Copenhagen, June 21th 2017.

Dear Mr Buonfiglio and MEDAC members

Thank you very much for your letter dated 12.June 2017 about the concerns and questions raised by the MEDAC regarding the stock assessment and management strategies evaluations performed by the STECF. The assessment of data-poor or data-limited stocks is certainly more complex and challenging mathematically than the assessment of data-rich stocks, and is therefore more difficult to be explained and understood; meanwhile, these assessments have major economic and social implications. It is therefore of vital importance to reach a common understanding about the complex processes involved in defining and implementing a management plan, and to be fully transparent about the data and assumptions used for estimating the impact of alternative scenarios.

We acknowledge that there are many shortages, gaps and limitations in the data and knowledge available regarding Mediterranean stocks and fisheries; STECF (and GFCM) operates in order to provide the best available science based on this fragmented information, and follows world-wide developments in assessment methods and good practices; but we recognize that many uncertainties remain. In this context, STECF emphasizes also the importance of supporting programs that aim to enhance the quality, quantity and coverage of fisheries-dependent and fisheries-independent data collection.

This letter aims to answer to the various points raised in your letter.

Point 1: *"concerns were expressed about the difference between the diagnosis made by the Scientific Committees and the perception of the fisheries at sea. This discrepancy is usually due to the time that the scientific assessments take - on average 2 years - since the scenarios might have changed in the meantime."*

STECF Answer: Indeed, there are time gaps between the steps when the data are collected, when data are made available for stock assessment, when stock assessment is performed, when the advice is published, and when the management action takes place. Some of these gaps are inherent to any process of stock assessment and cannot be easily reduced, as some data are quite time-demanding to process (e.g. the collection of catch data and the age-reading). Other time gaps could potentially be reduced, and in July 2016, STECF 16-14[1] (p. 10 and section 6) noted that advice on short-lived small pelagics was particularly sensitive to the data and advice time flow. STECF suggested some improvements which could speed up the way in which evaluation of stock status and provision of catch advice could be carried out, and which could reduce substantially the concerns noted here.

[1] https://stecf.jrc.ec.europa.eu/documents/43805/1446742/2016-07_STECF+16-14+-+Methods+for+MED+stock+assessments_JRC102680.pdf

Point 2: *"The difference between the assessed stocks and the perception of the status of the fisheries by several stakeholders can be significant, thus affecting the discussion on management measures when it comes to short life cycles high fecundity and fast growing species, with natural annual fluctuations and heavily dependent on environmental factors."*

STECF answer: Differences in perceptions between stock assessment and stakeholders are a common claim in fisheries all over the world, and are difficult to resolve. These differences arise partly from the fact that scientists and stakeholders see different aspects and at different spatio-temporal scales, where stakeholders follow high-density areas on a day-by-day basis, while scientists look at average annual patterns over long periods of time and large areas including low-density areas. These differences in perception become usually more marked when the stocks are considered overexploited, because the patchiness of the stock increases and the probability of encountering a low density area in a scientific survey increases, whereas commercial catch rates may remain stable. Nevertheless, STECF underlines that although some stocks may indeed change state rapidly, most stock assessments in the Med are very consistent in showing a recent low biomass and high exploitation rates, also for the small pelagic stocks. Thus, while some annual variation might occur, and some uncertainty may remain, there are no observations which would support a claim that these stocks could be in a good state and not overexploited. Notwithstanding the uncertainties noted above, we still believe that important reductions of fishing mortality are necessary to reach exploitation levels consistent with the Maximum Sustainable Yield (MSY).

Point 3: *"In this framework, stakeholders have doubts about certain ecological factors that maybe were not taken into account in the scientific assessments, such as, for example, the influence that the trends of primary production have on these species and the relationships with the predators (BFT)."*

STECF answer: STECF notes that the assessment models and assumptions used here are consistent with those used for many other assessments of small pelagics in other regions, and are thus not specific to the Mediterranean stocks. Furthermore, almost all of the assessments carried out by STECF are based on DCF data, these often consist of 8 to 12 years of data. Thus, the stock assessments reflect primarily the current and recent environmental conditions, and are not really influenced by the conditions which prevailed more than a decade ago. As such, the assessments relate to the current state of the Med in terms of productivity, which is not considered to have significantly changed during the last 10 years. Regarding the inclusion of predators effects, there are currently no complex multispecies models available for the Mediterranean Sea, and given the difficulties in obtaining single species data it seems unlikely that such models will be possible in the near future.

Incidentally, STECF underlines that taking into account the variability of environmental conditions and/or the effect of predation in stock assessments implies a need to account for larger precautionary buffers, which often result in lower reference points and lower advisable catches than obtained with a standard stock assessment model, and not necessarily higher as may be expected. Examples of this effect can be found in the history of the changes in reference points for the North Sea demersal stocks during the last 15 years.

For small pelagics, one option to address the variability of environmental conditions is to determine annual fishing opportunities on the basis of an escapement strategy, where a mimimum amount of biomass is required to be left in the sea each year; As mentioned in the report quoted above, STECF underlines that an escapement strategy would be possible for the Mediterranean short-lived stocks if the timeline of assessments, advice and implementation is shortened.

Point 4*: Some stakeholders raised doubts about the exhaustiveness of the data used in the stock assessments, which are mainly based on the overall annual catch rather than CPUE or echosurvey. This might lead to an unfavourable management proposal of the reduction in the fishing effort.*

STECF answer: STECF (and GFCM) base assessments on all data that are available to them, following standard procedures. For the most important stocks, echosurveys and CPUE from demersal trawl surveys are available and used, in combination with time series of catch. Catch-only assessments are used only where no survey data is available. These methods which use catch data only are improving, and considerable scientific attention is currently given to them in order to fully understand their potentials and their bias. Nevertheless, it is obvious that the exact status of stocks estimated with these methods will always remain uncertain, and significantly more uncertain than if a full analytical assessment with survey data had been possible. STECF systematically considers both uncertainty and bias in its assessments, and if the best possible assessment for a given data-poor stock is considered reliable even though it is uncertain, STECF prefers to present the results, considering that some information is still preferable to no information. STECF notes furthermore that if the precautionary approach was applied strictly, then for a stock with no assessment, it might be necessary to recommend closing the fishery, a proposal which would be more unfavorable than if an uncertain assessment is presented.

STECF hopes that these explanations can help clarifying your questions and doubts. It is our perception that the quantity and the reliability of stock assessment estimates in the Mediterranean Sea is continuously improving, and we are convinced that this can support the establishment of sustainable harvest strategies for the benefits of stocks and of the fisheries exploiting them. We remain at your disposal for future meetings and dialogues.

With my best regards

Prof. Clara Ulrich, STECF Chair