



NEWSLETTER OF THE NORTH PACIFIC ANADROMOUS FISH COMMISSION

NPAFC HISTORY, MEMBERS, MISSION, & ACTIVITIES

NPAFC welcomes you to the first issue of our new biannual newsletter. Our goal is to keep you informed on news related to salmon conservation, scientific research, and enforcement activities in the North Pacific Ocean.

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Masthead photo: Lake Iliamna, Bristol Bay, Alaska. Andrew Hendry Commission photo: Fuji Enterprise

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THE CONVENTION

Anadromous stocks of Pacific salmon and steelhead begin life in fresh water, migrate to the ocean to feed, and return to fresh water to spawn. Salmon are one of the most valuable fish resources in the North Pacific Ocean and play a major role in the economics and culture of Pacific Rim countries. After World War II, Japan developed large-scale, high seas salmon driftnet fisheries, which operated through the 1991 fishing season under a bilateral agreement (Japan, USSR) and a trilateral convention (Canada, Japan, USA).

Over forty years of research have shown that salmon from the four major salmon-producing countries (Canada, Japan, the Russian Federation, and the United States of America) intermingle extensively during their offshore migrations. In an effort to conserve salmon on the high seas the four countries came together to negotiate the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, signed in Moscow in February 1992, and entered into force in February 1993.

The goal of conservation of salmon is consolidated by strong measures. The treaty prohibits all directed fishing—fishing targeted on salmon—in international waters of the North Pacific and its adjacent seas, north of 33° North latitude beyond the 200-mile zones of the coastal states. Incidental taking—catching or harvesting salmon while conducting directed fishing for other species—is to be “minimized to the maximum extent,” and retention of incidentally-caught salmon on

board a fishing vessel is strictly prohibited. The four countries take measures necessary to ensure that their nationals and fishing vessels comply with the treaty’s provisions. In addition, scientific research for the conservation of salmon is emphasized.

THE COMMISSION

The Convention established the North Pacific Anadromous Fish Commission (NPAFC) to promote salmon conservation and serve as a forum for cooperation and coordination of treaty-related enforcement and scientific activities. Member countries cooperate by

- exchanging information on treaty violations and enforcement actions and plans;
■ collecting, reporting, and exchanging biostatistical information, fisheries data, biological samples, and other relevant data;
■ developing appropriate cooperation programs to collect fishing information;
■ participating in seminars, workshops, and exchanges of scientific personnel;
■ providing information on research programs and catches of anadromous fish.

NPAFC’s inaugural meeting was held in February 1993 in Ottawa, Canada. Annual meetings are held in each fall and the location rotates among the four member nations. Since the first annual meeting in Vancouver, Canada in 1993, succeeding meetings have taken place in Vladivostok, Russia (1994), Seattle, USA (1995), and Tokyo, Japan (1996). The next annual meeting will be held in Victoria, Canada in October 1997.

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## ENFORCEMENT ACTIVITIES

The Committee on Enforcement (ENFO) coordinates monitoring efforts, including pre-season enforcement planning, exchange of information on unauthorized fishing activities and illegal import and export of salmon, and review and evaluation of measures to avoid or reduce incidental taking of salmon. ENFO's inaugural meeting was held in Ottawa, Canada in 1993.

Cooperative enforcement efforts in 1996 resulted in the detection of a Taiwan driftnet vessel actively engaged in fishing with a large scale driftnet in the North Pacific. The seizure of the vessel and arrest of the master and crew were made by the Taiwan authorities acting on a request by the US Government.

The member countries concurred that the *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas*, approved by the United Nations Food and Agriculture Organization (FAO) in 1993, could serve as a mechanism to obligate non-member states to support and cooperate with the objectives and principles of the treaty.

## RESEARCH ACTIVITIES

Scientific work is coordinated by the Committee on Scientific Research and Statistics (CSRS), which held its inaugural session in

Vladivostok, Russia in 1993. At NPAFC annual meetings, the CSRS develops a plan for the upcoming year and reviews and discusses statistics and research conducted by member countries.

