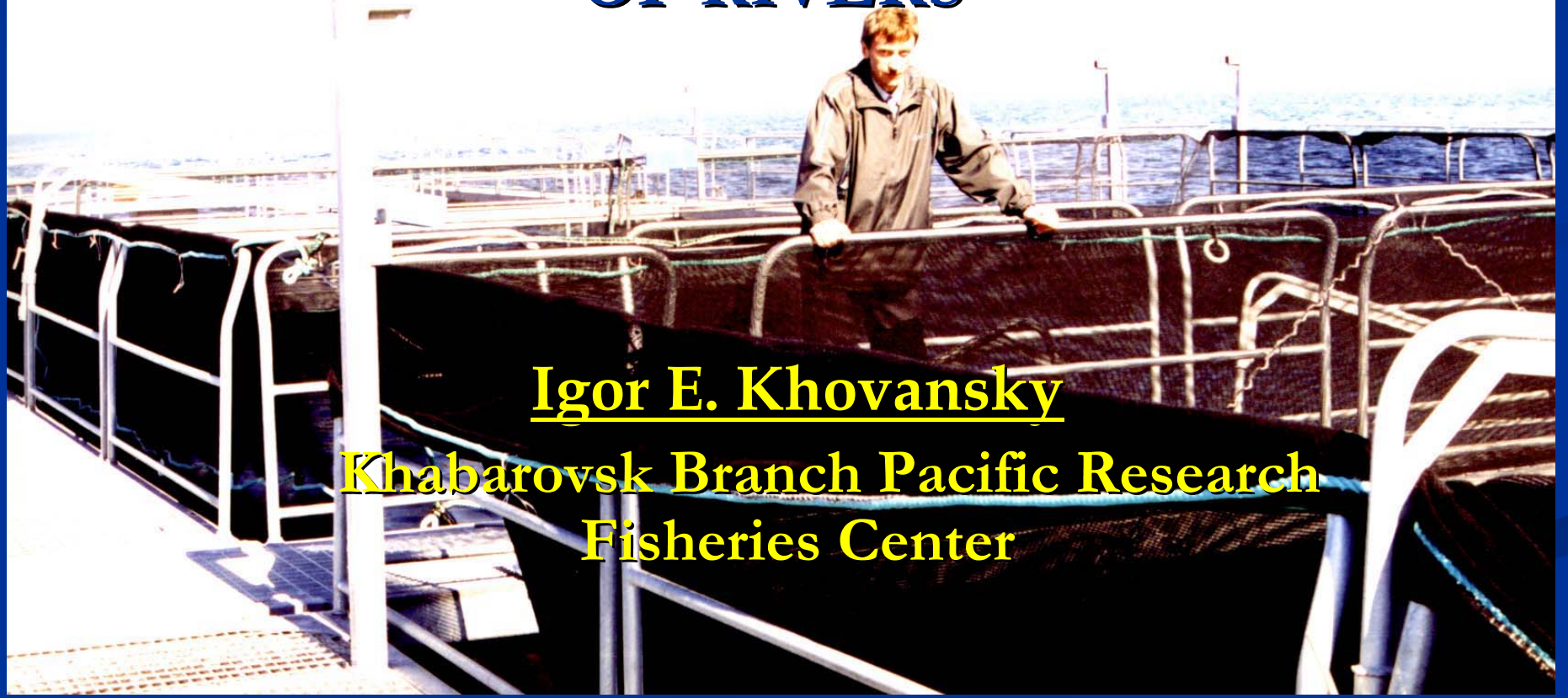
PERSPECTIVES OF SALMON SEA RANCHING IN THE COAST OF THE OKHOTSK SEA AND IN ESTUARIES OF RIVERS



