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Fostering fish-friendly farms

Photo: John Conallin

Fleur Muller
KONDININ GROUP

Fishy future: *Improving the health of waterways can help secure the future of fish species while helping to improve farm productivity and sustainability.*

Making farms more fish friendly is not just about improving native fish habitats. Farm productivity, infrastructure, stock health and farm values can also benefit from making rivers, creeks and wetlands healthier for fish and aquatic species as *Farming Ahead's* Fleur Muller found out.

At a glance

- Farming practices can affect fish habitats but by taking steps to reduce the impact on fish habitats producers can increase farm productivity, improve farm infrastructure, increase stock health and improve farm values.
- Excluding stock from critical riparian zones along creeks and rivers, installing off-stream watering points, installing fish-friendly crossings, controlling agricultural run-off and leaving snags in waterways can all provide healthy environments for fish and other aquatic species.
- Improved infrastructure, easier stock movements, improved farm biosecurity and greater windbreak protection are other benefits of fish-friendly farms.
- Eight farmers across NSW have been implementing fish-friendly practices on their property to improve the health of rivers and streams and to demonstrate to other producers the benefits of making farms more fish friendly.

Farming practices can significantly affect the health of rivers and creeks and can lead to a loss of fish from local waterways. Integrating fish–friendly practices into overall farm management can protect and restore native fish numbers and at the same time enhance natural resources, and maintain or improve farm productivity.

Native fish need shelter, clean water, food and room to move.

Fish will feel more at home with the help of large woody debris (snags) in streams, well-vegetated stream banks, fish–friendly crossings, low levels of agricultural run-off, off-stream stock watering points, controlled opening of floodgates and healthy wetlands.

Steps such as re-snagging fencing to exclude stock, removing weeds, revegetating with native plants, installing fishways and changing road crossings, removing weirs and actively managing floodgates all help to improve fish habitats.

Re–snagging

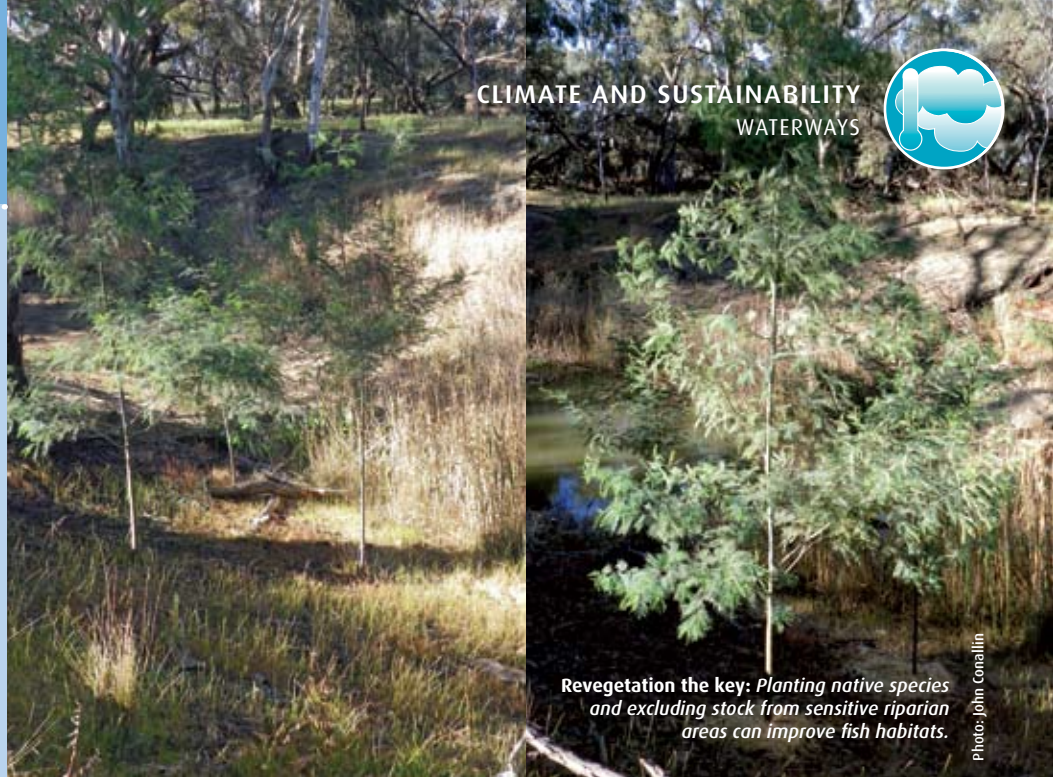
Native fish numbers can often be directly related to the amount of snags present in a waterway so it is important to leave logs in streams where possible. Snags provide protection from predators, shelter from direct sunlight, resting areas out of the main channel flow, territorial markers, and breeding and foraging sites. Increased bank stability and reduced waterway erosion is also provided by the presence of large wood in streams. Lop, realign or relocate large logs rather than remove them and consider re–snagging if the waterway lacks sufficient large snags.

