

Fisheries Conservation and Control Division
Malta Centre for Fisheries Sciences, Marsaxlokk, Malta

**MALTA NATIONAL PROGRAMME FOR
COLLECTION OF FISHERIES DATA 2006**

in accordance with

Council Regulation (EC) No 1543/2000

Council Decision (EC) 439/2000

Commission Regulation (EC) No 1639/2001

Commission Regulation (EC) No 1581/2004

Complementary Regulations: CR 2090/98 (fleet register), CR 2847/93 (control) CR 3759/92 (market)

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Table of contents

INTRODUCTION.....	4
MODULE OF EVALUATION OF INPUTS: FISHING CAPACITY AND FISHING EFFORT (- CHAPTER II -)	5
C. COLLECTION OF DATA CONCERNING FISHING CAPACITY	5
C.1. <i>Minimum programme</i>	5
C.2. <i>Extended Programme</i>	5
D: COLLECTION OF DATA RELATED TO FISHING EFFORT	6
D.1. <i>Minimum programme</i>	6
D.1.1. <i>Fuel consumption</i>	6
D.1.2. <i>Fishing effort by type of technique</i>	6
<i>Logbook approach</i>	6
<i>Sampling approach</i>	6
D.1.3. <i>Specific fishing efforts</i>	6
<i>Logbook approach</i>	6
<i>Sampling approach</i>	6
<i>Questionnaire</i>	7
<i>Interviewers</i>	7
<i>Sampling plan</i>	7
<i>Sample size and allocation to strata</i>	8
<i>Estimator</i>	9
D.2 <i>Extended Programme</i>	9
MODULE OF EVALUATION OF CATCHES AND LANDINGS (- CHAPTER III -).....	10
E: COLLECTION OF DATA RELATED TO CATCHES AND LANDINGS.	10
E.1 <i>Minimum program</i>	10
<i>Logbook approach</i>	10
<i>Sampling approach</i>	10
<i>Questionnaire</i>	11
<i>Interviewers</i>	11
<i>Sampling plan</i>	11
<i>Sample size and allocation to strata</i>	12
<i>Estimator</i>	13
E.1.2 <i>Discards</i>	14
E.1.3 <i>Recreational and game fisheries</i>	14
E.2 <i>Extended Programme</i>	15
F: COLLECTION OF DATA CONCERNING THE CATCHES PER UNIT OF EFFORT AND/OR EFFECTIVE EFFORT OF SPECIFIC COMMERCIAL FLEETS.	16
F.1. <i>Minimum programme</i>	16
F.2 <i>Extended Programme</i>	16
G. ELIGIBILITY OF THE SCIENTIFIC EVALUATION SURVEYS OF STOCKS.....	17
G.1 <i>Minimum programme</i>	17
G.1.1 <i>Introduction</i>	17
G.1.2. <i>MEDITS project</i>	17
G.1.3. <i>Tuna Tagging Survey</i>	17
G.1.4 <i>Organisation of MEDITS survey</i>	17
G.2 <i>Extended Programme</i>	18
G.2.1 <i>The GRUND project</i>	18
G.2.2 <i>The JUVENILE acoustic survey</i>	18

H: BIOLOGICAL SAMPLING OF CATCHES: COMPOSITION BY AGE AND BY LENGTH.....	19
<i>H.1 Minimum programme</i>	19
<i>Introduction</i>	19
<i>Sampling Fish Markets for Length and Age</i>	19
<i>Exemptions</i>	19
<i>Sampling Discards for Length and Age</i>	19
<i>H.2 Extended Programme</i>	19
I: OTHER BIOLOGICAL SAMPLING	20
<i>Introduction</i>	20
<i>I.1. Minimum programme</i>	20
<i>Exemptions</i>	20
<i>I.2 Extended Programme</i>	20
MODULE OF EVALUATION OF THE ECONOMIC SITUATION OF THE SECTOR (-	
CHAPTER IV -).....	21
<i>Introduction</i>	21
J. COLLECTION OF ECONOMIC DATA BY GROUPS OF VESSELS	21
<i>J.1. Minimum programme</i>	21
<i>Sampling strategy</i>	21
<i>Data collection practice</i>	21
<i>Database Development</i>	22
<i>J.2. Extended Programme</i>	22
K. GATHERING OF DATA AND THE PROCESSING INDUSTRY	23
<i>K.1 Minimum Programme</i>	23
<i>K.2 Extended Programme</i>	23
ARTICLE 10 - DATA BASE AND DATA ACCESS	24
CO-ORDINATION.....	25
MALTA CORRESPONDENT AND INTERNAL CO-ORDINATION	25
REFERENCES.....	26
TABLES.....	27
<i>Table 1:</i>	28
<i>Table 2:</i>	29
<i>Table 3:</i>	30
<i>Table 4:</i>	31
<i>Table 5:</i>	32
ANNEX IA: TRAWL SURVEY AREA AND HAULS	33
ANNEX IB: ACOUSTIC SURVEY AREA AND TRANSECTS	34
ANNEX IC: ACOUSTIC SURVEY AREA AND HAULS	35
ANNEX II: THE OFFICIAL DATABASE SYSTEMS	36

INTRODUCTION

This document lays down the Maltese programme for 2006 to meet the requirements of Commission Regulation 1639/2001.

The Maltese programme outlined in this document sets out the work the Maltese authorities intend undertaking directly or in conjunction with national and/or international bodies to meet the requirements of the community minimum programmes for 2006.

Before its accession to the European Union (EU) in May 2004, Malta started adopting the EU's Common Fisheries Policy (CFP). Fisheries Conservation and Control Division is the administrative authority responsible for fisheries and fisheries issues in Malta. The Malta Centre for Fisheries Sciences is the institute within this Division responsible for scientific monitoring, research, development and training in the fields of fisheries and aquaculture.

Malta intends to meet its obligation under this legislation by:

- ✓ The use of data collected by Maltese authorities on registered fishing vessels;
- ✓ The collection of data on fishing activity and commercial landings of marine fish species in Malta and by Maltese fishing vessels landing abroad;
- ✓ The collection of biological data on marine fish species
- ✓ Maintain and upgrade an Information System involving personnel, a server, a database, communications and technical staff to enable the storage, maintenance and accessibility of data required under the legislation, with appropriate security to ensure against improper access and also to answer efficiently to EU requests.

Details of the Maltese programme of activities are given item by item based on EC Regulation 1639/2001. The resources required to fulfil the items within the minimum programmes are set out in the specific enclosed financial forms. Detailed figures for 2006 are provided in the sheets, as requested by the Commission. All costs are expressed in Euros, at current exchange rates.

In view of the fact that the current programme document has been drawn up before obtaining any results from the 2005 programme, Malta wishes to point out that whilst every endeavour has been made to produce a complete proposal and to quantify associated costs, they may be subject to revisions in years following 2006. Some parts of the proposed programme are already implemented through current schemes and structures; however, other parts need more planning and preparation based on the experience gained through the previous exercise to fully cover the Maltese obligations regarding the Data Collection Regulation. Therefore, during 2006 some amendments to the proposed programme for 2006 could take place, in the light of the results and experience obtained from the 2005 programme.

During 2005 the development of the database (Control Centre) would be completed facilitating the storage of data and coordination of the data collection related to each module of the present document, as well as producing an output in the format requested by the Regulations No. 1639/2001 and No. 1581/2004.

