

TARGET TAUPO

A newsletter for Taupo Anglers

SEPTEMBER 2007, ISSUE 55



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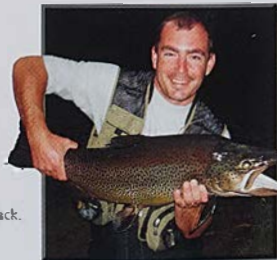
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Photo by: Kim Alexander-Tava

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General enquiries and address changes email: fishinfo@doc.govt.nz

Production and advertising by Fish & Game New Zealand

Contact Peter McIntosh Telephone (09) 634 1800
Facsimile (09) 634 2948

Email: peter.mcintosh@fishgamenz.co.nz



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The views expressed in Target Taupo are those of the contributors and do not necessarily reflect Department of Conservation policy.

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Fishery Forward

By John Gibbs

Taupo Fishery Area Manager

WELCOME TO ISSUE 55 OF TARGET TAUPO

The Taupo Fishery team hope you enjoy our efforts to bring you up to date and interesting information about the wonderful trout fishery we all share.

The mid-year issue comes out at the time when Taupo river anglers are anticipating their peak season fishing opportunities. This highlights a couple of topical issues for us.

First is the risk of didymo. You will see again in this issue, as in the last 5 issues, more stories about this alga and the threats it poses to our fisheries. Some anglers may question the likelihood of succeeding in the campaign to keep didymo out of the North Island, fearing that it is a *fait accompli*. Others may become complacent that, as it isn't here yet or that reports that it may not have had as severe impact on southern fisheries as first expected, mean there is less to be concerned about. The risk with both these attitudes is that they encourage people to drop their guard and become less diligent in checking and cleaning their fishing gear.

The reality is different. Even if its arrival is inevitable – and I don't subscribe to that view – the longer we can keep the North Island didymo free, the more time there is for development of control measures. Recent field trials in the South Island show some promise that didymo can be killed over a short distance in smaller streams. There maybe then, some potential for attacking it in early stage infestations provided it is detected promptly. Further work indicates that it may not be able to survive in spring fed streams and this also warrants closer study.

Several research projects are underway looking at the ecological, recreational and economic impacts of didymo. Those examining the effects on trout fisheries are in their very early stages and need some years of monitoring before any meaningful conclusions can be drawn. So it is just too soon to say whether or not the impacts are worse, less or about the same as originally estimated. My view is that the Taupo trout fishery is likely to experience a significant negative impact if didymo becomes established in our lake and rivers. If that happens it will have flow on effects to recreation and economic values.

The second current issue is our proposal to reduce the minimum trout size limit from 45 cm to 42 cm. This is a response to the effects of later trout spawning leading to smaller fish size at a given time of the year and the consequent need for more undersize fish to be released by anglers. We believe that this lost angling opportunity can be safely

Photo by: Pat Gibbs



mitigated by a small reduction in the minimum size. Glenn Maclean explains this in much more detail in his article inside. If this proposal is approved by the Minister of Conservation the Taupo Fishery Regulations will have to be amended to change the size limit.

The secondary effect of later spawning is that the peak runs of trout will not be in the rivers until 2 to 3 months later than traditionally. As anglers you should be thinking about planning your fishing trips well into the spring to take advantage of this change. Nothing can be more pleasant than fishing the Tongariro River in shirt sleeves under a relatively balmy October sun, so don't put your nymphing rod away too soon.

Review of Taupo Trout Minimum Legal Length Regulation



By Glenn Maclean
Glenn is our Programme Manager, Technical Support, and manages the research and monitoring work done in the area

The late spawning in recent winters has several implications, not least that the fish in the lake are now younger and therefore smaller compared to the same time of year a decade ago, and therefore the current minimum legal length restriction for Taupo trout may no longer be appropriate. This paper reviews the effectiveness of the current limit and examines whether it should be modified.

Following a well publicised downturn in the fishery in the late 1980's Taupo fishery managers reduced the daily bag limit from 8 trout to three. This was designed to reduce the angling harvest by 10%. Then in July 1997 the minimum legal length was raised from 35cm to 45 cm. This was in response to concerns that the trout production was likely to be significantly depressed in the following years as a result of major spring floods and effects from the eruptions of Mount Ruapehu in 1995 and 1996. The increase in the minimum size was designed to reduce the harvest of young trout in the lake, and so ensure a higher proportion survived to run the rivers and spawn. While the effects of the eruptions have since passed, in the intervening period angling effort has increased by a third and the need to continue to restrict harvest remains

The effect of the increased size limit was further exacerbated by a change in the way in which the legal length was defined in 2004. Whereas previously the length was measured from the tip of the nose to the end of the tail, this was changed to the fork of the tail to be consistent with how length is measured in other fisheries. This has the effect of increasing the minimum size by approximately one centimetre.

