



Department of artificial fish reproduction,
Siberian Research and Design Institute
of Fish Industry

“SIBRYBNIIPROJECT”

Authors:

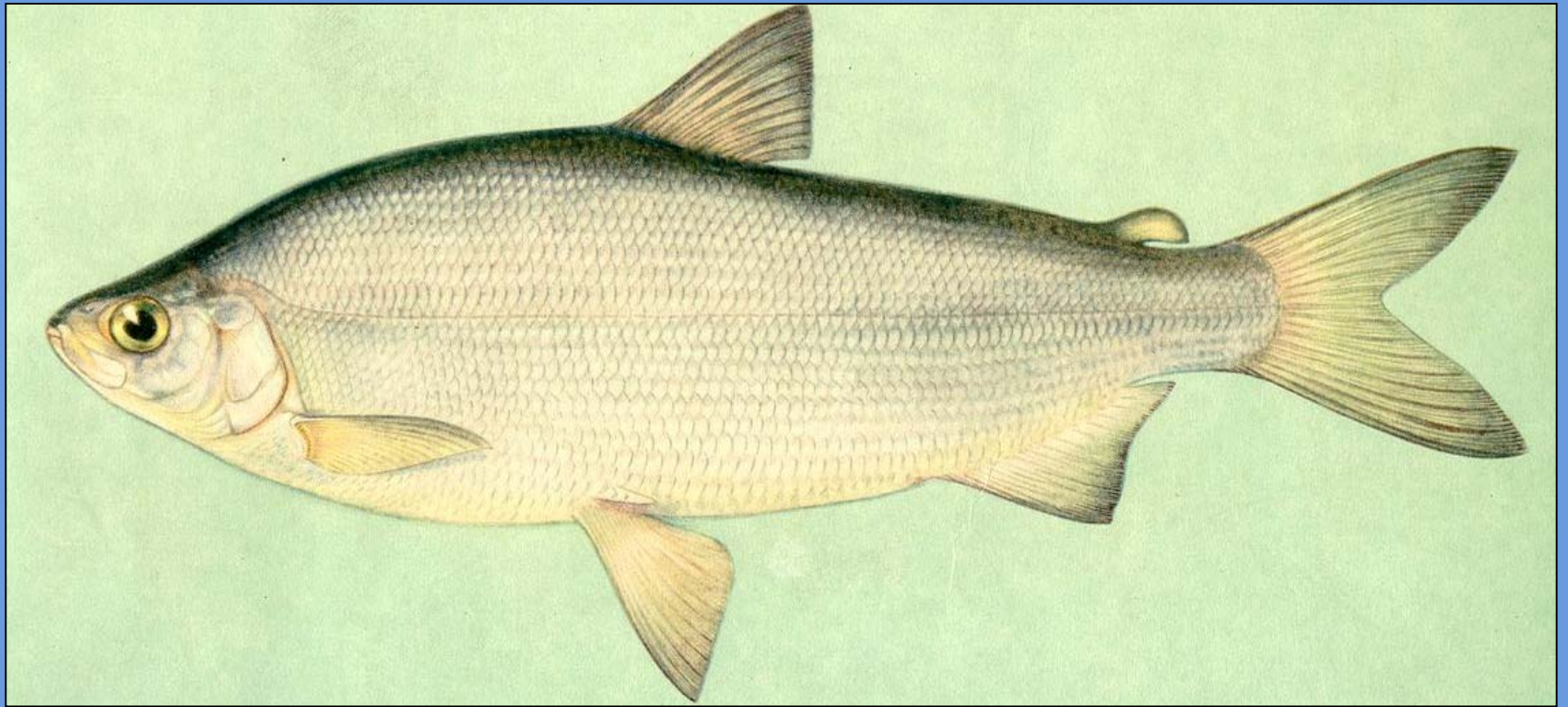
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Current Condition of Whitefish (Coregonidae) Artificial Reproduction in Russia