Module of evaluation of inputs: fishing capacity and fishing effort

(- Chapter II -)

C. Collection of data concerning fishing capacity

C.1. Minimum programme

All Maltese fishing vessels are registered in the Vessel Register of Maltese Fisheries Conservation and Control Division. The Vessel Register is part of a database (MALTASTAT), correlated to other databases concerning landings, controlling input and output of the Maltese fisheries and includes, among others, the following information relating to each vessel:

- ✓ Typology
- ✓ Registration number
- ✓ Age (age of the hull)
- ✓ Dimensions: GT, length, width, draught.
- ✓ Engine power, type and age;
- ✓ Owner
- ✓ Health and safety equipment

The information in the Vessels Register is updated daily.

Based on information supplied in MALTASTAT system, Malta is able to segment the fleet of vessels according to the sub division set out in Appendix III (of the Regulation), at the requested precision level of the Regulation.

During the end of 2004 and beginning of 2005 a re-classification of licensed vessels took place allowing the categorization of the fishing fleet into new vessel classes.

Moreover, an upgraded version of the Fleet Register database and information system will be operational during 2005 and will form part of the MaltaStat integrated system managed by the Control Centre from 2006.

Data collected to meet the requirements of Regulation 2090/98 are covered exhaustively.

C.2. Extended Programme

No data collection will be carried out within the framework of the extended programme.

D: Collection of data related to fishing effort

D.1. Minimum programme

D.1.1. Fuel consumption

Calculations of the average annual fuel consumption expressed in volume and cost for vessels in the respective segments (as defined in Appendix III of the Regulation) will be dealt with in the collection of economic data on the fishing fleet.

D.1.2. Fishing effort by type of technique

Malta expects to be able to supply information on fishing effort by technique according to Appendix VIII (of the Regulation), on a quarterly basis, and accordingly to level 3 of geographical disaggregation defined in Appendix I (of the Regulation). Figures will be based on logbooks (over 10 metre fleet) and on a sample survey (under 10 metre fleet). If a satisfactory level of collection of data is not reached through the logbooks, the Fish Market Sales Notes system will be used as a back-up for providing data on fishing effort.

Logbook approach

In the use of data from completed logbooks for the parameters on fishing effort by technique, being each fishing operation recorded by trip (that should take more than one day), Malta will require the master to complete a separate entry in the logbook when fishing activity has taken place that day. In this manner, Malta expects to be able to report effort on the basis of days fished for active gear fishing as requested in relation to the over 10 metres fleet. Data will be collected and provided in an exhaustive way.

Sampling approach

Fishing effort by type of technique will be assessed on the basis of a sampling scheme for the less than 10 metre fleet.

Fishing effort by type of technique is one of the variables covered by the survey for measuring specific fishing efforts. The methodology is described in next section. Data will be collected by type of fishing techniques defined in Appendix VIII (of the Regulation), will be estimated on a quarterly basis, according to level 3 of geographical disaggregation level defined in Appendix I (of the Regulation), also disaggregated according to Appendix III (of the Regulation), at precision level 2 as requested.

D.1.3. Specific fishing efforts

Logbook approach

Similar information to fishing effort by technique can be provided at the level of specific fishing efforts again based on the logbook data, which are gathered in an exhaustive way. Same considerations will be taken as in section D.1.2. if logbooks do not provide satisfactory results.

Sampling approach

A specific sample survey will be carried out to estimate the Maltese specific fishing effort. Data will be collected by type of fishing techniques defined in Appendix VIII (of the Regulation), will be estimated relating to the stocks mentioned in Appendix VI of the Regulation (according to thresholds reported in that Appendix) on a quarterly basis, according to level 3 of geographical disaggregation level defined in Appendix I (of the Regulation), also disaggregated according to Appendix III (of the Regulation), at precision level 3, as requested.

An ad hoc sample survey for this parameter is needed because the other sample surveys of fisheries in Malta do not include information on the daily activity and catches of the fishing fleet.

The sampling design for the following years will be prepared annually in accordance with the methodology described below.

The object of the survey is to estimate effort by technique and also effort relating to stocks of special interest (when catches of specific stocks exceed defined thresholds given in Appendix VI of the Regulation). Eleven species were involved in the study. Species and thresholds are defined in table 1.

The population under study therefore consists of all Maltese vessels less than 10 metres during the survey reference period, i.e. a quarter.

The complete and updated list of vessels comes from the Malta Vessel Register.

The target variables of the survey are the active boats per day, during the reference period, their catch and also the fishing area.

During the reference period, for a specified number of days (see table 2), in a sample of major landing sites, a census of all active boats will be taken. Only when catch kept on board of stocks in Appendix VI (of the Regulation) occurs, landed catch will be recorded. Interviewers at landings will record information.

Questionnaire

The questionnaire will be on paper and it will consist of very few essential questions to give interviewers the possibility to spend the least time necessary for a census of each active vessel to be taken. In the case of active vessels the following information will be recorded:

- ✓ Registration number
- ✓ Gear
- ✓ Fishing area
- ✓ Target stock
- ✓ Kilograms of catch per species landed

A complete list of the target stocks will be part of each questionnaire.

Interviewers

Recorders will be people already involved in interviews at landing during the previous years but also new ones will be engaged. According with new precision levels to be respected in providing information, according to the Regulation, the number of interviews will increase in relation to past years.

More recorders will be recruited and will attend a new specific training course.

Sampling plan

The complex sampling plan will be a two-stage sampling with stratification at primary-unit level. The first-stage units will be the major landing site and the second-stage units the fishing days. Both primary and secondary units will be randomly selected without replacement; Primary units are selected with Probability Proportional to Size (PPS sampling)

Two-stage sampling was chosen because of the need of obtain the requested precision level at a reasonable number of days sampled.

The primary units are stratified according to three factors:

- ✓ Season
- ✓ Geography
- ✓ Type of fishing technique (according to Appendix VIII, of the Regulation)

So, different sampling size samples will be drawn according to the quarter of the year, the part of the country and the gear class.

Sample size and allocation to strata

The sample size was determined according to the defined precision level.

The required sample size to estimate the population total (total effort) ensuring an error not exceeding the defined precision, for a 95% confidence level, was estimated according to Hansen & Hurwitz (Hansen et al.,1953):

$$\bar{n} = \frac{W / m}{\varepsilon^2 + W^2 / \bar{N}m + B^2 / M - B^2 / m}$$

in which:

\bar{n} average number of days to be sampled (estimate of the average secondary units sample size)

\bar{N} average number of days in the reference period, 90 (secondary units average population size)

m number of ports to be sampled (estimate of primary units sample size)

M number of ports in the population (primary units population size)

W : average relative variance between days total effort (secondary units total)

B : relative variance between ports total effort (primary unit totals)

ε : fixed precision (error)

The overall sample size will be distributed among the strata according to Neyman's criterion, i.e. proportionally to the variance of each stratum.

$$n_h = n \frac{N_h S_{2h}^2}{\sum_{h=1}^H N_h S_{2h}^2}$$

Where

$$S_h^2 = \frac{1}{n_h - 1} \sum_{j=1}^{n_h} (x_{hj} - \hat{x}_h)^2$$

in which:

h stratum index ($h = 1, \dots, H$)

j secondary-unit index (day)

n_h number of secondary units sampled in stratum h

x_{hj} total effort on the j th unit of the sample (j th day)

\hat{x}_h total effort estimate in the stratum h

After having estimated the number of secondary units for each stratum (n_h), the number of primary units (m_h) has to be estimated. As first approach they were considered equal to 3 for each stratum, i.e. 3 ports per stratum will be sampled. Primary units were randomly selected, without replacement, according to PPS sampling.

