

**Fisheries Panel Meeting (Rotorua Convention Centre)
9.00 am Monday, 16 August 2010**

Present: Richard Barker (Otago Uni); Michel Dedual (DOC); Ian Kusabs (Fisheries consultant); Rob Pitkethley (NZFG); Matt Osbourne (NZFG)
David Rowe (NIWA); Brendan Hicks (UOW); Jennifer Blair (UOW).

Chair: Andy Bruere (Bay of Plenty Regional Council)

Scribe: Matt Bloxham (Bay of Plenty Regional Council)

Item	Discussion/Decision	Action	Responsibility / Timeframe
Apologies	None		
1 Matters arising from previous minutes	<p>2009 meeting minutes covered in detail but general comments called for:</p> <p>Andy lamented the breathtaking delays in having Bay of Plenty Regional Council create a shared space for lodging meeting minutes, reports and agenda (this was an action point from the previous meeting). It was suggested instead that we look at depositing material on a site that could be accessed via Google or Wiki. Richard thought this would serve our purposes adequately.</p> <p>Engage with the Te Arawa Fisheries Committee to enable the gathering of cultural Smelt catch data. It was explained that the 'Committee' was still really in its formative stages and that they had yet to decide on which fisheries management model would be used to manage the cultural smelt take from the Rotorua lakes.</p> <p>From the last minutes Matt B asked whether the group had formed a view on whether the five year monitoring period would be adequate to allow detection of changes from the wall. Richard remarked that while subtle changes wouldn't show, large changes would become self evident within five years and that might be enough. Andy said he would be looking for guidance from the panel on whether we would need to continue monitoring beyond the consent termination. Richard said we are really talking about two things here: a) Monitoring changes over the first five years of operation and beyond. Richard suggested that in 6-7 years time we should be able to say that we are comfortable that the level of monitoring has been sufficient to pick up on changes from the wall etc.). b) Amassing data that could be used in support of a consent renewal. Michel commented the need for further monitoring will be contingent on whether we can answer the question of whether or there not there have been affects from the wall. Andy said nonetheless a new statement regarding future monitoring goals would help him to attract future budget from management.</p>	<p>Investigate an alternative (Google) shared file space on website for past reports and agendas.</p> <p>Ian to approach Te Arawa Fisheries Committee re accessing info on cultural smelt take.</p> <p>The panel agrees that "five years is an absolute minimum for monitoring the wall's impacts and that ideally monitoring should extend beyond the five year period as this would allow the panel to detect subtle yet potentially significant long-term changes."</p>	<p>Andy</p> <p>Ian</p> <p>Andy</p>

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	<p>Richard said we (the panel) would happily support you in this and that the panel is comfortable in principle to be quoted as saying that “We agree that that “five years is an absolute minimum for monitoring the wall’s impacts and that ideally monitoring should extend beyond the five year period as this would allow the panel to detect subtle yet potentially significant long-term changes”.</p> <p>Ian was queried whether his frozen pre-wall smelt samples had reached Brendan for otolith analysis. Brendan confirmed that he <i>had</i> received the samples but that their analysis had been delayed.</p>		
<p>2 2009/2010 NIWA smelt report (David Rowe, NIWA)</p>	<p>Dave spoke to his power point presentation and report on smelt monitoring in Rotoiti and discussed major points. Peaks in adult smelt numbers through OC were in October. Shag numbers also up around this period suggesting a run had occurred. Smaller runs occurred in September. What is becoming evident is that runs do not occur every day and on any particular day when runs <i>are</i> occurring, run activity probably doesn’t span an entire day – so quite easy to miss a run. May explain the fact NIWA’s trap sets are not always picking up runs on any particular day because run activity is discontinuous. The data suggests the wall <i>hasn’t</i> prevented adult smelt migration through the channel.</p> <p>Juveniles runs not picked up either in Spring or in Autumn but may not occur every year (there were certainly gap years where juveniles did not run through the channel prior to the wall) and juvenile runs may <i>now</i> be restricted to winter because of the wall (i.e. and therefore occur outside the sampling period).</p> <p>Monitoring of smelt larvae (using Wisconsin drop net) suggests larval densities are more than double what they were the previous two seasons. This may represent a generalised increase or a lake specific response to improved water clarity and or the absence of blooms (editor note: blooms were indeed absent in the main body of Rotoiti in the 09/10 season and the autumn/early winter peak was restricted to Okere Arm).</p> <p>Both the 2008 data and 2009/2010 data for adult smelt indicate the decline in adult in smelt numbers in Rotoiti (i.e. those recorded between 2000-2007) has been halted. Acoustic monitoring of adult smelt indicates no significant change from the 2008 season (and that there is a significant spatial pattern over the last three years). Looking at the data presented in figure 13 of Dave’s report. Richard suggested it was difficult getting a feeling for the uncertainty in the data, that the figure may understate the extent of the difference in the data sets and that it may be a better idea to display the standard error of the mean.</p>	<p>Michel recommended that the panel support the continuation of yearly smelt monitoring as is.</p> <p>Richard recommended doing additional data analysis to tease out spatial/seasonal trends.</p>	<p>Dave Rowe Repeat sampling 2009/2010</p>

