CASE STUDY

LAKE STATS

Lake Kaituna ("B") 22ha and Lake Komakorau ("C") 8ha

Status: Horsham Downs Government Purpose Reserve - Wildlife Management (DOC administered)

Recreational uses: duck shooting and koi carp hunting (widespread pest fish). Walkway around both lakes (access from Bankier Rd)

CONTROLLING GREY WILLOW AT LAKES KAITUNA AND KOMAKORAU

The lakes to the north of Hamilton City form part of a chain of more than 30 shallow peat lakes that extend along historical routes of the Waikato River. Over the course of a few decades, grey willow (*Salix cinerea*) invaded the margins of both Lake Kaituna (15 ha) and the adjacent Lake Komakorau (2.6 ha), considerably reducing the area of open water. Much to the concern of the landowners, the invasion of willow and other weeds combined with declining lake water impacted on native wildlife populations – few birds were to be seen. To remedy this, a lake care group was formed, and partnerships developed between the group, Environment Waikato and DOC.

The beginnings

Ground work to clear dense thickets of grey willow at Lake Kaituna started in 1999. A host of other weeds including royal fern (*Osmunda regalis*), blackberry (*Rubus fruticosus*), crack willow (*Salix fragilis*) and Japanese honeysuckle (*Lonicera japonica*) were also removed in the process. Both lakes were fenced to prevent stock access, and silt traps and vegetation filters were constructed on drains to prevent direct entry of nutrient and sediment laden water to the lakes.

Ground-based control

Beginning upwind to avoid reinfestation of cleared areas, grey willow was felled and stumps painted with 4 parts diesel and 1 part Roundup™. These works were carried out Dec–Jan to take advantage of low water levels. A digger then stacked the willow in piles working from the margins further into the wetland. Willow rots quickly and this method allowed native sedges and eventually other wetland species to reestablish quickly. After 3–5 years, the felled willow has almost entirely rotted away, with the area now largely colonized by native sedges.

Aerial control

Areas where the water was too deep were helicopter sprayed with 9L Roundup™, 500 ml Pulse penetrant and 1 L Delfoam anti-drift agent in 200 L water. Follow-up work is focused on controlling willow seedlings, blackberry, beggars tick (*Bidens frondosa*), and gypsywort (*Lycopus europaeus*), through a combination of handpulling/grubbing and spot spraying with Roundup™.

Funding

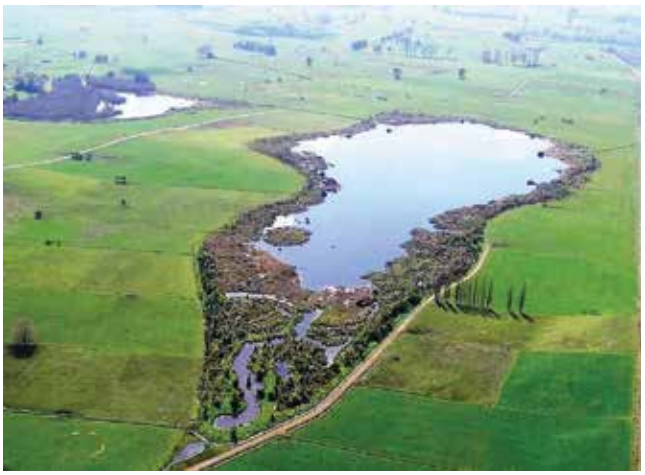
Complete removal of ~16 ha of willow from both lakes took 7 years at a total cost of around $60,000. This sum includes financial contributions from Environment Waikato, DOC (both lakes are Wildlife Management Reserves), the landowner farming around the lakes, and the local lake care group. Not included in this sum is the considerable unpaid time and resources the landowner and lake care group have contributed toward weed clearance, planting, pest control, and plant maintenance.

– Monica Peters, NZ Landcare Trust and Andrew Hayes, Lake Kaituna and Komakorau Care Group

REF: www.landcare.org.nz/files/file/841/Hayes%20Case%20Study%20Revised%20May%202012.pdf

Before and after.

Lake Kaituna prior to willow removal.



