Ecosystem indexes obtained from fishing monitoring (methodological proposal on direct stock assessment for marine resources of the SPRFMO area

Acoustic methods are evolving from a single species approach to a broad range of observations on species occupying different ecological niches (e.g. zooplankton, micronekton) including abundance indexes and diel cycles of behavior. Furthermore acoustic data often contains information about certain characteristics of the habitat (e.g. depth of the thermocline, internal waves) which might be linked to spatial patterns on local abundance and relationships between groups of species.

Furthermore FAO is currently encouraging fishing countries to adapt the Ecosystem Approach to Fisheries which in Peru is partially applied throughout an Adaptive Management of fisheries. This is a challenge which spans on several scientific disciplines and will need of extended databases and time series. Main obstacle is however the lack of financial sources which might support the longstanding effort over a wide geographical area in the case of the fisheries of the South Pacific Ocean.

The proposal outlined here is to SPRMFO to adopt as a regular tool for monitoring of fisheries a method which is currently applied in Australia, New Zealand, Chile and Peru regarding the use of fishing vessels as *scientific platforms of opportunity*. The proposal is not intended to supplant current scientific surveys, which will always be necessary to calibrate the data supplied by other sources, but to fill up the gaps which usually occur from one survey to the next.

The basis or the proposal is the fact that scientific surveys are usually performed on very strict itinerary, then they are unable to detect signals like daily changes on catchability and/or relate those variations to other changes in the local conditions (e.g. availability of preys, relationships with magnitude of internal waves etc). The use of several fishing vessels for parallel quick synoptic surveys are also useful though still unable to detect and study small scale dynamics which in turn can effectively be observed by vessels staying more or less in the same location during several days or weeks.

The basic equipment needed for this approach is a digital echosounder which is becoming common detection equipment aboard fishing vessels. More sophisticated systems like multifrequency echosounders are also available as standard equipment in several vessels from the mentioned countries operating in the SP besides vessels from UE, Russia, China etc.

Conclusions

- Acoustic data in digital format is available for use by several disciplines aboard fishing vessels. This might be of scientific quality if certain protocols are followed up. The use of this kind of equipment might be obligatory for vessels operating in the SP region.

- There is a need for acquiring continuous information even at the level of fishing ground in order to track preys and predators dynamics at different time-space scales.

- The proposal implies for SPRFMO to start to build up an ecosystem approach from the monitoring of as much components of ecosystem as possible.

- It is recommended to study and define stratification areas for the SPRFMO region, and to start to build up for them some time series on indexes of ecosystem functioning which in turn requires of a definition.

- The high cost and limitations of performing scientific surveys makes indispensable all other source of information. The participation of all stakeholders guarantee the quality of data and results.

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