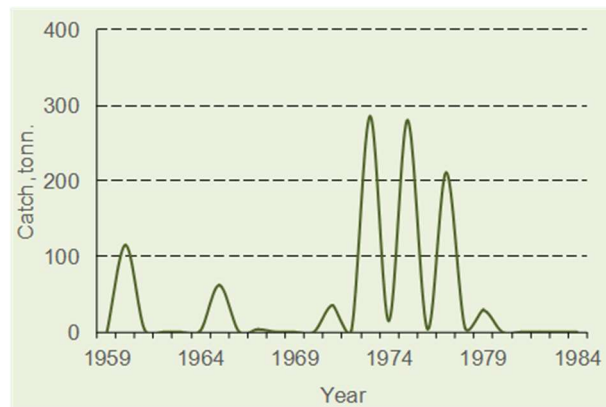


## STATUS OF STOCKS AND MANAGEMENT OF PINK SALMON FISHERIES IN THE RUSSIAN NORTH

Studies of pink salmon biology and conditions for its reproduction in the new habitat were quite active in the 1950s to 1970s but were practically all gone in the 1980s. Nowadays there are sporadic studies in the Indera, Varzuga, Kola and Tuloma rivers. There is no monitoring of the stock either. Fisheries statistics for the last 10 years are incomplete as some of the catches remain unreported. This makes it difficult to assess the stock.



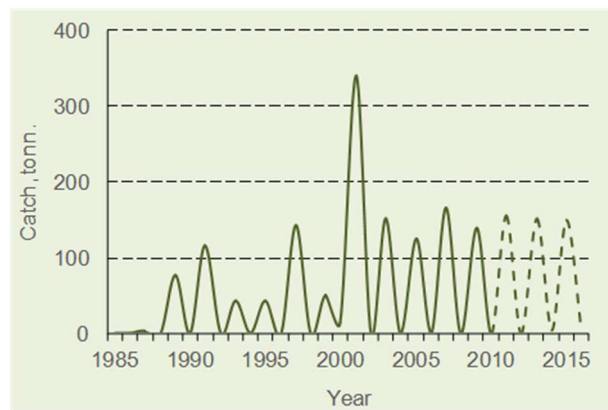
### Catches of pink salmon during the first stage of introduction

During the first stage of active introduction of pink salmon in the Russian North the catches exceeded 100 tonnes only three times (in 1973, 1975 and 1977) even though significant volumes of eggs were imported (up to 44 m annually) and by mid-1980s catches went down virtually to zero. That said, no direct relation was observed between the number of juveniles released from the hatchery and the number of returning producers. In 1962, 34.3 m larvae of pink salmon were released in the White Sea rivers with no return of offspring registered in 1963, whereas the release of 8 m larvae in 1972 brought a return of 131,600 registered individuals in 1973.

In 1999, 0.164 m larvae from the incubation of 2.5 eggs brought from the Far East were released in the Umba river in order to restore the even-year line of pink salmon which had disappeared in the early 1980s. However, registered catches of the even-

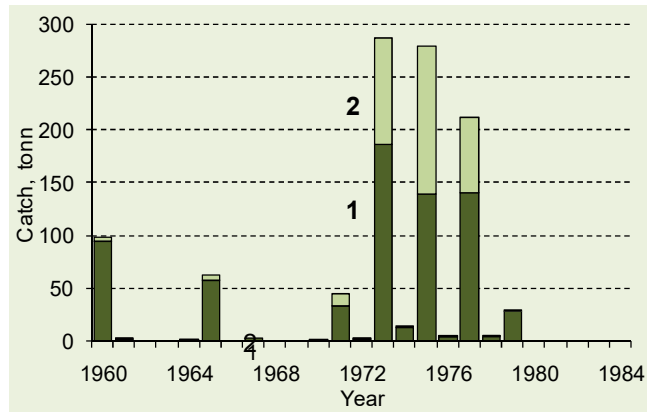
year line in the following years fluctuated between several hundred kilograms to 11 tonnes which meant that the attempt to “start” the reproduction of the even-year line failed yet again.