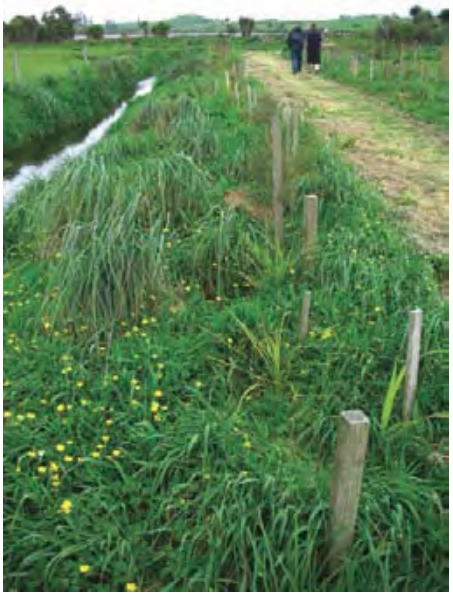
Willows completely cleared from Lake Kaituna and regeneration well underway. The grayish stands of willow on the adjacent lake (Komakorau) have since been removed. Photo: Environment Waikato

Native sedges, rushes and shrubs naturally regenerated and flourished once free of the willow stranglehold.

Large-scale restoration takes large-scale approaches: a digger was necessary to remove the dense stands of grey willow.

With funding from Environment Waikato, the Department of Conservation and a lot of volunteer work, the Care Group has also:

- Installed sediment traps on all inlet drains to both lakes
- Cleared away 30 truckloads of household rubbish from the lake edge
- Dealt to privet, blackberry and other weeds
- Controlled animal pests including possums and feral cats
- Re-planted native species
- Developed areas for wading birds
- Installed teal nesting boxes
- Created a walkway around both lakes



Some drain margins are grassed while others incorporate walking tracks and native plantings. Photo: Monica Peters

Native sedges, rushes and shrubs naturally flourished and help the wetland work like a sponge keeping adjacent paddocks drier in the winter as the soil and plants soak up floodwaters, and moister in the summer as the stored ground water is slowly released.

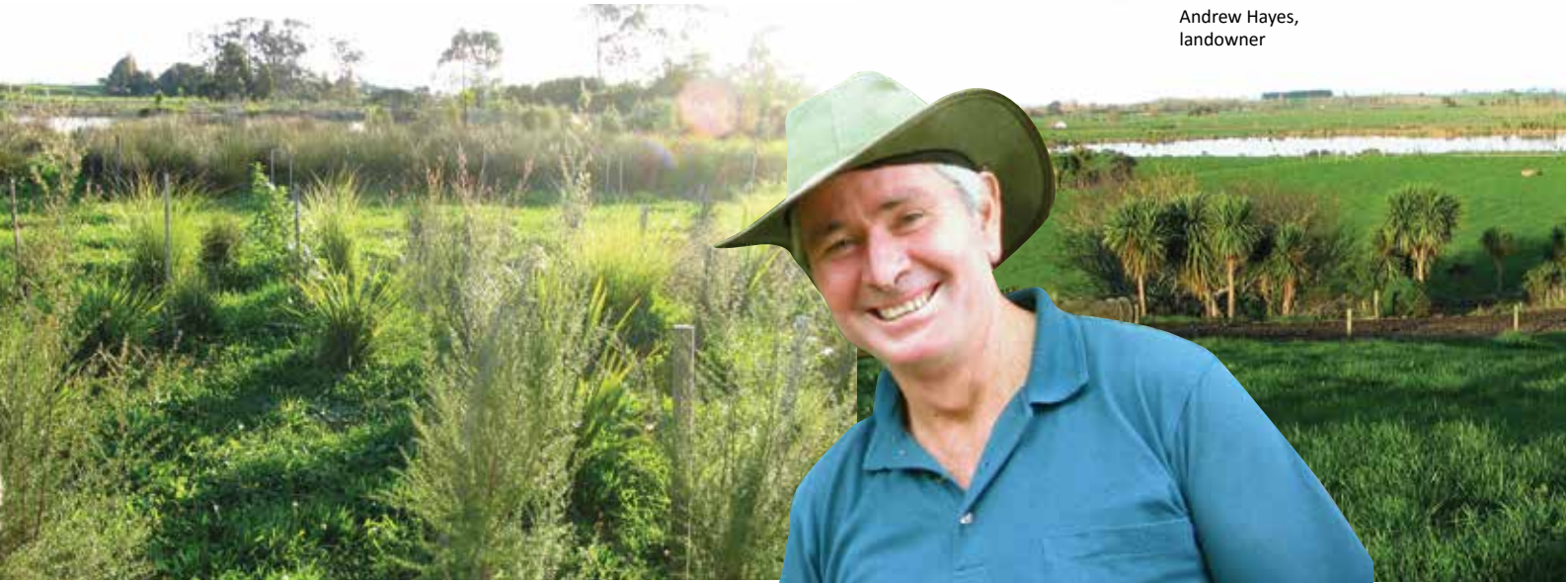
Birdlife bounces back.