According to the above-described methodology and to the data on activities and landings from previous year samplings, a sampling design is proposed to estimate total effort corresponding to

standards, requested in the Regulation. Sampling size will be estimated each year on the basis of new updated variance estimates. Please, see table 2.

Estimator

In a two-stage sampling design, stratified in the first stage, both the primary and the secondary units being randomly selected, the estimate of total effort can be given as:

$$\hat{x} = \sum_{h=1}^H \sum_{i=1}^{m_h} \sum_{j=1}^{n_{hi}} K_{hi} x_{hij}$$

$$K_{hi} = \frac{M_h}{m_h} \frac{N_{hi}}{n_{hi}}$$

in which:

h stratum index (h = 1, ..., H)

i primary-unit index (port)

j secondary-unit index (day)

N_h number of secondary units in stratum h (days)

M_h number of primary units in stratum h (ports)

n_h number of secondary units sampled in stratum h (days)

m_h number of primary units sampled in stratum h (ports)

x_{hij} total effort in the j th day, in the i th port

\hat{x} total effort estimate

According to the followed sampling plan, the sampling relative variance of the estimate of the total effort of the population is:

$$V^2(\hat{x}) = \sum_{h=1}^H \frac{M_h - m_h}{M_h} \frac{B_h^2}{m_h} + \sum_{h=1}^H \frac{\bar{N}_h - \bar{n}_h}{\bar{N}_h} \frac{W_h^2}{m_h \bar{n}_h}$$

in which:

h stratum index (h = 1, ..., H)

i primary-unit index

j secondary-unit index

M_h number of primary units in stratum h

m_h number of sampled primary units in stratum h

B_h relative variance between ports total effort (primary unit totals), in stratum h

\bar{N}_h average number of secondary units of primary unit i in stratum h

\bar{n}_h average number of sampled secondary units in stratum h

W_h average relative variance between days total effort (secondary units total), in stratum h

D.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

Module of evaluation of catches and landings (- Chapter III -)

E: Collection of data related to catches and landings.

E.1 Minimum program

Malta expects to be able to supply data on commercial landings for all stocks mentioned in Appendix XII (of the Regulation), according to the subdivisions defined in that Appendix. It expects to provide the landings by weight and value of each segment identified in Appendix III (of the Regulation) by species, by quarter and with regard to the geographical origin of the catch, at the level of geographical disaggregation 2 according to Appendix I (of the Regulation).

Figures will be based on exhaustive data reported in logbooks (over 10 metre fleet), by sampling landings (under 10 metre fleet) and sales notes (>10m and <10m).

Malta expects to be able to provide information on all the landings of its vessels including those into other Member States and third countries.

Malta will also intend to collect information on landings by other flag vessels into its own territory.

For large pelagics Malta uses the conversion coefficients proposed by the ICCAT, other species are not eviscerated before landings.

Logbook approach

In the use of information from logbooks, Malta expects to be able to provide data on commercial landings (both within and outside the country) and total catch, including landings (in value and weight) for the stocks in Appendix XII (of the Regulation) according to the disaggregation and the precision requested, relating to over 10 metre fleet. Moreover, Malta intends to use the Fish Market Sales Notes Scheme together with the logbooks to provide data according to the Regulation. All information on sold fish is registered and stored in the Sales Notes database and includes among others the following information:

- ✓ Vessel Registration number
- ✓ Landing place, date and buyer
- ✓ Species
- ✓ Weight in kilo
- ✓ Value in national currency

The Sales Notes Scheme is considered to obtain data on landings values and estimates of fishing effort for vessels over 10m on a census basis.

Sampling approach

A specific sample survey will be carried out to estimate landing relating to artisanal fishery, i.e. under 10 metre fleet.

Data will be collected to estimate overall annual commercial landings by species, distinguish the geographical origin of the catches according to level 2 of the geographical disaggregation of Appendix I (of the Regulation); for all stocks in Appendix XII (of the Regulation) according to the subdivisions defined in that Appendix; landings by weight and value will be estimated also by segment as defined in Appendix III (of the Regulation), individualised by species, by quarter, and with regard to the geographical origin of the catch, at the level of geographical disaggregation 2 according to Appendix I (of the Regulation), at precision level 2 as requested.

An ad hoc sample survey has been planned, based upon results surveys carried out in previous years in the country respecting the precision level 2 requested. Results of the sample survey will be given according to the reference period.

The sampling design for the following years will be arranged annually in accordance with the methodology described below.

The objective of the survey is to estimate landings related to stocks in Appendix XII (of the Regulation).

The population under study therefore consists of all Maltese less than 10 metre vessels during the survey reference period, i.e. a quarter. The complete list of vessels comes from Malta Vessel Register. Each quarter, before starting to take interviews on landings, interviewers are asked to go to each sampling ports and update the list of boats (sampling frame) that are expected to be found as active (obtaining an updated sampling frame). This is a compulsory task because of the possibility (in artisanal fleet) to have a very high percentage of changes in the population to be investigated from a quarter to another. Having finished the updating of the vessels' list, interviewers can start interviewing fishermen at landing sites.

During the reference period (a quarter), according to the sampling plan, a random sample of all active boats is taken (see table 3), in each sample of major landing sites.

The target variables are the active boats per day, their catch and also the fishing area, during the reference period. Interviewers at landing sites will record information.

Questionnaire

In each quarter, two types of questionnaires will be filled in. They are on paper and consist of:

Sampling frame: A list of boats to be updated, according to their activity, including the updating of gear used in the reference period

Daily landings form: essential questions to give interviewers the possibility to spend very short time with fishermen, not to annoy them. Compulsory information to be recorded is:

- ✓ Registration number
- ✓ Gear
- ✓ Time spent in fishing
- ✓ Fishing area
- ✓ Species
- ✓ Kilograms of catch per species landed

Interviewers

Recorders will be people already involved in interviews at landing during the previous years but also new ones will be engaged. According with new precision levels to be respected in providing information, according to the Regulation, the number of interviews will increase in relation to past years.

More recorders will be recruited and will attend a new specific training course.

Sampling plan

The complex sampling plan will be a two-stage sampling with stratification at primary-unit level. The first-stage units will be the major landing site and the second-stage units will be the vessels. Both primary and secondary units will be randomly selected without replacement; Primary units are selected with Probability Proportional to Size (PPS sampling)

Two-stage sampling was chosen because of the need of obtain the requested precision level at a reasonable number of days sampled.

The primary units are stratified according to three factors:

- ✓ Season
- ✓ Geography
- ✓ Type of fishing technique (according to Appendix III of the Regulation)

So, different sampling size samples will be drawn according to the quarter of the year, the part of the country and type of fishing technique.

Sample size and allocation to strata

The sample size was determined according to the defined precision level.

