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Asiatic Pink Salmon:

Commercial Catch in Current Century

by

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Pacific Research Institute of Fishery

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Abstract

Deficiency of significant asiatic pink quantity in the fishing statistics of Russia and Japan is fixed with help of historical analysis of annual catch values.This pink was caught in Russian territorial waters during Japanese concessional fishing in 1907-1945. Maximum annual catch of asiatic pink was higher twice in comparison with previous known data. Potential limits of maximum pink run were estimated as 850.0-1000.0 mln.sp. and this fact indirectly characterize the ecologic capacity of areas of pink feeding and maturing in North-western Pacific.

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Prepared for Annual Meeting of NPAFC,
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It's necessary to know the historical peak of species quantity for the estimation of ecological capacity and productivity of the areas, where pacific salmon feed and mature. We are interested mainly in pink, dominated in the Russian commercial fishing. Longterm statistics is the most accessible and real indicator of the state and dynamics of commercial object.

There are two well-known publications about pink, those include the dynamics of commercial catches. These are Takagi's report (Takagi et al.,1981) where the statistics during period 1908 - 1971 was presented and Heard's report (Heard, 1991) where that period continued till 1981.In the last publications (Beamish, Bouillon, 1993) commercial statistics is presented during 1925 - 1989.

All these authors used the data from Soviet papers, reports, and personal conversations. But official Soviet statistics was very limited and conradictions. During long time the commercial data staved prohibited for announcement. In 1989 some publications of VNIRO's scientists were released (Kazarnovsky,1989; Janovskaya et al.,1989), where the first statistical data about salmon fishery in the Russian (former Soviet) Far East were presented. Inspite of some data defects and contradictions published commercial statistics allowed relatively impartially to estimate the salmon catch since early century till 1985-86.

With help of these works L.B.Kliashtorin and B.P.Smirnov (1992), basing on long-term fishery statistics, tried to assess the stock and reproduction of Pacific salmon. For the first time the attention was publicly payed to the fact, that analysis of Russian catches is distorted by the affecting of prolonged Japanese concessional salmon fishery in Russian waters. The figure, presented in this work, reflects the dynamics of pink catches in north Pacific unsufficiently because Japanese data doesn't contain the offshore catches.

Since 1985 all Russian data about pink catches, presented here, are based on annual information from TINRO branches. Japanese fishery statistics till 1981 was used from above mentioned work of Janovskaya et al. (1989), the data of 1982 - 1992 were pleasantly presented by Dr.Nagasawa (National Research Ins.of Far-East Seas Fisheries,Shizuoka).

We have converted the catch weight into the quantity (when it lacks) with help of average weight of pink specimen in according to collected and approximated data. This decreased the precision of the used information insignificantly, but allowed to obtain the pink catches suitable for comparison of dynamics of such "superstocks" as "Russian", "Japanese", "American" and other.

For precise estimation of Russian pink catches it was important to determine how Japanese concessional salmon fishery conducted in Russia during tens of years was assessed.

The concessional fishery began in Russian coast due to Russian-Japanese Fishery Convention (RJFC), concluded in 1907 in according to Portsmouth Treaty (5,September,1905). Russia has given to Japan the right of fishing in territorial waters along the coast of Japan, Okhotsk and Bering Seas for rental.
Although the convention period was over in 1919, Japanese fishers

continue the fishing during the civil war (1918 - 1922) and after, basing on the decisions of Soviet government, accepted Portsmouth in fact, till the new agreement. In 1923 there were 361 fishery areas in the Russian coast and 323 from them belonged to Japanese fishers (about 90%). And in the best for Russia years (1913-1914) the share of Russian fishery areas did not exceed 25% and its production - 15%.

In January of 1928 the first fishery convention was concluded between USSR and Japan (SJFC) about fishery conditions in far-eastern region of Soviet Union. SJFC allowed Japanese citizens to catch, collect and process the fish and other marine objects,excepting fur seals and marine beavers,along the Okhotsk and Bering coast.Japanese fishers bought the rented fishery areas at the annual public sale. More rights and opportunities were provided for Russian fishers by SJFC in comparison with RJFC (1907).