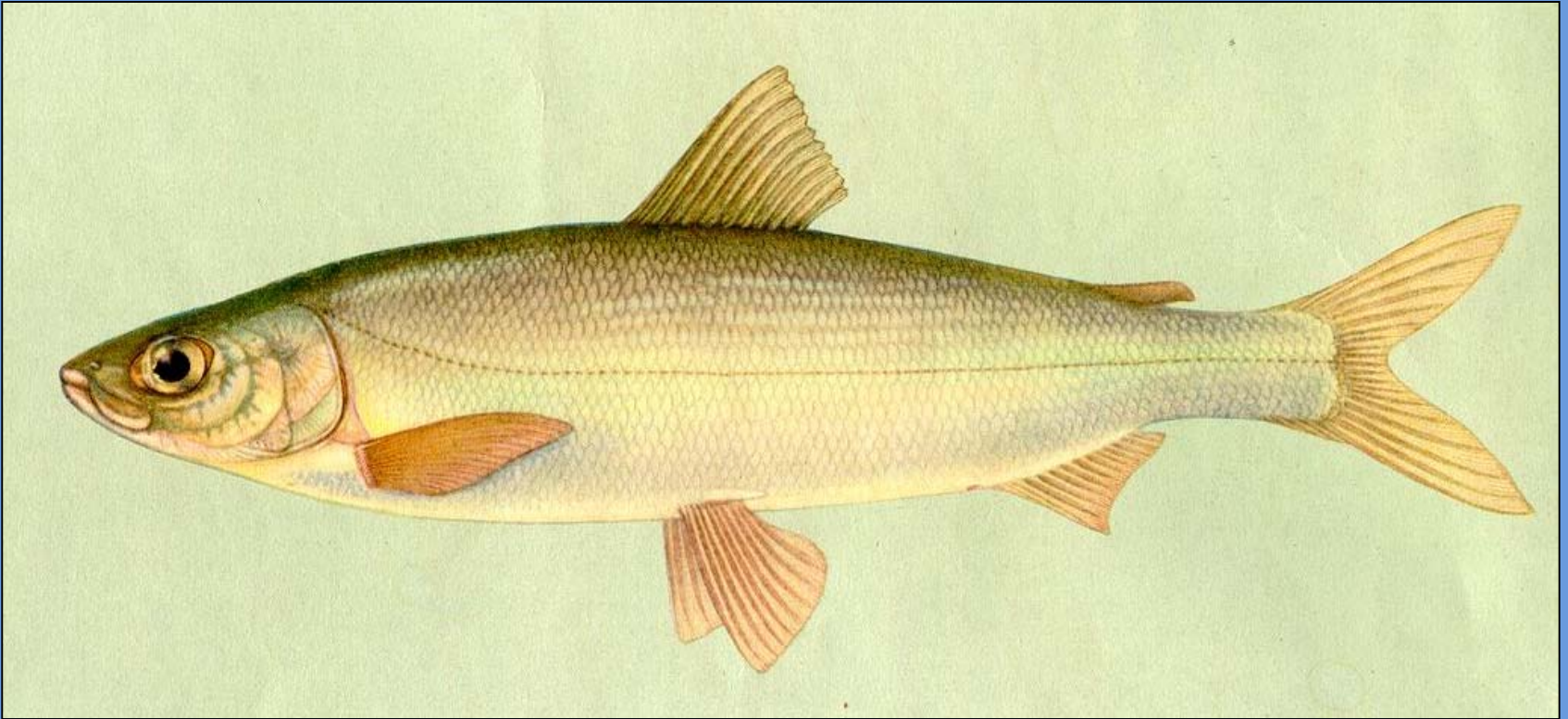
Speaker - Simonova Olga
09.2001



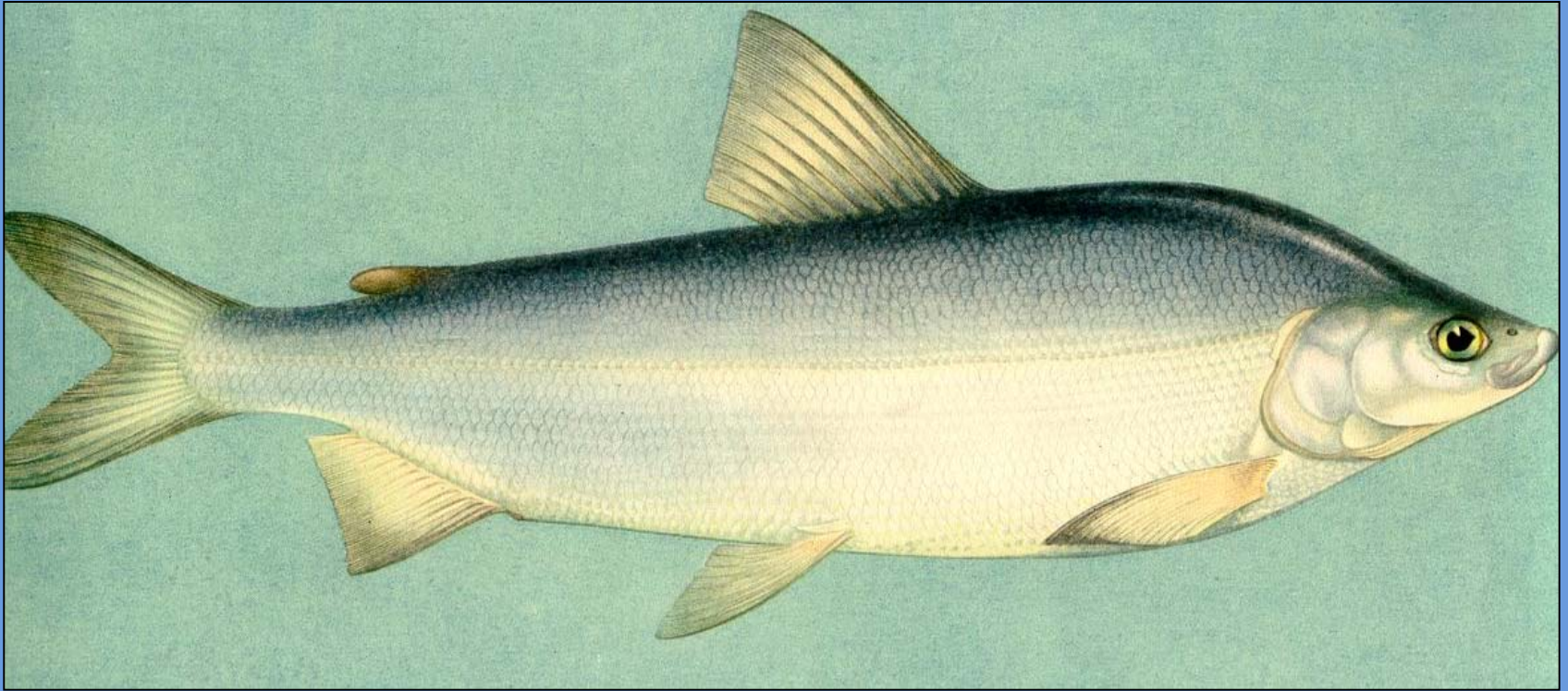
Coregonus sardinella



Coregonus peled



Coregonus autumnalis



Coregonus muksun

Main whitefish production areas



Table 1 – Actual and potential whitefish production values
(thousand tons)

Region	Actual production			Potential production		
	1940- 1960-	1970- 1980-	1990-	Natural reproduction	Artificial reproduction	Total
Northern-East and North of European territory of Russia	3-4	1.6- 2.5	1.3- 1.7	2.0	5-6	7-8
Ural	0.1- 0.8	1.3- 2.8	1.3- 1.6	0.1	8-9	8-9
Western Siberia	10-17	6-17*	4-9**	9.0	19-24	26-30
Eastern Siberia	10-17	8-10	6-9	12.0	6-7	18-21
Far East (from Chukotka until Amur river)	2-3	2-3	1-2	2.0	2	4
TOTAL	25-34	19-28	10-17	25	40-45	65-70

