JSC Gidrostroy is a private company established in 1991. Today, it is one of the largest fish processors in the Russian Far East and owns and operates fish breeding, catching and processing facilities located on Iturup Island.

Slide 1

As an example, 21 thousand tons of pink and 5.5 thousand tons of chum were caught in Kurilskiy and Prostor Bays in 2010. All the fish is processed with the company's own fish processing facilities.

Slides 2 and 3

The main product is frozen fish, produced for both domestic and foreign consumption. Products from the Gidrostroy group of companies have repeatedly been a winner of the "100 Best Goods of Russia" competition. The company is listed in the European Commission register.

Meanwhile, Gidrostroy is not only engaged in fishing. It also pays great attention to the reproduction of resources. A number of activities are annually held both to preserve and protect salmon spawning areas and to ensure reproduction of chum and pink in hatcheries.

Slides 4, 5 and 6

JSC Gidrostroy hatcheries release around 190 mln juvenile pink and chum, which equates to approximately 27 percent of juvenile releases in the Sakhalin Region.

Slide 7

Apart from this, Gidrostroy is also the largest construction contractor on the Kuril Islands. Using its own funds, the company has built the following facilities in 1991–2011:

- 4 modern fish processing plants on Iturup, Shikotan and Sakhalin Islands;
- a deepwater, ice-free mooring in Olya Bay, Iturup Island;
- a hatchery in Olya Bay;
- 2 cold storage facilities (7,000 tons in capacity);
- a sports center in Kurilsk;
- 2 modern buildings for accommodation of seasonal workers;
- engineer support facilities.

In addition, vital social facilities have been built on Iturup using federal funds: A kindergarten in Reydovo Village, a geometrical power plant, residential buildings, roads, and an airport.

JSC Gidrostroy is the primary employer on Iturup Island and is responsible for the livelihood of most of its inhabitants. The company is also the primary tax payer in the Kurislkiy District.

Four years ago, after analyzing and assessing the catch and reproduction of pink and chum salmon on Iturup Island, and the fishery operations management system, we have decided to initiate a process of obtaining an international environmental certificate.

We have performed significant research that has allowed us to take a more thorough and detailed look at the situation with harvested species populations. The resulting data has confirmed the intentions of our company to carry out fishery operations in accordance with the main principles of preservation and sustainable development of aquatic biological resources in Iturup Island's coastal waters.

In order to obtain such a certificate, the following activities have been carried out:

- development of the genetic characteristics of chum populations in Kurilskiy and Prostor Bays
- determination of the tagging schedule for hatchery juvenile fish
- identification of harvested populations of pink and chum
- determination of the degree of impact of catch on by-catch species.

The following is a brief explanation of some research findings. More detailed reports are available at www.gidrostroymsc.com.

In 2009–2010, the by-catch assessment of a number of different fish species was carried out during pink and chum harvesting in Kurilskiy and Prostor Bays, on Iturup Island.

The following indicators were analyzed:

1) species composition of the by-catch;

2) quantities of the by-catch;

3) biological characteristics of the by-catch (age, size, weight, sex ratios, etc.).

In the coastal waters of Iturup Island, some 70 fish species were found. In the course of a 2 year observation period, held during pink and chum harvesting in Kurilskiy and Prostor Bays, 41 fish species of 18 blood lines were found (Table 2).

Table 2. Fish species found in the by-catch during pink and chum harvesting in Kurilskiy and Prostor Bays in 2009–2010.

Blood Line	Genus	Species / Subspecies
1	2	3
Salmon *Salmonidae* (Cuvier, 1816)	Pacific Salmon *Oncorhynchus* (Suckley, 1861)	Chum *O. Keta* (Walbaum, 1792)
		Pink *O. Gorbuscha* (Walbaum, 1792)
		Blueback Salmon *O. Nerka* (Walbaum, 1792)
		Silver Salmon *O. Kisutch* (Walbaum, 1792)
	Chars *Salvelinus* (Richardson, 1836)	Dwarf Char (Dolly Varden) *S. Malma Curilus* (Pallas, 1814)
		Sakhalin Char *S. Leucomaenis* (Pallas, 1814)
Carps *Cyprinidae* (Fleming, 1822)	Redfins *Tribolodon* (Sauvage, 1883)	Pacific Redfin *T. Brandtii* (Dybowski, 1872)
Combfish Hexagrammidae	Greenlings *Hexagrammos* (Tilesius, 1810)	Rock Greenling *H. Lagocephalus* (Pallas, 1810)
		Tenner crab, masked greenling *H. Octogrammus* (Pallas, 1814)
		White-spotted Greenling *H. Stelleri* (Tilesius, 1810)
	Okhotsk Atka Mackerel *Pleurogrammus* (Gill, 1861)	Lockington *P. Azonus* (Jordan & Metz, 1913)
Firefish *Scorpaenidae*	Rockfish *Sebaster*	Bergall *S. Glaucus* (Hilgendorf, 1880)

