

## EXECUTIVE SUMMARY

Small driftnets of limited length and relatively small mesh size to catch small/medium sized species have been used for generations by many artisanal fleets along the Mediterranean coasts, without major environmental concerns. Problems started in the late 70s-80s when the use of driftnets with larger meshes and much greater overall size targeting mainly swordfish and tunas rapidly expanded outside any preventive control. These type of nets led to large incidences of unwanted catch and created a great environmental concern.

In the early 90s, following the United Nations Resolutions, EU developed a strict legislation on driftnets. Since June 1992 the keeping on board or using of driftnets whose individual or total size is more than 2.5 km is prohibited in EU waters (EEC, 1992). Subsequently EU prohibited all driftnets, no matter their size, when intended for the capture of a group of pelagic species including inter alia tunas, swordfish, billfish and sharks (e.g. the species included in the Annex VIII of EC regulation n. 1239/98). In practice, the current legal driftnets in the Mediterranean are those existing from ancient times.

Despite their historical presence, the knowledge on these fisheries is at present very scarce and scattered.

In this context, the MAREA Specific Contract n.8 ("Identification and characterization of the small-scale driftnets fisheries in Mediterranean" acronym DRIFTMED) was carried out, with the main objective to identify and characterize, both for the past and the present, the small scale driftnet fisheries (SSD fisheries, e.g. those using nets < 2.5 km in length and not targeting species in the Annex VIII) in the Mediterranean.

Other specific objectives were:

- Provide technical information on the driftnet gear (mesh size, twine thickness, rigging ratio, etc.).
- Identify and describe SSD fisheries currently used by countries other than EU Member States in Mediterranean Sea.
- Identify and describe alternative fishing methods to catch the same species or group of species exploited by the small scale driftnets.
- Provide information on the economic parameters pertaining to each EU Mediterranean small scale driftnet fishery
- Provide an overview of the international/EU/national provisions regulating the use of driftnets fisheries in Mediterranean Sea.

DRIFTMED had also the objective of providing update outcomes to the Commission service and of guaranteeing the coordination and interaction with the Specific Contract n.5 (SC5) MARE/2011/01 "*Study in support of the review of the EU regime on the small-scale driftnet fisheries*". DRIFTMED and SC5 were in continuous contact, sharing data and information. DRIFTMED was structured into four inter-correlated Workpackages and included three main activities:

- the review of all the existing available information;
- the collection of new data regarding the technical characteristics of the gears, as well as the CPUE and catch composition;
- the analysis of the gathered data to identify and characterize the currently active SSD fisheries, in terms of fishing capacity/activity, composition of the catches, socio-economic relevance.

The Contract was signed on March 4<sup>th</sup> 2013; its duration was 8 months.

All the information coming from literature references related to small scale driftnets in the Mediterranean EU countries was gathered and critically reviewed.

Data for the vessels associated to the fishing type "GND" (Driftnets) were extracted from the EU Mediterranean Countries, taking into account the information stored in the website of the EU Fleet Register (<http://ec.europa.eu/fisheries/fleet/index.cfm>).

An overview of all the provisions issued in these years affecting the driftnet fisheries in the Mediterranean was made. This work considered all the driftnet fisheries *sensu lato*, not only the SSD fisheries. All the relevant information was gathered and summarized, with particular attention to possible catch reporting obligations, verifying if some compulsory fishing authorization regime is in place.

The investigations performed confirmed that, despite their historical presence along the EU Mediterranean coastal zones, the knowledge on the small scale driftnet fisheries is still scarce and scattered at spatio temporal level. Most of the past information mentioned the presence and described the technical characteristic of some small scale driftnet fishing gears, without providing data on the effective number of vessels, landings and catch composition.

At the same time, the data from the DCF (EC Reg. n. 199/2008, fishing system GND), which is in force from several years in EU Mediterranean waters, did not allow to draw a detailed picture of the characteristics of the small scale driftnets. As a matter of fact, the monitoring according to DCF is at present limited to spot areas, due to the very scattered distribution of these fisheries, their amount of catches and the catch value. Thus this data source is not sufficient to exhaustively describe this fishing segment. Indeed, as concerns the Italian waters, only in the GSA 19 and occasionally in the GSA 10 the GND (the fishing system specialized for the catch of small pelagic species) has been selected by the ranking system as a *métier* to be monitored.

From the data collected in the past, it emerged that most of the small scale driftnet fisheries in Mediterranean were located in Italy, where several typologies of SSD fisheries were present in the past years using:

- driftnets with small mesh sizes (from 20 to 40 mm) targeting mainly anchovy and sardine;
- driftnets with higher sizes mostly targeting saddled seabream, greater amberjack, mackerels, Atlantic bonito and bullet tuna.

All these fisheries, grouped with the term "ferrettara", came from historical traditions, or, in other cases, they resulted from the gear substitution followed to the enforcement of the EU Provisions forbidding the large scale driftnets and the Italian Provisions prohibiting driftnets with meshes higher than 100mm. Finally, in other cases, there are new fisheries, as the "ferrettara" for bluefish, recently developed on the basis of the increased availability of this resource and the local market appreciation of this species.

