

TAUPO FISHERY ADVISORY COMMITTEE

Meeting to be held

**Wednesday, 25 May 2016, at the Department of Conservation, Turangi Office,
Commencing at 5.30pm**

REPORT

TO: TFAC

FROM: Michel Dedual

RE: Fishery Monitoring Report

Waipa fish Trap

To that day only 3 rainbow trout have passed through the trap. This is in strong contrast with last year when x fish were trapped. A major difference between 2015 and 2016 was the unusually dry months of March and April this year. Rain and increased flows are often cited as one of the triggers that encourage the spawning runs but obviously that's not the whole story.

So what does the scientific research tell us as to the reasons fish begin their spawning migration? We know from our previous radio-tracking experiments that early in the season (Mai to September) trout respond mainly to changes in flow created by freshets to enter the river and to move upstream. The same studies also indicate that these movements are not long lasting as trout stop moving when flow returns to normal. During that period trout can stay for extended periods in the same pool until the next fresh to move further it can take for a fish as much as 89 days to move from the Delta to the Waipa Stream. This is mainly why the early running fish are important as they sustain the winter river fisheries. However, this year we haven't had any decent fresh for the last two months to initiate the runs. Interestingly, the Tauranga-Taupo River in its lower section between HW1 Bridge and the lake contained densities of trout that hadn't been seen for many years suggesting that these fish are waiting for the right clue to move up.

Later in the season (Sep-Nov) fish are running in a more advance stage of maturity and are less reactive to freshes with some fish rushing through the river in 9 days. This indicates that the early running fish are very important for the fishery as they sustain the typical winter fishery. This is why we looked at the genetic make-up of the early v. late running fish and more importantly if fishing (in the lake) was more likely to remove early running fish. We didn't find any evidence of this but this is also where we met the limit of science.

Water temperature and water flow throughout the gravel are other important triggers but how fish use them is not fully understood. There are some theories that the flow in the gravel that can go up or down is important and even used differently by brown and rainbows but again the science on this is not complete.

Environmental conditions are not the only trigger to migration. Fish also need to reach maturity before spawning and maturity is modulated by several factors. Growth is an obvious one, when fish grow quickly they will spawn earlier. If they don't grow quickly they will "wait" longer in the lake before running trying to maximise the output of eggs. However, at some stage there is a trade-off between growing further with the risk of mortality and running a bit smaller. This is also when the sexual hormones cycles controlled by temperature and day length and also fat content

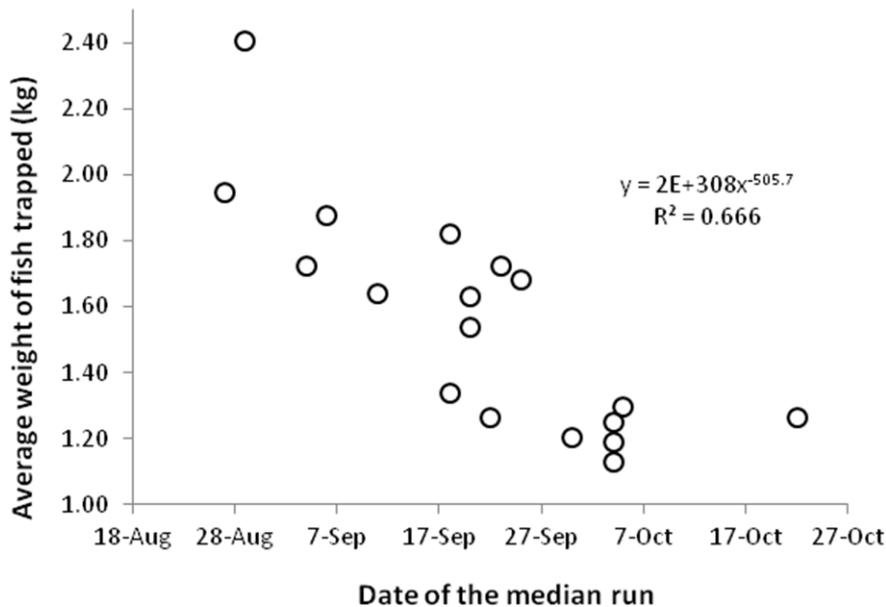
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(like in human fish need some fat to metabolise hormones and again if the growing conditions are not right they will affect the maturity) become the dominant trigger.

The importance of the growth as a trigger for migrating and spawning is illustrated below. The graph shows that the average size of the fish explains 67% of the variability in the date at which half of the run has passed through the trap for the years 1998 to 2015.



The presence of fish spawning is another strong trigger as it provides a “smell” to the water that will attract other, in that sense this is the first run that is the hardest to get, after things are more predictable.