The required sample size to estimate the population total (total catch) ensuring an error not exceeding the defined precision, for a 95% confidence level, was estimated according to Hansen & Hurwitz (Hansen et al., 1953):

$$\bar{n} = \frac{W/m}{\varepsilon^2 + W^2/\bar{N}m + B^2/M - B^2/m}$$

in which:

\bar{n} average number of boats to be sampled (estimate of the average secondary units sample size)

\bar{N} average number of boats in the reference period, boats registered (secondary units average population size)

m number of ports to be sampled (estimate of primary units sample size)

M number of ports in the population (primary units population size)

W : average relative variance between boats total catch (secondary units total)

B : relative variance between ports total catch (primary unit totals)

ε : fixed precision (error)

The overall sample size will be distributed among the strata according to Neyman's criterion, i.e. proportionally to the variance of each stratum.

$$n_h = n \frac{N_h S_{2h}^2}{\sum_{h=1}^H N_h S_{2h}^2}$$

Where

$$S_{2h}^2 = \frac{1}{n_h - 1} \sum_{j=1}^{n_h} (x_{hj} - \hat{x}_h)^2$$

in which:

h stratum index ($h = 1, \dots, H$)

j secondary-unit index (day)

n_h number of secondary units sampled in stratum h

x_{hj} total catch on the j th unit of the sample (j th day)

\hat{x}_h total catch estimate in the stratum h

After having estimated the number of secondary units for each stratum (n_h), the number of primary units (m_h) has to be estimated. As first approach they were considered equal to 3 for each stratum,

i.e. 3 ports per stratum will be sampled. Primary units were randomly selected, without replacement, according to PPS sampling.

According to the above-described methodology and to the data on activities and landings from previous year samplings, a sampling design is proposed to estimate total landings corresponding to standards, requested in the Regulation. Sampling size will be estimated each year on the basis of new updated variance estimates. Please, see table 3

Estimator

In a two-stage sampling design, stratified in the first stage, both the primary and the secondary units being randomly selected, the estimate of total effort can be given as:

$$\hat{x} = \sum_{h=1}^H \sum_{i=1}^{m_h} \sum_{j=1}^{n_{hi}} K_{hi} x_{hij}$$

$$K_{hi} = \frac{M_h}{m_h} \frac{N_{hi}}{n_{hi}}$$

in which:

h stratum index (h = 1, ..., H)

i primary-unit index (port)

j secondary-unit index (day)

N_h number of secondary units in stratum h (days)

M_h number of primary units in stratum h (ports)

n_h number of secondary units sampled in stratum h (days)

m_h number of primary units sampled in stratum h (ports)

x_{hij} total effort in the j th day, in the i th port

\hat{x} total effort estimate

According to the followed sampling plan, the sampling relative variance of the estimate of the total catch is:

$$V^2(\hat{x}) = \sum_{h=1}^H \frac{M_h - m_h}{M_h} \frac{B_h^2}{m_h} + \sum_{h=1}^H \frac{\bar{N}_h - \bar{n}_h}{\bar{N}_h} \frac{W_h^2}{m_h \bar{n}_h}$$

in which:

h stratum index (h = 1, ..., H)

i primary-unit index

j secondary-unit index

M_h number of primary units in stratum h

m_h number of sampled primary units in stratum h

B_h relative variance between ports total catches (primary unit totals), in stratum h

\bar{N}_h average number of secondary units of primary unit i in stratum h

\bar{n}_h average number of sampled secondary units in stratum h

W_h average relative variance between days total effort (secondary units total), in stratum h

E.1.2 Discards

According to the Regulation Malta has to collect discard data in order to be able to present estimates of discard rates for selected species. Discards will be monitored for the stocks mentioned in Appendix XII of the Regulation and by type of technique as defined in Appendix III except for the stocks for which Appendix XII specifies another disaggregation rule.

Discard sampling in Maltese fleet will be restricted to the important fleet segments related to industrial fisheries (>10 m vessels) because it is noted that it is very difficult to speak about discards relating to artisanal fisheries.

A survey will be carried out on the basis of the experience obtained during the pilot survey for 2005 and will be expected to produce the first estimates for discards in each fleet segment (results for 2005 are expected to be only qualitative). The task of this survey is to develop the sampling plan and to perform a detailed quality check of the sampled data of the fleet also with respect to representatives of the sampling programme. On obtaining the results of this survey, new sampled discard data will be directly applied to the national landing statistics. The survey will be of 10 discard trips for each segment of the fleet. The total number of trips should be 60.

All discard sampling trips will follow the rules laid down in the international agreed sampling manual established under EU study 98/097: "Discard Monitoring". In this document all aspects of "at sea sampling" are covered (including: selection procedures for selecting fishing trips, description of sub-sampling procedures, recording of data, safety at sea etc).

The sampling of discards will be done on-board during normal fishing activities by observers trained *ad hoc*.

The vessels to be monitored should be randomly selected from all the registered ones. However, for this survey, the vessels will not be sampled randomly from all vessels performing a given fishery but only from the vessels where the skipper has agreed beforehand in having observers on board.

The information sampled will include the biological sampling to comply fully with the MP required in Chapter III (H) of the Regulation and contains

- ✓ Vessel and gear characteristics
- ✓ Place, date, time and duration of fishing operation
- ✓ Total weight of discards and landings by all species caught.
- ✓ Separate length distributions of discard and landings by all relevant species caught.
- ✓ Otoliths and individual mean weight per cm-length group of selected species.

Success would depend on weather but also on the activities and friendliness of the fishing fleet owners, and other uncontrollable factors.

E.1.3 Recreational and game fisheries

According to the Regulation Malta has to collect data exclusively on Bluefin tuna (mentioned in Appendix XI) caught by recreational fishery. A survey will be carried out after developing a sampling plan according to the results of the pilot study undertaken in the 2005 programme. The annual survey will take into account the disaggregation level specified within Appendix XI (of the Regulation).

The recreational fishery for Bluefin tuna is practiced largely by three categories of vessels:

- ✓ Recreational vessels – fishing fleet register
- ✓ Non fishing register vessels – sport vessel register
- ✓ Charter vessels

The catches in the recreational fishery in Malta will be officially registered in 2005 for the first time. In previous years no data on the total recreational catch was available. For the fishing season 2006, the questionnaires requiring information on both effort and catch will be distributed to all three categories of vessels listed above.

E.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

F: Collection of data concerning the catches per unit of effort and/or effective effort of specific commercial fleets.

F.1. Minimum programme

Within the framework of the Data Collection Regulation Malta will continue to enhance its time series of CPUE data making it readily available for any analysis which may be requested at any time. Malta has reasonably started to collect data on CPUE since 2001 for selected fisheries.

F.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

G. Eligibility of the scientific evaluation surveys of stocks

G.1 Minimum programme

G.1.1 Introduction

Malta has taken part in the MEDITS Trawl Survey programme since 2000 in collaboration with CNR-IRMA (Mazara del Vallo, Sicily) and has actively participated in coordination meetings. A database and information system has also been developed in collaboration with CNR-IRMA to store and process trawl survey data.

In 2005 a Tuna Tagging Survey was developed for the first time.

G.1.2. MEDITS project

In accordance with the requirements of Chapter III(G) of the Annex to implement this regulation, Malta intends to continue its activities in the project, maintaining the coverage of the survey in the GFCM Geographical Sub-Area (GSA) 15, performing a total of 45 hauls (Annex I). The Sampling area and sampling procedure are in accordance with sampling protocol established by EC Project 99/026-014-046-038 (See References, page 24).

