**Summary of ETP Species Interactions with the PUKFI Monkfish Fishery and Recommendations for Bycatch Mitigation**

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| **Fishery name:** | Western Seas & Channel Monkfish / Anglerfish (*Lophius piscatorius* *and L. budegassa*) |
| **Fishing method:** | Gillnets (Trammel & entangling/gill nets); Demersal trawl; Beam trawl |
| **Fishery location:** | Western Seas and Channel (VII b-k, VIII a/b/d) |
| **Action point/indicator:** | 2.3.1, 2.3.2, 2.3.3  ETP species outcome, management and information;  Effects of the UoA on populations within national / international limits;  Management strategy in place;  Information is adequate for the assessment of impacts and their management. |

Summary of ETP Species Interactions

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| *Beam Trawl* |
| The common skate was observed as bycatch in significant amounts in the beam trawl. However, this species has high levels of survivability from interactions with fishing gear. Catches of undulate ray have declined, whereas catch rates of nurse hound, starry smooth hound and blonde ray have increased. Limited catches of spurdog were also observed.  There were four incidents of capture of northern gannet in beam trawl gear observed by Cefas in 2013. As seabird interaction rates are low, mitigation of seabird bycatch will not be considered further at this time. |
| *Demersal Trawl* |
| The common skate was observed as bycatch in significant amounts in the demersal trawl. However, this species has high levels of survivability from interactions with fishing gear. Other than the common skate, demersal trawls exhibited limited bycatch of other vulnerable elasmobranchs. |
| *Gillnets (Entangling/ Hill & Trammel Nets)* |
| Entangling and trammel set nets potentially have a relatively high risk to the common porpoise, common dolphin, grey seal and common seal. Estimations of total bycatch of common dolphin and porpoise were found to be below thresholds established by the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) (1.7% of the population). Furthermore, clients of the fishery state that pingers are in use on vessels over 12m in length.  There were only moderate catch rates of elasmobranchs, particularly spurdog, with rare observations of interactions with porbeagle and basking sharks. However, these elasmobranch catches were much lower than those observed in beam trawls.  Seabird interactions are thought to be minimal, however gannets, guillemots and fulmars have been observed to be caught in entangling and trammel nets in the UK. As seabird interaction rates are low, mitigation of seabird bycatch will not be considered further at this time. |

Recommendations Proposed in MSc Thesis

The recommendations proposed to mitigate bycatch of ETP species were as follows:

* To gain knowledge of the total number of fishing trips to assist in standardising a fleet level catch rate for ETP species.
* Maintain a good level of sampling in the observer programme to ensure long term trends in ETP interactions can be identified.
* Adopt the collaboration the CFPO has led with the Shark Trust, Cefas and the MMO on the spurdog initiative across all high-risk level elasmobranchs identified in this assessment.
* An independent site visit from Sea Mammal Research Unit (SMRU), to properly assess and estimate the magnitude of impact of the fishery on the high risk marine mammal species.
* Ensure good practice and pertinent use of available equipment (e.g. pingers) that can mitigate the impacts of fishing pressure on ETP species.

Potential Measures to Monitor and Mitigate Bycatch – June 2018

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| *Beam Trawl* |
| There is a need to assess and properly understand current ETP bycatch rates to obtain a useful /meaningful measure of bycatch rates in the context of the ETP stocks involved and the impact of beam trawl on these stocks. The focus should be on common skate bycatch.  In the first instance, some enhanced data collection using skipper information/recording might prove useful and should be fully explored.  Existing research and initiates should be reviewed and identify data gaps/additional research/data requirements.  Exploration of any potential/necessary mitigation measure should also assess/consider the impact on target species.  Meetings/workshop should be convened with CEFAS and SMRU to explore interaction rates and if necessary potential mitigation measures for both elasmobranch and marine mammal interactions. |
| *Demersal Trawl* |
| There is a need to assess and properly understand current ETP bycatch rates to obtain a useful /meaningful measure of bycatch rates in the context of the ETP stocks involved and the impact of demersal trawl on these stocks. The focus should be on the common skate and spurdog by catch.  In the first instance some enhanced data collection using skipper information/recording might prove useful and should be fully explored.  Existing research and initiates should be reviewed and identify data gaps/additional research/data requirements  Exploration of any potential/necessary mitigation measure should also assess/consider the impact on target species.  Meetings/workshop should be convened with CEFAS and SMRU to explore interaction rates and if necessary potential mitigation measures for both elasmobranch and marine mammal interactions. |
| *Gillnets (Entangling/ Hill & Trammel Nets)* |
| The main issues regarding ETP species interaction are around marine mammals and cetaceans.  Although all of the larger vessels (>12m in length) carry pingers (DDDs), it would be useful to understand deployment patterns and alternative mitigation measures for smaller vessels.  There is also a need to assess and properly understand current ETP by- catch rates to obtain a useful /meaningful measure of by-catch rates in the context of the ETP stocks involved and the impact of demersal trawl on these stocks. The focus should be on the marine mammal and cetacean by catch.  Meetings/workshop should be convened with CEFAS and SMRU to explore interaction rates and if necessary potential mitigation measures for both elasmobranch and marine mammal interactions. |

Measures to mitigate bycatch – October 2018

Recommendations based on Project NEPTUNE and protocols in place in the MSC Certified Cornish hake gill net fishery

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| *Beam Trawl* |
| * Design and implement an on-going discard monitoring programme, that will record both the quantity and composition of discards. * Work with management authorities, observers and other relevant stakeholders to determine the effectiveness of any existing bycatch mitigation measures. * Where vulnerable species have been detected, reduce tow duration where possible to minimise catches. * Develop safe handling and release protocols, which include species identification guides. Then install posters on-board vessels. These will include measures such as:   + Returning ETP species back to the sea as soon as practical   + Avoiding leaving ETP species on deck and/or in direct sunlight   + Handling animals in a manner which minimises risks of injury to both the animal and crew members * Explore trialling square mesh cod-ends, if they are not already installed, as they have been shown to increase shark release effectiveness. |
| *Demersal Trawl* |
| * Design and implement an on-going discard monitoring programme, that will record both the quantity and composition of discards. * Work with management authorities, observers and other relevant stakeholders to determine the effectiveness of any existing bycatch mitigation measures. * Where vulnerable species have been detected, reduce tow duration where possible to minimise catches * Develop safe handling and release protocols, which include species identification guides. Then install posters on-board vessels. These will include measures such as:   + Returning ETP species back to the sea as soon as practical   + Avoiding leaving ETP species on deck and/or in direct sunlight   + Handling animals in a manner which minimises risks of injury to both the animal and crew members * Explore trialling square mesh cod-ends, if they are not already installed, as they have been shown to increase shark release effectiveness. |
| *Gillnets (Entangling/ Hill & Trammel Nets)* |
| * Design and implement an on-going discard monitoring programme, that will record both the quantity and composition of discards. * Work with management authorities, observers and other relevant stakeholders to **determine the effectiveness of any existing bycatch mitigation measures, e.g. pingers** * Reducing soak time on grounds where vulnerable species may occur * Develop safe handling and release protocols, which include species identification guides. Then install posters on-board vessels. These will include measures such as:   + Returning ETP species back to the sea as soon as practical   + Avoiding leaving ETP species on deck and/or in direct sunlight   + Handling animals in a manner which minimises risks of injury to both the animal and crew members   + Remove any gear remains from the caught specimen |