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	<p>Dave indicated that measuring adult smelt densities (using acoustic methods) is a proxy for the entire smelt population as adults (rather than juveniles) tend to stay deeper and it is only at depth that populations can be monitored acoustically. Dave indicated that the sensor is less accurate at sensor depths 10 metres and less (also the depths in which most smelt juveniles are found). The beam width put out by the sensor is relatively narrow at shallow depths and widens appreciably at depth (so becoming more accurate). The suggestion though is that the western end of Rotoiti is still less important for smelt than the Eastern end simply because depths at the western end are insufficient to support high smelt densities (i.e. they lie outside the optimum depth range of smelt (30-40m)). Richard suggested doing an analysis of covariance to help tease apart differences in the east/west gradient).</p> <p>Dave indicated that juvenile smelt recruitment into Lake Rotoiti is <u>s</u>still significantly greater than over the entire 2005-2009 period (i.e. no evidence of a decline) but that it was still some way off the 95/96 period. Dave begged the question “what is it about productive lakes that is limiting smelt abundance because it certainly doesn’t appear to be food availability”. Dave proffered that high turbidities and/or modification of the lake edge spawning environment could be limiting production or it could be increased competition from common bullies (whose populations tend to thrive in productive littoral environments) at the lake edge and be that as it may there were likely to be complex interactions occurring. Richard agreed that it was likely to be a combination of factors.</p> <p>Dave’s suggestion was that smelt production would likely increase in response to increased lake clarity (Ed. With the exception of Okere Arm, there has certainly been a lack of bloom activity in the main body of Lake Rotoiti since the wall’s completion).</p> <p>It is recommended to continue with yearly monitoring.</p>		<p>Dave Rowe further analysis of data presented in 2010 report (as suggested by Richard Barker)</p>

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<p>3 Electric Fishing results (Brendan Hicks, UOW)</p>	<p>Brendan spoke to a power point presentation. This was the third year of monitoring the purpose of which is to look at the longitudinal smelt distribution in Ohau Channel and to do it in a way that validated NIWA's netting surveys (i.e. sampling points again focussed on NIWA's netting stations). Fished 2.73km of channel.</p> <p>Total fish caught in 2009 (all species) 353 cf. with 776 in 2008. Approximately half the fish were smelt and the other half common bully, with a handful of goldfish and one eel. Highest numbers of fish caught were adjacent to NIWA netting stations but overall the catches were not very good. That is, significantly fewer fish were caught using the EFBM than in NIWA's nets and fish numbers are not correlating particularly well with NIWA catches. Didn't see as much of a drop in smelt numbers from the top to the bottom of the channel as in previous years. Again it may be that the EFBM (electric fishing boat method) sampling is missing the runs (Ed. Potentially even more so than NIWA's netting regime as the netting period at least spans an entire day) as there is likely to be variation in run peaks between days and within days. Brendan produced a graph showing how their first (out of three) surveys coincided with the peak in run activity for the month. However, this year's survey missed the peak month by some margin. Brendan doesn't believe given all of the above that the EFBM has worked particularly well and it is certainly not proving to be an effective validation tool for NIWA's netting programme. Timing is one thing but there may also be problems with the EFBM's ability to detect and capture smelt in the Ohau Channel environment (it may be that many of the fish that are stunned are not able to be seen and netted by the boat operators).</p> <p>The Panel's view was that while the EFBM method may not hold any particular value as a validation tool it was still worth continuing with EFBM sampling even if the method was altered (see below) to improve capture efficiency, as it would help at re consenting time. Ian suggested that that the goldfish and tuna capture data will be of particular interest to Lakes Iwi and may be useful at re consenting time (Ed. But that it didn't matter particularly if it was the new or old method being used. The main issue was keeping up with the EFBM programme generally).</p>	<p>Cease the existing EFBM programme (using the scoop nets). Replace with the new sweep net EFBM method. Use any subsequent data as a support for the new consent but carry on developing the new EFBM as a validation tool for NIWA's netting programme (there needs to be a 3 year commitment to this). Increase the sampling frequency and where possible time sampling to better catch smelt run peaks.</p>	