(Risso)	(Cuvier, 1829)	Catfish (Mochokidae) *S. Steindachneri* (Hildendorf, 1880)
		Owston's Rockfish *S. Owstoni* (Jordan et Thompson, 1914)
		Threestripe Rockfish *S. Trivitatus* (Hildendorf, 1880)
Flatfish, or Right-eyed Flounders *Pleuronectidae* (Rafinesque, 1815)	Dabs *Limanda* (Gottsche)	Sand Flounder *L. Punctatissimus* (Steindachner, 1879)
	Rock soles *Lepidopsetta* (Gill)	Dusky Sole *L. Mochigarei* (Snyder, 1911)
	Blackbacks *Pseudopleuronectes* (Bleeker)	Cresthead Flounder *P. Schrenki* (Schmidt, 1904)
		Dark Flounder *P. Obscurus* (Herzenstein, 1890)
		Yellow Stripped Flounder *P. Herzensteini* (Jordan & Snyder, 1901)
	Petrale Sole *Eopsetta*	Grigoriev Flounder *E. Grigorjewi* (Herzenstein, 1890)
	Christmas Flounders *Liopsetta* (Gill, 1864)	Stripped Flounder *L. Pinnifasciata* (Kner, 1870)
	Plaice *Cleisthenes* (Jordan et Starks)	Plaice *C. Herzensteini* (Schmidt, 1904)
	Craig Flukes *Glyptocephalus* (Gottsche)	Far Eastern Witch Flounder *G. Stelleri* (Schmidt, 1904)
	Scaly-eyed plaices *Acanthopsetta* (Schmidt)	Nadezhny Flounder *A. Nadeshnyi* (Schmidt, 1904)
	Flounders *Platichthys* (Girard, 1854)	Great Flounder *P.Stellatus* (Pallas, 1787)
	Barfin Flounder *Verasper* Jordan et (Gilbert, 1898)	Barfin Flounder *V. Moseri* (Jordan et Gilbert, 1898)
Sea Snails Liparidae	Snailfish *Liparis* (Scopoli)	Snailfish *L. Ochotensis* (Schmidt, 1904)
Sea toads, or Bullheads *Cottidae* (Bonaparte, 1831)	Horned Sculpins, or Shorthorn Sculpins *Myoxocephalus* (Tilesius, 1811)	Far Eastern Sculpin *M. Stelleri* (Tilesius, 1811)

	Staghorn Sculpins *Gymnocanthus* (Swainson)	Staghorn *G. Herzensteini* (Jordan et Starks, 1904)
	Irish Lords *Hemilepidotus* (Cuvier)	Banded Irish Lord *H. Gilberti* (Jordan et Starks, 1904)
Sea Ravens *Hemitripteridae*	Silver-spotted Sculpins *Blepsias* (Cuvier)	Crested Sculpin *B. Bilobus* (Cuvier, 1829)
Queenfish *Carangidae* (Rafinesque)	Samson Fish, Sea Kingfish *Seriola* (Cuvier)	Flat Amberjack *S. Lalandi* (Valenciennes, 1833)
Lumpfish, Mollets Cyclopteridae (Bonaparte)	Smooth Lumpsucker *Aptocyclus* (La Pylaie)	Lumpsucker *A. Ventricosus* (Pallas, 1769)
Prickles *Stichaeidae*	Ascoldia *Ascoldia* (Pavlenko)	Pavlenko's Red Blenny *A. Variegata* (Pavlenko, 1910)
	Prickles *Stichaeus* (Reinhardt)	Grigoriev's Prickle *S. Grigorjewi* (Herzenstein, 1890)
Deep-sea Rattails *Coryphaenidae*	Dolphin fish *Coryphaena* (Linnaeus, 1758)	Common dolphin fish *C. Hippurus* (Linnaeus, 1758)
Tetraodontidae Blowfish, Swellfish *Tetraodontidae* (Bonaparte)	Pufferfish *Takifugu* (Abe)	Swell Fish *T. Porphyreus* (Temminck & Schlegel, 1850)
Sandfish *Trichodontidae*	Japanese Sandfish *Arctoscopus* (Jordan et Evermann)	Japanese Sandfish *A. Japonicus* (Steindachner, 1881)
Catfish *Anarhichatidae* (Gill)	Lancet Fish *Anarhichas* (Linnaeus)	Bering Wolffish *A. Orientalis* (Pallas, 1814)
Blennies *Pholidae* (Gill)	*Rhodymenichthys* (Jordan et Evermann)	Stippled Gunnel *R. Dolichogaster* (Pallas, 1814)
Codfish Gagidae (Rafinesque, 1815)	Navagas *Eleginus* (Fisher, 1830	Far Eastern Navaga *E. Gracilis* (Tilesius, 1810)
Mackerels Scomdridae	*Scomber* (Linnaeus, 1758)	Pacific Mackerel *S. Japonicus* (Houttuyn, 1782)

