First steps of Salmonid monitoring carryng out in Sakhalin

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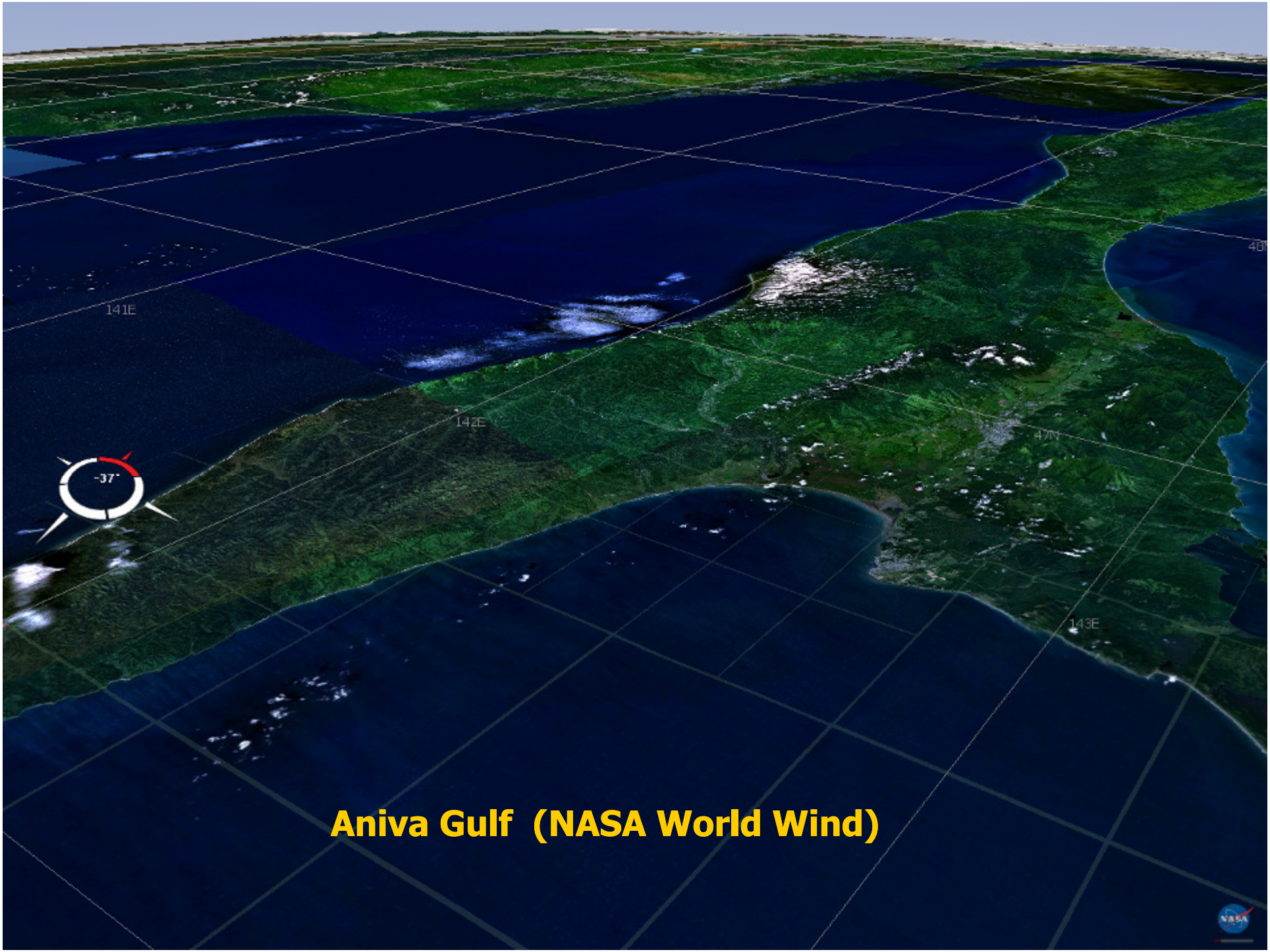
The purpose of survey – not expensive complex monitoring of Pacific salmon abundance in their habitats, possible tendencies of their abundance trends and their biodiversity in the Sakhalin rivers

1. Hydrological and hydrometeorological data collecting from the test basins.
2. Studying fish fauna of the Kura, Naycha and Taranay Rivers by river seine test fishing, definition of fish composition and fish biological data collecting.
3. Survey of masu, malma, kundzha, sakhalin taimen and their spawning grounds presence in the rivers.
4. Carrying out of biological analyses of salmon.
5. Escapment survey.
6. Certification of the test rivers.
7. Catch and other fisheries statistics data collecting within Aniva Gulf and in the test rivers.

