Fisheries panel Meeting (BOPRC Office Rotorua

9am Wednesday 16th November 2011

Present Richard Barker (Otago University), Michel Dedual (DOC), Ian Kusabs (Fisheries Consultant), Rob Pitkethley (ERFG)., Matt Osborne (ERFG), Dave Rowe (NIWA), Brendan Hicks (UoW), Jennifer Blair (UoW)

Chair Andy Bruere (BOPRC)
Secretary Andy Woolhouse (BOPRC Contractor)

Refer also to handouts/support report documents. NB Because many of the topics are inter-related, most of the discussion and proposed outcomes occurred at the end of the meeting

Item 1 Confirmation of Meeting Notes and Matters arising from meeting 16th August 2010

1a. Shared File Space

System up and running

1b Te Arawa Fisheries info on smelt

Ian meeting Hera and Roku next week. Will report back. Tracey Kingi seconded from MAFF Fisheries to work with TALT on fisheries issues. Rob P – said that Frank Thompson (Ridgewhites) has info on smelt runs from mid 90s to 2002. Dave knows Frank and will arrange to meet him to get the info. Ian will also ask Willie Emery for any thing that he has

Action Points;

- **Ian to report back after TALT Meeting**
- **Dave to contact Frank for smelt records**
- **Ian to contact Willie Emery**

Item 2 NIWA 2011 Smelt Report – Dave Rowe

Copies of Dave Rowe report 'Smelt Monitoring in the Ohau Channel and Lake Rotoiti 2010-2011' were provided before the meeting. Dave's powerpoint presentation covered the key points (Need a copy to be sent out).

Key Points;
3 Years of post wall data have been collected. Four traps installed, Trap 1 closest to the weir consistently contains more fish, and trap 4 contained the least. In Oct 2009 there was a spring run of juvenile smelt, accompanied by large numbers of trout, shag and anglers. In Oct 2010 there was no spring run, but there was a run of adults in autumn (March-May 2011). There were few anglers present at this time and few fish caught. Temperature has been highly variable (daily and yearly) but there appears to be no correlation with smelt numbers. Shag numbers peaked in Oct 09 but numbers were much lower in 2010.

Comment that Willie Shaw (Wildland consultants) may be doing shag count **To be confirmed**.
Rob – Oct 09 graph shows all adults. Shag prefer adults. There appears to be two smelt runs adult in spring, mainly juveniles in autumn. The trapping also included a by- catch of bullies, which showed no change in numbers, but koura numbers were increasing. Juvenile koaro were also running with the smelt.

Traps 1 and 2 monitored smelt runs before the wall was constructed (Fig 5.1). Jan 2006 – large run, but no runs during wall construction (completed June 2008) or the following year. Small runs in Oct 09 and March 11. The results show that the wall is not preventing smelt movement into the channel and weir - post construction smelt runs are occurring. The wall is not preventing runs, but it is not clear whether it is a discouraging influence. The factors that cause the smelt to run are not known.
Drop netting does not provide conclusive results. There appears to be a relationship between secchi disk and smelt numbers. AB commented that secchi disk readings (transparency) are increasing

Conclusion See further discussion at the end of the meeting

- **The wall is not preventing movement of smelt**
- **Increasing the number of traps or intensity will not provide more usable data**
- **Suggest discontinue acoustic testing**
- **Suggest discontinue larval smelt monitoring**

Item 3 Electric Fishing Results – Brendan Hicks

The electric fishing provided results for comparison with the NIWA traps. This method is suitable for water depth up to 2 metres. The scoop net at the front of the boat is not very efficient, and fish within the edge of field area are repelled. There was a big increase in catch rate in

2010. . Species caught included common smelt, common bully, rainbow trout, goldfish and 1 eel. Ian noted that goldfish and eels are significant for tangata whenua.
There have been 4 years of data produced, but smelt numbers change on a daily basis. Electric fishing produces a 'snapshot'. There is little correlation between the electric fishing results and NIWA trap data.

