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The present situation of Danube Salmon, Danube Roach and Striped Chub population in the Ljubljana River corridor and main tributaries

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Table of Contents

1. RANGE, NUMBER OF CAUGHT AND NUMBER OF RE-INTRODUCED DANUBE SALMON	2
Table 1: Catch of Danube Salmon from year 1986 to 2006.	2
Table 2: Number of re-introduced specimens from year 1986 to 2007.	3
Figure 1: Catch of Danube Salmon in Ljubljana River from the confluence of Mala and Velika Ljubljana to the motorway bridge in Podpeč from 1967 to 2007.	4
Figure 2: Catch of Danube Salmon in Ljubljana River from the motorway bridge in Podpeč to the dam at Ambrožev trg and in Mali Graben from 1967 to 2007.	4
Figure 3: Catch of Danube Salmon in Ljubljana River from the dam at Ambrožev trg to the dam in Vevče paper factory from 1967 to 2007.	5
Figure 4: Catch of Danube Salmon in Gradaščica and Horjulka from 1967 to 2007.	5
Figure 5: Re-introduction of Danube Salmon in sport fishing waters in Slovenia by managers from 1986 to 2007.	6
 2. EXPERT OPINION ON FISH POPULATION	 7
Table 3: Expert estimation on the size of fish population in Ljubljana River from year 1842 to 1933 and in 2007 (D - dominant, S - subdominant, R - rare).	7

1. RANGE, NUMBER OF CAUGHT AND NUMBER OF RE-INTRODUCED DANUBE SALMON

Danube Salmon lives from the source to the outflow of the Ljubljanica River and in its tributaries. Its spawning place is in Zadvor. In Mali Graben it lives from Bokalce to the outflow in Ljubljana and spawns in Bokalce and two spawning places in the middle stream. In Gradaščica it lives from the confluence of the Velika and Mala Božna to Bokalce. Known spawning areas in Gradaščica are in Dvor, Log, Hrastenice, Stranska vas, Dobrovo and in Bokavci. It is estimated that the population in this two tributaries is relatively large. The species lived also in Horjulka, but in the last ten years they didn't catch it. Most likely, it is still present in some smaller tributaries of Ljubljana: Podlipščica (recorded spawning place in Ligojna), Ljubija (recorded spawning place in the middle stream), Bistra (recorded spawning place under the castle Bistra), Iška, Iščica and Želimeljščica (recorded spawning place in Remšetovec).

Table 1: Catch of Danube Salmon from year 1986 to 2006.

year	number	kg
1986	0	0
1987	0	0
1988	3	22,15
1989	2	16
1990	3	26,6
1991	2	14,8
1992	2	10,8
1993	5	35
1994	2	20
1995	3	24
1996	6	49
1997	9	58,4
1998	13	87,92
1999	4	30
2000	2	18,5
2001	2	18,5
2002	4	37
2003	3	22
2004	3	24
2005	6	48
2006	7	56

Table 2: Number of re-introduced specimens from year 1986 to 2007.

year	< 5 cm	5-9 cm	9-12 cm	12-15 cm	15-20 cm	20-30 cm	30-50 cm	market fish
1984	3000	0	0	0	0	0	0	0
1985	0	190	0	0	0	0	24	0
1986	0	0	0	0	18	0	0	19
1987	0	0	0	0	0	0	0	90
1988	0	250	0	0	0	0	0	0
1988	0	700	0	0	0	0	7	45
1991	0	750	0	0	0	0	0	0
1991	0	1500	0	0	0	0	0	0
1992	0	620	0	0	0	0	0	0
1993	0	2500	0	0	0	0	0	76
1994	8000	0	0	0	0	0	0	0
1995	0	4800	0	0	0	0	0	0
1995	0	2000	0	0	0	0	0	0
1996	0	900	0	400	0	0	0	0
1996	0	0	0	250	0	0	0	0
1996	0	0	0	200	0	0	0	0
1997'	0	300	0	0	0	0	0	0
1997	0	0	0	0	0	0	6	0
1999	0	957	0	0	0	0	0	0
2000	0	0	412	0	0	0	0	0
year	< 5 cm	5-9 cm	9-12 cm	12-15 cm	15-20 cm	20-25 cm	30-35 cm	> 35 cm
2001	0	0	0	0	0	1000	0	0
2002	0	0	0	1000	0	0	0	0
2003	0	0	0	0	0	500	0	0
2004	0	0	0	0	0	1130	0	0
2005	0	0	2200	0	0	0	250	0
2006	0	0	0	0	0	0	0	500
2007	0	0	0	0	0	0	300	0

The data was collected on the section of the Sava River from the confluence with the Ljubljanica River to the bridge in Litija.