One pleasure of restoring the lake is seeing the native wildlife come back now that food and shelter has improved.

- Grey teal use the nesting boxes
- Several Australasian bittern are regular visitors
- New Zealand dabchick have been seen on the lake
- Rare native black mudfish have been released into the wetland
- DOC is considering the lake as a site for brown teal release
- The lake is also a habitat for eels and common bullies

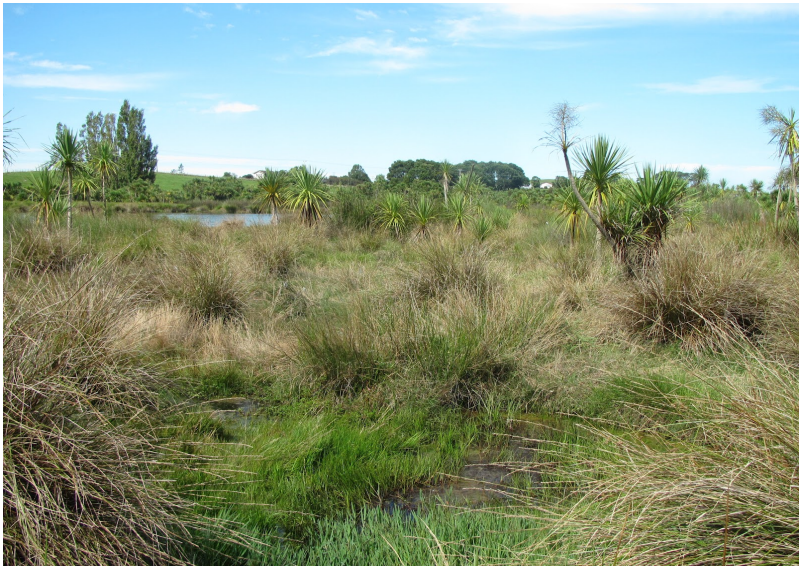
Educational opportunities.

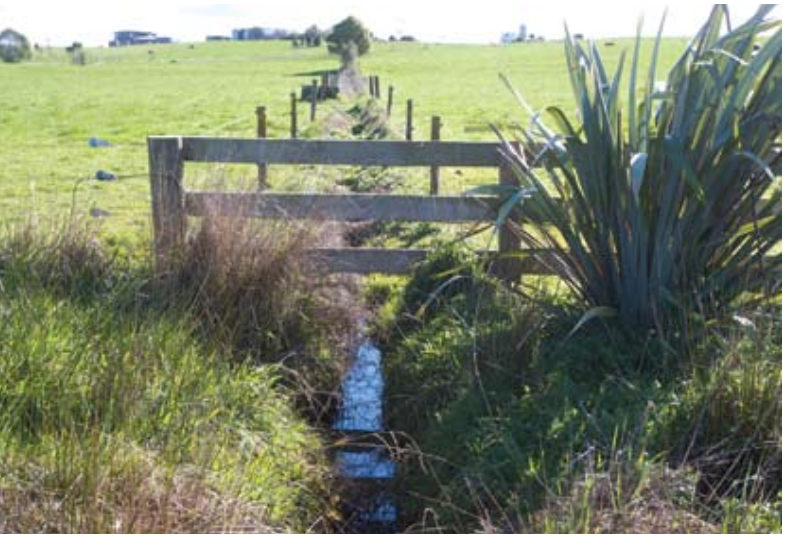
An educational resource kit has been developed by the Department of Conservation, especially for Lake Kaituna. The kit has been developed to encourage teachers to take school groups to visit the lake and learn about its ecology. The resource kit for Lake Kaituna and other Waikato wetland sites is available on the Department of Conservation website.