As the result of our works, we have created photo albums of the species found along with their description.

Slides 8 and 9

According to our findings, by-catch species are numerous, yet sporadic.

Slides 10 and 11

Table 3. Most common species of fish found in by-catch, Kurilskiy Bay, long-haul seines.

Month	Pink Catches Inspected, Tons	Most Common Species of Fish Found in By-catch, Tons								
		Dolphin fish	Redfins	Blen-nies	Gobies	Green-lings	Flatfish	Rockfish	Catfish	Sandfish
July	50.5	-	0.0055	0.0017	0.088	0.219	0.0842	0.024	0.0057	0.0001
August	680.22	0.0739	0.0028	0.0003	0.0709	0.0218	0.0784	0.0068	0.0049	-
September	429	0.0286	0.0077	-	-	0.00148	0.0009	-		-
Total	**1,159.72**	**0.1025**	**0.016**	**0.002**	**0.1589**	**0.0242**	**0.164**	**0.0308**	**0.0106**	**0.0001**

Table 4. Most common species of fish found in by-catch, Prostor Bay, long-haul seines.

Month	Pink Catches Inspected, Tons	Most Common Species of Fish Found in By-catch, Tons								
		Dolphinfish	Redfins	Blen-nies	Gobies	Green-lings	Flatfish	Rockfish	Navaga	Sandfish
July	21.76	-	0.0003	-	0.0057	0.028	0.052	0.0943	0.0074	0.022
August	500.28	-	-	0.0008	0.0236	0.268	0.130	0.087	0.0315	0.014
September	219	0.0017	-	0.0013	0.0045	0.0034	0.028	0.00015	0.0025	0.04
Total	**741.04**	**0.0017**	**0.0003**	**0.0021**	**0.0338**	**0.2994**	**0.21**	**0.18**	**0.0414**	**0.076**

It was demonstrated that pink and chum harvesting does not affect the status of populations found in by-catch, as such harvest is accidental.

Out of all Red Book species or those species forbidden for fishing, only the Sakhalin Taimen may be found around the stationary nets of Iturup Island. However, for the last 10 years, not a single case of trapping the Sakhalin Taimen in a stationary net has been registered.

A major program has been launched aimed at tagging fish, with a follow-up assessment of hatchery originated fish in catches.

Around the world, over 1.5 bln tagged juvenile salmon are being released annually using a large number of unique tags. Thus, 121 tags were used for tagging of 2009 generation chum. That is why the tagging procedures are preceded by significant preparation activities.

Starting from 2007, research began on the incubation of spawn, the quality of tagging, and the peculiarities of the temperature schedule in the hatcheries. Otoliths of non-tagged juveniles have been analyzed, and for each hatchery the best methods and timelines of tagging have been determined and the regimes have been developed making it possible to receive high quality tags on otoliths of juvenile fish being released. An individual tag type for each hatchery was selected.

From 2008, pink and chum have been tagged at all Gidrostroy hatcheries located on Iturup Island.

Slides 12 and 13

Table 5 demonstrates the number of tagged juvenile fish released by Gidrostroy hatcheries for three recent years.

Slide 14

Table. 5. Number of tagged juvenile fish released by Gidrostroy hatcheries.