In general the young trout enter Lake Taupo in autumn and then grow at approximately 1mm per day by feeding on smelt. Typically the majority of fish reached the old minimum length of 35cm in early spring, and so were available to be harvested through the high-catch spring and high-use summer periods when the majority of lake angling harvest occurs. In the seasons leading up to the regulation change we had measured the length of fish kept by anglers as part of routine creel surveys on the lake. From this data we estimated that an increase in the size limit from 35 to 45 cm saved 25% of the total harvest (fish caught and killed) at that time. The intent of the change was to protect the young trout through the spring period, but ensure that the vast majority of trout would be large enough to take by Christmas. Similarly our data indicated that river anglers fishing for

Top: Anglers at the public meeting at the TNTC

Photo by:
Kim Alexander-Turra

mature spawning trout would not be affected as 97% of fish in the spawning run were greater than 45cm in length.

Table 1. Proportion of undersized fish (less than 45cm) by month as recorded in 2006/07 summer creel survey

MONTH	PERCENTAGE
November	58
December	42
January	38
February	25

Over recent winters trout spawning has become progressively later, coinciding with unusually dry and settled conditions through the early and mid winter periods over a succession of years. However last winter was a much more typical weather pattern with frequent rain early in the season, but the run was again late so now appears to be set in a pattern of peak spawning in October and November (figure 1).

There are several implications from this later spawning, not least that the young fish in the lake are several months younger than previously at the same time of year. This has a significant impact. Given that these fish are growing at approximately 1mm per day then potentially a couple of months makes a difference in length of 5 to 6 centimetres. Instead of being legal sometime in December a large proportion of the catch is still undersized in late summer. This is reflected in our catch data from our routine surveys on the lake (table 1).

So even well after Christmas lake anglers have to release a significant part of their catch because they are undersized, which is not the intention of the regulation.

Compounding this, a study carried out by Dr Michel Dedual in February 1992 into the survival of trout caught and released by different angling methods found that the highest mortality (12 to 15%) was associated with deep trolling methods, which are also the most successful at this time of year. Since then deep jigging has also become popular and has proven highly successful in late summer.

While catch rates were generally very high last autumn for those anglers targeting fishing depths of 30 to 35 metres, it was very obvious that some of the small fish caught and released were dying despite very careful handling. This was probably a combination of the effect of depth and also warm surface waters. So while anglers were technically restricted to the daily bag limit of 3 trout, the actual unintentional harvest could have been significantly higher. Some anglers indicated they may well have stopped fishing earlier had they been able to keep 3 prime fish, but in order to obtain 3 such fish that were over the legal length they first had to catch and release a number of other smaller fish.

Furthermore in terms of our obligations under the Conservation Act 1987 to main-



Figure 1. Comparison of the monthly rainbow run through the Waihukahuka trap 1994 and Waipa trap 2006

tain and enhance the sports fish resource in the recreational interests of anglers. then there is a sound argument that the current regulation which in significantly limiting anglers opportunity to keep fish after Christmas (which is not the intent) is unnecessarily restricting angling opportunity and satisfaction. A common comment we received from anglers over summer when asked if they had any fish was one of disappointment 'No - we caught a couple, they were in great condition but just too small and we had to put them back'

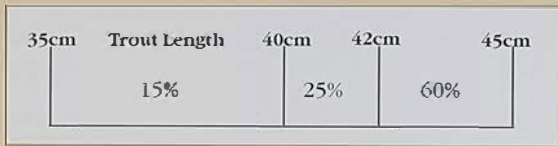


Figure 2. Percentage of trout recorded in each size category between 35 and 45cm (1993/96 & 1996/97 angler survey data)

There is also a theoretical argument that the current size limit tends to reinforce the late spawning, in that the lake harvest selects for early spawned, larger fish while the later spawned, smaller fish are effectively protected.

Finally it is evident that so far this winter, river anglers are also having to release a significant proportion of their catch (20 to 30%). This is contrary to past years when almost all fish were larger than the limit, and it was never the intent that the size limit should impact on these anglers.

So the combination of a likely significant unintentional by-kill from fish dying after release, the unintended but significant restriction on anglers keeping fish after Christmas and on Taupo rivers, and the potential that the current limit is tending to maintain the status quo provides strong justification to review the size limit down.