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	<p>Jennifer Blair spoke to her power point presentation and told us about an alternative capture method for the EFBM boat where a rigid sweep net is held beneath the bow and stunned fish are caught passively while the vessel is on the move. This method has significantly improved the CPU particularly at night time and in shallow littoral areas (less so in deep limnetic lake sections). And in fact preliminary comparisons have shown this revised EFBM method to be the equal of, or better than all the other available methods including purse seine (a table was shown). Michel commented that purse seine netting of smelt was shown to be very successful in Taupo. Richard suggested that to allow direct comparison with other methods, more needs to be done to standardise effort.</p> <p>There was general support for developing this method providing, as Andy suggested, the method could be applied to Ohau Channel. Richard commented that if the method was ever going to be used to support NIWA’s survey effort, one would need to commit to surveying for at least 3 years (we would still lack pre-wall baseline data with which to compare post wall changes).</p> <p>Rob suggested that it was not going to be useful for calibrating netting efficiency unless one scales up the EFBM survey frequency, but Dave noted that it is a method worthwhile developing if it allows more expensive methods to be supplanted. Richard used “the truth lies somewhere at the intersection of lies” analogy suggesting questions remain over the validity of methods and results used thus far and ultimately we are better served if we use more than one method to build up a picture of what’s happening and if we have new methods (e.g. EFBM boat sweep net) coming on.</p> <p>Andy agreed that it is definitely worthwhile developing the new EFBM method but for the initial purpose of supporting the new consent rather than the existing programme. Ultimately however, Andy agreed that the goal (in developing the new EFBM fishing method) would be to improve the EFBM’s ability at validating other established methods.</p> <p>The value of monitoring shag movements (both actively feeding and roosting shags) was once again raised. Dave indicated that as well as the anecdotal records kept by a local fisherman, the NIWA team have been keeping accurate records of shag numbers up and down the OC. This could prove enormously useful because as Dave pointed out shags provide a fairly reliable measure of smelt migration activity (if shags are not there then smelt aren’t likely to be either) and provide a good way of interpreting trap data.</p>	<p>The panel approved of (and were impressed) with Jennifer’s work including her:</p> <ul style="list-style-type: none"> • Proposed bio-energetics work. • Efforts to improve the EFBM’s catch efficiency using the sweep. • Compare its catch efficiency with other methods. • Assess its applicability to the Ohau Channel. <p>The panel were keen to see this work continue, but not as a requirement of the fisheries monitoring programme for the resource consent.-</p>	

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	<p>Jennifer also presented on her PhD where she is looking at the factors controlling smelt dynamics/abundance.</p> <p>Jennifer indicated that:</p> <ul style="list-style-type: none"> • The diet of smelt doesn't change throughout the year. • Trout generally predate smelt all year round. • Smelt were by far and a way the most significant prey item in their diet • Even 200mm trout were found to be predated smelt. • Koaro was found to form a larger contribution in a trout's diet than invertebrates and bullies. <p>Jennifer ran us through a proposed bio-energetics model that examines trout calorific intake relative to their (trout) depth distribution. The premise is that temperature and therefore depth will have a large bearing on bio-energetics and that temperature changes with depth.</p> <p>Dave's questioned whether there is a preferred depth for digestion and commented that presumably it lies close to their optimum depth range.</p> <p>Jennifer then showed us her new smelt spawning sampling pole which basically has a small sediment corer on the end. This allows the user to randomly sample for spawning activity in shallow littoral areas while wading (the alternative is that divers would need to be used). Dave suggested that it would be useful (as part of the sampling strategy) to spend time finding smelt spawning beaches before sampling begins (and areas <i>within</i> beaches that are particularly favoured), as this would maximise encounter rates. Jennifer saw merit in this approach. Because the sampling chamber was kept quite small (to allow a sediment core to be extracted intact and to reduce time spent sorting) eggs might be missed unless the location of spawning areas wasn't pre-determined in advance.</p>		
<p>4 Otolith micro-chemistry update (Brendan Hicks, UOW)</p>	<p>Brendan spoke to his powerpoint presentation "Assessing movement of rainbow trout and common smelt between Lake Rotoiti and Lake Rotorua using otolith chemical signatures.</p> <p>An explanation and background of the study was given, including the lake of origin of trout and smelt. It was explained that because smelt have a short life cycle, smelt otolith analysis should show the affects of the wall relatively quickly.</p> <p>TROUT Discriminant function has shown that trout using Ohau Channel tend to have originated from Lake Rotorua. There has however been a 3 fold increase in the Lake Rotoiti trout contribution (in the Channel) suggesting the ratio of Lake Rotorua Trout entering the Channel has fallen</p>	<p>Give pre-wall smelt to Brendan for otolith analysis</p>	<p>Ian</p>