Year of Tagged Juvenile Fish Released	Name of Hatchery	Species of Fish	Overall Release Number, Mln	Number of Tagged Juvenile Fish	
				Mln	Percent of Total Number of Juvenile Fish Release
2009	Kurilskiy	pink	67.4	7.32	10.86
		chum	18.7	2.3	12.3
	Reydovo	pink	42.24	42.24	100
		chum	23.89	23.89	100
2010	Kurilskiy	pink	58	48.9	84.3
		chum	27	11.7	43.3
	Reydovo	pink	42.2	42.2	100
		chum	26.4	26.4	100
2011	Kurilskiy	pink	73.335	73.335	100
		chum	20.641	20.641	100
	Reydovo	pink	42.856	42.856	100
		chum	26.556	26.556	100
	Olya Bay	chum	26.209	26.209	100

As you can see, by the third year of our work, we have selected such regimes and methods of tagging that make it possible to tag 100 percent of juveniles released from all hatcheries.

A thorough estimation of the quality of tags is held annually, with nonconforming tags described. In order to ensure a correct estimation of the origin of fish, collections of the otoliths of tagged juvenile fish are preserved. The results of such tagging are annually submitted to the NPAFC data base.

The second, significant portion of the tagging project consists in identification of tagged species which are caught as they return to their spawning areas. The procedures fall into 2 phases. At the first phase, before our tagged species were harvested, a study of microstructure of otoliths of chum and pink in 2007–2009 returning to Iturup Island had been conducted, in order to identify the potential presence of fish from other regions. No tagged fish from other regions were identified in the samples.

Beginning in 2010, studies have been conducted to identify tagged pink in spawning returns to Iturup Island.

The sampling principle for the return of tagged spawners was conditioned by certification requirements: The samples were taken at zaboykas of hatcheries, in base hatchery rivers, in tributaries of base rivers and in reservoirs not part of hatchery streams. In addition, salmon otoliths were selected from stationary nets in the area of Prostor and Kurilskiy Bays, where Reydovo and Kurilskiy hatcheries are located.