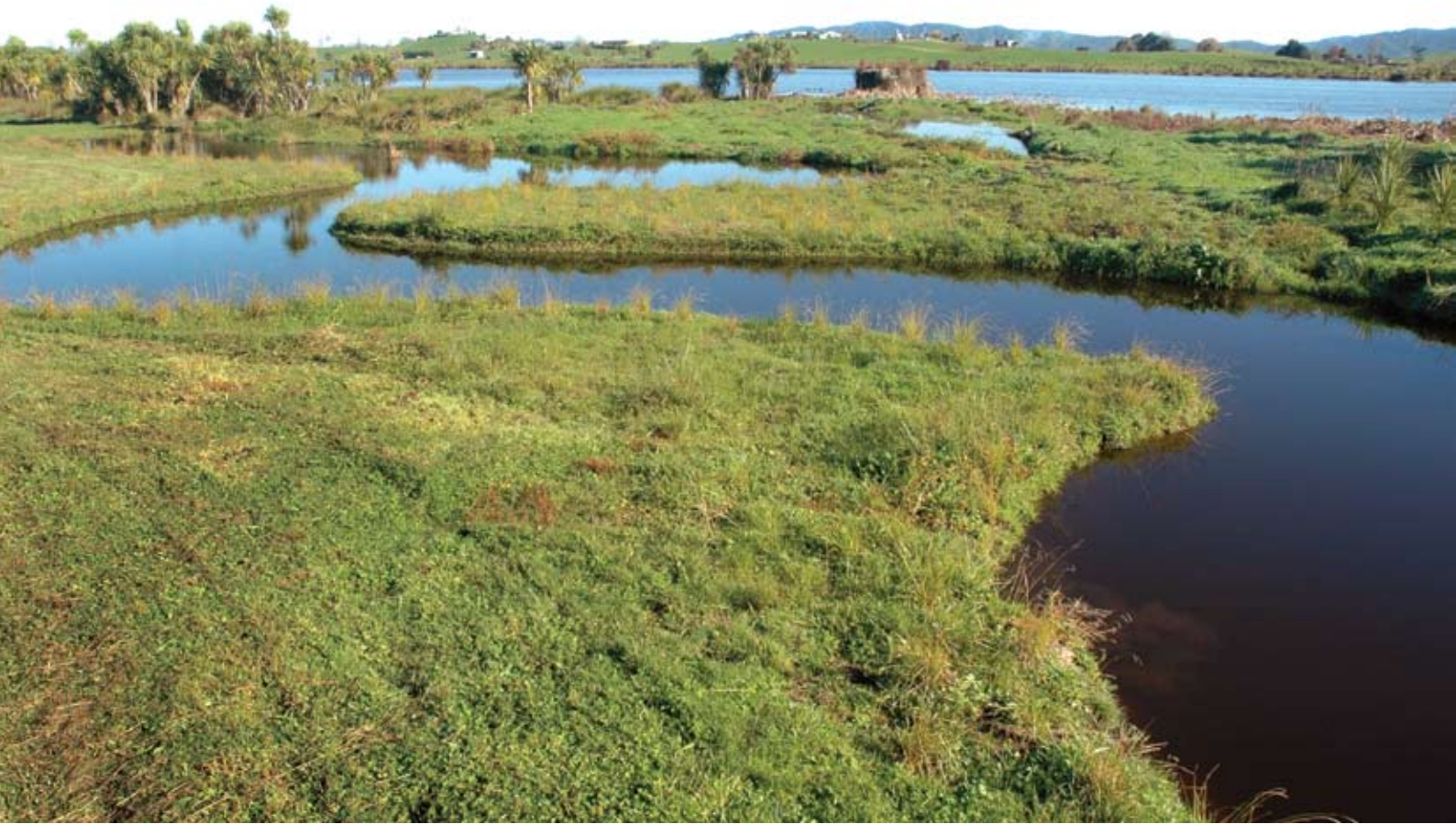
Andrew Hayes, landowner

...fenced out the stock and retired the land around the lakes, creating a wide buffer of wetland vegetation to trap silt and nutrients.





Silt traps slow the water, allowing sediment to settle out before the water enters the lake.



Text and images sourced from:

Wetland Restoration: A handbook for New Zealand freshwater systems. Edited by Monica Peters and Beverley Clarkson. Lincoln, NZ. Manaaki Whaenua Press, 2010.

Landcare: A Practical Guide. 2010.

Best Management Practices: For enhancing water quality in the Waikato. NZ Landcare Trust . 2010

www.landcare.org.nz/files/file/841/Hayes%20 Case%20Study%20Revised%20May%202012.pdf