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	<p>Rob suggested looking more closely at juveniles as impacts from the wall are more likely to register in juvenile cohorts.</p> <p>SMELT</p> <p>Brendan indicated that no Rotoiti smelt have been captured in Rotorua but that there has been an increase in Rotoiti origin fish in Rotoiti. Michel asked whether this was simply confirmation that fewer Rotoiti origin fish were migrating through the channel into Rotorua. Rob suggested that regardless, it is showing that the source has changed but that smelt <i>abundance</i> hasn't. I.e. that something other than recruitment is influencing smelt abundance.</p> <p>At last year's meeting Michel expressed concern that smelt larvae in Rotorua, once entrained in the Ohau Channel outflow, would be lost from both lakes and asked that someone investigate this possibility. Matt B asked whether this had been resolved. Dave indicated that this possibility <i>had</i> in fact been discounted at the time the wall was being contemplated as:</p> <ul style="list-style-type: none"> • Entrainment of Rotorua larvae in Ohau Channel was not found to occur on a large scale • Few smelt larvae were detected in the Ohau Chanel outflow (i.e. the suggestion is that larval retention in the lakes is good). <p>The panel was happy for the otolith monitoring programme to continue unaltered and that any changes would depend upon the results of the cross validation suggested by Richard.</p> <p>Conclusions:</p> <ul style="list-style-type: none"> • The contribution of Lake Rotoiti trout to Ohau Channel has increased (fewer Lake Rotorua trout are entering the OC than previously). • The source of smelt recruitment has changed slightly. • The programme should continue as is. Further sampling and analysis needed. 		

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<p>5 Trout Fishery data (Rob Pitkethley, NZFG)</p>	<p>2009 Trout Fisheries Data</p> <p>An update was given by Rob P supported by Matt Osborne, opening day, summer and autumn survey data.</p> <p>Also continuation of angler surveys (by Aqua Tech) in Ohau Channel. Rob said monitoring the condition factor in two year olds provides the best data. Recent data (from 2009 surveys) shows that the average condition factor for two year olds is very similar to those from previous years (this data set goes way back to 1991). This suggests that the food supply for trout (smelt) hasn't changed appreciably within 'the lake' (ed. which I take to mean Lake Rotorua is still the dominant source lake for recruitment).</p> <p>Percentage of wild fish in the catch</p> <p>Fish and Game has also recently looked at the impact of the wall on the migration of wild trout. The expectation was that the percentage of wild fish would drop overtime and in fact this is what appears to be occurring. The percentage of wild fish in the catch is down to 28% which is the lowest we've had (from a peak of 78% in 1993). There have been other periods where the % of wild fish was low but this coincided with a dramatic increase in the release of hatchery fish. However since 2001 the hatchery contribution hasn't changed but the wild fish contribution is still falling and has been since 2003 (i.e. the decline began before the wall was put in (wall put in September 2007)). Richard suggested that there is still nothing in the data that can't be put down to inter-annual variation (which Rob agreed with as a comment).</p> <p>Angler survey</p> <p>The second post wall survey (conducted in 2009) suggests everybody is thrilled with the wall. The questionnaire was carefully worded this year to avoid leading questions. i.e. rather than asking fishers whether they thought the wall had had an impact on fishing, in the 2009 survey, fishers were asked "what is your level of satisfaction with this season's fishing". This was followed by a second question, which was "<i>why</i> you were satisfied or dissatisfied?" This was recommended quite strongly as an approach in last year's panel meeting. Matt B suggested that "Fishers' seem to be quite capricious in their responses and asked "Can their responses be relied upon to form any measure of whether the wall is impacting the fishery?" Rob believes that the fisher's view <i>can</i> be relied upon when one</p>		<p>Richard, Dave, Brendan</p>