Slide 15

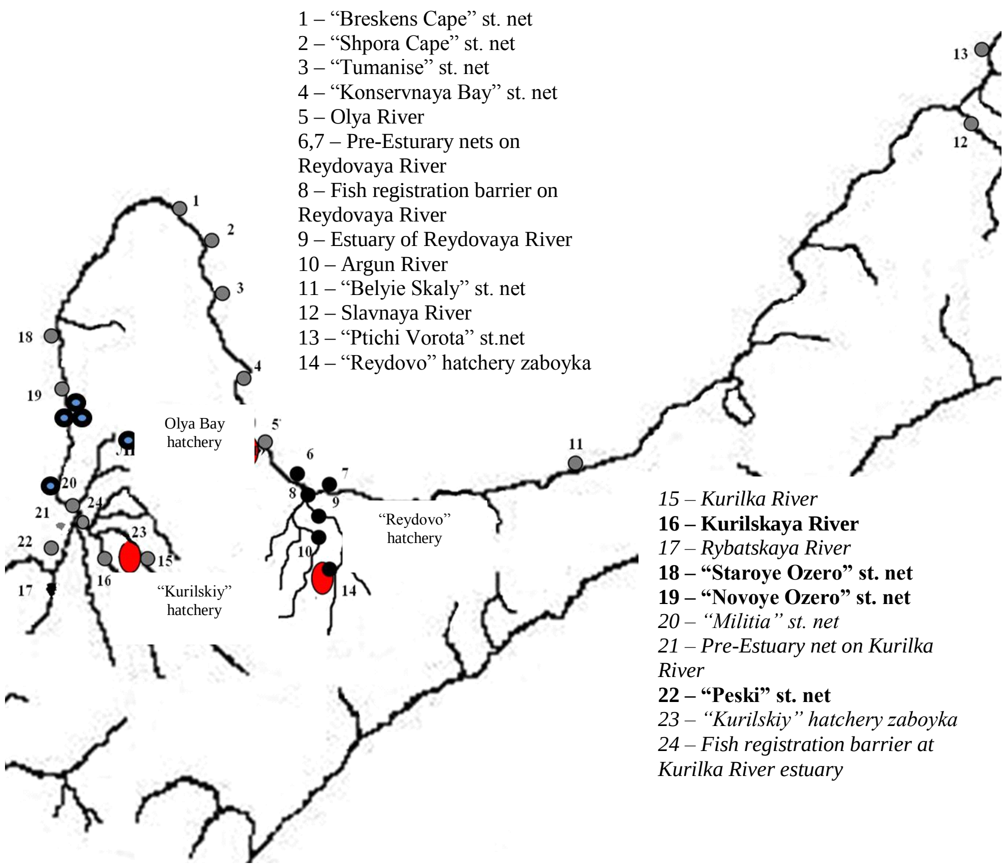


Figure 1. Layout of the sampling area for the identification of tagged chum and pink spawners, in the 2010 return to Iturup Island. Black color represents the collecting areas of otoliths identified during the 1st phase of research. Blue represents the 2nd stage identification. Grey represents the collecting areas of otoliths studied during the 3rd stage of work.

To identify hatchery spawners, 1,940 pink specimens were selected in the 2010 return. In order to check if specimens from other region are present in catches, 1,400 pairs of chum otoliths were collected.

As per the results of the work, the following conclusions can be drawn:

1. The portion of tagged pink for the whole period of studies is around 14.1 percent from the total number of spawners selected for analysis (Figure 6). Among the species tagged, those having Reydovo hatchery tags prevailed (11.8 percent), while tagged pink originating from Kurilskiy hatchery

accounted for 2.1 percent. Pink with Sakhalin Island hatcheries' tags was not identified in the 2010 return.

2. Tagged pink were found both on hatchery zaboykas and in estuaries of their base rivers and in stationary nets around hatcheries. In approaches of rivers not included in a base river system, sporadic tagged species were observed.

3. A high (up to 100 percent) portion of hatchery-originated pink were noted at zaboykas of Reydovo hatchery. The ratio of wild to hatchery-originated spawners in the estuary of Reydovaya River demonstrates a more delayed approach of hatchery pink Salmon, compared to those of wild spawners.

4. The collected data of tagged species in the reservoirs (which are not a part of a base river system) demonstrates the extent of exchange between spawners from different hatcheries, although the degree of straying is insignificant.

Slides 16 and 17

Table 6

Results of Identification of Hatchery Pink in Kurilsk Hatchery in Spawning Return, 2010

Collection Date	Area of Collection	Number of Hatchery Tags		Selection Scope	Point on Diagram
		Kurilsk	Reydovo		
Stationary Nets around Kurilsk Hatchery					
July 31, 2010	Peski, Militia stationary nets	0	0	98	22, 20
August 06, 2010	Staroye Ozero stationary net	0	0	88	18
August 13, 2010	Militia stationary net	0	0	56	20
August 24, 2010	Peski stationary net	2	1	45	22
August 30, 2010	Peski stationary net	3	2	48	22
September 05, 2010	Peski stationary net	2	1	47	22
September 10, 2010	Novoye Ozero stationary net	5	0	50	19
September 17, 2010	Pre-Estuary area of Kurilka River	10	0	43	21
Total		22	4	475	
Base River and Estuary Nets around Kurilsk Hatchery					
August 17, 2010	Kurilka River estuary	2	0	49	24
August 30, 2010	Kurilka River estuary	0	0	47	24
September 08, 2010	Kurilsk hatchery zaboyka	1	0	46	23
September 22, 2010	Kurilka River estuary	4	0	50	24
September 25, 2010	Kurilsk hatchery zaboyka	0	0	50	23
October 04, 2010	Kurilsk hatchery zaboyka	1	0	46	23
Total		8	0	288	

Spawning Areas around Kurilsk Hatchery					
September 10, 2010	Kurilka River	1	0	48	15
September 10, 2010	Kurilskaya River	0	0	48	16
September 13, 2010	Rybatska river estuary	0	1	50	17
Total		1	1	146	
Total around Kurilsk hatchery		31	5	909	

