2023 CALL FOR TECHNICAL AND SCIENTIFIC CONSULTANCY OF THE PELAGOS AGREEMENT

Final Administrative Report

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General info:

Project title	Assessment of fishing-related impacts on cetacean species and their habitat in the Pelagos Sanctuary: state of the art.
Consultant(s)	Cecilia Pinto, Luca Lanteri, Federico Vignati, Giovanni Roppo Valente, David Gamba, Fulvio Garibaldi
Duration of the consultancy (beginning – end)	December 2023 – June 2025
List of the deliverables submitted (number of the deliverable, title and date of submission)	1 – Overview on the issue of ghost nets and cetaceans, within the framework of existing national initiatives in the three countries of the Pelagos Agreement. Deadline: January 2024. 2 – Review on the present state of fisheries in the Sanctuary. Deadline: end March 2024 and end May 2024. 3 – Review on operational interactions between bottlenose dolphins and fisheries (especially artisanal) within the Sanctuary (depredation, retaliation, bycatch, etc.). Deadline: end July 2024. Draft final technical report on all deliverables: end February 2025.

Abstract:
The way fishing activities can exert a pressure on cetaceans' populations can be direct or indirect. Therefore, to assess the state of the art of the impact of fisheries on cetaceans in the Pelagos Sanctuary, four main aspects were explored:
1. In order to investigate the impact of ALDFG on cetacean populations, a scientific literature review was implemented to collect existing information on the impact of ALDFG on cetaceans, specifically in the Pelagos Sanctuary. Additionally the review was integrated with information from current and past projects on ALDFG held in the Pelagos Sanctuary and collecting information on the existing legislation that can be applied to the case of ALDFG monitoring and management. The review on ALDFG highlighted the difficulties when monitoring this specific marine waste, especially lost fishing nets.

Projects such as EcoeFISHent, LIFE GHOST, Defi-Med, RECUPMED 2 and others, aim at removing ALDFG from the Pelagos Sanctuary. The Life Strong Sea Life project also developed a protocol for the monitoring and removal of ALDFG, highlighting the importance of assessing whether the removal of ALDFG can cause further damage to benthic populations. In cases where removal is risky, it is recommended to deactivate the net while keeping it in situ. To monitor the presence of ALDFG in a vast area such as the Pelagos Sanctuary it is recommended to focus on monitoring areas of high biological importance or those known to fishers for their higher likelihood of net loss like shoals or seamounts. Additionally it is recommended the implementation of EU Regulation 1224/2009 with a toll-free number linked to the responsible authority for gear recovery, which further reduces the obligation for the commercial fishers to attempt gear retrieval, as this practice could cause further damage to the seabed where the fishing gear has been dispersed. As the Sanctuary is constituted by three different countries (France, Monaco and Italy) existing legislation should be homogenized across the Pelagos Sanctuary. Due to the limitations in collecting precise information on quantity of ALDFGs and on their potential impact on cetacean population, it is not currently possible to quantify the effect of ALDFG on the survival of cetaceans populations in the Pelagos Sanctuary

2. The level of fishing pressure from the most updated spatial and temporal data and temporal trends of commercial fishing effort where described using available data from three main sources: the EU Fleet Register database (https://webgate.ec.europa.eu/fleet-europa/search_en), the publicly available Global Fishing Watch database (www.globalfishingwatch.org) and the publicly available Fleet Dependent Information (FDI) database (https://stecf.ec.europa.eu/data-dissemination/fdi_en). The main data provided by the Fleet Register refers to the technical characteristics of the boats (Length - LOA, tonnage - GT, power – kW), useful to define the fishing capacity indices, the main and the subsidiary fishing gears and the year of construction (Age) of the vessels. The spatial distribution of commercial fishing vessels grouped by gear was analyzed first using data downloaded from the Global Fishing Watch website for the year 2020. As Global Fishing Watch data have a number of limitations when used at small scale resolution (such as gear classification), the spatial representation was integrated using the publicly available DCF FDI dataset for the year 2022, by gear and fleet segment. It should be noted that this dataset is available only at GSA (Geographical Sub Area) level and country resolution. In order to have a higher resolution of the fishing effort within the Pelagos Sanctuary, data by region were requested for the Italian regions of Liguria, Tuscany and Sardinia the MASAF. The fleet within the Pelagos Sanctuary is mainly represented by small scale fisheries (<12m) and passive gears (PGP). In the last 10 years the effort (expressed in total fishing days) in the area has been decreasing, The reduction of vessel numbers and fishing days started already in 2018, before the implementation of regulation EU 2019/1022 (which acts on the whole western Mediterranean Sea (European waters), but the effort of trawlers of all fleet segments is now regulated since 2020 by EU 2019/1022, therefore an increase of fishing effort of trawlers is not envisioned in the near future. Such reductions could potentially bring an increase of fishing effort within the PGP sector if there was a shift of investments in the fishing sector. This should be considered if information on the distribution of hotspots of cetaceans species were to be combined with the available information on the spatial distribution of fishing effort, as PGPs (mainly represented by 0-12 fleet segments) are not remotely monitored currently. To describe the effort and distribution of recreational fisheries in the Pelagos Sanctuary the main data source refers to technical reports and pilot studies (EU Data Collection Framework - DFC) based on qualitative interviews and