Conclusion See further discussion at the end of the meeting

- **Generally the panel were in agreement that the electric fishing is of limited value**

Item 4 Trout Fishery Data Rob Pitkethley

Two data sets were provided; Lake Rotoiti and Ohau Channel.
If the wall affects smelt numbers, this lack of food will be reflected in trout condition.

Lake Rotoiti

The graph on P1 doesn't include 2011 condition factor which at 44 is the lowest value in the 21 years shown on the graph. In the last 10 years the value has fluctuated between 45and 48. Lake Rotoiti results - % of wild fish in the catch has not changed and the food supply looks adequate. The spring liberation number has been increased by 3000 over 2 seasons to match increased angler usage and winter angler success. No change in the age of wild fish caught, so new recruits are coming in. Lake Rotoiti fishing appears to be good. Dave commented that a 2 year delay in effect could be expected. Since the wall was completed in June 2008, it is significant that the 2011 figures look positive.

Ohau Channel

Records include 2 years pre wall (2005 and 2006). Re Angler Catch Rate (Section 2.2), Richard asked if the individual anglers can be identified, particularly if they fish regularly (eg over 30 days/year). (Yes) and asked if he could have a copy of the raw data.

The fishery is very seasonal, very heavy use when season opens (1 October) and continues thro if the fishing is good, but generally it isn't fished in summer. May is a second heavy use period. Satisfaction rate Pre wall = 'average', Post wall yr 1 ='Poor', Post wall yr 2= 'Good', Post wall yr 3= 'Poor'.

Table 8 20010-11 Catch Rate shows that the catch rate (and size) is poor with a correspondingly low angler satisfaction rate compared to other years. The opening day 2010 was not good and this may deter people. 2011-12 seems to be showing similar trends.

Michel – CPUE and fish abundance are not necessarily linked eg 20 fish are not 2 x easier to get than 10 fish and anglers change behaviour and attitude depending on abundance, so don't rely on CPUE. Initially they may also be spread out, but later congregate together in the more successful areas.
Brendan – How fast will the effect of the wall show?
Rob - Fairly soon if the wall affects food (smelt) supply.
Dave - The smelt are here, but fish are not being caught.
George Prouse made a similar observation – The smelt are present, but the catch is poor.
Ian – What's happening in Lake Rotorua?
Rob – Brown good numbers and healthy fish, Rainbow, poor condition but have improved in the last 6 months.
Ian – Is the quality of the channel fishery more a reflection on L Rotorua than Rotoiti?
Rob – Brown are now more dominant in the Ngongotaha run (now 50%, was 10%).
Table 9 Angler Detractions; 2010 No detractions -74%, Poor fish size and condition 15%, the wall 2%.
Table 3 Fish generally smaller and in poorer condition, more likely to be fish moving down from Rotorua rather than up from Rotoiti (which are showing better condition).
Dave – Could poor condition fish be moving into the channel because smelt are scarce in the lake?
Rob - Possibly, but there are many thousands of trout in the lake and if they are leaving due to food shortage, the channel numbers would be massive. Fish go to channel as a behavioural response or in response to food abundance. They wont stay in the channel if there is no food.
Michel – Is there any smelt data for 2011?
Dave – No.
Andy B – Should monitoring be changed?
Rob – The big issue is 'what is happening to the fishery. People are concerned and answers are needed to defend the wall. (Ian agreed).
Brendan – Temperature data hasn't been checked and correlated against trout number variability – is it worth checking. The raw data is available.
Dave – Temperature correlation with smelt has been investigated. George Proud found better correlation between trout catch and smelt abundance. Temperature varied greatly and he found no correlation.
Brendan – Trout are more temperature sensitive than smelt.
Rob – Flow velocity greatly affects catch rate. Weir manipulation has been discussed with Ken Tarboton.
Michel – Many anglers would not fish when there is fast flow.