Geographical position of Southern Sahkalin test rivers

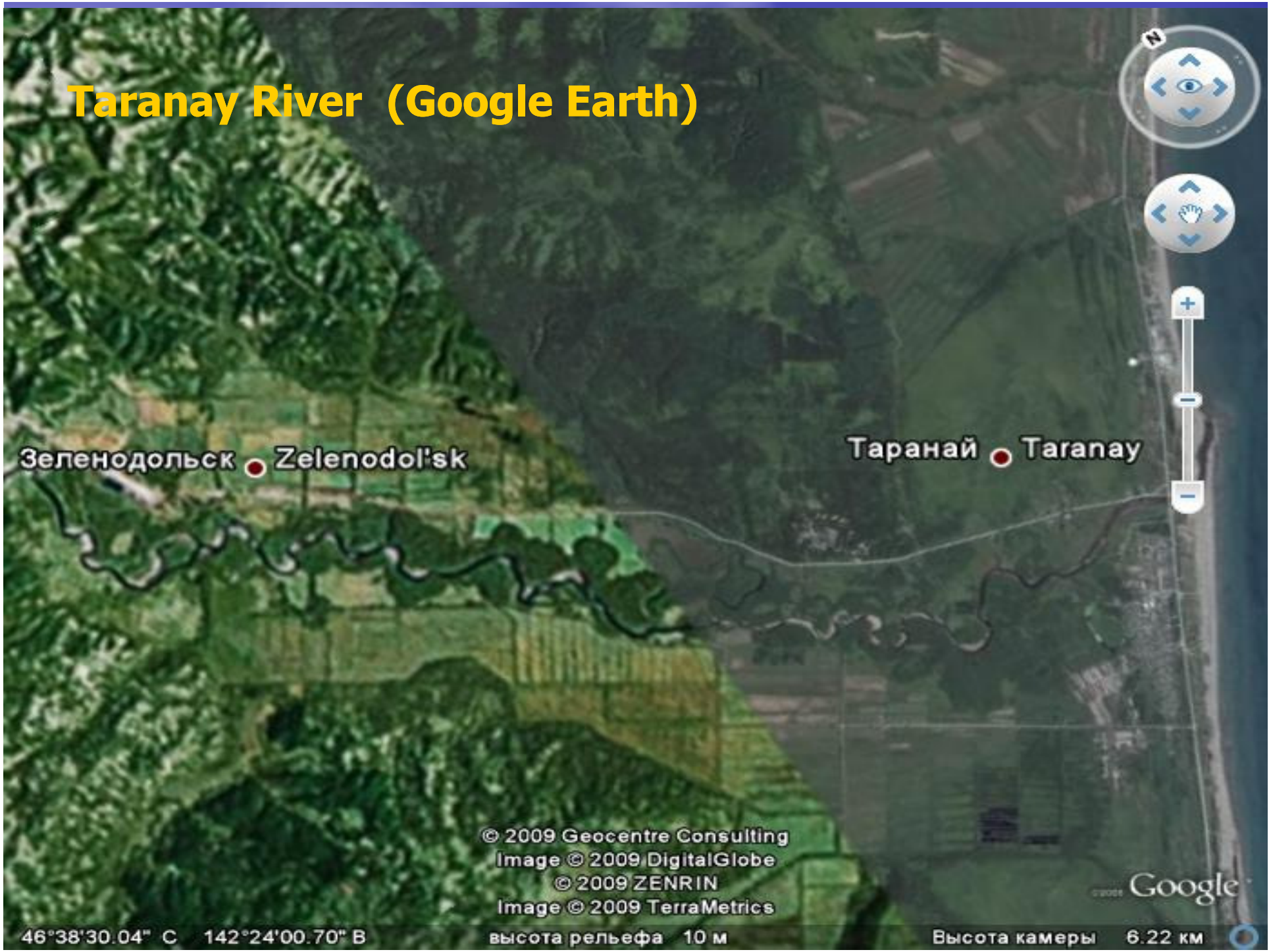
Sakhalin Island (from NASA World Wind)



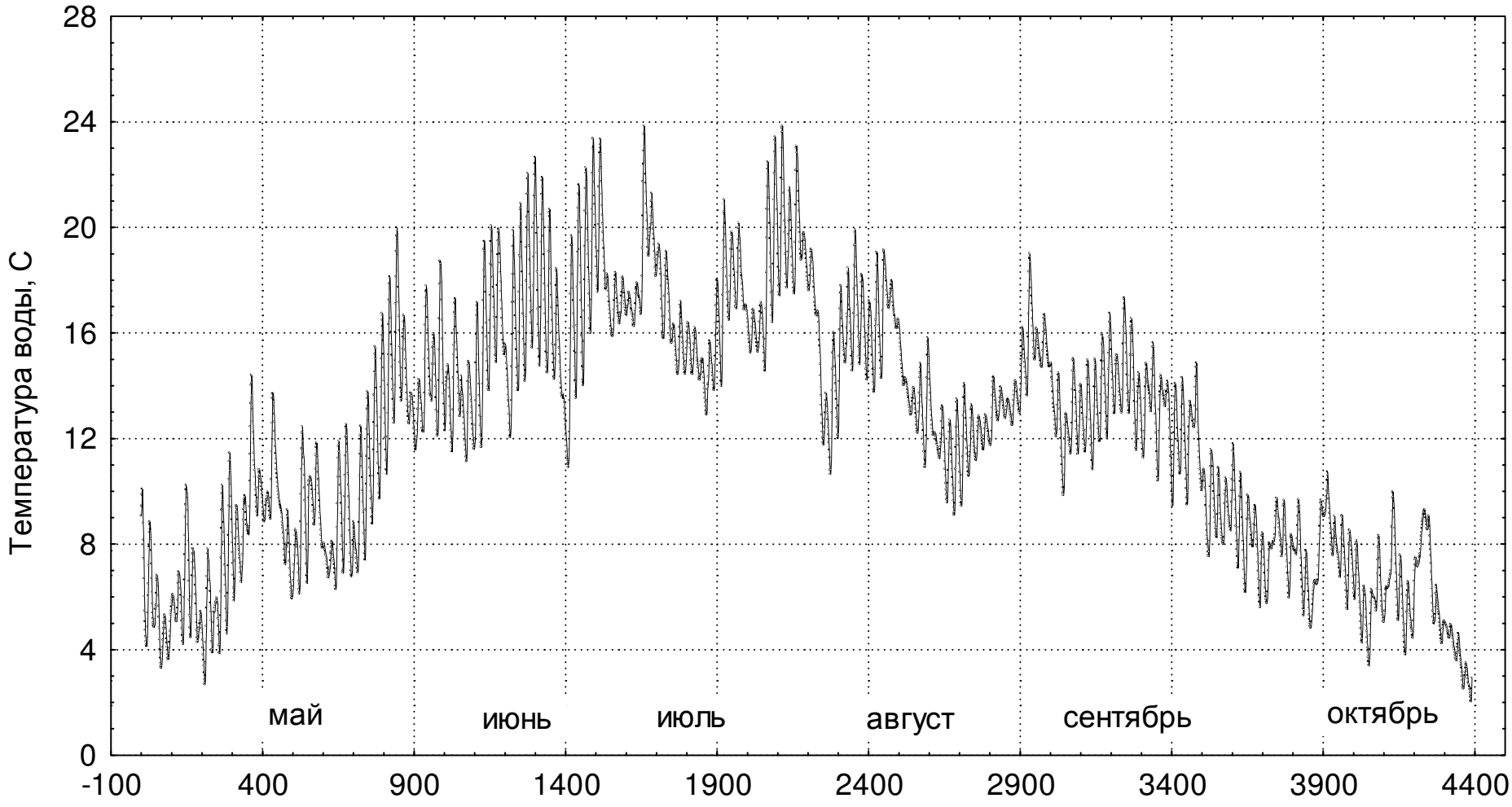
Aniva Gulf (NASA World Wind)