Igor E. Khovansky

Khabarovsk Branch Pacific Research Fisheries Center

Main eliminating factors in the fresh water life cycle of salmon

Adult fish

Harvest

Predators

Poaching

Main eliminating factors in the fresh water life cycle of salmon

Eggs, larvae, fry

Fluctuations of water level

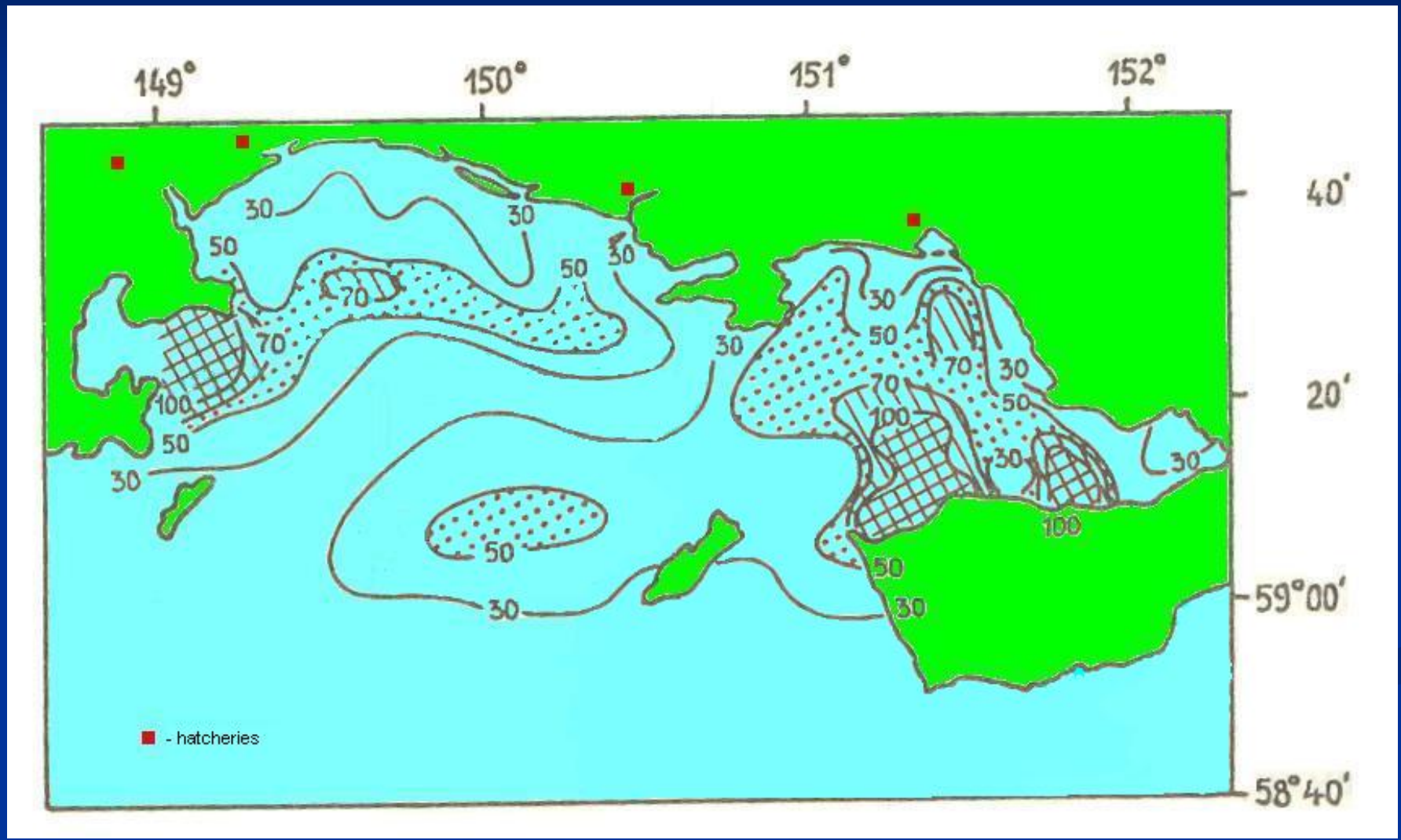
Flood flows

Freezing of channel

Predators

Food competition

Biomass of mesoplankton in the Taujskaya Guba of the Okhotsk Sea (% of probability) and locations of hatcheries



Elements of biotechnology

Freshwater (rivers, lakes, ponds)

- Holding of spawners, Stripping of mature reproductive products
- Incubation of fertilized eggs
- Farming of larvae
- Rearing of strong fry : chum and pink salmon – until 1 year; coho, sockeye, chinook salmon until 2 year
- Stocking of fry

Sea coast

- Holding of spawners, Stripping of mature reproductive products
- Rearing of strong fry : chum, pink, coho, sockeye, chinook salmon
- Stocking of fry

