Kokemäenjoki-LIFE

From Ancient to the Present Estuary, Kokemäenjoki Wetland Chain

LIFE Nature project 2006 - 2012 (LIFE06NAT/FIN/000129)
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The purpose of the Kokemäenjoki-LIFE project was to restore five valuable natural sites on the River Kokemäenjoki, including eight Natura areas. These included a number of Special Protection Areas referred to in the Birds Directive and sites to be preserved under the Habitats Directive. Species and habitats that are valuable by European standards and nationally endangered species occur in these areas. In addition, all the sites are important recreation areas.

In the course of the project, bird-watching towers and information boards were put up and a number of nature trails were laid, and efforts were made to increase awareness of the natural values represented by the areas. Conservation and management of the natural environment also improves living conditions and wellbeing for people.

One half of the EUR 3.4 million budget indicated in the project plan was provided by the European Union’s LIFE Nature Fund that supports the conservation and restoration of Natura areas. Due to additional challenges and work associated with the restoration of Lake Puurijärvi, the total cost of the project amounted to over EUR 5 million. The project was led by the Southwest Finland Centre for Economic Development, Transport and the Environment, in addition to which 13 partners and co-financiers were involved in the project.
Project areas

The sites covered by the Kokemäenjoki-LIFE project were the area of Puurijärvi-Isosuo, Vanhakoski, Pirilänkoski, Preiviikinlahti Bay area and River Kokemäenjoki estuary in Satakunta.

Lake Puurijärvi, River Kokemäenjoki estuary and Preiviikinlahti Bay are some of the best known and important bird conservation areas in Finland. The groves of Pirilänkoski and Vanhakoski are part of the National Herb-Rich Forest Conservation Programme. In addition to their environmental value, all the sites are important recreation areas.
Management and land use planning

During the project, management and land use plans were drawn up for all the sites to help coordinate conservation, recreational activities and other use in the areas.

Nature inventories were conducted during the project to underpin the plans. In the River Kokemäenjoki estuary, the heavy metal and mercury content of sediments was investigated, and the evolution and changes of the estuary were studied. The sediment study supported the preparation of a management and land use plan for the area. The River Kokemäenjoki estuary is one of the areas most prone to flooding in Finland, and the study will also contribute to controlling flood damage in the region. Dragonfly inventories were carried out around Lake Puurijärvi, the River Kokemäenjoki estuary and Preiviikinlahti Bay, as little is currently known about dragonfly species and their occurrence in wetland habitats.
One underlying factor often affecting the biodiversity of bird wetlands is human activity, including the lowering of water levels in lakes in order to increase arable land area, as well as grazing and mowing. As a result of human action or natural development, many of these wetlands are at risk of becoming marshy and overgrown, with the ensuing loss of valuable species. The current modes of land use no longer tend to produce habitats of this type, and preserving the environmental value in wetlands thus requires regular management or restoration.

During the Kokemäenjoki-LIFE project, mowing and excavation were used to prevent overgrowth and to preserve wetland habitat. Raising the water level in Lake Puurijärvi represented the most large-scale effort in this project.

Part of the restoration work aimed at reverting the area to its natural state. This process was accelerated by blocking ditches in drained mires and by increasing the amount of decayed wood in areas that had been used for commercial forestry.
Lake Puurijärvi

Lake Puurijärvi (440 hectares) is part of the Puurijärvi – Isosuo Natura area, which also comprises the National Park of Puurijärvi and Isosuo. Lake Puurijärvi is a wetland area of international value, and its restoration was the largest project of its kind ever undertaken in Finland.

In order to preserve the wetland habitat and valuable bird life of Lake Puurijärvi, the water level in the lake was raised by approximately one metre. The objective was to almost double the water surface during the driest periods of the year. By building a dam and embankments and carrying out excavation work, the mosaic of water and vegetation that is vital for wetland habitats was created in the area. The basic structure of the dam consisted of a man-made set of rapids that also serves as a pathway for migrating fish.

As a result of the work carried out, the number of nesting pairs of diving ducks that need open water increased considerably, including such species as the common golden-eye and tufted duck. The impacts of the restoration work at Lake Puurijärvi and experiences gathered during the project also produced important background information for future wetland restoration projects. To evaluate the impacts of the work, monitoring will be needed after the project, and some of the changes may take years to manifest themselves.
The southern end of Lake Puurijärvi in summer 2007 on the left, and in summer 2010 on the right. The image on the right shows the alignments of the dam structure (black line) and embankments (red line) built at the lake.

The photo on the left is from July 2011 and the one on the right from July 2012 – in the southern part of Lake Puurijärvi, the water level has risen; the dam can be seen at the bottom left of the lake.
Lake Raijalanjärvi

Lake Raijalanjärvi is a field area owned by Huittinen Prison that is popular with geese, swans and cranes. Pools were excavated in the area, and feeding places were arranged for birds that come here to rest during their migration. The positioning of the pools and feeding stations help guide the birds into areas where they are not disturbed. The locations reserved for bird-watchers were selected to ensure that visitors to the area do not disrupt the prison's activities.
Shore meadows and flood meadows

Shore and flood meadows are vital feeding and nesting environments for many wetland birds, including the extremely rare dunlin. Many species of plants and insects also require open shore meadows for their habitat.

