoli boats are bottom trawling, pelagic trawl, long lining, and hydraulic dredge. Bottom trawling is the most utilized system; it is carried out by

[2] Data supplied by the Harbour Master's Office and by the ship owners co-operative 'La Motopesca'.

60% of the fleet. The second most important system is the flying net pelagic trawl. Boats utilizing only the dredge, a device for catching clams, are 22% of the Termoli fishing fleet.
Vesseles distribution, according to the fishing technique[3], underlines the most important characteristic of Termoli fleet structure: it comprises boats authorized to operate exclusively within the limits of 20 miles off shore. Boats using multiple techniques for fishing along the coast, or dredges for clam catching, represent 47% of the fleet, while trawling boats are 35%. No boat in the maritime area carries out deep-sea or ocean fishing; besides the long distance between Termoli and the catching areas, huge financial investments would be required for equipping the boats for this kind of fishing.
During the first half of the '90s, the building of new boats positively affected the power of the fleet, both at the unit and at the total level. Thanks to the increased power of the engine, in many cases more than proportionate to the tonnage increase, increased power of the fleet has allowed for a longer stay at sea, for longer travels and for research of more productive areas. The rejuvenation of Termoli fleet favoured also a better contribution of innovative techniques and materials for boat building, and a wider diffusion of ancillary services for sailing, catching, and processing fish.

Fish catching
According to the data of Termoli Harbour Master's Office, concerning the species that are sold on Termoli wholesale fish market, 83 species are caught in the sea of Termoli: 60 of them are fish, 10 are shellfish and 13 are clams. The Harbour Master's Office estimates that a relevant quantity of fish is sold outside the official market, by means of private agreement between the ship-owner and the individual customers; however, the exact amount of this trade cannot be registered.
Codfish has registered a positive trend since 1990 (Figure 1). It represents 35% of the fish production and 20% of total catch, resulting the species more caught by Termoli boats and in great demand from the market; the red mullet is another important species among other fish landed in Termoli. Anchovies, pilchards and mackerels that are usually caught by Termoli fleet, reach a lower level of yield than in the past.
Among shellfish, the catch of which has a very low level (15% of the total catch), Norway lobster reach a certain importance probably for its commercial value. Squid, cuttlefish and mainly octopus represent 16% of total Termoli production. Among molluscs, clam fishery is quite important, since many Termoli boats (24% of them) are geared for this specific fishery.

[3] The fishing technique has been classified according to fishing permit.

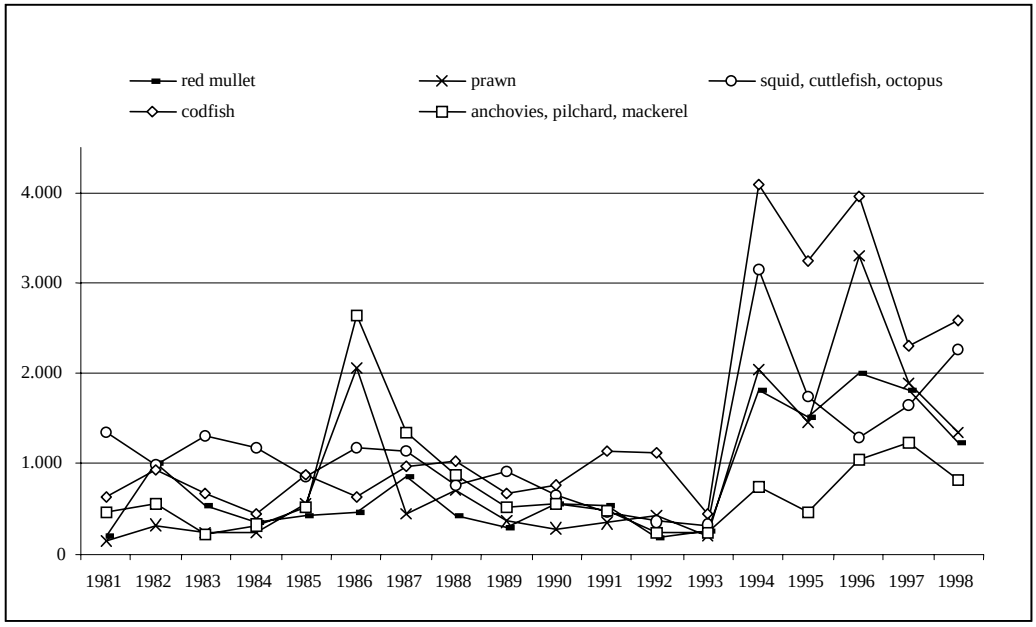

Figure 1. Fish catches in Molise: main species (quantities in quintals).

3. A socio-economic profile of fishing people: the results of a direct survey

The direct survey in Termoli maritime area has mainly interested the two major professional profiles in sea fishing: the ship-owner and the fisherman.
The results are presented according to the outline of the interview plan. They are arranged in the following topics:

- The individual and his family
- The boat and its crew
- Institutions and connected problems

The summary presentation of the socio-economic outline of the two professional profiles is followed by some references to the main marketing problems that surfaced during the direct survey. These problems prove relevant for the entire maritime area both from the economic and the social point of view.

3.1 The fisherman in the Termoli maritime area

According to the estimate of Termoli maritime area trade organizations, about half of the fishermen come from outside the region, mainly from Puglia (Manfredonia, Molfetta). It has proved impossible to trace back people living outside the region; for this reason the survey reports only on Termoli fishermen; 32 of them have been traced back, and that figure is believed to represent a significant sample of the local reality[4].

[4] This has not meant in a statistical sense, firstly because the number of fishermen in Termoli was known only some uncertain estimates, according to which our sample represents nearly 50% of fishermen living in Termoli. The significance of the results was discussed with local experts.

The family

Analysing the fisherman segment, the aspects concerning the individual and the family have been approached with particular care, since interesting findings were expected on the sociological profile.

First of all, data have been recorded about marital status, age and education level of the fishermen. It is worth noting that the survey was always dealing with local manpower; for this reason, in Termoli, unlike other maritime areas, the presence of workers from outside the EU is completely irrelevant.

A preliminary consideration has to be made on the personal data of the individuals who have been investigated. In particular, about 90% of them are quite young, between 25 and 45 years. Together with the young age, a great number of married people is found. Moreover, the age when the first son was born is very young; 66% of the investigated fishermen are less than 25 years old. Considering the high number of children, 2 or 3 per family in more than 70% of the fishermen households, this figure underlines an additional peculiarity of the surveyed category[5].

According to the data that have been collected, the majority of children are of school age; otherwise, they are employed as workers, clerks, and shop assistants. Only in few cases is the fisherman's son himself a fisherman. Probably this fact is not only attributable to the son's young age, it is also to be seen in connection with the query related to the working life the fisherman would like for his children. More than half of the interviewed people, which means about the totality of people who have given an exact answer, positively say they would not like their children to be fishermen; more than 20% would like their children to continue their studies.

In the end, it is interesting to evaluate the education level of the respondents. The highest educational qualification the fishermen possess is the vocational certificate. There are not any other secondary school certificates. The possession of a vocational certificate is not a recurrent circumstance, if we consider that 90% of the respondents conclude their scholastic experience at the level of compulsory school and 40% only reach the primary school certificate. The modest education level which the fishermen achieve should be interpreted together with the young age they normally enter their working life, 30% of them under 18 years and 80% under 20.

A great part of the respondents has never been employed in apart from fishing. Some of them, before entering the fishing industry, have been employed in the building industry, mainly as bricklayers. It is not easy to establish a connection between these two kinds of work, since in a sense they are totally different. However, the change should have evidently implied an improvement in the economic, if not social conditions of the respondents. We should, however, bear in mind that the productive environment in Termoli was not offering many alternatives when the fishermen we are talking about were looking for their first job; that is the '70s for some of them and the last ten years for the others. The '70s represent the period of industrialization for Termoli in which urban concentrations were developed and lines of communication were increased.

This fact may have promoted a consistent demand of housing and industrial buildings. On the other hand the effect produced by the recent development of the hotel and tourist facilities, of

[5] It would be interesting to study the industry and also local peculiarity of these results.

the country housing and in general by an improvement in the socio-economic conditions of the local populations cannot be ignored.[6]
Another aspect that has been examined is how the leisure time is spent. This is a well known indicator of the socio-economic development. First of all, the activity at sea comprises 4 working days of fishing (unless extra shifts are required due to bad weather conditions) and a fifth day of land activity for cleaning and maintaining the boat and preparing it for the next fishing week. Therefore the leisure time is basically confined to Saturdays and Sundays, and all the fishermen dedicate it to their families and their houses. No other leisure or social activities were apparent.

