FISHERIES IN MALTA

NOTE

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GENERAL ECONOMIC DATA

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area:</td>
<td>320 km²</td>
</tr>
<tr>
<td>Shelf Area:</td>
<td>13,000 km²</td>
</tr>
<tr>
<td>Length of Coastline:</td>
<td>140 km</td>
</tr>
<tr>
<td>Population (2004):</td>
<td>399,867</td>
</tr>
<tr>
<td>GDP at market prices (2004):</td>
<td>4,332.4 million €</td>
</tr>
<tr>
<td>GDP Per capita (2004):</td>
<td>10,835 € (50% EU25)</td>
</tr>
</tbody>
</table>

STRUCTURE AND CHARACTERISTICS OF THE INDUSTRY

The fishing industry in Malta is relatively small with more than 65% of landings by weight taken up by large pelagic species. However, at local level, the social importance of fisheries far outweighs their economic output. This is due to the small-scale and traditional nature of local fisheries, and to their role in supplying valuable food items.

In order to prevent the further depletion of stocks and protect the domestic fishing industry, Malta has secured derogation from EU rules, which will allow it to maintain a fisheries conservation zone of 25 nautical miles. In this zone, Treaty of Accession limit activities to coastal fishing for vessels less than 12 metres except for a limited number of larger vessels undertaking specific fisheries. It must be pointed that 95% of Maltese fleet has less than 12 metres, representing 20% of total gross tonnage and 72% of total power.

In 2003 Malta's fisheries production was 1,954 tons, from which 1,073 tons catches and 881 tons aquaculture. In 2002 Malta imports 8.820 tons of fish fresh, chilled or frozen (value 8.9 million €) and exports 3.131 tons (value 18.2 million €), mainly sea bass and sea bream (from fish farms) and tuna.

Maltese fleet

The Maltese fishing industry may be categorised mainly in the artisanal sector since only a small number of fishing vessels, the larger ones, operate on the high seas. The boundary between industrial and artisanal fisheries is not always well defined and with the purpose of regional standardisation the General Fisheries Council for the Mediterranean (GFCM), at its 21th session, agreed to set a minimum length limit of 15 metres for the application of the "Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas" and therefore Maltese vessels over 15 m length should be considered as industrial in line with this agreement. As on 2004, there were a total 2,252 fishing vessels. Of these vessels, only 63 were considered to be industrial vessels (i.e., over 15 m in length). These industrial vessels were mainly trawlers, long-liners and netters. The rest could be considered as multi-purpose, since they undertook all types of fishing, although on a smaller scale.
Table shows the distribution of vessels by their length. The predominance of small vessels remains clear, but the three vessels longer than 85 meters accounts for 59% of the total gross tonnage and 9% of the power. The smaller craft are mostly engaged in coastal or small scale fisheries. Industrial vessels (longer than 15 meters) accounts for 3% of the number of vessels, 77% of the total gross tonnage and 23% of the total power. These industrial vessels are mainly trawlers, longliners and netters. The rest of the vessels could be considered as multipurpose since they undertake all types of fishing although on a small scale.

The vessels composing Maltese fishing fleet may be categorised as modern or traditional. The traditional boats (Luzzu and Kajjik) differs from modern fishing vessels both in shape, size and range of fishing activities. Whereas the modern fishing boats operate on the high seas where swordfish, tuna and large demersal species such as stone bass and various sparids are targeted due to their economic importance, the Luzzu and Kajjik are used for coastal artisanal fishing which includes small long-lines, trammel netting and traps.

<table>
<thead>
<tr>
<th>Type</th>
<th>% N° Vessels</th>
<th>Length</th>
<th>Gross Tonnage</th>
<th>Power</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kajjik</td>
<td>44%</td>
<td>4.6 m</td>
<td>1.0 mt</td>
<td>17 kW</td>
<td></td>
</tr>
<tr>
<td>Luzzu</td>
<td>18%</td>
<td>6.7 m</td>
<td>2.3 mt</td>
<td>30 kW</td>
<td></td>
</tr>
<tr>
<td>MPV</td>
<td>37%</td>
<td>8.0 m</td>
<td>4.6 mt</td>
<td>78 kW</td>
<td></td>
</tr>
</tbody>
</table>

