

8 Data and information needs for assessment

8.1 Overview on data needs

The main sources of information currently used for the assessment of the wild salmon stocks can be categorized into three groups according to the place where the actual data collection is carried out:

River surveys: parr density estimates, smolt trapping, monitoring of spawning runs and river catches;

Sea surveys: catch data, fishing effort data and catch composition estimates;

Joint river and sea surveys: tagging data (tagging in rivers, recaptures from sea and river fishery).

Table 5.3.2.1 gives an overview of all the riverine and tagging data collected on regular basis for the different salmon stocks within the Baltic Sea area. Data collection from the sea is described in Section 2.6 and Section 3 describes data collection in rivers.

The amount of information available from individual rivers differs significantly between rivers and between assessment units. Because of the discrepancies between the amounts of information available from wild salmon of the different assessment units, the uncertainties in the assessment of stock status differ significantly between assessment units. The Working Group discussed the data needs in 2005 (ICES 2005). As the requirement for data will always exceed the available resources, preferences must be given. The decisions regarding which investigations should be given preference are normally made on a national, regional or local level and they are normally based on a number of factors. They could be based on factors such as need of the data for management or availability of resources to carry out a certain investigation in a certain place.

It is possible for the working group to give guidelines regarding which kind of data collection should be given priority. Such guidelines should ideally be based on evaluation of what data will give maximum improvement of accuracy and precision to the present assessment model.

It has high priority to establish one index river in each Assessment Unit. The collection of data concerning parr densities, smolt counts and number of spawners has high priority in these rivers. Electrofishing surveys in these rivers should preferably cover more sites than in other non-index rivers distributed over all parr rearing habitat of different quality to give representative estimates. Tagging of smolts also has high priority.

Electrofishing surveys in non-index salmon rivers should be carried out but in the present assessment model it is not necessary to have annual surveys in every river. They could be carried out for instance every second or third year. A decision whether monitoring would be carried out in a particular year should by no means be influenced by expected changes in abundance of salmon. Smolt trapping may be carried out in a river for a couple of years and then moved along to another river. This could have a high priority in relation to annual high intensity electrofishing surveys in non-index rivers. Monitoring in every non-index salmon river should be arranged so that each juvenile cohort is sampled at least once before smoltification.

As there are at about 600 sea trout rivers in the Baltic Sea area it is unlikely that each one can be monitored annually. It is however essential that data collection, preferably through electro fishing, but also through other means, are made at a high rate so that forthcoming assessments are based on data of good quality. Habitat surveys of all sea trout rivers will also be important tools in the assessment.

Tagging data is currently used for many purposes by the Working Group. Carlin tagging data are the basis of the current assessment models for the Main Basin and the Gulf of Bothnia. Swedish tagging data constituted a major part of the data when the initial models were established in the late 1990s, but since 2001 the power companies have been responsible for most Carlin tagging, and there have been periods when the data has not been available to the WGBAST. When the database finally became available from the power companies in 2007 it turned out that the entire database suffered from severe quality problems that had arisen in the period when it had been unavailable. The Board of Fisheries has tried to rectify the database, but a considerable part of the data cannot be corrected. As a consequence the Swedish tagging data has been used only by 2005 in the stock assessment.

Furthermore increasing evidence suggests that the tag reporting rate of Swedish fishermen has decreased considerably but to an uncertain extent in the last decade, also for tags from other countries. The reasons for decline are uncertain, but of course non-professional handling by those responsible for the database may be an important contributing factor.

As the quality of the tagging data seems to have decreased considerably for the reasons mentioned above, it would be timely to start discussions concerning other tagging systems that could replace current large scale Carlin tagging, or if the current system should be revised and continued with the mandatory obligation of the Swedish handling office to be improved radically. The Working Group suggests that a more comprehensive plan may be considered during the Working Group meeting in 2010.

Also catch data on recreational fisheries in sea has been used in the salmon stock assessment. Area specific catch estimates, however, are rather uncertain and improvements in survey applications should be considered by the national statistics agencies in order to obtain more accurate estimates. In addition, estimates of catches and fishing efforts in (each) river would be needed in order to better model the potential trends/changes in river fishing. The working group would be able to provide a list of the rivers, which preferably should be surveyed in order to obtain catch and effort estimates.

Genetic data on catch composition have not been used so far in salmon stock assessment. However, there is a potential in the assessment model to incorporate also such data and the plan of the Working Group is to develop the model accordingly. From the assessment perspective the most important area to sample catches is the Main Basin mixed stock fishery (longlining in the off-shore). Therefore it would be important to ensure a catch sampling with a relevant spatial and temporal coverage in this area. The renewed DCR gives obligation to sample catches to those countries where catches area landed. In Main Basin the main landings occur in Poland, Denmark and Sweden. Based on the data collected from Main Basin in the last three years, the Working Group will explore potential sampling designs (number of samples per area and month) and will come up with the relevant design in the 2010 meeting.

8.2 Compatibility of the DCR with the data needs for WGBAST

Table 8.2.1 provides an outline of the data requirements by the Working Group and to what extent such data are provided by the DCR. It also gives an overview of whether these data are used or not.

The current management regime requires an evaluation of the status of individual salmon stocks. As such river specific information would need to be collected within all wild salmon rivers. The current DCR does not explicitly cover river monitoring in non-index rivers even though river sampling also in these is recognized to be important by the working group. Data collection within the index rivers is currently accepted within the national programs of Estonia, Finland and Sweden. River monitoring is also needed for sea trout, though electrofishing may be more important for sea trout than for salmon. It would of course be cost effective if the same rivers could be utilized as index rivers for both salmon and sea trout, but this will not always be possible as only some rivers are good mixed salmon and sea trout rivers.

Table 8.2.1. Overview of the compatibility of data collected under the DCR with the data needed for stock assessment.

Type of data	Collected under DCR	Available	Reviewed and evaluated by WG	Used in assessment	Notes
Fleet capacity	yes	yes	no	no	Incompatible with current stock assessment model
Fuel consumption	yes	no *)	no	no	Incompatible with current stock assessment model
Fishing effort	yes	yes	yes	yes	-
Landings	yes	yes	yes	yes	-
Discards	yes	yes	yes	yes	-
Recreational fisheries	yes	yes	yes	yes	-
CPUE data series	yes	yes	yes	yes	-
Age composition	yes	yes	yes	partly used	Not incorporated in current stock assessment model, river samples used
Length & weight at age	yes	yes	yes	no	Not incorporated in current stock assessment model
Sex ratios	yes	yes	no	partly used	Not incorporated in current stock assessment model, river samples used
Maturity	yes***)	no ***)	no	no	
Economic data	yes	no *)	partly used	no	Incompatible with current stock assessment model
Data processing industry	yes	no *)	no	no	Incompatible with current stock assessment model
Electrofishing data	yes **)	yes	yes	yes	-
Smolt trapping data	yes **)	yes	yes	yes	-
Tagging data	no	yes	yes	yes	-
Fish ladder data	yes **)	yes	yes	yes	-
Genetic data	yes **)	yes	yes	no	Not incorporated in current stock assessment model

*) Not asked for by the working group.

***) Not mandatory under current DCR.

*) DCR requires collection but only a few of the countries are doing it.