
Boat electric fishing survey in River Oulujoki (Finland) July 2007.



Part of the Ahmaskoski area above the suspended bridge.



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Summary

Boat electric fishing was performed in several stretches within three areas of the regulated boreal River Oulujoki (Finland) in purpose to study presence and abundance of stocked and naturally reproducing Atlantic salmon (*Salmo Salar* L.) and other salmonid fish.

During 1.6 hours of effective electric fishing fourteen different fish species were caught and/or observed. Atlantic salmon was not caught in any of the study areas, European grayling (*Thymallus thymallus* L.) was caught in all three areas and rainbow trout (*Onchorhyncus mykiss*) in two of the areas.

Large variation in water levels, limited presence of suitable stream habitats/habitat variation inter specific competition and relatively high abundance of predators are put forward as reasons for low success of stocking and natural reproduction of Atlantic salmon in the River Oulujoki within the study areas.

Material and methods

Boat electric fishing

The boat electric fishing was done simultaneously as the boat were driven down stream in the river. Electric current was generated by a 7.5 kW generator placed within the boat. During all electric fishing pulsed direct current (60Hz, 2.5-3.4A, 1000V) was used. The effective time for electric fishing was automatically registered by the pulsator of model Smith-Root Electrofisher 7.5 GPP. Studied parts of the stream was fished by driving the boat downstreams covering approximately 4m parallells of the stream each time without running over the same part of the stream several times. Salmonid fish that were chocked by the electric current was caught with nets by two persons standing in front of the boat (Fig.1.). Other fish species were only caught extensively to determine species composition within the river. During electric fishing the shocked and by nets caught fish were put in an aerated tank in the boat at a water depth of 0.3m.



Figure 1. Staff in action on the electrofishing boat during electric fishing in the Laukka area of River Oulujoki.

Study areas

In the Kurenkoski and Ahmaskoski areas three and six stretches, respectively, were included in the study (Fig. 2). The Laukka area was divided into an upper and a lower part containing eight and two stretches, respectively. The water flow in the river is regulated on a daily basis for hydroelectric purposes in both areas, without minimum discharge levels in the Kurenkoski and Ahmaskoski areas, and with a minimum discharge of $60\text{m}^3\text{ s}^{-1}$ in the Laukka area.