The boat and the crew
The second part of the questionnaire on the fishermen comprises some aspects concerning boat characteristics, fishing kinds and techniques, and composition of the crew.
According to all the surveys that have been performed, fishing takes place within 20 miles off shore. The technique generally used, except the case of entrapment, is trawling. The crews are composed of 3 to 5 sailors. The main professional figures in a crew are the captain, the motor mechanic (they frequently overlap), and one or more junior sailors.
The contractual relationship among crew members is regulated according to the local contract called 'alla parte', which establishes the share (parte) of the revenue originated by fish selling that each fisherman is entitled to, proportionate to his professional qualification. The contract also regulates the type and share of costs that are charged to the crew, the so called 'monte' (mount); it also regulates rights and obligations for both the fishermen and the ship owner.
It seems that the implementation of this contract does not create difficulty for about one half of the respondents. The remaining 50% say that the contract is not enforced, or rather that its correct enforcement depends on the fairness of the ship owner statements about the exact proceed of fish sales. The elements of dissatisfaction with the contract, when they are perceived, mainly consist in the regulation and remuneration of paid leave and recovered working days. Moreover respondents believe that charging the cost for net repair also to the crew is unwarranted, because nets should be part of the boat gear and therefore under the complete responsibility of the ship owner. They also believe that fishermen catching clams are more advantaged. As for the remuneration aspects, the salary is paid monthly; however, in some instances its exact amount can depend on the proceed from sales.
The paid biological fishing idle is evaluated favourably by almost all the fishermen for reasons of convenience: restocking the sea with fish, an opportunity for rest, a paid leave. The preservation of marine environment is not frequently addressed as one of the main motivations supporting the opportunity for an idle period. In two instances the idle period has been considered damaging as a cause for loss of potential revenues.
Boat maintenance both at sea and ashore, is an integral part of the fisherman job. It essentially consists of ordinary operations that, according to the specific skills, include net repair, bottom cleaning, painting, cleaning, and motor maintenance. Other ordinary operations are performed at the Termoli shipyard, extraordinary repairs of the electrical and

[6] An interesting reading on the socio-economic development in Termoli and in general in the low Molise is made for by L. Nola – F. Orlando, *Termoli, dove atterra la FIAT*, in 'Italia Rurale', Laterza, Bari, 1988. According to them 'building is the true thermometer for measuring the development fever of the Molise population'.

mechanical components are performed in San Benedetto del Tronto; and carpentry is done at Molfetta.

The fisherman and his relationship with the institutions
The subject of the last part of the questionnaire is the diffusion of an associational attitude among the fishermen and the identification of the problem that the fishermen perceive as related to their category, industry, harbour facilities and commerce.
As far as the association is concerned, the queries requested an evaluation about trade union activity and some specific initiatives they have been carrying out. On this subject, favourable and frankly negative judgements correspond, while 25% of the respondents are not willing to answer the query. A modest number of fishermen are aware of the union proposals on insurance on board the boat, paid leave, recovery, and biological idle. Another 25% of respondents believe that the union has never put forward any proposal, while half of them do not answer or are not aware of the problem. The category critical aspect is obviously the problem of safety at sea. Harbour facilities are given a negative evaluation for a number of inefficiencies that are partly due to its original construction; for instance the quite shallow water requires specific actions, partly due to intervened requirements. Among them, the most important problem is the limited mooring area, which is further worsened by the mooring of boats belonging to the adjoining maritime areas. For this reason long waits before mooring happen in some instances, with consequent slowing down of landing, thereby delaying or even jeopardizing fish sales.
As for a general assessment of the industry, no problems are underlined which have a particular importance; this finding, together with the high number of not answered queries, point to the fact that there is probably a gap in knowledge and relationships between the productive stage and the reality of the industry as a whole. Eventually the fishermen have been asked to give their assessment on the problems of the fish markets, which generally are enduring a rather critical situation because of the small number of dealings taking place.
At the time of the survey there were a great number of problems concerning the markets. Respondents complain about the auction room opening hours, which are delayed with respect to the mooring of the boats; complaints are also made about the obsolete facilities, which extend the dealing time since they are lacking the basic services and are not automated. The bid down system gives the buyers the opportunity to lower the price to the point where the seller is compelled to exercise the right of withdrawing his product from the market. Moreover, the legal obligation to record each transaction does not enable the sellers to escape tax payment.

3.2 The profile of the ship owner of Termoli maritime area

Unlike the research on the fishermen, the survey on the ship owners encompasses a larger number of people, since it concerns 75% of Termoli operators.

The ship owner and the family structure
According to the survey the Termoli ship owner is between 30 and 60 years old, is married, and has two children (it is noteworthy that there are families with up to 5 children). The highest education certificate obtained by 80% of the ship owners before entering the work

force is the compulsory school. Half of them completed only primary school. As to the children, the elements that can present some interesting points for discussion are their education level and their working activity. For the first aspect, the importance given to education is apparent since a great number of the children pursue their studies even after completing compulsory school. This has a particular relevance because 30% of people, who have reached a secondary certificate, continue with university studies. This aspect is different from what has been observed for the fishermen children for reasons that might be of an economic rather than a cultural kind. It is necessary however to consider that the observations that have been expressed reflect the time of the survey. For a definitive assessment of the education level those individuals should be taken into consideration who have suspended or continued their course of study vs those who are already following a trade. A secondary certificate is possessed by people carrying on a clerical job, even if this is not the prevalent working activity among the children. As a matter of fact half of the people who are presently working are employed in the fishing activity. The sea, therefore, represents an element of continuity that generally goes back to the grandfathers, continues with the fathers, and is inherited by the sons. The education these people have received is seldom associated with a diploma, particularly vocational, while compulsory school also in this case is placed at the end of the scholastic career of the fishing people. Seamen vocational training is one of the most discussed issues, since it is considered essential for the involvement of young motivated people in this activity. Continuous formal training is also essential, mainly for motor mechanic chiefs and captains, due to technological innovations in boat equipment.

The boat and the crew

The characteristics of the boats observed were intended to define first of all a general framework of boat typology, navigation instruments, product preservation, and processing facilities. Successively, some aspects concern the state of technology, the innovations already introduced, and those in the future.

With reference to the fishing type and technique, as mentioned above, Termoli ship owners practice fishing within 20 mile from the coast of Molise, between the rivers Trigno and Saccione.

As for the gear installed on the fishing boats, three typologies are usually installed in Termoli boats, and they can be identified with reference to the scope they deal with: communications, depth of the sea monitoring, and navigation control[7]. As for fish preservation facilities, a significant number of boats of the local harbour is equipped with refrigerators and ice-boxes; a few boats also have a freezer, but no boat is equipped with a deep freezer or fish processing facilities. Finally, with reference to the crew composition, normally it comprises the captain, the motor mechanic, and one or more sailors. In half of the instances observed, the ship owner is also part of the crew, often with the role of captain or motor mechanic: these three profiles generally overlap in the case of small boats. There are some instances, however, where the ship owner, if an aged man, carries out the role of a sailor, while another person, generally a young relative, is the captain. These situations are estimated to be determined by

[7] The first type of instruments comprises cellular phone, VHF and CB. Among the navigation instruments, there are radar, mainly used in bad wheather conditions for obstacle detection and course identification, Loran, and the GPS plotter. While radar has an almost general diffusion, the Loran and especially the GPS plotter characterize basically medium-large boats. Among the under water control instruments, there are the ichthioscope (fish finder) and the sonar, which are installed only in a few boats of Termoli. The recording echo-sounder and the echo-sounder main are installed on almost all the surveyed boats.

a reason of succession rather than economic considerations; when the aged ship owner will leave his working life, the young captain will succeed the ship owner. Anyway, the family relationship has to be considered when it links together the members of the crew in small boats.

The ship owner and the institution related issues

A discussion of institutions and main industry related issues concludes the analysis performed on the fishing business and the professional profile of Termoli ship owner. The most important associations the ship owner maintains contact with are the Harbour Master's Office, the Customs, and the local trade association. Moreover, in many occasions, opportunities of contact arise with other maritime areas, particularly those adjoining Termoli. The ship owners association provides some services to its members that include category protection, legal advice, management advice, and bookkeeping. Finally, with reference to the issues concerning the fish market, the harbour, the maritime area, and the industry, many problems are found which have already been underlined in the analysis concerning the fishermen, particularly those concerning Termoli harbour. As for the fish market, a further critical issue (estimated to be the most important), which increases the difficulties of fish markets performance, is the high quantity of fish imported from abroad that does not transit through the fish market. An equivalent disapproving judgement is expressed about the local commerce facilities, which will be discussed later. The most important issues concerning the industry are taxes, commerce and credit, and the lack of trained workers. A further aspect is that many ship owners require better information about the industry regulations. Actually, it is significant that more than 80% of respondents are not able to talk about the existence of regional laws concerning industry support.

Commercial activity

Termoli's commercial structure has been in a state of obsolescence for many years[8], but in our opinion this is not the only reason why the fish market does not function to the full, considering that, according to the operators, about 50% and maybe more of the effective caught is dealt with there. Two types of buyers take part in the commercial structure: wholesalers and retailers. Wholesalers buy most of the caught on sale (estimated over 80%) and then take care of selling the product to dealers or other wholesalers, and to only a low percentage of the fish processing companies[9]. Dealers who buy directly at the fish market are owners of fish shops, food shops, supermarkets, and restaurants. The fish sold in Termoli fish markets is mostly caught by small operators, that is, by those companies, lacking onboard equipment for fish preservation, who are compelled to sell their caught immediately. Conversely, the middle size fishing companies, besides having equipment for the preservation of the product, usually enter unofficial dealing with individual buyers. These dealings offer several advantages: first of all it is possible to achieve better sale prices than those which could be reached by means of a bid down system. As a consequence it is possible to sell in advance large quantities of caught, and, in that way, to plan catching activity better. On the other hand the buyer, usually a wholesaler, acquires a first choice product, avoiding the competition of other dealers, within and outside the fish market. In the commercial structure of Termoli the balance of bargaining strength is against the fishermen, both for the

[8] With reference to European Union Directive 493/91 and Italian Decree Law 531/92.
[9] These companies are located outside the region, in Abruzzo, Marche and Sicily.

sale system (bid down) and the low number of buyers participating in the dealings. More often than not, the buyers enter an agreement and make fish prices drop to a very modest level.

