

Protecting our eels



Whether you'd like to eat eels for dinner or not – the one thing you should be aware of is the significant role they play in our waterways.

As a top predator, both longfin and shortfin eels play an important role in maintaining the natural ecosystem in our rivers, streams and lakes.

As they grow, the diet of eels shifts from insects and snails to a greater emphasis on fish species including small eels. The loss of a significant proportion of large eels from an area may have an impact on the whole ecosystem, changing the abundance of other fish and insects and the interrelationships between the other species living in the area.

Eels are highly valued as a taonga by Māori and are taken for traditional customary purposes. They are also taken by recreational fishers and are a valuable commercial fishery.

It's no surprise then that people with an interest in our eel fisheries want to see better protection of eels – especially since they were heavily fished commercially from the 1970s through to the early 1990s.

SO WHAT ARE WE DOING?

Since the mid-1990s the Ministry of Fisheries has put several research and monitoring initiatives in place to collect better quality information that will support improved management measures for eel fisheries. The management controls on eel fishing have been progressively strengthened, with eels brought into the quota management system from 2000.

It is particularly important to ensure that enough of the eel population grows to maturity and undertakes its spawning run. Eels breed only once after a mammoth swim into tropical waters far to the north of New Zealand and then they die.

This is a unique aspect of the eel species and something that needs to be carefully considered when managing the fishery. Female longfin eels mature at a larger size and older age than shortfin eels. To manage this, a more conservative strategy has been introduced that is working to limit the catch of longfin eels.

In order to improve the eel population's average size and increase the number of female eels migrating to spawn, three types of management controls have been progressively introduced to date:

- 1) Catch limits were introduced within the quota management system and were reduced for several eel stocks in October 2007. This has allowed for much lower catch rates among commercial fishers than in previous decades.
- 2) Size limits are in place to restrict the portion of the fishery that is able to be caught, which allows eels to reach the maximum size limit (4 kg for commercial fishers, no limit for recreational fishers). With lower catch limits, the value of this measure is expected to increase as eels have more opportunity to develop to a larger size.
- 3) Closed areas mean there is no commercial fishing in some river catchments – allowing the eel populations a much greater chance of joining the spawning population.

MOTU RIVER

The Motu River and its tributaries (in the Eastern Bay of Plenty) have been closed to commercial fishing since January 2005 to provide areas where eels are relatively unaffected by commercial fishing activities. The intention of this measure is to enable a larger eel population to migrate to spawn.