According to the investigations carried out in this study, at present the vessels involved in the Small Scale Driftnet fisheries in EU Mediterranean waters are operative only in Italy and Slovenia; in the other EU Countries, no vessels associated to the SSD fisheries were identified in the period investigated by DRIFTMED. In some countries, as Spain and France, the SSD fisheries were present in the past years, but they were progressively abandoned in the subsequent periods.

In any case, the SSD is potentially usable in all the EU Mediterranean Countries, except in Greece, where this gear is prohibited according to a national provision.

As concerns the not EU Countries, the available knowledge on the presence of the SSD gears is still more scarce. It resulted, however, that in some countries (Morocco, Tunisia, Turkey), these gears are currently forbidden, even though their use were widespread in the past (e.g. Turkey).

The investigations at field were carried from the end of March to mid October 2013, in 25 different harbors and mooring places of Italy and Slovenia: 96 interviews, 254 logbooks and 55 embarks were performed.

Detailed information about SSD fisheries as concerns fishing capacity and activity, gear technical characteristics, species composition of the catch (by catch in particular, with attention to the possible presence of sensitive/endangered and non authorized species) was collected.

Data collection was realised according to a common protocol. All the information extracted from the analysis of the existing knowledge, as well as the new data, were stored in a common Database, using a standardised platform.

In spite of the 480 vessels which at present potentially can use small driftnets in the EU Mediterranean waters (467 of them in Italy), according to the last data of the EU Fleet Register, the number of the vessels currently using these gears is notably lower.

During the investigations at field, 100 vessels, almost all in Italy (only 1 in Slovenia), involved in nine small scale driftnet fisheries, were identified. This number can be likely slightly higher (we estimate of 20-30 units, as a maximum), due to the vessels not active or not identified in the monitored period, because located in very small and isolated mooring places.

The following nine fisheries were identified:

- 1) "Menaide" for anchovy, *Engraulis encrasicolus*, in Catania area (GSA19): it was performed all year round by 30 vessels.
- 2) "Menaide" or "menaica" for anchovy, *Engraulis encrasicolus*, in the Cilento area (GSA10): it was seasonal (April-June) and carried out by 19 vessels.
- 3) "Occhiatarà" for saddled sea bream, *Oblada melanura*, in Ligurian Sea (GSA9): 5 vessels were involved in this fishery, from may to June.
- 4) "Sgomberara" or "sgombetara" for mackerels (*Trachurus* spp. and *Scomber* spp.) and bogue, in northern Sicily (GSA10): this fishery involved 30 vessels all year round but for a limited number of fishing days.
- 5) "Menaide" for anchovy, *Engraulis encrasicolus*, in S. Agata di Militello (GSA10): it was performed by 7 vessels from June to August.
- 6) "Ricciolara" for greater amberjack, *Seriola dumerili*, in S. Agata di Militello (GSA10): 3 vessels were identified, from August to October.
- 7) "Ferrettara" for blue fish, *Pomatomus saltatrix*, in Gulf of Naples (GSA10): it was carried out by two vessels, from June to October.

Other two fisheries were identified, even though less important in terms of number of involved vessels and economic aspects:

- 8) "Menaide" for sardine, *Sardina pilchardus*, in northern Adriatic (GSA17): only one vessel in Slovenia, from April to May.
- 9) "Menaide" or "tratta" for anchovy, *Engraulis encrasicolus*, and sardine, *Sardina pilchardus*, in Selinunte (GSA16): it was performed by five vessels in May-September.

The order of magnitude of these fisheries, in terms of fishing capacity/activity (number of vessels and fishing days), volume of landings and economic parameters is definitely small, if compared with that of the other artisanal fisheries. They have relevance at local level and in terms of seasonal fishery, thus providing an alternative to other small scale fisheries.

The majority of the vessels involved in these fisheries has less than 12 metres length and generally operates close to the home ports. These vessels are dispersed in many artisanal and small fleets, often located in small coastal villages of the south-west of Italy (mainly in Campania and Sicily administrative Regions). These fisheries are in most cases strictly seasonal, with the exception of the "menaide" of Catania area (GSA19), which is active all year round (145 fishing days per vessel per year). For the other fisheries, the annual activity ranged from 15 days in Ligurian Sea to 70 days in the Gulf of Naples.

All the investigated fisheries are characterised by a high degree of specialisation and a high efficiency of the captures: for most of the fisheries the target species dominated the biomass caught (from 70 to 100%); only in the case of the "sgomberara", in the investigated period, the by-catch accounted, by far, for the majority of the catches.

The technical properties of the nets studied were strictly correlated with characteristics (size, behaviour) of the target species, as well as with the features of the fishing grounds (depth, typology of bottom).

For five (the "menaide" nets) out of the nine fisheries the average length of the nets employed was less than 500 m and for the other fisheries it was always no greater than 2400 m. The mesh sizes of the "menaide" nets were from 20 to 30 mm, those of the other nets ranged from 70 to 90 mm. The net configurations were characterised by high values of hanging ratio, often greater than 0.7.