SJFC was prolonged with small changes in 1936, 1937, 1938,1939,1941 and 1944.But the privileges of Japanese fishers were considerably cut and the number of saled fishery areas decreased. The first SJFC was over in 1945 related with the war between USSR and Japan.

During RJFC and SJFC were valid (1907-1945) the total catch of "Russian" pink was about 2.6 bln. specimen, that equal to about 3.5 mln.t. As will be showed further, this catch was not taken into account by both Takagi et al., (1981) and other scientists (Heard,1991; Beamish, Bouillon, 1993).

Data of following table confirm this supposition.

Commercial catches of pink salmon by Russia and Japan (mln.specimen)

Data	Russian inshore fishing	Japanese fishing in Russian territorial waters[a)]	Japanese high seas fishing
1915	53.56	64.70	-
1916	77.22	84.90	-
1921	59.63	78.70	-
1923	30.46	31.30	-
1924	101.11	102.40	-
1926	109.28	111.20	-
1927	29.24	48.30	-
1933	31.05	37.40	4.30
1934	73.79	97.50	20.00
1935	46.88	113.80	34.50
1936	43.73	73.60	41.00
1937	58.29	138.30	74.00
1938	59.73	115.40	61.00
1939	60.41	197.00	115.00
1940	38.95	53.00	19.00
1941	59.46	121.00	56.00
1942	59.01	70.50	38.00
1943	88.58	113.90	57.00

a) Concessional fishing

In this table the data of those years are presented, when Japanese catches in Russian territorial waters exceeded Russian catches or Japanese high-seas catches. This means,that the concessional catch in those years could not be included into official statistics of Russian inshore catch or into any other.

It's evidently, that before Japanese high-seas fishing started (in 1933),Japanese catches of pink in Russian territorial waters reached significant values exceeding 100 thousand tons (1924,1926),and during the active high-seas fishing period (1933-

1943) they always exceeded Russian catch values - sometimes in 2.4 - 3.3 times (1935,1937 and 1939).

So,the lack of Japanese catches of pink out of the limits of inshore Japanese waters in official statistics before 1933,i.e. during 25 years the concessional fishing conducted, and concessional catch values obviously exceeded Russian inshore and Japanese high-seas catches, convince us that the official Russian and Japanese statistics didn't take into account Japanese catches of pink near Russian coast during RJFC and SJFC are valid (1907-1945).

Taking into consideration this fact, we have included the concessional catches data into dynamics of asiatic pink catches in current century and made a plot (figure) similar with one in Takagi's (1981) report. At this plot the new considerable features became evident:

1. The maximum total catch of asiatic pink,indirectly characterizing the limits of ecological capacity of northwestern Pacific, exceeded former value twice and reached almost 400 mln.sp.(379.9) in 1939.
2. The peaks of catches of Asiatic and American pink coincided in 1939. This confirmed the idea of Dr.Beamish and Dr.Bouillon (1991;1993) about synchronous oscillation of salmon quantities in north Pacific. Takagi et.al. (1981) reported, that there are two life cycles of odd pink generations between Asiatic and American peaks (1939-1943).
3. In total the maximum catch of pink reached 500 mln. sp. in north Pacific. It's supposed,that in high quantity years about 50 -60% of returned for spawning fishes are caught. So,the maximum possible pink abundance is assessed by 850-1000 mln.sp. Taking into consideration that the mortality during high-seas phase between September-October and June-August is estimated in about 50% (Shuntov,1994), total maximum quantity of young pink in north Pacific waters can reach about 1.7 - 2.0 bln.sp.

In 1991 the record number of pink was caught - 160,6 mln.sp.,and abatement began later. In 1993 the pink catch constituted 83,0 mln.sp. (109,3 thousand tons). In 1992 the pink catch exceeded one in cyclic 1990 on 9 mln.sp. We think,that all these facts indicate that the natural decreasing of salmon quantity started, related with global atmospheric-oceanologic and ecologic reconstructions.That is confirmed by TINRO investigations,leading by Pr.V.P.Shuntov (Shuntov, 1991;1993;1993a;1994a; Shuntov, Lapko et.al.,1994;1994a; Shuntov et. al.,1994a).