3.3 Further developments of this research

The analysis of the professional profiles that constitute the fishing system is not exhausted by the ship owner and the fisherman, who are, however, the main players. There is a world of subjects and institutions that perform ancillary services to the fishing industry: they are related to boat equipment and fishing gear, to ship building, and to product processing, transport, and marketing. In the preliminary stage of the present research, the main objective has been the knowledge of the principal operators of the fishing system: ship owner and fisherman. This knowledge will be further improved in the next year when the survey on owners and fishermen will be updated. Therefore, the analysis of wider subjects and different professional figures will be approached later, with the aim of profiling the entire fishing process in Termoli. It is, however, interesting to underline some findings that the survey has pointed out from a social perspective. The first finding concerns the strong tradition and family values that are rooted in an activity which has been passed down from generation to generation. When the experience of the present day ship owners is looked at retrospectively, they entered their work life almost everywhere through the family company, not only because of the occupational crisis that sweeps around other economic sectors, but also for consolidating their fixed assets. This character of tradition that hands down the company from father to son is linked to a strong family organization of the crews of the fishing companies, where members of the same family are often employed in the most qualified positions (captain, motor mechanic). The family link constitutes a cohesive element between subjects that often keep within its limits their economic and social relationships. This link characterizes the industry with a strong closed attitude towards external members to the family and the company. Family, in a wider sense, often encompasses the company. On the other hand, the family bond could be estimated as the reason for the low rate of conflict within crews, for the poor interest and appreciation and also limited relationship that fishermen, but not ship owners, keep with the labour and trade organizations of the small fishing companies in Termoli[10]. As a consequence of the previous comments, labour mobility within and outside the industry is rather limited.

A further aspect is the educational level of people employed in fishing industry: they normally begin to work at sea as soon as they complete their compulsory study. When this is the case for younger people who have lately entered the fishing industry, some problems arise which this survey can only defer to a further elaboration. The first problem is the educational domain. In a world where the problems related to management, credit, technology, and law are becoming more and more complex, the fishing operators are probably wondering if the on job training is still adequate, or if professional training would be required with applicative contents and direct effects on the fishermen and ship owners activity.

[10] Where, on the other hand, manpower is mainly local. On the other way, it is known that there are maritime areas, like for instance Mazara del Vallo, which are not characterized by a social climate, without conflicts between the ship owners and the sailors.

The comparative reading of local researches underlines both a need, sometimes latent, for professional training, and a lack of knowledge of basic technical and managerial aspects. In many cases this insufficient knowledge is not adequately satisfied even by external consultancy, since in many case they also lack a specific knowledge about the sector. When the decisions are examined about work and study taken within the family, it could be observed that some boys are pursuing their studies, while some other boys start their working life at sea as soon as they complete compulsory school[11]. It should be presumed that the boys who enter working life have little vocation for study and are less interested in increasing their education. Furthermore, ship owners and fishermen show a prevailing attitude to favour a different industry than fishing for their sons, generally because of the hardship of work at sea and the low life quality. The considerations that have been presented could lead to underlining a tendency for the young people to abandon the fishing industry that they have traditionally and potentially fostered. This attitude introduces a breaking-off of continuity prospects in the industry. On the other hand, the fact that the human resources, which remain in the industry are those at the lower level of education, should encourage reflection about the economic and social effects on the industry itself. The situation anticipates the disappearing of Italian workers as far some fishing professional figures are concerned and the rising of extra-EU manpower for carrying out the less skilled jobs (the presence of extra-EU workers is already a reality; however, it is not quantifiable). These findings are estimated to have certain relevance, since the fishing industry in Termoli maritime area still represents an important industry in the local economy, not only from a historic-cultural perspective, but also from the point of view of business and occupation.

3.4 Information needs

One of the major results derived from the survey on the Termoli maritime area is the evidence on the lack of information on socio-economic aspect of fisheries sector at aggregate and local level. As claimed by the statistical and research institutions on fisheries, both international (from FAO to OCSE and UE, just to cite a few) and national, it is not possible to analyse the structure and the development of the fishery sector by considering only official data. Problems of reliability, completeness, and time reference require other methods to collect and analyse the economic and mostly the social performance on the sector. At this regard it could be necessary to consider and compare advantages and disadvantages of each method according to different criteria (reply, reliability, costs). Another problem concerns the collection data reference point. Obviously, there are different levels in collecting socio-economic data on fisheries (see for example the following picture) which are connected each other and goes from the smaller reference unit (the fishers) to the aggregate country and countries' network. As to the collection methods, and also for the reference point, it is necessary to exactly define objectives, time limits, costs, and reliability. Methods and reference points are strictly connected and before starting any research and statistical collection it is important to find for each objective, the more suitable reference point of collection data and the right method of analysis.

[11] It would be interesting to verify, if and to what extent, entering working life during school age is determined by the economic reason of increasing family earnings, in as much as fishermen often have one-income families, or if it is the result of different kinds of reasons.

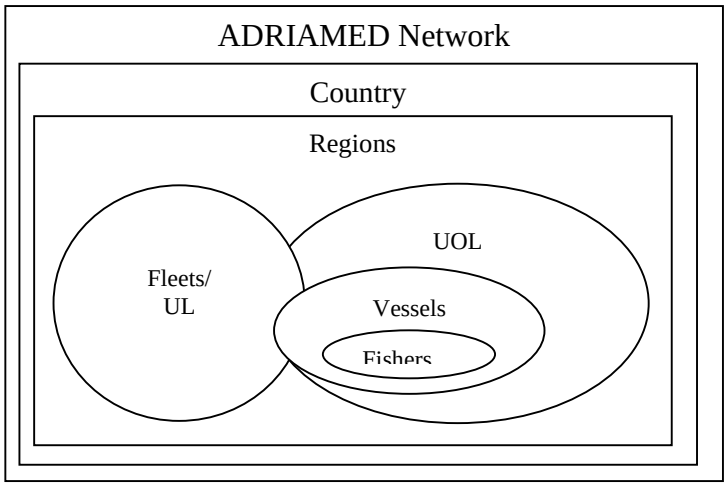

Figure 2 - Different levels in collecting socio-economic data on fisheries.

To create a homogeneous network of socio-economic data on fisheries is not a straightforward goal, nor it is a short time project. One of the first steps could be to detect the existing information on fisheries, both from official and unofficial statistical body, at aggregate and local level, from micro to macro perspective, just to appreciate the state of the art. This preliminary step requires strong attention and knowledge of the statistical system of each country. Attention has to be given to many aspects: which are the elementary data collected and his definition; the source institution, its nature (public or private), and the collection methods (census, sampling or something else); the level of desegregation at which data are collected; the period of time and the frequency of collection; the measurement unit and other relevant information. Once this preliminary step is performed, it allows a first common base of existing data to be defined. This common base is the starting point of the homogeneous network on which to evaluate further information needs.

IREPA implementation of a national monitoring system of socio-economic parameters of the Italian fishing fleet[1]

IREPA Onlus[*]

Abstract

Data collection and estimates of economic parameters concerning the Italian fishing fleet is produced by the Institute for Economic Research on Fisheries and Aquaculture (IREPA) through a National Monitoring System, which dates back to the early 80s. In 2000, IREPA started a process of rationalisation and harmonisation of the existing surveys on the fishery sector in collaboration with the Italian National Statistical Institute (ISTAT). The practical outcome of the process was the definition of a sample survey on the catches and the relative values whose objective is to satisfy the EU legislation and, more in general, the information needs at a national and international level. Within two years, this new approach shall substitute the surveys currently carried out by ISTAT and IREPA and it will represent the only official statistical source of the sector. The IREPA monitoring system for economic data on the Italian fishery sector is based on three main modules: fishing effort and activities, landings and prices by species and economic data. The IREPA survey is based on data gathered with a technical questionnaire, illustrated in the paper. Details on the sampling design used are also given.

1. Aims of the monitoring system

The statistical survey's aim is to gather information on the most significant parameters of the fishery sector.
The existing monitoring system consists of three main modules:

- module of evaluation of fishing effort and activity;
- module of evaluation of landings and prices by species;
- module of evaluation of economic and social data.

The survey is based on a unique sample. More than 400 vessels (around 800 vessels from 2001) are monitored each week and elementary data are later expanded to the universe (the whole Italian fleet) using statistical sampling procedures. It is worth underlining that the research programme on systematic monitoring of fishery indicators in Italy has targeted and still targets an evaluation of economic and management features of fisheries. It does not aim

[*]IREPA Onlus - Istituto Ricerche Economiche per la Pesca e l'Acquacoltura - Via S. Leonardo, Traversa Migliaro, 84131 Salerno, Italy; e-mail: irepa@irepa.org
[1] The monitoring system has been implemented by IREPA Onlus – Istituto Ricerche Economiche Pesca e Acquacoltura, and it is partially funded by the FIFG programme, under the technical assistance measure.

at estimating and assessing biological resources. The proposed sample survey is described in the following pages.