G.1.3. Tuna Tagging Survey

Malta intends to continue the tagging programme developed in 2005 in accordance with the outcome of the Planning Group on Tuna Tagging (PGTT) – Joint European Tuna Tagging Programme for 2005 (Report of the First Meeting of the PGTT in the East Atlantic and Mediterranean Sea; Bari, 4-6 April 2005).

The survey scheme consists of a joint exercise together with the Italian and Cypriot partners. In this joint programme, Italy will provide the tags to be used in 10 BFT (Bluefin Tuna) in Malta (and 10 BFT in Cyprus) and Cyprus will cover the satellite fees (Argos).

Malta intends to tag 10 BFT specimens of 150 kg each, with electronic Pop-up tags. The specimens will be purchased from the local tuna farm companies and the tagging experiment is expected to be carried out through the expertise of the Italian team and taking into account the results obtained from the previous and first exercise in 2005.

The present scheme is subject to collaboration with the two partners. On the contrary, Malta will be using the conventional tags provided by ICCAT.

Regarding tagging of swordfish, Malta intends to develop a similar experiment to that of Bluefin Tuna. If feasible, this survey would be targeting small specimens during the late summer period. Conventional tags are likely to be used for this purpose, nevertheless, the use of internal archival tags will be considered.

G.1.4 Organisation of MEDITS survey

The survey will be carried out in much the same way as at present in spring. It consists of 11 days of sampling at sea collecting biological data. Nevertheless, due to subcontracting of the Italian vessel St Anna, a total of 13 days of vessel costs are requested since two days are necessary for the vessel to arrive/leave to the Maltese port, prepare the gear and equipment and allow the Maltese scientists to get on-board. The responsibilities pertaining to this survey will be given to the Maltese international and national coordinators who will be purposely nominated for these tasks.

G.2 Extended Programme

G.2.1 The GRUND project

Since 2003, Malta has carried out a second trawl survey within the framework of the Italian national programme (GRUND). The 2005 GRUND survey will cover the same area (GSA 15) and involve the same total number of hauls as in the MEDITS project (45). Sampling area and procedure are equal to those of Medits, albeit GRUND survey takes place in autumn. The survey effort will be kept at 45 hauls and the sampling design will cover the whole area GSA 15.

Costs to carry out GRUND survey are equal to those of MEDITS survey, the reason being that the two surveys involve the same number of hauls. However, the two surveys are carried out in different seasons.

G.2.2 The JUVENILE acoustic survey

Malta has carried out for the first time in October 2004 an acoustic survey around the Maltese Islands and will carry it out again in autumn 2005. Malta intends to continue this survey in the following years under the Extended Programme with the collaboration of CNR –IAMC (Mazara) / ISMAR (Ancona).

The survey consists on 5 days at sea carrying out acoustic transects around the Maltese Islands (Annex Ib) and hauls to collect biological information on small pelagics (Annex Ic). Moreover, data on oceanographic parameters and ichthyoplankton are collected at the same time. Nevertheless, due to subcontracting of the Italian R/V G. Dalla Porta, a total of 7 days of vessel costs are requested since two days are necessary for the vessel to arrive/leave to the Maltese port, prepare the gear and equipment and allow the Maltese scientists to get on-board.

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

H.1 Minimum programme

Introduction

Malta will sample species indicated in Appendix XV (of the Regulation) unless exempted on the basis of landing quantities. Sampling will be undertaken on an annual basis, as specified in relation to species involved. The numbers of measurements and age samples will be at the level specified under the MP.

Biological sampling of catches, to assess age and length composition will take place in fish market in Valletta. Each sample will be representative of the size composition of landing.

The method involves a team of two persons at the fish market sampling all target species according to Appendix XV (of the Regulation). Sampling will be based on landings. Target stock specimens will be bought except for large pelagics, which will be measured in length at the market. Age reading (otoliths / spines) will be done in the laboratory in order to construct seasonal age/length distribution for each species.

Sampling Fish Markets for Length and Age

The Maltese sampling requirements are detailed in Table 4 by species.

For each species in the regulation the sampling requirements are given. In addition Table 4 shows average annual market landings for the species included under the MP in Appendix XV (of the Regulation). Maltese landings have been compared to the reference level by species and area to select those species to be included in the minimum programme.

Exemptions

In accordance with the exemptions concerning the sampling rules, sampling of species whose landings by weight correspond to less than 200 tonnes will not be carried out.

Sampling Discards for Length and Age

The Maltese discard sampling programmes incorporate the estimation of length distributions and the collection of otoliths from the discarded size groups of all target species so far as conditions at sea permit. Being part of the survey specified in section *E.1.2. Discards*, only funding for age reading is being requested in the financial form H A&L Discards.

H.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

I: Other biological sampling

Introduction

Malta will sample species listed in Appendix XVI (of the Regulation) unless exempted on the basis of landing quantities. Sampling will be undertaken on an annual basis, as specified in relation to species involved. Data will be collected for sexes separately where specified in the Regulation.

I.1. Minimum programme

The collection of data relating to growth by length and weight and maturity stage for species covered by Appendix XVI (of the Regulation) will be mainly obtained through market sampling, but also through biological research surveys carried out at sea (MEDITS and GRUND).

Data for sex ratios will be obtained from commercial landings where possible.

Exemptions

According to the exemptions concerning the sampling rules, stocks for which TACs and quotas have not been defined, the same rules apply on the basis of the average landings of the previous three years and with reference to the total Community landings. No samples will be collected for those species whose landings by weight are less than 200 tonnes.

I.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

Module of evaluation of the economic situation of the sector (- CHAPTER IV -)

Introduction

The economic situation of the fisheries sector in Malta is not well known yet, and its importance to the economy has been frequently underestimated.

J. Collection of economic data by groups of vessels

J.1. Minimum programme

A survey will be developed according to the results of the pilot study 2005. The task of this survey is to carry out a sampling plan in order to achieve the possibility to estimate population requested parameters at specified level 1 precision.

The annual survey will be devoted to cover all parameters mentioned in Appendix XVII (of the Regulation), according to segmentation set out in Appendix III (of the Regulation).

The programme of work for future years will be updated according to the results of the present study.

Sampling strategy

The national programme for collection of economic data will be based on the following data sources:

- ✓ Vessel register information recorded in MALTASTAT
- ✓ Logbooks information from catch and landings evaluation
- ✓ Questionnaire information returned from vessel owners on a voluntary basis.

To ensure the highest possible standard of survey results, the fleet has been divided into two distinct populations; industrial fleet (over 10 metres overall length), and artisanal fleet (under 10 metres). A different sampling strategy will be employed for each. The Industrial fleet will be divided into sub-populations based on overall length and type of fishing technique according to Appendix III (of the Regulation) of the Regulation. On the other hand, the artisanal fishery will be considered as a whole, since all fishing operations are passive, with the exception of the FAD *Coryphaena* fishery, albeit not accounting for more than 50% of the total annual fishing time for any vessel in this segment.