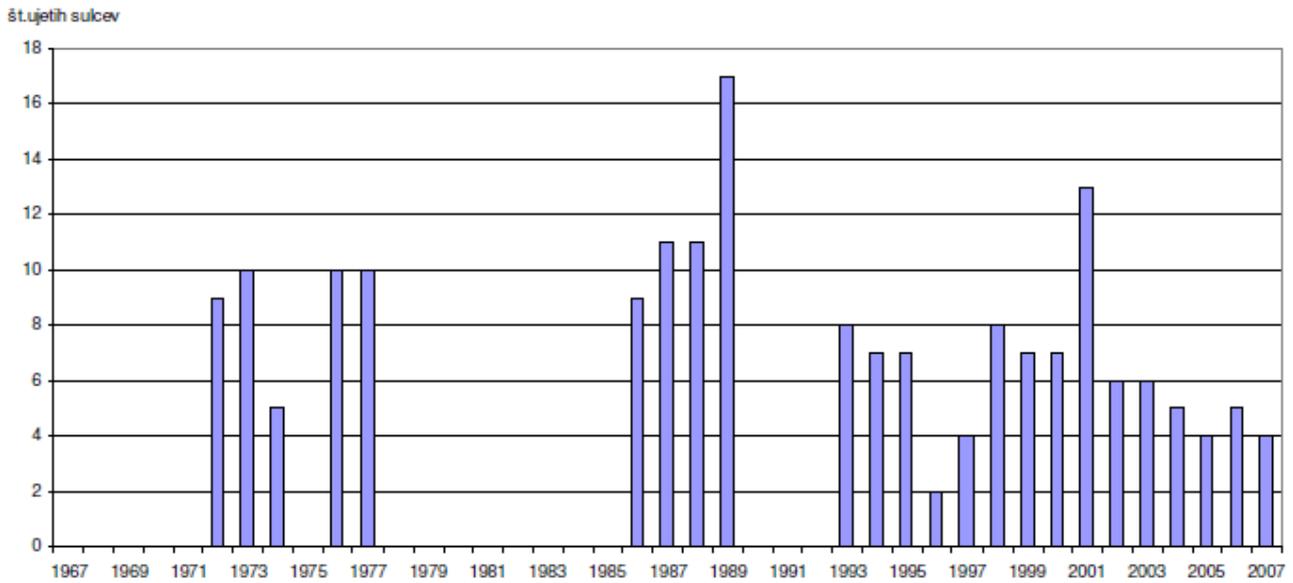


Figure 1: Catch of Danube Salmon in Ljubljana River from the confluence of Mala and Velika Ljubljana to the motorway bridge in Podpeč from 1967 to 2007.