2. Description of the survey

2.1 Assessment of the sampling universe and of the list

Data collection concerning the fishery sector in Italy is very complex due to the high number of species caught, the spreading of the fleet along the 8000 Km of coastline and the vast number of landing points available (estimated around 800).
The National Fleet Register (Archivio Licenze di Pesca – ALP kept at the General Directorate for Fisheries and Aquaculture of the Ministry of Agricultural and Forestry Policies (Direzione Generale Pesca del Ministero delle Politiche Agricole e Forestali) constitutes the list from which the sampling units are extracted where all Italian fishing vessels are included. Therefore, the sampling basis used for the survey (2001) is the Fleet Register updated to June 2000. In this archive the total number of fishing vessels in Italy is slightly higher than 18 thousand units. Twenty-seven vessels fish beyond the straits (the so-called oceanic fleet). Considering the specific activity of the latter vessels, they have been excluded from the sampling basis and data referring to this segment are gathered on the basis of taxable property, by means of agreements with ship owners and their fishery associations (Federpesca). Tuna fishing vessels (associated in the Associazione Produttori Tonnieri, Salerno) are also excluded from the sampling basis and data concerning their activity are provided directly by the Association for its member vessels.

2.2 The questionnaire and the choice of the data collectors

Sample data are recorded by means of three specific questionnaires:

1. an annual questionnaire to record technical, dimensional and vessel – management information on the sample units and relevant socio-economic aspects (number of ship owners, their ages, their property quotas and relationships between them);
2. a quarterly questionnaire to record data on fixed and variable costs, and on social aspects of property and crew;
3. a weekly questionnaire to record information reporting activity such as fishing time and area, average number of crew members, gears used, quantities, prices and revenues – as per species or group of species – and trade channel for sales.

The questionnaire for the survey has been designed so that the sequence of questions can be defined as "funnel-shaped". The first part of the questionnaire concerns general information such as the name of the boat, the gears employed, the days of activity at sea, the days of bad weather, non-fishing days for rest, the total number of hours, the average crew and the distance of the fishing area from the coast. The second part is meant to gather the survey's target information such as the species caught (quantity, quality, average prices, destination). The questions are structured according to the characteristics of the phenomenon and the degree of knowledge. In other words, there is no need to choose between open-response

questions and fixed-response ones. In particular, an exhaustive list of the species for which quantity and prices are required has been prepared, and the data collectors' duty is to report the individual species caught and their prices. Other important aspects of the questionnaire's design, such as the use of the language, the formulation of the questions, the correct reporting of information, are handled directly by the data collectors. They thus represent a filter between the people interviewed and the data processing unit. It is also to be noted that the input of data for the single vessel is fully computerised; the software, specifically designed for the survey's objectives, is logically structured and also includes crosscheck programmes to avoid partial or inconsistent filling of the questionnaire. In brief, the most important annual, monthly and weekly information recorded are the following:

Annual information

- ✧ name
- ✧ maritime district where the boat has been registered, (coastal area/sector)
- ✧ first year of service (therefore, age)
- ✧ authorised fishing gears
- ✧ maritime district from where the ship departed for fishing
- ✧ maritime district where the product has landed
- ✧ type of association and year of its creation
- ✧ number of shipowners, their ages, their property quotas and relationships between them
- ✧ type of association and year of its creation
- ✧ overall length and length between perpendiculars
- ✧ gross registered tonnage (GRT)
- ✧ gross tonnage (GT) based on London Convention (Reg. EC 2930/86)
- ✧ horsepower (kW)
- ✧ engine make, location and type of propeller
- ✧ communication engine
- ✧ navigation engine
- ✧ fish location engine
- ✧ conservation equipment
- ✧ employment contract used

Quarterly information

- ✧ name
- ✧ month
- ✧ maritime district where the boat has been registered (coastal area/sector)
- ✧ fuel (total and unit value)
- ✧ cost of nets
- ✧ cost of bait
- ✧ cordage and ropes
- ✧ food
- ✧ boxes and ice
- ✧ commercialisation costs
- ✧ other running costs
- ✧ fish transport cost
- ✧ other running cost
- ✧ labour share, wages and social insurance
- ✧ ordinary maintenance
- ✧ extraordinary vessel maintenance
- ✧ extraordinary hull maintenance
- ✧ extraordinary engine maintenance
- ✧ vessel insurance
- ✧ tax and other fiscal costs
- ✧ bank charges
- ✧ other vessel costs

Weekly information

- ✧ Name
- ✧ Week
- ✧ Maritime district where the boat has been registered
- ✧ Engine used
- ✧ Gear used
- ✧ Average crew
- ✧ Fishing days
- ✧ Total hours at sea (navigation and fishing)
- ✧ Non fishing days for bad weather
- ✧ Non fishing days for rest, repair and other
- ✧ Hulls
- ✧ Average time (in hours) for each single trip
- ✧ Minimum and maximum fishing area's distance perpendicular to coast line
- ✧ Maritime district from where the ship departs
- ✧ Maritime district where the product is sold
- ✧ For each single species or group of species landed: quantity, prices, income and commercial channel (wholesaler, fish market, retail dealer, others).

Data collectors belong to the productive or management fishery sectors. This is certainly an innovative element for official surveys. As matter of fact, data collectors are usually external to the phenomenon that is being examined and, moreover, they are often part of some public structure, in order to avoid possible influences due to personal interests. On the basis of the experience acquired in this field, it has been demonstrated that it is essential to have data collectors belonging to the fishery productive chain in order to obtain correct and timely data. Obviously, periodic inspections in the various areas are carried out in order to check the data collectors' work (Figure 1).

2.3 Sampling design: Single Stage Stratified Sampling

The sampling design is based on a single stage sample stratified over two variables. Stratification is carried out in order to create strata as homogeneous as possible, using characteristics correlated to the target variables.
The maritime regions of the Italian coast represent the first stratification variable from an administrative point of view. The sampling design considers only 13 of these 15 maritime regions, since there are no enrolment offices in Basilicata and, due to the small size of Molise's fleet (0.3% of the total number of Italian fishing vessels), the latter has been aggregated to Abruzzo. The second stratification variable is the fishing system used by the vessel; the fishing fleet is therefore divided in groups and each fishing vessel belongs to one of these groups according to the fishing system it uses. For the present surveys the following systems are considered: trawlers, purse seines, mid water pair trawlers, dredges, multipurpose, small-scale fishery and tuna fishery. The identification of the fishing system follows the fishing systems actually present in the Italian fleet, while taking into account criteria of consistency with the segmentation considered under the MAPG IV (Multi Annual Guidelines Programme).

Figure 1. Monitoring system - survey points.

Furthermore, for some systems (trawler and multipurpose) and for some regions (Abruzzo, Marche, Puglia, Sicilia and Veneto) another stratification is carried out on the basis of the dimensional parameter GT (Gross Tonnage). This in order to obtain more homogeneous study domains and to take into accounts the differences between the coastal or short-range trawler and the high sea trawler. Moreover, for dredges registered in Veneto, Emilia Romagna and Marche regions, another stratification has taken place, based on the marine compartments to which they belong. This is due to the fact that national regulation allows the dredge fishery to be self-managed by the Bivalve Molluscs Management Consortiums (Consorzi di Gestione dei Molluschi Bivalvi) established in the marine compartments.

Finally, those vessels authorised to fish tuna among other species represent an additional specific stratum. This stratum is identified in reference to the 7/2/2000 ministerial decree regarding the "determination of individual fishing quotas for blue-fin tuna for the year 2000", according to which a complete list of the units operating on this target species is reported. The vessels of the Associazione dei Produttori Tonnieri di Salerno does not belong to this segment and, as said before, they are not sampled and belong to a specific stratum, since they fish exclusively tuna. The final number of strata or domains from which the overall sample is extracted amounts to 70. To the latter, the two strata that are out of the sample (Oceanic fleet and Associazione dei Produttori Tonnieri di Salerno) need to be added.

2.4 Sample size and allocation across strata

The size of the sample is assessed on the basis of the evaluation of the sampling error. In particular, this implies the specification of the estimates' reliability, which consists in setting the value of the average square error; furthermore, since correct or approximately correct estimators are used, the values of the estimates' variances are determined.
In the case of single stage stratified sampling, and in the hypothesis of extracting the sampling units with equal probability and without re-pooling, the sampling variance of the estimate Y^ of the total Y is described by the following expression:

$$V(\hat{Y}) = \sum_{h=1}^{H} N_h^2 \frac{N_h - n_h}{N_h} \frac{S_h^2}{n_h} \quad ,$$

given these definitions:

H represents the number of strata in the population

$\hat{Y}$ represents the estimated total of Y for the population

N_h represents the total number of sampling units in the *h*th stratum

n_h represents the total number of sampling units measured in the *h*th stratum

S_h^2 represents the variance of Y for the *h*th stratum

Therefore, for a given population, variance varies both as a function of the overall size of the sample n and, for a set value of n, as a function of the numerosities $n_1,\ldots, n_h,\ldots, n_H$, with the imposed constraint that their sum must be equal to n.
Among the various ways of determining the sampling sizes of the H strata, the Neyman criterion has been used instead of the proportional one. The Neyman method is based on the criterion by which a different percentage of elements is drawn from each stratum in order to minimise the value of V (Y^).
Nevertheless, the Neyman method can be applied only in the case of a single target variable, otherwise we would obtain a different sample size for each variable considered. Since the present survey is multivariate, that is, the variables investigated are more than one, to calculate the sample size we use the Bethel method, which is the application of Neyman's method to the multivariate case. The approach used by this method is to transform the analysis into a linear programming model that allows the identification of the sample size and the allocation across strata, minimising the variances of all variables simultaneously (see also Bethel, 1989).
The optimal allocation across strata for multi-scope studies has been solved by Bethel using the Kuhn-Tucker theorem and then deriving the expressions for the optimal allocation in terms of the LaGrange multipliers.
In order to apply this method, a pre-estimate of the S^2_h variances is required; in other words, the variances of the target variables of the survey must be known. For this purpose, the results

of a sampling survey conducted in 1999 on the production data of more than 400 vessels have been used. It was decided that the variables to be considered to calculate the sampling size, must be those for which the variance is highest; catches by species and by region were chosen. So, to apply the Bethel model monthly estimates of the total catches by species and by region must be known. The Bethel method has been applied to the data available for 1999, with a procedure specifically implemented on SAS basis.
In a first phase, since the sample size is inversely proportional to the error level, three different levels of sampling, with three different levels of maximum acceptable error, have been identified. However, the final choice has been the lowest level of the maximum acceptable error (average sampling error of 5%, on a confidence interval of 95%), with a total sample size of 783 units and a degree of coverage of 4.2%. The final size has been obtained by applying the Bethel procedure with a constraint of minimum size per stratum of 4 units (with the exception of the stratum Campania-mechanised dredge; the numerosity considered for this stratum is the one that derived from the application of Bethel's algorithm).
The sample units have been extracted by applying the PPS method (proportional to the size method). Each unit has a different probability to be sampled and this probability is proportional to the following measure:

$$P_i = \frac{LFT_i}{LFT_h}$$

Where:

i = a generic vessel

h = stratum

LFT= overall length.