It is difficult to know exactly what effect reducing the limit would have on the harvest because anglers are required to release undersized fish and so we have no length distribution data with which to model the impact of smaller minimum length restrictions. Nevertheless it is evident from the drop in the proportion

of undersized fish from one month to the next and our own observations, that many of the undersized fish caught after Christmas are close to the present limit.

In the absence of more precise data one strategy is to consider possible limits based around obvious and easy to remember figures. An option is to return to the old limit of 35cm (14"). However the underlying reason for the increase in the first place which was to reduce the lake harvest over spring still remains, and a return to the old limit risks that overharvest may again occur.

A more prudent limit would be somewhere in between, the most easily understood being a limit of 40cm (16"). Without putting it in place and recording the proportion of fish kept which are between 40 and 45 cm in length, there is no way of knowing exactly how much this change would increase the opportunity and harvest. In terms of the data recorded under the old limit, 20% of the total harvest were fish between 40 and 45cm, and a 40cm limit would only reduce the harvest by 4% over that from a 35cm restriction (figure 2). However this would likely be greater now because the fish are generally smaller. Nevertheless would it be enough given that ideally our aim is to significantly reduce the harvest on that possible under a 35cm size limit?

The other option is a limit in the order of 42cm. From an anglers perspective it is not quite as an intuitive figure, but under the old limit 15% of the total harvest or 60% of the fish between 35 and 45cm were between 42 and 45 cm. Therefore it is anticipated such a change would significantly increase the number of fish available to anglers but still limit the harvest to a significantly lesser level than under a 35cm limit.

If we are going to change the limit it needs to make a real difference, and setting the limit any higher than 42cm probably does not achieve a great deal.

Therefore the recommendation is that the minimum legal length be set at 42cm.

Where to Now?

The above paper was presented to the Taupo Fishery Advisory Committee in June. At the meeting the committee endorsed the recommendation that the minimum legal length for Taupo trout be reduced to 42 cm. In July we also put the paper out for public discussion

and held a public meeting at the TNTC in early August. The issue has created a lot of comment, indeed one of the positive spin offs has been the robust and constructive discussions with many anglers. There have been a wide range of views expressed as reflected in the following sample of comments:

"At 45cm the fish is too small to eat and are surely our spawners for the following season. If a fish is released from the hook with long nosed pliers beside the boat there should be no reason to think they will die. Perhaps education is needed here"

"My feelings are, that the Taupo Fishery as a truly wild fishery can only benefit from the existing legal size limit remaining as it is. As a wild trout fishery there will always be natural changes & fluctuations occurring & management should be to assist & support these changes. If Taupo trout are peaking later in their spawning runs because of seasonal changes in the fishery this will naturally have implications on the summer lake harvest but only be of benefit to the river angler as more & larger fish enter the rivers in Sept/Oct. The lake anglers may be disadvantaged over a few summers until natural fluctuations again occur to balance the fishery."

"There is a range of opinion but all experienced fishermen have responded positively to a reduction in the minimum length to at least 40 centimetres. A mixed bag retaining the 3 fish limit with only one spawning ben above (say) 55 centimetres to reflect the fecundity of larger fish would maintain a balance and should be given serious consideration"

"I have landed around 200 trout over the last 12 months mainly deep trolling and it does seem there are a lot of smaller fish around. I always have the future in mind when fishing and enforce rigid rules on my boat regarding handling of fish and we put time into getting the fish going again prior to letting it go. However this still results on fish dying sometimes immediately and I presume later as well. My point is that we have to catch a lot of fish just to get 3 decent fish. Therefore the risk of harming juvenile fish is high. Often these fish are just under size and in good condition, therefore lovely table fish but must be returned. I believe that in order to kill 3 legal size fish, sometimes the total kill for the day could be 5 or 6 due to mortality after releasing, and some of this by catch would be longer than 42cm. So finally I believe that lowering the limit to 42cm is a good thing for the future of Lake Taupo fishing"

"Are you just trying to satisfy lake fisherman. We have higher mortality rate now with deep trolling and jigging maybe we need to look at these methods I think the limit bag should stay the same, and maybe the limit size could be lowered"

"Unless we are looking at a more permanent downward trend I am strongly opposed to lowering the size limit or increasing the daily bag. As I recall the size was put up to 450mm to stop too many fish being taken during the summer at the expense of the winter fly fishers. I think this was a wise move and should not be undone without solid justification. As they say one swallow does not make a summer and neither do (to date) incomplete trap records justify rash decisions"

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"The 'Review' issued by Department of Conservation (DOC) represents one of the poorer documents coming out of an organisation which might be noted for a failure to provide clear, accurate, verifiable information. The obvious implication to take from the document is that DOC is in fact not particularly interested either in the 'Review' document, or the process of taking submissions. If so, the customers, as it were, would be better served by DOC stating exactly what they think, and what they intend"

"I moderate on New Zealand's largest fishing website FISHNET.CO.NZ. I raised the issue of size reduction with the members. Generally there seems to be an interest in having a maximum size limit to protect the larger fish. Most anglers don't favour the proposed reduction in the fish size."