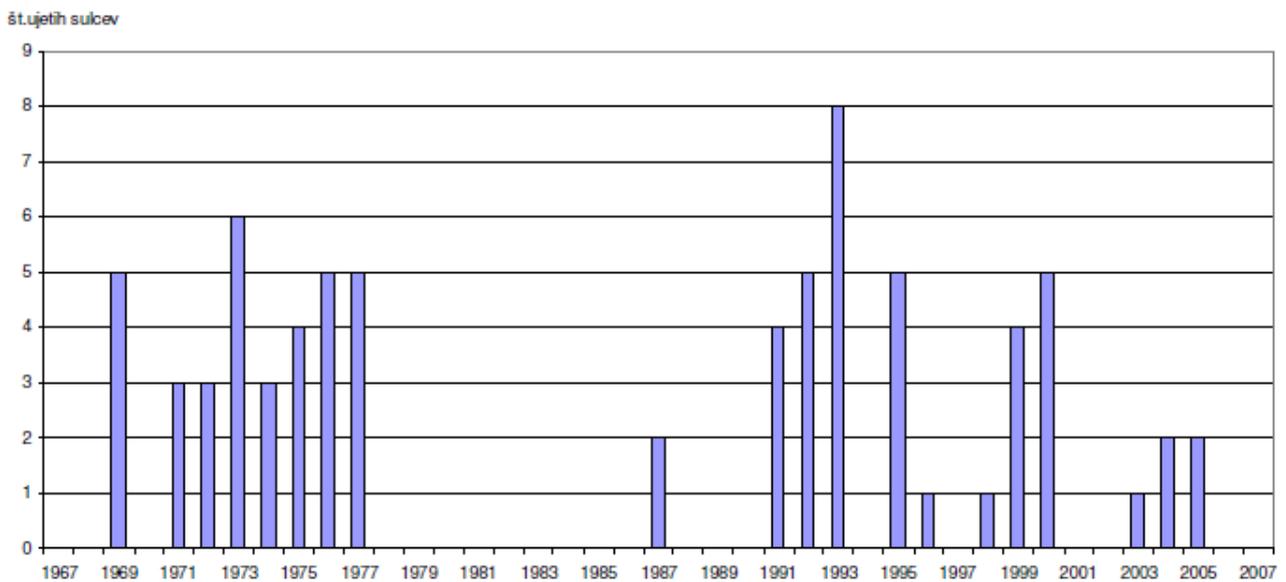


Figure 2: Catch of Danube Salmon in Ljubljana River from the motorway bridge in Podpeč to the dam at Ambrožev trg and in Mali Graben from 1967 to 2007.

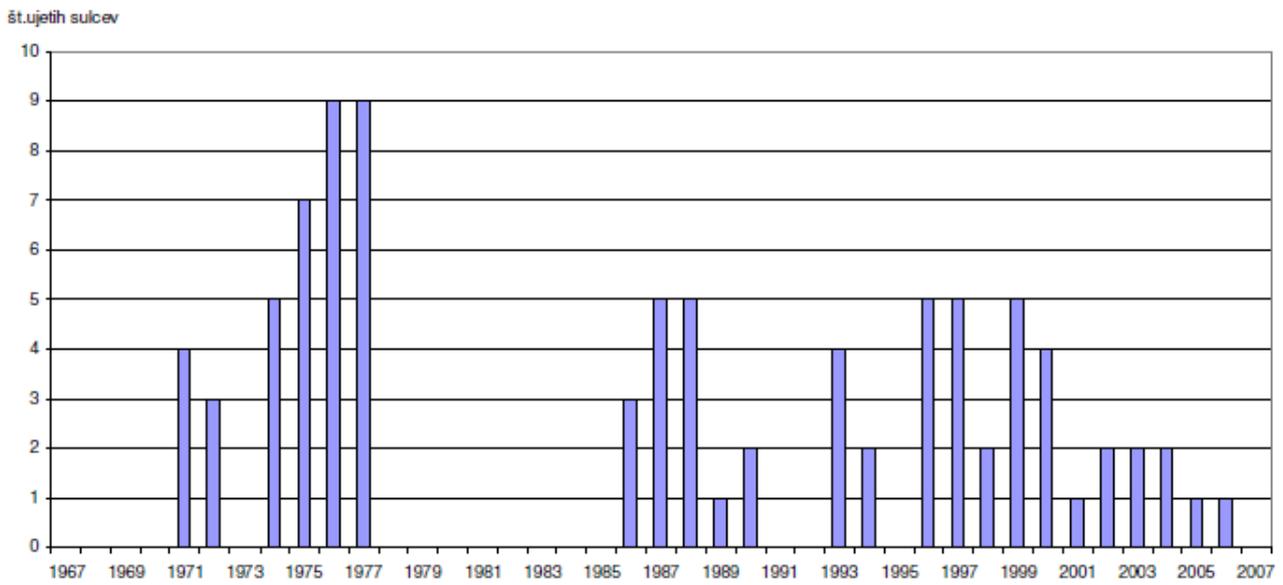


Figure 3: Catch of Danube Salmon in Ljubljana River from the dam at Ambrožev trg to the dam in Vevče paper factory from 1967 to 2007.