Among the different methods to extract a sample, the Hanurav algorithm was chosen.

2.5 Expansion factors

In brief, to pass from the sampling data to the overall estimates, the weight applied to each elementary data is the following:

$$k_{hi} = \frac{1}{\pi_{hi}} = \frac{1}{n_h \frac{LFT_i}{LFT_h}} = \frac{LFT_h}{n_h LFT_i}$$

Where:

π_{hi}: the probability of the unit i to be selected

n_h: sample size for the stratum h

LFT_h: cumulative vessel length of the stratum h

In the case of non-responses, the initial weights k_{hi} are adjusted on the basis of data referring to the responses (r_h) and the non-responses (s_h) of the sample (n_h). The method consists in multiplying the initial weights (k_{hi}) by a factor (d_h) equivalent to:

$$d_h = \frac{r_h + s_h}{r_h}$$

The resulting weights (v_{hi}) are called base weights because they are finalized to the calibration of the weight sum of the different population levels and to the elimination of the bias caused by different non-response rates among strata. In our specific case, the base weights are:

$$v_{hi} = \frac{r_h + s_h}{r_h} \frac{LFT_h}{n_h LFT_i}$$

The hypothesis underlying this method is that the total number of non-responses is not influent for homogeneous groups of statistical units.
It is demonstrated that, for homogeneous groups of responses (response homogeneity group – RHG) the $\hat{Y}_{(r)h,RHG} = \sum_{i=1}^{n_h} v_{hi} y_{(r)hi}$ estimator is unbiased.

2.6 Non-sampling errors

The final step of the survey is the check on the elementary data to eliminate non-sampling errors. This has been achieved by means of computer programmes implemented to correct the erroneous values and to permit statistical data analysis. These programmes are mainly based on graphical analysis of elementary data. Other standard interconnected computer programmes were added to support procedures for controlling, filing, correcting and elaborating data. These are able to facilitate the process of assessment, transmission and diffusion of statistical information.

3. RICA software

Specific software has been developed to conduct the survey.
The software is divided into the following sections:

- data collectors' software to be filled and transmitted;
- software for data processing: queries on specific groups of elementary data;
- software for the production of the final tables: checking and correction of the elementary data, application of the expansion factors.

Software is developed on Delphi language. Data bank is structured on Interbase module. Specific statistical software (Windows Statsoft) is used to treat and to analyse data for scientific purposes (Figure 2).

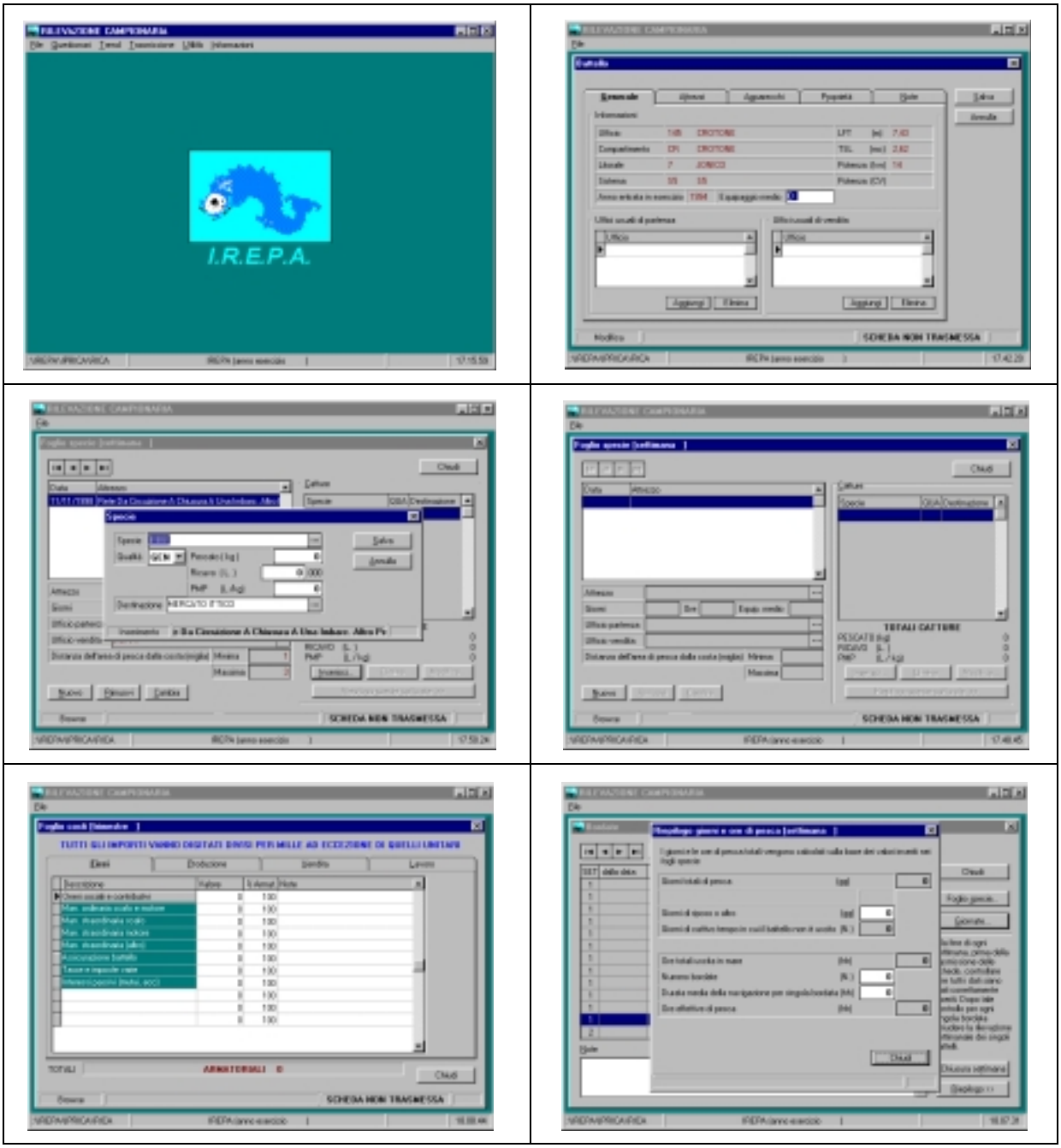

Figure 2. The RICA software.

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** Different issues are available at IREPA Onlus, Via San Leonardo, Traversa Migliaro, 84131 Salerno, Italy

The Adriatic resource: valorisation of the fishery within the collaboration Italy - Croatia

Nikolina Jukić Peladić*

Abstract

The paper reports the results of the research "The Adriatic resource: the valorisation of the fishery within the collaboration Italy - Croatia" carried out between 1996-1997. A brief overview on the fishery sector in Croatia is outlined. It is a macroeconomic analysis of the most relevant indicators which put in evidence the role of the Croatian fishery, considered as an productive sector, in the period 1989 - 1995. Particular emphasis is placed on the analysis of the fleet composition and on the trade indicators.

1. Introduction

This paper reports some of the results of the research (Jukić[1], 1997): "The Adriatic resource: the valorisation of the fishery within the collaboration Italy - Croatia". This research was stimulated by the increasing need to get more articulated knowledge about principle characteristics of the fishery sector in Croatia as well as to fill gaps, at least partially, that were accumulated during the years in economic and statistic studies of the Croatian fishery. The paper reports some information collected from different responsible authorities, regarding the characteristics of the productive structure of the fishery sector in Croatia. This work offers a brief framework of the Croatian fishery reality and whose results need to be updated and examined more closely.

2. The economic influence of the fishery in Croatia

During the examined period, from 1989 to 1995, the fishery occupation, extended to the fish food processing industry, had an almost constant decreasing trend. In fact, data for 1995 show a drop of 12% compared with 1989 data. As shown by the following Table 1, the reduction in the employment was related in particular to the processing industry[2] and this resulted in re-evaluation of the importance of the fishery as an occupational alternative. Data for 1995 show that fishery itself employs 85% of the total of employees against 13% of the processing industry and only 2% of the aquaculture.

*University of Ancona, Faculty of Economics – Via Brecce Bianche, 60133 Ancona, Italy; email: rackog@yahoo.it

[1]Final thesis, supervisor Prof. Franco Sotte, Faculty of Economics, University of Ancona.