Andy B – Not sure how much the weir affects flow rate, the Kaituna gate are more likely to have more effect.

Rob – Ken said that the gates don't affect the channel flow rates at the top. The weir stop logs are removed 2 days before the start of the season (stop logs are at 6-7 metres, lowered to 3 metres).

Ian – Why are they manipulated?
Resource Consent condition re Rotorua lake level

Rob This is a good time to look at management of the weir in relation to fisheries management.

Andy B Talk to Ken. Can Brendan look at temp and velocity data for correlation with fisheries?

Michel How easy is it to remove the stop logs?

Andy B Needs a crane doesn't happen very often (eg put in for summer, out for winter). For 10 years they were not removed.

Rob Test flushing has been undertaken, allowing level in Rotorua to build up, and in Rotoiti to fall then flush, but the flow rates are too fast for fish. There are clauses in Okere Gates consent about getting the flow velocity relationship with the gates and relationship with stop logs.

Dave High velocity re trap 1 – wont affect smelt, but could affect trout.

Ian Should there be more comparison with Rotorua trout?

Rob Yes the condition of Rotorua fish has fluctuated over many years.

Outcome **Agreed that the trout fisheries monitoring and work should continue**
Rob to provide Richard with individual anglers raw data.

Item 5 Otolith Update – Brendan Hicks

Brendan gave powerpoint presentation *'Otolith microchemistry and movement of rainbow trout and common smelt between lakes Rotoiti and Rotorua 2005 to 2010'.*

This allows lake of origin to be identified for trout and smelt. The 2010 results show nothing new. Smelt have a shorter life, so effects of the wall can be seen sooner than trout.

Pre wall 87% of wild trout in Lake Rotoiti were from Rotorua tributaries

Post wall, 65% of wild trout in Lake Rotoiti were from Rotorua tributaries

This is a 3x increase in fish originating in L Rotoiti remaining in Lake Rotoiti and fewer fish are moving into Rotorua.

Smelt data is less accurate

Conclusion **Recommend that trout monitoring continues, but smelt is discontinued.**

Item 6 Koura and Kakahi Monitoring Progress – Ian Kusabs

Ian presented report ' *Ohau Channel Diversion Wall – Monitoring of koura and kakahi populations in the Okere Arm and Lake Rotoiti November 2011'*.

Sampling method has been used for 5 years.

The Okere Arm and Lake Rotoiti continue to support abundant koura and kakahi populations 3 years after completion of the wall but invasive hornwort on traps and lake bed made it difficult to determine overall trends in abundance and yield Hornwort caused DO levels to plummet. There was a significant decline in koura abundance and yield at Te Akau (control) but no significant change at Okere (treatment). This may be due to inundation of the Te Akau site by hornwort. Smaller sized koura have disappeared

Kakahi – Winter algal blooms in Rotorua made counts difficult. Timing is critical to avoid algal blooms. Kakahi remain abundant in the Okere Arm and Lake Rotoiti, with significant increase in abundance at the boat ramp, but no significant change at the Rest Area and a significant decline 'the Ditch' which is showing a 10x increase in sediment levels. These changes are likely to be caused by changes in wave action and flow patterns which create new areas of accretion and erosion within the Okere Arm. Future changes in abundance are inevitable until equilibrium is reached. Kakahi health fluctuated throughout the year. Ian works with Ngati Pikiao assistants and this has provided useful training for them.

Andy B It is recognised that increased weed will have an impact on benthic ecology. BOPRC have sediment transect which may be useful for Ian.

Ian The wall doesn't seem to be creating any problems, but hornwort is a major issue. Koura are more at risk than kakahi.

Recommendation **Andy B suggests continuing the same level of monitoring, except that kakahi sampling at Tumoana be discontinued as very few were caught.**

Andy B suggests that the panel provides a 'Hornwort Risk Alert' to the Regional Council.