Aniva Gulf, test rivers (CD "All Russian maps")

Taranay River (Google Earth)

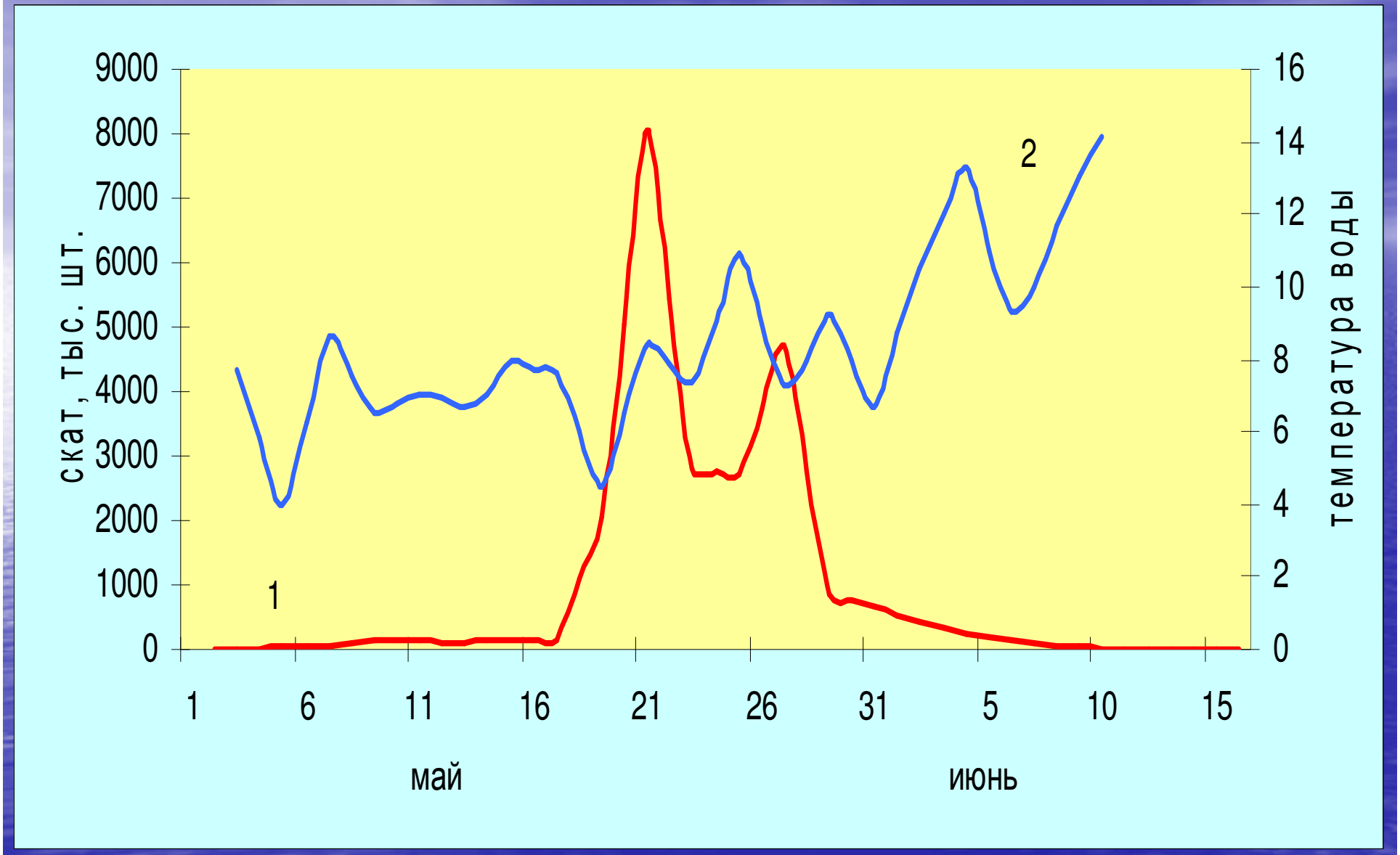


A dam on of Taranay salmon hatchery territory



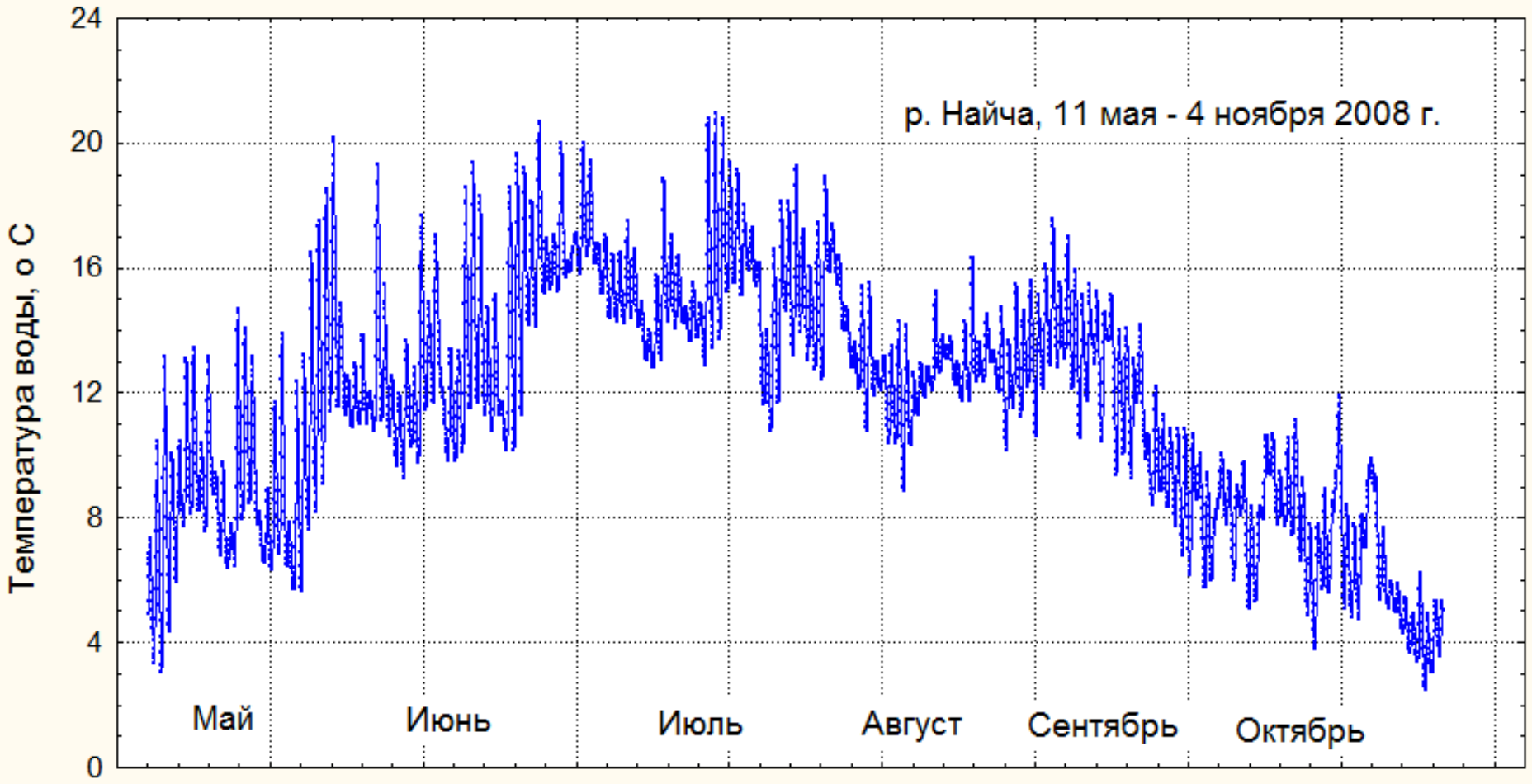
Water temperature in Taranay River – HOBO sensor
(May – October 2008)