However, in current year the maximum pink number suddenly came to west Kamchatka - about 180 mln.sp. But only 25 mln.sp. were caught,because the fishing industry was not ready for accepting such quantity of pink. The possible catch of pink near west Kamchatka could constitute about 90 mln.sp. (110 thousand tons), while in 1989, cyclic with peak 1991, total far-eastern catch was 114,3 mln.sp.

The pink catches in Sakhalin were higher than predicted values - 72,2 thousand tons (prediction - 45 th.t.). But because of above mentioned reasons fishers in Sakhalin as well as in Kamchatka have caught less at about 15 thousand tons. According to primary data (20,September),total salmon catch in Russian coast is equal about 153,3 thousand tons. With adding above noted values (90 - in Kamchatka and 15 thousand tons in Sakhalin) the total catch could reach about 250 thousand tons that corresponds to peak catch level in 1991.

But simultaneously pink abundance was scarce in continental Okhotsk coast, including Amur river, as well as in northwestern Japanese Sea (Sovetskaya Gavan area).

All this means,that natural decreasing of pink and other

salmon abundances is not simple in all areas. Possible,next 1 - 2 years the exchange of dominated pink generations can happen at the first turn in Sakhalin-Kuril region. Then general dynamics of Asiatic pink catches can become similar with one in period before WW II, when even years generation dominated.

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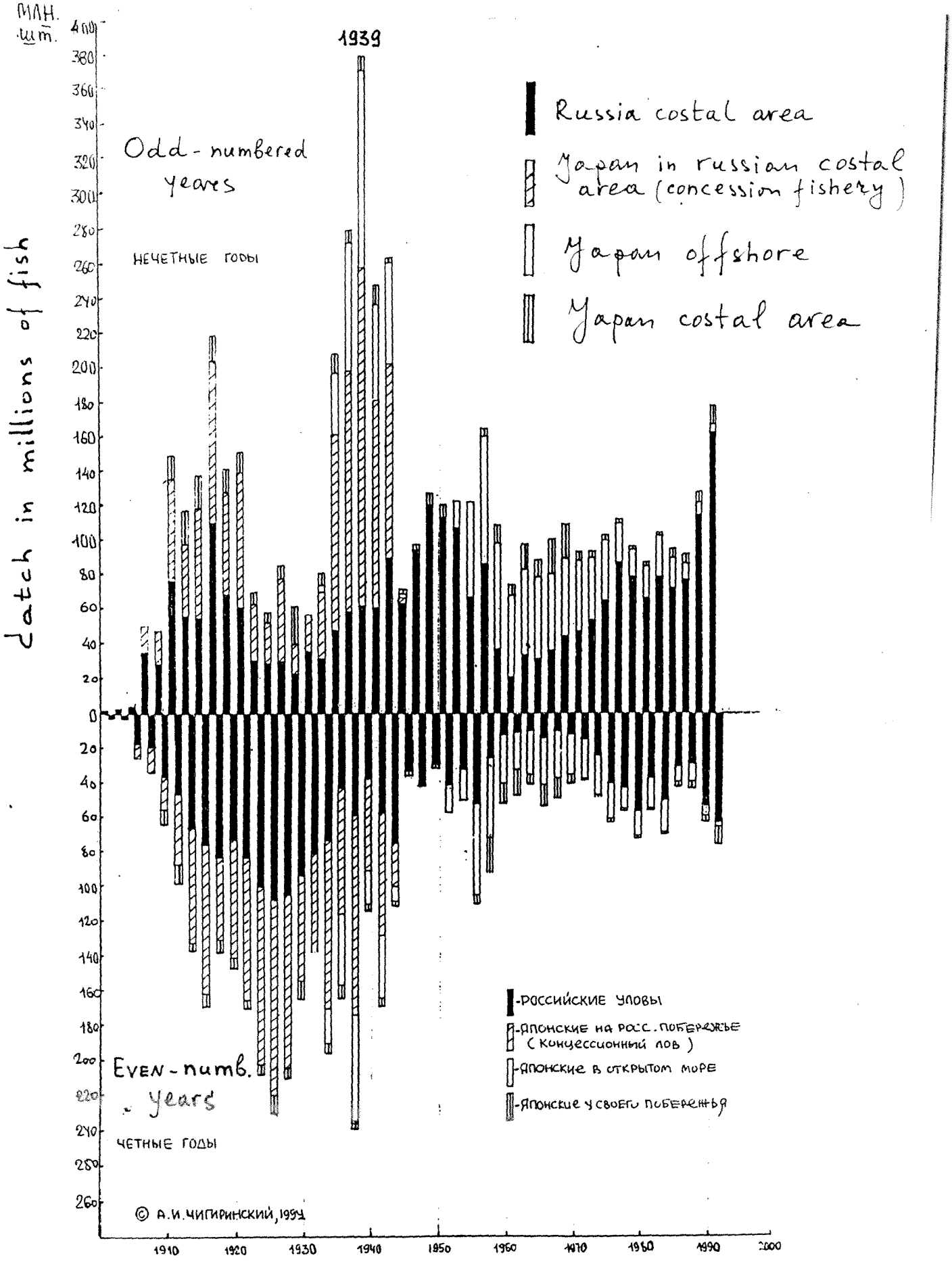