"I have been reading with interest the debate over fish condition. People seem to have forgotten that we are there for the sport of catching the trout, not meat hunting. In the last five or six weeks we have driven up early in the morning from Napier and had some great days fishing without bringing many fish home. Perhaps we are at fault for not taking the ample takeable but not trophy fish we have caught. My thoughts are not to panic too much and see how the next two months pan out as we caught more larger fish in September last year."

"Finally - I'm in favour of your recommendation! Although I'm not a scientist, I think it's important that changes like this are backed up by sound science, and I hope you'll be able to use any change to gather some more good data to monitor its impact."

In general there are two schools of thought - that there is a problem reflected by the small size of the fish and the proposed change is good, and a second view that it is all part of the natural fluctuations that occur in a wild fishery and that any change is unwarranted.

As managers we agree with the second view in so much that the fishery is fine, but as a consequence of the late spawning in recent years it is different in terms of how it functions and the implications this has for fish size and condition. The majority of the spawning runs are only starting now and the fish are noticeably bigger than several months ago. The reality is that the peak runs in the Tongariro River will most likely be made up of 1.6 to 1.8kg trout as they always have been, but that these runs will be after most anglers have given away their winter fishing.

However the issue under this scenario is that the current size limit is no longer a sound management strategy. It requires anglers to release a large number of trout at a time of year when this is not ideal because their survival is significantly

reduced. It overly restricts angler's ability to keep a trout and it protects a whole group of fish which on the surface means more trout for winter river anglers, only they run after most people have stopped fishing so few make use of them anyway. This recommendation is not a radical change but about fine tuning an important management tool to meet the current circumstances.

It is not a numbers game, in the end we have to make the call as we see best for the good of the fishery and there is no easy way around that. Nevertheless it is a big help to our decision making to have the rigorous, constructive and challenging debate that is occurring to ensure we consider and address all aspects and opportunities.

If we make this change and that is the likely outcome at this stage, then ideally we would have it in place for this summer. However the practicalities of making a legislative change within this time frame may preclude this, in which case it will come in for the new season on July 2008.

The following letter reflects a common view expressed this summer by anglers fishing on Lake Taupo. We have printed the letter and our response in the knowledge that many of you share similar concerns.

Dear Sir,

After fishing for three days (7 hours) over Queens Birthday and catching and hauling 16 fish on two rods, we kept three fish and returned 13 due to under size or poor condition.

This seems to be the norm over the last few years and is frustrating and disappointing. Are there too many fish for the feed available? i.e. we may need to cull. Or should we have a closed winter season for three years to enable the fish to regain condition and size?

AND OUR RESPONSE

Dear Sir

TROUT SIZE AND CONDITION

Thank you for your letter regarding the size and quality of the trout you caught in Taupo over Queen's Birthday weekend. Your comments mirror those of many other anglers this summer.

Fortunately the number of small fish and poor condition of others is not an indication of any problem, rather simply a reflection of the much later spawning which now occurs in the fishery. Instead of the majority of trout spawning in August or September as they did in the past, now the peak runs through the Waipa trap for example, occur in October and November. This has two impacts. Firstly in the past these fish would have returned to the lake after spawning in spring and had several months getting on smelt and regaining condition before you caught them over summer. Now though they are likely to have only just returned to the lake when caught and are still in their post spawned condition. From a management perspective the key is the condition of the maiden fish (fish yet to spawn) as these reflect the food resources in the lake. These fish are in very good condition this summer. In fact a common comment has been along the lines "I had to put a number back, really nice fat fish but just too small". So we are not concerned about the food resources.

The other impact of the late spawning is that the young fish in the lake are effectively several months younger than normal for the same time of year. Given that these fish grow about 3 cm a month once they start feeding on smelt in the lake, then this makes a major difference to their size. The intent of the size restriction was to limit harvest through spring but that by summer most fish should be large enough to take. However, clearly in the last couple of years the size restriction has now become unnecessarily restrictive. To this end we have just agreed with the Taupo Fishery Advisory Committee to reduce the size limit to 42cm, which hopefully we can get in place for next summer. A more detailed report on the reasoning behind this will appear in the August issue of Target Taupo.