Data collection practice

The survey questionnaire will be utilised to comply fully with the MP of data collection as defined in Appendix XVII (of the Regulation). The success of the survey depends ultimately on the co-operation of the fishermen. The Fisheries Conservation and Control Division will ensure the best possible outcome by consulting the relevant fisheries organizations and by advertising the survey in the national press. The majority of the survey information will be collected by face-to-face interviews with vessel owners. Only relating to industrial fleet, the survey will be carried out by distributing the questionnaires with the logbooks but also face-to-face interviews with vessel owners will take place. As mentioned above, the success of the survey depends ultimately on the co-operation of the fishermen.

Price/species time-based disaggregation, investment estimation and regional-based disaggregation requests from the DCR will be fully addressed on the study.

Database Development

The National Database for Economic Data will be maintained and upgraded permitting users to store and analyse all relevant data currently available (i.e. fleet register, logbook data etc) along with the data to be collected in the survey. The system will ensure that when accessing information or exporting information to outside parties all data imported/exported will comply with current data regulations.

J.2. Extended Programme

No data collection will be carried out within the framework of the extended programme.

K. Gathering of data and the processing industry

K.1 Minimum Programme

A survey will be developed according to the results of the pilot study 2005. The task of this survey is to estimate the annual value per sector of the parameters listed in Appendix XIX (of the Regulation).

The Fisheries Processing Industry has been monitored in Malta for the first time in 2005 and a sampling plan will be drawn up after obtaining the results from the pilot study 2005. In this respect the pilot study collecting formation from the various sectors will give insight on the data collection procedure which should be adopted in 2006 and the following years.

K.2 Extended Programme

No data collection will be carried out within the framework of the extended programme.

Article 10 - Data Base and Data Access

Fisheries data in Malta are archived in separate databases (Annex II) for catches and landings and vessels structural characteristics. Initiatives are now underway to upgrade and complete the system. As part of this work, a joint strategy for the development of IT systems in Fisheries Conservation and Control Division was developed. An integral part of this work included the creation of a combined Maltese database on fishing activity called “Control Centre”, which will be the source of the data to fulfil the requirement for fishing activity data laid down in the minimum programme. This database which started to be created in 2005 will be finalised by the end of 2006. As part of its creation the current degree of compatibility between the systems and the databases will be completely solved; obviously part of the work will be to bring together the separate distinct existing databases. Moreover, part of this database will be deposited on the web.

The resulting datasets will be placed on a server, containing the appropriate database software, with suitable security that will then be accessible as required under Article 9(3) of the Regulation.

Co-ordination

Malta correspondent and internal co-ordination

Dr. Matthew Camilleri (Head, Malta Centre for Fisheries Sciences) has been appointed as the Maltese national correspondent to supervise Malta's commitment to the data collection programme. Ms. Alicia Mosteiro will act as sub-coordinator of the programme.

It is estimated that in total this will comprise at least 1 ½ man-years.

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Tables

Table 1:
Threshold values per Stock

Stocks	Threshold 1	Threshold 2
Sole	30%	5%
Nephrops	30%	5%
Hake	30%	5%
Anchovy	30%	5%
Sardine	50%	5%
Swordfish	30%	5%
Bluefin tuna	30%	5%
Big-eye tuna	30%	5%
Albacore	30%	5%
Yellow-fin tuna	30%	5%
European eel	30%	

Table 2:

Sampling design for specific fishing effort and for fishing effort by type of techniques. Number of interviews.

Gear	Strata (Island)	January March	April June	July September	October December	Total
Gear using hooks	<i>Gozo</i>	62	78	75	33	248
	Malta	78	42	38	77	235
Pots and traps	<i>Gozo</i>	83	50	40	78	251
	Malta	31	29	35	53	148
Fixed nets	<i>Gozo</i>	67	46	56	70	239
	Malta	55	38	25	50	168
<i>Total</i>	<i>Gozo</i>	212	174	171	181	738
Total	Malta	164	109	98	180	551
Grand Total		376	283	269	361	1289

Table 3:

Sampling design for evaluation of catches and landings (<10 metres fishing fleet). Number of interviews to be taken per sampling port, per type of fishing technique, and per quarter

Sampling Ports	January - March			Total	April-June			Total	July-September			Total	October-December			Total	Grand Total
	Nets	Pots	Hooks		Nets	Pots	Hooks		Nets	Pots	Hooks		Nets	Pots	Hooks		
Marsalforn	45	12	24	81	48	12	24	84	27	21	96	144	36	21	57	114	423
Mgarr	101	263	432	796	99	174	231	504	104	210	581	895	102	207	495	804	2999
Xlendi	11	12	12	35	24	12	24	60	17	12	36	65	14	12	36	62	222
Msida	137	58	516	711	21	48	504	573	48	69	750	867	93	102	603	798	2949
MarsaXlokk	247	135	488	870	246	144	606	996	234	156	912	1302	333	141	1200	1674	4842
St. Pauls Bay	96	56	213	365	267	63	624	954	134	114	725	973	72	66	552	690	2982
Grand Total	637	536	1685	2858	705	453	2013	3171	564	582	3100	4246	650	549	2943	4142	14417

Note: Owing to space constraints, the names of types of fishing techniques have been reported in a short form, in this table: NETS relates to “Fixed nets”, POTS relates to “Pots and traps”, HOOKS relates to “Gear using hooks”

Table 4:

Sampling requirements by species, according to Regulation. The table also reports average annual landings (above 200 tonnes).