Historical commercial catch of Asian pink salmon
1901 - 1992

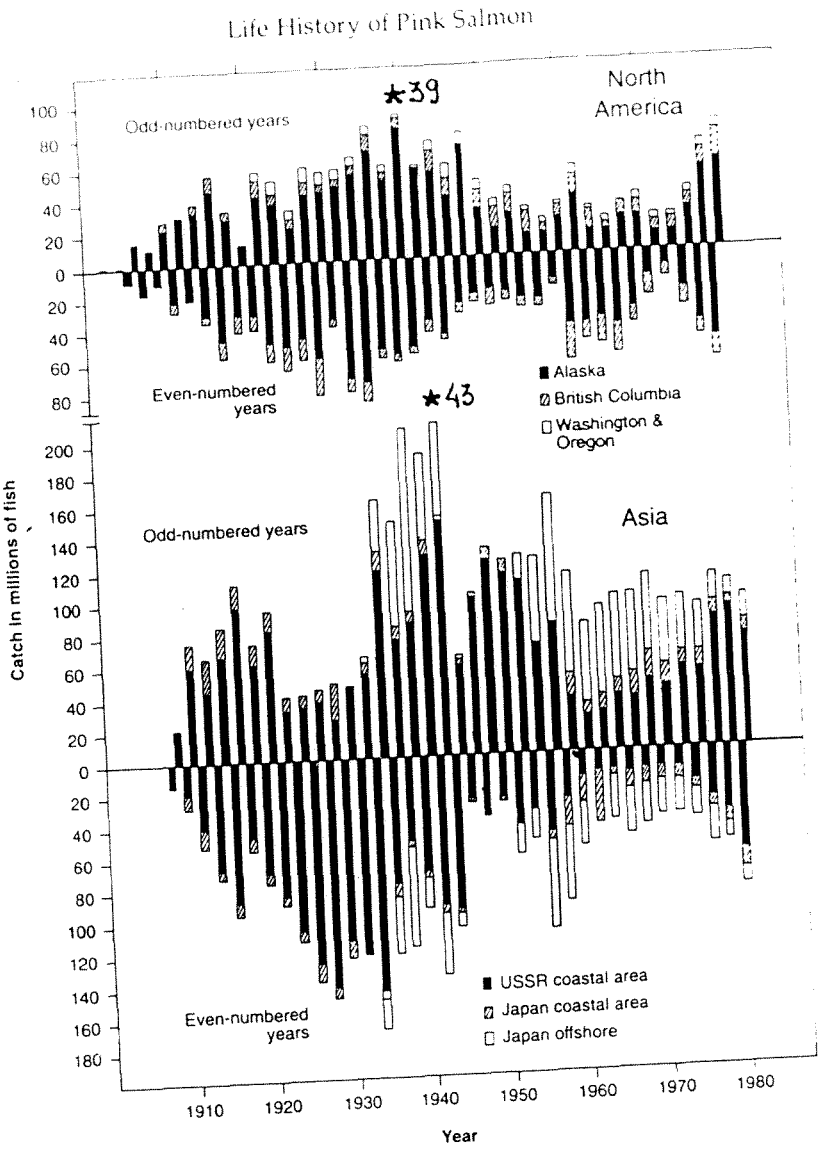

FIGURE 2
Historical commercial catch of North American and Asian