GENERAL FISHERIES COMMISSION
FOR THE MEDITERRANEAN

COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE

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GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

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LIST OF ABSTRACTS

Size analysis of the most important discarded commercial species captured by demersal trawls in the Turkish Coast of Middle Aegean Sea*

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Discarded sizes and percentages of the most important commercial species captured by demersal trawls in the Turkish Coast of Middle Aegean Sea is presented. For this aim, forty trawl hauls were performed between October 2007 and April 2009 by a commercial trawler. Totally 38 commercial species corresponding to 5940 kg catch were obtained and it was dominated by *Parapenaeus longirostris* (40.5%), *Trachurus trachurus* (14.3%), *Merluccius merluccius* (8.3%), *Illex coindietti* (3.2%) and others (33.7%). It was also found that 29 commercial species existed in the discarded catch by occurrence of undersized individuals or market demands. *P. longirostris* composed the 6.4% of the total discards while *T. trachurus* was represented with 0.2%, *M. merluccius* with 2.8% and *I. coindietti* with 1%. Average carapace lengths (CL) for marketed and discarded *P. longirostris* were found 21.9 (±0.06) mm and 14.4 (±0.12) mm, respectively. Furthermore similar situations were also detected for *T. trachurus, M. merluccius* and *I. Coindietti.*

* poster

Évaluation de l'interaction entre *Tursiops truncatus* et les filets de la senne tournante dans la région du Cap Bon (Nord Est de la Tunisie)

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L'abondance des delphinidés sur les côtes Nord de la Tunisie et l'extension vers le large des activités de pêche ont augmenté sérieusement les risques d'incidents dont les conséquences peuvent être lourdes à la fois pour les pêcheurs et les populations de delphinidés. A l'instar des autres régions, celle de Kélibia a connu durant ces dernières années une intensification de l'interaction entre la pêche et les dauphins, le secteur le plus touché étant celui de la pêche sardinière. Notre étude s'intéresse à l'évaluation de l'impact des interférences entres Delphinidés et secteur le pêche au feu. Cette recherche a été réalisée sur une année, durant la période d'Août 2009 à Aout2010. 13 modèles de fiches questionnaires ont été préparé et qui ont permis de compiler une multitude d'informations sur cette thématique soit un taux de 1465 fiches questionnaires retenues au total. Chaque fiche a été soldée par l'estimation des répercussions de ce phénomène.
L'effet négatif des interférences se réalise sous forme d'attaques des delphinidés sur le banc de poissons encerclés par la senne coulissante, ce qui se traduit par l'endommagement des filets de pêche et la réduction des captures. La fréquence des attaques lors des sorties de pêche fluctuent à une échelle spatio- temporelle. Ces attaques sont à l'origine d'un nombre de jours d'immobilisation consacrés à la réparation des filets. Les causes de ramendage des déchirures de dauphins sont estimées majoritaires par rapport à toutes les autres causes. Les pertes de production dues à ces attaques ont été évaluées à environ 4% des captures réelles dans les cas les plus courants et peuvent atteindre 100% dans les cas catastrophiques. Le problème en question cause pour l'ensemble du secteur de la pêche sardinière de la zone d'étude des pertes en valeurs ajoutées à cause des pertes dues à l'annulation des opérations de pêche ou dus aux frais additifs des réparations des filets ce qui conduit certains pêcheurs à songer à changer le maillage ou la finesse du fil affirmant qu'il s'agit d'un facteur pouvant minimiser l'impact des attaques de dauphins.

Trawls used in Moroccan Mediterranean Sea (state and solution for By-catch)

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Different kinds of Trawl nets are used by Moroccan Mediterranean trawlers; operate using small diamond-shape meshes in the codend, designed as a mobile non-selective fishing gear. Theses bottom trawl net collects every organism in its path and the incidental capture of non-target species – by-catch – has become a major concern allied to trawling. The diagnostic of the situation will be presented with best solution programmed to resolve this situation.