Kura River (Google Earth)



Pink salmon downstream migration intensity in Kura River, 2008
1- number of fish, thous. individuals, 2 - water temperature, °C (SakhNIRO data)

Naycha River (Google Earth)



Water temperature in Naicha River (May – November 2008)

Seminar «GIS and analyses of river basins»

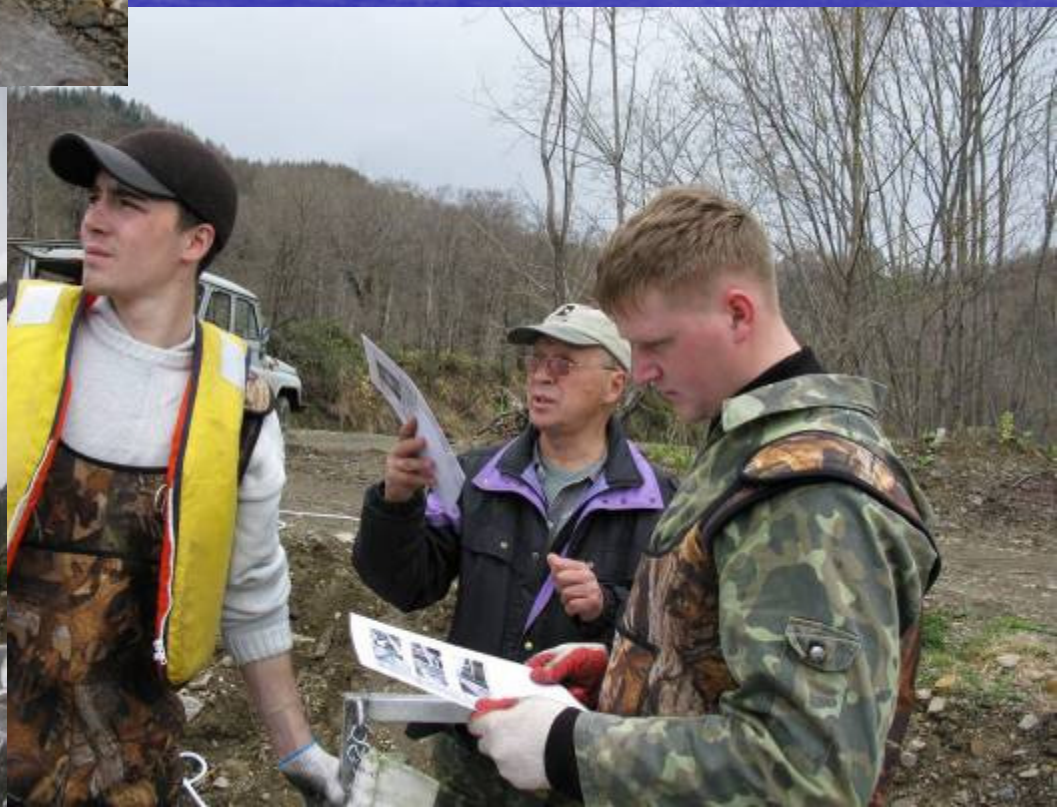
Studying «Arc Map» program and river basins remote sounding PC technology.

Yuzhno-Sakhalinsk,

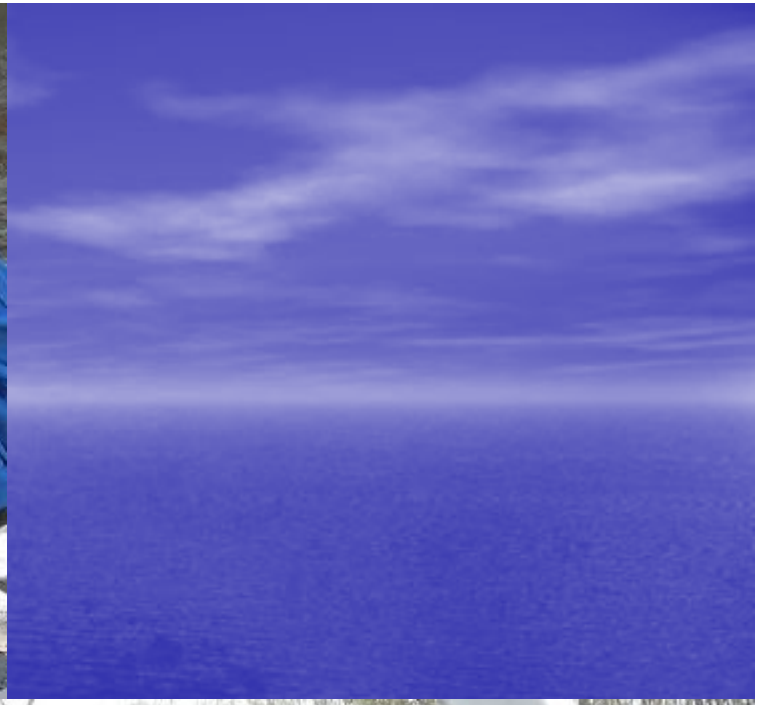
April 14-18, 2008

Lecturers and managers of the GIS seminar on Taranay River (left to right): Lee Benda, Nicole Portly, Dan Miller, Christina Friedle

