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Current Juvenile Pacific Salmon Research in Canada

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Studies of juvenile Pacific salmon in the ocean are focused in the Strait of Georgia and off the west coast. Studies in the Strait of Georgia are examining the relationship between trends in climate and trends in marine survival. A particular emphasis is on diet, growth and over winter survival. On the west coast, the research emphasis is similar but with attention to bioenergetics, coastal migration and food web dynamics.

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Research on the Early Life History of Chum Salmon in Korea

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For the last four decades, Korea's chum salmon program has focused on improving the conditions of salmon stocks by artificially fertilizing eggs, raising fingerlings, and releasing them. One of the key factors that improve the conditions of salmon stocks will be the increase of return rate. We considered that controlling the out-migration mortality of fingerlings would be a driving factor that would influence the return rate and consequently impact the dynamics of stock conditions. Since 1991, we have conducted follow-up investigations in river. Both biological and environmental data were collected in order to determine the behavior of fingerlings' out-migration and to investigate the source of early mortality during out-migration. Some preliminary results will be presented from those surveys during 2000–05, which summarizes duration and patterns of fingerlings' out-migration, stomach contents, and interannual variability of the river environments.

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Russian National Overview of Juvenile Pacific Salmon Research during 2001–2005 Period

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Current research of juvenile Pacific salmon's marine life period is integral part of programs of Russian EEZ ecosystem research of biological resources. During 2001–2005 the studies on juvenile Pacific salmon marine life period, which initiated in early 1980s, were continued on the basis of data collected in research trawl surveys in Okhotsk, northwestern Japan and western Bering Sea. The major accents were as follows:

- monitoring juvenile Pacific salmon marine abundance for forecasting adult returns,
- evaluation of role and status of Pacific salmon juveniles in nekton communities of upper epipelagic layer of Russian EEZ,
- research of long-term interannual variability of quantitative distribution of plankton resources in Far Eastern seas as the basis of juvenile Pacific salmon feeding base,
- feeding habits of juvenile Pacific salmon juveniles and their role in trophic structure of upper epipelagic layer's nekton communities in Far Eastern seas,
- seasonal distribution, areas of highest abundance and migration routes of Pacific salmon juveniles,
- carrying capacity of Russian EEZ in relation to Pacific salmon juveniles.

Major results of 2001–2005 research of Pacific salmon juveniles early marine period of life can be summarized as follows. Based on long-term data quantitative estimates of Pacific salmon juveniles' abundance in Far Eastern seas' upper epipelagic layer are provided for early 2000s. The different areas of Russian EEZ are ranked in relation to quantity, species composition and duration of presence of Pacific salmon juveniles in these areas.

By means of GIS knowledge base of trawl surveys by TINRO-Centre the places of concentration and migration routes of Pacific salmon juveniles are clarified for Russian EEZ. The new ideas about ecology of Pacific salmon juveniles during early marine life period are substantiated. Our data testifies that Pacific salmon species are tolerant to wide range of temperatures, and in particular to low temperatures. Water temperature of upper epipelagic layer, which is characterized by highest abundance of Pacific salmon, does not limit intensively Pacific salmon distribution and timing and migration routes.

All Pacific salmon species are non-herding fishes with wide marine area of distribution. Due to this fact Pacific salmon distribution is not influenced significantly by allocation of local productive areas. Unlike some other publications, which proclaim significant influence of feeding base upon Pacific salmon growth and abundance, our data does not testify for this. On the contrary, our data testifies for sufficient food availability for Pacific salmon within Russian EEZ.

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Overview of Current Juvenile Salmon Research by the United States

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Juvenile Pacific salmon research in the U.S.A. occurs in the coastal areas of the states of Alaska, Washington, Oregon, and California. Objectives of this research are to understand how the marine environment influences the migration, distribution, growth and survival of juvenile salmon during their early marine experience. An overview of the research in each of these areas will be discussed.

OV-5

Overviews of Juvenile Salmon Research in Japan from 2001 to 2005

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Research on juvenile salmon in coastal waters began in 1967 in Japan, and has continued since then. Since a historical review concerning the studies of the early ocean life of juvenile Pacific salmon in Japan was carried out by Mayama and Ishida (2003) in the precedent bulletin of NPAFC, the recent studies including ongoing ones are introduced in this presentation. There are several organisms conducting juvenile salmon surveys in Japan. The National Salmon Resources Center (NASREC) initiated a monitoring program at seven coastal areas around Hokkaido in the spring of 1994. In the program, the early marine growth, distribution and feeding of juvenile salmon (chum and pink), physical and biological environments are studied. In particular, as the number of released juvenile salmon having the otolith thermal marks increased, recaptures of those fish in coastal areas also increased, which will be a new, powerful tool for clarifying their distribution, migration routes and developments in coastal waters. Many of marked fish were captured and were widely moved in every direction in coastal areas. The results suggest that to know such subjects are necessary to research in broad areas. Now, some prefectural fishery experimental stations (e.g., Hokkaido and Iwate prefectures) also conduct juvenile salmon researches in its administrative areas. After leaving Japanese coastal waters, Japanese juveniles dwell in the Okhotsk Sea from summer to autumn. To investigate distribution of juveniles in the Okhotsk Sea, Japan-Russia cooperative juvenile salmon surveys were conducted in the autumn of 2000 and 2002. Some otolith marked fish, these released from Japan, were captured in the sea in 2002. In addition, similar, but geographically limited surveys were carried out within the Japanese exclusive economic zone (EEZ) of the Okhotsk Sea in October 2004 and 2005. The results of the surveys in the Japanese EEZ, however, revealed that few juveniles were collected in the areas, suggesting that juvenile salmon occur mainly in far from the Japanese EEZ in that season. Introducing the activities of the actual surveys on juvenile salmon, I discuss future issues that should be focused on for better understanding the early life of juvenile salmon.
