

# Identification of sockeye salmon *Oncorhynchus nerka* (Walbaum) populations in Asian part of the species in mixed marine catches of juvenile fish on the base of microsatellite DNA analysis

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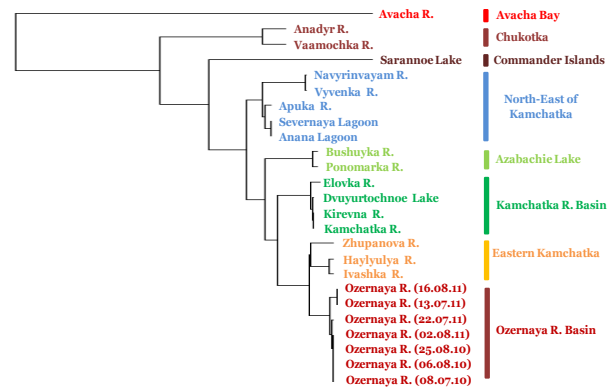
## ABSTRACT

Sockeye salmon (*Oncorhynchus nerka* Walbaum) is one of the most valuable and highly abundant species of Pacific salmon in Russian Far East. The species has demonstrated sophisticated population structure. A huge data massif has been collected for nowadays to get an insight about the structure of sockeye salmon stocks and specifics of distribution of the stocks at sea. Along that, in view of changing climate conditions and some other factors, disturbing natural balances, there is a need in new and more detailed data, based on using modern genetic methods.

Genetic sampling locations for 30 samples of sockeye salmon in Asian area



The UPGMA dendrogram based on Nei & Li's genetic distance for 25 populations of sockeye salmon surveyed at 7 microsatellite loci



Differentiation of Chukotkan, East Kamchatkan and Ozernaya River basin stocks was tried on the base of examining allelic variety of seven microsatellite loci (*Ots107*, *Oki1a*, *Oki1b*, *One104*, *One109*, *Oki6*, *OtsG68*). Variety of allelic frequencies in samples from 25 populations was studied. The populations were united into regional groups on the base of results of cluster analysis. Hierarchic analyzing (AMOVA) has it indicated, that the regional contribution to the dispersion in studied part of the species is 3.90%. The data we have obtained can serve to provide differentiation between the outlined population groups. The likelihood of their identification in mixed marine aggregations is pretty high - from 77,47 to 90,05%. Five samples of juvenile fish from trawl catches, provided by the R/V "Professor Kaganovsky" in October of 2010 in the course of survey in the Bering Sea and Pacific Ocean waters off Kamchatka, were analyzed with using the baseline made. Data on the ratio of juvenile sockeye salmon individuals from different populations or population groups in the mixed samples are obtained.

Average percent (SD in parentheses) correct and incorrect allocations (read vertically) by region for simulated mixtures based eight regional groups. Expected value for estimates shown in bold is 100%:

No	Region	1	2	3	4	5	6	7	8
1	Azabachic Lake	82.54 (5.83)	6.33	1.19	2.62	0.02	1.86	0.19	0.09
2	Kamchatka R. Basin	1.97	85.89 (3.60)	4.41	2.52	0.51	1.86	0.33	0.02
3	Eastern Kamchatka	1.38	3.40	77.47 (6.18)	3.45	4.46	11.67	1.17	0.32
4	North-East of Kamchatka	1.88	2.36	3.46	83.37 (3.89)	0.36	6.48	0.71	0.08
5	Commander Islands	1.99	2.78	2.75	3.01	80.12 (6.28)	6.62	0.47	0.21
6	Ozernaya R. Basin	1.61	1.51	6.03	4.18	0.6	84.63 (3.94)	0.8	0.1
7	Chukotka	0.49	1.39	1.49	2.11	2.94	3.82	85.08 (4.60)	0.01
8	Avacha Bay	0.04	0.09	0.13	0.43	2.56	0.07	0.00	90.05 (5.41)

Stock proportions of juvenile fish from trawl catches, provided by the R/V "Professor Kaganovsky" in October of 2010 in the course of survey in the Bering Sea and Pacific Ocean waters off Kamchatka