Cetacean by-catch levels in the northern Black Sea: results of onboard monitoring programme

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ACCOBAMS Scientific Committee

Incidental catch in bottom-set gillnets for turbot (*Psetta maeotica*) and spiny dogfish (*Squalus acanthias*) continues to be the major source of human-induced mortality among Black Sea harbour porpoises (*Phocoena phocoena relicta*) and bottlenose dolphins (*Tursiops truncatus ponticus*), the cetaceans recognized by IUCN and ACCOBAMS as the endangered subspecies. In order to estimate levels of the bycatch in the Ukrainian Black Sea, a monitoring programme was implemented in 2006-2009 on board of a fishing boat specialized in this kind of fishery and operated all year round. During the examination of 4,769 nets with an overall length of 354.1km, a total of 519 cetacean carcasses (514 harbour porpoises and five bottlenose dolphins) were found, whereas the catch of target fish species came to 5,080 turbots and 2,641 dogfishes. Aggregate bycatch indices of those fishing operations were evaluated as follows: 142 porpoises and two bottlenose dolphins per 100km of turbot nets; 151 porpoises and no dolphins per 100km of dogfish nets; 65 porpoises and one dolphin per 1000 turbots; and 70 porpoises per 1000 dogfishes. Peaks of harbour porpoise bycatches occurred in June (2.7 indiv./km, turbot nets) and August (7.6 indiv./km, dogfish nets). This dismal statistics were obtained from just one fishing boat legally operating in small coastal area. In the meanwhile, hundreds of vessels are permitted annually to catch turbot and dogfish in the Black Sea. In addition, IUU fishing became widespread in the region suggesting that a significant share of cetacean bycatches takes place due to marine poaching.

Review of available data on by-catch in Spanish Mediterranean Trawl Fleets GFCM area

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Since the introduction of the EU Data Collection Regulation and the subsequent Data Collection Regulation (2009-present), monitoring the catches on board fishing vessels is undertaken routinely around the Spanish Mediterranean Coast.

The Spanish Mediterranean coast is divided in five broad areas following the GFCM geographical subdivisions for the 37.1.1. Mediterranean Division (General Fishery Commission of Mediterranean) (GSA 1, GSA 2, GSA 5, GSA 6, GSA 7), within each of those areas; a number of métiers are used as the basis for Data Collection. The observers programme is based on a stratified random sampling on voluntary collaborative fleet basis. The sampling unit was the trip and all the hauls of a trip are usually sampled, afterwards haul-raised data are further raised to trip level. From 2003 to 2009 two main métiers were considered Demersal SpEcies Fishery (DEF) and Deep Water Species (DWS), in some cases a third métier the Mixed Demersal SpEcies and Deep Water Species fishery have also considered (MDD). From 2009 a new sampling scheme has been tuned on basis of the concurrent sampling.

During a typical catch sampling trip data is collected on the gear type used, fishing ground, weather conditions; species catch composition and quantity of the landings and discards in the catch.

The Spanish Institute of Oceanography (IEO) has developed a data storage system called “SIRENO”. Data from existing sources under control obligations rules (landings, effort, log-books data, and census fleet) are obtained from the database of fisheries control of the Spanish Ministry of Fisheries. Sampled data from observers on board are also stored. To manage all the data is used the "SIRENO” application, which stores information from many slices, observers on board commercial vessels and research surveys. The application SIRENO is developed under Oracle Application System. It is a modular application with different accessibility based in three levels: collection data, processing and reports generations in available format *.txt. It is a tool that, thanks to its configuration and development is always open to new modules and functionality that are developed to integrate, in a comprehensive manner, the areas in which the IEO is working. Using program routines discards are raised to effort or/ total landings. Moreover, data routines outputs allow using the Standard Data-Exchange Format

specifications (COST, ICES, 2009). This is the European common format of data sets comprising all the variables needed to raise the data.

Development of indicators to monitor and manage discard issues for European fisheries/fleets: Landing and By-catch fishery data for the coastal demersal fishery for the Balearic Islands trawl fleet

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A data set spanning 9 years (2001- 2008) of demersal fishing in the Balearic Islands was used to estimate three different diversity indices (Species richness, Simpson's and Shannon's diversity indices) for landed and discarded fish species. Species caught in more than 10% of sampling trips were used in the analyses. Data were standardized to kg per hour per trip and then square root transformed. Diversity indices were averaged across each year by using bootstrapping. Sensitivity of the indicators such as expected effect of fishing, exclusiveness to fishing effects, and measurability based on the Rochet and Trenkel review (2003) was analyzed.

GTMF- bycatch group activities in french Mediterranean waters

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The GROUPE TORTUES MARINES FRANCE (GTMF) created in 2007 by the French Ministry in charge of the Natural Environment aims to reflect and to make propositions on all issues concerning the management of sea turtles in all French waters, including overseas, with links to the conservation actions at the international level. It is open to all the actors of the marine turtles conservation in France and gathers to-date 150 members, who can exchange information through its weblist gtmf@mnhn.fr. The work of GTMF is organized into 5 working group concerning the following themes: databases, by-catch reduction, habitat restoration, public sensitization, legislation and training. The main actions carried out by the by-catch WG during these last years were to take stock of the situation of the sea turtles in the different French waters based on the analysis of a National questioner on various interaction of fisheries with sea turtles. Provisory maps on repartition of turtle strandings and catches were drawn with information on most impacting gears. Furthermore, posters to disseminate to fishers were also drawn to advise them on best ways to avoid mortality on board or during retrieval.