pink salmon 1908-81. (Adapted from Takagi et al. 1981)

From Heard, 1991

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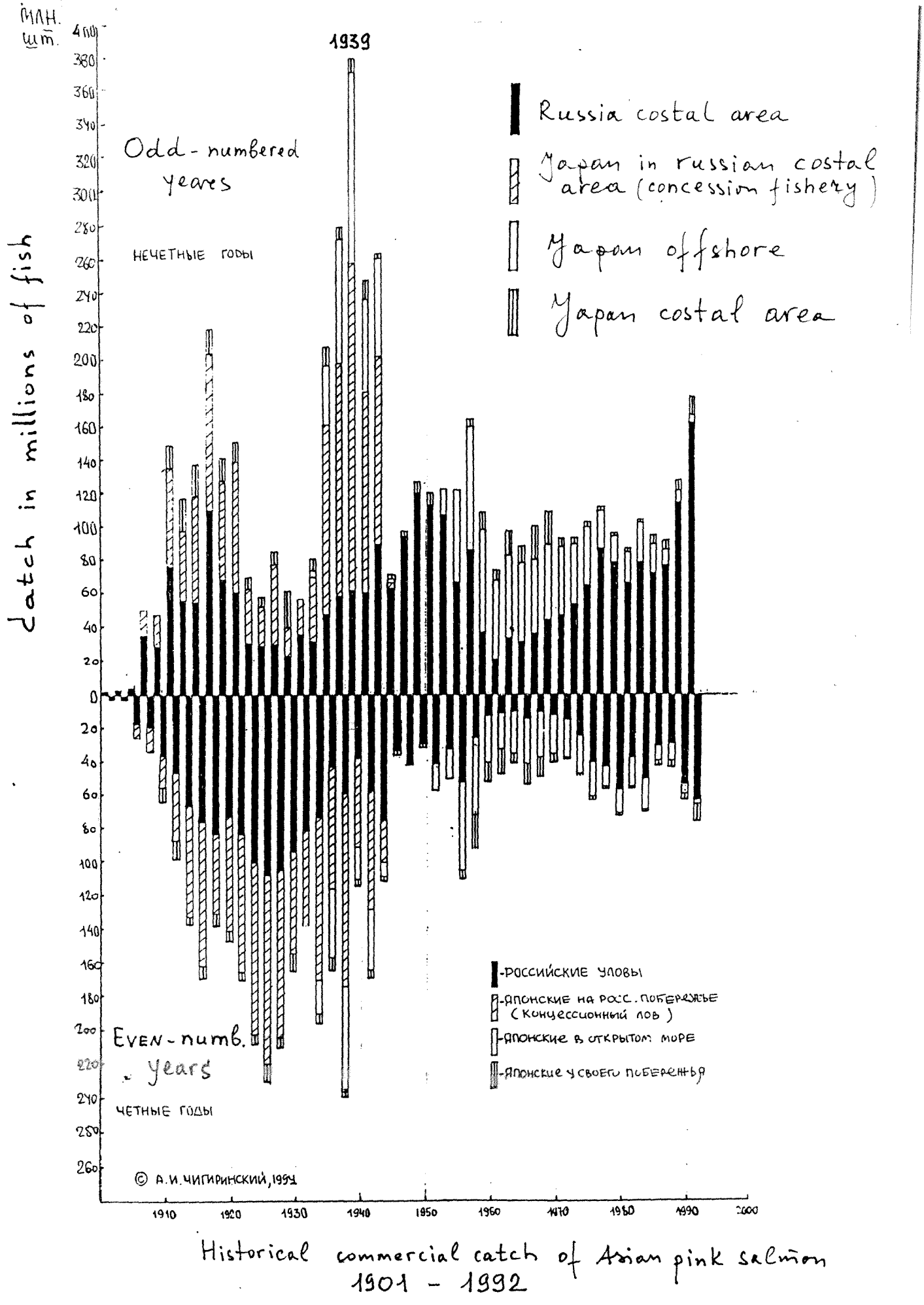

