ReBorN- Restoration of Boreal Nordic Rivers

Conservation of freshwater bivalves and restoration of upstream catchment habitats

Périgueux, Dordogne, FRANCE
2019-11-06
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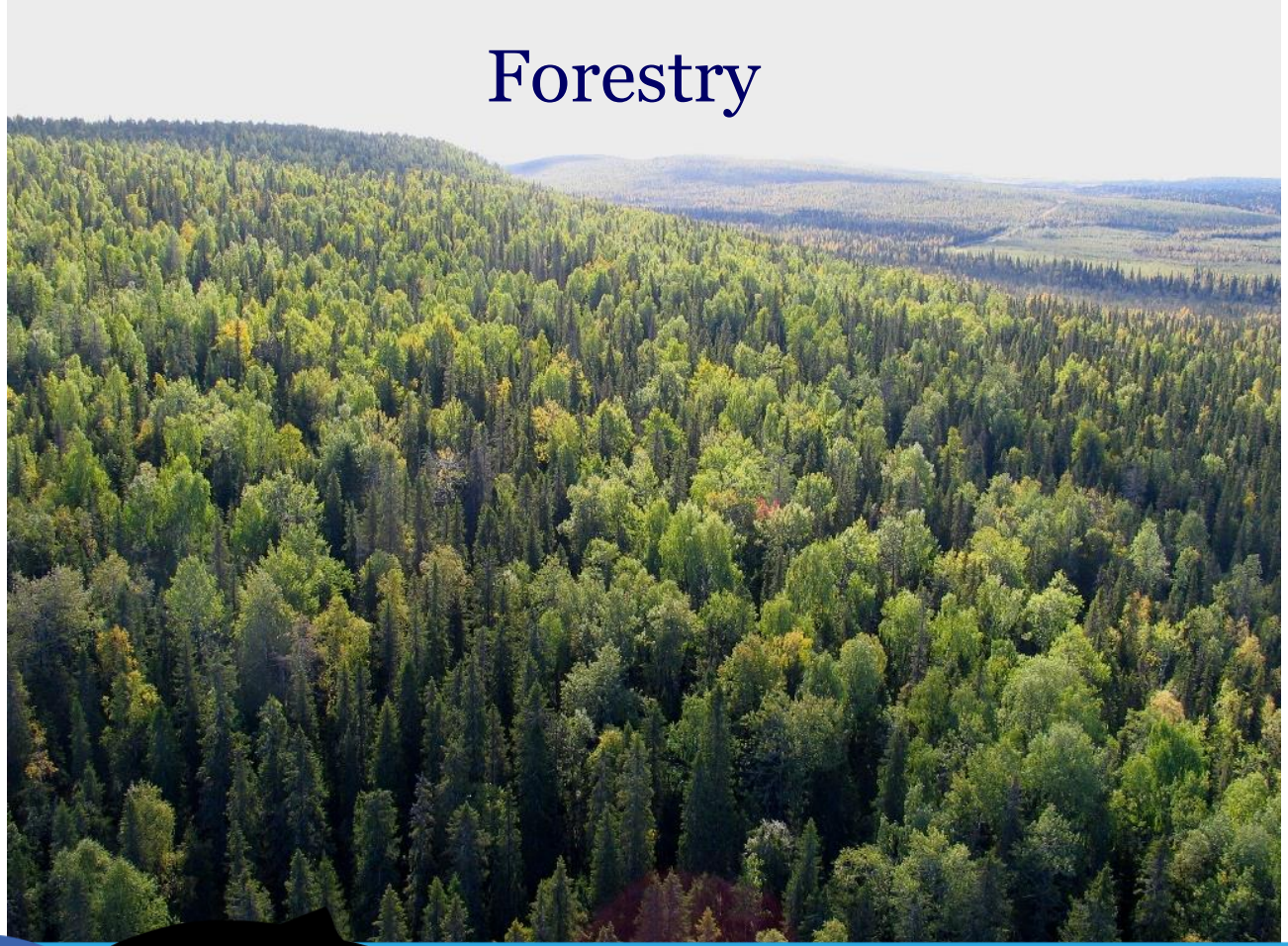
County Administrative Board of Norrbotten

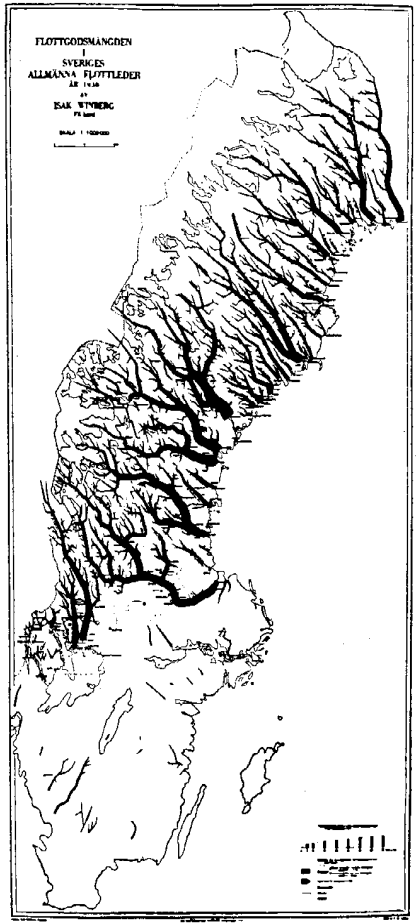
- Background
- Restoration through time
- ReBorN – LIFE
- Some results
- Short movie

Why ReBorN?

Forestry



Forestry



40 000 km river stretch have been used for timber floating in Sweden.

1750 – Cleaning of rivers to facilitate transport of barrels with tar.

The timber floating started in the county of Norrbotten 1840-1850.

1930 – Engine powered cranes are introduced.

After WWII – caterpillars are introduced.

