

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

**MALTA NATIONAL PROGRAMME FOR  
COLLECTION OF FISHERIES DATA 2005**

**in accordance with**

Council Regulation (EC) No 1543/2000

Council Decision (EC) 439/2000

Commission Regulation (EC) No 1639/2001

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

May 2004

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# INTRODUCTION

This document lays down the Maltese programme for 2005 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 2005.

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
- ✓ Create 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 2005 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 it is the first time this programme document has been drawn up by Malta, it 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 2005. Some parts of the proposed programme are already implemented through current schemes and structures, however, a lot more planning, preparations, development and recruitment would need to be undertaken in order to fully cover the proposed monitoring programme contained in this document.

# **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.

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).

#### **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 under 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. The efficient provision of these data will require some further development of Maltese fishery database systems, part of which falls under this programme.

#### **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 under 10 metres during the survey reference period, i.e. a quarter.

The complete 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**

Part of recorders will be people already involved in interviews at landing during the previous years but also new ones will be selected. 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)

$\varepsilon$ : 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<sub>h</sub> number of secondary units in stratum h (days)

M<sub>h</sub> number of primary units in stratum h (ports)

n<sub>h</sub> number of secondary units sampled in stratum h (days)

m<sub>h</sub> number of primary units sampled in stratum h (ports)

x<sub>hij</sub> total effort in the j<sup>th</sup> day, in the i<sup>th</sup> 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<sub>h</sub> number of primary units in stratum h

m<sub>h</sub> number of sampled primary units in stratum h

B<sub>h</sub> 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<sub>h</sub> 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 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.

#### **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 under 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 its 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 spent very short time with fishermen, not to annoy them. Compulsory information to be recorded are:

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

### **Interviewers**

Part of the recorders will be people already involved in interviews at landing sites but new ones will be recruited. According with the new precision levels to be respected in providing information, according to the Regulation, the number of interviews will increase in relation to past years.

Newly recruited recorders will attend a 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)

$\varepsilon$ : 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

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 pilot survey will be carried out. The task of this survey is to develop the sampling plans and performs 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 pilot survey, new sampled discard data will be directly applied to the national landing statistics. The pilot 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 pilot 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**

A pilot study will be carried out. The task of this survey is to understand the extent of recreational and game fishery and to develop a sampling plan. The annual pilot study will focus on the evaluation of the recreational Bluefin tuna fishery, taking into account the disaggregation level specified within Appendix XI (of the Regulation). A survey will be carried out once a month in each sample port.

The programme work for future years will be based on the results of the pilot study.

### **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**

Reviews of catch and effort data which have been used during the years 1995 to 2000 by scientific assessment working groups have to be made by each Member State and sent to the Commission. Unfortunately, Malta has reasonably started to collect data on CPUE since 2001 within the framework of the FAO-Copemed project and is not in the position to study or review data in this regard. However, the recently collected data will be analyzed to investigate whether they have implications for this task.

**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. In addition, since 2003, Malta has carried out a second trawl survey within the framework of the Italian national programme (GRUND). Sampling in both Medits and GRUND has been restricted to the Maltese 25 mile fisheries conservation zone. A database and information system has also been developed in collaboration with CNR-IRMA to store and process trawl survey data.

#### **G.1.2. MEDITS project**

In accordance with the requirements of Chapter III(G) of the Annex to the implement this regulation, Malta intends to continue its activities in the project, whilst extending the coverage of the survey to the GFCM Geographical Sub-Area (GSA) 15, performing a total of 45 hauls (Annex I).

#### **G.1.3 The GRUND project**

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).

#### **G.1.4 Organisation of MEDITS and GRUND surveys**

The two surveys will be carried out in much the same way as at present, MEDITS in spring and GRUND in autumn.

The responsibilities pertaining to these surveys will be given to the Maltese international and national coordinators who will be purposely nominated for these tasks.

Costs to carry out MEDITS survey are equal to those of GRUND survey, the reason being that the two surveys involve the same number of hauls. However, the two surveys are carried out in different seasons and with different nets (an experimental net for MEDITS and a commercial net for GRUND).

### **G.2 Extended Programme**

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

## ***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 2000-2002 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 pilot survey specified in section *E.2. Discards*, no additional funding is requested.

### **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**

A clear picture of economic situation of the fisheries sector in Malta has not been obtained to date, and its importance to the economy has been frequently underestimated.

### ***J. Collection of economic data by groups of vessels***

#### **J.1. Minimum programme**

A pilot survey will be carried out. The task of this survey is the developing of a sampling plan in order to achieve the possibility to estimate population requested parameters at specified level 1 precision.

The annual pilot 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 based on the results of the pilot 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 meter overall length), and artisanal fleet (under 10 meter). 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, whilst the artisanal fishery will be considered as a whole.

#### **Data collection practice**

The survey questionnaire will be developed during the pilot study 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.

#### **Database Development**

The National Database for Economic Data will be designed to permit 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 be designed to 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 pilot survey will be carried out. The task of this survey is to understand the size of the processing industry and to develop a sampling plan in order to estimate the annual value per sector of the parameters listed in Appendix XIX (of the Regulation).

The programme of work for future years will be based on the results of the pilot study.

### **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 under way to modernise the system. As part of this work, a joint strategy for the development of IT systems in Fisheries Conservation and Control Division is being developed. An integral part of this work will be the creation of a combined Maltese database on fishing activity called “Monitoring command system”, which will be the source of the data to fulfil the requirement for fishing activity data laid down in the minimum programme. This database will be completed within 2 years, and 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***

Mr. 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. There will be sub-coordinators, to cover the scientific aspects separately and the fleet, fishing activity, catches, landings and other data aspects.