In general terms, we can conclude that the high hanging ratio, together with the use of small meshes and the T90 configuration of the net make the small scale driftnets highly selective fishing gears.

Moreover the mesh opening used in the small scale driftnets seems to be small enough to make difficult the incidental catch of sensitive species, as marine mammals and reptiles. The same consideration holds for the fishing operations, in general carried out near the coastal area.

Only for one out of the nine fisheries investigated, the biomass caught was dominated by the by-catch fraction; for the majority of the fisheries, the target species were by far predominant in the total catch. The not authorised species, included in the Annex VIII, were generally not registered in the catch, in particular these species were never recorded in the “menaide” fisheries. In the by-catch of the “occhiatarà” the presence of Atlantic bonito and of two species of cephalopods was observed but with minimal values in respect to their percentage contribution; the same was registered for the “ferrettara” for bluefish as regards bullet tuna. Only the catches of “sgomberara” for mackerels and bogue were dominated by the by-catch, mostly constituted in this case by bullet tuna.

The discard was in all cases practically absent, as well as the presence of invertebrates belonging to the local biocenosis, testifying the absence of impact on the bottom.

Formal stock assessments for the target species, as well as for the main species of the by-catch, are not available for the investigated areas. At the same time the information of the biology and the population dynamic for most of these species in the investigated areas is scarce (except for anchovy and sardine).

Therefore, the sustainability for the exploitation of these fisheries was based on simple and basic concepts, as the proportion of the catch smaller than the size at first maturity.

The investigated small driftnets resulted highly selective also at species level. The catch of the target species, for the 5 “menaide” fisheries, the “occhiatarà”, the “sgomberara” and the “ferrettara” for bluefish, was composed entirely by adult specimens, greater than the size at first maturity. The specimens caught by these fisheries were also higher than the limit imposed by Minimum Conservation Size (from EC reg. n. 1967/2006), if present.

Only the specimens of greater amberjack caught by “ricciolarà” were lower than the maturity size reported for this species; in fact this fishery occurs in the recruitment period of the target species, when the specimens are concentrated and close to the coasts.

A great percentage of the specimens of bullet tuna (around 50%) and little tunny (around 80%), the species dominating the catches of the “sgomberara” fishery in the investigated period, was lower than the respective maturity size.

We have also to take into account that, in general, the landings of the target species due to the SSD fisheries are always a minor or negligible (as the case of the “menaide” for sardine in GSA17) fraction of the total landings at GSA or national level. A remarkable exception is the “menaide” fishery of Catania which landing represents about 30 % of the total production of anchovy in the GSA19.

The nine small scale driftnet fisheries identified accounted for a limited social and economic importance at national level, but they have high social, economic and cultural importance at a local level.

The employment related to the investigated SSD fisheries was estimated in approximately 300 fishermen. These fisheries generate more employment in comparison of the other small scale fisheries, especially the “menaide” ones, where (principally the Catania “menaide” fishery) the number of fishermen employed is high (up to six per vessel). Moreover, in some areas (e.g. Cilento and Catania) the SSD fisheries generate employment also in associated activities, related to the processing and the commercialization of the product.

In general, the economic value of the product landed by the SSD fisheries is higher than that of the same product landed by other fisheries.

Another common aspect of these fisheries is the low economic cost: the fuel consumption was roughly estimated, less than 30 € per day at sea, for the majority of studied fisheries. The costs related to the purchase and the maintenance of the gear were low as well.

Another important aspect is the territorial and social peculiarity. In many cases (e.g. the “menaide”) these fisheries are carried out since many decades, following historical traditions. As regards the “menaide” of Catania and Cilento areas, the fresh product landed and the processed one are object of a brand (“Slow Food” Presidium).

The SWOT analysis to assess the possible replacement of each existing SSD fishery with alternative fishing methods has stressed, in general, the strengths of the SSD fisheries against the following four strategic areas or criteria: technical characteristics of the gears/vessel/fleet; environmental impact; economic performances; social and cultural heritage.

In particular for the “menaide” fishery the Strengths completely outbalanced the Weaknesses, whilst the Threats were not counterbalanced by the Opportunities. Intermediate situations were registered for the other SSD fisheries, though the Threats, in case of replacement with Purse seine (PS); Set gillnet (GNS), Trammel net (GTR), Set longline (LLS), Drifting longline (LLD), Boat seine (SB\_SV), were more relevant. In the case of the “sgomberara” and “ricciolara” the Threats appeared to be compensated by the Opportunities, while Strengths were not outbalanced by the Weaknesses

In conclusion, in spite of their general low incidence in terms of fishing activity and landing at national level, these fisheries provide a relevant contribution in terms of the annual income for the fishermen involved. These fisheries are generally highly selective on the target species, with an overall low impact on the environment.

These aspects provide robust evidences to implement specifically oriented management measures, which could ensure the regulated activity of these fisheries, allowing the diversification of the fishing effort, maintaining old local traditions and sustaining the economy of small coastal villages.