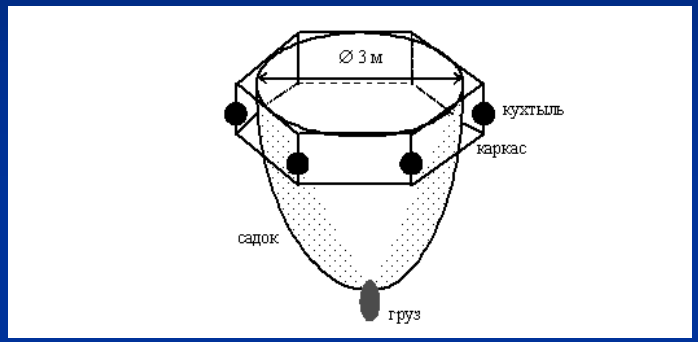
Favorable environmental conditions for sea ranching of salmon fry in the Taujskaya Guba

- Date of the rearing starting – First –second decade of June
- Water temperature – from 5-6 °C to 12-14 °C
- Salinity of water – from 20-26‰ to 30-35‰

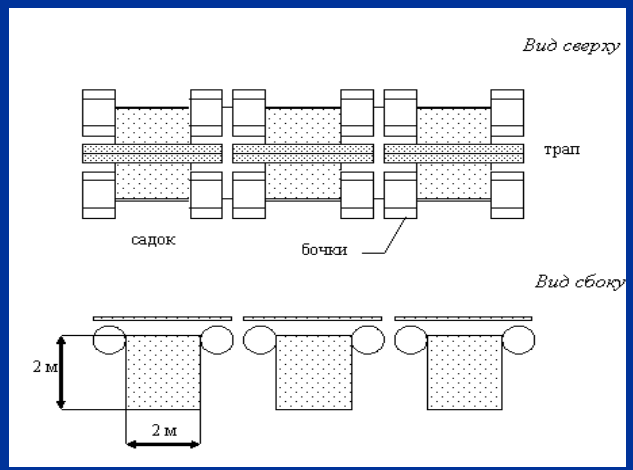
Sea ranching on the North-West Okhotsk Sea