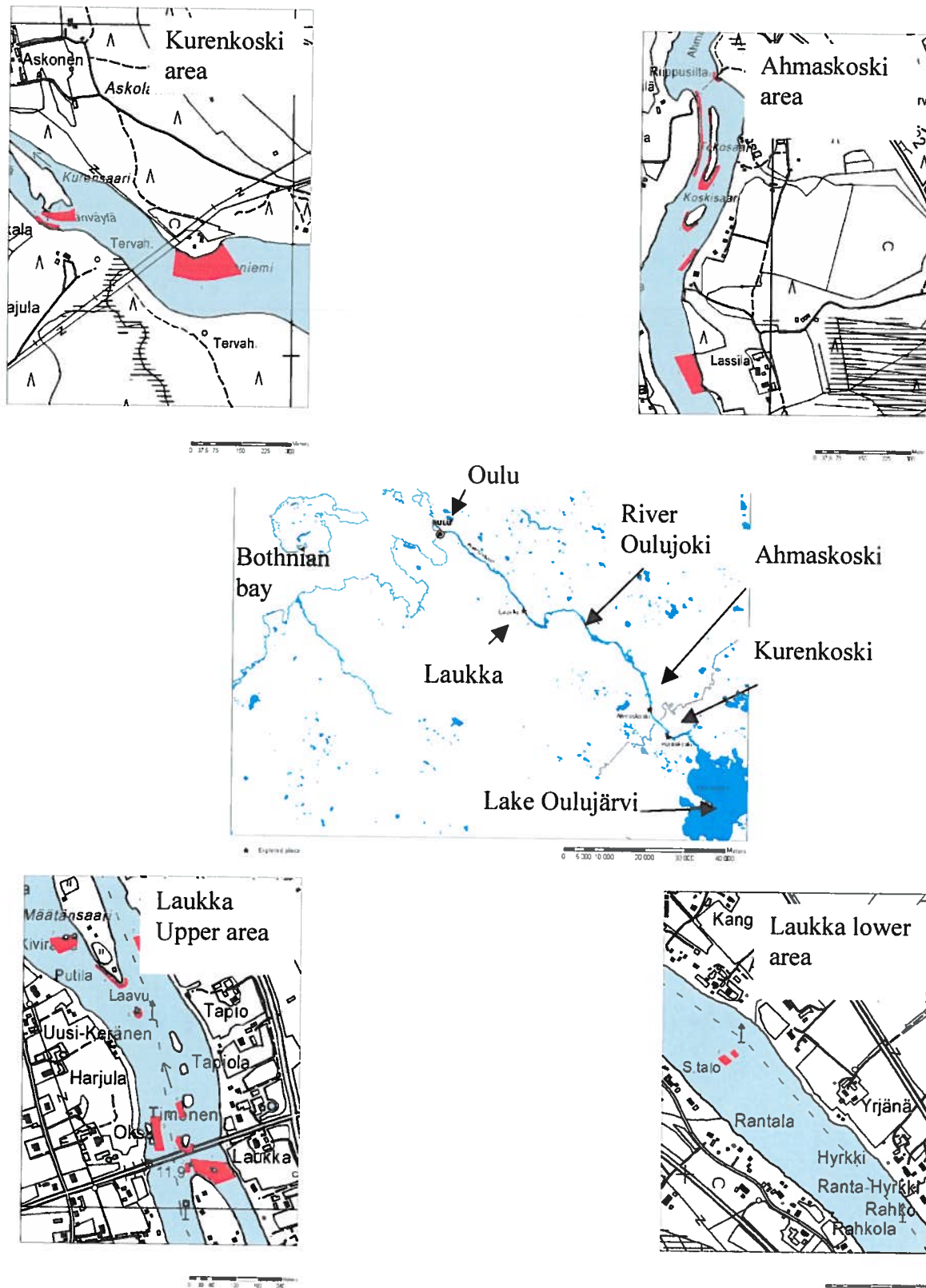


Figure 2. Study areas in the River Oulujoki.

Water flow, conductivity and temperature in the Kurenkoski/Ahmaskoski areas and Laukka areas was 310-350 m³ s⁻¹, 3.3mS m⁻¹ & 18.2°C (July 5) and 200-250 m³ s⁻¹, 3.4mS m⁻¹ & 18.0°C (July 6), respectively.

Results and discussion

During in total 1.6h of effective electric fishing in three different areas of the River Oulujoki 106 fish were caught and registered corresponding to a mean number of 1 fish caught per minute (Table 1, 2 & 3). Actual number of fish caught but not registered, and potential catch but without attempt from the “netters”, was in total at least ten times higher. Sometimes roach (*Rutilus rutilus*) and bleak (*Alburnus alburnus*) were observed in hundreds within reach for the netters. Limited time was the main reason for not catching all fish.

Table 1. Number of fish caught*, observed and effective electrofishing time (s) during boat electrofishing in the Kurenkoski area July 5, 2007.

Species	Area 1 (369s)	Area 2 (357s)
European Grayling (<i>Thymallus thymallus</i>)	1	-
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	1	-
Common Perch (<i>Perca fluviatilis</i>)	1	2
Bullhead (<i>Cottus gobio</i>)	-	Observed
Ide (<i>Leuciscus idus</i>)	-	2
Roach (<i>Rutilus rutilus</i>)	Many observed	
Bleak (<i>Alburnus alburnus</i>)	Many observed	

* The study focussed only on catching salmonids, other fish were only observed or accidentally caught.

Table 2. Number of fish caught, observed and effective electrofishing time (s) during boat electrofishing in the Ahmaskoski area July 5, 2007.

Species	Area 1 (1067s)	Area 2 (421s)	Area 3 (501s)	Area 4 (1053s)	Area 5 (205s)
European Grayling (<i>Thymallus thymallus</i>)	4	2	4	8	1
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	2	-	1	1	-
Vendace (<i>Coregonus albula</i>)	3	-	-	-	-
Northern Pike (<i>Esox lucius</i>)	2	-	-	3	1
Eurasian Perch (<i>Perca fluviatilis</i>)	4	2	1	3	3
Bullhead (<i>Cottus gobio</i>)	-	2	-	-	-
Stone Loach (<i>Barbatula barbatula</i>)	1	-	1	-	-
Common Bream (<i>Abramis brama</i>)	1	-	-	-	-
Ide (<i>Leuciscus idus</i>)	-	-	-	-	2
Ruffe (<i>Gymnocephalus cernuus</i>)	4	2	-	-	1
Dace (<i>Leuciscus leuciscus</i>)	7	-	-	2	-
Roach (<i>Rutilus rutilus</i>)	Many observed and caught				
Bleak (<i>Alburnus alburnus</i>)	Many observed and caught				
Eurasian Minnow (<i>Phoxinus phoxinus</i>)	Observed				

Table 3. Number of fish caught*, observed and effective electrofishing time (s) during boat electrofishing in the Laukka area July 6, 2007.