The majority of vessels are of traditional built i.e. luzzu and kajjik. The kajjik is the most prevalent vessel. Following the Kajjik, the Multi-Purpose vessel (MPV) is the most common and luzzu. There are only a limited number of trawlers, most of which are less than 24 metres in length. The Luzzu is the foremost traditional fishing vessel and it is pointed at both ends and the hull material is wood. These vessels have been the mainstay of the fleet in times gone by and their average age is 37 years old. The Kajjik differs from the Luzzu in being generally smaller and being flat ended at the stern. In the past, they were made of wood, but since several years fibreglass has been the material of choice. So, at present, with the average age being 19 years, there is marginally more fibreglass Kajjiks than wooden ones. The multi-purpose vessels are a relatively recent addition to the fleet and the average age is 12 years. This is reflected in the hull material, with the majority being made of fibreglass whilst the remainder is being constructed of wooden planking, and to a lesser degree marine plywood.
Table shows the age of the vessels. Vessels of less than 20 years accounts for 70% of the number of vessels, 89% of the total gross tonnage and 82% of the power. The three bigger vessels (longer than 85 meters) are 5 years old. 19 of the 63 industrial vessels (more than 15 meters) have 20 years old or more (30%). The number of vessels with more than 50 years is negligible.

The majority of vessels undertake fishing on part-time basis (82%); the full-time vessels only accounts for 17% and market fisherman for roughly 1%. The term Market Fisherman denotes craft owners who undertake fishing on part-time basis but who regularly sell fish through the Wholesale fishmarket. Full-time fishery is predominant for trawlers and part-time is the characteristic fisheries for Luzzu and Kajjik. Roughly the 80% of multi-purpose vessel works on a part-time basis.

The main landing sites in Malta are Marsaxlokk Harbour and the wholesale fishmarket in Valletta, whilst Mgarr Harbour is the main landing site in Gozo. The three main ports in Malta's south-eastern region (Marsaxlokk, Birzebbuga and Marsascala) harbour the 36% of Malta's fisheries fleet. Mgarr is the main port in Gozo.

**Employment**

In 2002, the total registered fishing population was 2,552, according EUROSTAT. Of these, there were 538 full-time fishermen. This number should be seen in the context of most fishermen owning more than one craft. Fishing in Malta is mainly seasonal and as a consequence most full-time fishermen own at least one small and one large vessel which enable them to practice off-shore fishing during the milder seasons and coastal or inshore activities during the winter months. The average number of fishermen employed on each full-time boat is of three persons per unit during winter, whilst when undertaking trips of more than two days, extra hands are sometimes recruited.

The rest (2,014) are registered as part-time fishermen whose contribution towards the industry is minimal, except for the Market Fishermen registered craft who land fish regularly at the fishmarket.

There are no female full-time fishermen and only 11 females were engaged in fishing on a part-time basis. Most of the full-time fishermen hailed from a particular area of Malta. In fact, Malta's south-eastern region has 42% of the total full-time and 25% of the part-time fishing population on the Maltese Islands. 30%, of part-time fishermen on the Island of Malta (excluding Gozo) were civil service employees.