Table 7

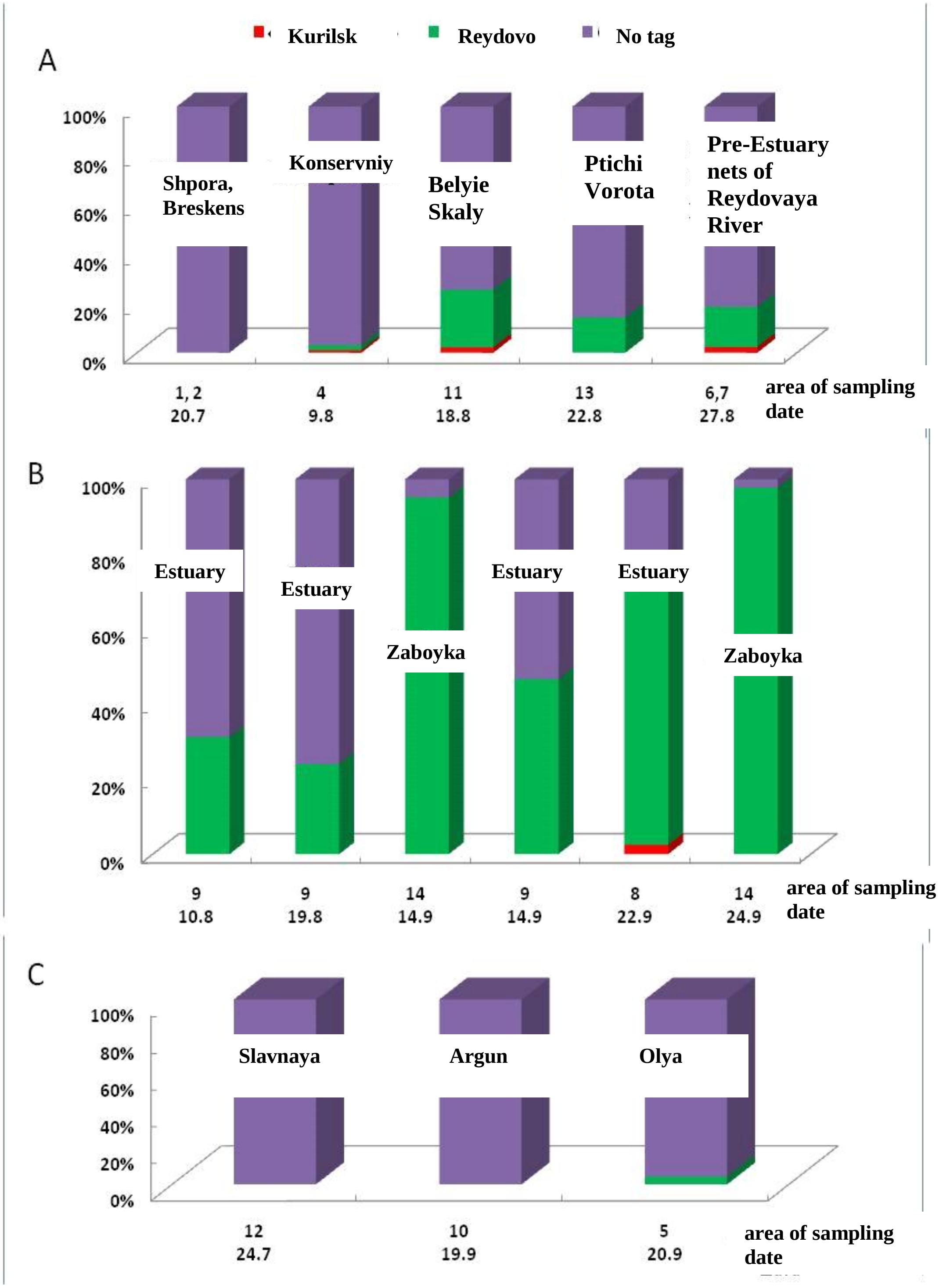
Results of Identification of Hatchery Pink in Reydovo Hatchery in Spawning Return, 2010

Collection Date	Area of Collection	Number of Hatchery Tags		Selection Scope	Point on Diagram
		Kurilsk	Reydovo		
Stationary Nets around Reydovo Hatchery					
July 20, 2010	Shpora, Breskens st. net	0	0	96	1, 2
August 09, 2010	Konservny st. net	1	2	96	4
August 18, 2010	Belyie Skaly st. net	1	11	47	11
August 22, 2010	Slavnaya, Ptichi Vorota st. net	0	7	49	13
August 27, 2010	st. nets at Reydovaya River	1	7	43	6,7
Total		3	27	331	
Stationary Nets around Reydovo Hatchery					
July 24, 2010	Slavnaya River	0	0	37	12
September 19, 2010	Argun River	0	0	47	10
September 20, 2010	Olya River	0	2	48	5
Total		0	2	132	
Base River and Stationary Nets around Reydovo Hatchery					
August 10, 2010	Reydovaya River estuary	0	15	48	9
August 19, 2010	Reydovaya River estuary	0	12	50	9
September 14, 2010	Reydovaya River zaboyka	0	39	41	14
September 14, 2010	Reydovaya River estuary	0	21	45	9
September 22, 2010	Fish registration barrier at Reydovaya River estuary	1	28	41	8
September 24, 2010	Reydovo hatchery zaboyka	0	43	44	14