Target and by-catch species by deepwater trawl fishery in the Antalya Bay, eastern Mediterranean

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Red shrimps, specifically the giant red shrimp (*Aristaeomorpha foliacea* Risso, 1827) and the blue and red shrimp_(*Aristeus antennatus* Risso, 1816) and deep-water rose shrimp *Parapenaeus longirostris* Lucas, 1846 are the prime targets of deepwater bottom trawl fishing carried out in the Antalya Bay of the eastern Mediterranean. The commercial importance of these species, along with more than 10 marketable by-catch species, including crustaceans (pandalid shrimps *Plesionika martia* and *Plesionika edwardsii*), fishes (European hake *Merluccius merluccius*, the blackbelly rosefish *Helicolenus dactylopterus*, forkbeard *Phycis* blennoides and the monkfish *Lophius piscatorius*) and cephalopods (elegant cuttlefish *Sepia elegans*, pink cuttlefish *Sepia orbignyana*, and the fourhorn octopus *Pteroctopus tetracirrhus*) makes the deep-water resources of increasing interest. In our study we aimed to show the catch composition of shrimps trawl fisheries realized in the Antalya Bay. For this purpose was performed operation in four different depth contour lines (between 300 and 699 m) in the area. During the 12 month, totally 53 valid haul with a total time of 85 hour 10 minutes carried out. Besides the target species 76 Teleost, 15 Elasmobranch, 35 Crustacean, 14 Cephalopod, 10 Echinoderm and 4 Cnidaria species was caught as by-catch.

Counting shark counts: an inventory of pelagic shark CPUEs to support the global shark baselines project

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Shark conservation and management faces several challenges, including a lack of global estimates of shark removal and remaining abundance, and uncertainty about the structure of undisturbed marine ecosystems. Failing to understand the structure of ecosystems before exploitation, and their pathways of change in response to fishing can seriously mislead fisheries management, extinction risk assessments, and consequent conservation planning. By developing synthesis of global datasets and analyses of representative case studies, the global shark baseline project aims to reconstruct baselines of population levels and structure of shark assemblages in natural ecosystems, quantify the patterns and magnitude of change resulting from human perturbation. Toward this goal, we are assembling a global database of time series of shark catch per unit effort (CPUE) data from multiple pelagic fisheries. Data are being integrated from the primary literature, pelagic fisheries reports, historical surveys, and online databases of catch and effort compiled by Regional Fisheries Management Organizations and federal agencies. We will provide a summary of the information, results available to date and highlight opportunities for collaboration to make this data inventory and integration endeavour instrumental to multiple management and conservation purposes.

The collection of fisheries by-catch data in Malta

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The current state of data on discards collected from the Maltese fishing fleet will be described. The methods used, the fishing gears covered and some preliminary data will be shown.

Cetacean bycatches in turbot fisheries on the central coast of the Bulgarian Black Sea

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Some of the material reported in this presentation is part of the project "Establishment of a network on cetacean strandings monitoring and on bycatch assessment in Bulgaria" financed by ACCOBAMS. Gillnet fishery is known to be associated with most cases of interactions with cetaceans raising in particular the majority of harbour porpoises bycatches in the Black Sea. An estimate of cetacean bycatch in different parts of the basin on the basis of onboard monitoring schemes is just getting underway in order to assess the scale of this threat. In 2010-2011 during the most intense turbot fishing season April-July direct recording of cetacean bycatches in bottom set gillnets was conducted in the central Bulgarian area. During the trips 982 nets hauled were examined with a total length of 88.4 km. All trips were positive for cetacean bycatches except for one carried out in April 2011. In total 21 cetaceans: nineteen harbor porpoises (90%) and two bottlenose dolphins (10%) were recorded bycaught. All porpoises and bottlenose dolphins were dead on hauling. The bycatch index of *P. phocoena* was estimated at 22 per 100 km net set and that of *T. truncatus* – 2 per 100 km net set or overall 24 cetaceans per 100 km net set. Taking into account that this onboard monitoring of cetacean bycatch is the first one organized in Bulgaria, it may represent an important baseline for further investigations. The extending of observer-based studies to cover a number of fishing units of the fishing fleet adequate for accurate bycatch assessments will promote the evaluation of human induced impacts on cetacean populations. The above would ultimately conduce ACCOBAMS Resolutions on bycatch issues and the ICES Regulations and Advice for protecting cetaceans against incidental catch to be met in a more effective way.