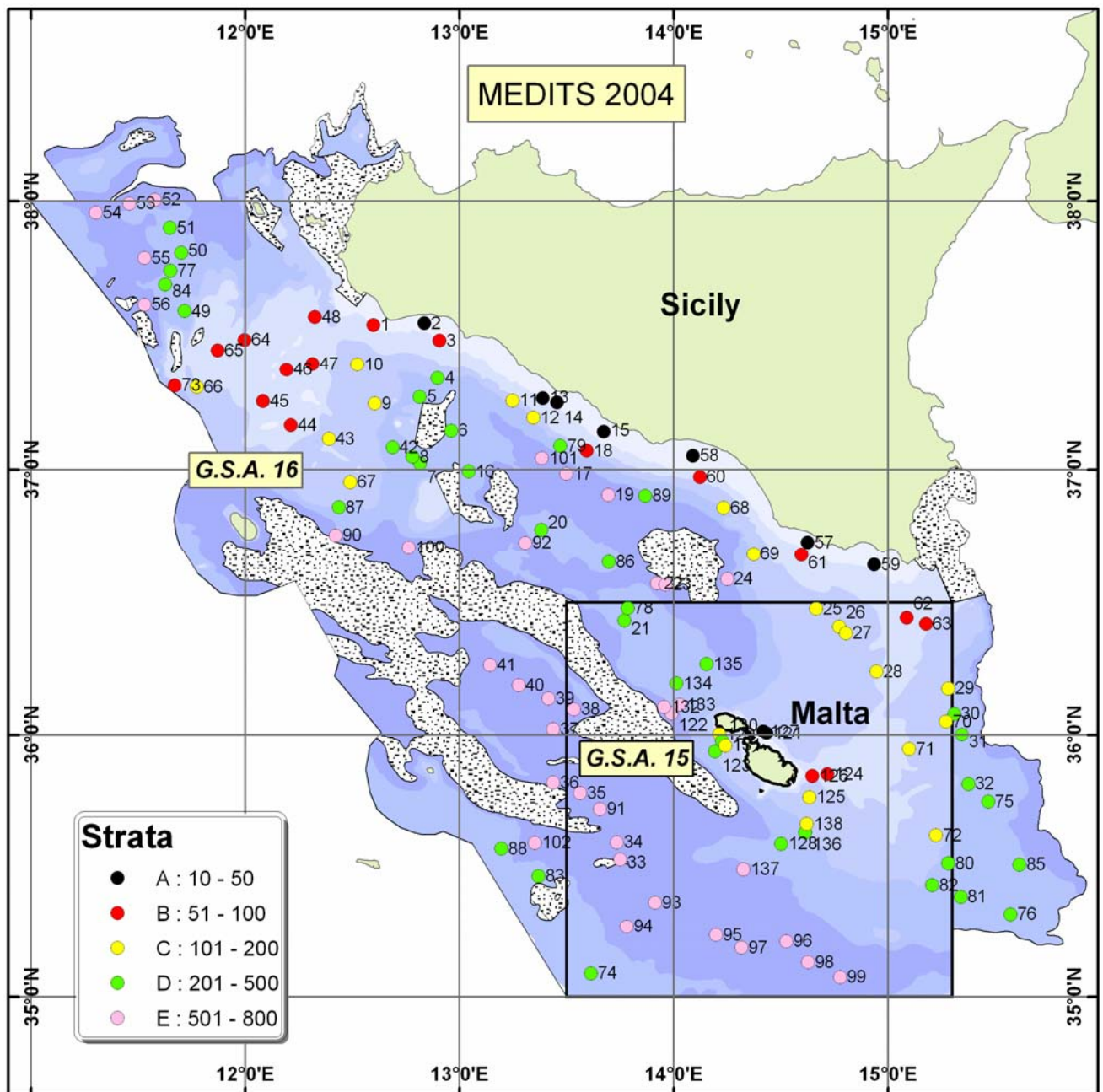
Species	Average annual tonnes of landings	tonnes per each length and age sample	No of fish per each age and length sample	No of samples	Total No of fish measured	Total No of fish measured aged
AREA Mediterranean - Division 37.2.2						
Bluefin tuna	230	100	100	2.3	230	230
Dolphin fish	350	50	50	7	350	350
Swordfish	200	100	100	2	200	200

Table 5:

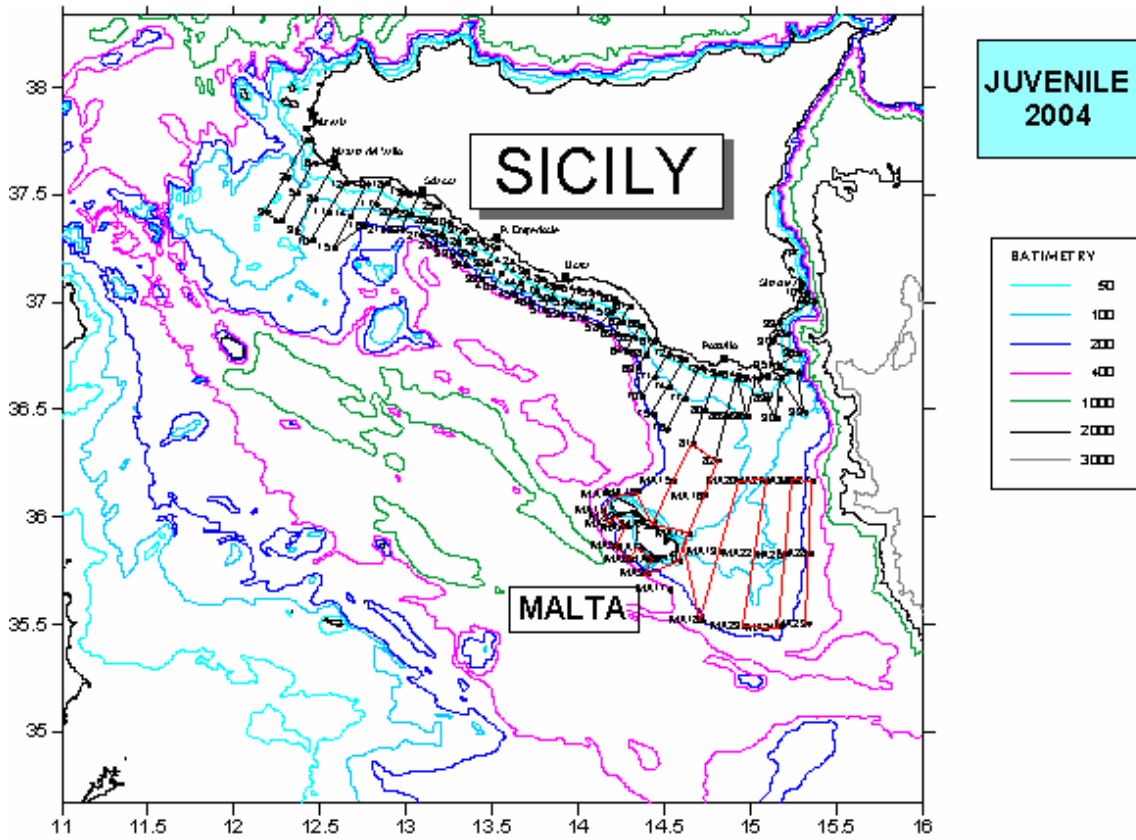
Maltese landings (in kg) and market value (in Maltese liri – Lm) for all species for years 2000 to 2004.