Total		1	158	269	
Total around Reydovo hatchery		4	187	732	

The following slides demonstrate cuts of otoliths of pink mature adults bearing the tags of Kurilsk and Reydovo hatcheries Slides 18 – 21

On the following slide, we can see the occurrence of tagged species in various areas of sampling, and time line. Slide 22.



Again, please be aware that more detailed information is available for you at www.gidrostroymsc.com.

From 2006 to 2009, genetic characteristics of chum populations was compiled for chum reproduced at Kurilsk and Reydovo hatcheries. During the runs of chum spawners, work was carried out to collect and preserve samplings. Further on, in the laboratories of the Russian Academy of Sciences' N.I. Vavilov General Genetics Institute, these people (Slide 23) performed the studies of highly polymorphic DNA markers, mainly microsatellites.

In the course of those studies, DNA methods were developed that allowed for the identification of clear genetic differences between chum populations reproduced in different reservoirs and rivers.

Slide 24

Independent characteristics of Kurilsk and Reydovo populations and specifics of lake-type chum were proved, which allowed for solving the problem of their identification.

Slide 25

Prof. Lev Anatolyevich Zhivotovsky, who is here today, will explain his work to us in more detail.

Slide 26.

It is worth mentioning that for the last 3–4 years, Iturup Island has been the subject of a vast number of studies carried out by various scientific teams and organizations. We know that between 2007–2011, observations of the spawning rivers of Kunashir, Iturup and Paramushir Islands were conducted to locate new hatchery areas; and observations were made of aquatic littoral areas of The Kuril Islands, to locate areas of construction of sea farming and reproduction facilities. These are to be performed within the framework of the "Social and Economic Development of the Kuril Islands (Sakhalin Region) for 2007–2015" Federal Target Program (approved by the RF Government Decree No, 478 of August 09, 2006). The studies have been performed by VNIRO sector research institute (Moscow), together with SakhNIRO.

In September 2010, expeditionary studies were carried out on Iturup Island to collect genetic material for Taimen. The studies are in collaboration with Sakhalin Salmon Initiative and the N.I. Vavilov General Genetics Institute (L.A. Zhivotovsky).

In the period from August 25, 2011 to September 15, 2011, an integrated zoological expedition also worked on Iturup Island.

The members of the expedition were:

I.L. Tumanov, Doctor of Biology, Leading Research Fellow of the Western Affiliate Branch of B.M. Zhitkov All-Russian Hunting and Animal Breeding Research Institute (VNIIOZ), Saint Petersburg;

A.V. Abramov, Candidate of Biological Sciences, Senior Research Fellow of Theriology Laboratory at the Russian Academy of Sciences Zoological Institute, Saint Petersburg;

V.V. Platonov, Senior Custodian of Theriology Laboratory at the Russian Academy of Sciences Zoological Institute, Saint Petersburg;

M.V. Nazarkin, Candidate of Biological Sciences, Senior Research Fellow at the Russian Academy of Sciences Zoological Institute's Museum, Saint Petersburg.

One of the expedition’s tasks was to perform a preliminary assessment of the status of commercial animal populations, in particular the brown bear, and to give recommendations on control of its numbers.

As per the preliminary assessment on the territory researched, the numbers of brown bear are at least 300 animal units, while the estimated figures for the whole island territory are 500–600 animal units. The great number of predators that eat fish calls for the necessity of increasing salmon bypass to the spawning areas by 10 percent as compared to the norms during salmon runs. In addition, according to the preliminary data, there is no perceptible difference between the density in predatory populations in streams with hatcheries than in streams located far from hatcheries.

In summary, it may be said that the works performed were found to be useful not only for Gidrostroy but for Russian fishery science in general. In this lucky circumstance, production and science share the same level of interest. I would like to extend my heartiest thanks to all scientific organizations and individuals that have carried out this work. I look forward to our continued fruitful efforts in this direction.

Thank you for your attention.