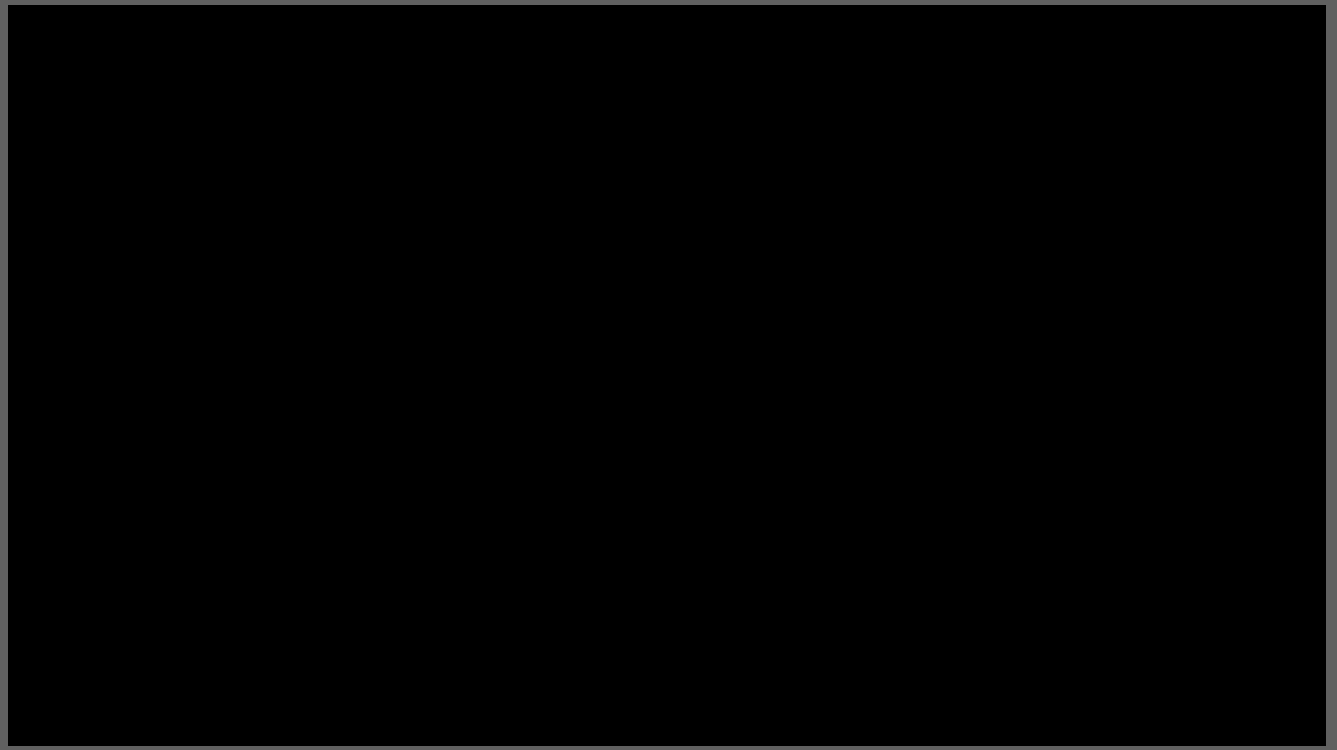
Transportation

Transportation problems

Straithening and cleaning of rivers

Cleaning the rivers

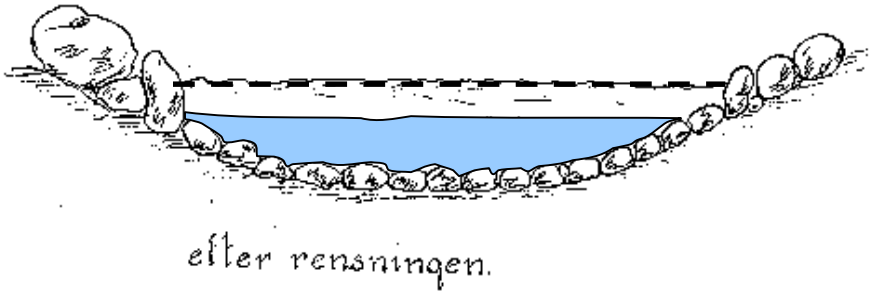
Cleaning the rivers



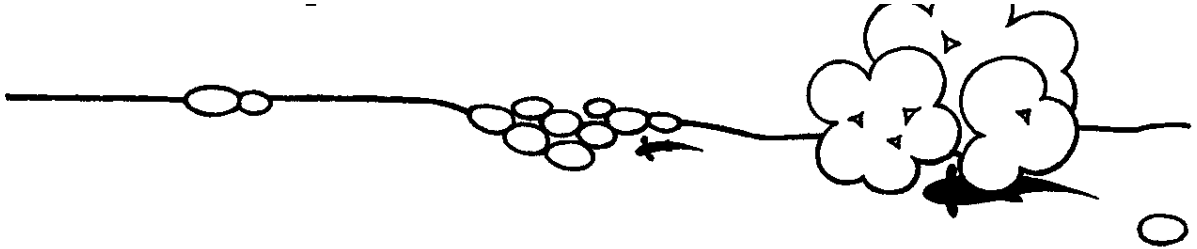
Before

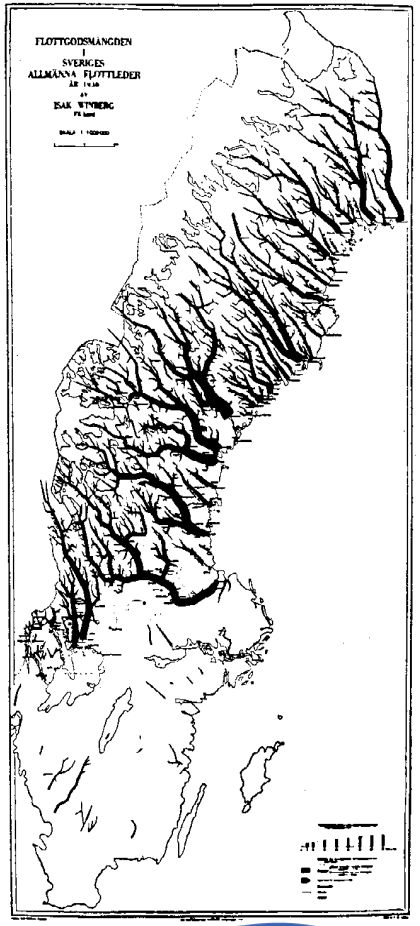
After

Before cleaning



After cleaning





In 1960 the timber floating decreased.

In 1970 the restoration of the rivers started in small scale.