Once again thanks for taking the time to put forward your thoughts. As long as the spawning is late poor conditioned fish will be a feature of the summer catch, but hopefully the reduced size limit will allow you to keep more of the well conditioned small fish.

Yours sincerely

ASK US: Do you have a burning question about the fishery?

You may want to know about technical data, access, fishing pools or even why we do what we do. Send in your question and we will do our best to answer it. Email: fishinfo@doc.govt.nz

Access Rights in the Taupo Fishery

By John Gibbs

Most of the content of this article was first published in earlier issues, especially #32 in 1999, but we think it has enough ongoing interest to print it again.

No other sports fishery in New Zealand has such comprehensive access rights as the Taupo fishery. Taupo anglers are extremely fortunate that, in addition to normal access provided on public lands, they have a unique statutory right of access over private lands in many places.

This has come about by a long-standing arrangement between the Crown and Ngati Tuwharetoa iwi, the owner of the beds of Lake Taupo and its inflowing rivers and much of the surrounding land. This agreement has been enshrined in law since 1926 and explicitly recognises the national and regional importance of the Taupo fishery as a recreational asset. Because the fishery is used by so many visitors it also underpins a substantial part of the region's prime tourist economy.

So how did these access rights come about?

The Taupo trout fishery is and always has been a public resource managed under statute. However, because the Crown did not own the lake and river beds, access to the fishery was effectively controlled by the Maori land owners. A number of wealthy overseas anglers recognised the implications of access control and saw a chance to lock up parts of the fishery for their own use by negotiating with the owners for exclusive access rights. The government of the day was concerned that this effective privatisation of a public resource would lead to a loss of a highly valued recreational fishery

as well as an economically important tourist activity.

After some years of negotiations the government passed the 1926 Maori Land Amendment and Maori Land Claims Adjustment Act. Among other things, this provided for access to the fishery and confirmed compensation arrangements for Ngati Tuwharetoa. The prime access provision was the right of access over lake and river beds and the establishment of a 20 metre wide right of way over Maori land around the lake shore and over specified portions of the banks of the inflowing rivers.

What are these access rights and where do they apply?

The key thing to remember is that the rights of way over Maori land are just that: they don't change the underlying ownership of the land which remains in Maori title and must be respected as such. This is a fundamental difference from the popularly-known Queen's Chain provisions elsewhere in the country, where waterways may be bordered by land in various forms of public ownership.

Activities permitted on the Taupo rights of way are not all clearly defined in law and some have evolved over time through common law and precedent. Essentially, the rights of way exist to provide access to and along the water's edge and over its beds. However, the lake and river rights of way have some important differences in their purposes and provisions.



The lake and river beds access is for all public, not just anglers. Likewise, the lake shore right of way is classed as a general right of way available at all times to pass over and along by whatever means. The key constraint to its use is that it must not be obstructed. It is unlikely that fishing, launching or beaching a boat, picnicking or swimming would constitute an obstruction, but camping would. Lighting fires is not encompassed by the right of way and in any case requires both the permission of the land owner and a permit from the relevant rural fire authority. Similarly, there is no inherent permission for toileting on the right of way.

The river bank rights of way are more precisely defined and specific in their purpose. They:

- are limited to specified distances up both banks of nominated rivers (Table 1);
- can only be used for access on foot for the purposes of angling;
- can only be used by people holding a valid Taupo fishing license;

- do not extend a right of use to the general public.

In all cases the distances are measured along the centre-line of the river. The rights of way apply to all tributaries entering the rivers within the defined lengths, except for the Tongariro River. In practical fishing terms this means the Mangamutu and Te Araro tributaries of the Waitahanui River also have rights of way on their banks.

Just why the particular distances specified were chosen is lost in the mists of time. Some are self-evident, such as the Whanganui Stream which has a waterfall about 1 mile (1.6km) from its mouth, and the Hinemakia River which ran through an inaccessible gorge about 3 miles (4.8 km) above its mouth. Less obvious is the Tauranga-Taupo which has many kilometres of good and physically accessible fishing water above the limit of the 3 mile (4.8 km) right of way.

Are the rights of way permanent?