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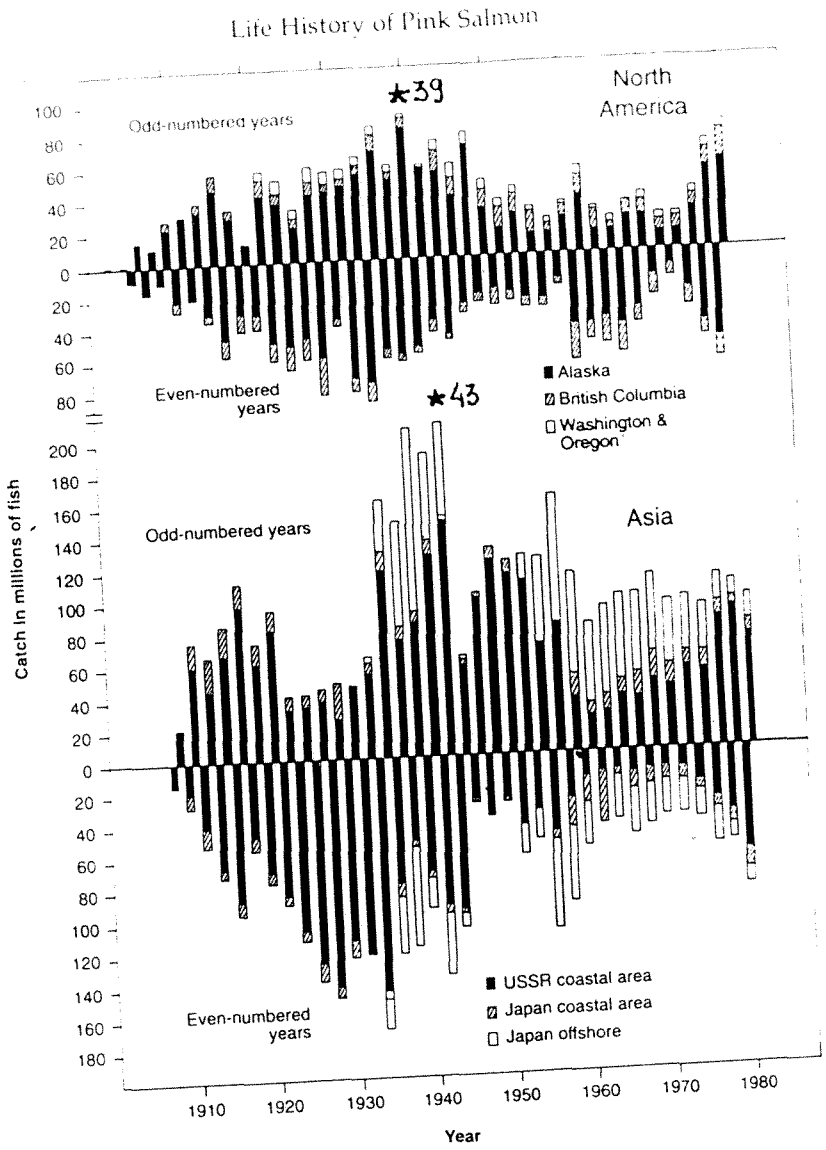

FIGURE 2
Historical commercial catch of North American and Asian pink salmon 1908-81. (Adapted from Takagi et al. 1981)

From Heard, 1991