Te Whaiiau

The trapping is planned to start on 1 June and will run until the 31th of July.

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RE: Research

LAKE TAUPO

The Lake Taupo echo-sounding survey for autumn 2016 has been completed. The final results are not available but the initial observations indicate a healthy smelt population and a large adult trout stock (Fig. 2).



Fig 1. V fin transducer used to record echograms from Lake Taupo, photo courtesy Thomas Symmonds, DOC Turangi.

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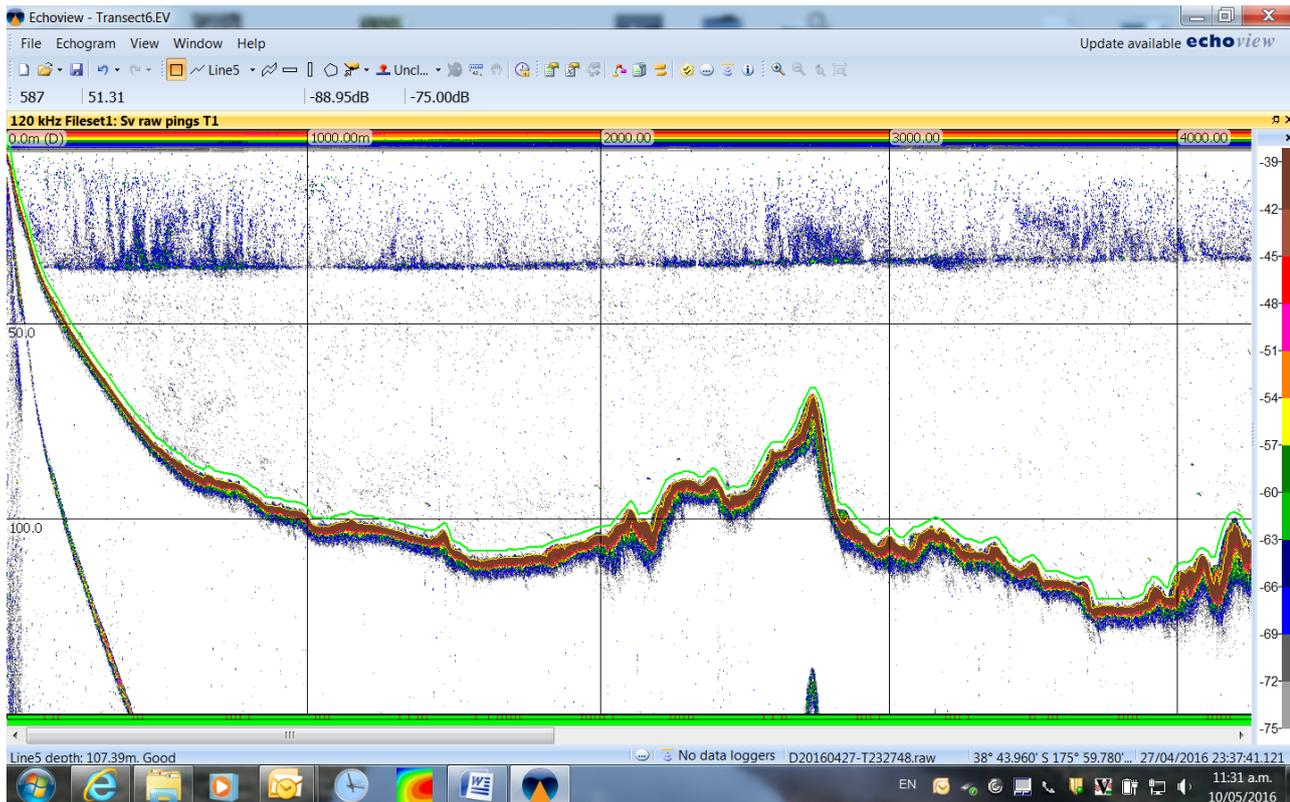


Fig. 2 Echogram recorded between Te Raeotepapa Bay and Waitahanui showing smelt layers around the 35m deep mark, Lake Taupo April 2016.

ANGLING INTERESTS IN THE NPS

The Ministry for the Environment has put together a panel of scientists to seek feedback on the National Policy Statement (NPS) regarding water in New Zealand. Michel has been invited as a member of the Fishing Expert Panel to provide expertise from the Taupo fishery. Fishing will be considered as an Additional National Value in the NPS.

Presently the NPS-FM describes fishing values as:

Fishing – The freshwater management unit supports fisheries of species allowed to be caught and eaten.

For freshwater management units valued for fishing, the numbers of fish would be sufficient and suitable for human consumption. In some areas, fish abundance and diversity would provide a range in species and size of fish, and algal growth, water clarity and safety would be satisfactory for fishers. Attributes will need to be specific to fish species such as salmon, trout, eels, lamprey, or whitebait.