The rights of way only apply over Maori land or land that was in Maori

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RIVER	EXTENT OF RIGHT OF WAY
Tongariro	Mouth to Whittkau Stream junction
Poua	Junction with Tongariro River to old state highway bridge
Waioata	Mouth to source (excluding within the boundaries of Tongariro prison)
Waingarano	Mouth to source
Tauranga-Taupo	Mouth to 3 miles (4.8km) upstream
Waipahi	Mouth to source (NB the Waipahi is closed to fishing)
Fiorenzaiaia	Mouth to 3 miles (4.8km) upstream
Waikarami	Mouth to source
Waiohoro	Mouth to 6 miles (9.7km) upstream
Waiahaha	Mouth to 6 miles (9.7km) upstream
Whanganui	Mouth to 1 mile (1.6km) upstream
Whareroa	Mouth to 3 miles (4.8km) upstream (NB the Whareroa is closed to fishing)
Kuratau	Mouth to 10 miles (16.1km) upstream

Table 1 ownership in 1926. They attach to the title so remain in effect even if the land ownership or status changes. While a right of way may not be revoked, its use as such may be suspended with the same effect. There is also provision to reduce the right of way width. This has been done in a few places, eg the Manganutu Stream, where the width has been reduced from 20 metres to 3 metres because of the location of dwellings close to the stream bank.

One curious feature of Taupo rights of way is that they are fixed as at 1926 and do not move with changes in lake and river margins. This means that due to erosion or accretion in some places they may be some distance from the waters' edge or indeed out in the water. Given the original intent and the difficulty of establishing precisely where a margin has moved, it seems common sense to treat the current shorelines and banks within the proclaimed areas as being bordered by a right of way.

How is access managed on rights of way?

DOC manages a number of basic walking tracks on river bank rights of way. While these are only maintained with owners' agreement, there are clear benefits in having them. Providing tracks reduces the likelihood of anglers wandering outside their boundaries and inadvertently trespassing on private

land. Formed and maintained tracks also help reduce the impact of numbers of people crossing the land and, of course, make for more useful access to fishing spots. Most right of way tracks are managed at a basic standard to minimise infrastructure impacts. This also recognises that the rights are for foot access only and that most anglers are wearing waders and should reasonably expect to encounter water and mud in pursuit of their sport.

In using the rights of way people should be mindful that they may lie over or adjacent to sites of special cultural significance to tangata whenua. These include marae and urupa (burial sites) and you should take great care not to trespass onto them or desecrate them in any way. Some examples are at Whanganui Bay, Poukura and Waipi.

What other forms of access apply?

Considerable lengths of both the lake shore and river banks are Crown land in some form of reserve or other public ownership, such as forest park or road. Various forms of local body reserves also occur. There is free public access over all these reaches and other uses (eg, camping) are limited by the particular status of the land or governing bylaws. Very small lengths of the shores and banks are in pre-1926 freehold title and thus have no public access at all.

There is some access on private land which has no right of way and is available by the goodwill of the land owners. The best example of this is on the Tauranga-Taupo River where the legal right of way ends at the Pump Pool. However, the Te Rangiata farm trust has generously agreed to allow access within the river bed right up to the winter fishing limit at the Rangers Pool and we maintain a basic marked route along this stretch. It is especially important that anglers honour the spirit of this agreement and treat the land and the owners' rights with the respect they deserve.



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Graeme Sinclair with his 11 pound South Westland brown trout caught on a G.Loomis Swt GLX Rod, Shimano BioCraft 7/8 LA reel, Cortland 555 Line.

F60831



Managing Lake Otamangakau Weed

By Mark Veniman
Mark is our Technical Support Officer and part of the research and monitoring team

Lake Otamangakau is a man-made lake of 180 hectares designed for short-term storage of water captured from the Western Diversions of the Tongariro Power Scheme (TPS). The lake was formed in 1972 over an open swampy area and is in close proximity to Mount Tongariro. Lake Otamangakau is a shallow lake (maximum depth 12m) with weed beds covering approximately 50% of the total lake area, especially along the shore line. These beds consist of mainly oxygen weed and these weedy areas provide good habitat for cruising trout.

A considerable amount of research and discussion between DOC, Genesis Energy and anglers occurred as part of the renewal of consents for the TPS to try and find the most desirable operating level for Lake Otamangakau. The research carried out found that the optimum lake level for anglers fishing along the lake edge was 611.10 m above sea level. This is when

the water level is just lapping against the bankside vegetation which creates an open zone between the weed beds and the shore that brown trout like to cruise in, but is not so high as to make wading difficult. Brown trout cruise this zone feeding on snails and damsel nymphs which have to swim or crawl from the weed beds towards the shore and beach in order to hatch. With little cover as they cross the muddy bottom they are easy pickings for the cruising browns which in turn are a coveted target of anglers stalk in around the lake edge.

The relatively high level also ensures that water remains cooler and well oxygenated especially during low inflows over the summer months. Thus as part of the consents process, the various parties agreed to a condition that requires Genesis Energy to try it's best to maintain an average lake level of 611.10m between 1 October and 31 May.

Top: An ideal lake level is lapping the grass, the currently exposed beach becoming an open corridor that the brown trout can cruise. Note the bamboo poles indicating the edge of the weed bed.