[2]The processing industry has been facing a lot of difficulties caused by: a) necessity to import machinery and materials as well as fish suitable for the processing, b) the loss of a big part of ex national market (in 1971 the Republic of Serbia represented 37% of domestic demand), c) barriers to entry in the EU market. In 1995 in Croatia there were 6 active industries and they were operating at 39% of their potential.

Table 1. The fishery employment in Croatia (1989 - 1995). (Source: Morsko Ribarstvo).

	1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Fishery	12217	12614	11589	12586	12434	12062	11846
Aquaculture	183	183	177	181	237	275	293
Processing industry	3425	2926	2382	2272	2085	2021	1815
Total	15825	15723	14148	15039	14756	14358	13954

The extended fishery sector, with a total of 13954 employees, represented in 1995 only 3,8% of the population employed in the agro food sector and only 1,4% of the active population at the national level[3].
Although the fishery contributes modestly to the national economy - both in the employment and in GNP terms – nevertheless in 1995 the marine fishery was the only sector which influenced positively the agro food balance of trade, with the exportation that exceeded greatly the importation.

3. The marine production in Croatia

The analyses of the catch starts from 1987, a record year for the Croatian production. As shown by the following Table 2, from that year on, the volume of the production has had an almost constant decreasing trend and, in 1995 recorded the drop of 65% compared to 1989.

Table 2. Marine production in Croatia (tonnes). (Source: Morsko Ribarstvo).

	1987	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Catch	48822	38803	40920	34901	18776	26463	25767	16560	15364
Aquaculture	n.a.	300	280	400	405	420	900	1300	1600
Total	48822	39103	41200	35301	19181	26883	26667	17860	16964

It is also interesting to put in evidence the composition of the Croatian catch by the groups of the main species. In 1995, as shown in Figure 1, more than 50% of the Croatian catch consisted of the group "Pelagic species", followed by the group "Other" mostly corresponding to highly commercial and prized demersal species.

[3] It should be considered, however, that the fishery assumes much more importance if refered to the coastal zones and islands. In that case, sometimes, fishery represents the only occupational alternative. Therefore, when evaluating the occupational incidence of the fishery, it would be more appropriate to analyse its importance in those areas.

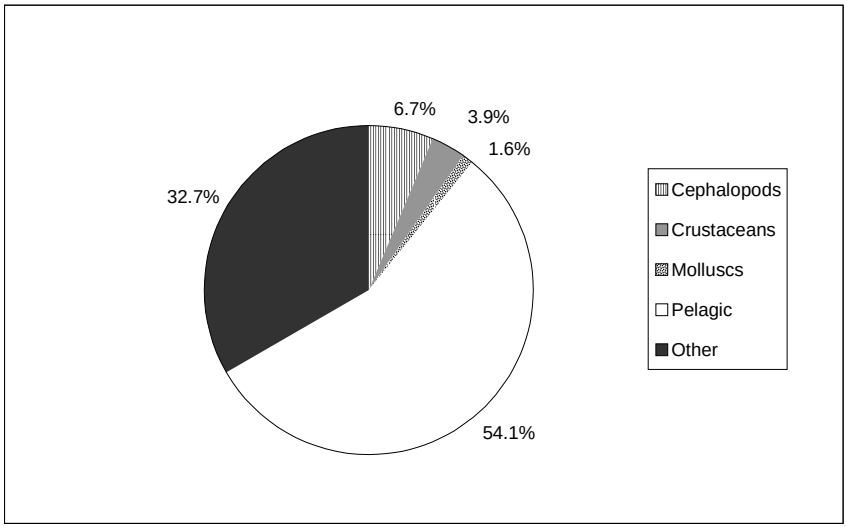

Figure 1. Production by the groups of the main species. 1995. (Source: Morsko Ribarstvo).

The composition of the catch by species in 1995 was undoubtedly better if compared to the previous years of reference period. In fact, the high percentage of demersal species suited well the increasing demand of the western commercial partners for those species, and that influenced positively the balance of trade of the sector. However, this improvement was due to a drastic decrease of the catch of pelagic species. The later group registered a drop of 79% in the considered period, while the species included under "Other" dropped by 8% "Molluscs" by 7%. The only exception was the increasing trend regarding Crustaceans and Cephalopods, even though this increase was very slight and insufficient to counterbalance the general decreasing trend of the Croatian production. At the same time and in correspondence with the continuous downward trend of the catch, the production structures increased considerably (Table 3).

Table 3. Fishery fleet in Croatia (1989 - 1995). (Source: P. Cetinic, Analiza sadasnjeg stanja jugoslavenske kocarske i plivaricarske ribolovne flote in "Morsko ribarstvo", n.3, Zagreb 1989, Ministarstvo pomorstva, prometa i veza - Odijel sigurnosti plovidbe).

	Motor trawlers	**Motor ships**
1989	259	335
1990	**n.a.**	**n.a.**
1991	196	**n.a.**
1992	314	591
1993	318	**n.a.**
1994	349	676
1995	359	669

- Motor trawlers are fishery boats whose length is superior to 15 m and whose GRT superior to 15.
- Motor ships are production units whose length is inferior to 15 m and whose GRT inferior to 15 but superior to 3[4].

[4] It is important to observe that the units for recreational and non-professional fishery (almost 14.000 units in 1995) are not considered even thought they have a great impact both from the economic and biologic point of view. As to the classification of fishery boats in Croatia, see Article 3 of the Marine Fishery Law 12/07/96.

In 1995 the Croatian fishery fleet consisted of 1029 units. This number represents a growth of 73% compared to the first year of the reference period of the analysis. With the reference to the same year, the Croatian fleet was mostly concentrated in the ports of the Central and North Adriatic (45,8% and 46,1% of the total fleet respectively), against 8,1% of the vessels registered in the South Adriatic local fleet.
In spite of this consistent and continuous rise, the Croatian fishery fleet is still far away from reaching the Italian counterpart in 1995, both in terms of the number of fishery units and of their tonnage[5] or the power of the engines. In fact, in 1995, the Croatian production represented just a marginal part of the Adriatic production; less than 10% of Italian Adriatic production and less than 20% of the Italian Adriatic fleet (data source: fishing units number from Ministarstvo pomorstva, prometa i veza and Institute for Fisheries and Aquaculture Economic Research, IREPA; production figures from Morsko ribarstvo and Italian National Statistical Institute, ISTAT). As to the characteristics of the productive structures on the sea, the Croatian fleet can be defined prevalently artisanal. As shown in Figure 2, more than 68% of the fleet possess tonnage less than 10 GRT.

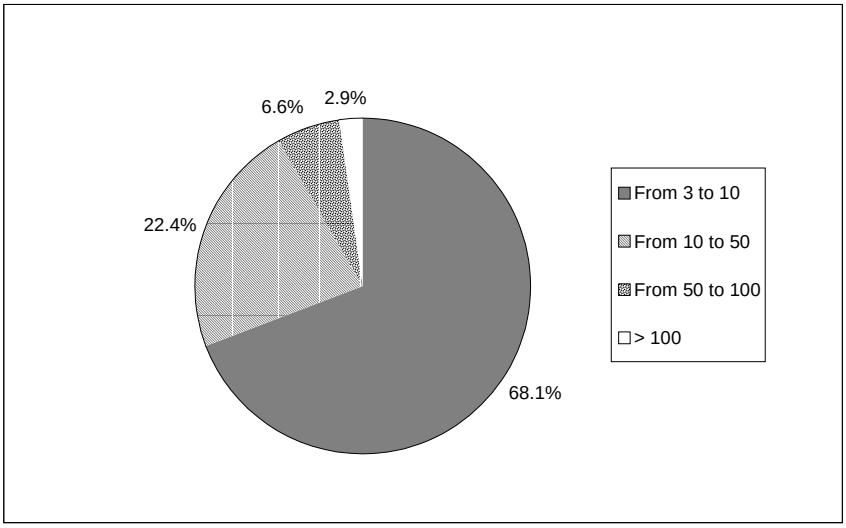

Figure 2. Fleet by GRT categories. 1995. (Source: elaboration data Ministarstvo Pomorstva, Prometa i Veza Odijel sigurnosti plovidbe).

The units of 10 to 50 GRT assume some relevance, while the enterprises more properly industrial whose tonnage exceeds 100 GRT represent only 2,9% of the total. Small dimensions of the Croatian vessels are accompanied by the elevated vessel age; hulls aged more than twenty years, represent the most significant category (55%). Data of Ministry of Agriculture and Forestry for 1995 show that the average age of the Croatian vessels was 38 years (Ministarstvo poloprivrede i sumarstva - Sektor morskog ribarstva, Ribarski registri, Zagreb 04. 10. 1995). This data could be, at least partially explained, by the fact that in the early 90s the sector was privatised and, this process was more accomplished by a transfer of "old" vessels both from a public sector and EU countries to the private sector, than by an adequate reconstruction of the fishing fleet (Figure 3).

[5] In 1993, total tonnage of 318 Croatian motor trawlers was 15.093 GRT.

