

Restoring the channelized River Vääräjoki (Finland) towards good ecological status

The River Vääräjoki is a mid-sized lowland river with 835 km² catchment area. The river is 107 km long and descends 110 metres from its source to the confluence where it meets the larger River Kalajoki, which further flows to Gulf of Bothnian in the Baltic Sea (Figure 1).

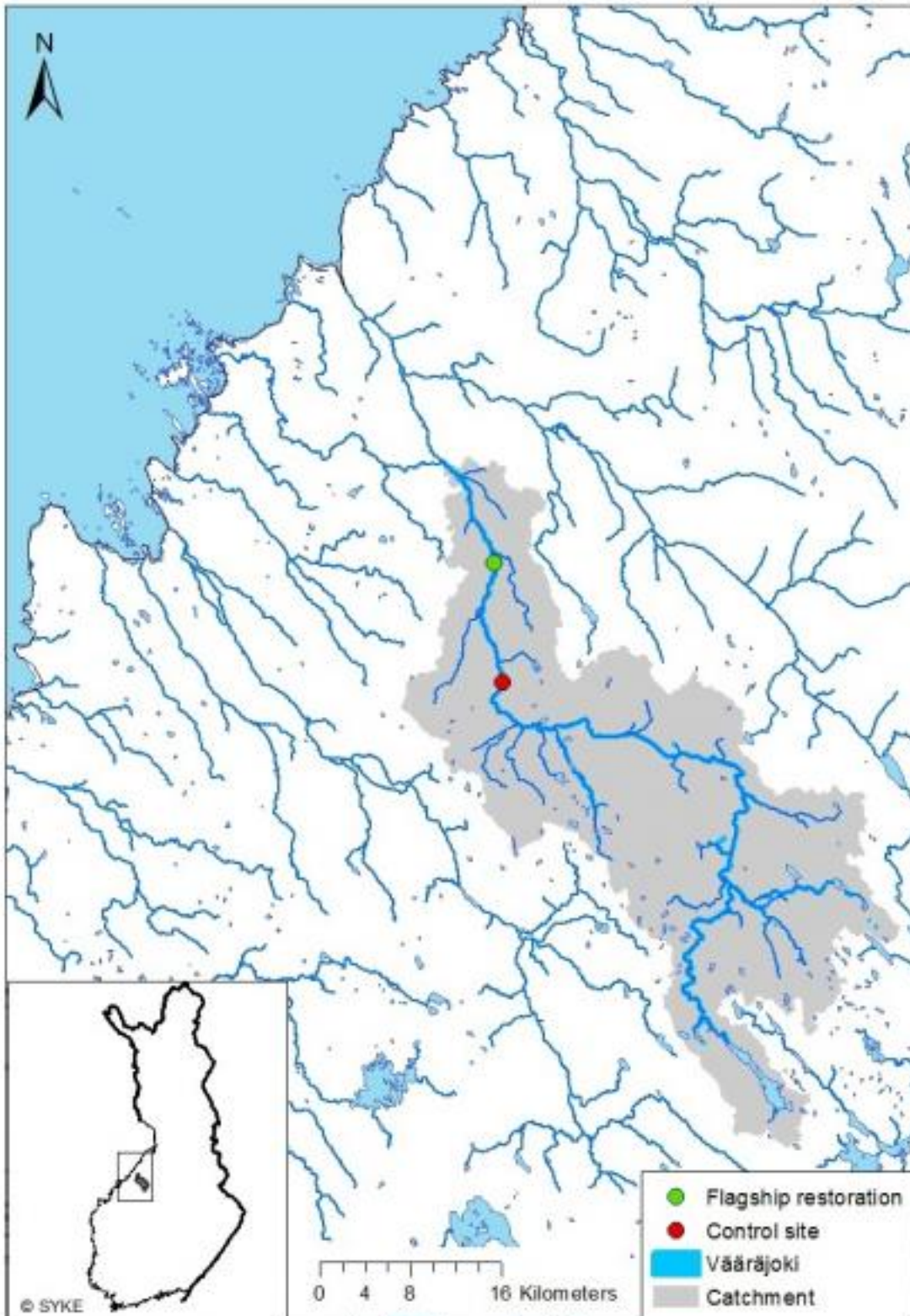


Figure 1. Catchment and location of River Vääräjoki in Finland.

Human activities have extensively modified hydrological and morphological conditions of the river in the past 150 years. Altogether, 25 km was channelized for flood protection and timber floating between the 1860s and late 1950s. From 1959-1974, Lake Evijärvi in the middle reaches of Vääräjoki was reclaimed for flood protection (Figure 2). Nine hundred ha of lake area were reclaimed by channelizing the river and by embankments. Especially flood protection measures changed the riffle areas considerably: The water retention capacity of the river bed decreased, and the heterogeneous flow patterns in riffle habitats disappeared.



Figure 2. The spring floods at Vääräjoki. Photo: Maarten Plug.

Nowadays, all rapids in the section from 13 km to 29 km upstream of the river mouth have been restored. These extensive works were started in late 1990s and were finished in 2006. The main aim has been to return the heavily modified river closer to its natural hydrological and morphological state and particularly to enable fish migration and spawning. The stream bed was rearranged using boulders that had originally been removed from the channel during channelization and placed along stream margins (Figure 3). Also, gravel beds were created to provide nursery habitat for salmonids.



Figure 3. The restored riffle Niskakoski at Vääräjoki. Photo: Jukka Aroviita.

In 2013, there are plans to continue the restoration works at the upper and lower reaches of the river. The restoration plan for the upstream reach 35-86 km from the river mouth is ready, and the work is about to begin. The plan to restore the downstream part of the river 0-13 km from the river mouth is nearly finished.

Despite the hydromorphological restorations, diffuse loading from agriculture and forestry in the catchment still impacts the river. Furthermore, soils in the area are naturally acidic and their cultivation has caused episodic acidification and impairment of the ecological status of the river. In the second national assessment for the WFD in 2013, ecological status was assessed as moderate. The catchment pressures thus likely hinder attaining the ecological objectives of the WFD.

A socio-economic study conducted in Vääräjoki as part of REFORM in April 2013 indicated that most respondents (78 %) visit the river several times a year. Among the total 67 people that were interviewed, the most common activities were bird or animal watching, fishing, and walking their dog along the river.

A slight majority of the respondents were also aware of the restoration activities. Plans to expand the restorations to upstream sections of the river were less well known: around 30% of the respondents were aware of these plans. In the choice experiment, most respondents were willing to have a tax increase in order to enable restorations to improve the ecological condition and provide more natural scenery. The study thus revealed a wide public acceptance, awareness, and willingness to participate in river basin management at the local scale.

Further links

Link to the socio-economic study conducted in Vääräjoki as part of REFORM in April 2013
<http://www.reformrivers.eu/news/169>

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