The timber floating lasted longer in some rivers (Piteälven 1982, Klarälven 1991)

In 1990 - creating constructions for sportfishing

2010 ecosystem based restoration (whole drainage areas)

Migration barriers – Give access

Restoration – Create/recreate habitat

Information/Control means – Reduced risk of negative impact

Management – Long term sustainability

Development – Opportunity for economic growth in rural areas

Project period 2016-2021

Budget 13 000 000 €
EU finances 60%

Project owner:
County Administrative Board of Västerbotten

Partners:
County Administrative Board of Norrbotten
Nordmaling municipality
Gällivare municipality
Swedish Forestry Agency
Swedish Agency for Marine and Water Mangement

Financiers:
Arvidsjaur municipality
Boden municipality
Jokkmokk municipality
Luleå municipality
Piteå municipality
Älvsbyn municipality
SCA Skog AB, Västerbotten
SCA Skog AB, Norrbotten
Sveaskog Förvaltnings AB Västerbotten
Sveaskog Förvaltnings AB Norrbotten

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Project areas

- Byskeälven
- Åbyälven
- Piteälven
- Råneälven
- Kalixälven
- Lögdeälven

Project areas

In the County of Västerbotten 97,5 km river stretch will be restored

- River Lögdeälven 61,9 km
- River Lögdeälven tributaries 35,6 km

In the County of Norrbotten 104,5 km river stretch will be restored

- River Byskeälven 4,3 km (River Långträskälven)
- River Åbyälven 16,5 km (main channel)
- River Piteälven 36,9 km (River Stockforsälven & River Vitbäcken)
- River Kalixälven 13,3 km (River Linaälven & River Vassaraälven)
- River Råneälven 33,5 km (main channel + River Rutnajoki)

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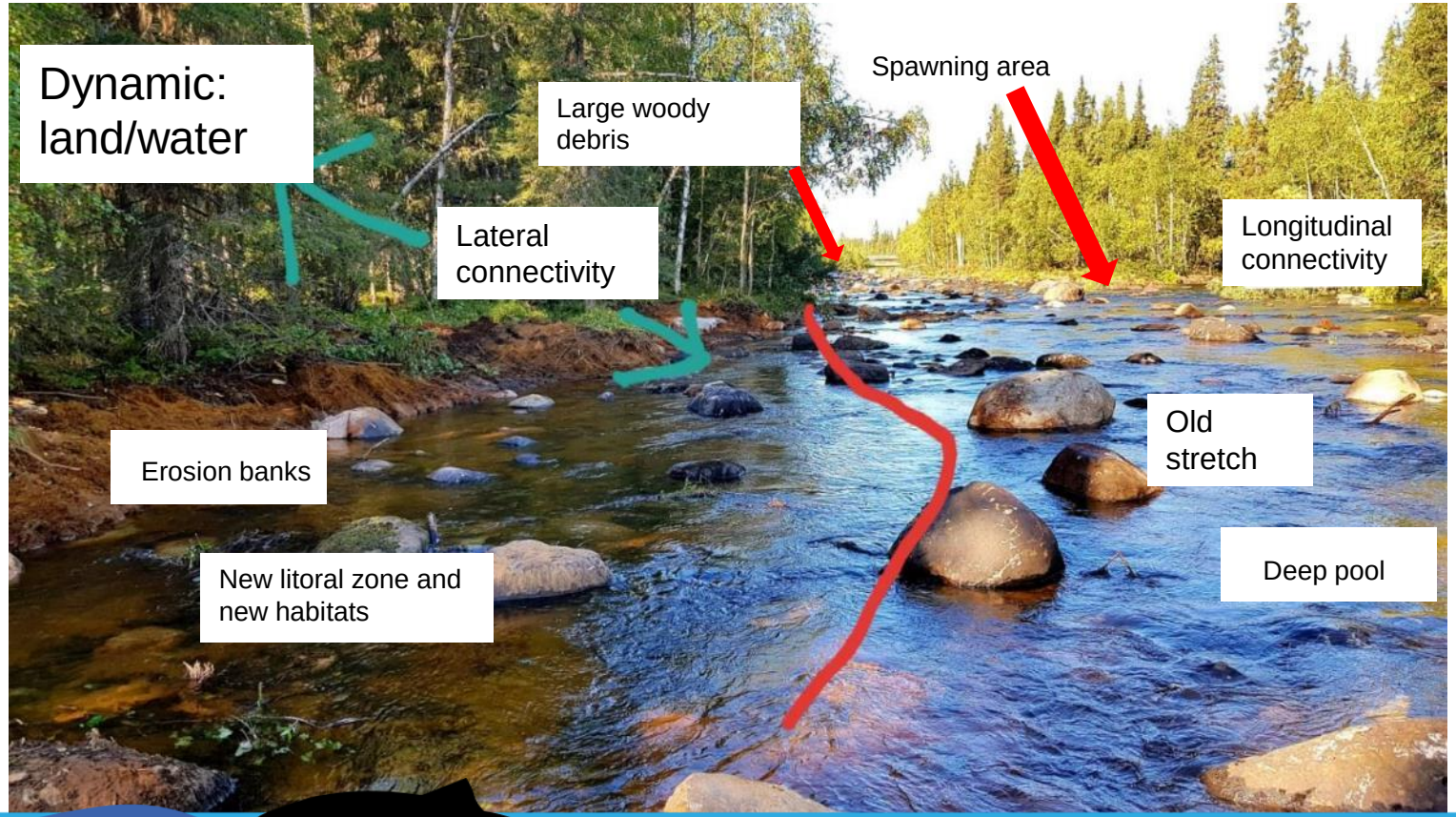
Major objectives

- Ecological restoration of 200 km rivers stretch
- Create 2 300 spawning beds for salmon and trout
- Monitoring of the four target species; salmon, trout, freshwater pearl mussel and otter
- Monitoring of geomorphology and hydrology
- Wider considerations regarding forestry in connection to rivers – four demonstration areas
- Follow up of sale of fishing licenses
- Sustainable management of salmon and trout

How do we do it?

Focusing on recreating natural processes and many different habitats.



