

Case Study Report, Task 7.3

Synthesis and recommendations for Discard Mitigation Strategies by case study

Year 1: March 2015-February 2016

Case Study: Azores

Date: **March 2016**

Main Authors: Telmo Morato, Pedro Afonso, Laurence Fauconnet (IMAR, Beneficiary 17)

Task Leader: Clara Ulrich

DTU, Beneficiary 1

WP Leader: Kåre Nolde Nielsen

UIT, Beneficiary 26

1 What has been going on in this case study during the last 12 months?

1.1 Important changes in stock development, discard data and ecosystem

No major changes were observed in stocks, discard data or ecosystem since no LO is in place in the Azores as yet.

1.2 Important changes in terms of fisheries and stakeholders perception

- The LO has not been applied to the Azores deep-sea fisheries yet. Therefore, no changes in the fisheries were observed until March 2016.
- At the start of the project, most fishermen and fisheries associations were not aware or concerned of the landing obligation regulations. During the first stakeholder meeting the implementation of the LO in the Azores was discussed by many questions and doubts were raised, namely: Do discards landed sum for quota counts? What will the destination of landed discards be in this outermost region? When is the demersal fishery obligation due? Are tuna (other than *T. alalunga*) included in the first (pelagic) period? What is the applicability of the survivability exception (through release to the demersal, small pelagic and tuna fisheries)? Is scientific demonstration needed through studies to include specific cases in the exception list, as those of the small pelagics in the North Sea?
- During the last 12 months a change on the fishers perception towards the LO was observed with an increased awareness and several question being raised. Local fishermen and fishers association are now discussing with the local government how the LO regulation will affect their activities.

1.3 Important changes in management

- The Azores government asked to the Government of Portugal for clarifications on the starting date for the implementation of the LO for the deep-sea fisheries. It is their understanding that for this particular fleet LO would be applied only in 2019.

2 The Year behind us: What has DiscardLess produced in this case study during the last 12 months?

2.1 Impact assessments

2.1.1 Ecosystem scale assessment

Current status of ecosystem knowledge and data and identification of knowledge gaps

- The compilation of several observer datasets and fishing experiments that have studied catch and discard composition of the different fleets occurring in the Azores is under progress.
- A Master of Science thesis was finished in December 2015 about "Trends in deep-water shark fisheries in the Azores".

Standard ecosystem criteria for evaluating discard mitigation strategies

- The standard ecosystem criteria for evaluating the most relevant effects of discards on MSFD descriptors has been identified and deliverable D.1.2 finalised. The descriptors considered in DiscardLess to evaluate whether the Discard Mitigation Strategies promote GES are: the descriptors 1 (biodiversity), 3 (commercial fish and shellfish), 4 (food web), 5 (eutrophication) and 6 (sea-floor integrity). DiscardLess uses a selection of the simulation models developed with Ecopath with Ecosim, OSMOSE, Atlantis, ISIS-Fish, and StrathE2E to assess the outcomes of scenarios in different case studies based on standard criteria. Indicators were defined for the following criteria: population abundance or biomass (D1), population demographic characteristics (D1), composition and relative proportions of ecosystem components (D1), fishing mortality (D3), spawning stock biomass (D3), proportion of fish larger than the mean size of maturity (D3), performance of key predator species using their production per unit biomass (D4), proportion of large fish (D4), abundance trends of functionally groups or species (D4), nutrients concentration in the water column (D5), chlorophyll concentration in the water column (D5), dissolved oxygen changes and size of the area concerned (D5), and bottom trawling effort maps (D6).

Discard mitigation strategies scenarios and parameterisation of operational models

- The ecosystem modelling of the open-ocean and deep-sea environments of the Azores, NE Atlantic is in progress. The baseline model (Ecopath with Ecosim) has been updated with the most current data and a paper describing the model was submitted. The adaptation of the ecosystem model to discards is under development: a detritus group specifically for discards is being added, discard fate and survivability is being estimated, discard estimates being finalized. The Business as Usual (or discards as usual) scenario is ready to run, and the full compliance scenario is under progress.
- A spatial version of the model is being developed. A three days workshop on Ecospace was organised in February 2016 to help get started with the spatial model and to discuss how different discard mitigation measures can be modelled in Ecopath.