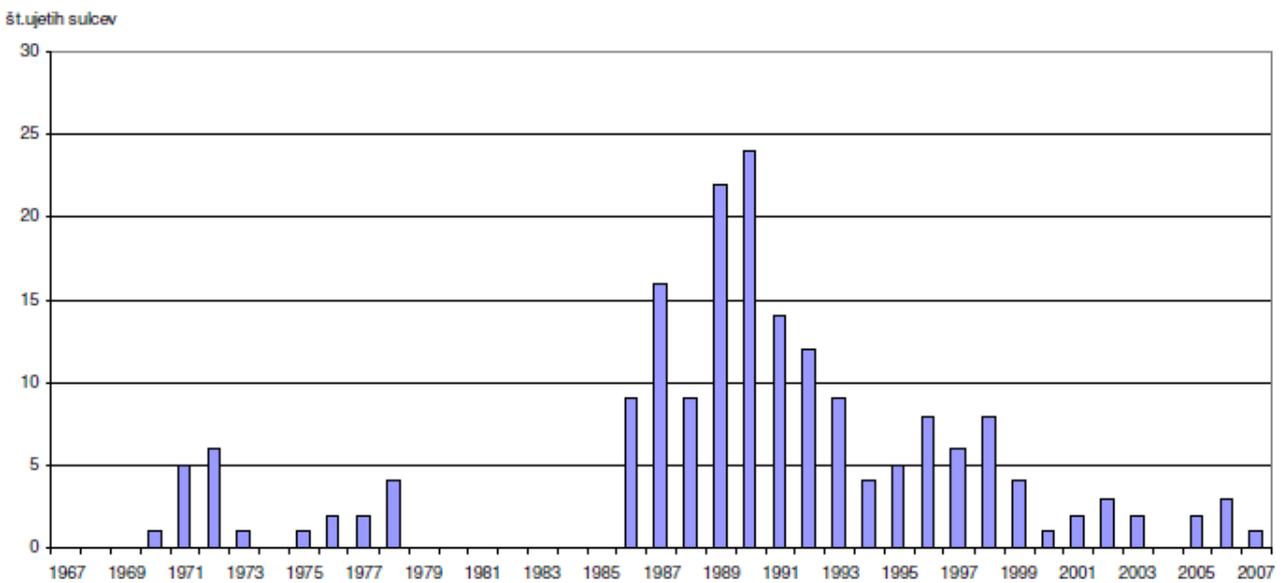


Figure 4: Catch of Danube Salmon in Gradaščica and Horjulka from 1967 to 2007.

In the segment from the confluence of Mala and Velika Ljubljanica to the motorway bridge in Podpeč the catch was constant in the last 15 years and represented from 4 to 8 caught species of Danube Salmon per year (Figure 1). For the earlier period the data is incomplete. In this segment the population of Danube Salmon was estimated as vital.

In the segment from Podpeč to Ambrožev trg and in Mali Graben the catch of Danube Salmon was less constant and generally reached from 2 to 5 caught specimens per year (Figure 2).

The catch of Danube Salmon from Ambrožev trg to Vevče was in constant decline since 1990. In 1990 it reached 24 caught specimens and since year 2000 it didn't reach even five specimens per year (Figure 3).

In Horjulka only individual specimens of Danube Salmon got caught, in the last fifteen years seven of them (Figure 4). In Gradaščica the amount of caught fish wasn't large, but constant.

According to the data of caught fish and numerous spawning places they estimated, that in 2007 the population of Danube Salmon in Ljubljana River basin was vital and in satisfying condition. Since year 1990 a trend of decline was noticed. Population in this area was estimated to be one of the most numerous and vital, but because of impassable barriers there is a risk of quality deterioration and extinction of isolated populations.

