Report from the
Waikato Raupatu River Trust
and the **Waikato Biodiversity Forum**
held at Hopuhopu on 31 May 2013

Our Freshwater Species - Survival and Enhancement

Purposes of the Day

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- Increase knowledge of the management of freshwater species in the Waikato River Catchment
- Provide opportunity to share stories on successes, challenges and solutions for enhancing the Waikato River Catchment
- Meet with others who undertake biodiversity work

Introduction

Around sixty people gathered at Te Kauhanga Nui Chambers at Hopuhopu to network and share ideas on the management of freshwater species in and around the Waikato River. Pokaia Nepia opened the forum with a karakia so that we would be blessed, protected and watched over for the day together.

Julian Williams from the Waikato Raupatu River Trust gave a welcome to participants and then handed the facilitation over to Terina Rakena who kept us on track for the day.

Forum participants

Tuna from Lake Areare

Morning Presentations

Jacques Boubees presentation covered the results of historical tuna surveys undertaken in both Lake Waahi and the Lower Waikato River. He also focused on trends in elver recruitment and results of the elver seeding program of the Waikato Hydro Reservoirs. Fine mesh trap nets were deployed in Lake Waahi in 1987, 1990, 1992 and 1993. These traps became unserviceable so began to be replaced by fine mesh fykes from 1992, with further deployment in 1993, 1994 and 2011. Analysis of records indicates a marked decline in eel numbers between 1987 and 1992 but by 2011 catches had returned to 1987 levels. Throughout the monitoring period the eel population has been dominated by small shortfins which continue to support an important traditional puhi eel (small male migrant) fishery at the lake outlet.

In the lower Waikato River, eel surveys were undertaken in 1974, early 1980s, 2007 and 2010. Size analysis of the catch indicates an almost total absence of commercially harvestable eels (i.e. 330 g and about 550 mm) by 2007. However, the 2010 survey shows a more balanced population structure which most likely reflects recently implemented management practices.
At Karapiro Dam an elver trap and transfer program has been in place since summer 1995/96. Shortfins dominate the catch which has remained relatively stable over the monitoring period. Elvers are released into the seven reservoirs below the Aratiatia Rapids. Except for the area below the present Arapuni Dam, these habitats were likely inaccessible in their natural states because of the significant rapids and waterfalls then present.

Terina Rakena facilitating the hui

The reservoir now supports a commercial fishery of about 25 tons, and both the reservoir and the tributaries provide for customary take. However, studies undertaken in Lake Arapuni under a partnership with Mighty River Power and the river iwis indicate that survival of released elvers is only in the order of 5%. Growth rate has also decreased markedly since the first releases were made. This slow growth rate contrasts with that of newly seeded farm ponds where eels achieved the same size in one year, whereas it takes six years in the reservoir.
Overall, the studies indicate that there are more recruits than available habitat. To maintain, let alone, increase the tuna population what little aquatic habitat is left must be retained. Emphasis should be given to restoring bare and eroding stream and river banks over removal of existing exotic species that do provide excellent cover for eels. An extensive network of farm ponds should also be created throughout the catchment.

Nicholas Manukau gave us detail of the Waikato-Tainui (Waikato River Fisheries) Regulations 2011 which were developed by both Waikato-Tainui and the Crown, as a co-management arrangement that allows Waikato-Tainui to manage their fisheries resources and carry out customary food gathering practices. The regulations allow Waikato-Tainui to:

1. Manage Waikato-Tainui customary fishing within the Waikato-Tainui Fisheries Area through the issuing of customary fishing authorisations; and
2. Recommend to the Minister the establishment bylaws which may restrict or prohibit fishing

(managed under the Fisheries Act 1996) for the whole or part of the Waikato-Tainui Fisheries area to which the regulations apply. The regulations apply to the Waikato-Tainui Fisheries Area which includes the Waikato River between Karapiro and Te Puaha o Waikato, the Waipa River to the Puhinui stream, including the streams and lakes in the catchment.

The regulations also provide for the Waikato Raupatu River Trust (the Trust) on behalf of Waikato-Tainui to appoint marae based Kaitiaki who will be responsible for managing customary fishing within the Waikato-Tainui Fisheries Area. The appointed Kaitiaki together with the Trust will manage customary fishing through the issuing of customary fishing authorisations (whakaaetanga) and will also create bylaws to manage fisheries resources under the Fisheries Act 1996.

The Trust has the power under the regulations to propose bylaws within the Waikato-Tainui fisheries area. The Trust may propose bylaws to restrict or prohibit the taking of fisheries resources from fisheries managed under the Fisheries Act 1996 in the Waikato-Tainui fisheries area. The restrictions or prohibitions must be consistent with the Waikato-Tainui environmental plan. The restrictions or prohibitions must also be necessary for ensuring sustainable and cultural reasons and cover:

- the species of fisheries resources that may be taken
- the quantity of fisheries resources that may be taken
- the size limits on the fisheries resources that may be taken
- the method by which fisheries resources may be taken.

To date Waikato-Tainui through the Trust and Kaitiaki have met with stakeholders on a range of bylaw ideas. The Trust will release its proposed bylaws around August for consultation.