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

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## **Tables**

**Table 1:**  
Threshold values per Stock

<b>Stocks</b>	<b>Threshold 1</b>	<b>Threshold 2</b>
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

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

**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
<b>Grand Total</b>	<b>637</b>	<b>536</b>	<b>1685</b>	<b>2858</b>	<b>705</b>	<b>453</b>	<b>2013</b>	<b>3171</b>	<b>564</b>	<b>582</b>	<b>3100</b>	<b>4246</b>	<b>650</b>	<b>549</b>	<b>2943</b>	<b>4142</b>	<b>14417</b>

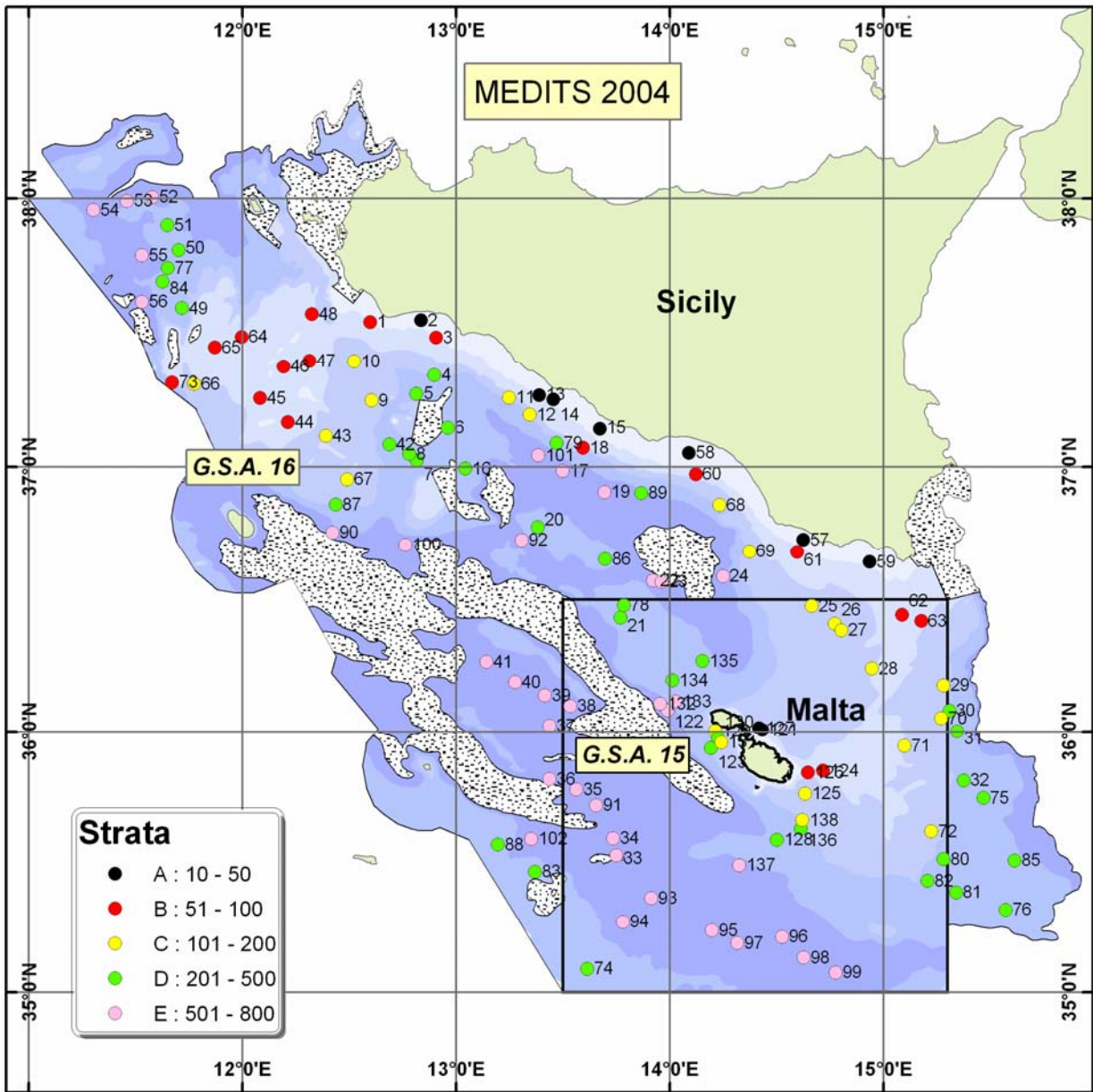
Note: Owing to space constraints, the names of types of fishing techniques have been reported in a short form, in this table: NETS relates to “Fixed nets”, POTS relates to “Pots and traps”, HOOKS relates to “Gear using hooks”

**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 samples	Total No of fish measured	Total No of fish measured aged
<b>AREA Mediterranean - Division 37.2.2</b>						
Bluefin tuna	230	100	100	2.3	<b>230</b>	<b>230</b>
Dolphin fish	350	50	50	7	<b>350</b>	<b>350</b>
Swordfish	200	100	100	2	<b>200</b>	<b>200</b>

# Annex I: Trawl survey area and hauls



## **Annex II: The official DataBase Systems**

- ✓ 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 Statistical Working System (*to be implemented*) Malta-StatSys (Overall data processing and monitoring of National Fishery data)