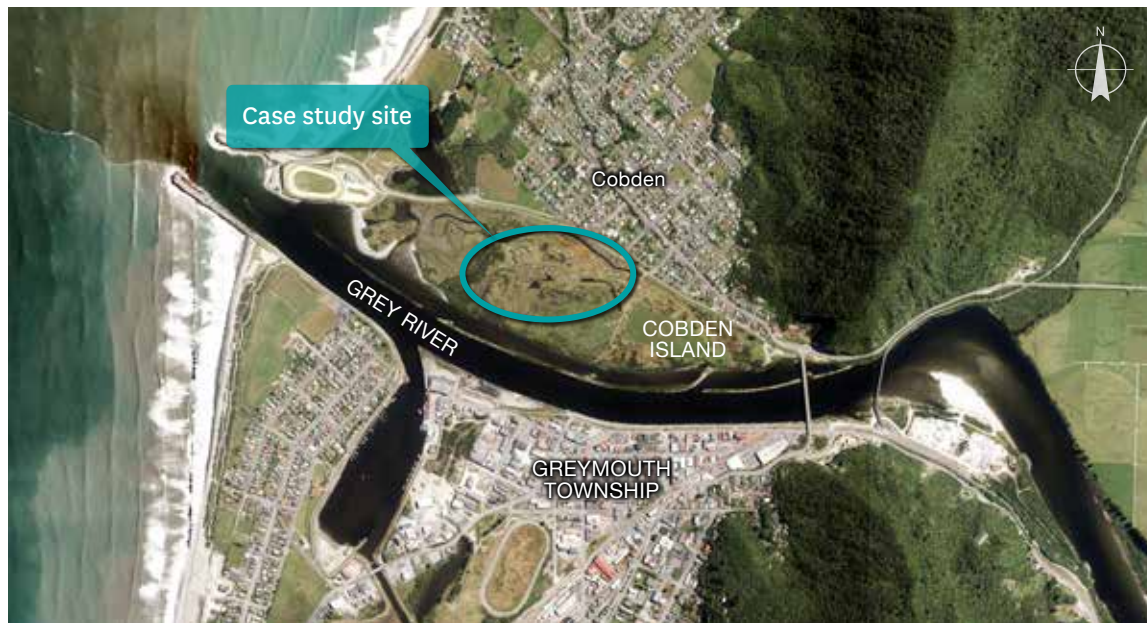




Backwater habitat creation on Cobden Island in the Grey River

Following a survey of īnanga (*Galaxias maculatus*) spawning sites on the West Coast in 2007, Cobden Island in the lower Grey River was identified by the Department of Conservation (DOC) as a candidate site for spawning habitat restoration.

► Location:



► Objectives:

Although some limited spawning had been observed on the island, it was considered that īnanga spawning and rearing habitat could be greatly enhanced by excavating numerous backwater channels and establishing extensive native plantings.

With funding from DOC secured, local staff and community volunteers embarked on a project with the primary objective of enhancing īnanga spawning habitat.



photo © EOS Ecology / Shelley McMurtrie

Application



backwater



bank/riparian



intertidal

This case study is part of a series providing information about techniques used to restore native freshwater fish habitat in New Zealand rivers and streams.

Some techniques are still in their trial phase, and not all techniques have been confirmed effective. Resource consent or other permissions may be required to undertake works. We recommend you seek advice before applying any of these techniques onsite.

▶ Restoration method:

The restoration project was based on a 2001 trial, which involved excavation, planting, and weed control within the Taramakau River lagoon, south of Greymouth. This small-scale trial was deemed a success and the same digger driver was used for the Cobden Island restoration project.

The bulk of initial restoration costs were for channel excavation and acquiring native plants.

Construction included creating:

- numerous broad channels with gently-sloping banks excavated in the dry
- low-level weirs to retain water in the channels at low tide.

Native plants for re-vegetation were chosen for:

- general hardiness

- ability to bend during flood flows
- their location abundance.

Flax (*Phormium tenax*) was used extensively for the native plantings, along with cabbage trees (*Cordyline australis*) and kowhai (*Sophora* sp.). Most of the flax was obtained by splitting pre-existing plants that were moved around by the digger driver.

As īnanga are often found spawning amongst rank grass, some pasture grass was also sown to provide rapid ground cover after excavation. The bulk of planting was done by volunteers, and many hours were spent removing broom, gorse, and willows. The site was walked several times before and after excavation, and any īnanga observations were recorded.

▶ Outcomes:



Approximately 6 km of new riparian margin and backwater habitat has been created by excavating a series of convoluted channels over an area of about 6 ha on Cobden Island. The fifth annual (and last) stage of channel excavation was completed in 2017, and in 2018 the project is now nearing completion.

FISH:

- Īnanga were observed using the channels immediately after they were excavated.
- Five years after the project started schools of īnanga are now seen every few metres in the channels during spring and summer.
- During observations at one location in March 2017, milky-coloured water and īnanga swimming into grass were seen, indicating likely spawning, although no surveys for īnanga eggs have been undertaken.

HABITAT:

- Riparian plants established very quickly and there was generally a high survival rate.
- In 2018, around 11,000 flax plants – 95% of the plantings – had been planted.
- Regular weed control was required for around three years after the excavation of each channel, until sufficient ground cover established to shade out the weed species.
- Residual weeding will be required for another 12–18 months, but the time and effort required for this is declining as native vegetation cover becomes established. After this, only a small amount of ongoing maintenance will be necessary to prevent weeds (e.g., invasive willow cuttings that are washed onto the island during floods) from re-establishing.

OVERALL: The restoration project partners consider the project to be a success, and it generated considerable community interest and involvement.

**BEFORE**

photo © Henk Stengs

DURING

photo © Henk Stengs

**AFTER
1.5 years**

photo © Henk Stengs

OTHER LEARNINGS:

The two key elements of success for this project were i) having an experienced digger driver with a proven track record, and ii) the many volunteer hours contributed.

Weeding at seedling stage for gorse and broom was crucial, as it enabled the seedlings to be easily removed by hand – although this was intensive and time consuming. Other than occasional maintenance, these weeds were no longer a problem once long grass naturally re-established.

Maintaining volunteer interest in the project became more difficult over time, as removing weeds is often not as appealing as planting trees, but it is crucial for success.

The remaining work at the site is mostly focused on weed control, and splitting and planting the remaining flax clumps. With the project now in its final stages, the Cobden Aromahana Sanctuary and Recreation Areas (CASRA) community group are now managing all ongoing restoration work with support from Conservation Volunteers New Zealand, while DOC contributes to community funding only. Visitors to the restoration site are often shown before and after photographs, and fish traps are often deployed, to highlight the value of their volunteer efforts and maintain engagement.

FURTHER INFORMATION:

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