Spawning beds – ”Hartijoki method”

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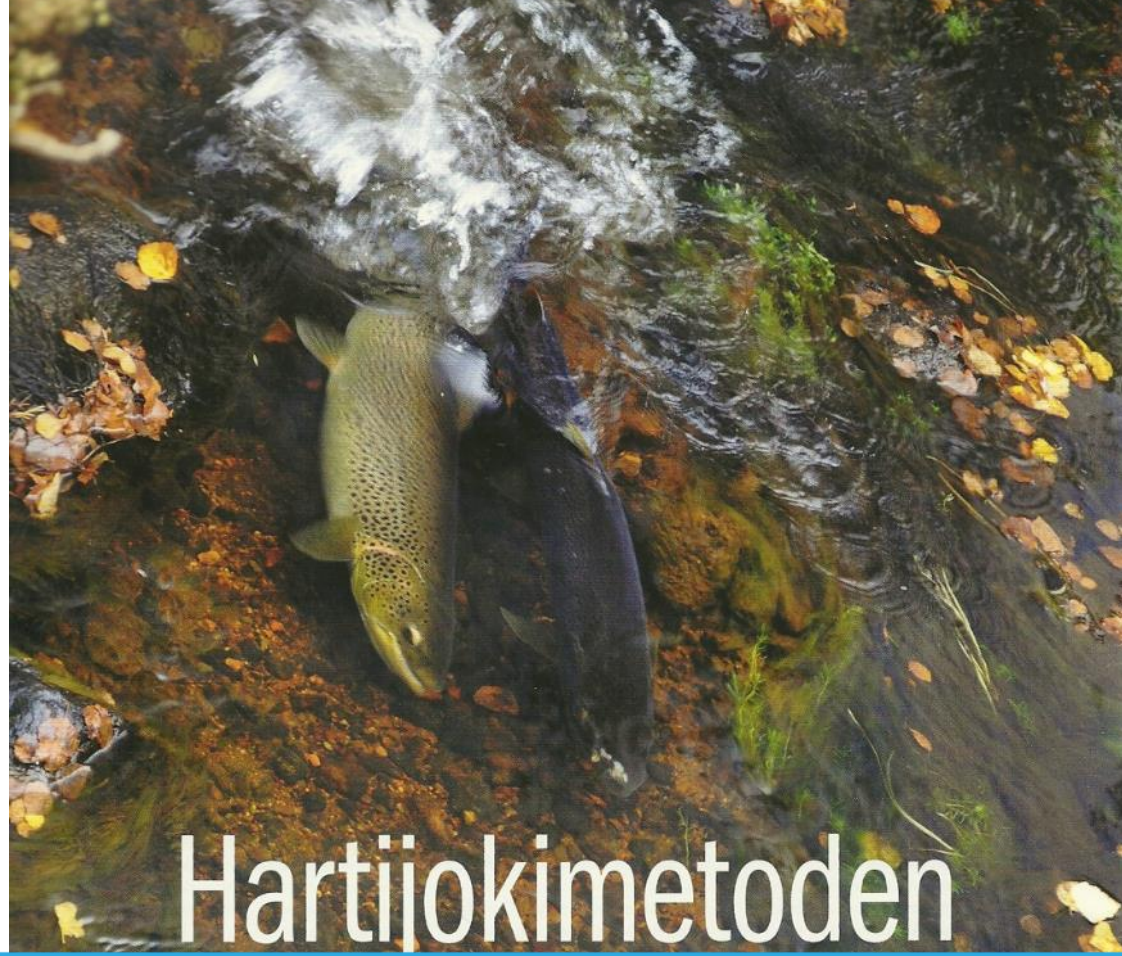

Hartijokimetoden

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Larger spawning areas in larger rivers. Prepared with excavator then adjusted by hand.

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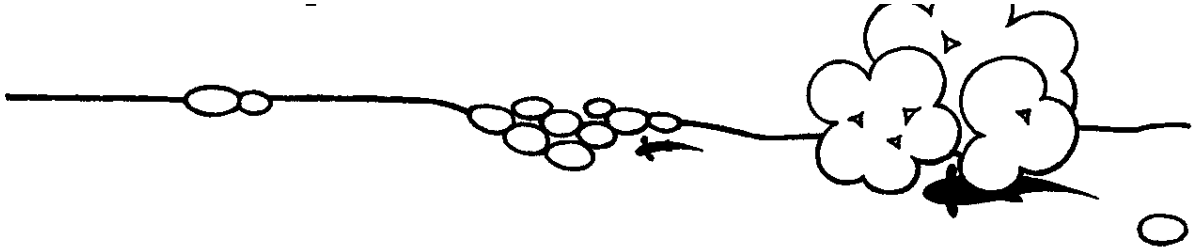
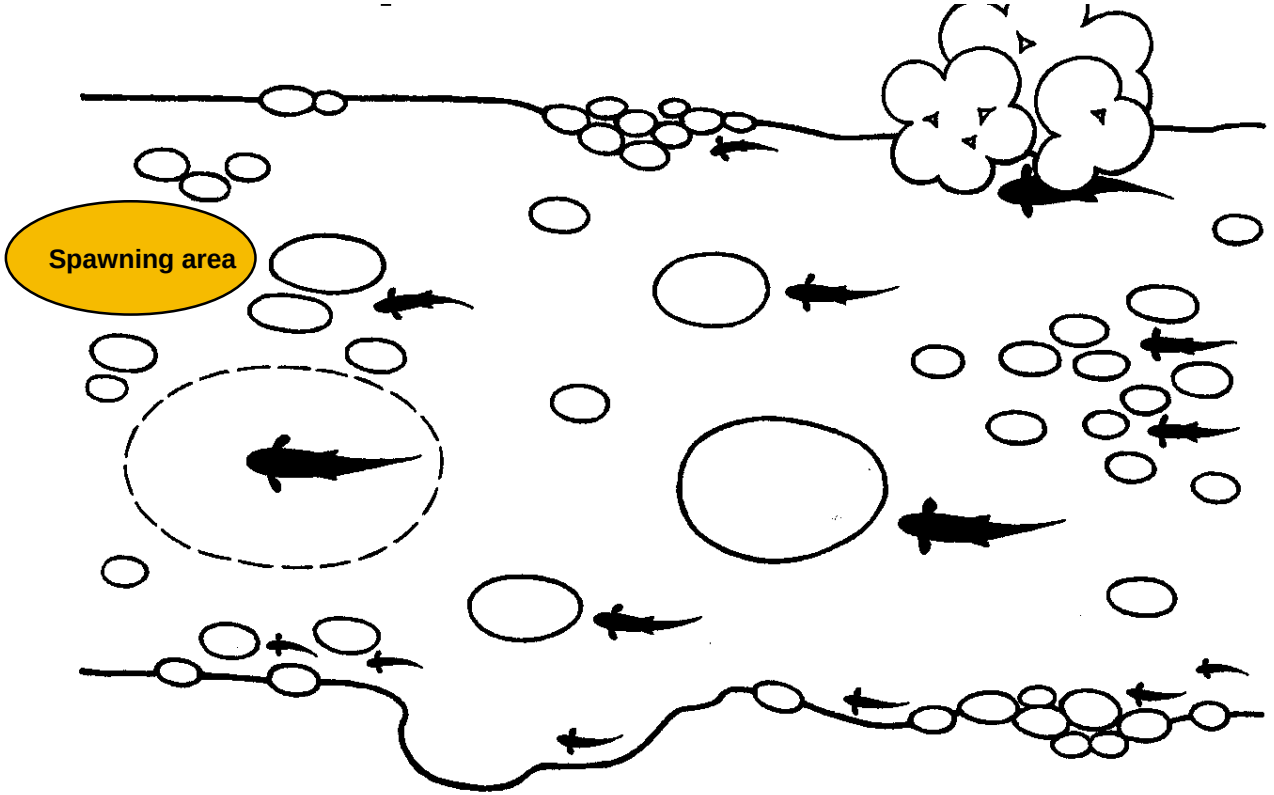
Spawning salmons