Estimating the outcome of selected scenarios

- Preliminary runs of the discards as usual scenario were run but the ecosystem and fisheries indicators were not analysed yet.

2.1.2 Fishery scale

- A stakeholder workshop was organized during the kick off meeting and one report was prepared. Participants included DiscardLess members, APEDA (Azorean demersal fisheries association), SRAMCT (Azores Regional Govt. - Secretary of sea affairs, science & technology), FPA (Azorean Fisheries Federation), APASA (Tuna Fisheries Association), Porto de Abrigo (Fisheries Producers Association), APG (Graciosa island Fisheries Association), APT (Terceira island Fisheries Association), APF (Flores island Fisheries Association), ACPSM (S. Miguel island Fish Sellers Association), OMA (NOG Sea Observatory for the Azores), PONG Pesca (Portuguese Platform of Fisheries NGOs), LPN (Portuguese league for Nature Protection).
- Stakeholders raised several concerns regarding the application of the regulation to the Azores fishing activities, namely:

- *Currently, there are some species that reach quota limits every year in the Azores, and the industry considers this to be the result of unrealistically low quotas for the region (e.g. alfonsinos, of which TAC dropped from >200 tons to < 100 in just a few years as a result of the global NE Atlantic evaluation). Therefore, the LO will inevitably have deleterious local effects (i.e., anticipate reaching the limit), and poses the question of whether TAC managed species should be included in the LO.*
- *In relation to this aspect, market limitations for these species also need to be taken in consideration. For example, smaller alfonsinos (TAC managed with no size limit) have very little market value, but if landed and marketed will overload the already too small quota and anticipate choking. So, eventually some species/sizes shouldn't count towards the quota.*
- *What to do with the landed discards? There is no food processing industry, and no prospects of having such, in the Azores. Also, there might be deleterious effects in the market if this product competes with commercialized regular fish.*
- *Limited fleet capacity to retain discards on board with implications on 1) fish quality maintenance, 2) capacity to retain regular catch, and 3) safety issues (e.g. overcapacity of small artisanal boats on small pelagic fishery).*
- *How will LO contribute to or harm other management measures currently claimed by the industry to be introduced so to solve local issues, such as temporary fishery stops (e.g. the winter stop for blackspot seabream), or the introduction (e.g. alfonsinos) or revision (e.g. blackspot seabream) of size limits.*
- **Contacts with stakeholders were kept during year 1.**

2.2 Avoiding unwanted catches

2.2.1 gear technology

Innovative technologies

- Given that the field work to experiment circle hooks vs J-hooks and shark deterrents (rare Earth elements) is dependent on the re-start of the black scabbard fishery, which only recently became possible, the starting of this task was postponed to year 2.

2.2.2 fishing strategies

The Scientists story – identification of locations, times and practices to fish to avoid unwanted catch

- Telemetry experiments with deep-sea sharks (*Dalatias licha* and sixgill shark) were continued, with permanent data acquisition and periodic retrieval of the receivers (last retrieval in February 2016). Similar experiments have been completed for the black-spot seabream in 2015. Such experiments will be used for estimates of survival upon release, and to increase our understanding of species spatio-temporal distribution and essential fish habitat identification.
- The species distribution modelling work is in progress and environmental and geomorphological layers have been produced. SDMs were developed for 8 deep-sea fish species and published during year 1 (Parra et al., 2016). Raw data on the occurrence of deep-sea sharks has been compiled.
- Recent (2010-2015) VMS data has been requested to regional authorities but has not been granted yet.
- The GIS platform is in progress and is now live but with limited functionalities.

2.3 Policy outreach

2.3.1 Framing and implementing the discard policy

Analyse the background, objectives and motivation of the discard policy

- In year 1, the Azores government asked to the Government of Portugal for clarifications on the starting date for the implementation of the LO for the deep-sea fisheries. It is their understanding that for this particular fleet LO would be applied only in 2019. The local fisheries is concerned with issues related to choke and 0 TAC species.