The first workshop will be held in Wellington early in June when the panel will be brainstormed on how fishing should be approached, and also to look at what attributes might be required (in light of existing attributes for the compulsory values, and those under development).

The purpose of this group is to discuss the technical aspects, not to give feedback on policy decisions as the NOF Reference Group and Science Review Panels cover this function.

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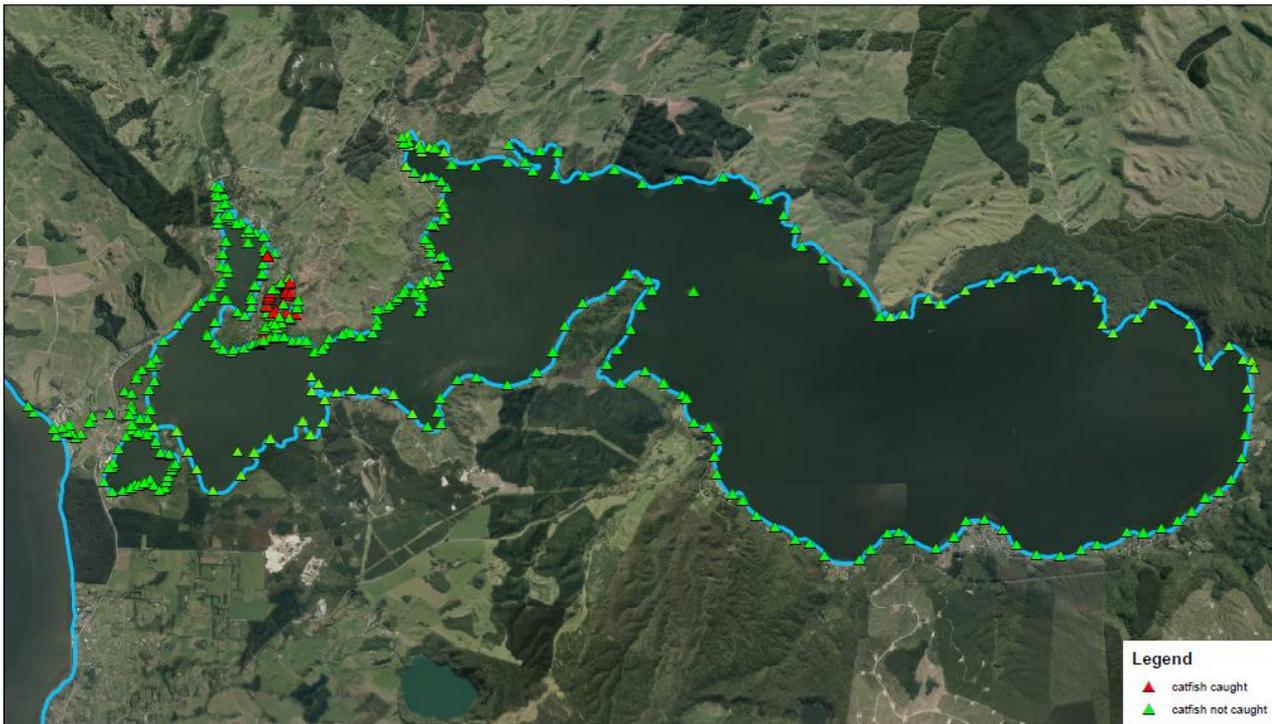
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CATFISH HAVE BEEN FOUND IN LAKE ROTOITI

Brown bullhead catfish have recently been discovered in Lake Rotoiti. Environment Bay of Plenty (EBoP) has currently surveyed the entire lake with fyke nets and the Ōhau Channel and some sections of Lake Rotorua with the University of Waikato electric fishing boat.

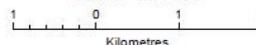
So far 371 individuals (mostly juveniles) were caught in Te Weta Bay which is where the initial discovery was made. Apart from that only one juvenile has been caught in the Okere Inlet. The presence of adult and juvenile indicates that catfish are likely to have already established a feral, albeit localised population.



HORIZONTAL DATUM: New Zealand Geodetic Datum 2000
For practical purposes, NZGD2000 equates to WGS84
VERTICAL DATUM: Mean Sea Level
PROJECTION: New Zealand Transverse Mercator 2000
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Te Weta Bay - catfish surveillance results map, 2 May 2016

Scale 1:55000



Sheet 1 of 1
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Over the coming weeks EBoP will continue to try and delimit the extent of the incursion. The next step will be to decide what management options are appropriate to deal with the issue long-term. Michel was invited as an expert by EBoP to attend a workshop in Rotorua to discuss what is feasible to contain or control the establishment of catfish in Rotoiti and potentially in adjacent lakes.