questionnaires (Guillot et al., 2018, Grati et al., 2021b). For Italy data were also requested to the MASAF to explore which data are available at national level for recreational fishery. An official estimate of recreational fishing effort is currently unavailable, and various studies suggest that the total number of fishers recorded is likely underestimated.

3. Stock status of commercial stocks within the Pelagos Sanctuary was derived by the assessment carried out in three GSAs (7, 8, 9) by the STECF and GFCM Committees. Trends of biomass indices were estimated from the MEDIT survey data (http://data.europa.eu/89h/f25092c4-3f0f-449f-ba60-5fbfe385defc). None of the commercial stocks covering GSAs 7-8-9 (within which falls the Pelagos Sanctuary), which are analytically evaluated and that are part of the diet of cetaceans species (*Mullus barbatus, Mullus surmuletus, Engraulis engrasicolus, Sardina pilchardus, Merluccius merluccius*), are evaluated to be in a state of overfishing (F/Fmsy =<1) with the exception of the *M. merluccius* stock, and the biomass indices show positive trends. Therefore, the state of these specific preys does not seem to be a potential cause of worry for the state of cetacean populations feeding on them.

4. To collect existing information in both, scientific and grey literature, on the interactions of *T. truncatus* and fishing activities and the potential effect of these interactions on the survival of *T. truncatus* populations in the Pelagos Sanctuary, a literature review was implemented, specifically focusing on the area of the Pelagos Sanctuary. The main risk for *T. truncatus* and/or other cetaceans comes from gear actively in use (cfr ALDFG paragraph), which can cause interactions also bringing to death both indirectly, such as during depredation where death can be caused by the ingestion of fishing gear parts, and directly through accidental catches and entanglements. In this case as well, though, estimates of mortality (when available) are still highly uncertain due to the complexities in the monitoring of the consequences of such interactions and in reconstructing the actual causes of death of individuals observed when already stranded. Currently, a long term practice to mitigate the consequences of interactions between *T. truncatus* and the fishing industry has not been identified. State aid as a long term solution could risk becoming economically unsustainable on top of being a fragile system that could be highly dependent on the political agenda of the government in charge. Additionally the difficulties and uncertainties in quantifying the economic losses due to depredation of the catch by *T. truncatus* could also undermine the establishment of such a process. On the other hand it should be considered that acoustic deterrents (and deterrents in general) could potentially become attractive instead of repellent once local populations of cetaceans become accustomed to their presence on the fishing gears. Therefore, it is of high importance that further research keeps on going to be able to find long term solutions to the problem of fishers-cetaceans interactions in order to guarantee both, the long term viability of cetacean populations and the profitability of small scale coastal fisheries. In the Pelagos Sanctuary area this is particularly important as following the study by Arpal (2021), in 2023 a new proposal to define a pSIC to protect *T. truncatus* in the Ligurian Sea has been approved at regional level (n.414 05/05/2023) following the D.P.R. 357/97 following the European Directive 92/43/CEE.

Future work should focus on collecting detailed information on fishing vessel operating in the Pelagos Sanctuary to create area specific maps of fishing effort by gear and fleet segments, overcoming the limitations observed within the public datasets. This would allow to directly relate trends of biomass indices of cetaceans preys with fishing effort and environmental variables. Being *T. truncatus* the most studied species of the Pelagos Sanctuary and potentially the one on which are available most information to parameterize an evaluation process, a first

attempt to quantify the effect of fishing activities on the survival of this species should be implemented, accounting for the uncertainty highlighted throughout our review process.