Species	Area 1 (892s)	Area 2 (364s)	Area 3(488s)	Area 4(89s)
European Grayling (<i>Thymallus thymallus</i>)	8	10	1	1
Northern Pike (<i>Esox lucius</i>)	2	-	4	1
Common Perch (<i>Perca fluviatilis</i>)	-	-	2	-
Bullhead (<i>Cottus gobio</i>)	-	1	-	-
Ruffe (<i>Gymnocephalus cernuus</i>)	1	-	-	-
Roach (<i>Rutilus rutilus</i>)	—————Many observed—————			
Bleak (<i>Alburnus alburnus</i>)	—————Many observed—————			

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Most abundant in the catches of salmonid fish was European grayling (n=40). A few rainbow trout (n=5) and vendace (*Coregonus albula*, n=3) was also caught. In spite of the efforts to stock Atlantic salmon into the river, and observations of adult salmon (and brown trout, *Salmo trutta*), zero salmon (and brown trout) juveniles were caught. This may have several explanations. Large variation in water levels, limited presence of suitable stream habitats/habitat variation, inter specific competition and relatively high frequency of predators are factors likely to act solely or additively for the low success of stocking and natural reproduction of Atlantic salmon in the River Oulujoki within the study areas.

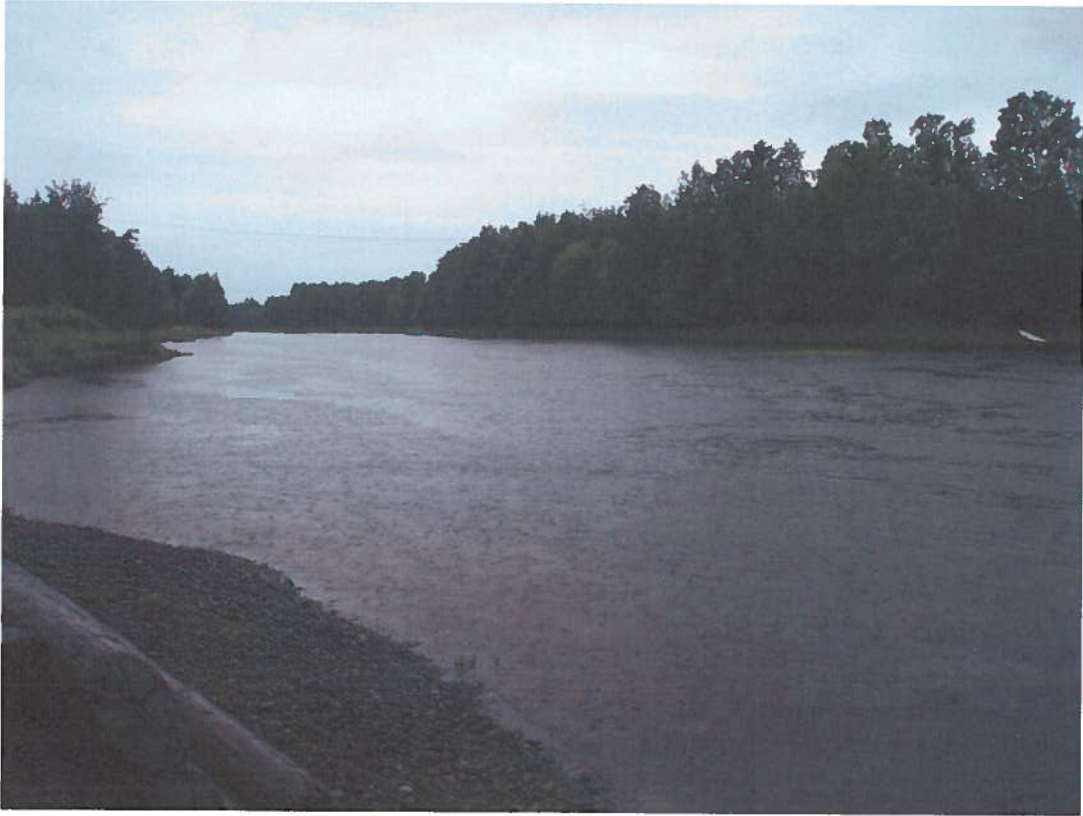
Thanks to

North Ostrobothnia Regional Environmental Centre for financing the study.

Some Pictures from the Laukka are:



At the bridge



The area north of the bridge.



The area north of the bridge a bit further down.



During studies around the sland above the bridge.



Artificial islands below the bridge.



Press information by the bridge at the Laukka area.