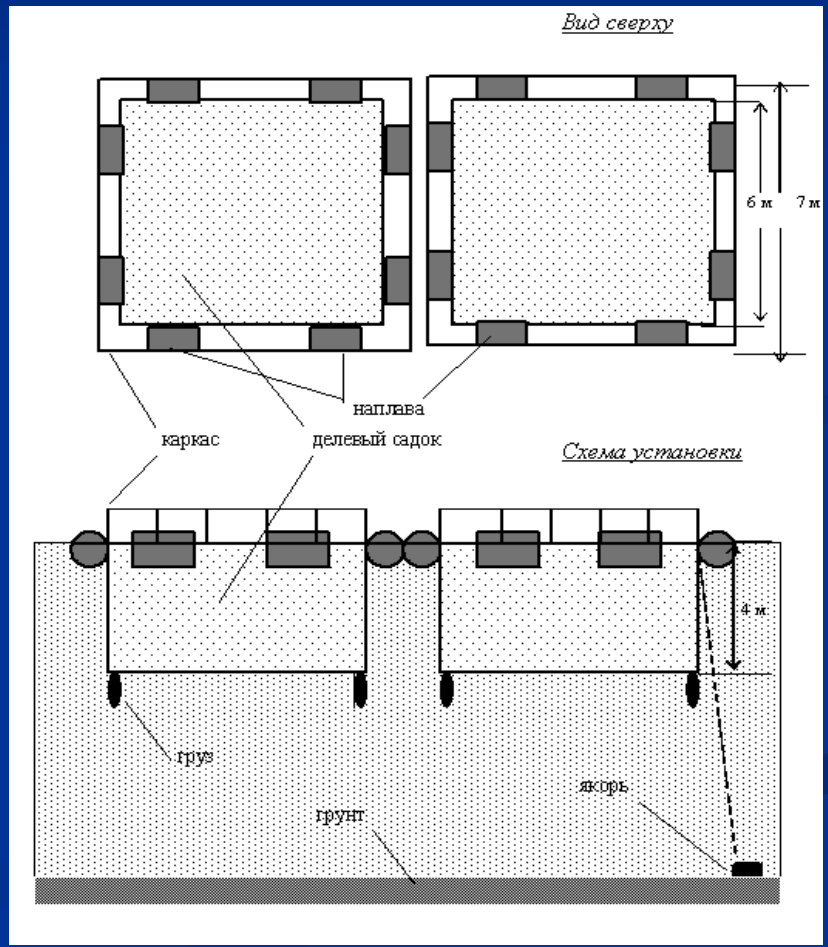
Construction of cages for sea ranching

View from above



Schema of mounting





Stocking of fry

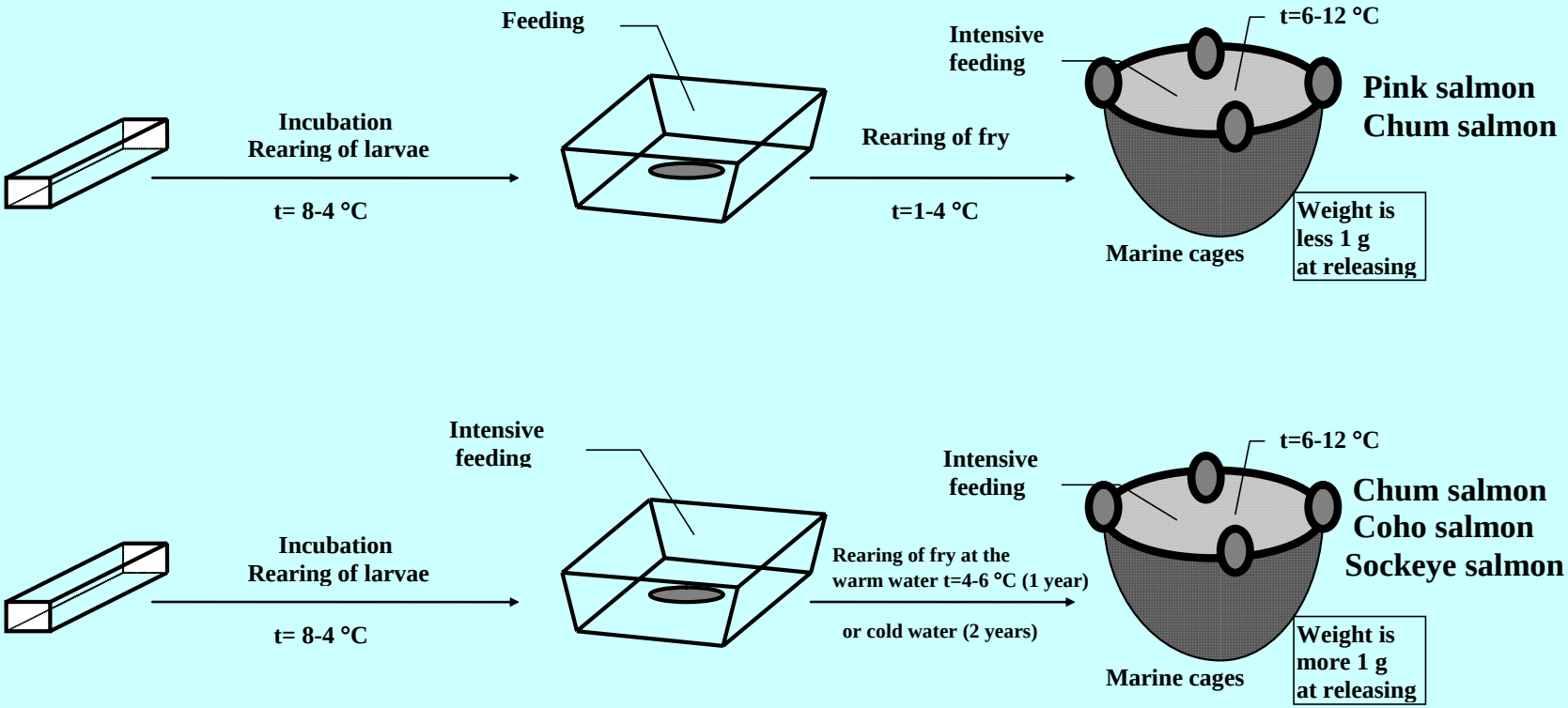
Feeding of fish in net cages

Feeding of fry

Results of experiments on sea ranching of chum

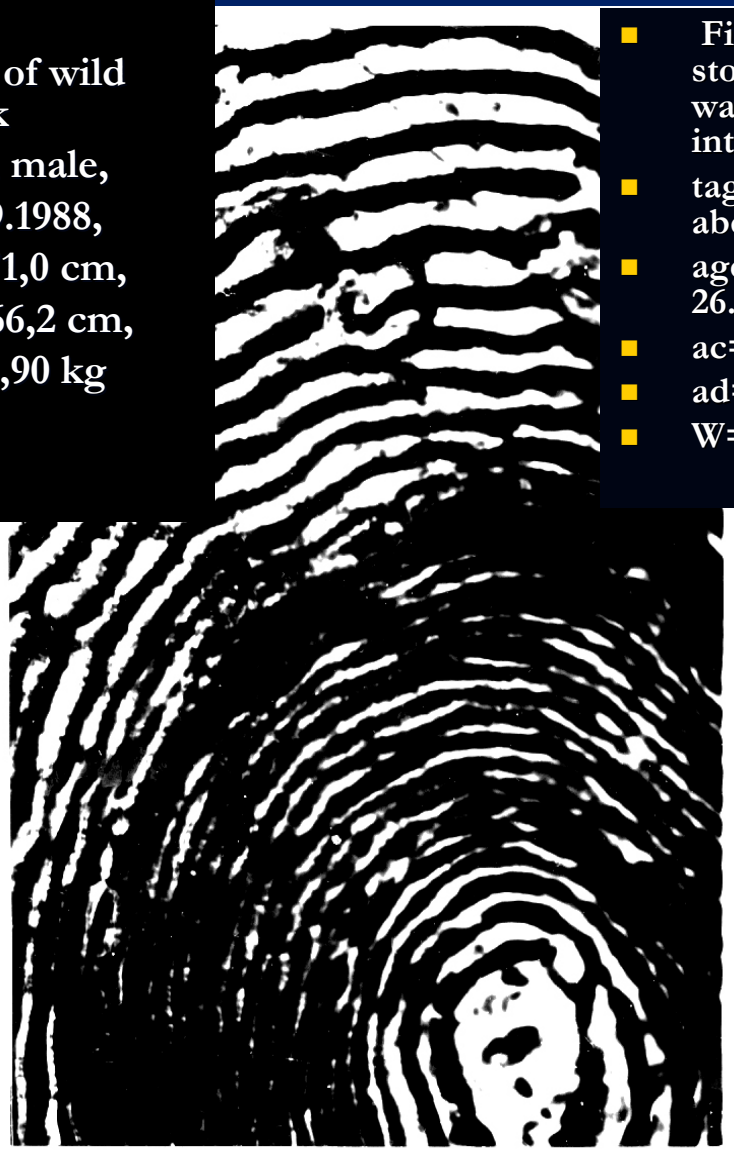
e of rearing	Number of cages	Number of fry, thousand ind.	Density thous.ind/ m3	Weight of one fish, mg		Relative increment of one fish, %	Total increment of all fish,kg	Productivity kg/m³	Needs of food kg/kg of fish increment	Survival rate, %
				Starting	Final					
Hatchery “Nuklya”										
15.08.87 г.	2	62	3,0	450	1030	128,9	34,8	1,7	-	96,7*
17.08.88 г.	4	425	8,0	378	1023	170,6	27,4	0,5	-	10,0*