Photo by:
Kim Alexander-Turia

However in practice this objective didn't meet either party's objectives. As occurred last summer, high inflows during early summer meant that Genesis Energy had to keep the lake very low for the remainder of the summer in order to achieve an average level of 61.10 metres over the whole period. From an operational perspective this complicated Genesis flow management and although the low levels had the beneficial effect of killing off the encroaching weed beds by exposing them to the sun, the low lake levels meant that anglers couldn't take advantage of these newly widened cruising corridors. Therefore from a fisheries perspective, the condition wasn't helpful either, in fact it was requiring the level to be kept lower than desirable for long periods. It is a question of semantics but in reality it is the frequency at which the lake is around 61.10 metres which is more important than the average level throughout the season.

As a result we have agreed with Genesis and Horizons Regional Council that this particular condition should be deleted, and are currently working on a management plan that includes an objective to ensure that the lake level is maintained as close as possible to 61.10m during the summer months. This will also simplify the management of the lake level from an operational perspective.

However a potential issue with maintaining a relatively high constant lake level is that it allows the weed beds to encroach closer to the shore, doing away with the open zone used by the cruising brown trout. Ultimately this would defeat for most part, the whole intention of maintaining a high lake level in the first place. Therefore the management plan will also incorporate options to lower the lake level for a period over winter to help kill off the encroaching weed beds by exposing them to the winter frosts. The exposed weed beds would also provide food for winter fowl during a time when

food is harder to come by. The same effect could also be achieved by a low lake level over summer (as occurred this year) allowing the near shore zone to dry out. However this is when anglers want to be able to fish this zone and is also the time of year when high temperatures and low inflows make it preferable to maintain the lake levels as high as possible.

To test the effectiveness of this proposed regime we have initiated a programme to monitor the seasonal distribution of the near shore weed beds. Monitoring of the weed bed around Lake Otunangakau is a big task in itself and so it was decided to use a large sampling quadrat that could be laid down on top of the weed beds at specific locations so that the main edge of the weed bed could be mapped onto paper at each of the survey sites. This would hopefully provide an insight into what was happening to the weed beds at certain areas around the lake. The monitoring project began during September 2006 and is ongoing. Although still early days, this article summarises the results so far and attempts to describe what is happening to the Lake Otunangakau weed beds.

Four sample locations were chosen around lake Otunangakau with three sites between the south-eastern arm and the Waiehu Canal and one situated on the northern side of the outlet arm (Figure 1). Three sampling sites at each location were chosen and marked by a wooden stake. The location of the large quadrat was then determined by placing the middle of the grid at the edge of the weed bed during the first day of sampling. This would allow us to determine whether the weed beds had encroached, receded or remained the same over a given period.

The two corners of the grid closest to the bank were marked with painted bamboo canes driven into the ground so that the grid could be positioned in exactly the same position each time monitoring occurred. Bamboo canes were used in

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Figure 1: A map showing the 4 sampling locations around Lake Otamangakau courtesy of Google Earth.



preference to metal stakes to minimise damage to any boats wishing to land at any of these sites. The GPS coordinates of these canes were also recorded along with the location of the bank side stakes just in case they were accidentally removed.

The grid itself was constructed from a large sheet of reinforcing mesh 150cm wide and 300cm long (10 x 20 squares) and was cut in half (10 x 10) so that it could be transported easily on a small dinghy. Each square measured 15cm. Plastic cable ties were used to hinge the two sides together. The whole grid was then sprayed white to improve visibility while underwater.

Two staff members undertake the survey and sites were sampled from the down-wind side to prevent disturbed silt from affecting the unmonitored sites. The grid was cleaned of weed each time it was used and care was taken not to disturb the weed beds being surveyed. The edge of the weed bed was mapped onto a survey sheet with a grid already printed upon it. Any small patches of weed between the main edge of the bed and the shore were also plotted on the grid as these are thought to help the weed beds expand.

RESULTS & DISCUSSION

As a result of monitoring every few months we were able to identify changes in the weed bed that may have gone unnoticed if we had only sampled during early spring and late autumn. For example, by examining the difference between the sampling in September 2006 and May 2007 it would appear that the weed beds receded at all four sampling sites. However, sampling during January and March showed that while the weed beds generally receded at sites A & B they expanded at sites C & D before retreating again during May. This in order to explain our findings so far, I will briefly discuss what has happened at each site over the nine month study period.