<table>
<thead>
<tr>
<th>Age</th>
<th>% Vessels</th>
<th>% Gross Tonnage</th>
<th>% Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt;= Age &lt; 5</td>
<td>17,10%</td>
<td>8,76%</td>
<td>22,89%</td>
</tr>
<tr>
<td>5 &lt;= Age &lt; 10</td>
<td>20,69%</td>
<td>69,99%</td>
<td>35,32%</td>
</tr>
<tr>
<td>10 &lt;= Age &lt; 15</td>
<td>19,72%</td>
<td>6,71%</td>
<td>16,05%</td>
</tr>
<tr>
<td>15 &lt;= Age &lt; 20</td>
<td>12,70%</td>
<td>3,36%</td>
<td>7,40%</td>
</tr>
<tr>
<td>20 &lt;= Age &lt; 25</td>
<td>8,13%</td>
<td>3,70%</td>
<td>5,95%</td>
</tr>
<tr>
<td>25 &lt;= Age &lt; 30</td>
<td>4,48%</td>
<td>2,32%</td>
<td>3,74%</td>
</tr>
<tr>
<td>30 &lt;= Age &lt; 35</td>
<td>4,40%</td>
<td>1,49%</td>
<td>2,50%</td>
</tr>
<tr>
<td>35 &lt;= Age &lt; 40</td>
<td>6,17%</td>
<td>1,50%</td>
<td>3,14%</td>
</tr>
<tr>
<td>40 &lt;= Age &lt; 45</td>
<td>4,31%</td>
<td>1,45%</td>
<td>1,96%</td>
</tr>
<tr>
<td>45 &lt;= Age &lt; 50</td>
<td>1,15%</td>
<td>0,54%</td>
<td>0,75%</td>
</tr>
<tr>
<td>50 &lt;= Age &lt; 55</td>
<td>0,36%</td>
<td>0,05%</td>
<td>0,11%</td>
</tr>
<tr>
<td>55 &lt;= Age &lt; 60</td>
<td>0,13%</td>
<td>0,01%</td>
<td>0,02%</td>
</tr>
<tr>
<td>60 &lt;= Age &lt; 65</td>
<td>0,04%</td>
<td>0,00%</td>
<td>0,00%</td>
</tr>
<tr>
<td>65 &lt;= Age &lt; 70</td>
<td>0,09%</td>
<td>0,01%</td>
<td>0,01%</td>
</tr>
<tr>
<td>70 &lt;= Age &lt; 75</td>
<td>0,31%</td>
<td>0,07%</td>
<td>0,11%</td>
</tr>
<tr>
<td>75 &lt;= Age &lt; 80</td>
<td>0,13%</td>
<td>0,01%</td>
<td>0,01%</td>
</tr>
<tr>
<td>80 &lt;= Age</td>
<td>0,09%</td>
<td>0,01%</td>
<td>0,02%</td>
</tr>
</tbody>
</table>
Fishing operations

Fishing methods adopted in Malta are demersal trawling, "lampara" purse seining, deep-sea long-lining, inshore long-lining, trammel nets, drift nets and traps. Apart from dolphinfish (lampuki) which are caught by ring-netting, all the other main commercial species are caught by longlines, either on the surface (tunas, swordfish) or on the bottom (demersal species). No anchovy or sardine fishing is carried out.

Table shows the distribution of vessels by their main gear. 48% of vessels use bottom set longlines representing 16% of total gross tonnage and 45% of total power. 17% of vessels use troll lines, with 16% of total gross tonnage and 50% of total power. 16% of vessels use trammel net (Parit), with only 3% of total gross tonnage and 4% of total power. The 9% of vessels use traps (1% of total gross tonnage and 4% of total power).

Bluefin tuna (*Thunnus thynnus*)

For years, the limitations of the local market and the lack of facilities to store tuna for eventual preservation made it uneconomical for fishermen to keep targeting this fish. Up to the 1980's, although landings of tuna were substantial, these were caught as bycatches with swordfish longlines. It must be noted that during the 70's and 80's swordfish along with dolphin fish, was the mainstay of local fishing.

The upsurge in Bluefin tuna landings (multiplied by ten in the 20 last years) came about as a result of the tapping of the Japanese market at the end of 80's. Tuna is targeted by more than 50 Multi-Purpose Vessels ranging from 10 meters upwards involving around 150 full-time and part-time fishermen. The gear used is drifting surface longline (LLD) and is baited with Atlantic mackerel and/or Japanese squid.

Bluefin tuna fishing season starts during the month of May and extends until July. Fishing is undertaken to the West, South and South East of the Island. At the beginning of the season, May, the effort is undertaken mainly in the Southwest area and consequently further to the East according to the normal movement of the Bluefin tuna. The season ends in July. The main landing zones are Marsaxlokk, St. Paul's Bay and Marsascala harbours in Malta, whilst those in Gozo are Mgarr and Marsalforn harbours.
Dolphinfish (Coryphaena hippurus)
Dolphinfish or lampuka is one of the most important species for the economy of the Maltese fishing industry. In fact up to a few years ago it was actually the most important fishery due to its appeal to the public and the abundance of catches.