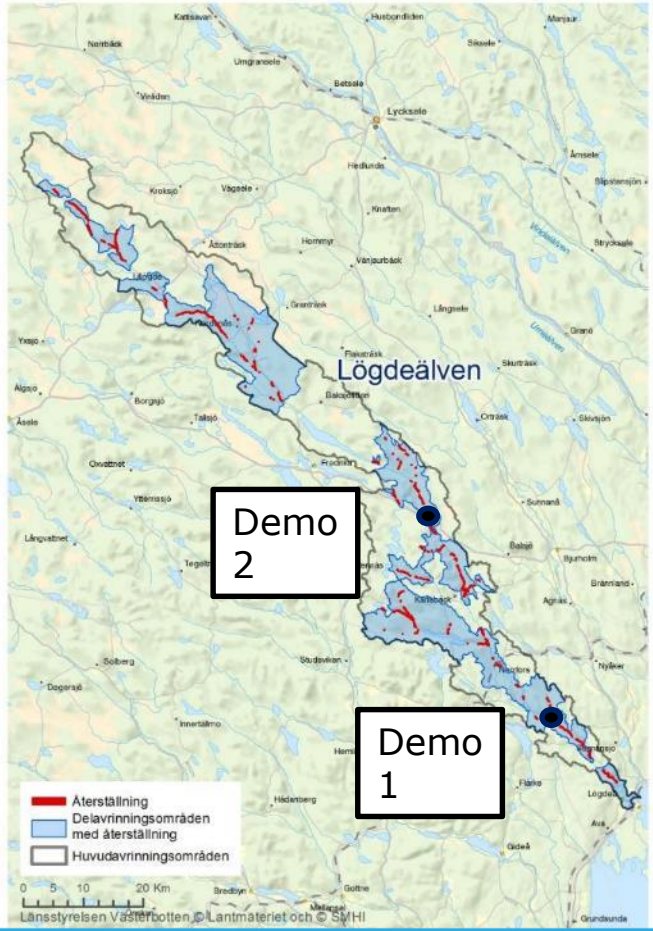



Spawning area

Education of foremen and excavator operators

So far more than 100 people have been trained.

Demonstration areas - forestry



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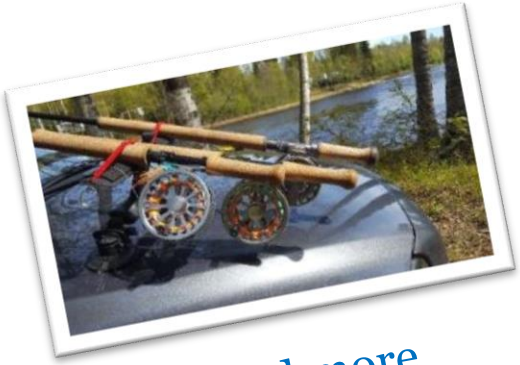
Information meetings



Reached more than 8700 people!

Around 130 meetings!

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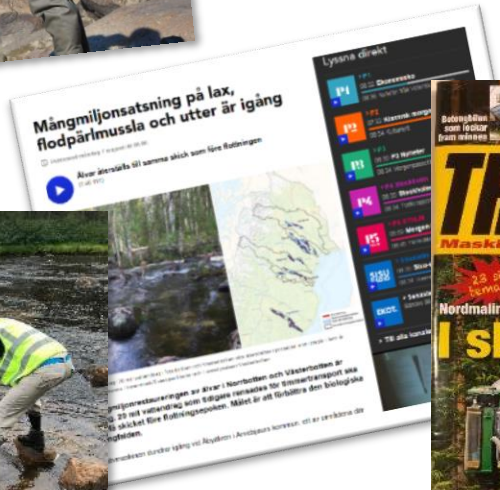
Media



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NATURA 2000

How much have we done so far?

