Theme Session Q Report 2024

Small-scale fisheries, where are you?

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Session synopsis

Small scale fisheries (SSF) account for around 80% of the fishing fleet in the world. Yet, proper knowledge of their activity is scarce due to the difficulties in data collection compared to industrial fisheries. Despite the efforts to improve the understanding of SSF, significant limitations persist, particularly regarding their spatial distribution.

These restrictions hamper effective management for resource sustainability, marine ecosystem health, and local fishing communities. In addition, the emergence of the blue economy, need for marine spatial planning, and stricter environmental requirements demand an enhanced comprehension of the spatial activity of SSF. Some examples are those related to the implementation of marine protected areas (MPAs), wind farms or the estimation of fisheries impacts to assess ecosystem status (as required, for instance, by the EU Strategic Marine Framework) among others.

Fortunately, an increasing number of countries are now embracing the monitoring of SSF activities using tracking devices. This holds significant potential in overcoming the challenges associated with data collection in SSF. Proper analysis of this data would identify and quantify the complexity of behaviours within SSF, which are characterised by a high diversification in gears and fishing techniques and changing spatio-temporal patterns of their use.

ICES community has accumulated expertise working with VMS. However, SSF requires highly resolved spatial data with higher sampling frequencies (GPS, AIS, EM, etc.) to identify fishing activities which are usually shorter in time and space. In this context, emerging techniques such as machine learning and other analytical tools are being tested to identify and model fishing operations and obtain the activity indicators (e.g., effort/soak time, bottom impact, or bycatch).

This theme session provided an opportunity to review the latest advances in analysing highly resolved spatial data. It addressed data collection technologies, data processing and management, indicators/knowledge obtained from SSF geospatial data, and more.

Structure and participation

After the abstract submission and selection process to ensure works were in line with the established objectives, the session featured a total of 16 oral presentation proposals and 7 posters.

The session was successfully carried out on the first day of ICES Annual Science Conference. The session followed a format allowing questions after each individual presentation instead of grouping presentations for a larger Q&A discussion. This provided the same opportunities to each of the presenters to receive questions from the audience and promote participants to interact with all subjects, with successful results. One third of the presentations were online with different formats. In this regard, the main issue was that one of the presenters was not able to be available to respond online, losing the opportunity for all to enrich the discussion. The main comment from the other online presenters was that they were not able to follow the entire session online. We would like to highlight the fact that one of them included subtitles in his/her presentation, which was very helpful.

Participants feedback from the session (Slido questions)

Conveners included an introduction presentation that contained questions for the audience using Slido as icebreaker questions and allowing a brief interaction.

Apart from highlighting some knowledge gaps referring to small scale fisheries, the participants largely opted for having a high ping rate frequency for the transponders for SSF activity, between five and one minute, thus showing the need for high resolution data that fisheries scientists need to work with SSF. This answer is in line with the recommendation of ICES Workshop on Geo-Spatial Data for Small-Scale Fisheries (WKSSFGEO) to use a ping rate of one minute to allow an optimal spatial analysis.

Between the challenges participants encounter when working with spatial vessel data in their countries, they mostly opted to rank the access to data as the first problem followed by the problem of the gear identification for each individual trip.

Content of the presentations

The content of the presentations mostly followed the goals for which the session was designed and proposed, giving space for discussion within the audience on the geo-spatial analysis of small-scale fisheries. Presentations can be aggregated mainly into two different categories: 1) methods to infer fishing activity information (gear, grounds, management, etc.) and 2) geo-spatial impact analysis. We would like to highlight that there were presentations in other sessions that clearly fitted in the session described herein.

The discussion highlighted the opportunities and challenges that tracking SSF is giving to the fisheries management community. During the session, scientists presented different ways to estimate fishing effort (fishing time, soak time, area impacted, etc.) at different levels of spatial resolution. Some presenters focused on different tracking devices used, whereas some others presented a real integrated system together with logbooks and sales notes to infer fishing activity from geospatial data.

The improvement of these tools and analyses will aid decision-making in several fields (marine spatial planning, offshore wind energy, MPAs, etc.) as well as a clear improvement in stock assessment. In addition to the analytical work, the resolution of the generated information also has consequences, as it can impact management decisions. Are the indicators and spatial resolution used so far in LSF useful for SSF? How can SSF improve the methodologies, results and interpretations in LSF?

Conclusion

Small Scale Fisheries geospatial data provide the fisheries community with interesting challenges that can benefit the entire sector.

This session has highlighted the amount of work already done in the scientific and policy makers communities. Three different aspects have been concluded:

1. Difficulties to distinguish gears using geo-spatial data.
2. Difficulties to obtain highly resolved fishing effort results.
3. Scarcity of tracking system devices.

There is a long way to go to obtain reliable spatial information on fishing grounds, fishing effort, bycatch, and other characteristic variables in SSF. Nevertheless, incoming changes such as the recently approved EU regulation to implement tracking devices in all vessels - including those with LOA below 12 m - drives us to improve our estimation methodologies and algorithms to be closer to the quality and accuracy SSF requires.