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**Scientific Research on Salmon Resources should be promoted by
the North Pacific Anadromous Fish Commission**

by

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Scientific Research on Salmon Resources should be promoted by the North Pacific Anadromous Fish Commission

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Abstract

Fisheries Agency of Japan (FAJ) believes that essential research activities for the rational utilization and conservation of salmon stocks in the North Pacific Ocean should be promoted under the framework of the North Pacific Anadromous Fish Commission (NPAFC). One of the most important scientific approaches for the conservation of salmon stocks is to carry out cooperative stock assessment on salmonids. FAJ proposes that "stock assessment of salmon in the North Pacific Ocean" should be recognized as a most important issue of the Committee on Scientific Research and Statistics (CSRS). It would be possible that scientists of the contracting Parties may reach a common view on the condition of salmon stocks based on reviewing the results of assessment research in the annual CSRS meeting. The arrangement for scientific discussion in the CSRS meeting is also proposed.

Introduction

Under the framework of the International North Pacific Fisheries Commission (INPFC), Japan, the United States of America, and Canada had been targeting on the discrimination of the continent origins of anadromous species migrating in the North Pacific Ocean. The North Pacific Anadromous Fish Commission (NPAFC) was established in 1993 as the succeeding Commission of INPFC and the contracting Parties consist of the previous three member countries of INPFC and the Russian Federation.

NPAFC has prohibited the contracting Parties from conducting commercial salmon fisheries in the North Pacific Ocean except within their 200-mile zone. FAJ believes that up-to-date essential research activities for the rational utilization and conservation of salmon stocks should be promoted under the framework of NPAFC.

The fundamental purpose of NPAFC is to conserve salmon stocks. For the rational utilization and conservation of stocks, we should promote basic scientific studies for managements for salmon fisheries and reproduction. In order to establish a scientific basis for the stock managements, it is necessary to clarify the present situation of salmon stocks and the factors influencing salmon stocks.

Recently, long-term fluctuations in body sizes and age compositions of maturing salmon are reported. For estimating the "Carrying capacity for salmon" related to such fluctuations, some (e.g., the proposed PICES-GLOBEC Science Plan) attempt to interpret these fluctuations using a

numerical modeling of ecosystem.

However, for clarifying the present situation of salmon stocks and factors influencing salmon stocks, it is necessary to carry out the stock assessment at each life stage and to promote biological studies on salmon through their life history. For realizing salmon stock management, FAJ strongly suggests that stock assessment study must be promoted on every-year class and some modeling studies of population dynamics such as cohort analysis may be introduced for quantitative analysis.

Basic Conception

One of the best scientific approaches for promoting the conservation of salmon stocks is the long-term consecutive stock assessment. We should make clear the survival process of salmon and factors which influence the survival by means of estimating the stock abundance, growth rate, survival rate, and other biological characters at each life stage based on results of stock assessment. The contracting Parties can utilize results of these scientific studies for management of the enhancement program and coastal fisheries based.

FAJ thinks that the consecutive stock assessment is very useful for interpreting population dynamics of salmon stocks with reference to analyses of information on physical and chemical factors of marine environments and prey organisms.

On the other hand, FAJ judges that the numerical modeling for ecosystem would not be practical and successful for making clear "carrying capacity for salmon" and making the scientific base of salmon management, because (1) the present numerical modeling for ecosystem has too many uncertain factors in the model components and parameters, (2) the past achievement of the numerical modeling for ecosystem was insufficient in the practical application for fisheries managements in general.

Definition of Stock Assessment

FAJ emphasizes that one of the best scientific approaches for the conservation of stocks is "stock assessment" of salmon. Definition of "stock assessment" is to judge whether or not salmon stock is in desirable condition. Estimation of the abundance, survival rate, factors affecting mortality, growth rate, nutritional condition of salmon must be monitored for the stock assessment.

Proposal for Items of Research Activities of the Committee on Science Research and Statistics (CSRS)

FAJ proposes that "stock assessment of salmon in the North Pacific Ocean" should be added to items in the terms of reference of CSRS. This item is consistent with the principle of NPAFC

make a common view on the condition of salmon stocks as main subject for discussion of the CSRS meeting through reviews on the results of stock assessment, which consists of monitoring surveys in offshore waters, statistics on coastal fisheries, escapement, enhancement program, and other information. It is important to definitely make clear the abundance of salmon stocks and growth condition of salmon by species, by area, and by stock, by year-class in this common view.

FAJ also proposes to improve the procedure of the CSRS meeting for promoting the constructive discussion. The suggested way for the CSRS meeting is shown as in the following. The scientists should review and discuss the results of stock assessment and make a common view on the condition of salmon stocks in the first session. Secondly, presentations of scientific papers except for stock assessment would be conducted. If necessary, workshops on pressing issue on salmon stocks should be held for information exchanges and discussions in this session. Thirdly, statistics on annual catches, enhancement program and other matters on salmon are reported and discussed. Lastly, cruise plans for research on salmon, information exchanges, and other matters are discussed.

The month for the CSRS meeting should be changed to June or July, because (1) the results and discussion of the stock assessment in the CSRS meeting can be referred to forecasting the abundance of returning salmon stocks, (2) scientists may have sufficient time for analyzing the results of stock assessment in summer and fall, which is main research for assessing stocks.

Arrangement for Scientific Discussion

(1) Stock Assessment of Salmon in the North Pacific Ocean

Scientists of the contracting Parties discuss the stock abundance and biological conditions of salmon by year-class and by stock and make a common view on the condition of salmon stocks.

(2) Presentations of Other Studies on Salmon

Presentations of scientific papers including ecological related species (ERS) except for stock assessment may be carried out. If necessary, a workshop on issues on salmon stocks may be held for information exchanges and concentrated discussion in this session.

(3) Other Matters

- a. review cruise reports and statistics on salmon.
- b. coordinate the collection and exchange of scientific data and collection of specimens of salmon.
- c. coordinate scientific seminars, workshops, field research, and data analyses.
- d. make recommendations to the commission for the conservation of stocks.
- e. review proposed scientific research programs.
- f. discuss other matters.