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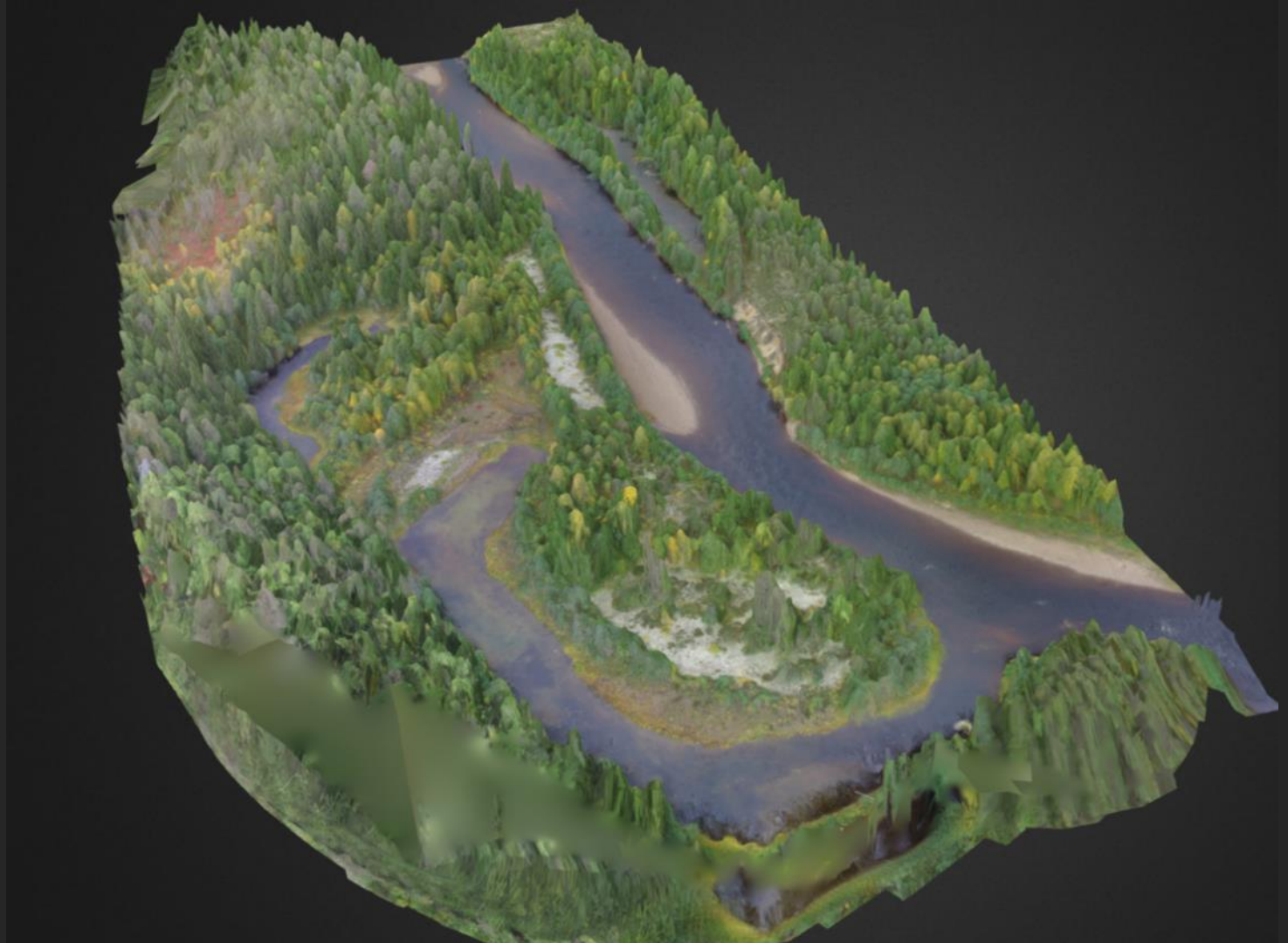
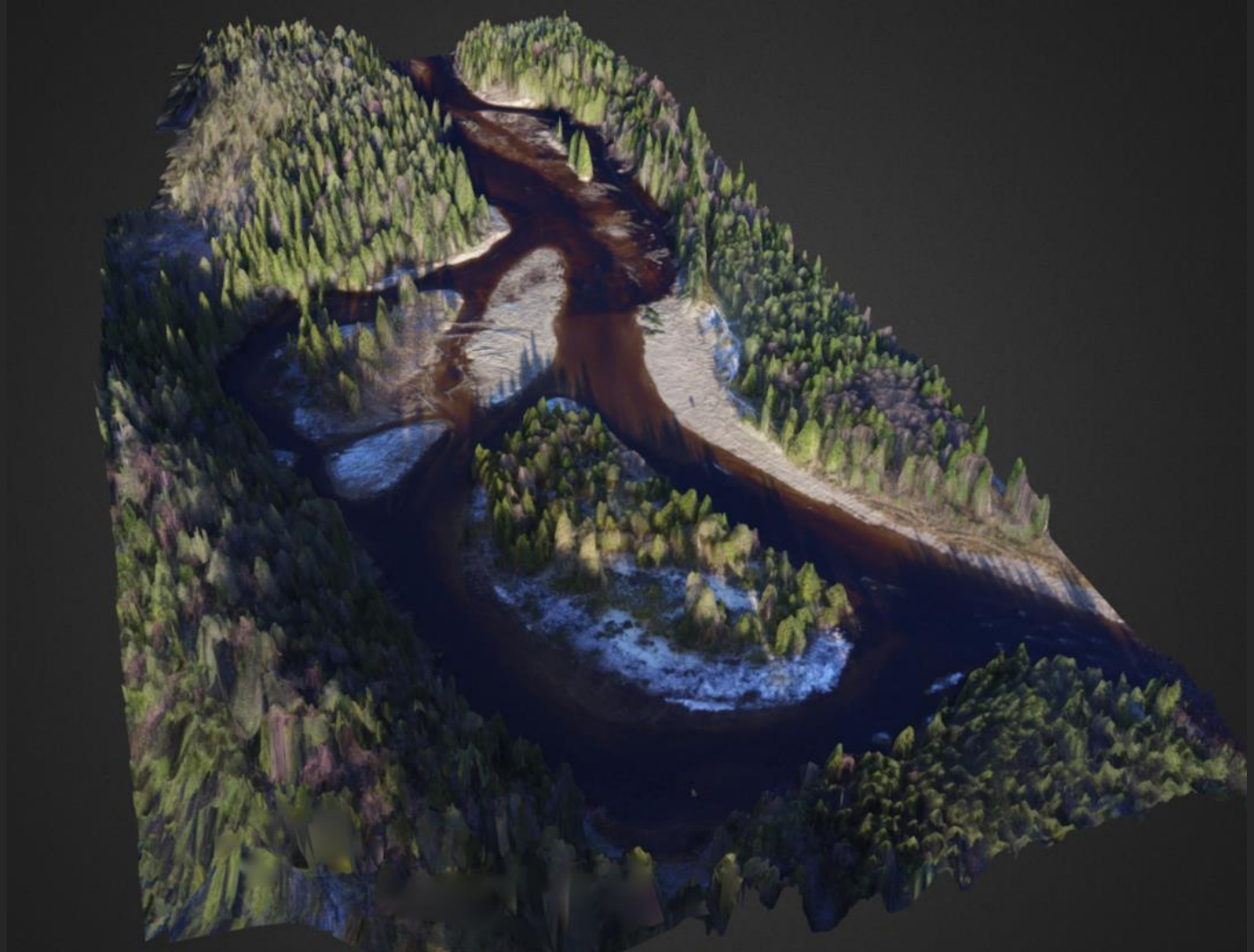
Restored 2016 - 2018