Dolphinfish are captured using "fish aggregating devices" (FAD's). These FAD's are small rafts made of floating material, which are then anchored to the bottom. They were introduced after it was noticed that dolphinfish along with other species such as the pilot fish (Naucrates ductor) and the amberjack (Seriola dumerili) tend to aggregate within the canopy of shadow that these floats make. To further augment the number of fish, palm fronds are attached underneath each float. Once the dolphinfish are aggregated, they are caught by surrounding nets similar to a purse-seine. When the boat is near a FAD various trolls made out of feathers or artificial bait are set and when one fish is caught, a decoy dolphinfish is thrown into the sea to attract any others that may be present under the FAD. When the number of fish present makes it worthwhile, the surrounding operation is then undertaken.

The dolphinfish season extends from September to November. Due to its traditional appeal all boat owners participate in this seasonal activity, but a licence is compulsory.

Swordfish (Xiphias gladius)
Swordfish is targeted throughout the year although in varying degrees. The peak period is from late June to August when other boats revert from tuna to swordfish fishing prior to starting operations for dolphinfish from September onwards.

In the 90's occurred a downward trend due to the presence of swordfish is diminishing through over fishing by both local and foreign fishermen, and because there has been a pronounced shift to Bluefin tuna fishing from May to July to meet the demands of newly found foreign markets particularly Japan. However, in spite of this important decline, swordfish still have an important economic role and represent a constant 7% of the total annual effort.

The only gear used for swordfish is surface drifting longlines (LLD). Actually only few MPVs are equipped solely with swordfish longlines, the rest adapting their gear according to different seasonal fisheries such as swordfish, tuna and dolphin fish.

Demersal species
Demersal fishing is undertaken with different types of gears: gillnets and entangling nets, bottom trawlers, longliners and traps.

Gillnets and entangling nets
Different types of bottom gillnets and entangling nets are used in the Maltese Islands. These are: a) trammel net (GTR) locally known as Parit; b) the Xkitt (GTN) which is a compound net; c) Xkatlar, a single mesh bottom net (GNS). They are mainly used during the winter months when the weather does not allow long term fishing on the high seas. These gears are used both day and night depending on the particular species being targeted, eg demersal species late evening and night, pelagic species during the day. The product is commercialised fresh for local consume. The importance of these nets started diminishing through
the introduction of long-lining which permits fishing away from the shore in deeper waters. Licenses are normally issued only to *bona fide* full-time fishermen.

**Bottom trawling**

Due to the complexity of the local market trawling is also seasonal, in the sense that certain species fetch good prices at particular periods of the year. Currently, three different types of trawling activities are undertaken during the year:

a) Deep sea trawling (during the day) in 600 m and over, where king prawns (*Aristeus antennatus*) are targeted. When fishing king prawns there is almost no by-catch, except for small marketable by-catches of forkbeard (*Phycis blennoides*) and common sole (*Solea vulgaris*).

b) Trawling in depths of between 150/200 m, (during the day) where the terrain is mainly mud and clay yields shrimps (*Parapenaeus longirostris*), hake (*Merluccius merluccius*), red mullet (*Mullus surmuletus* and *Mullus barbatus*), octopus (*Octopus vulgaris*), Japanese squid (*Todarodes sagittatus*), cuttlefish (*Sepia officinalis*) and marketable by-catches of dogfish (*Squalus acanthias*), spotted dogfish, skate and rays (*Raja spp.*), bogue (*Boops boops*) and scad (*Trachurus mediterraneus*). These species are fished very close to land (3/4 miles). This activity is mainly carried out in winter, when the weather does not allow to fish in deeper waters.

c) Trawling at night in depths of between 100 and 200 meters where the bottom is hard and rocky, yields red mullet, comber (*Serranus spp.*), Pandora (*Pagellus spp.*), squid, cuttlefish and weaver (*Trachinus spp.*). This type of trawling is undertaken all along the Northern side of the island but the main zone is on and around Hurd Bank where stocks are more abundant.

In all cases the nets used are the *Mazara* type otter trawls (OTB) which are adjusted according to the type of terrain in which operations are being conducted.