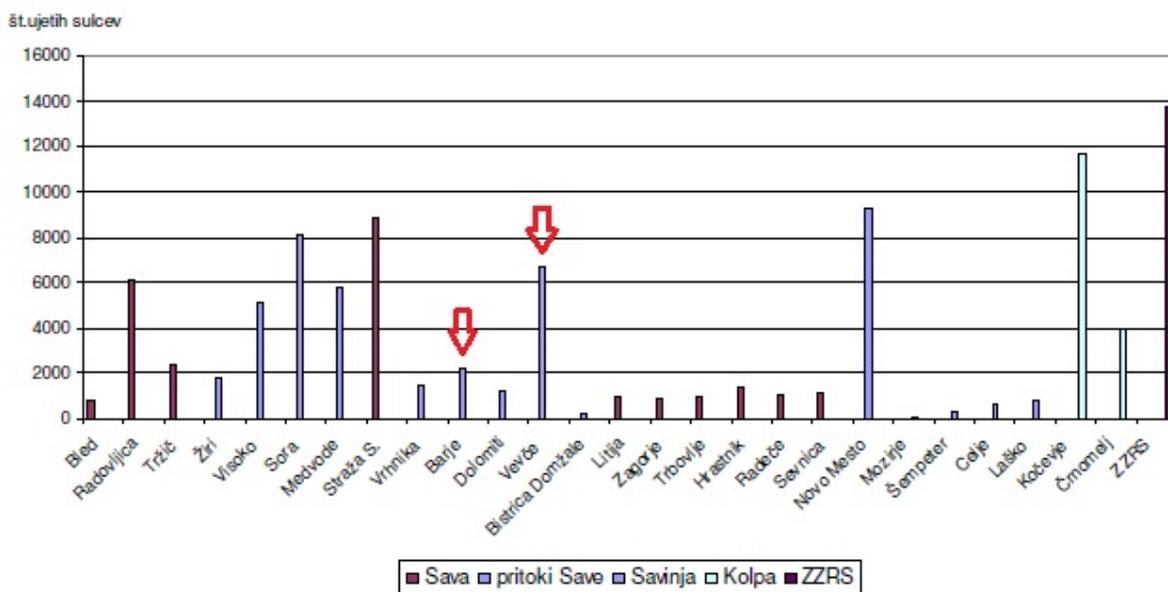


Figure 5: Re-introduction of Danube Salmon in sport fishing waters in Slovenia by managers from 1986 to 2007.

Re-introduction of Danube Salmon was in the last 21 years in the area of angling club Vevče (Ljubljana from the dam at Ambrožev trg to the outflow of Besnica) among the largest, while in the area of angling club Barje it was average.

2. EXPERT OPINION ON FISH POPULATION

Table 3: Expert estimation on the size of fish population in Ljubljana River from year 1842 to 1933 and in 2007 (D - dominant, S - subdominant, R - rare).

fish species	HISTORICAL ESTIMATION	ESTIMATION FOR 2007
<i>Salmo trutta m. fario</i>	R	R
<i>Hucho hucho</i>	D	S
<i>Thymallus thymallus</i>	D	D
<i>Abramis brama</i>	R	R
<i>Aspius aspius</i>	R	R
<i>Barbatula barbatula</i>	R	R
<i>Barbus barbus</i>	S	S
<i>Abramis bjoerkna</i>	R	R
<i>Carassius carassius</i>	R	R
<i>Chondrostoma nasus</i>	D	D
<i>Cottus gobio</i>	S	S
<i>Cyprinus carpio</i>	R	R
<i>Leuciscus cephalus</i>	S	S
<i>Leuciscus souffia</i>	R	R
<i>Rhodeus sericeus</i>	R	R
<i>Rutilus pigus</i>	S	S
<i>Scardinius erythrophthalmus</i>	R	R
<i>Tinca tinca</i>	R	R
<i>Vimba vimba</i>	R	R
<i>Perca fluviatilis</i>	R	R
<i>Zingel streber</i>	R	disappeared
<i>Cobitis taenia</i>	R	R
<i>Esox lucius</i>	S	S
<i>Lota lota</i>	R	R
<i>Eudontomyzon mariae</i>	R	R

Based on expert opinion, fish populations in Ljubljana River were evaluated. It was found that in 2007 Danube Salmon was no longer the dominant species, because its habitat shrank due to all the negative effects, which occur due to regulations, pollution, habitat fragmentation and other impacts.

Evaluation for other species remained the same like in the past. Common Nase and Grayling remained dominant species. Subdominant species also remained the same except Danube Salmon, which passed into lower hierarchical category. In the group of rare species Streber disappeared, while others were still present.