

# Biodiversity of the Whanganui River

## Information review

This document is a summary of a 2021 report that reviewed existing information about the biodiversity of the Whanganui River catchment. It covered the history, species, knowledge gaps and recommendations for future work.

### Traditional fisheries

Whanganui River once provided plentiful food for iwi, including kaharore bully, Dinah's bully, giant kōkopu, shortfin and longfin eel, common bully, redfin bully, torrentfish, atutahi (īnanga) and piharau (lamprey). Yellow-eyed mullet, grey mullet, pātiki, yellowbelly flounder, kahawai and ngaore, kōura and kākahi were also a valued resource.

### Waterfalls and barriers confine fish to the main river

Longfin eels are found throughout the catchment. Waterfalls and chutes at the junctions of tributaries with the main river, however, stop fish that cannot climb from accessing large areas of habitat upstream.

While some parts of the catchment are poorly surveyed, the New Zealand Freshwater Fish Database records 643 fish surveys and 23 freshwater fish species in the catchment from 1948 to 2019. 11 species are not threatened, 7 are introduced and naturalised, 2 are threatened nationally vulnerable and 5 are at-risk declining.

### Fewer fish are present today

Catches of tuna, piharau and kākahi are declining. Reasons include reduced water levels, gravel abstraction and bush clearance. Agriculture in parts of the catchment also reduces the habitat and water quality.



The steep sides of the Whanganui River prevent some fish from entering tributaries. Image: DOC

### Water flows, fish and the western diversion

Water has been taken from the headwaters at the western diversion for the Tongariro Power Development since 1964. Resource consents to continue the take were granted in 2001. The diverted water flows into the Waikato River, leaving minimum flows to support the river's biodiversity.

Only trout and longfin eel are present above the western diversion intakes. Passage past these structures is not provided because of natural barriers downstream and the low number of fish naturally present in the area.

### Species vulnerability to climate change

Very high: longfin eel, piharau

High: shortfin eel, banded kōkopu, īnanga, kōaro, kākahi

Moderate: giant kōkopu, kōura

Low: yellow eye mullet have to climate change



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Whio may be vulnerable to climate change because floods are projected to increase. Large floods can devastate whio populations, depending on their timing in relation to the breeding season.

## Tuna

Longfin and shortfin eel live throughout the catchment but shortfin are not present in the Whangamōmona subcatchment.

Tuna was the largest traditional fishery with up to 350 pā tuna (eel fishing weirs) located along the river up to the late 1880s. In the 1900s, this fishery was threatened by regulations designed to stop introduced trout being caught and efforts to 'improve' the river for European navigation.

A commercial fishery was established in the 1960s and catch volumes peaked in the mid-1970s. The North Island tuna fishery became part of the quota management system in 2005 most of the catchment was closed to commercial fishing that year. This closure may provide refuge for longfin eels.

## Piharau

Traditionally more than 90 utu piharau (weirs) are thought to have been present on the river, enabling a catch of up to 600 fish in one night and several thousand over a season.

Piharau are difficult to survey but can be detected by measuring the concentrations of pheromones in stream water. This technique estimated that larvae were present at 9 out of 30 sampled sites, with the highest concentrations in the Mangapurua Stream and two tributaries of the Manganuioteao River.

## Atutahi and spawning sites

Atutahi (īnanga) are found in the lower reaches of the river, with records as far upstream as Kirikau. These fish do not use upstream habitat because of their inability to climb waterfalls or swim through swift rapids.

Spawning sites have been surveyed along 18.5 km of the river, up to 28 km from the mouth. The number of eggs laid at spawning sites depended on favourable

bank shape and slope, and amount of shading. About 5.3 million eggs are estimated to be laid but the population is unlikely to be self-sustaining because of the whitebait harvest and the loss of suitable spawning habitat.

## Other native fish

Kōaro, shortjaw kōkopu and banded kōkopu are very strong climbers. This allows them to migrate long distances inland to areas with suitable habitat.



Map showing where native fish have been recorded. Red dots: kōaro, orange: banded kōkopu, yellow: atutahi, green: shortjaw kōkopu. Map copyright EOS Ecology 2021.

## Trout

The Manganuioteao, Whanganui and Whakapapa Rivers support brown and rainbow trout fisheries, with the Manganuioteao and Makatote identified as outstanding trout fisheries.



## Pest fish

Pest fish are not widely distributed but koi carp, goldfish, catfish, perch and gambusia have been recorded. Koi carp have been eradicated from four pond sites in the catchment.

## Kākahi



Kākahi, freshwater mussel. Image: H Rainforth

Although kākahi were once plentiful, their numbers are now very low. A 2008 survey of 22 known beds found an ongoing decline, with juveniles found at only 18% of the sites.

Kaumātua identified reduced flows, increased sedimentation, pollution, gravel extraction and channel modifications as contributing to the decline. A lack of host fish (kōaro) for the parasitic larval stage is also likely to be a factor.

## Kōura

A 2009 survey found kōura present at 13 of 19 representative sites. Riverside vegetation, predators and stream habitat affected the presence or absence of kōura.

## Invertebrates

Most sites monitored for macroinvertebrates (bugs visible with the naked eye) had an average of 22–28 species at each site, which indicates good water quality. Surveys found healthy communities upstream and downstream of the western diversion.

## Whio

More than 50 km of the Manganuioteao and Retaruke Rivers form a whio security site, with intensive management and predator control carried out by DOC. At these sites, floods, droughts and food availability are the greatest threats. In the last 20 years, establishing a minimum water flow and intensive predator control has enabled the population to grow.

## Recommendations for future research

- Survey macroinvertebrates, fish (including piharau) and pest fish across the catchment – environmental DNA could be a useful technique.
- Research and monitor atutahi spawning.
- Study the effect of trout on shortjaw kōkopu.
- Identify and map natural barriers to fish migration.

## Priority restoration work

- Identify areas to revegetate to reduce the amount of fine sediment entering the river. Riverside planting and fencing may need to be wider than usual.
- Protect and restore atutahi spawning habitat because the population is unlikely to be self-sustaining.
- Restore sites for kākahi, noting that the distribution of kōaro is linked as these are the host fish for the parasitic larval stage of the kākahi.
- Continue the transfer of migrant tuna from the Wairehu drum screen and investigate ways to connect habitat upstream of the Tongariro Power Scheme with the rest of the catchment.

## Report reference

A review of fisheries and aquatic biodiversity information for the Whanganui River catchment, December 2021. Prepared by EOS Ecology for the Department of Conservation.