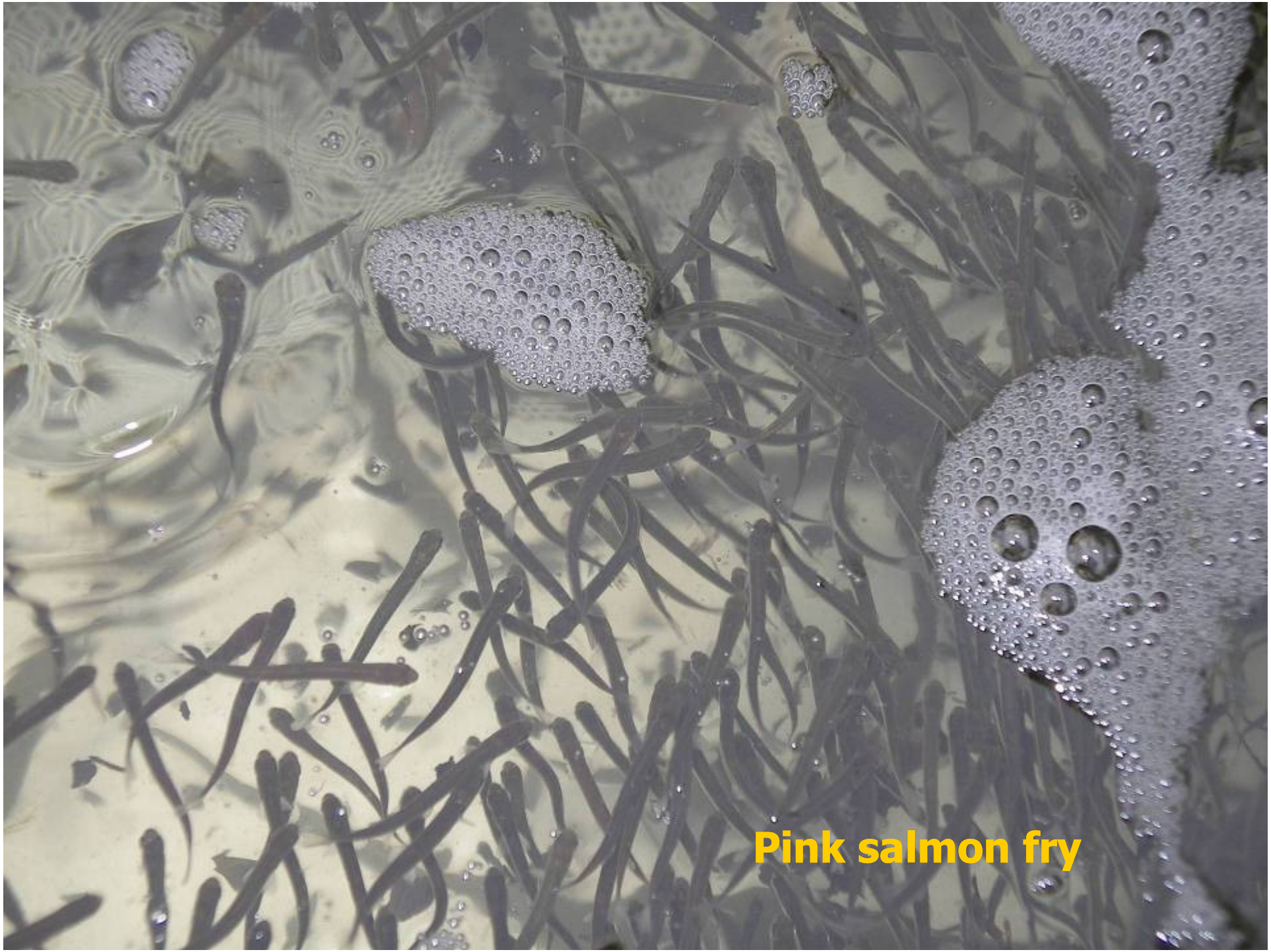
Aniva Salmon Station staffs begin rotary trap installation in Taranay River