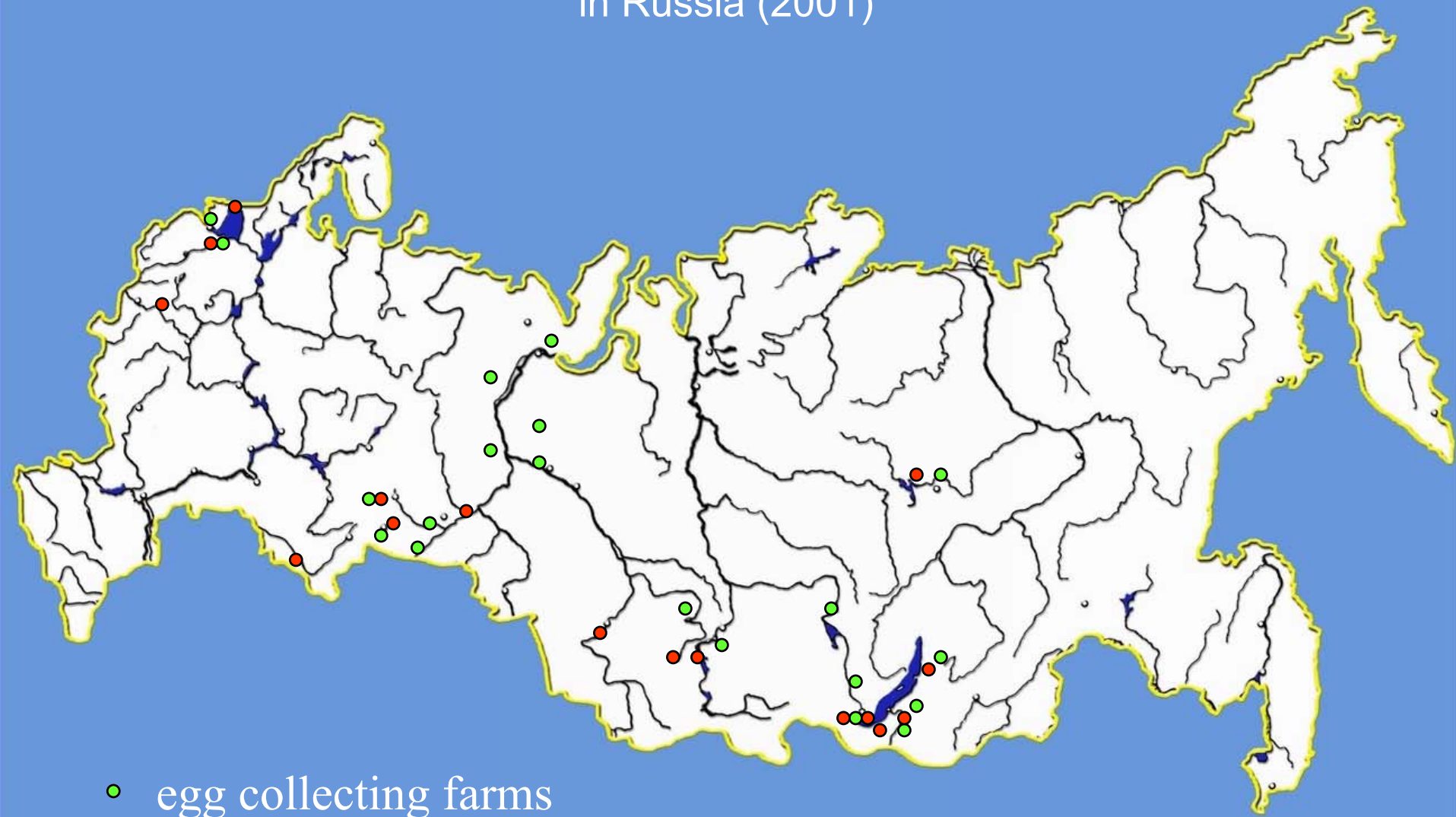
* includes 5000 tons of artificial reproduction

** includes 1000 tons of artificial reproduction

Table 2 – Approximate production of whitefish in water bodies of Russia in 2001, in tons

