

NPAFC
Doc. <u>1069</u>
Rev. _____
Rev. Date: _____

Russian Research Plan for Salmon in 2008

by

Vyacheslav P. Shuntov

Pacific Scientific Research Fisheries Center (TINRO-center), 4 Shevchenko Alley,
Vladivostok, 690600, Russia

submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

by

Russia

October 2007

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

Shuntov V.P. 2007. Russian Research Plan for Salmon in 2008. NPAFC Doc. . 6 pp. Pacific Scientific Research Fisheries Center (TINRO-center). (Available at <http://www.npafc.org>).

Russian Research Plan for Salmon in 2008

Vyacheslav P. Shuntov

Pacific Scientific Research Fisheries Center (TINRO-center), 4 Shevchenko Alley,
Vladivostok, 690600, Russia

ABSTRACT

The present document reviews Russian Research Plan for Salmon in 2008. The brief outline of anticipated research activities is given. The preliminary scope of research methods, goals and objectives is outlined.

Preliminary (draft) outline of locations and time periods for Russian salmon research surveys in 2008 is provided in Figure.

1. NPAFC 5-year science plan (2006-2010) research component “Anadromous Stocks in the Bering Sea Ecosystem (BASIS)”. Research sub-theme “Bering Sea Salmon Research”

Comprehensive ecosystem approach during the anticipated 2008 trawl surveys will be further employed to gain a better understanding of Pacific salmon carrying capacity in the Bering Sea. Similar to previous years of research, the abundance and relative share of Pacific salmon and other nekton species, foraging conditions dynamics, food competition and its influence upon growth and survival, etc. will be studied. In summer-autumn period information on distribution, migration, stock composition, abundance, and biological characteristics of mature, immature and juvenile salmon will be collected in the Russian EEZ of the Bering Sea. Intensification of research on spatial and population differentiation of Pacific salmon stocks is envisaged to build upon previous surveys results. Issue of interannual variability of these characteristics, as well as ration of different stocks, will be addressed. Major research methods (genetic, morphological, scale pattern analysis) will be strengthened through the thermal marking and tagging. Meteorological and oceanographic data will be collected during the forthcoming surveys. Information obtained during research surveys will be utilized to forecast Pacific salmon returns and improve fisheries management.

During summer and fall period, feeding behaviour of Pacific salmon will be studied in detail. In addition, data (abundance estimates, biological parameters, and feeding behaviour) for other pelagic fish species will be collected during surveys planned. Comparative analysis of Pacific salmon and other pelagic fish species consumption rates of plankton and micronekton species will help to elucidate role of Pacific salmon in the trophic structure of pelagic ecosystems. Overall estimates of plankton species abundance and production are envisaged. Estimates of consumption of salmon prey organisms by nekton and carnivorous plankton species in the western Bering Sea will be achieved. Expansion of research on caloric content of

food items and their isotope composition will provide better understanding of Pacific salmon biological environment.

One of the major aims of planned surveys will be elucidation of nekton communities' composition and structure in the upper epipelagic layer of the western Bering Sea. The research topics will include abundance and biomass estimates for major nekton species of upper epipelagic layer. Traumatization and infestation of the Pacific salmon in the western Bering Sea and adjacent Pacific waters will be analyzed. The spatial distribution of injured and infected individuals will be reviewed in the context of species- and age-specificity. Pacific salmon tagging activities are expected to be continued. Bioenergetics studies on Pacific salmon diets are expected to be expanded. Further improvement of salmon and other nekton species stock assessment and trawling techniques is anticipated. Also studies on measurements of fishing gear selectivity and catchability of Pacific salmon are anticipated.

2. NPAFC 5-year science plan (2006-2010) research component “Juvenile Anadromous Stocks in Ocean Ecosystems”. Research sub-theme “Juvenile Salmon Research in Western North Pacific Waters”

Juvenile Pacific salmon marine life period will be studied during surveys planned in selected areas of western Bering Sea and Okhotsk Sea. Oceanographic, stomach content and plankton data, as well data on food competition, will be collected in major marine areas off Sakhalin, Kamchatka, and in Okhotsk Sea during summer-fall season. Juvenile salmon seasonal distribution, migration, population characteristics, and survival will be estimated through different approaches. Region-specific analysis juvenile salmon distribution, abundance, marking, scale pattern and parasite infestation will be performed. Stocks abundance, habitat conditions, feeding behavior and trophic interactions of Pacific salmon juveniles and others major nekton species will be studied. Thermal and “dry” marking programs will be continued at hatcheries in the northern Okhotsk Sea region, Sakhalin and Kamchatka. Return rates for marked juvenile and maturing individuals will be analyzed. For Kamchatka region techniques of thermal and “dry” otolith marking will be utilized to perform

research on distribution and migration of juvenile and adult sockeye salmon, as well as, for survival estimates of artificially and naturally reproduced populations.

Expansion of research on caloric content of food items and their isotope composition will provide further insights into understanding of Pacific salmon biological environment. Primary production and salmon food resources in different salmon habitat (rivers, lakes, estuaries, coastal and offshore waters) will be estimated. Outlined research activities will serve as basis for understanding causes of Pacific salmon abundance dynamics throughout major reproduction areas of Russian Far East.