Vegetated stream banks

Riparian vegetation provides food, shelter, shade and fine organic material for fish and other aquatic species and is important for filtering sediment, phosphorus and organic nitrogen from run-off. Densely vegetated stream banks also shade waterways and help control water temperature. Control stock access to waterways and limit grazing in riparian areas to: help retain important stream bank vegetation, improve water quality, and stabilise stream banks and thereby reduce erosion. Controlling weeds, maintaining a well-grassed buffer area between crops and stream banks, eradicating willow trees and other exotic plants and revegetating with layers of mixed species native to the area will help

Fish Friendly Farms Project

The Fish Friendly Farms (FFF) is an Industry and Investment NSW program that encourages farmers to protect fish habitat on and off their properties through sustainable agricultural practices. For the past year, eight farming families have been implementing on-ground works to enhance the health of rivers and creeks and build native fish populations, which has also included the establishment of FFF demonstration farms. With funding from the NSW Environmental Trust, the project has helped these farmers incorporate more fish-friendly management practices to improve the health of local river systems and the fish and other aquatic life. Field days have been hosted on the eight properties to show other farmers that are many ways they can make their properties more fish friendly and improve their farms productivity at the same time.



Revegetation the key: *Planting native species and excluding stock from sensitive riparian areas can improve fish habitats.*

Photo: John Conallin

protect native fish stocks and farm biodiversity.

The flow-on farm benefits

Excluding stock from rivers and streams also makes mustering more efficient by not wasting time trying to move stock out of steep river bank areas, and helps with farm biosecurity by reducing the incidence of stock straying into and from neighbouring properties when water levels are low. Revegetated creek lines provide windbreaks for crops and shade for stock.

Reducing river bank erosion not only improves water quality but reduces the amount of valuable paddock soil lost to the adjacent waterway.

Fish-friendly crossings

Some freshwater fish are migratory and need to move between different habitats to complete their lifecycle. Concrete causeways or narrow pipe culverts inhibit fish migration and cause small waterfalls or shallow flow depths that make it difficult for fish to cross them. Ford-type wet crossings can stir up sediments, and cause erosion and increase turbidity when vehicles and stock cross waterways. They also contribute to increased

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Combining recreation with sustainability

Farm information

Farmer
John Conallin

Location
Deniliquin, NSW

Property size
140ha

Enterprise
Dryland grazing and irrigated hay production

John Conallin's property is now more fish friendly due to his belief that farm productivity can benefit from improving and preserving natural resources.

John, together with parents Peter and Barbara, run a 140–hectare dryland grazing and irrigated hay production enterprise. For the past seven years the family has worked to exclude stock from river banks, increase understorey plantings and install alternative watering sources, recognising the impact farm practices can have on riparian zones and in turn the health of the aquatic environment and fish habitats.

With the property bordering both the Wakool and Edward Rivers and a natural flood runner connecting the two in times of high flows, improving the biodiversity and health of riparian areas is a critical part of the Conallin's management. In good years they run about 100–150 cattle on both semi-native pastures and improved sub-clover pastures and produce hay from 40ha of irrigated sub-clover — when allocation is available.

A holistic approach

Motivated by the theory that production, environmental and lifestyle goals are all interconnected has seen the family undertake a number of projects since 2002 aimed at improving the river environment. With funding from the NSW Environmental Trust through Industry and Investment NSW's Fish Friendly Farms (FFF) program ($9000), 5000 understorey trees mainly acacia, saltbush, nitre goosefoot and lignum species were planted this year and a weed control programme targeting Patterson's Curse, Horehound and Scotch Thistle was also carried out. Continuing in 2010, the second phase of the project will see another 5000 acacia and saltbush species planted and the weed control programme continue. There will also be some direct seeding trials conducted to increase the area where an understorey is being re-introduced.