Acoustique dans la diminution des bycatch

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(Abstract to be provided by the authors)

Development of national network for monitoring the Black Sea cetacean in Romania and identification of relevant measures for mitigation the adverse impact of fisheries.

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The presentation focused on results obtaining in the frame of similar title project granted by ACCOBAMS.

By-catches and discards in static net fisheries in Greece

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Small scale fisheries in the Mediterranean are characterized as multi-species, operated by a big variety of fishing gears. They produce a relatively high proportion of the total catch and include the vast majority of fishing vessels (more than 97% in Greece) yielding the 55% of the total landings in 2008. Fishermen's incentives to increase their profit are the main drivers for the selection of target species, while a large proportion of the catch could be allocated to the by-catch category. Generally, discards in small scale fisheries correspond to an average of 10% of the total catch, but taking into account the large size of the fleet, their impact on the ecosystem should be considered at a local scale. However, due to the variety and the size of small scale fishing activities it is rather complicated to achieve high quality information and organize monitoring strategies, which are usually based on reports from observers on board commercial vessels.

Catch composition of the Greek trawl fisheries, with emphasis to quantification and analysis of by-catch species

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Catch composition of the Greek trawl fisheries were analyzed in GSA20 (Ionian Sea) and GSA 22 (Aegean Sea). Targeted species correspond to a high proportion of the landings in both areas, and present increased commercial value and market demand (Merluccius merluccius, Mullus barbatus). The highly diversified species composition and the predominance of small size species in the Greek trawl fisheries, does not allow a clear distinction between the target and by-catch categories. The latter group comprised of specimens of species with increased commercial value but having a small size (lower than MLS) and species with decreased value but with high proportion in catch (Trachurus trachurus). Moreover, in the by-catch category there was a varying proportion of species with no commercial value, which were discarded in all cases. The discards-catch ratio in Greek trawl fisheries is relatively high reaching more than 30% in both GSA areas.

Indicators describing fishery by-catch/discards: An example from the Greek case study of the BADMINTON project.

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The selection of a robust set of informative and easily interpretable indicators sheds light on the efficacy of management measures reflecting the state of the resources and potentially the ecosystem. Fisheries impact on the ecosystem, not only through the extraction of targeted species and non-targeted species but also through the portion discarded in the sea. Indicators based on a Driver-Pressure-State-Impact-Response could potentially provide a comprehensive tool for managers, stakeholders and decision-makers. In the Greek case study of the BADMINTON project pressure indicators were estimated using data collected in the DCF during 2003-2008. Additionally, state indicators were quantified from time-series derived by MEDITS data. The estimated indicators were evaluated by applying linear regression and extracting the corresponding trends.

Action Plan for the mitigation of the negative effects of monk seal - fisheries interactions in greece

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The Action Plan for the mitigation of the negative effects of monk seal - fisheries interactions in Greece includes specific measures to mitigate the seal-fishery interaction, utilising the results from the MOFI Life Nature project's field work, bibliographic references on available legislative, structural and technical measures, and experiences from case studies that attempted to mitigate similar wildlife-human interactions globally. The Action Plan, elaborated in extensive consultation with key stakeholders (fishermen) and national competent authorities, resulted in a set of interrelated specific, realistic and feasible proposals for measures, including the necessary structures and resources for its implementation. In particular, the proposed measures aim at the protection and restoration of key fish stocks, thus addressing the root source of the conflict, at the decrease of fishery-related mortality of the monk seal and at the financial support of coastal fishermen for the damages suffered by the marine mammals. Although the project focused on the monk seal, the action plan includes also interactions with bottlenose dolphins

Discard characteristics of demersal trawl fishery from the Turkish coasts of the middle Aegean Sea

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This study aimed to determine the seasonal distribution of by-catch species in Turkish coasts of the middle Aegean Sea. Forty trawl hauls were performed between October 2007 and April 2009 by a commercial trawler. Seasonal samplings were carried out 88-450m depth by using 1200 meshes modified demersal trawl net. 110 species were determined and 9 of those were commercial, 72 were discards (non-commercial) and 29 species took place in both commercial and non-commercial compositions (occurrence of undersized individuals of commercial species). It was found that 72.6% of the total catch was commercial and 27.4% discard. Group based analyse of the discarded catch composition showed that bony fishes dominated the discard with 52% followed by cartilaginous fishes (27%), crustaceans and cephalopods (9%) and other groups (3%), respectively.

