North-East Atlantic Commission

NEA(01)7

Report of Progress in the EU-funded Concerted Action:
A co-ordinated approach towards the development of a scientific basis for
management of wild Atlantic salmon in the North-East Atlantic
(SALMODEL)

(tabled by the European Union)

SALMODEL

Abstract of the progress report for the period: 01/01/2000 to 31/12/2000

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I. Objectives

SALMODEL seeks to advance the scientific basis upon which advice is given to managers of local, national and international salmon fisheries, compatible with the precautionary approach, as adopted by the North Atlantic Salmon Conservation Organization (NASCO) and within the requirement of sustainability (the core theme of Key Action V of the EU Fifth Framework). Specific objectives are:

To improve our ability to set salmon conservation limits (CLs); addressing transportability and dynamic change issues, also taking into account underlying stock structure, and;

To examine methods of estimating pre-fishery abundance (PFA) for Northeast Atlantic (NEAC) salmon stocks and to determine whether and how PFA estimates can be used to give catch advice.

II. Description of work

In SALMODEL the above themes are broken down into 5 Workpackages; 1 and 2 under the responsibility of the co-ordinator; WP3 under sub-group 1, and WP's 4 and 5 under sub-group 2. Within each Workpackage, a series of tasks was identified, each addressing a specific aspect of the overall work. Following the first Steering Group meeting in April 2000, work started on the tasks in Workpackages 1 and 2, with national reports and data summaries etc. having been presented at the first plenary meeting in Belfast in May. Work in Workpackages 3, 4 and 5 also started at this meeting and was extended with sub-group meetings in France in September. The final meeting in year 1 was a plenary in Norway in November. A second Steering Group meeting was held in November, after the plenary meeting. A significant amount of work was carried out between meetings, as task leaders collaborated with other members on specific tasks, including several large-scale surveys, requiring input from all members. A large number of working papers were tabled at meetings during the first year, allowing task leaders and others to present ideas, analysis, and report on progress with the various tasks.

III. State of progress

Workpackages 1 and 2 have been completed, and significant progress has been made in several of the tasks of Work packages 3 and 4. Workpackage 5 was not due to start until the second year, but some early progress was made with life history based PFA modelling. Some modification was required to Workpackage 1, with a new task, a SALMODEL website, while Tasks 2 and 3 of Workpackage 3 were modified to include a survey of management objectives. However, the majority of tasks in the CA were addressed as originally set out in the Technical Annex.

IV. Achievements

National progress with setting river-specific conservation limits has been reviewed, while present interim models for national CL setting were evaluated and potential for development assessed. A Bayesian Hierarchical Approach has been considered as a potentially viable method of setting conservation limits, using stock/recruitment (s/r)

data from a limited number of river datasets. Evaluation of this approach is underway, and it is being compared against an existing approach used by the Environment Agency in England & Wales. (Target customers: national fishery laboratories; EU; ICES; NASCO)

Work on refining our ability to transport and use conservation limits has centred on several specific areas, including; methods of quantification of river carrying capacity, together with the impact of migratory trout. In the latter case, a river classification scheme is being developed to categorise types of rivers. The potential impact of dynamic change in s/r data from rivers was evaluated, using two contrasting Irish examples, while genetic constraints on setting river-specific CLs were identified and a modelling approach to test consequences of using single river CLs is in development. Alternatives to s/r based CLs were considered, with one possible example being identified (rod catch time series in Scotland). (Target customers: national fishery laboratories; EU; ICES; NASCO)

The availability and quality of historical data used to run the existing ICES pre-fishery abundance model was evaluated and significant areas for improvement identified. The present model was reviewed in detail, a sensitivity analysis highlighting sensitivity of the model to exploitation rate estimates, particularly when exploitation is low. Additional datasets for the PFA model were evaluated, with emphasis on adult count data. Use of assumed natural mortality values in PFA models was challenged and work started to evaluate levels and patterns of "m". Smolt count/estimates data were reviewed, as possible input to a forward running (potentially predictive) PFA model, while a simple life history model was developed and used to compare forward running and backward running PFA estimates for a single stock. (Target customers: national fishery laboratories; EU; ICES; NASCO)

Dissemination activities during the first year included presentations on SALMODEL to the NASCO Standing Committee on the Precautionary Approach, in Miami (March 2000) and the ICES N. Atlantic Salmon Working Group meeting in Copenhagen (April 2000). The Chairman of sub-group 2 attended a major Canadian workshop on the decline in salmon abundance in the N. Atlantic, on behalf of SALMODEL. A SALMODEL website is being developed and will go live early in 2001. Sub-group 2 has fully evaluated, tested and documented the existing pre-fishery abundance model and produced an operating guide which will be provided to the ICES N. Atlantic Salmon Working Group. Copies of the model have been produced on CD and made available to CA members. (Target customers: national fishery laboratories; EU; ICES; NASCO; wider scientific community)

V. Future actions

The method of working as agreed with the Commission was to address the workpackages and their tasks within the context of sub-group and plenary meetings, the majority attended by most or all members. It was important during the first year that all participants had an opportunity to take part in most or all tasks, as several of the tasks required input and data from all members. In the second year, methods of working will be somewhat modified, using dedicated smaller groups, in order to focus on several of the major tasks that require substantial work. Accordingly, although plenary meetings will still be held, within sub-groups there will be an emphasis on

topic-specific rather than overall sub-group meetings. These will include *inter alia:* quantification of river carrying capacity (GIS applications); determination of appropriate stock groupings (for PFA estimation); further investigation of natural mortality of salmon at sea, and evaluation of options for developing predictive PFA models.

Further information may be obtained from the Coordinator (walter.crozier@dardni.gov.uk), or by visiting the SALMODEL website (www.salmodel.net), which should be available from 30 June 2001.