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ALL INCLUSIVE**FW: Mc Carties Stream Report**

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FYI Rob

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Cc: Phillip Brown; Stephen Benham
Subject: Mc Carties Stream Report

Freshwater Fish Survey Report - Mc Cartie's Stream, Miranda**Introduction**

On the 25th and 26th November 2010, a freshwater fish survey was undertaken in Mc Cartie's Stream, Miranda. The purpose of this survey was to determine the composition and abundance of freshwater fish species within this stream. This stream possessed little or no riparian vegetation and due to its close proximity to the sea (approximately 1 kilometre) was tidally influenced. The stream was fenced off preventing livestock intrusion.

Methodology

Eleven Gee minnow traps (3mm gauge mesh) were set over a 1 kilometre section of stream. Gee minnow traps are the most suitable method of capturing freshwater fish in small streams such as this which was approximately 2 - 3 m wide and 200 - 500 mm deep depending on tidal status. The traps were baited with vegemite, left overnight and collected the next day. All fish captured were identified, counted and returned to the water except for the *Gambusia affinis* which are an unwanted organism so were destroyed on site.

Site Information

Habitat Type	run (tidal influence)
Substrate Type	mud/sand/shell
Riparian Vegetation	pasture
Catchment Vegetation	95% pasture, 5% exotics
Fish Cover	some weed/algae
Water Clarity	turbid (partially saline)
Stream Type	farm drain

Results

Trap 1	No Catch (NC)
Trap 2	10 x Gambusia
Trap 3	12 x Gambusia
Trap 4	NC
Trap 5	12 x Gambusia, 9 x Longfin Eels (<i>Anguilla dieffenbachii</i>)
Trap 6	NC
Trap 7	13 x Longfin Eels, 38 x Inanga (<i>Galaxias maculatus</i>)
Trap 8	150 x Inanga, 1 x Gambusia
Trap 9	1 x Longfin Eel
Trap 10	2 x Gambusia
Trap 11	6 x Gambusia

Totals – 23 x Longfin Eels

43 x Gambusia

188 x Inanga

Discussion

A total of 254 fish were captured out of the 11 Gee minnow traps set (approximately 23 fish per trap). Considering that this stream is essentially a turbid farm drain, the relatively high number of native fish trapped was a pleasant surprise. The 254 fish comprised of three species, *G. affinis*, *G. maculatus* and *A. dieffenbachii*.

Unfortunately Gambusia are unwanted organisms hence were destroyed on site. Many more

Gambusia were seen in the stream at the time of the survey. Their presence was not a surprise as they are very widespread in the Auckland/Waikato region and are highly tolerant of adverse water conditions; including temperatures from near freezing to 44 °C, salinities of up to twice sea water, pollutants and pesticides. Mc Dowall, (2000). As a consequence, eradicating Gambusia from this stream would be a very difficult undertaking.

The other two species Longfin eels and Inanga are native diadromous species so spend part of their lifecycle in the sea. Due to the close proximity to the Firth of Thames these species would find the stream easily accessible and would be a relative representation of what species you would expect to find in most of the streams in this region.

Longfin eels spend a large part of their lifecycle in freshwater before migrating many thousand kilometres to the subtropical pacific to spawn. Inanga on the other hand will spawn amongst vegetation upstream of the tidal salt wedge during autumn. It can be surmised that due to the large number of Inanga captured during this survey that this stream provides important spawning habitat for this species. In a recent publication produced by Allibone et al, *Conservation status of New Zealand freshwater fish*, (2009), Inanga and Longfin eels were classified as 'in decline' and 'threatened'. To put this classification in perspective, the iconic New Zealand bird, Kiwi, is also classified as 'in decline' and 'threatened'. Considering both Inanga and Longfin eels are an important food source for New Zealanders this is extremely concerning. As a consequence, it is critically important for the sustainability of both species that streams such as this are protected from further habitat degradation and that these fish are allowed to spawn unimpeded.

Recommendation

- To plant suitable native vegetation, such as flax and toe toe, along the riparian margins of the stream. This will provide cover and enhance spawning habitat for native fish such as Inanga.

References

- Mc Dowall, R.M. (2000), *The Reed Field Guide To New Zealand Freshwater Fishes*.
- Allibone et al, (2009), '*Conservation status of New Zealand freshwater fish*', New