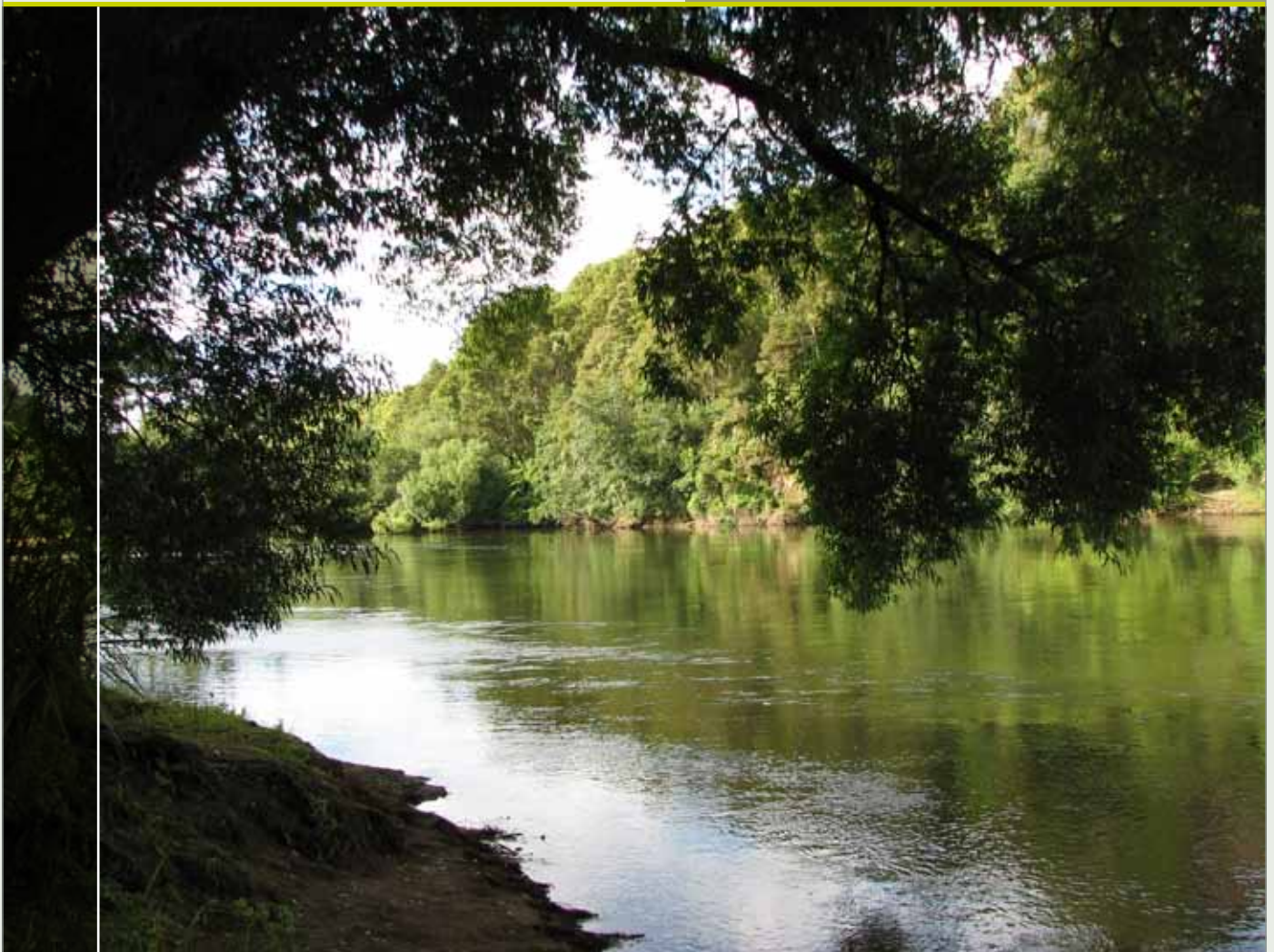
Widely acknowledged as a key habitat for eels, the Motu River was identified as the focus of a survey to assess the age, population structure, growth rate and sex composition of shortfin and longfin eels.

The survey took place in warm weather during a week in March and will ultimately allow for a better assessment of how this eel population contributes to the annual eel spawning migration from around New Zealand.

While a final report on the findings is due to be released later next year, the story on page 9 offers a glimpse of early observations.

Recreational eel fishers are reminded to follow some basic guidelines when fishing for eels:

- Release eels if not taken for food.
- Ensure eels returned to the water are unharmed.
- Consider returning larger (female) eels to the water (shortfin eels above 60 cm and longfin eels above 75 cm).



WAIKATO AREA

Since 1992 MFish has issued special permits and transfer authorisations to allow elvers to be collected from the base of Karapiro Hydro Dam and transferred to seven lakes upstream. Fishing industry groups have worked alongside the power company to catch elvers prevented by the dam structure from making their way upstream.

Between 800,000 and 2,177,000 elvers per year have been collected at the Karapiro Hydro Dam over the past ten years and transferred upstream. This has boosted the eel population above the dams.

In the future, the Ministry of Fisheries will also be working with Waikato-Tainui to look at how elvers and glass eels can be further protected within the Waikato River catchment. This is likely to involve further research to closely monitor the eel population. This is just one work programme that has been developed as part of a wider implementation strategy for the collective management of aquatic life in the Waikato River (see Waikato-Tainui story overleaf).

LAND-BASED EFFECTS CONTRIBUTING TO THE HABITAT OF EELS

Land-based effects can also have an impact on the habitat of eels. There is a growing understanding that these effects are

an important ongoing factor contributing to any decline in the eel fishery.