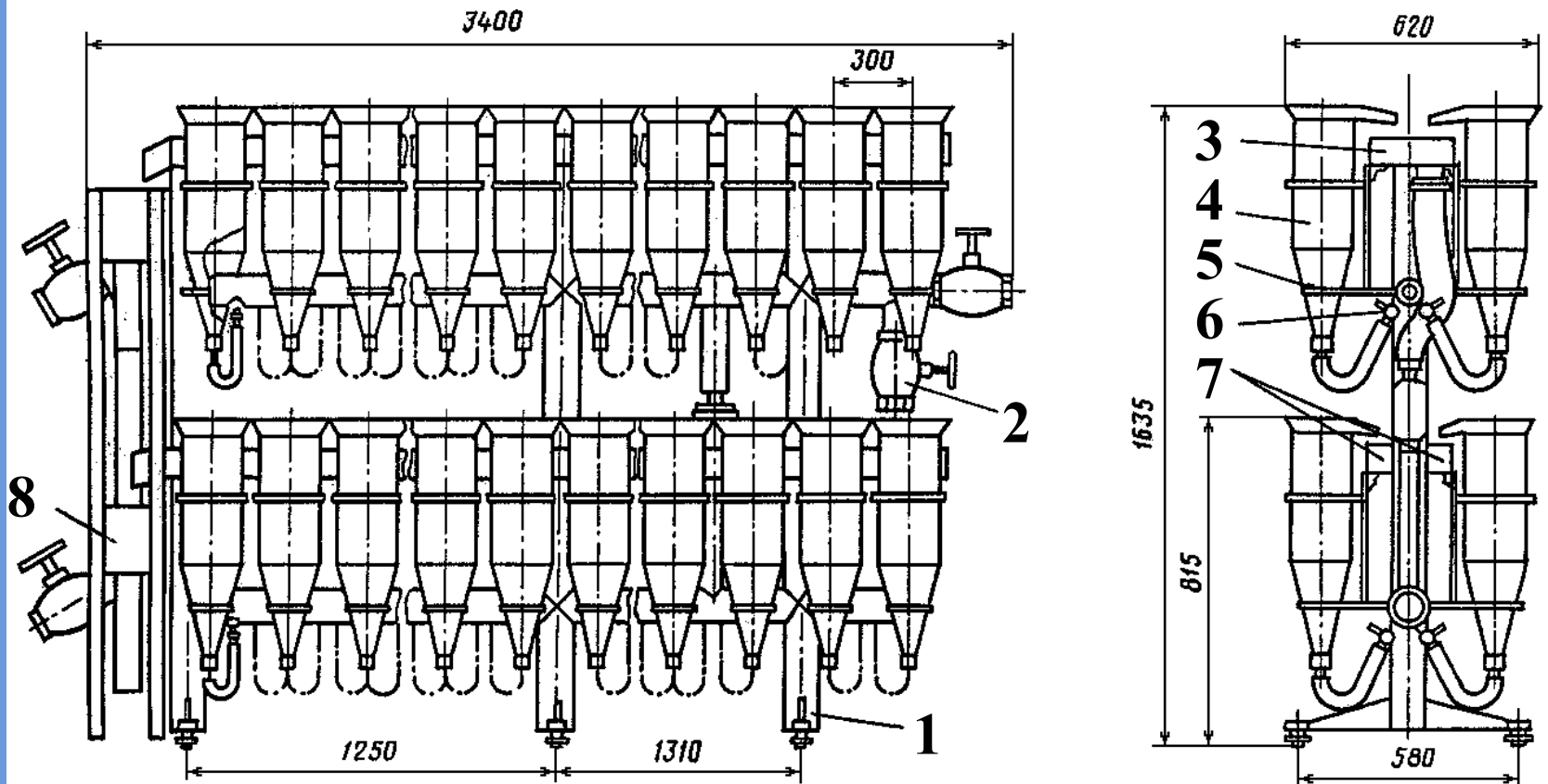
Species	Lakes	Rivers	Water reservoirs	Total
<i>Stenodus leucichthys</i>	-	184	-	184
<i>Coregonus muksun</i>	-	1443	-	1443
<i>Coregonus peled</i>	918	2342	40	3300
<i>Coregonus nasus</i>	10	1055	-	1065
<i>Coregonus lavaretus</i>	442	1376	134	1952
<i>Coregonus albula</i>	1813	20	251	2084
<i>Coregonus sardinella</i>	-	3755	-	3755
<i>Coregonus autumnalis</i>	2805	353	180	3328
<i>Coregonus tugun</i>	-	20	-	20
Total	6088	10548	635	17271

Location of whitefish egg collecting farms and incubation units in Russia (2001)



