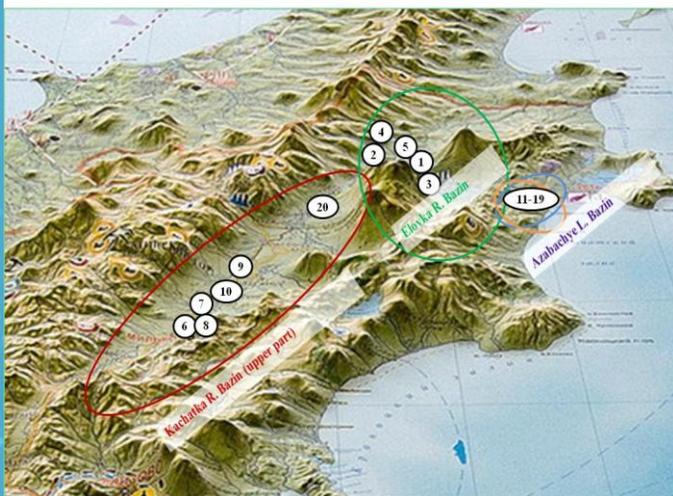


Genetic Identification of the Local Stocks of Sockeye Salmon of the Kamchatka River Basin in the Commercial Catches from Kamchatsky Gulf

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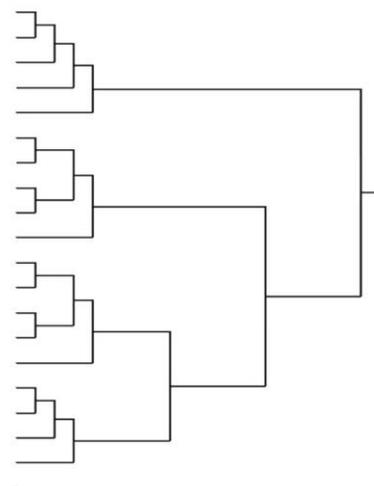
Sockeye salmon is one of the most valuable commercial species in Kamchatka. The species has sophisticated population-genetic structure, different ecological groups and seasonal morphs. The biggest lake-river system in the Asian part of sockeye salmon reproduction is the Basin of Kamchatka River. Research identify several differentiated groups in the structure of this complex population system, where local stocks spawning in the basins of the Elovka River and Azabachye Lake are the most principle in terms of abundance. According to the generally accepted insights, the part of sockeye salmon from the Elovka takes about a half, and in some years more than 60% of the total number of spawners in the Kamchatka River Basin. However, an abrupt reduction of the number of sockeye salmon spawning in this major tributary was observed in recent years. A likely reason of the situation may be overfishing, and the research was provided to check the composition of the catches of marine trap nets in Kamchatsky Gulf.

Genetic sampling locations for 20 samples of Sockeye Salmon in Kamchatka R. Basin



The WPGMA dendrogram based on Nei & Li's genetic distance for 20 populations Kamchatka R. Basin of Sockeye Salmon surveyed at 9 microsatelliter loci

1. Yelovka (Maslovka) R.
2. Kirevna R.
3. Grenadirskoe L.
4. Dvukhyurtochnaya R.
5. Yelovka R.
6. Kamchatka R.
7. Zhupanka R.
8. Kamchatka (Tajonka) R.
9. Kimitina R.
10. Kirganik R.
11. Azabachye L. (late)
12. Bushuyka R. (late, 2017)
13. Bushuyka R. (late, 2018)
14. Bushuyka R. (late, 2018)
15. Bushuyka R. (late, 2010)
16. Bushuyka R. (early, 2013)
17. Ponomarka R. (early)
18. Rybovodnij Creek (early)
19. Bushuyka R. (early, 2010)
20. Ushki L. (limnokren)

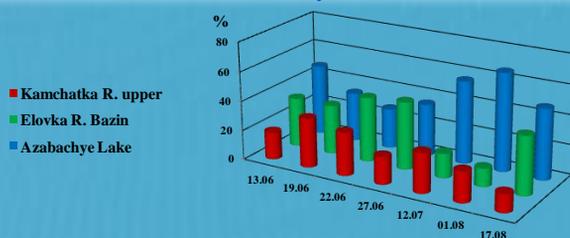


There were seven mixed samples analyzed (336 individuals) from the catches from June 13 to August 17 of 2018. The identification was carried out based on the reference database, including the allele frequencies of nine microsatellite locuses (*Ots107*, *Oki1a*, *Oki1b*, *One104*, *One109*, *Oki6*, *OtsG68*, *Omm1037*, *Ots100*) in 20 samples (988 individuals) from the major local stocks of sockeye salmon in the Kamchatka River Basin.

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

№	Region	1	2	3
1	Kachatka R. Bazin (upper part)	77,27 _(3,30)	5,12	5,82
2	Elovka R. Bazin	9,16	77,60 _(4,43)	1,43
3	Azabachye L. Bazin	3,61	6,54	82,33 _(2,83)
	Unknown	9,96	10,74	10,42
	Σ	100	100	100

Results of genetic Identification of the Local Stocks of Sockeye Salmon of the Kamchatka River Basin in the Commercial Catches from Kamchatsky Gulf



The membership to the intrapopulation groups was evaluated with the accuracy about 80%, as next: «Azabachye Lake» (early and late morphs), «the Kamchatka River upper part» and «the Elovka River Basin». The results of the genetic identification confirmed, that in most examined samples from the mixed marine catches the part of the fish from the Elovka River Basin was not over 40%, what is agree with the data of the spawning stock abundance monitoring from the air.