**Bottom longlining**

Breams (*Pagellus spp.*), dentex (*Dentex dentex*), wreckfish (*Polyprion americanus*), stone bass (*Epinephelus alexandrinus*) and common sea bream (*Pagrus pagrus*) are the main targeted species for this type of fishery that is undertaken in areas well away from shore. The gears used are bottom set longlines (LLS). Usually these longlines are set in deep rocky areas near the slope, at depths of 200 m. or more.

**Traps**

Traps (FPO) are used to catch a wide range of demersal species and are constructed in different shapes varies according to species. Benthonic species as moray eel (*Muraena helena*), octopus (*Octopus vulgaris*) and lobster (*Palinurus elephas*) are fished with rectangular metallic traps built with chicken wire netting. They are set all the year round in bottoms ranging from 30 to 70 m depth and they are present in all ports.

**Pelagic species**

*Lampara*

The term "*lampara*" is used because fishermen use strong lights to attract fish, which are then caught by purse seining. *Lampara* fishing was first introduced locally in 1930 and up to a few years ago it was very important part of the total national fishing effort when landings of chub mackerel (*Scomber japonicus*), atlantic mackerel
(Scomber scombrus), horse mackerel (Trachurus trachurus), scad (Trachurus mediterraneus), bogue (Boops boops), allice shad (Alosa alosa), pilchard (Sardina pilchardus) and anchovy (Engraulis encrasicholus) were quite abundant and in fact use to constitute 30% of the total fishing effort, but since the 60's the effort became minimal and subsequent catches are insignificant.

The main importance of sardines and anchovy in particular was because they were bought by fishermen to use as bait. Also, before the advent of large scale targeting of swordfish and tuna and the introduction of demersal species such as hake and red mullet on a large scale, the local market use to absorb all the catches, especially chub mackerel, which was then, along with the dolphin fish, one of the most sought after species.

"Lampara" fishing takes place all along the North side of the island but the main zone is around a shallow area covering about 5 square miles, known as Hurd bank. The depth is between 35 and 44 meters with the intermediate area descending to a maximum of 100 meters.

"Lampara" fishing is undertaken throughout the year except for the period from September to December when these boats target the dolphin fish. Although catches are more or less constant, the peak period is during May.

**Ormeggio (Shark Fishery)**

The word is Italian for berth. It is used locally to indicate where strong surface set longlines (LLS) are anchored and baited with chunks of meat or pieces of large fish to attract sharks (Squalus acantbias and Prionace glauca). However other types of sharks are caught either directly or by means of bottom long lines or as by-catch during other activities.

This fishery is conducted in the south part of Malta and in the Southwest of Gozo all year round.

Dogfish are the main targeted species for this type of fishery that is operated with surface set longlines. The main season for this fishery is from November to May.

**Drifnets**

The Maltese name for these gears is 1-Gholi. These nets are small pelagic nets (GND) used mostly from November to February when saddled bream (Oblada melanura) and small tunids (Scombridae) are known to congregate. The size of the meshes varies according to the species.

**Fish utilisation and marketing**

According to fisheries regulation all fish caught by local fishermen has to be sold through the Wholesale Fishmarket in Valletta, which is under the authority of the Fisheries Department. Catches are sold by public auction through a middleman to retailers and fish hawkers and under the marketing supervision of fisheries officers. All dealers in fish are registered with the Fisheries Department. Sales are usually on credit and the Fisheries Department collects the money due to the fishermen. The fish bought wholesale is marketed by roughly 300 registered fish vendors, each of which has an exclusive marketing zone. The number of modern fish shops is increasing throughout the country.

Statistical data for fish landings is collected through the daily returns of sales submitted by middlemen at the Wholesale Fishmarket in Valletta. However this only
covers sales effected in Malta since there is no such market in Gozo. It is assumed that at least 25% of all catches are not recorded for various reasons which are beyond the control of the Fisheries Department. Changes in the fishing regulation system like the obligation of minimum catches sold to the Wholesale Fishmarket and the future surveillance of fisheries activities by maritime patrols should improve the accuracy.