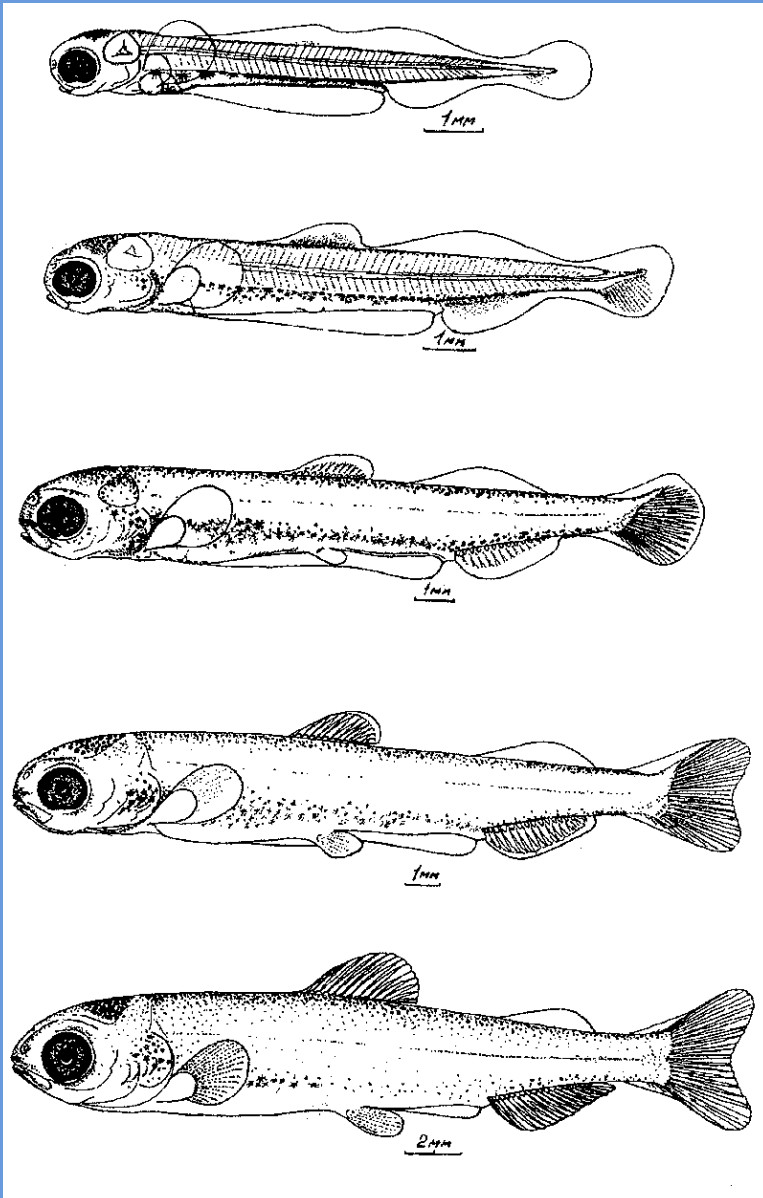
- egg collecting farms
- incubation units