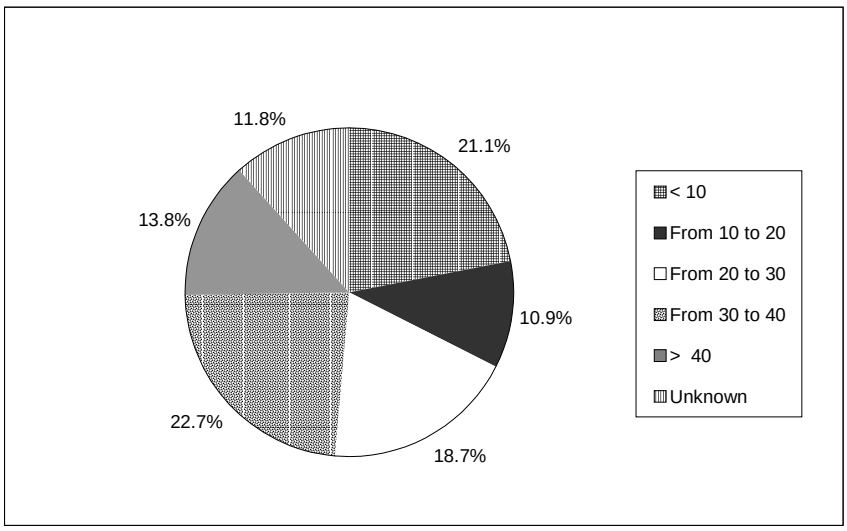

Figure 3. Fleet by categories of hull age. 1989. (Source: P. Cetinic, Analiza sadasnjeg stanja jugoslavenske kocarske i plivaricarske ribolovne flote in "Morsko ribarstvo", n.3, Zagreb 1989).

The available data indicate that, as far as the most commonly used fishing gears in Croatia are concerned, just two types of vessels (Figure 4) can be distinguished. More that 70% of vessels are trawlers, followed by purse seiners (25%).

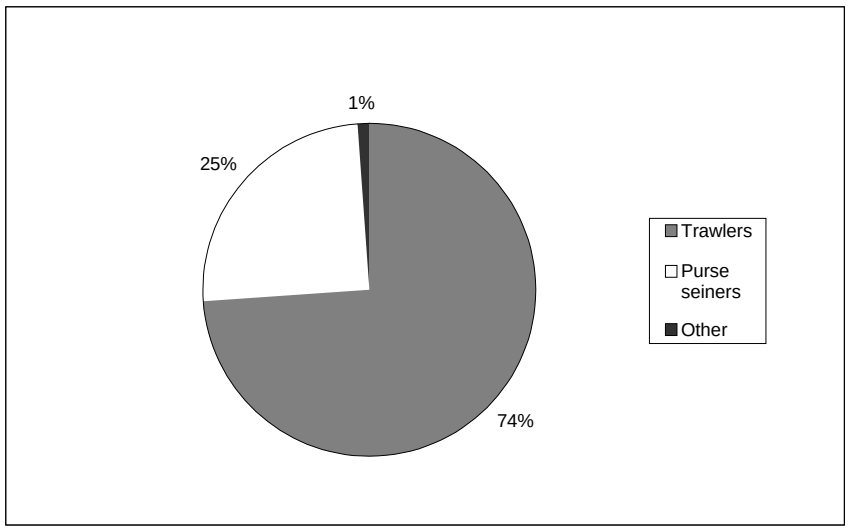

Figure 4. Fleet by vessels (main gears). 1995. (Source: Ministarstvo Pomorstva, Prometa i Veza- Odijel sigurnosti plovidbe).

As to official data, only 1% of Croatian vessels are included under the group "Other" which corresponds to those vessels that combine more than one fishing gear. It should be put in evidence that this low percentage is due to the fact that national legislation does not consider a high number of vessels whose tonnage is inferior to 3 GRT. Those vessels, mostly operating in artisanal/coastal fishery actually combine during the year a big variety of fishing gears as to stabilise their income.

4. The balance of trade

National production is mostly destined to the exportation and it gets placed in two principle markets[6]. Fresh fish, especially highly commercial and prized demersal species, almost entirely goes to the markets of the European Union member Countries and, the Italian market absorbs more than 80% of the Croatian fresh fish (Table 4).

Table 4. Trade indicators (tonnes). (Sources: Morsko Ribarstvo).

Total Products	**1992**	**1993**	**1994**	**1995**
Production	26883	26667	17860	16964
Import	7680	6244	8946	10567
Availability	34563	32911	26806	27531
Export	26377	25627	20792	16442
Balance	18697	19383	11846	5875
Movement	34057	31871	29756	27009
Apparent consumption	8186	7284	6014	11089
Normalised balance	54.9%	60.8%	39.8%	21.7%
Autosufficency	328%	366%	296%	152%
Level of covering import	343%	410%	232%	156%
Propulsion to import	93.8%	85.7%	148%	95%
Propulsion to export	98%	96%	116%	96.9%

Availability (Production + import)
Apparent consumption (Availability - export)
Normalised balance the relation between balance (export - import) and movement (export + import)
Level of autosufficency indicates the level of the theoretical consumption that could be covered by the national production and is given by the relation between production and apparent consumption
Level of covering import is given by the relation between export and import
Propulsion to import indicates how much a certain county depend of imports for a national consumption
Propulsion to export indicates a quota of a national production that is exported

The processed fish, on the contrary, gets placed almost entirely in the markets of the East European Countries while the importance of the European Union market for the processed fish is marginal (Table 5).

Table 5. Trade indicators ('000 US$[7]). (Source: Morsko Ribarstvo).

Total Products	**1992**	**1993**	**1994**	**1995**
Import	12123	12598	18716	22942
Export	54582	49231	50763	45680
Movement	66705	61829	69479	68622
Balance	42459	36633	32047	22738
Normalised balance	63.6%	59.2%	46.1%	33.1%
Level of covering import	450%	390%	271%	199%

[6] It is important to note that an average Croatian family consumes c.a. 7 kg of fish per capita/year, which is one of the lowest consumption in the World. The consumption can be divided as follows: c.a. 3,5 kg of fresh fish, 2 kg of frozen fish and 1,4 kg of the processed fish (Data Chamber of Commerce).
[7] The exchange rates Italian Lira/ US $ were: 1.232,6 Liras for 1 US$ in 1992; 1.572,7 Liras/1 US$ in 1993; 1.611,8 Liras/1 US$ in 1994 and 1.628,9 Liras/1 US $ in 1995.

As shown by the Tables 4 and 5, however, the reference period is also characterised by a consistent increase of imports with reference to the fresh and frozen fish. In fact, although the tables show an active balance of trade in the period 1992 – 1995 its decreasing trend, both in terms of volume and value, is evident.

5. Conclusions

As already mentioned in the introduction, this work offers only a brief description of the Croatian fishery reality and the results need to be updated and fulfilled with more detailed information. The data collected, however, clearly show that in the period observed, the Croatian fishery sector was characterised by deep changes of all the indicators considered. From 1989 to 1995, the employment and production, as well as the balance of trade present a decreasing trend. On the other hand, the number of fishing vessels is in continuous increase. This could mean that the Croatian fishery is becoming a sensitive economic sector, which needs particularly careful, but radical management measures, not only to permit the survival of the fishery as the economic activity, but also to prevent the depletion of the Adriatic resources.

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Some social–economic aspects of marine fishing in Albania

V. Spaho*, B. Musabelliu, F. Haka

Abstract

An analysis of the fishery sector in Albania is given for the period 1995-2000. Economic indicator, social economic issues and the illustration of regulations are used to describe the fishing sector organization.

1. Some economic indicators

Fish production from fishing and aquaculture, has played and continuous to play a very important role in the production structure of the Albanian economy. The importance of this activity is due to the fact that fish production contributes to national income, plays an important role in our exports, and offers employment to many people. According to the data of the Ministry of Agriculture and Food, fish export during 1995-2000 has been as follows (Table1).

Table 1. The quantity of fish exported in the 1995-2000 period.

Nomenclature	**Years**				
	1995	**1996**	**1998**	**1999**	**2000**
Quantity (T)	1255	1341	2451	813	686
Value (000 lek)	313726	218064	591507	295119	308700

It is evident that there have been sensitive fluctuations in both fish production and exports. Nevertheless, there exist all possibilities for a sensitive increase of production due to the state and number of fishing boats, as well as to their compatibility with the various methods of fishing. By estimating fishing capacity (fishing boats) according to their engine power and methods of fishing, we have the following situation (Table 2 and Table 3):

* Tirana Agricultural University, Zootechnology Department, Tirana Albania; e-mail: (to the attention of Vladimir Spaho): mlamaj@agri-univ-tirana.edu.al

Table 2. The classification of fishing boats according engine's power in Hp.

Power of engine	Number of fishing boats	%
< 80	32	18
81-150	34	20
151-299	57	33
300-408	45	26
409-600	4	2
mbi 600	2	1

Table 3. Number of vessels for fishing method.

No	Fishing (Catching) method	Number of vessels	%
1	Trawlers	54	31
2	Trawlers-pelagic	23	13
3	Trawlers-seiner	48	28
4	Pelagic	3	2
5	Selective	46	26
	TOTAL	**174**	**100**

The allocation of fishing boats according to catching methods from 1990 up to 1999, is presented in Figure 1. It is evident, there has been a tendency to increase the number of trawler boats. In the graph are not presented the pelagic fishing boats, but it should be mentioned that actually their number has been drastically reduced compared to their dominating position in the early '90s in Vlora and Saranda harbors.