Test of rotary-screw trap



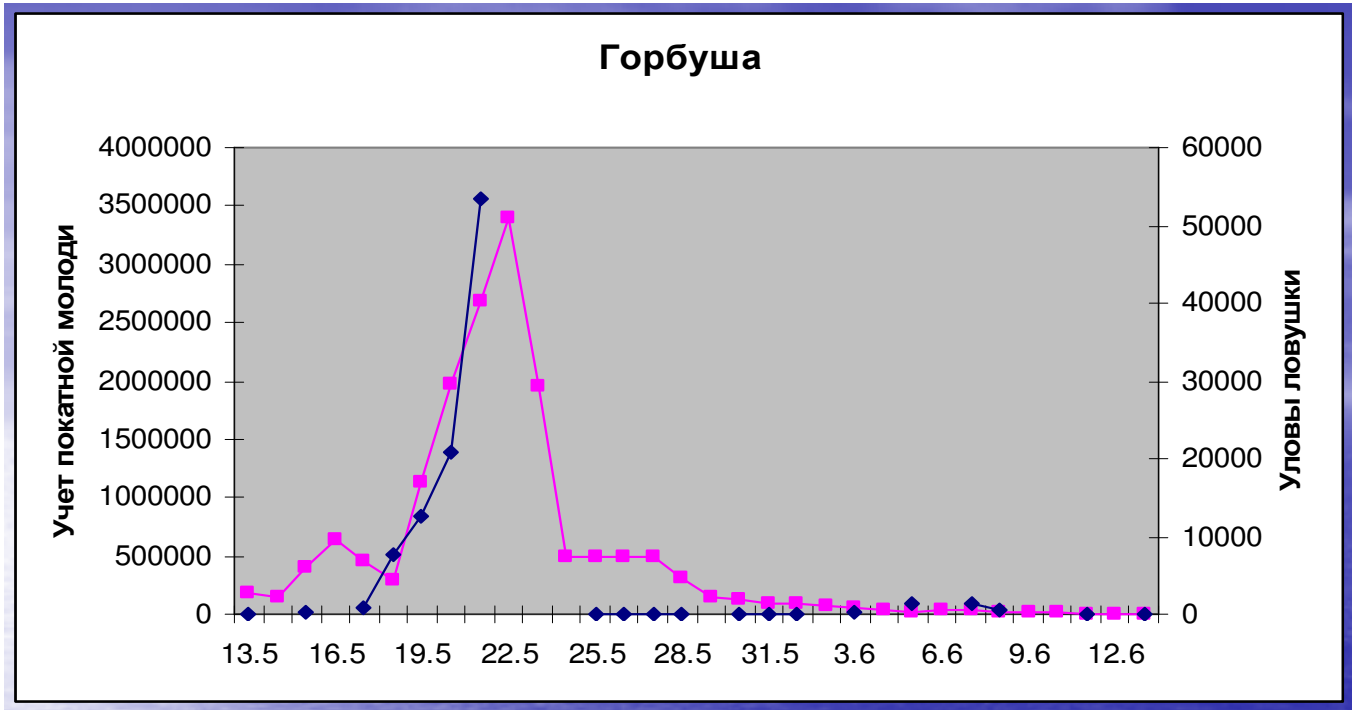
Biological analysis of pink and chum fry, and masu salmon juveniles


