Data collection systems for the inland fisheries of Europe

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The evaluation of the importance and value of inland fisheries is one of the biggest challenges for its development. As long as the data on the importance and socio-economic value of inland fisheries is unrecorded or under-reported, decision makers value other water uses with known value to the economy over the fisheries sector. The global sustainable development agenda has mainly focused on the marine environment (FAO, 2018). In general it is known that inland fisheries are important sources of ecosystem services contributing to human diet, health, well-being, rural community livelihoods and economies. In European countries, the role of inland fisheries has increasingly provided recreational services, biodiversity conservation, and eco-tourism. It is expected that the importance of inland fisheries, and thus the need for improvements in monitoring and management, further increases as food security becomes a major global concern. The challenge from climate change, lower carbon emissions, can be better met by low environmental impact food production, such as freshwater aquaculture and inland fisheries. Sustainable inland capture fisheries also contribute positively to several United Nations Sustainable Development Goals.

In this report, the authors focus on commercial and recreational freshwater fishing in Europe. Examples are provided from five European countries on data collection and use of recreational and commercial inland fisheries data. Those countries are: Croatia, Czech Republic, Denmark, Finland and Ireland. Challenges are identified and recommendations provided from country case studies. Literature and personal communications were used to collect information from other European countries. The aim of the study was to form a baseline of information on current methodology and systems for data collection, monitoring and evaluation of inland fisheries.

Review of the current situation of inland fisheries data collection in Europe

The level and methods of inland fisheries data collection in Europe were highly variable. Some countries did not collect any data on recreational fishing, or it was collected only from specific areas, or only the number of licenses sold was recorded. Data collection from catches of diadromous species was most common and harmonized among countries and in particular, Atlantic salmon *(salmo salar)* were recorded. Many countries provided fishing license buyers with catch return forms or logbooks to be filled at fishing occasions and/or returned at the end of the fishing season. Commercial inland fisheries did not exist, or were very limited, in many European countries. Where commercial inland fisheries existed, it was mandatory for commercial fishers to report their catches The reliability of self-reporting of commercial catches was questioned in some cases. There was a trend towards web based online reporting of inland fisheries data, which some countries were already using. With regards to recreational fisheries, several points are clear from our data collection: 1) in general, there is strong focus on data collection of salmonid species; 2) few countries collect data for all waters and all species; 3) mandatory self-reporting is frequently used but participation/compliance is rarely evaluated and data quality is therefore unknown; 4) mandatory self-reporting can focus on single species or multiple/all species.

Country examples

The five country examples included a nationwide recall survey approach from Finland, where data of recreational fishing is collected by postal questionnaire. The frame sample is the Population Register Centre Finland (sample size 9 000–11 000 people). The criteria for the survey are determined by the Advisory Board of the Official Statistics of Finland to keep the bias typical of recall surveys as low as possible. The continuous repeatability of work under the same criteria for a long time makes it possible to analyze trends in recreational fishing (effort, gears used) and also in catches of common fish species. Results are upgraded to national level also to estimate the importance of recreational fishing in the society (e.g. age structure of fishers, men and women involved in recreational fishing). The results of the nationwide study can be used as a part of the calculations of the socio-economic importance of recreational fishing on a national level. On the negative side the large spatial scale of the national study makes it impossible to identify the catches of individual water bodies, lakes or rivers, from the data. Also, catches of rare species include a large error rate when data from few observations are expanded to national level.

In the example of the Czech Republic, anglers are obliged to write down and report every fish (date, species, length and weight) retained (implying that released fish are not recorded) during fishing including the fishing site. Also, recording of the number of angling visits, irrespective of the catch, as a proxy of fishing efforts is compulsory. Every fisher is strictly requested to carry the logbook with the fishing license, where every visit (before starting the fishing day) and catch (after deciding to retain particular fish) must be recorded. At the end of the year, the angler is strictly requested to fill in the summary (total number and weight of every taken species and number of visits at every fishing ground) and to hand this summary (opposite side of the logbook) to his/her local Anglers' Union. Fishers are sanctioned if they do not comply and return their annual logbook. Czech anglers who fail to hand in the summary to the Anglers' Union cannot apply for the angling license for the next year. Further compliance is secured through control as part-time and full-time bailiffs frequently checking the licenses and the logbooks of the anglers. This results in a very high rate of logbook returns (close to 100 percent) for Czech anglers. The other example based on logbook returns (Croatia) was a less controlled system. It was not producing reliable results and a new method was under development in Croatia.

Mandatory reporting of Atlantic salmon in Denmark and Ireland was described in the report. In Denmark catches have to be reported within a few days after the catch, whereas in Ireland annual logbooks are submitted. In Denmark the compliance of anglers is secured through control activities. In Ireland, all fishers must attach a gill tag to each salmon (or sea trout >40 cm) they catch and retain. A logbook entry must then be made giving details of the fish caught. All logbooks and unused tags must be returned to Inland Fisheries Ireland within a period of seven days after the last day of the relevant fishing season, or after the license has been in force (e.g. one day and 21 day licenses are available).

Future prospects

In Denmark, a system of voluntary self-reporting is used to collect data from recreational fisheries, specifically anglers. They have framed it as a citizen science project, implying that the anglers not only collect data, but also benefit in various ways from doing so. Anglers provide information about fishing location, hours fished, target fish species as well as information about catches, i.e. species, length or weight, fate (released or harvested), and gear used, as well as other information. Anglers are encouraged to report blank trips, which allow calculations of CPUE estimates. Data is being collected via an electronic platform including a browser version and a smartphone app (for android and iPhone). This gives several advantages compared to traditional paper logbooks, as data can be collected swiftly and statistics can be compiled immediately and distributed to relevant stakeholders, such as the individual angler on the fishing site, fishing right owners, and fishing clubs. Integrating an electronic reporting system such as the one used in Denmark (and now in Finland), into mandatory self-reporting systems is an interesting future approach.

References

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