AQUACULTURE

Fish farming is growing in importance, as overfishing and pollution in the Mediterranean Sea have affected the industry badly. The total production from fish farms is mainly exported to Italy and Japan. The offshore aquaculture industry has been developed within the tight constraints of a National Aquaculture Plan and policy guidelines that ensure environmental protection and sustainable development. Aquaculture is essentially based on large-scale commercial offshore units employing modern technology. The cost of producing farmed fish is still relatively high. The aquaculture production – which reached 881 tons in 2003 – is almost entirely exported (95 %). In 2003, aquaculture's employed 75 workers, from which 54 full-time.

Table below shows the main features of Malta's aquaculture companies producing fish flesh. Most of the companies produce Seabream and/or Seabass. There is only one company Blue fin tuna penning, mainly for export to Japan (550 tons/year).

<table>
<thead>
<tr>
<th>Company</th>
<th>City</th>
<th>Year of Establish.</th>
<th>Production Range</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.J.D. Tuna Ltd.</td>
<td>St. Paul’s Bay</td>
<td>2000</td>
<td>500 - 1000 tons</td>
<td>Blue fin tuna</td>
</tr>
<tr>
<td>Malta Fish Farming Ltd.</td>
<td>Kirkop</td>
<td>1993</td>
<td>200 - 500 tons</td>
<td>Seabream (gilthead)</td>
</tr>
<tr>
<td>Fish and Fish Ltd.</td>
<td>Mqabba</td>
<td>1991</td>
<td>100 - 200 tons</td>
<td></td>
</tr>
<tr>
<td>Pisciculture Marine de Malte</td>
<td>St. Paul's Bay</td>
<td>1990</td>
<td>500 - 1000 tons</td>
<td>Seabass (common) and</td>
</tr>
<tr>
<td>Malta Mariculture Ltd.</td>
<td>Mellieha</td>
<td>1993</td>
<td>200 - 500 tons</td>
<td>Seabream (gilthead)</td>
</tr>
</tbody>
</table>

Two companies produce seed for aquaculture purposes. Malta Centre for Fisheries Sciences is a public research institution whose surplus (if any) is sold to local on-growing private fish farms.

<table>
<thead>
<tr>
<th>Company</th>
<th>City</th>
<th>Year of Establish.</th>
<th>Scale of Activity</th>
<th>Production Range</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malta Centre for Fisheries Sciences</td>
<td>Marsaxlokk</td>
<td>1989</td>
<td>Semi-industrial</td>
<td>1 - 2 tons</td>
<td>Seabream (gilthead) and Seabass (common)</td>
</tr>
<tr>
<td>Sealand Limited</td>
<td>St. Paul's Bay</td>
<td>1990</td>
<td>Industrial</td>
<td>1 - 2 tons</td>
<td>Seabream (gilthead)</td>
</tr>
</tbody>
</table>

DEVELOPMENT PROSPECTS

The Maltese fishing industry is facing a number of problems, including the very hard work associated with lack of deck hands. The younger generation prefers less arduous jobs on land which guarantee a steady income. The only boats which are still economically viable are those entirely owned and manned by families with a fishing tradition and trawlers.
FISHERIES ADMINISTRATION AND INSTITUTIONS

The Department of Fisheries and Aquaculture has two headquarters. The Fisheries Division is located in Valletta, while the Malta Centre for Fisheries Sciences is situated in Marsaxlokk.

The head of the Department is the Director of Fisheries and Aquaculture. The Department has two senior fishery officers. One of these senior fishery officers, and a fishery officer under his supervision, are devoted to administrative tasks, which comprise fishery statistics, information, training, etc. The other senior fishery officer is involved in technical aspects related with fisheries as maintenance of fishing ports, fish sanitary aspects, maintenance of the cold storage room, etc.

FISHERIES MANAGEMENT

The Fisheries Department is authorised to manage and supervise all fishing and marketing activities through Parliamentary Legislation, which empowers the Minister and the Director of Fisheries and Aquaculture to issue and update new regulations whenever necessary. Since 2001 a new Parliamentary Act catering for modern Fisheries management was enacted.

Regulations related to the Act are submitted for Ministerial approval by an Advisory Fisheries Board which is set up every year and is composed of representatives from all branches of the fishing industry including scientific and technical experts.