Pink salmon fry

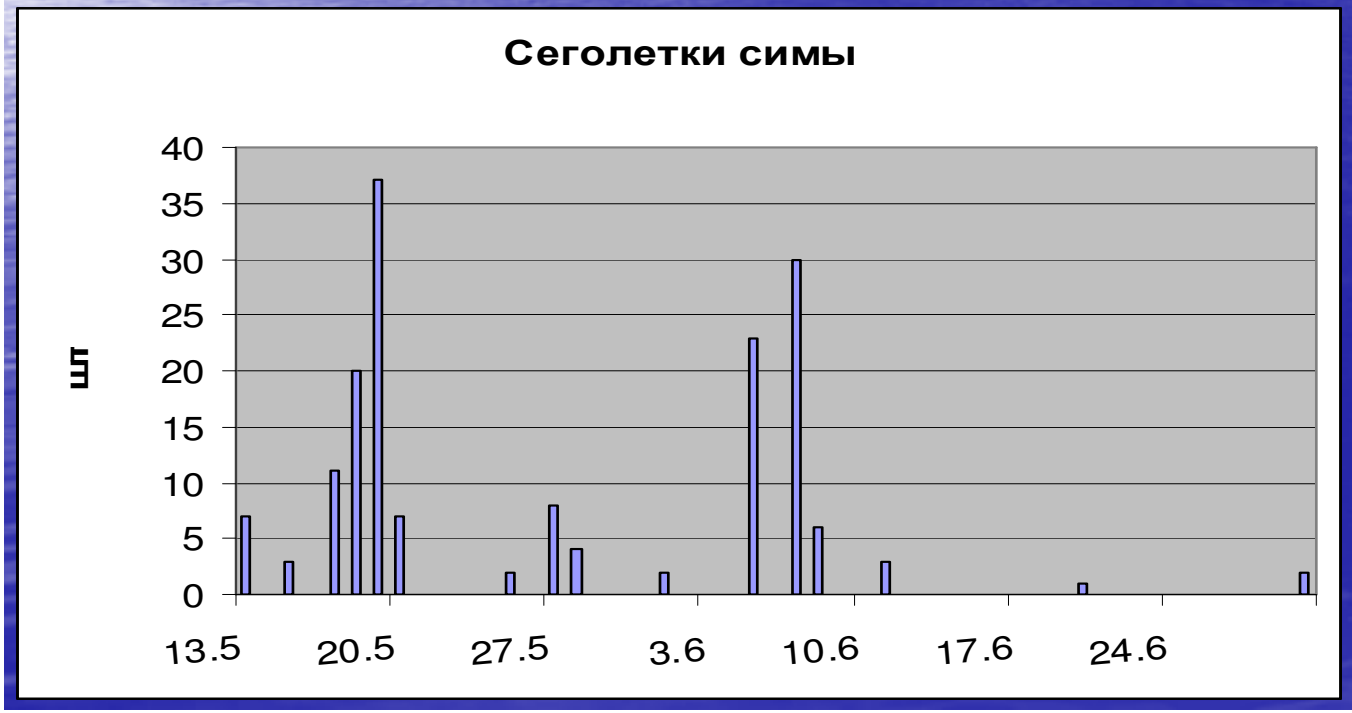

Juveniles count by seine


Underwater survey in Taranay River


Salmon eggs in spawning redds density and survival rate study

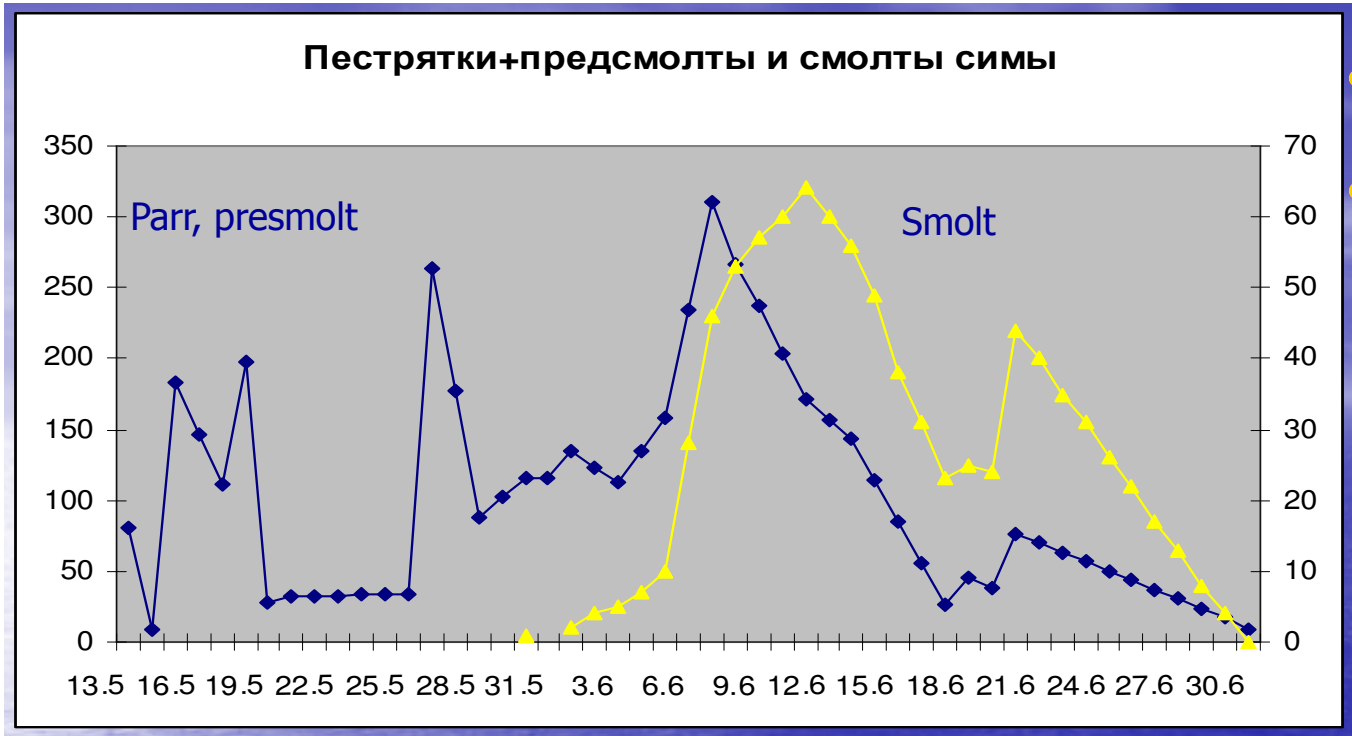


Taranay River, 2008. Accounts of numbers pink smolts by different methods (on the left - standard methods, on the right - rotary trap). The period 13.05 - 13.06. (SakhRybvod data).



Taranay River, 2008.

Migration intensity of yearling masu.



- Migration intensity of yearling masu.
- Accounts of numbers masu parr, smolts, presmolts by different methods (on the left - standard methods, on the right - rotary trap).