In the course of the Kokemäenjoki-LIFE project, shore and flood meadows were restored in Preiviikinlahti Bay area, Lake Enäjärvi and Vanhakoski. In Preiviikinlahti Bay, over 33 hectares of shore meadows overgrown with reed beds were mowed. The area was also managed by rotivating and furrowing the reed bed root system, imitating the effects of being trampled by cattle, which has proven an effective method in many places.

Flood meadows are often threatened by the drainage and embankment of shore areas. As a result of this shoreline areas begin to dry out and trees start encroaching on the shores. In addition to a decline in suitable nesting habitats for birds, drain banks overgrown with trees and bushes provide cover for mink and raccoon dogs, which are harmful to bird life. At Lake Enäjärvi, overgrown shore meadows were restored by clearing, blocking drains and removing drain banks. In addition, islands suitable as nesting areas for seagulls and aquatic birds were created in the area.
Over time, River Loimijoki has changed its course as a result of a landslide, and its old channel can be traced in Vanhakoski grove as a chain of small ponds. The many small rapids in this area, which are mainly in their natural state, are some of the last sites in Finland where the endangered asp (fish species) occurs in Finland. A ditch dug in the old channel had previously drained the area, and changed its natural state. This ditch was filled in using soil obtained from the banks.
Forests and mires

In the Puurijärvi-Isosuo area, the natural state of the mires has in many places been changed by drainage carried out in years gone by for forestry purposes. The drainage of the mires has had a detrimental effect on the living conditions of many species requiring a marshland habitat.

Areas that have been used for commercial forestry often lack some of the natural phases in the life cycle of tree stands, including decayed wood. However, ageing and natural forests provide vital habitats for many vulnerable and rare species.

Forests in the Puurijärvi-Isosuo area were restored to their natural state over an area of a few dozen hectares by producing decayed wood and removing planted softwoods to clear space for deciduous trees. More than one hundred hectares of marshes were restored by blocking drains and clearing trees.
Nature trails

Bird-watching towers and nature trails are important for allowing visitors to get acquainted with the natural environment. They help guide the visitors’ movements so that harmful effects to birds, vegetation and landowners alike can be minimised. Disturbances during the birds’ nesting season may have an adverse effect on nesting success. Disturbing birds in their resting and feeding areas in the spring and autumn may affect the birds’ ability to survive the migration.

As part of the Kokemäenjoki-LIFE project, bird-watching towers and information boards were put up and paths were laid in the sites. Two new bird-watching towers were built at Lake Puurijärvi, as well as an observation deck for wheelchair users. Information boards and paths were constructed. Bird-watching towers were also built at Lake Raijalanjärvi and around River Kokemäenjoki estuary in Noormarkku, Pori.

The nature trails in Vanhakoski and Pirilänkoski were restored. New information boards were also put up and old ones were repaired.
Monitoring

During the project, various types of nature inventories were carried out in order to assess the impacts of restoration and management efforts at Lake Puurijärvi, the Preiviikinlahti Bay area and at Lake Raijalanjärvi.

There is a large-scale, multi-annual monitoring programme focussed on the restoration of Lake Puurijärvi. It includes monitoring the effects of the restoration on bird life, vegetation, habitats, benthic fauna and water quality. Aerial photographs will be taken of the lake annually to support the monitoring of the vegetation and to help chart the impacts of the excavation work and rising water levels.

In Preiviikinlahti Bay area, the impacts of mowing were assessed by means of bird life, vegetation and habitat monitoring. Aerial photographs can be used to chart changes in the area of the shore meadows. At Lake Raijalanjärvi, the impacts of the restoration on the numbers of resting birds and their occurrence in the area were studied.

The impacts of forest and mire restoration on the environment can only be properly assessed after a lengthy period of up to several decades. During this time, the effects of the
project can be assessed by such factors as changes in the surface area of drained land.

The Kokemäenjoki-LIFE project also studied the project’s impacts on attitudes towards the changes and its financial impacts on the area. Both play a key role in the success of nature conservation and associated projects. These studies were carried out by Turku University’s Satakunta Environmental Research Institute.
Partners and co-financiers

Beneficiary
• Southwest Finland Centre for Economic Development, Transport and the Environment, area of responsibility of the environment
  (previously Southwest Finland Regional Environment Centre)

Partners
• Metsähallitus
• Finnish Environment Institute
• Geological Survey of Finland
• Satakunta Prison, Huittinen Unit
• BirdLife Finland
• University of Turku
  - Department of Geology
  - Environmental Research Institute
• Finnish Road Administration, Turku Region
  (as from 1 January 2010, part of Southwest Finland Centre for Economic Development, Transport and the Environment)

Co-financiers
• Regional Council of Satakunta
• Town of Kokemäki
• Town of Huittinen
• Municipality of Noormarkku (as from 1 Jan 2010, part of the town of Pori)
• Municipality of Nakkila
• Town of Harjavalta

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