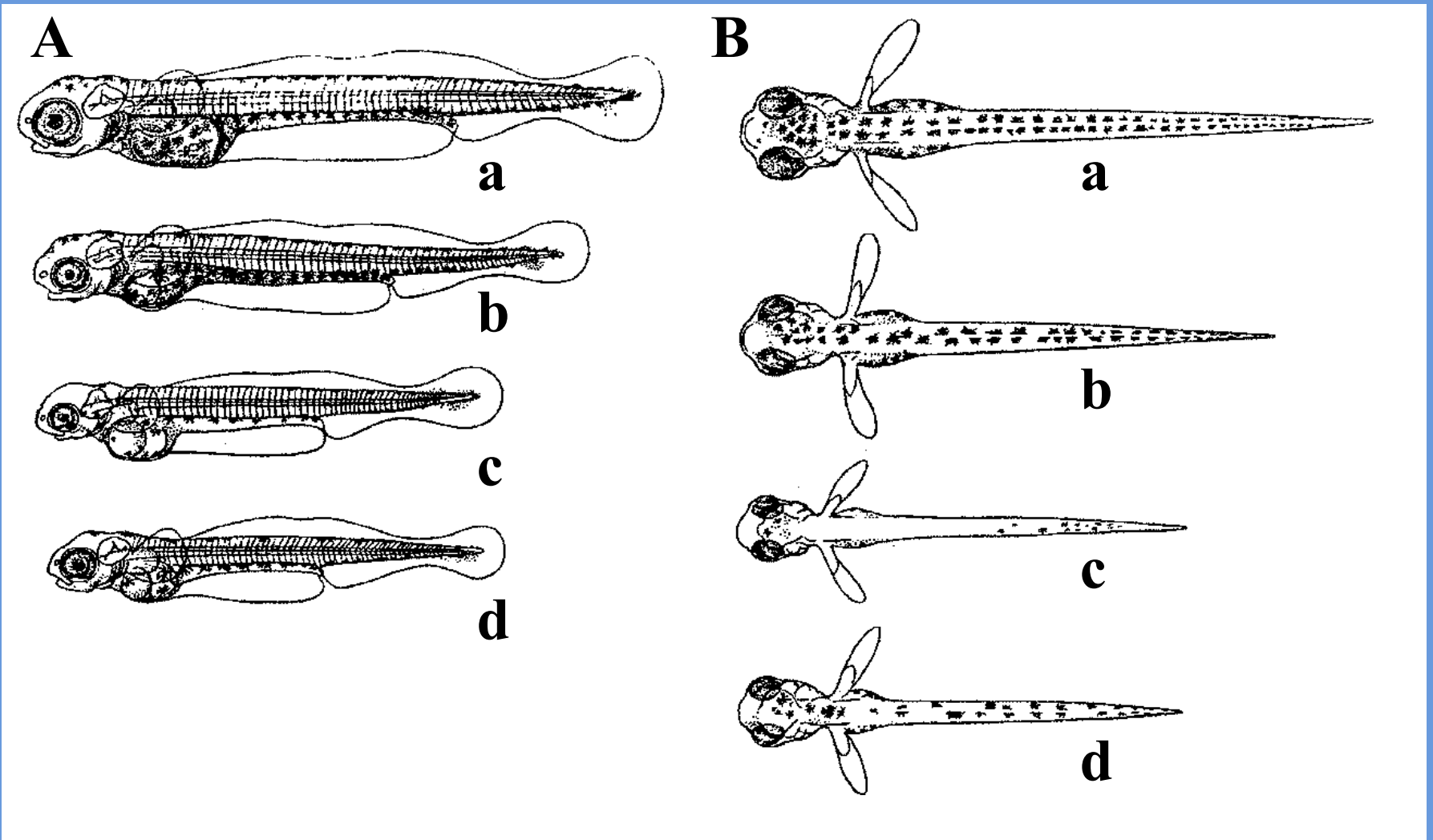
Hatching recipient



1. carriage; 2. valve; 3. upper combined tray; 4. hatching recipient;
5. holder; 6. regulating tap; 7. lower combined tray; 8. larvae separator

Larval developmental stages of
Coregonus peled





Larvae of *Coregonus nasus* (a), *Coregonus albula* (b),
Coregonus peled (c) *Coregonus tugun*(d)
 A – lateral view, B – dorsal view

Location of extensively operated whitefish farms in Russia (2001)



Location of industrial whitefish farms in Russia (2001)