Dave Supported this. Hornwort is now appearing in areas that it hasn't been seen for 40 years.

Who is responsible for weed control? LINZ, RDC, TALT? There is no real control except at the boat ramps.

Is spraying the right option? Did spraying in Okawa Bay lead to an algal bloom?

Richard Is hornwort a response to the wall?

In part it's due to improved water clarity which creates a greater habitable area.

Item 7 Update on Fish Dynamics Work Jennifer Blair (get copy of presentation)

Rotoiti -Smelt spawning peeks April, October and January. Usually once per year. Main spawning site 4 in the eastern basin, nothing in the three (sites 1-3) western sites. Bigger sediment grain size at eastern end compared to west. Sites 1-3 sheltered, so there were more eggs in the exposed sites

Autumn – increase in smelt numbers in littoral zone, few in open water. In April, smelt were located all over the lake, January – only in the east. Spawning age is 1 year, it is thought uncommon to spawn at 2 years

Weed has a serious effect on spawning habitat.

Jennifer	Suggests long term monitoring of smelt is required
Brendan	Zooplankton should be monitored. It is a hole in the data between algae and smelt
	Can David Hamilton's model be used? Will only be as good as the quality of inputted data.
Dave	We have knowledge of adult smelt population but don't have juvenile % and these (>20mm) are the food source for trout. Smelt diet is 16% koura.
Action	**Dave to look at old data and see how it relates to Jennifer's work.**

Item 8 Acoustic work

The Sept 2011 monitoring date was missed. Suggest that it should be done next year. This work consumes half of the budget. Data can be stored for later analysis. Acoustic monitoring has shown no immediate change.

Dave This is moving on from the effect of the wall.

Brendan This is a fisheries panel but it has moved on to wider lake issues. Suggest using David Hamilton's model and getting DH's (and Dennis) input.

The wall consent will need to be renewed in 2017. The intention of the wall was to fix Lake Rotoiti. Without ongoing monitoring, we wont know if it has worked.

Richard and Michel both want to keep the monitoring going. Often when monitoring programmes are dropped, it is later regretted.

Michel The smelt are not changing, but trout condition is declining – why?

Acoustics only picks up adult smelt >50mm and these are not eaten by trout, seeing what is left after the trout feed. This is consistant but we don't know what is happening to the juvenile smelt.

Overall Recommendations

As there is significant overlap in the information presented, the main discussion considering all presented data took place at the end of the meeting.

1 Ohau Channel Traps

Suggest keeping traps 1 sand 2 going and do observations of shags (Frank and George's work) or do it every 2 years. Agreed to do autumn trapping to see of there is second spawning and an autumn run of smelt. Smelt is a critical food item for iwi. Traps 3 and 4 do not seem to be adding useful information and should be discontinued. We are changing the requirements of the data. We no longer need to confirm if the wall is having an effect. **Retain traps at sites 1 and 2. Monitor in Feb, May and September**

2 Trout Monitoring

Agreed that this work should be continued.

3 Otolith Studies

Retain the trout, but stop the smelt monitoring

4 Koura Kakahi

Keep the monitoring going, but remove the kakahi sampling site at Tumoana.

5 Hornwort

Need to consider including water clarity in relation to incidence and spread of infestation. Andy B to write up a recommendation. Need to consider how to handle public expectations

6 Anglers Expectations

BOPRC Comms to do report or press release summarising the findings to date. There is no specific anglers club(s) associated with the Ohau Channel fishery. Rob thinks a flier outlining the aquatic survey results would be useful. F&G could distribute it. Alternatively there could be a public meeting presented by BOPRC and Fish and Game (with input from there agencies here) presenting the findings.

7 Acoustic Work

Action Acoustic testing Do next year then work out a plan with David Hamilton.

8 Drop Netting

Action Drop Netting isn't a major cost, keep it going for one more year.

9 Electric Fishing

Action Continue for consent renewal purposes in the future.