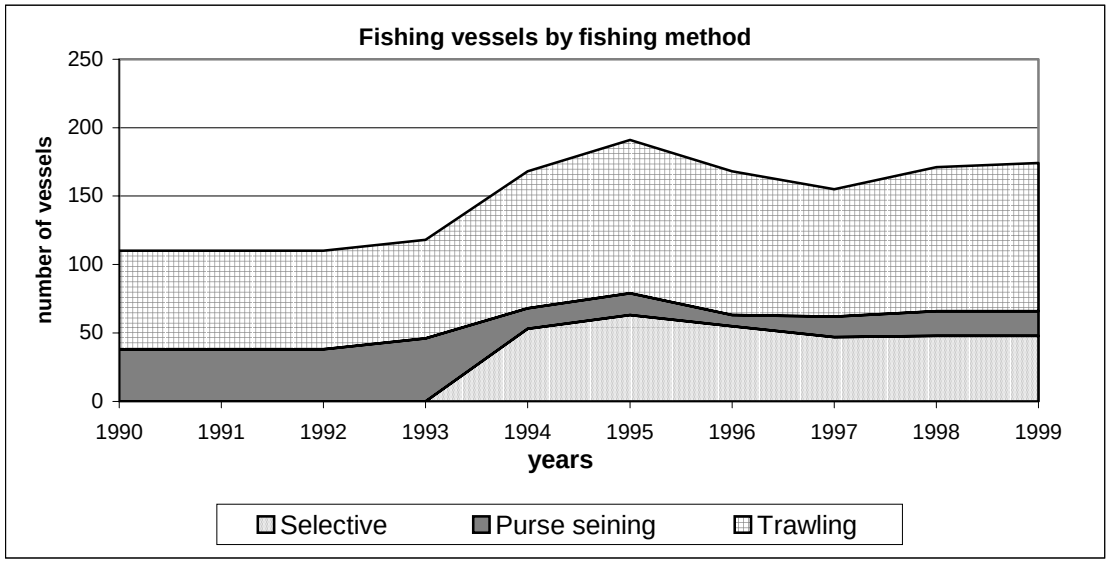

Figure 1. The distribution of fishing boats according the catching methods in the 1990-1999 period.

By estimating fishing capacitiy (fishing vessels) according to their engine power and fishing methods, (fish production from marine fishing and according to fishing methods) for the period from 1990-1999, is as follows (Table 5):

Table 4. The production of the fish by marine fishing in the 1990-1996 period in tons.

No	Fishing methods	1990	1991	1992	1993	1994	1995	1996
	Total production by marine fishing (a+b+c)	6903	2055	1920	1245	757	992	1260
a	Trawling	1700	506	1657	1200	529	691	845
b	Pelagic	1314	379	263	34	190	239	263
c	Purse seining	3888	1170	0	11	38	61	152

2. Sector organization and ownership forms

Up to 1990, there existed four marine fishing enterprises, allocated in the four main harbors of the country (Durres, Vlore, Sarande and Shengjin). Fishing enterprises were state owned, as it was the case with the entire Albanian economy. Fishermen were fixed wage employees, and their wage varied according to qualification level, the task they accomplished and their job seniority.

Privatization of fishing vessels and fishing gears took place during 1991-1992. Initially, the fishing vessels passed under the ownership of fishermen (about 8-11 persons worked on a vessel). Because of certain economic difficulties related to the price of fishing nets, maintenance costs, high level of vessels depreciation, high prices of fuel etc., the largest number of fishermen sold their stocks.

Actually, the ownership map is presented as follows:

One owner- one vessel	154 cases
One owner – two vessels	5 cases
IKTIOADRIA Ltd	3 vessels
INCA Ltd	2 vessels
Adriatik Ltd	1 vessel

Fishermen payment depends on both quality and quantity of fish production. However, the average monthly wage of a fishermen fluctuates between 25 000 – 30 000 leke (about 200 USD).

After privatization, there were observed tendencies to set up groupings of collective nature, but they were not successful. Actually, there does not exist any special form of organization, and each vessel operates as a single production unit. There exist three associations with limited liability, and only two of them are Italian-Albanian joint ventures.

3. Social-economic issues of the transition period

In general, the privatization of fishing enterprises was accompanied by an increase in fishermen income, but the process met with various social-economic problems. Hereunder are presented some of them:

- Some inadequacies in the existing Law "About fishing and aquaculture", particularly in the articles related to organization forms and activity monitoring. The Law did not express explicitly the social-economic transformations which were taking place in Albania during the recent years.
- In every day practice there still exist some elements of the old management psychology: the producers tendency to over estimate the government competencies and to require government intervention for the solution of their economic problems; the public institutions tendency to keep some kind of patronage over those activities which might be covered by fishermen associations (such as license specifications, supervision of the areas defined as "fishing areas" by the government etc.).
- From the financial point of view, the vessel owners did not possess sufficient collateral to provide the necessary crediting for their activities. According to the information gathered from the producers, no one from the vessel owners had received any bank credit during the period 1960-1990.
- There exist inadequacies in the fiscal system for fish imports, creating difficult situations for the domestic producers. It happens that low quality fish products enter our market and sold at very low prices. There are certain periods when 1kg. of imported mullet is sold for less than 1$, a price which does not encourage at all the coastal lagoon fishermen of the country.
- It is necessary to make efforts for the improvement and restructuring of fish retail and wholesale market. It is timely to establish markets for fish and other seafood products at the main centers of fish production. Such an initiative will encourage producers, promote exports and increase foreigner faith in our domestic products, promote tourism and improve marketing of seafood products.
- Lack of seafood processing industry constitutes another issue. Up to early '90s, there existed sea food processing industry in Albania. There were produced mainly sardines cans (in Vlora), herring cans (in Korca and Kukes), as well as clamp cans (in Saranda). The nature of sea food processing industry determined in some way the nature of fishing methods up to the early '90s. After the '90s, the market for pelagic fish was reduced because seafood processing plants were closed down. Many producers were obliged to invest for changing fishing methods. Efforts have been made to re establish the conservation industry in Durres and Lezha, but without any encouraging result. The support to such initiatives would be an efficient step to encourage raw material producers.
- There exist inadequacies related to professional qualification of fishermen and training of managers. The lack of a professional education system for fishermen and higher specialists, who are going to manage this sector is becoming more and more pressing. Marine fishing needs qualified technicians, fishermen well acquainted with their profession and qualified managers.

- Scientific research poorly supports the production activities. There are situations which obstacle the full integration of research structures with production. Here can be mentioned:
    - Some managers consider research as a secondary activity
    - Inefficiency of research institutions. The Fishing Research Institute, as the unique research center in the country, is provided with a limited number of specialists, and equipment available is not suitable for a qualitative research work.
    - There are very few private producers, who ask the assistance of research institutions for the solution of technical problems
    - There is no competition because of lack of analogue research institutions and due to the fact that actually in Albania are not established private research structures

4. Prospect of fishing sector organization

The Law No. 7908 date 05/04/1995, "About Fishing and Aquaculture in Albania" is based on the principles of FAO "Code of Conduct for Responsible Fisheries". This law and the other by-laws related to it, make possible marine fishing in Albania in compliance with international standards, based on responsible fishing and rational exploitation of fish resources.

The development of responsible fishing asks for the implementation of efficient organizative ways, which should be reflected in the existing Law about marine fishing. To this aim, the Albanian Government, with the decision of the Council of Ministers No.222, date 05/05/2000, has approved in principle the Fishing Development Project, credited by World Bank, which foresees the establishment of fishermen communities and Fishing Management Associations (FMA). Their main tasks are:

- Harbor and improved fishing centers management
- Development of responsible fishing

The application of laws and definition of regulations will be realized through the cooperation of public institutions with fishermen communities, organized in associations. From here derives the concept of "Co-management" The transfer of competencies about harbor management, will condition investments in portual infrastructure. Actually, only trade activities are carried out in ports. As a consequence, fishing operations meet with difficulties related to supporting infrastructure and application of management rules.

On the other hand, the "Co-management" concept permits the government to "transfer" to FMA, part of their competencies related to fish resources management. The government in cooperation with FMA is going to develop fishing management plans. These plans will define the measures related to fishing areas management, number of fishing licenses, fishing limitations in certain seasons and areas, definition of fishing gear etc.

During Fishing Development Project preparatory phase, some additions were made to the Law "About Fishing and Aquaculture in Albania", which will complete the legal framework of fishing sector, and will create the required conditions for the application of the project. The existing law has been conserved, and additions made are mostly related to the establishment and functioning of FMAs, harbors and fishing centers transfer to FMAs, co-management of fish resources in defined marine areas and inland waters.

Fishing Management Associations are foreseen by law as non-governmental organizations and non-profit generating, they are established on community basis and in conformity with the Civil Code. Association beneficiaries control harbor and fishing center activities, participate in fishing co-management, offer a limited number of specific services to their members. The Law describes the activities of FMA, their internal structure, members' tasks and rights, monitoring way of activities by the Ministry of Agriculture and Food and local public institutions.

One of the most essential differences of the Law about Fishing and Aquaculture is the chapter about the transfer of harbor and fishing centers from the government to FMA. FMAs are foreseen to be responsible for the functioning and management of harbor and fishing centers. The Law defines the feasible form of transfer, as well as FMA's rights and tasks related to harbor management. In addition, the law defines the monitoring ways of FMAs by public institutions, and activities accomplished in harbor and fishing centers.

The Law speaks about "Co-management" and defines "Co-managing fishing area". According to this concept, fishing management plans for each co-managing area, will be the outcome of common agreements between Fishing Directory at MAF and FMA, in the respective area. Fishing management plan will be approved by the Minister of Agriculture and Food, and be accomplished according to the regulations developed by MAF in cooperation with FMAs. The Law foresees monitoring provisions of fishing management plan.

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