Enforcement and supervision is the responsibility of the Fisheries Division and the Maritime Branch of the AFM (Armed Forces of Malta) who, through the new draft Act, are to be amalgamated under the new nomenclature of Fisheries Protection Officers. Their main tasks will also include the conservation of stocks and the environment.

A fishing licence issued by the Director of Fisheries and Aquaculture is needed to undertake any fishing activity. Consequently every fishing vessel must be registered in the Fisheries Department. A fisherman must also state whether his activities are going to be full or part-time.

The Department issues licences in which fishing with a particular gear for a particular species is specified. Long-lining is undertaken in the open seas without definition of parameters. The setting of Kannizzati (Lampuki fads), traps and ormeggios (set long-lines) is licensed in areas specified by the Department. All fishermen pay an annual registration fee according to their category. No charges are levied for any fishing license.

RESEARCH

Fisheries

The Department of Fisheries and Aquaculture (DFA) Malta Centre for Fisheries Sciences (MCFS) has been an active member of the FAO's regional fisheries science project, COPEMED. The activities of this project are expected to assist in developing a management policy for the region within the framework of the General Fisheries Commission for the Mediterranean (GFCM). Malta has been involved in the
following major COPEMED research activities: Artisanal Fisheries in the Central and Western Mediterranean; (*Thunnus thynnus*) Population Dynamics research programme; The Fishery, Biology and Management of *Coryphaena hippurus* (*lampuka*) and Fisheries Sampling Network.

The DFA/MCFS is taking part in an Mediterranean trawl survey programme (MEDITS) financed by the European Union, which estimates the abundance of demersal marine resources on a regional and sub-regional basis.

In parallel to the development of a new computerised statistics scheme, the DFA/MCFS has embarked on a catch assessment programme with the support of FAO, whereby catches and fishing effort of the Maltese fishing fleet could be monitored.

Malta is involved with the approach adopted by the GFCM for the management of fisheries in the Mediterranean is to control the fishing effort of "Operational Units" (in function of the category of fishing vessel, fishing operation, species stocks, economic category of the vessel etc.).

The DFA/MCFS takes part in other future research projects such as another FAO regional fisheries research project (MedSudMed), or in the Mediterranean Global Ocean Observing System (UN) and its associated FP5 (EU) project MAMA, and has joined the INCOMED programme (EU) and its associated FP5 project MEDUSA.

**Aquaculture**

The Malta Centre for Fisheries Sciences (MCFS) within the Department of Fisheries and Aquaculture, has a hatchery set-up for larval rearing research of currently bred species, namely European sea bass and gilthead sea bream as well as other new species to be cultured on a commercial scale. The MCFS is producing the fish required for vaccination and nutrition research.

Among the new potential species for aquaculture, a group of Red Porgy-*Pagrus pagrus* has been obtained to try and resolve a few of the obstacles encountered in commercial rearing. These include the formulation of a balanced diet, the lack of red pigmentation in marketed fish and high mortalities in reared batches. Another species that is being reared to adult broodstock at the MCFS is the amberjack. Some amberjacks have been caught from the wild and are being grown on high value raw fish diets for spawning trials.

The MCFS lends itself to research and development and is establishing itself as a highly specialised centre in association with other foreign institutions. Aquaculture Vaccines Limited (UK) has set up a vaccination evaluation programme at the MCFS effectively utilising the local scientific and technical expertise and facilities provided by the Centre. Every year, about 20 batches of vaccines against Pasteurellosis and Vibriosis, a bacterial disease currently threatening the Mediterranean aquaculture industry, are tested. The results of these tests are submitted in report format which forms part of the application to obtain a marketing licence from the European Union.
Papers in the field of pathology and immunisation were presented at conferences, and a paper on the amoebial gill disease as first finding in the Med was published.

By moment there are two European projects where Malta participates: concerted action on "Domestication of blue fin tuna (Thynnus thynnus)" and nutrition trials in collaboration with feed manufacturing companies such as BIOMAR, Le Gouessant or EWOS.

The MCFS is also involved in an EU FP5 project proposal titled: "Alternative methods for evaluation and utilisation of new products from plants and micro-organisms". This project will involve a total of 9 partners from a number of different countries in Europe and Asia.

Annex 1 Fishing Grounds