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Template for Bioeconomic Modeling and Pilot Project

(tabled by the United States)

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Bioeconomic models are an approach to developing an assessment of a fishery, which includes both the stocks and the participants. To understand the role NASCO should play in developing a socio-economic impact assessment, first it is important to clarify what a bioeconomic model is and how social factors are incorporated into them.

The best use of a bioeconomic model is to assess the status of a fishery; not only the stock but the participants as well. It is not an expert system that makes decisions, but provides information to managers on which decisions can be based. This modeling approach provides a framework in which information from different scientific disciplines can be integrated into a single assessment. As such, this framework can be viewed as a set of components or modules. The first component is the stock assessment that sets the biological limits on the other components of the model since it determines the availability of the salmon stock. The second component is a market assessment that determines the demand for the salmon resource by different users; e.g., commercial fishers, recreational anglers, nonconsumptive users, and those who are indirectly dependent on the resource. The third component is an assessment of how participants in the fishery and those who are indirectly dependent upon the fishery change in number and characteristics over time. The fourth component is an assessment of the costs of and revenues generated by fishing related activities.

Once developed using empirical analysis and expert opinion, this bioeconomic framework is flexible enough to allow the determination of the effects of regulatory change, the potential future value of a recovered sustainable stock that are presently being foregone, and the ability to compare activities to determine the resources best use; e.g., hydroelectric development versus habitat preservation.

This approach need not be time consuming or expensive. Existing studies of salmon values can be incorporated into the management framework, expert opinion can be used to determine parameter values to explain behavior, and case studies can be used. Simple analyses can be developed initially that can be replaced by more comprehensive analyses conducted in the future if needed. Statistical programs to develop the necessary data for these model components could be simplified if combined with existing stock assessment data collection survey programs. Alternatively, qualitative assessments can be used to rank the alternatives without explicit empirical values generated for each alternative.

A small NASCO workgroup could be tasked to establish a template for future fishery assessments done by NASCO Contracting Parties. This template would indicate the types of data that would be needed in the development of a bioeconomic salmon model and ensure that future salmon bioeconomic models developed by Contracting Parties are compatible. It is expected that the value of bioeconomic models will become evident as NASCO Parties implement the guidelines for incorporation of social and economic factors into decisions under the precautionary approach. To illustrate this, this workgroup could apply the template to a pilot project. The results of this project could be presented at the next NASCO meeting to illustrate how a salmon model could be developed and what types of information it would provide fishery managers.