2.3.2 Bringing results to users

- We were expecting to target some dissemination actions in the Outermost Regions RAC. However, this RAC is not officially formed yet.
- Some work has started to include Azores case study data into the DiscardLess Atlas.

2.4 Summary:

During year 1 the work plan and development made a substantial effort to adapt to the stakeholder perception and concerns for the Azores case study, which became clear during the very well attended 1st stakeholder WS held at the kick-off meeting. Work thus broadened to include fisheries other than just the black scabbard fish fishery. This effort will continue in year 2, when most activities are previewed to start across several topics. The contribution to transversal themes was impaired by the lack of LO implementation in the Region.

3 The Year ahead of us: What do we expect for the next year?

3.1 Impact assessments: ecosystem scale

Current status of ecosystem knowledge and data and identification of knowledge gaps

- In year 2 we plan to finalise the before LO discard practices description for the different fishing fleets, including a reason for discarding analyses.
- We plan to have one publication on the discards estimates for the deep-water longline and handline and one on the general overview of discard practices in the Azores submitted by the end of year 2.

Standard ecosystem criteria for evaluating discard mitigation strategies

- In year 2 we plan to finalise the selection of ecosystem indicators selection and validate their use in the LO ecosystem context.

Discard mitigation strategies scenarios and parameterisation of operational models

- In year 2 we will finalise the parameterisation of operational models and prepare the different scenarios (discards as usual, full LO implementation, partial implementation).

- We plan to have the ecosystem baseline model paper accepted by the end of year 2.

Estimating the outcome of selected scenarios

- In year 2 we will run different scenarios (discards as usual, full LO implementation, partial implementation), estimate the agreed ecosystem and fisheries indicators, produce a sensitivity analyses on the model runs, and we will start the spatial modelling.
- We plan to have the paper on the scenario runs submitted by the end of year 2.

Monitoring changes in fish stocks and sensitive components

- A fisheries observer program will start to be implemented in year 2 in collaboration with the data collection team. The program will monitor the changes in discard practice due to a) the deep-sea shark 0 quota (ongoing but a new fleet is coming in to fish BS), b) the blackspot seabream minimum size (ongoing) and seasonal closure (new in 2016), and c) quota species (mostly blackspot seabream and alfonsinos).

3.2 Avoiding unwanted catches

3.2.1 gear technology

Increasing awareness of existing solutions

- IMAR will produce a manual for best handling practices and identification of deep-sea sharks.
- Additionally, the team will review and provide data to fishermen (format to be determined) on potential technical solutions (e.g. circle hooks, deterrents, gear configuration, other techniques) and a survival analysis from previous tagging (both electronic and standard) programs to evaluate optimal release conditions not only of deep-sea sharks but also some key deep-water bottom fishes.

Innovative technologies

- We expect that part of the field and laboratorial experiments will be conducted during year 2: 1) captivity holding and rare Earth elements (REE) tests using a deep-sea shark model species; 2) in situ instrumented lines using observers onboard the black scabbard fishing vessels that are expected to operate starting summer 2016. This task will be completed in year 3, including analyses.

3.2.2 fishing strategies

The Fishers story – documenting suggested discard reduction fishing

- Questionnaires or interviews maybe developed, sent to fishermen, collected, analysed and reported during year 2, in collaboration with other partners with expertise on collecting this type of data and local NGOs and fishers organization.

The Scientists story – identification of locations, times and practices to fish to avoid unwanted catch

- We will continue the spatially explicit data compilation and run Species distribution models. Reporting to be done partially in year 2.
- In year 2 (Autumn 2016) we will participate or organize a workshop to define common product formats and contents across the case studies, and to exchange/test analytical tools (R scripts, etc.).
- Deep-sea shark telemetric experiments will be continued in year 2. We are exploring the possibility of complementing these with video experiments to evaluate release conditions and survivorship of some deep-sea sharks and fishes in year 2.

3.3 Policy outreach

Analyse the background, objectives and motivation of the discard policy

- Continue transferring information on the implementation, discussions and developments of the LO in the Azores case study.
- Continue working to include Azores case study data into the DiscardLess Atlas.
- Members of the Azores case study plan to present some of the recent results in international scientific meetings in 2016 such as the World Fisheries Congress, ICES Annual Science Conference.