Being both an avid recreational fisherman and an environmentally conscious farmer meant John was keen to be involved in the project. He said despite a well established redgum overstorey along both rivers there was a lack of acacia, lignum and saltbush.

"Farmers need to conserve and protect what is left of their environment and enhance degraded areas. If there is a healthy riparian zone water quality will be better and stock and animals will also do better".

Other flow on effects include: better insect control in pastures due to birds and small mammals inhabiting the riparian zone and extra protection from wind for stock provided by the tree plantings.

The progress so far

Despite the long drought the tree plantings are establishing well — particularly the silver wattles. Already a significant amount of natural regeneration from redgum and black box and understorey plants such as wandering, climbing and ruby saltbushes has occurred.

While still early in the regeneration lifecycle the Conallin family expect that when more established, the understorey plantings will help improve water quality, and increase the populations of birds, small mammals, water fauna such as yabbies and shrimps, platypus and water rats, semi aquatic birds such as herons and kingfishers and large and small fish, along with better native shrub and perennial grass establishment.

"We are waiting for the flow levels to return to normal so we can really see the benefits", John said.

Other projects

Funding from a number sources including the Cadell Land and Water Management Plan and the Recreational Fishing Trust project has helped the family fence more than five kilometres of riparian zone to exclude stock along the Wakool River, Edward River and the joining flood runner, install alternative off-steam watering points and plant understorey trees.

They were also involved in a native fish stocking program carried out by the NSW Department of Primary Industries during 2005 (now Industry and Investment, NSW) where the DPI matched each dollar the farmer invested in fish restocking. About 3000 yellowbelly and Murray cod fingerlings were released into the Wakool River, resulting in a noticeable increase in fish numbers. However continued low flows have since devastated fish numbers and only in the past months has water returned back to the upper Wakool.

Positive future

Being involved in these projects has been a positive experience for John and his family and he says it is not just about immediate production benefits:

"There is a 'feel good' aspect in knowing that we are giving something back and doing something for the benefit of future generations."

"I want our farming enterprise to be remembered as one that succeeded in incorporating ecological principles into its agricultural production."

John praised programs such as Fish Friendly Farms and the staff that deliver them.

"They seemed to understand that we as farmers are in a process of transition — no longer just simply landowners but custodians of the land for future generations."

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levels of manure and urine in waterways from animals.

Installing fish ladders or building new bridges or arch style crossings will reduce the impact on fish species.

Set culverts at stream-bed level and include a low-flow channel and avoid locating bridge foundations and piers within the main channel Remove debris from around the crossing.

Control or treat agricultural run–off

Run-off from agricultural land can add sediment and excessive nutrients to waterways. Studies have suggested that eight per cent of fish kills in New South Wales during the past 20 years were due to pesticide contamination. Pesticides can reduce fish fertility and life expectancy and increase fish abnormalities and skeletal defects. Suspended sediments can smother fish eggs and clog gills and increase stress levels and disease. Reduce the amount of agricultural run-off entering waterways by keeping riparian areas well vegetated and using chemicals carefully. Consider using biological sensitive herbicides and pesticides and retain and protect wetlands or install artificial wetlands to filter run-off.

Provide off-stream stock water

Further limiting stock access to stream banks by providing off–stream watering points can prevent problems with water quality, bank and stream erosion and loss of riparian vegetation. Stock will drink clean water from a trough in preference to stream water when access to both is available.

Providing water toughs and restricting stock access will reduce the amount of animal manure and urine entering the stream, which can transmit disease-causing bacteria to livestock, humans and fish and cause potentially toxic algal blooms as a result from the extra phosphorus.

Protect wetlands

Wetlands provide essential habitats for migratory birds, juvenile fish and other animals. They are also essential feeding, breeding and nursery habitats for many fish species and release nutrients and stored carbon, which are the building blocks of the aquatic food chain.

Improve the ecology of the wetlands by:

- Excluding stock via fencing.
- Reinstating natural water flows by modifying channels and floodgates.
- Revegetating cleared wetland areas with native species.

ACKNOWLEDGEMENT ▶ Adapted from "7 key tips for a fish friendly farm", produced by I&I NSW.

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