Cheri van Schravendijk-Goodman covered whitebait management. Whitebaiting on the Waikato River is a keystone activity for the peoples of Te Puuaha o Waikato. And, serving matamata (whitebait) is a tradition for which the marae of the area are renowned. It is commonly understood that there are five Galaxiid species that make up the typical whitebait 'catch' - iinanga, giant, short-jawed and banded kookopu and koaro. However, the lesser understood harvest within the activity of traditional whitebaiting can include porohe (common smelt), tunatuna (glass eels), mullet and kahawai, and valued plant species. Whitebaiting is more than 'just fishing' – it is an activity that brings together whaanau for the intergenerational sharing of traditions, learning of new skills (swimming and boat rowing), the telling of stories about those who have passed, and dreams for those to come. Most importantly, it is a way to freely express their relationship with Te Awa Waikato. This is what it means to 'eat with their tuupuna'.

Wayne Bennett presented an overview of the planting guidelines for the Lower Waikato River, recently prepared for the Department of Conservation and funded by Waikato District Council. These guidelines closely follow the natural native vegetation of the area, are designed for the unique conditions adjacent to the river and provide guidance to recreate a natural, authentic and resilient native plant community.
There are three planting guides for the following sections of the Waikato River:
Waikato River Mouth to Tuakau Bridge
Tuakau Bridge to Ngaruawahia
Ngaruawahia to Tamahere

And one guide for the Lower Waipa River:
Whatawhata to Ngaruawahia
The guidelines are available on the internet at;
http://www.doc.govt.nz/getting-involved/volunteer-join-or-start-a-project/grow-native-plants/local-planting-guides/ecological-restoration-in-the-waikato/

John Gumbley explaining the condition of Lake Areare

Mike Lake describing netting techniques at Lake Areare

Field trips

John Gumbley lead the field trip to Lake Areare is a 33ha peat lake (catchment 268.2ha) that forms part of the Horsham Downs peat lake complex. It is the largest of the eight peat lakes associated with the historic Kainui peat bog. The lake ranks 33rd out of 96 lakes in the Waikato region for biodiversity management. Its hypertrophic (nutrient) state and ecological condition means that it is very high in nutrients and seriously degraded. Despite that, important natural values exist including a good tuna population. The principle threats to its condition include a lowered lake level, reduction in the peat margin, very limited natural margin habitat (<5 % of the catchment is in natural vegetation), high sediment and nutrient input from the mainly dairying catchment and the presence of pest fish and weeds. An inter-agency action plan has been developed to undertake restoration of the lake and its margins. Funding from the Waikato River Authority and Fonterra will see a substantial increase in restoration activity over the next few years. Already over 15,000 plants have been planted in the past 3 years.

Wayne Bennett led the second field trip which visited two restoration sites on the Waikato River at Huntly and Ngaruawahia. The first site visited has been the subject of weed control over the past two years in preparation for planting, which has just started. Planting will continue over the winter and progress to the lower levels of the riverbank as winter flow levels recede. This was a very weedy site with blackberry, wandering jew, jasmine and honeysuckle
The second site was planted around twelve years ago. A nearby stand of riparian native forest was used as a template for this project. The early colonising species like karamu are now dying off, giving way to the second generation mahoe and mapou. Kahikatea and other trees are growing but not yet dominating the site.

Afternoon Presentations

Bruno David's presentation began with detailing current problems for maintaining freshwater biodiversity within the Waikato catchment. His presentation provided options for potential remediation which primarily focussed on issues with maintaining river connectivity (fish passage), instream habitat and controlling invasive fish species.

With respect to fish passage, potential use of mussel spat ropes to address both culvert perching and laminar flows within pipes was described. The problem and their uses was demonstrated through photos and video footage taken during lab and field trials. To address issues with loss of instream habitat for fish Bruno discussed some artificial habitat features that can be placed within stream banks to improve habitat diversity and possibly local fish abundance. He briefly profiled two current urban projects where these features 'kokopu condos' and 'tuna townhouses' have been installed (part funded through the WRA) and showed some brief video of their use by fish.
Lastly invasive fish were discussed with results of another part WRA funded project (Carp-n Neutral) detailed. Invasive fish were captured via an automated capture system that was designed to allow free passage of native fish but screen out target invasive fish. Invasive fish are fed into a bacterial digester and the granular fertiliser produced by the process has been used to propagate native plants which have been planted at the demonstration site at Lake Waikare. This is New Zealand first Invasive Fish Recycling Centre and demonstrates the type of technology and thinking that needs to occur elsewhere in the lower Waikato catchment to control invasive fish and minimise their environmental impact.

Adam Daniel from Fish and Game detailed research on pest fish removal and fish populations in shallow Waikato lakes. Four major pest fish removal operations have been conducted in the Waikato region including: Rotopiko Lakes (DOC), Lake Ohinewai (University of Waikato and DOC), Lake Kaituna (University of Waikato) and Lake Mangahia (University of Waikato). The Lake Ohinewai and Rotopiko Lakes removals were the only operations that significantly reduced pest fish populations. The Rotopiko Lakes removal has been very successful at lowering the rudd, catfish and goldfish population found in the lakes, protecting valuable native macrophyte community, but has required a significant annual netting effort. Intensive fish removal at Lake Ohinewi resulted in a substantial reduction in koi carp but did not result in regeneration of macrophytes or significant improvements in water quality. Eel populations were dominated by shortfin with longfin catches making up only 1-5% of eels captured. Notably no koura, very few kakahi and only one adult galaxiid were detected during the intensive sampling indicating an alarming absence of native species.

The Forum ended with a farewell from Pokaia. Thank you to the Waikato Raupatu River Trust for hosting such an informative and interesting day.