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	<p>considers responses over an entire season (rather than over a few weeks) i.e. if over an entire season the perceptions have generally been positive, it is likely to have been a good season. Rob also indicated that one cannot rely on the opening day catch rate alone because catch rates and angler attendance vary so much with the weather.</p> <p>Ian said he visited the channel on open day and couldn't believe the condition and the size of the fish. Rob agreed 2009 had been one of the best opening days on record.</p> <p>General conclusion There is no evidence at all that the wall has had a detectable impact on the Ohau fishery. Need to run the last 2 weeks of data to finish off. Continue both the angler survey and the collection and analysis of open day data.</p>		
<p>6 Koura and kakahi monitoring progress (Ian Kusabs)</p>	<p>Ian gave an update re Ohau Channel Diversion Wall impacts on Koura and kakahi (PowerPoint presentation).</p> <p>Using Tau again (10 fern bundles per Tau) koura found to be "really abundant" in Okere Arm and quite large.</p> <p>Late in the season (July) had issues with drifting hornwort clogging tau bundles which caused the bundles to decompose more quickly. Kakahi also remain abundant on Okere Arm, although sediment deposition continues to occur in shallow areas of OC (Ed. Presumably making littoral areas less suitable for Kakahi habitation). Ian explained that the wall has stopped wave action flushing deposited sediment from shallows areas inside the wall.</p> <p>However, blooms in the OC made monitoring of kakahi became untenable from May-June Onwards.</p> <p>Ian indicated that there is presently no point in starting the analysis because hornwort and algae have seriously hampered the continuity of the data. The suggestion was made that there may be benefit in beginning sampling earlier to avoid bloom activity. Matt B suggested calling him early in the season as we could update him (Ian is on the cyanobacteria distribution list so results will continue to be emailed to Ian weekly during the season re bloom activity).</p>		
<p>7 General business</p>	<p>Dave mentioned that part way through last (2009) season's monitoring, the V-fin transducer had failed. They are now faced with having to use a new transducer. To achieve consistency, there will probably be a need for a cross calibration. As a start the new and the old V-fins will be run alongside each other for a period.</p>		

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	<p>Matt B suggested that the results are tending to suggest that there is no demonstrable negative impact from the wall on either the trout or the smelt fishery. However, one assumes there is still interest in somehow bolstering the smelt fishery and wondered what Fish and Game's take had been on the proposed Okere gates reconstituting. I.e. had the AEE investigated whether the present regime could be manipulated to benefit the lake fishery)? Ken Tarboton had suggested to Rob that there <i>will</i> be some lake level variation, but because what Ken was in fact referring to was a slightly <i>higher</i> operating range, this would unlikely benefit smelt. That is, occasionally inundating terrestrial edge habitat won't enlarge smelt beach spawning areas (i.e. the present proposal sees the lake level remaining within the existing operating range 80% of the time).</p> <p>Ken said he would pass on the AEE once it had been completed. Rob indicated this hadn't happened and all had gone quiet. Bay of Plenty Regional Council is evidently at the point of notifying the application so presumably there is still time. Dave indicated that he would like to see more variation than what is currently being offered and that it should be seasonally adjusted.</p> <p>Matt B has since spoken with Keith Hamill (OPUS) who compiled the AEE. Keith indicated that it is unclear whether the proposed variation is going to improve the beaches but that it was unlikely. He said the bathymetric maps available don't have the level of detail to determine that. He indicated that ideally one would need side scan sonar to provide the level of detail necessary to identify any benefit, but that this wasn't made available to them. Keith indicated that extending the lake level range would most likely improve beach formation because, by exposing macrophytes to wave action, lowering the lake levels would potentially extend spawning beaches further offshore. However, to push macrophytes deeper, the drop would need to occur during windy periods (i.e. spring) and would in all likelihood need to be sizeable. More than anything though Keith believed that the major benefit would come from wave action removing any steps in a beach profile and that it would generally flatten the profile.</p> <p>Keith indicated that the pre-wall natural variation (mean decile range) was just under 30cm and that the proposed situation at 9cm would be less than a third of that (i.e. only slightly better than the 8cm variation in the present operating regime). Keith said that earlier on an effort was made to balance conflicting requirements/views and through modelling they came up with an iteration that was closer to 16cm inter-decile range (i.e. optimised fluctuation that was less than natural but nearly twice what they are proposing now). (Ed. It is unclear why they dropped this proposal but it appears that the threat of court action from lake residents had a major influence).</p>		

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	<p>Keith indicated that there <i>may</i> be benefits for smelt in this. It is moving in the right direction but ultimately the benefits are going to be so small as to be unnoticeable and certainly not measurable.</p>		
<p>8 Next meeting</p>	<p>To be confirmed but it was noted that there was some benefit in holding it slightly later to allow Rob and Matt O to process and make sense of all the year's trout catch data. (Proposed new meeting date 28th of October 2010?)</p>		<p><u>Andy</u></p>

Meeting closed: 3:40pm.