Maltese Landings per species SPECIES	2004		2003		2002		2001		2000	
	Weight	Value	Weight	Value	Weight	Value	Weight	Value	Weight	Value
ENGLISH NAME	TOTAL (kg)	Total (Lm)	TOTAL (kg)	Total (Lm)	TOTAL (kg)	Total (Lm)	TOTAL (kg)	Total (Lm)	TOTAL (kg)	Total (Lm)
AMBERJACK	6592	12776	3924	12263	4112	10017	2354	5542	2922	7331
CRAYFISH	15	101	27	199	40	280	37	297	75	523
MIXED FISH	285	954	684	1049	2100	2725	3608	3520	5645	5299
ALBACORE	10354	8246	4666	3325	2033	2676	3940	5037	3596	3677
PICAREL	299	241	727	506	1589	881	586	344	1601	732
GILTHEAD BREAM	581	757	138	276	33	71	192	284	298	562
BLUE SPOTTED BREAM	1304	6874	786	4021	1639	9361	2266	11026	1874	9233
COMMON STING RAY	528	332	221	223	272	342	468	504	465	496
GROUPE	967	3581	211	857	187	817	1348	4210	0	0
SCARBARD FISH	0	0	190	80	136	74	232	126	0	0
LARGE SCALE SCORPION FISH	11317	60201	10559	56126	11508	60075	7060	34883	8191	39187
DENTEX	1238	5026	534	2915	1650	8247	967	4978	890	4511
STONE BASS	30610	85650	32961	92043	47107	111778	23039	65249	22997	70408
PILOT FISH	4466	6747	15791	12951	8293	12507	7637	10367	28296	33663
GURNARD	179	591	1274	3066	766	2100	1126	3096	2085	5459
SHRIMPS/PRAWNS	26179	198202	36753	263116	29017	159432	36073	190735	23420	130482
SMALL SPOTTED DOG FISH	276	308	408	368	1406	1100	1778	1454	2195	1773
CONGER	1739	1541	2429	2147	3496	2935	3242	3303	2483	2431
TREASURE SHARK	0	0	84	126	64	128	387	708	1438	2664
BLUE SHARK	0	0	446	501	556	1104	833	1278	1151	1541
MORAY EELS	338	281	226	162	18	12	165	147	11	9
SADDLED BREAM	783	2502	1244	4160	1397	3589	1209	3604	1559	4196
MACKEREL	4313	4349	303	372	2693	4115	31762	17634	34427	26042
SQUID	890	4098	2037	8787	2291	9355	1846	6424	2709	8437
LITTLE TUNNY	955	672	1257	1003	503	354	363	261	179	151
DOLPHIN SHAD	0	0	0	0	621	1187	17626	4237	1849	1089
DOLPHIN FISH	472700	335415	507081	385983	347315	440129	302896	336109	234282	369933
LING	2112	3779	1632	3651	2544	5067	3422	5834	4655	7657
BARRACUDA	1648	2396	1065	1529	964	1573	877	1527	1093	1641
PELLUCID SOLE	448	830	769	1234	917	1471	1978	2333	1400	1666
DOG FISH	20361	20236	17049	17616	23538	25037	17428	21998	19431	22088
HAKE	2197	4385	2597	5595	3698	7990	5028	10087	6282	11111
GREY MULLET	0	0	26	28	28	31	11	9	124	94
PICAREL	1124	528	450	402	1466	928	5102	2686	6971	3681
SIX-GILLED SHARK	4151	4762	6157	6269	8529	9716	3419	4549	4867	5612
PANDORA	647	1676	2536	8927	1811	6285	2199	7204	4634	14294
COMMON SEA BREAM	6687	37907	7468	41677	4285	24726	4427	24771	5629	29903
SPEAR-FISH	730	844	929	765	1457	1856	1844	2586	1382	1609
ANGLER FISH	0	0	15	17	611	632	1504	1333	1215	1170
PORBEAGLE SHARK	469	442	109	222	43	113	1072	1953	502	979
SWORDFISH	174342	486982	133517	270146	189577	382702	78478	215800	140155	319358
ATLANTIC BONITO	569	836	270	415	705	972	426	573	1053	1356
OCTOPUS	4284	9825	4530	10836	6566	13803	5482	10919	8888	18056
SPOTTED DOGFISH	0	0	0	0	308	518	551	562	550	520
SKATE	5269	3191	5171	3806	4674	3574	4491	3550	5123	3620
SCOURER	1332	826	1720	1265	1403	1417	1154	1247	564	686
LONG NOSE SKATE	50	37	235	140	675	527	1532	1143	1189	1001
JOHN DORY	0	0	91	318	414	1617	274	1144	578	2168
WHITE BREAM	2057	9123	3751	18443	2583	13046	1916	8455	2043	8113
HORSE MACKEREL	2446	2246	1281	1524	3792	5720	5558	5338	13002	9255
COMBER	862	832	748	802	951	958	2007	1941	1557	1435
CUTTLE FISH	541	1122	1213	2507	1612	3070	1747	3176	3635	5979
SCORPION FISH	2289	6417	2796	7400	2343	6472	2603	6738	2537	6055
SEA BASS	0	0	0	0	48	77	115	321	1148	2977
BLUE-FIN TUNA	227774	461268	220218	543771	175707	400724	188693	486107	324393	604806
SQUID	84	88	633	981	1037	1661	1458	1763	1665	1948
SPOTTED WEEVER	119	261	175	352	899	2088	1441	2957	2586	4482
RED MULLET	3375	8629	3108	6709	3865	8085	5105	9130	7385	12988
FRIGATE MACKEREL	7615	1596	2350	969	186	91	1402	497	1201	400
SMALL BLUE-FIN TUNNY	268	304	2971	2010	4459	5701	4997	3873	2168	2317
BOGUE	15629	14464	19002	13957	16338	14022	26893	17184	21210	14156
SALEMA	1024	589	85	71	155	113	189	125	154	115
ANGEL FISH	0	0	111	190	0	0	138	177	171	256
ROUGH SHARK	411	235	480	314	1834	1093	3346	2097	1516	1040
TOTALS	1067822	1826101	1070219	1831483	940864	1798867	841347	1587044	987294	1854421

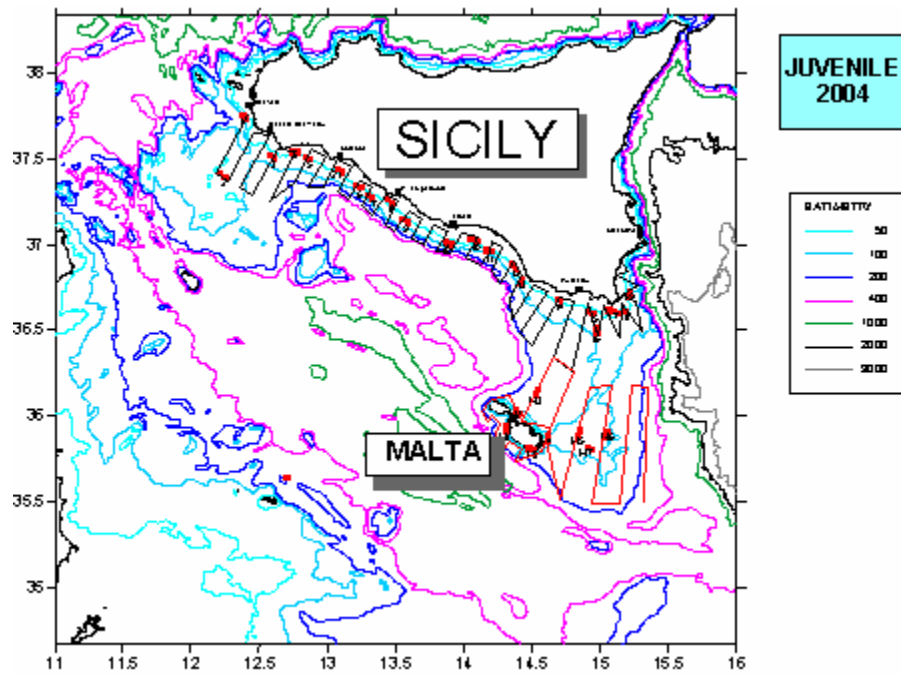
Annex Ia: Trawl survey area and hauls



Annex Ib: Acoustic survey area and transects



Annex Ic: Acoustic survey area and hauls



Annex II: The official DataBase Systems

- ✓ The Statistical Working System (*under development*) Malta-Control Centre (Overall data processing and monitoring of National Fishery data)
- ✓ The National Register of Fishing Vessels - MaltaStat-Register DataBase (Census data and Fishing Licences management)
- ✓ The Fishery Codification System - Fishery Codification System of Malta - National and GFCM
- ✓ The Catch Assessment Survey LogBook System - MaltaCas-LogBook System (Catch and Effort Data Management for Commercial Fisheries)
- ✓ The Catch Assessment Survey – Sampling System - MaltaCas-Sampling System (Catch and Effort Data Management for Small-scale fisheries)
- ✓ The Economic database – MaltaEcon System
- ✓ The Biological database – MaltaBiol System
- ✓ Trawl Survey databases – Seatrim
- ✓ Fish Market Landings database