08.08.89 г.	5	50	0,66	480	1172	144,2	26,0	0,3	-	75,0*
20.07.90 г.	4	112	1,75	412	828	101,0	40,1	0,6	-	86,0*
13.07.94 г.	4	1000	30,0	361	420	16,3	57,2	1,7	3,2	97,0
13.07.94 г.	1	10	5,0	361	552	52,5	1,8	0,9	2,8	96,0
13.07.94 г.	2	50	3,0	1077	1924	78,6	39,0	2,3	2,5	92,0
araya Vesyolaya Bay										
20.07.96 г.	2	960	10,0	354	1245	251,7	840,0	8,8	1,9	98,2
20.07.96 г.	1	480	10,0	475	643	35,4	79,3	1,7	1,8	98,3
20.07.96 г.	1	200	4,2	1158	1845	59,3	135,0	2,8	2,5	99,0
06–15.07.97 г.	1	143	3,6	413	1194	189,1	110,6	2,8	1,0	99,0
06–15.07.97 г.	6	1710	7,1	413	842	103,9	722,6	3,0	0,9	98,5
29.07.98 г.	5	460	1,9	1308	1580	20,8	124,5	0,5	3,4	99,5
31.07.98 г.	1	210	4,4	415	1323	218,2	190,1	4,0	2,2	99,7
28.07.00 г.	2	414	4,3	356	3812	970,8	1306,3	13,6	1,4	91,3