While the Ministry of Fisheries does not have direct control over land-based effects, we work with other agencies and government bodies that are involved in the administration of the Resource Management Act 1991. This includes working with stakeholder groups and agencies to encourage further measures to improve or maintain eel habitat and their ability to migrate up and downstream.

Land-based affects that contribute towards the mortality of eels include the following:

- Eels can often be killed during the mechanical clearance of drainage channels, by hydro-electric turbines and flood-control pumping. While some effort is made to improve fish passage through these manmade obstacles, it remains a significant problem in New Zealand.
- Eel populations are also likely to have been vastly reduced by a reduction in their habitat through wetland drainage, irrigation projects and the channelling of rivers and streams.
- The distribution of eels in some rivers may be affected by little or no protection of stream and river bank vegetation, through a lack of fencing on farms or adequate buffer zones near urban or forestry developments.



Surveying eels in the Motu River.



MOTU RIVER SURVEY

Widely acknowledged as a key habitat for eels, the Motu River was identified as the focus of a survey to assess the age, population structure, growth rate and sex composition of shortfin and longfin eels.

Initial observations from the Motu River survey show reasonably low eel stocks overall, but NIWA scientist Don Jellyman, who steered the research, says this could be attributed to characteristics of the river itself.

“It is very remote with a maze of other rivers and streams branching off it. It has variability in river flows and is also prone to floods – which is possibly what allows the eels to disperse a lot further,” he said.

From the nearly 50 sites surveyed, 130 large longfin eels were found and 231 small longfin eels.

“Catches in the mainstream river were lower than in the tributaries [streams and rivers connecting with the Motu] and this could be because the mainstream river appears to have an unstable gravel bottom – again largely reflecting the fact that it is flood-prone.”

“Eels like to congregate around places they can avoid light. So debris in the area is ideal for eels. But if there’s less debris around, as in the mainstream of the Motu, there’s likely to be fewer eels in that specific area too.”

Don notes that of the eels they did find, it was good to see some quite large eels, reflecting the existence of female eels (which are larger than their male counterparts).

The river was surveyed over a week in March and was conducted using two teams. One applied a stun method to catch fish in shallow water and the other applied fyke nets to catch fish in deeper water.

Using a mix of both qualitative and quantitative techniques, the teams anaesthetised the eels to examine their characteristics and measure them before releasing them soon after.

A sample of about 50 different fish were kept to assess growth rate.

“The process involves removing the ear bone (otolith) to assess the age of the eel. You break it in half and heat it to show the growth rings – it’s a similar process to counting the rings on a tree to determine age.

“The typical growth rate is about 1.5 – 2 cm each year. So if it’s a metre long, we’d place the eel at about 50 years old.”

A full analysis of the findings still needs to take place and a final report on the survey will be out next year.



WAIKATO-TAINUI

A strategy has recently been signed between Waikato-Tainui and the Ministry of Fisheries to guide the implementation of agreements that will advance the collective management of aquatic life in the Waikato River catchment.

These agreements are one component of a settlement between Crown and Waikato-Tainui to restore and protect the well-being of the Waikato River for future generations.

The implementation strategy includes establishment of a plan for the protection of elvers and glass eels in the area. This will incorporate the development of a research programme for the monitoring of the glass eel population.

The strategy also provides a work programme for the joint development of Waikato River Regulations. These regulations include provisions for Waikato-Tainui to recommend the making of bylaws to restrict or prohibit the take of tuna (eels) at all stages of their life cycle.

MFish CEO Wayne McNee says the signing of the implementation strategy marks the first step in Waikato-Tainui having significant involvement in fisheries management.

“The implementation plan lays the foundation for the co-management of the fishery provided in the Treaty Settlement between the Crown and iwi.”

Waikato-Tainui will be working with MFish and other relevant agencies on a range of issues that affect the fisheries of the Waikato River. One issue that has been highlighted is pest fish eradication.

Pest eradication is becoming a focus area in many fisheries as understanding is developing around the impact of pests on the habitat and associated fisheries.