Taranay River, 2008

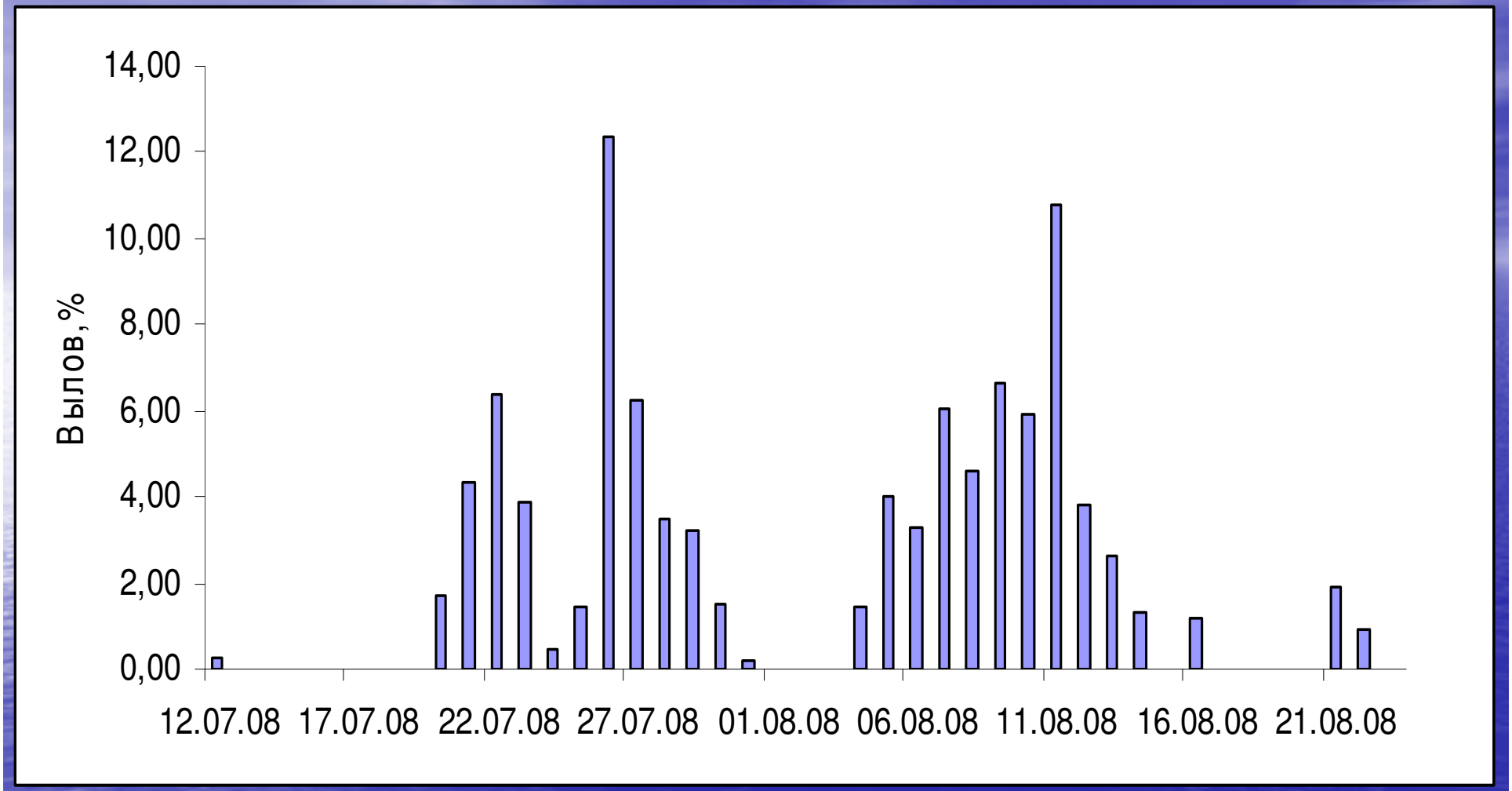
Migration intensity of Pacific lamprey

Square of spawning grounds in Aniva Gulf test rivers

River	Square of spawning ground, thous. m² (SakhNIRO data)				
	Before 1993	1994	1995	1998	Last estimation
Анастасия (Anastasia)	6,0	6,0	6,0	6,0	6,0
Атласовка (Atlasovka)	1,2	1,2	1,2	1,2	1,2
Могучи (Moguchi)	24,6	24,0	24,6	21,6	22,8
Найча (Naicha)	**119,5**	**113,0**	**119,5**	**119,5**	**113,0**
Медведевка (Medvedevka)	7,3	17,0	7,3	7,3	7,3
Кура (Kura)	**204,4**	**204,4**	**204,4**	**147,0**	**175,7**
Ульяновка (Ul'yanovka)	86,0	86,0	86,0	36,2	61,1
Максимкина (Maximovka)	5,0	5,0	5,0	5,0	5,0
Тамбовка (Tambovka)	161,0	161,0	161,0	46,8	103,9
Крестьянская (Krestyanskaya)	2,9	2,9	2,9	2,9	2,9
Урюм (Urum)	176,0	176,0	140,3	140,3	140,3
Бачинская (Bachinskaya)	11,3	11,3	11,3	11,3	11,3
Починка (Pochinka)	1,4	1,4	1,4	1,4	1,4
Ольховатка (Olkhovatka)	3,5	3,5	3,5	3,5	3,5
Таранай (Taranay)	**263,0**	**263,0**	**103,7**	**118,7**	**103,7**
Лютога (Lutoga)	936,0	983,0	945,4	535,0	735,5
Все реки (Total)	20009,1	2058,7	1823,5	1203,6	1494,6

Pink and chum salmon spawning redds survey in Naycha and Taranay Rivers, results of the spawning square estimation (SakhRybvod data)

Rates	Mean number of pink eggs			Mean number of chum eggs		
	live	dead	survival rate, %	live	dead	survival rate, %
Naycha River	93	50	**65.0**	135	42	**76.3**
Taranay River	228	91	**71,5 %**	472	169	**73,6 %**
Spawning ground square						
Naycha River	Total square of pink salmon spawning grounds area - 176319 m^2 Portion of total water surface square - 28,2 %					
Taranay River	Total square of pink salmon spawning grounds area - **169217** m^2 Portion of total water surface square - **16,5%**					



Dynamics of the pink salmon commercial catches by set nets near Kura River mouth, 2008. (SakhNIRO data)

Anadromous and freshwater fishes in the test rivers of Aniva Gulf

The list of freshwater and anadromous fishes of Kura-Naycha Rivers

Fam. Petromyzontidae	**Fam. Cyprinidae**
1. *Lethenteron japonicum* (Martens) - Pacific lamprey	12. *Tribolodon hakuensis* (Günther) – Big-scaled redfin dace
2. *Lethenteron reissneri* - riverine lamprey	**Fam. Cobitidae**
Fam. Salmonidae	13. *Barbatula toni* (Dybowski) – stone loach
3. *Oncorhynchus keta* (Walbaum) – chum salmon	
4. *Oncorhynchus gorbuscha* (Walbaum) - pink salmon	**Fam. Gasterosteidae**
5. *Oncorhynchus masou* (Brevoort) – cherry salmon	14. *Gasterosteus aculeatus* (Linnaeus) – three-spined stickleback
6. *Parahucho perryi* (Brevoort) – Sakhalin taimen	
7. *Salvelinus leucomaenis* (Pallas) – white spotted char	**Fam. Cottidae**
8. *Salvelinus malma krascheninnikovi* (Walbaum) – Dolly varden char	*15. Cottus amblystomopsis* Schmidt – sakhalin sculpin
9. *Salvelinus malma curilus* (Walbaum) – Dolly varden char, local form	**Fam. Gobiidae** 16. *Chaenogobius urotaenia Takagi - Urotenia*
Fam. Osmeridae	**Fam. Pleuronectidae**
10. *Hypomesus olidus* (Pallas) – pond smelt	17. *Platichthys stellatus (Pallas)* – *star* flounder
11. *Osmerus mordax* (Mitchill) – Asiatic smelt	

Cherry Salmon. Fry

Cherry salmon, stream type. Parr – age 1+

Cherry salmon smolts. Age 1+ - 2+

Adult cherry salmon

Pink salmon. Spawning male

Pink Salmon. Spawning female

Chum salmon fry

Chum salmon adult male

Sakhalin taimen juvenile

Head of Sakhalin taimen

Adult Dolly Varden male (riverine form)

White spotted char

Pacific redfin dace

Stone loach

Nine-spined sticklback

Results of monitoring research in 2008

- 1. Complex monitoring of Pacific salmon abundance and their habitats is carried out.
- 2. Hydrological and meteorological data for test rivers are collected. Data of the water temperature and water level changes in 3 rivers are collected.

- 3. 15 fish species (9 Families) live or enter river to spawning. The pink salmon is most abundant. Species of Salvelinus, Osmerus and Tribolodon genera are numerous as well.

- 4. Masu, char, white spotted char presents and spawn in all test rivers.

- 5. Spawning grounds of Sakhalin taimen were not found, as well as it's juveniles.

- 6. Number of pink salmon spawners salmon has changed from 220 to 391 thousand individuals (average – 294,2 thousand individuals), fish density – from 125 to 223 individuals/100 м^2 (average– 167,5 individuals/100 м^2). Number of masu salmon in the river basin has rather high level from 1 to 10 thousand individuals. Spawning area square in the test river is 175,7 thousand м^2. About a quarter of it belongs to masu salmon spawning area.

- 7. Salmonid abundance in Aniva Gulf rivers is at high level. Average commercial catch is about 19,7 million individuals (3,5 – 47,4 million individuals). Biological characteristics of pink salmon (body length, sex ratio) changed from the beginning to the end of spawning migration.

- Threats for reproduction: masu salmon sport fishery increased. In 2008 about one thousand individuals of masu salmon were caught in the Kura River. About 100-140 spawners have spawn in the river.

Thank you for attention