Biotechnological schema of aquaculture

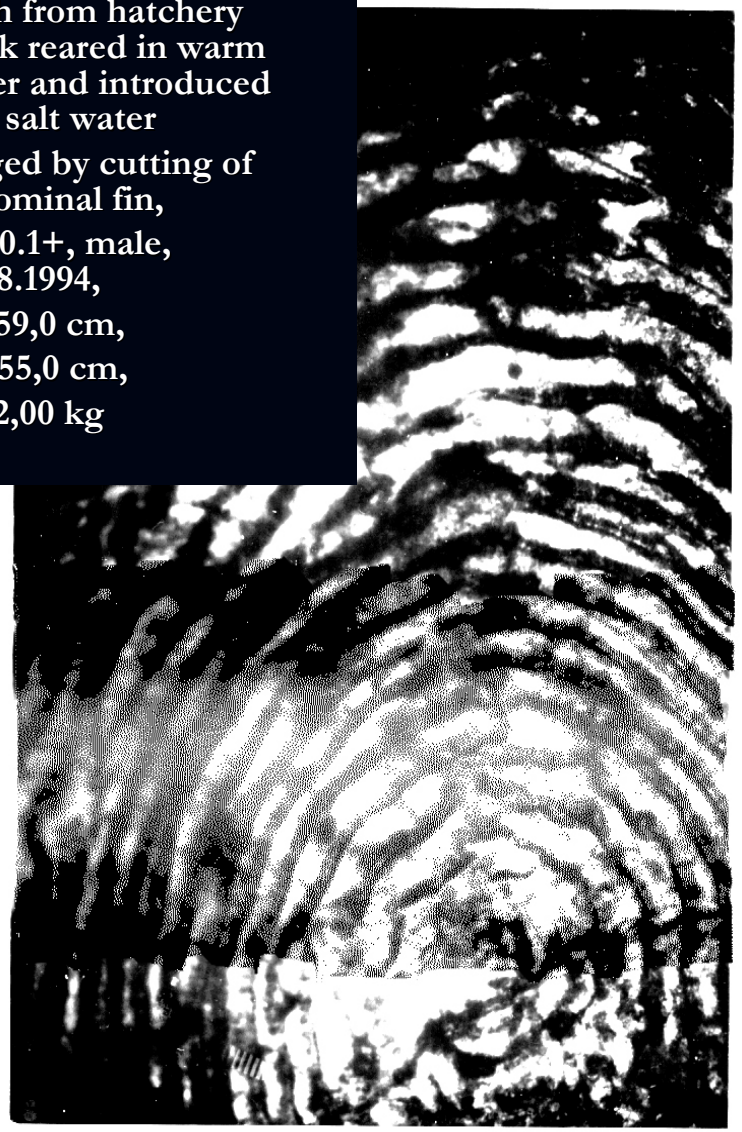


Structure of centre on the scale of coho salmon adults spawned in the Lankovaya River (tributary of the Ola River)

- Fish of wild stock
- 3.1+, male,
- 26.09.1988,
- ac=71,0 cm,
- ad=66,2 cm,
- W=4,90 kg



- Fish from hatchery stock reared in warm water and introduced into salt water
- tagged by cutting of abdominal fin,
- age 0.1+, male, 26.08.1994,
- ac=59,0 cm,
- ad=55,0 cm,
- W=2,00 kg



Holding of chum salmon spawners to complete maturation in the marine water (without releasing in rivers), the Staraya Vesyolaya Bay, the Taujskaya Guba

- **Catch of spawners by gill nets and introduction into cages – since 15 to 29 August**
- **Complete maturation of fish and stripping of mature reproductive products – since 2 to 9 September**
- **Survival Rate – 70%**
- **Water temperature – from 6 to 16 °C (8-9 °C)**
- **Salinity of water – 30-35‰**

Advantages of sea ranching

- Muscles keep the red color
- Fish are not infected by mycosis and bacteriological diseases
- No poaching effect
- No needs of regional transplantations of eggs for hatcheries

РОССИЙСКАЯ ФЕДЕРАЦИЯ

ПАТЕНТ

НА ИЗОБРЕТЕНИЕ

№ 2206988

Российским агентством по патентам и товарным знакам на основании Патентного закона Российской Федерации, введенного в действие 14 октября 1992 года, выдан настоящий патент на изобретение

СПОСОБ КУЛЬТИВИРОВАНИЯ ПРОХОДНЫХ ТИХООКЕАНСКИХ ЛОСОСЕЙ

Патентообладатель(ли):

см. на обороте

по заявке № 2001131508, дата поступления: 21.11.2001

Приоритет от 21.11.2001

Автор(ы) изобретения:

Хованский Игорь Евгеньевич

Патент действует на всей территории Российской Федерации в течение 20 лет с **21 ноября 2001 г.** при условии своевременной уплаты пошлины за поддержание патента в силе

Зарегистрирован в Государственном реестре изобретений Российской Федерации

г. Москва, ***27 июня 2003 г.***

Генеральный директор

А.Д. Корчагин

Thanks for your attention