Minutes

AdriaMed technical meeting in support of fisheries Management Strategy Evaluation (MSE)

FAO HQs, Rome, 22-23 March 2018

- An overview of the MSE methodology and its use has been provided. The GFCM work and discussion held in 2016-17 has been used as starting point of the discussion, in particular:
    - AdriaMed Working Group on fisheries socio-economics in the Adriatic Sea (WG-SEC), 13-14 December 2017,
    - the 19th session of the SAC/GFCM,
    - the GFCM recommendations of the 40th and 41st annual session of the GFCM.

- Aim of the meeting: Progress towards the integration of additional elements in the multiannual management plans for small pelagic fisheries in the Adriatic Sea. The outputs will be preparatory to the GFCM workshop on MSE (WKMSE, 9-11 April 2018) and the GFCM Subregional Committee for the Adriatic (SRC-AS, 12-13 April 2018).
- Management framework: multiannual management plans in the GFCM-GSA 17 and transitional conservation measures for fisheries on small pelagic stocks in GSA18 (GFCM Recommendation GFCM/37/2013/1) and the following Recommendations (GFCM/40/2016/3, GFCM/39/2015/1, and GFCM 38/2014/1).
- Management measures to be evaluated through scenarios was provided by: Croatia, MEDAC (opinion on LTMP for small pelagic in Adriatic Sea ref.94/2016, 11 March 2016), STECF and recommendation GFCM/40/2016/13.

- Meeting outputs, **Management scenarios for FLR (Fisheries Library in R: models for stock recruitment) tool**:

    -Status quo

    - Selectivity of fishing mortality at age (-10% of F on age 0 and +10% of F at age 2) to simulate the **spatio-temporal closures in juveniles' areas**;

    - Recommendation GFCM/40/2016/13, **Fixed number of fishing days** (not more than the year before), **temporal closures during anchovies and sardines spawning periods** (anchovy - from 1st April to 30th September, sardine – from October to March)

    - **3%, 5%, 10%, 20% from 2019 for 5 year until FMSY is reached** (also possibly try the Bpa and FMSY) to see how far you can go 'till you crash your fleet'; results (SSB, F and catch estimates) to be passed on to Nisea (can also simulate, economically, different combinations of the reduction of the two species).

    - Reduction in total F by 4% and 8% to simulate a **further 15 days or 30 days closure in winter**, for three years 2019-2013.

    - Following management options provided by **GFCM Recommendation and STECF scenarios** will be evaluated:
        - Linear reduction of F towards FMSY in period 2019-2020;

- Linear reduction of F towards FMSY in period 2019-2021;
- Linear reduction of F towards FMSY in period 2019-2023.
- Catch limit at 2014 catches

- **Bio-economic** aspects will be investigated through Bemtool (COISPA) – Scenarios:

- Bemtool: a multi-species and multi-fleet approach to provide a multi-criteria decision analisys, to consider the stakeholder's perspective. The uncertainty component is expanded from the biological to the socio-economic scenarios.

- selectivity of fishing mortality at age (-10% of F on age 0 and +10% of F at age 2) to be kept constant over the whole simulation (2030 as max but also looking at stability) + catch reduction by 5% starting from 2019 for 5 years;

- selectivity of fishing mortality at age (-10% of F on age0 and +10% of F at age 2) to be kept constant over the whole simulation (2030 as max but also looking at stability) + catch reduction by 3% starting from 2019 for 5 years;

- For each one has 2 prices scenarios: (i) fixed price at 2016 and (ii) increase of price which keeps the fleet positive despite reduction in catch (breakeven price)

<u>NO REDUCTION IN FISHING CAPACITY</u>

- **Economic aspects will be investigated through economic models** (Nisea). **Assumption for economic analyses based on outcomes of simulating scenarios with FLR tool:**

1 - Quotas for anchovies and sardines fully achieved in each simulation year (landings=catch limit):
- no choke effect (the fisherman can understand which species is fishing);
- no limitation by days at sea (the model cannot simulate this).
2 – Reduction in fleet based on the last program on scrapping (to be split proportionally among the fleet segments (length classes) involved:
- 30% for Croatian purse seiners (variable reduction 2016-2018: Croatia and Italy will provide the number of vessels for 2016-2018; the fleet will be constant over time);
- 9%GT for Italian purse seiners and pelagic trawlers (variable reduction initially based on number of scrapped vessels; then fleet will be constant over time);
3- Fish price assumed constant, but the increase in fish price allowing economic sustainability is estimated for each scenario;
4- Economic performance is estimated on median values for catches, fishing mortality and SSB (from FLR-MSE) no range of estimated uncertainty in economic indicators.
5- Revenues estimated by species?

- Main issues raised concerning the modeling of scenarios:
- there are some difficulties concerning the growth parameters of the two species, new benchmark is needed;
- the biological model can receive as input only F and catches quantities. Therefore, each management measure (other than TAC) should be translated in F variation to provide the scenario

(temporal closure etc.). This assumption can be difficult to be decided: how the fishing closures can be represented in terms of F variations?
- Fishing days reduction for purse seiners is directly related to diminishing the fishing effort, while for trawlers the effort can be constant even if the fishing days are reduced.
- the biological model cannot consider: both species in the same simulation (not multi-species model), the interactions between sardine and anchovy, other potential environmental impacts on their population dynamics;
- the socio-economic models (Bemtool) cannot evaluate the scenario of combined management measures such as fishing days reduction and TAC. It is possible only providing these inputs in different times (the scenario obtained by a management measure become the input of the new scenario based on other management measure). The economic model suggested by Nisea can simulate different management measures together, but it can be difficult the correct understanding of results;
- Croatian management options provided to this meeting have not been shared with stakeholders till now;
- choke effect can be a fundamental problem in the enforcement of the management options: maximum catches of one species can be raised before the other;
- socio-economic effects have a subjective component because the consequences on prices of the management measures aren't reasonably foreseen at this time. However even if the prices will raise, it is likely probable that the revenue will decrease;
- the translation of fishing days reduction in F variation is very difficult due to the weather conditions: the number of fishing days can be very different from the foreseen value, especially for small scale fishing vessels. Furthermore, the fishing days have been already reduced and the effect of an additional reduction might be not understood by the model;
- the growth parameters required by stock assessment were estimated till now using a method that will change in the future stock assessment (recently a common otolith measurement method was agreed).

At the end of the meeting it has been announced that as from next year the SAC/GFCM is reorganizing the meetings to provide advice one year before than the current timeframe.

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