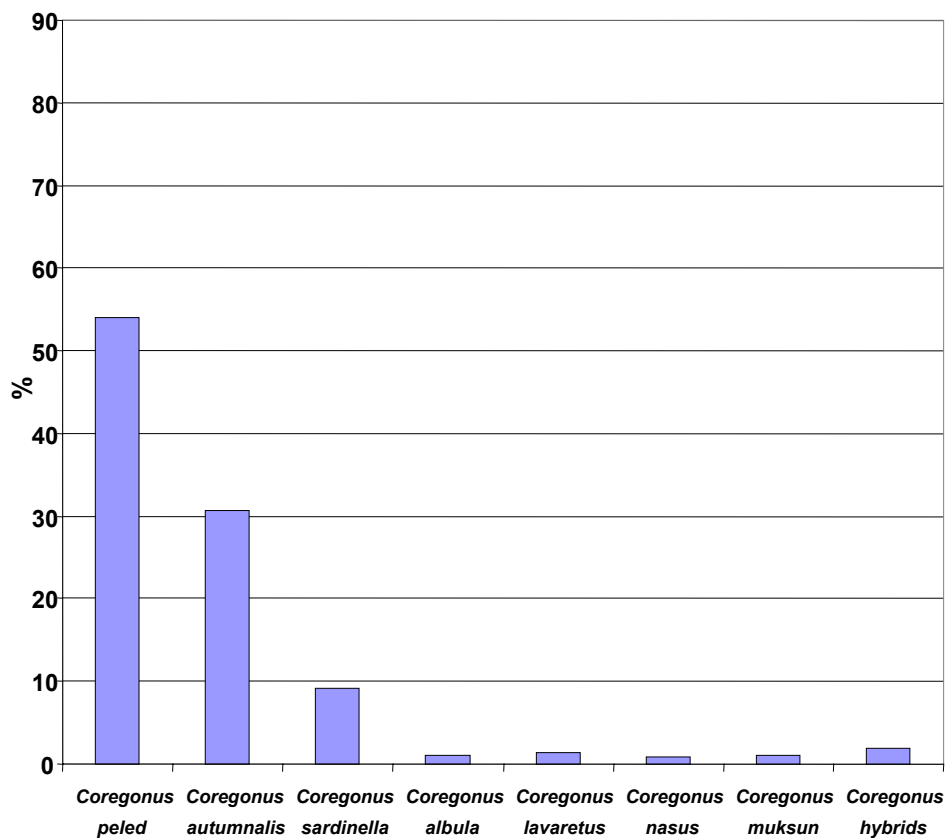


Table 3 - Biological parameters of whitefish cultivation

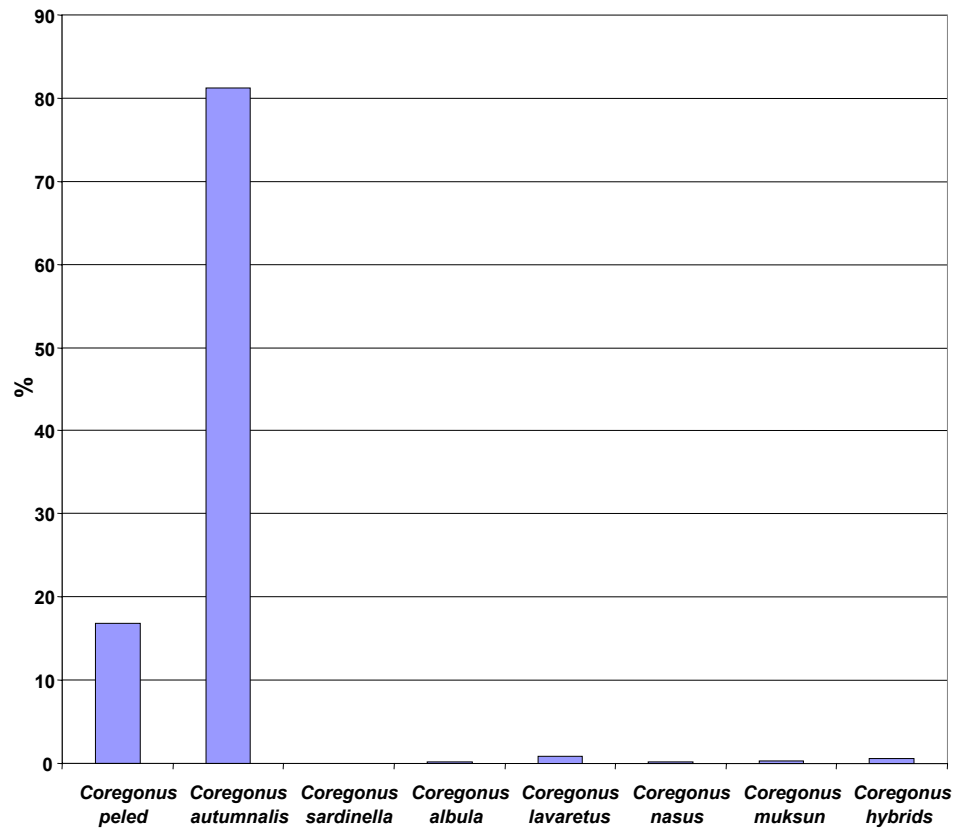
Species	Age of mature, years	The optimal spawning temperature, °C	Duration of embryonic development, days	Mass of spawners, kg	Fecundity of females, thousand eggs	Duration of larvae period in optimal temperature, days*	Commercial fish characteristics		Food supply base
							age, years	mass, kg	
<i>Coregonus sardinella</i>	2-3	0.3-2.0	155-180	0.1-0.4	3-12	32-40(12-16)	0+ 1+ 2+	0.06-0.12 0.12-0.25 0.25-0.45	Zooplankton
<i>Coregonus autumnalis</i>	6-7	0.2-0.6	170-180	0.5-0.9	15-32	30-38(10-14)	2+ 3+	0.3-0.5 0.5-0.8	Zooplankton
<i>Coregonus peled</i>	2-3	0.2-0.8	160-170	0.4-0.9	12-30	27-32(14-18)	0+ 1+ 2+	0.07-0.15 0.15-0.65 0.50-0.90	Zooplankton
<i>Coregonus nasus</i>	6-7	0.2-0.6	170-180	1.8-3.5	35-85	28-32(10-14)	1+ 2+ 3+	0.3-0.5 0.6-1.0 1.0-1.8	Zoobenthos
<i>Coregonus muksun</i>	5-7	0.2-1.0	170-180	1.4-4.0	30-95	28-32 (10-14)	1+ 2+ 3+	0.3-0.5 0.7-1.2 1.2-1.8	Zoobenthos

In parenthesis optimal temperature is shown, °C

A



B



Annual larval production of different whitefish species as percentage of total whitefish production in Russia
A - 1980 - 1982, B - 1998 - 2000.

Location of whitefish research centers in Russia (2001)



Overview of whitefish cultivation in Russia (2001)

- extensive farms
- industrial farms
- research centers
- incubation units
- egg collecting farms