In 1993, the CSRS identified two critical research issues: (1) factors affecting current trends in ocean productivity and their impacts on salmonid carrying capacity, and (2) factors affecting changes in biological characteristics (growth, size and age at maturity, oceanic distribution, survival, and abundance) of salmon. In 1995, the CSRS established a Science Sub-Committee (SSC), which developed NPAFC's Science Plan. These actions have resulted in an unprecedented, coordinated scientific research effort. The SSC, chaired by Dr. Michael Dahlberg of the United States, will update and revise the 1995-1996 Science Plan before the 1997 annual meeting and present a progress report on research results since 1992 to the CSRS.

At the 1996 annual meeting in Tokyo, the CSRS, chaired by Dr. Loh-Lee Low of the USA, reviewed over 40 new documents on results of salmon research. The 1996 NPAFC Annual Report lists documents that are authorized for distribution and citation. Preliminary data for 1995 indicate that salmon catches within the four countries' 200-mile zones totaled 951,168 metric tons and that nearly 5.2 billion juvenile hatchery salmon were released into the North Pacific Ocean and adjacent waters. ❖



Participants at the Fourth Annual Meeting: Takase (Japan), Satoshi Watanabe (Japan), David Bevan (Canada, Head of Delegation), Loh-Lee Low (USA, Chairman, CSRS), and Steven Pennoyer (USA, Head of Delegation).

## NPAFC REPRESENTATIVES

### CANADA

David Bevan, Dept. of Fisheries and Oceans  
Garnet Jones, B.C. Packers  
Gerry Kristianson, Sport Fishing Institute

### JAPAN

Koji Imamura, Japan Sea Farming Assoc.  
Nobuaki Tanaka, Ministry of Foreign Affairs, Economic Affairs Div.  
Satoshi Watanabe, Fisheries Agency of Japan

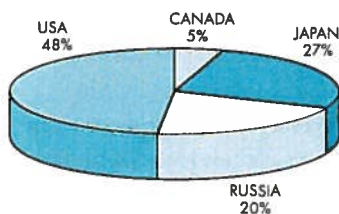
### RUSSIA

Vladimir Izmailov, Dept. of Fisheries Resource Conservation and Reproduction (GLAVRYBVOD)  
Vladimir Pautov, Dalryba  
Vyacheslav Zilanov, State Committee of the Russian Federation on Fisheries

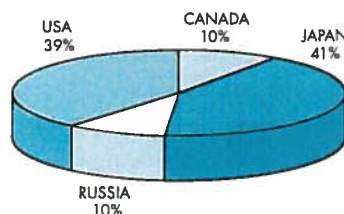
### UNITED STATES

Guy McMinds, Quinault Indian Nation  
Steven Pennoyer, NOAA/NMFS  
Fran Ulmer, Lieut. Governor, State of Alaska

ANNUAL SALMON CATCH  
951,168 metric tons\*



ANNUAL HATCHERY RELEASES  
5.2 billion juvenile salmon\*



\* preliminary data, 1995

The species of Pacific salmon (genus *Oncorhynchus*) covered by the treaty are:

- sockeye (*O. nerka*)
- chum (*O. keta*)
- pink (*O. gorbuscha*)
- coho (*O. kisutch*)
- chinook (*O. tshawytscha*)
- cherry (*O. masou*)
- steelhead (*O. mykiss*)

The first NPAFC *International Symposium on Assessment and Status of Pacific Rim Salmonid Stocks* was held at Hokkaido University in Sapporo, Japan in October 1996. The purposes of the symposium were to review the status of salmonid stocks in the North Pacific, including life history, population ecology, and ecosystem; methods used in monitoring and assessment of stocks; and factors affecting salmonid production. Participants also discussed future research necessary for assessment of salmonid stock conditions and methodology for cooperative work.