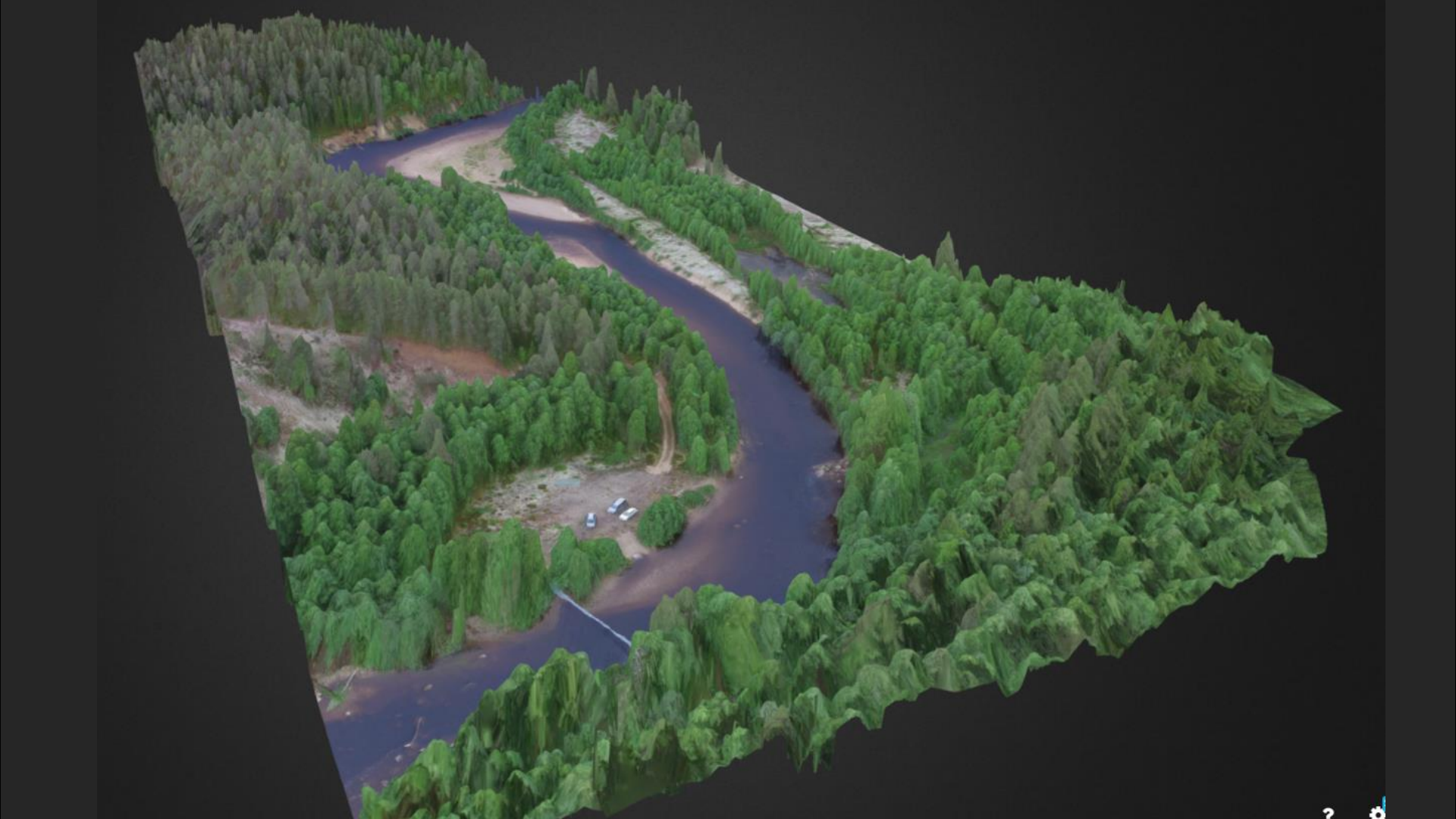
Area	Restored (km)	No. of spawning beds
Lögdeälven	47,4	5 854
Byskeälven	4,3	294
Piteälven	14,1	311
Åbyälven	3,8	399
Kalixälven	13,3	577
Råneälven	10,2	550
Total:	**93,1**	**7 985**

46,3 % restored

>100 % spawning beds created (47 910 m^2)







