

CHAPTER 1: A YEAR FOR SALMON

The Long Term Research and Monitoring Plan for Pacific Salmon

The concept of an International Year of the Salmon (IYS) was first put forward in the NPAFC Long-term Research and Monitoring Plan (LRMP) for Pacific Salmon (*Oncorhynchus* spp.) in the North Pacific Ocean (Beamish et al. 2009). The LRMP is an international strategic plan to improve the forecast of climate change effects on all life history stages of Pacific salmon by coordinating research among Pacific salmon producing countries. Effective management of Pacific salmon requires an understanding of mechanisms controlling production in both freshwater and marine environments. Although each Pacific salmon producing country can study the resource within their own jurisdiction, research and monitoring on the high seas requires international cooperation. The plan states the importance of international cooperation to conduct large-scale oceanic studies which is considered to be more possible than ever with the availability of new technologies and emergence of a new spirit of international cooperation. Furthermore, the NPAFC—as “*a trusted organization where researchers can share their data and interpretations*”—provides an existing framework for this cooperation (Beamish et al. 2009 p. 1).

The LRMP was produced based on the consensus of an international group of scientific experts on the dynamics and population ecology of Pacific salmon. Emphasis was placed on better understanding mechanisms regulating Pacific salmon populations in ocean ecosystems in order to “*improve forecasts of marine survival, produce more accurate estimates of the timing and abundance of adults returning to coastal rivers and determine the capacity of the subarctic Pacific to produce Pacific salmon*” (Beamish et al. 2009 p. 3). Researchers identified country-specific research and long-term monitoring requirements in addition to coming to an agreement on shared key areas of interest. These shared key areas of research and monitoring included an understanding of the large mortality of juvenile Pacific salmon in the early marine period as well as winter conditions affecting brood strength, which would require comprehensive winter surveys. The necessity of conducting integrated studies including specialists in physical, chemical, and climatological processes as well as experienced modellers was specified, in addition to the importance of having a fully shared data system. Emphasis was also placed on maintaining and improving basic monitoring of Pacific salmon, specifically with respect to escapement, catch, and migration, as many long-term monitoring programmes appear to be disappearing. Access to this basic data is essential to understanding climate impacts on Pacific salmon production.

The initial IYS concept was introduced by Richard Beamish of Fisheries and Oceans Canada (emeritus). The initiative was in part intended as a way to address some of the research needs put forward in the LRMP and in general imagined as a way to alert the public and provide a framework for an integrated study of salmon, particularly in the winter (R. Beamish, pers. comm.). The concept was supported by all NPAFC member states, and in the concluding remarks of the LRMP, a request for a proposal for an IYS was put forward.

The Initial Proposal to Establish an International Year of the Salmon

In response to the request put forward in the LRMP, a proposal was made by Canada to the NPAFC in 2012 to develop an IYS (Appendix A; Beamish 2012). The Initial Proposal discussed a rationale and possible levels of research for the IYS initiative. The overall goal of an IYS stated in the Initial Proposal

was “to ensure that each Pacific salmon producing country has the information to make management decisions that optimize economic opportunities relating to Pacific salmon production while maintaining responsible stewardship” (Beamish 2012 p. 2).

As we are entering a period of increasing variability in salmon productivity due to changing aquatic environments, Beamish (2012) stressed that it is now more important than ever to be able to forecast changes in Pacific salmon abundance in order to plan for the future and minimize economic impact. Major changes in Pacific salmon production and potential factors that have affected these changes in the past were discussed as they are likely to continue to have an impact in the future. These included improved marine survival of pink salmon, declining catches of Chinook and coho salmon (particularly in the southern portion of their range), extreme variability in sockeye salmon production in the Fraser River, varying marine survival of chum salmon, large-scale sea-surface temperature trends (specifically the Pacific Decadal Oscillation), large-scale changes in wind patterns, and ecosystem regime shifts.

Funding available for salmon research has been reduced in all Pacific salmon producing countries. A major benefit of the IYS discussed in the Initial Proposal would be that all resources available could be combined and used more efficiently by participating countries. The initiative would also include large-scale ocean studies and smaller-scale freshwater studies, as well as a collaborative approach to analyze and model the data that is collected. Moreover, every country involved would be able to address their own research needs with the “*common intent to be prepared for the future and optimize economic opportunities*” (Beamish 2012 p. 15). Three levels of activity were suggested for the IYS in the Initial Proposal, the first of which was to use existing knowledge in a series of workshops, which could be supported by organizations such as the North Pacific Marine Science Organization (PICES), to predict changes in Pacific salmon productivity and to identify key research needs. This stage would be followed by a year of marine research “*that would focus on identifying the country and population-specific rearing areas in the ocean, and improving the understanding of the mechanisms that regulate brood year strength*” (Beamish 2012 p. 15). The third level discussed was to continue ocean studies for another two years and include winter surveys. A final suggestion to the NPAFC was to form a group to begin to discuss the feasibility of an IYS initiative.

The proposal to establish an IYS was officially presented to the Committee on Scientific Research Statistics (CSRS) at the 2012 Annual Meeting of the NPAFC (North Pacific Anadromous Fish Commission [NPAFC] 2012). The proposal was fully supported by the Committee, and subsequently the Commission, who agreed that the goals of the initiative were urgent due to changing conditions for salmon and that with cooperation, significant understanding could be developed to help inform management, maximize economic opportunities, and guarantee responsible stewardship. Discussion proceeded to the creation of an IYS feasibility study group. It was decided that members were to be appointed by CSRS Points of Contact and that a short, clear prospectus would need to be developed to more clearly define the objective and give a timeline. This document would then be the focus of a scoping meeting that would include government and non-government agencies as well as industry.

References

- Beamish, R.J. 2012. A proposal to establish an International Year of the Salmon. NPAFC Doc. 1425. 16 pp. Fisheries and Oceans Canada, Pacific Biological Station. (Available at www.npafc.org).
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