Estimates of Cetacean Bycatch in the Turbot Fishery on the Turkish Western Black Sea Coast in 2007 and 2008

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There are three cetacean species living in the Black Sea; the harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*) and common dolphin (*Delphinus delphis*). Cetaceans in the Black Sea are faced with several threats such as accidental catches in fishing gear (bycatch), habitat degradation causing the reduction of prey resources, marine pollution and epizootics resulting in mass mortality events (Birkun, 2008). There are few cetacean bycatch studies in the Turkish Black Sea waters such as Öztürk *et al*., (1999), Tonay and Öz (1999), Tonay and Öztürk (2004), Gönener and Bilgin (2009). In this study, the turbot fishing boat was observed during two fishing seasons from April till the end of July in 2007 and mid-September in 2008. 24 harbour porpoise and one bottlenose dolphin bycaught in turbot trammel nets on the Western Black Sea coast were examined. According to the results, the CPUE was found to be 0.18 harbour porpoise and 0.01 bottlenose dolphin individuals per kilometer in 2007, and 0.19 harbour porpoise individuals in 2008. Total cetacean bycatch during turbot fishing season was estimated following Northridge and Fortuna (2008). It was estimated that the numbers of harbour porpoises died were; 361(±332) (CV: 0,92) in 2007; 608(±408) (CV: 0,67) in 2008 during the legal period (April and July) and 1829(±675) (CV: 0,37) in 2007; 2249(±790) (CV: 0,35) in 2008 during legal and illegal periods of turbot fishing season. In conclusion, the estimated number of bycaught harbour porpoises in turbot fishery on Turkish western Black Sea coast would be a combination of these two estimates. Turbot fishing carried out by using bottom nets, especially in May and June, when turbot fishery is banned, is a threat to the sustainability of harbour porpoise stocks. This is the first study about estimation of cetacean bycatch in the Turkish Black Sea.

Trends in metrics of fish community for otter-trawl discards in the Ionian Sea

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We examined trends in diversities, and trophic levels of the demersal fish community using data from a seasonally closed commercial trawl fishery in the eastern Mediterranean Sea (Ionian Sea), over a period of about 10 years. Trends were also examined for the artificial fractions derived from the discarding process (the marketed, the discarded, and the non-marketed clusters of the catch), as well as for the "Big" and "Small" fractions (defined by the size at which 50% of all specimens were discarded). The values of these metrics were compared among the pseudo-communities and seasonal effects were investigated. Declining trends for several metrics and fractions were observed over the examined period which were related to the deterioration of the community as well as the adaptive discarding practices. The composition and/or trophic level of discards in relation to the marketed catch seemed to be indicative of the exploitation state of the demersal community: differences between the discarded and marketed fractions were high at the beginning of the fishing season (autumn), but the values of the indices converged at the end of the fishing season (spring). These changes could be attributed to alternative discarding strategies for certain species in response to increased cumulative fishing mortality towards the end of the period.

Issues related to onboard sampling for assessing by-catch and discards in Greek waters

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The sampling scheme of the onboard data collection related to discards estimations in Greek waters is described. Sampling design includes spatial, seasonal and gear stratification. Data collection includes catch composition and length distribution of both retained and discarded fractions as well as positional, environmental and fishery variables. Problems and issues raised during the previous years are presented and discussed.

Discards of the purse seine fishery for small pelagic fish in the Aegean and Ionian Seas

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We analyzed data collected on board commercial purse seine vessels in the Greek waters (Aegean and Ionian Seas) from 2003 to 2008. The sampling was seasonally stratified taking place three times per year. In each area, five species constituted the majority of the marketable catch (>97%), resulting in low by-catch quantities. The discarded quantities were also low, on average 4.6% and 2.2% of the total catch, by weight, in the Aegean and Ionian Seas respectively. The discards on Marketable ratio didn't present any particular trend during the sampling period. At the species level, sardine and mackerel were seldom discarded and even small individuals were retained, while large amounts of anchovy were discarded only during its recruitment period (Autumn), when juvenile fish dominate the population. Discarding of bogue, picarel and round sardinella fluctuated a lot showing that these species constitute a supplementary source of income for the fishers. Generalized Additive Models were applied to describe the effect of fishing parameters on the discarded quantities, which were lower at intermediate marketable quantities and fishing depths. Discarding practices and implications for management of purse seine fisheries are discussed based on the results.