Starting from 1989 commercial pink salmon concentrations were observed only in odd years and only in the White Sea with the numbers of invaders being a result of natural reproduction. It was the 1985 generation that gave the start to relatively mass runs of pink salmon in odd years as a mass run of pink salmon (tens of thousands) from natural spawning was observed already in 1989 (no eggs were imported in 1987).



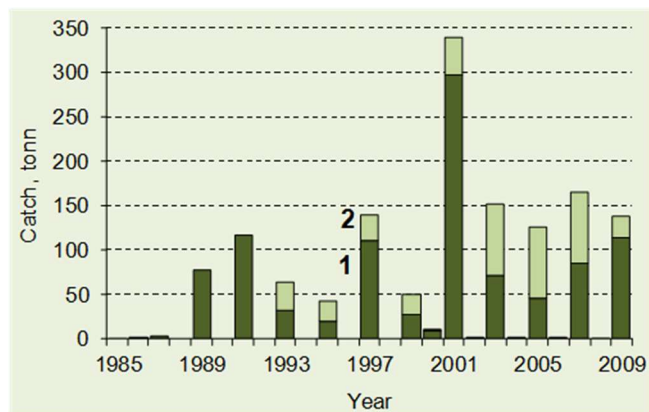
### **Catches of pink salmon during the second stage of introduction**

The highest catch (about 340 t) was registered in 2001 which was likely the year of the highest pre-fishing abundance of the invader.



**Catches of pink salmon in the Murmansk region (1) and Arkhangelsk region and Karelia (2) in 1960-1984**

During the first stage of pink salmon transplantation (1956-1984) maximum combined catch of the three regions (Murmansk, Arkhangelsk and Karelia) was about 286 t (1973) totaling about 1050 t for the entire period. On average, the Murmansk region accounted for about 68 percent of catches.



**Catches of pink salmon in the Murmansk region (1) and Arkhangelsk region and Karelia (2) in 1985-2009**

During the second stage (1985-2009) maximum catch of about 340 t was observed in 2001, while the total for this period was about 1,430 tonnes. Murmansk region accounted for about 70 percent of the catch. In the light of this, one can assume that

the White Sea rivers of the Kola Peninsula account for about two thirds of the reproductive potential of the invader. Registered abundance of pink salmon in these rivers in odd years of the 21<sup>st</sup> century was 102,000 individuals on average, ranging between 35,000 and 228,000. As pink salmon is fished in the same areas as the Atlantic salmon and all types of fisheries exploit about half of the stock, we estimate that the total self-reproducing stock of pink salmon in the White Sea rivers of the Kola Peninsula in these years fluctuated between 200,000 and 450,000 individuals or 250 to 600 tonnes of biomass. The overall maximum White Sea stock of pink salmon reached 500,000 to 600,000 individuals being at the level of 300,000 to 350,000 individuals over the last odd years.

According to various estimates (Agapov, 1986; Karpevich, 1998), maximum abundance of pink salmon in the White Sea basin may be as high as 2 million or even 4 to 8 million individuals (6,000 to 12,000 tonnes of biomass). However, we believe that these numbers are too high.





Currently, pink salmon is fished along the coast of the White Sea with fixed gear (seine nets) and at fish registration traps in the Varzuga, Umba and Kitsa rivers. For a long time, this fishery remained unregulated. Restrictions were first introduced in 2003 through the establishment of total allowable catch of 36.4 tonnes for each of the three regions (Murmansk, Arkhangelsk and Karelia), even though this measure was not science based and contradicted the Williamsburg Resolution of the North Atlantic Salmon Conservation Organization (NASCO Report..., 2003). In 2008, pink salmon was taken off the list of species, for which maximum allowable catch was established. Currently, fishing volumes per each water body and their parts, fishing grounds and fishing gear setup sites are determined by regional commissions for the regulation of fisheries of anadromous fishes in the internal waters of the Russian Federation and in the territorial sea of the Russian Federation. At this stage this is the most efficient regulation measure as it enables maximum exploitation of the pink salmon stock.