The symposium was a successful venue for exchange of scientific information and discussions on salmon conservation issues. There were 29 oral and 32 poster presentations on historical trends in fisheries, stock condition, and hatchery production; components of salmonid life history and salmon population ecology affecting stock assessment and status; and relation of North Pacific ecosystem, climate, and oceanographic changes to stock production. The peer-reviewed proceedings will be published in late 1997 as the first NPAFC scientific bulletin. ❖



ing in Tokyo, 1996. (left to right) Hisashi Endo (Deputy Director), Yasuo Imai (Head of Delegation), Fran Ulmer (USA), Vladimir Pautov (Russia), Koji Imamura (Japan, President), Guy McMinds (USA), Steven William Williamson (Canada), Vladimir Izmailov (Russian, Head of Delegation), and Elena Shestakova (Executive Director).

## 1997 RESEARCH PLANNING

A Research Planning and Coordinating meeting, chaired by Dr. Loh-Lee Low, was held in Vancouver, BC in March 1997. Participants discussed

- potential joint studies to resolve issues related to salmon growth and stock identification;
- standardization of ocean research vessel sampling methodologies;
- use of indices of ocean abundance of salmon to forecast returns to Asia and North America;
- exchanges of biological samples, data, and personnel;
- 1996 preliminary catches and 1997 run forecasts of salmon for each country.

The United States reported on new research using thermal marks on otoliths to identify the origins of hatchery salmon in ocean catches, and suggested that those conducting research on the high seas collect and examine salmon otoliths for thermal marks.

Participants also reviewed plans and objectives of research cruises in 1997. Canada is using the vessel *W.E. Ricker* for coastal and offshore research in the Gulf of Alaska to learn how juvenile salmon use ocean currents in their migrations and what biological factors are involved. Canadian cruises in the Strait of Georgia will investigate the effects of climate changes on the carrying capacity of juvenile salmon. The Japanese vessels *Hokko maru* and *Hokusei maru* will survey distribution and abundance of salmon and oceanographic conditions in the western North Pacific. The *Shunyo maru* will be used for cooperative Japan-Russia investigations of distribution and ecology of chum and pink salmon in the Okhotsk Sea and western North Pacific. Cooperative Japan-US research aboard the vessels *Wakatake maru*, *Oshoro maru*, and *Kaiyo maru* in the central North Pacific, Bering Sea, and Gulf of Alaska will provide data for salmon stock assessment

and ecological investigations. Russia plans to use data from four research vessel surveys within its 200-mile zone for forecasting salmon runs and ecological investigations. The United States is planning one offshore survey of salmon in the Gulf of Alaska and Aleutian Islands area to investigate salmon distribution and migration patterns. The USA also plans six cruises in the inside waters of southeastern Alaska and the coastal waters of the Gulf of Alaska to study juvenile salmon growth and survival and to characterize the physical and biological environment.

Representatives from the North Pacific Marine Science Organization (PICES), Ms. Patricia Livingston and Dr. Makoto Kashiwai, provided a short presentation on the PICES-GLOBEC International Program on Climate Change and Carrying Capacity, and NPAFC participants and PICES representatives discussed various research topics of mutual interest. ❖

Last summer the US National Marine Fisheries Service (NMFS), Alaska Fisheries Science Center, Auke Bay Laboratory completed its single most extensive ocean survey of young salmon. The survey covered more than 5,600 nautical miles in 41 days. The work was part of the NPAFC research program to investigate ocean survival and growth of salmon. The F/V *Great Pacific*, a stern trawler, fished a midwater rope trawl specially designed to catch salmon at sea. The vessel was chartered by the Groundfish Research Foundation, Fishermen's Terminal, Seattle, as part of a cooperative research agreement with NMFS.