Monitoring

Drones –recreated wet area

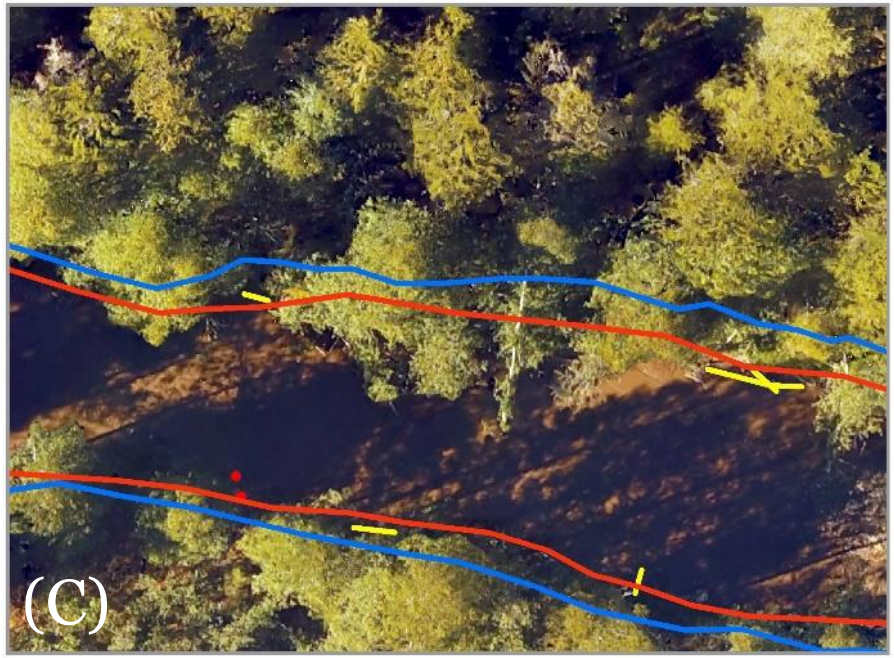
Electro fishing – abundance of fish

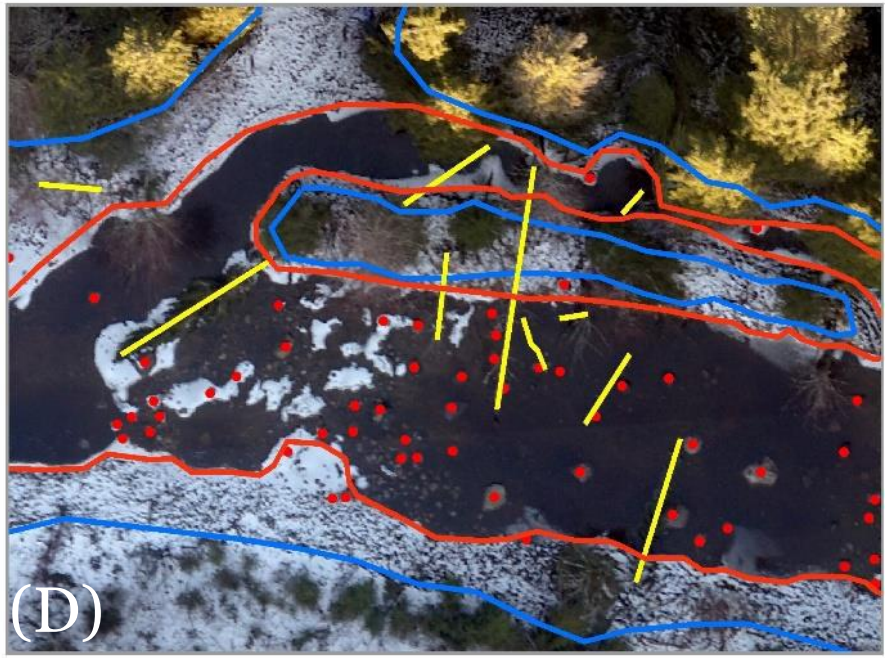
Freshwater pearl mussel – number of glochidia larva on trout and salmon and proportion infected fishes

Hydromorphology – bottom structure, velocity etc.

Spawning sites – if they are used

Monitoring of rewetted areas





0 5 10 15 20 m

Bankfull edge — Wetted area — Wood • Boulder

(C) Mjösjöån in channelized condition, and
(D) the same area of Mjösjöån in restored condition

So far around an 30 % increase of wetted area (average)

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Some results

In spring 2017 electrofishing was done at 35 sites in 13 different rivers within the ReBorN-project.

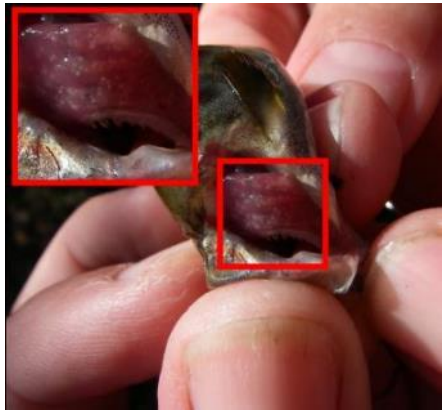
In all the studied rivers where glochidia infection was registered, the overall infestation rate was above 20 %, except one river (10%).

The number of glochidia larvae on each fish was in general very low. 74 % of all infected fishes in the study had between 1-10 larvae and only 4 % of the fishes had more than 50 larvae attached to their gills.

Salmon seems to act as host fish in River Lögdeälven, Åbyälven and Råneälven.

Standardized electro fishing conducted in the autumn 2017.

Follow up will take place 2020 and 2021.



Some results

45 spawning areas has been monitored in 2018.
30 (67%) of them showed traces of spawning activities.

Photos: Fiskmiljö

Some results

Reports are available for downloading at the website:

www.rebornlife.org


Biological data compilation on salmon and trout status of rivers within ReBorN-LIFE (LIFE15 NAT/SE/000892)

Stefan Larsson, County Administrative Board of Västerbotten 2017-09-22

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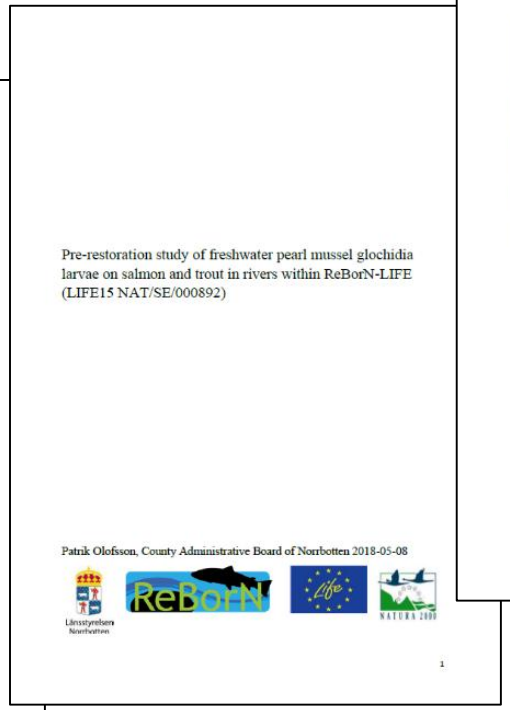
Pre-restoration study of freshwater pearl mussel glochidia larvae on salmon and trout in rivers within ReBorN-LIFE (LIFE15 NAT/SE/000892)

Patrik Olofsson, County Administrative Board of Norrbotten 2018-05-08

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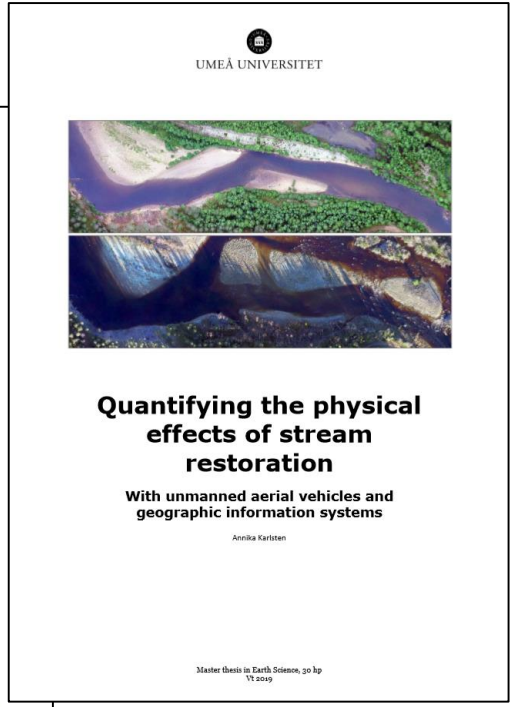
UMEÅ UNIVERSITET

Quantifying the physical effects of stream restoration

With unmanned aerial vehicles and geographic information systems

Annika Karlsten

Master thesis in Earth Science, 30 hp
Vt 2019

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Some results

Small populations with low recruitment of freshwater pearl mussel in most of the project rivers.

Larger populations in River Lögdeälven and River Råneälven. Not fully surveyed.

So far more around 8 300 mussels have been moved before restoration work started. Most of them from River Lögdeälven.

New fpm-population found in River Rutnajoki 2018.

”If it weren´t for the rocks in its bed, the stream would have no song” – Carl Perkins

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Thank you for your attention!

patrik.olofsson@lansstyrelsen.se

www.rebornlife.org

County Administrative Board of Norrbotten

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