3. NPAFC 5-year science plan (2006-2010) research component “Anadromous Stocks in the Western Subarctic Gyre and Gulf of Alaska Ecosystems”. Research sub-theme “Anadromous Stocks in the Western Subarctic Gyre”

The anticipated 2008 trawl surveys on Pacific salmon abundance and ecology in the Bering Sea and northwestern Pacific waters is planned in accordance with comprehensive ecosystem Russian fisheries research program. The major purpose of these studies is the detection and interpretation of environmental variation and density-dependence mechanisms that influence salmon carrying capacity in the North Pacific waters and their relevance for conservation and rational exploitation of salmon stocks.

In 2008 the studies on Pacific salmon spatial allocation, food selectivity, dependence of salmon feeding on biomass and composition of plankton and nekton communities are planned. Pacific salmon spatial differentiation and biological parameters dynamics during anadromous and foraging migrations are envisaged. Pacific salmon tagging activities are expected to be continued. Main goals of planned surveys are: 1) elucidation of the current state of Pacific salmon in the pelagic ecosystems of the northwestern Pacific waters (one of the primary goals - estimation of mature pink salmon abundance during prespawning migration); 2) elucidation of Pacific salmon position and role in the trophic structure of the upper epipelagic zone; 3) evaluation of pelagic ecosystems status, as well as oceanic and overall ecological conditions in the Pacific waters of Kuril Islands during summer period of 2008. One of anticipated results is

expected to be further improvement of high-seas trawl survey techniques to correctly predict Pacific salmon returns.

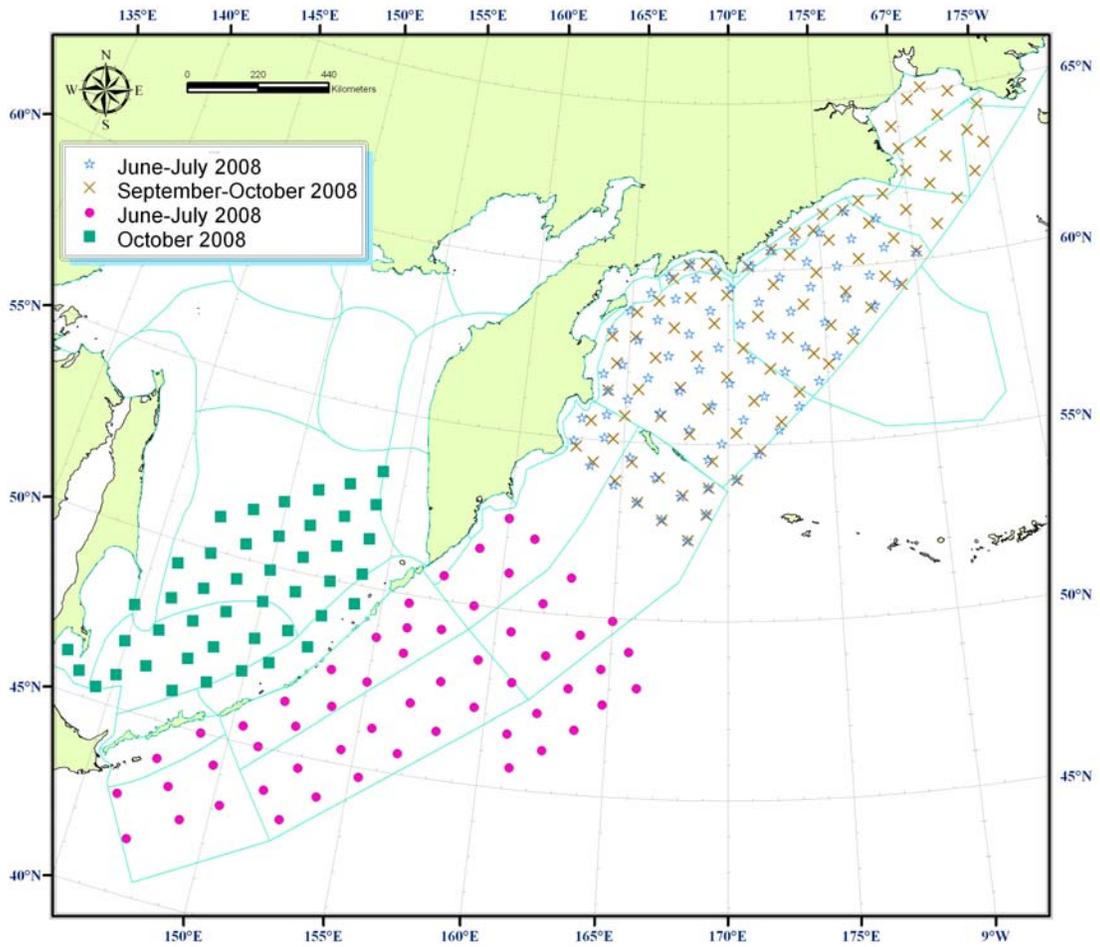


Figure. Preliminary (draft) outline of locations and time periods for Russian salmon research surveys in 2008.