The survey began at Cape Muzon and covered surface waters off southeastern Alaska, Prince William Sound, Kodiak, the Shumagin Islands, Unimak Pass, the Aleutian Islands to Amchitka Pass (beyond the International Date Line), and parts of the southern Bering Sea and Bristol Bay. Twenty-three transects, 60-120 nautical miles apart, were sampled over nearshore, shelf, slope, and oceanic regions. The sampling gear, a hexagonal-mesh midwater rope trawl, was towed on and near the surface at 5 knots. Oceanographic observations of sea temperatures and salinities to 100-meter depths were made along all transects.

Over 100 surface tows of 1-2 hours each collected several thousand young salmon. Juvenile pink and chum salmon in their first summer at sea predominated by numbers in catches from Dixon Entrance, across the entire Gulf of Alaska, to Unimak Pass at the western end of the Alaska Peninsula. Larger juveniles were found farther offshore than smaller fish. Westward of Unimak Pass no juvenile salmon were caught, and catches were mostly immature (second and third ocean year) chum and sockeye salmon. Immature salmon were generally located over or beyond the slope (200-meter bottom contour). On-deck analyses of major food items showed that euphausiids and amphipods were the primary prey of immature chum and sockeye salmon caught west of Unimak Pass. The net also proved effective at capture of a wide variety of fishes, including large salmon sharks, blue shark, dogfish, jack mackerel, opah, Pacific saury, herring, sandlance, capelin, pollock, Pacific cod, Atka mackerel, rockfish, sablefish, pomfret, sandfish, lumpsuckers, lampreys, daggertooth, wolf-eel, and wolffish. Near-surface temperatures off southeastern Alaska were relatively warm (12-13°C), and there was a westward progression across the Gulf of lower sea tem-

peratures (5-6°C) and higher salinities in Aleutian waters.

Another major goal of the survey was to learn more about the migration paths and distribution of young salmon by taking samples for laboratory analyses of their genetic origin. This could allow NMFS scientists to compare size and growth of young fish from a known region and to plot their ocean growth over distance and time. Laboratory analyses of young salmon collected during the survey will provide information on stock identity, growth at sea, food habits, and presence of marked hatchery salmon in samples. ❖

#### PUBLICATIONS

Publications are in English, Japanese, and Russian except where indicated.

- 1993. Handbook. 28 p.
- 1994. Annual Report 1993. 82 p.
- 1995. Annual Report 1994. 67 p.
- 1996. Annual Report 1995. 104 p.
- 1996. Science Plan 1995-96. 10 p. (in English only)
- 1996. Abstracts, International Symposium, Assessment and Status of Pacific Rim Salmonid Stocks, 28-29 October 1996, Sapporo, Japan. 104 p. (in English only)

#### IN MEMORIAM

#### LEO MARGOLIS (1927-1997)

It is with great sadness that we inform our colleagues of the sudden passing, on 13 January 1997, of Dr. Leo Margolis, one of the world's foremost fish parasitologists. Dr. Margolis served as the first Chairman of the NPAFC Committee on Scientific Research and Statistics, 1993-1995. He spent his entire professional career at the Pacific Biological Station, Nanaimo, B.C., where he occupied positions of Research Scientist and eventually Senior Scientist and headed various research sections and divisions. During his career, he authored over 150 original research and review articles, and edited a number of books and special volumes on fish parasitology and fisheries science. He was elected a Fellow of the Royal Society

of Canada (1975), appointed an Officer of the Order of Canada (1990), awarded the Gold Medal of the Public Service of Canada (1995), and received an honorary D.Sc. (1996) from St. Mary's University in Halifax, N.S. He was the recipient of the Distinguished Service Award of the American Society of Parasitologists, and of the R.A. Wardle Award of the Canadian Society of Zoologists for "outstanding contributions to the science of parasitology in Canada."

A graduate student scholarship, The Leo Margolis Scholarship, is being established. Contributions, made payable to the Canadian Society of Zoologists are welcome and should be sent to the Treasurer, Can. Soc. Zool., (Attn: Dr. J. Fenwick), Dept. Biology, Univ. Ottawa, Ontario K1N 6N5, Canada.