Site A located on the south-eastern side of Lake Otamangakau (Fig2) had a well defined open corridor between the shore and the main edge of the weed bed when sampling commenced during September. The substrate at this location was firm with only a small amount of sediment present. This produced a nice clear edge to the weed line with the area between the weed bed and the shore remaining bare of vegetation. It is likely that this harder ground inhibits small weed fragments from taking root.



Fishery ranger Harry Hamilton with the mesh used to map the edge of the weed bed.
Photo by: Marie Veneman

The weed bed at site A1 receded between September 2006 and January 2007 then encroached slightly until March before receding again during May. This would suggest a slight die back during early spring followed by growth during summer before dying back again during late autumn. However at site A2 the weed bed continued to recede over the 9 month period by an average of more than 2 metres. A similar pattern was observed at site A3 which receded by an average of over 4 metres. This was particularly noticeable during late summer and early autumn. Thus overall, site A saw a general recession of the weed bed with an average decline of almost 2.3 metres between September and May at all three sampling sites. The lower lake level for periods during the

summer months and the firmer substrate are two possible reasons why the weed beds have receded at this particular site. Site B is located slightly further north and is approximately mid way along the eastern shore. The substrate at this location is considerably softer and consists of mainly soft mud. In the first survey the weed bed edge was well defined with no other vegetation present from the weed edge to the shore. However low grasses began growing in the muddy substrate during the summer months. At all three B sites, there was a slight recession of the weed bed between September and January before remaining relatively stable between January and March. However, between March and May there was an encroachment of the weed bed at two sites ranging between an average

of 0.2 and 2.5 metres. Yet at the remaining site there was a considerable recession of the weed bed that averaged 6.5 metres! The main edge of the living weed bed had moved approximately 5 metres back into the lake with the remnants of the old weed bed starting to die off amongst the shallow margins. With each site being just 20 metres apart it was surprising to see such a large difference in the movement of the weed bed. Small patches of weed between the main weed edge and the shore were thought to be important in the encroachment of the weed bed as these grew out and met with the main edge of the weed bed. The softer bottom may also have aided the rooting of plant fragments and further helped the encroachment of the weed bed. However, the reason for the considerable decline of the weed bed at one of the three sites remains a bit of a mystery given its close proximity to the other two sites.

Site C was located even further north on the eastern shore with a very soft and muddy substrate similar to Site B. The weed beds here were relatively patchy with the main edge not as well defined as sites A & B. At Site C1 the weed bed receded slightly between September and March before encroaching slightly between March and May. However the weed was relatively patchy during summer and was starting to die off in parts later on despite the encroachment of some new low growing weed.

A similar pattern was observed at Site C3 and as with Site C1, the weed edge was not well defined and the weed relatively patchy. At Site C2, the weed bed encroached between September and January probably aided by the presence of small patches of weed. The main weed edge then receded slightly between January and March through the loss of some patches before declining further up until May although the weed bed was relatively patchy.

The patchiness of the weed and the

softer bottom made sampling difficult at Site C. The importance of recording small patches of weed between the weed edge and the lake shore was evident as it is likely that these patches contribute to the encroachment of the main weed edge by expanding outwards.

Site D was situated on the northern side of the Outlet arm and was another site with a very muddy bottom. The weed bed encroached towards the shore to some extent at all three sites between September and January. Little change was observed between January and March before the weed bed receded considerably between March and May. This large recession of up to 17 metres occurred during mid May with lots of weed observed dying off amongst the shallows.

It is still early days with this programme and we will continue monitoring over the winter months to see if proposed lower lake levels during a period of frosts knock back the weed beds further, and continue the general recession currently occurring. It is likely that the growth of the weed beds were affected by the Waireru Canal being closed during summer and so may not represent what would occur during a more normal year, but it does highlight the considerable fluctuations that occur in the extent of these weed beds.

If all goes to plan, then shore anglers should expect good fishing conditions in these open corridors next summer but more opportunities to fish them thanks to a more frequent high lake level! It's ongoing work and as we learn more about the responses of the weed beds to lake level manipulation we may well modify the regime further. It reflects however the benefits of a very constructive working relationship between Genesis Energy and DOC, which recognises that as we learn more there are often opportunities to tweak the operation of FPS to the benefit of everyone.



Whitikau Log Jam Cleared

By Gallum Bourke
Gallum is a ranger and part of the team that carries out our field operations work

Each winter, hundreds of wild Taupo trout start their annual migration up the various rivers and streams to spawn. The level of spawning success is largely influenced by the occurrence of natural events such as floods and the amount of suitable spawning habitat available. For example, occasionally obstructions occur within a spawning stream which prevent fish from accessing otherwise suitable habitat.

The Whitikau Stream, the Tongariro River's largest tributary, provides some of the most important spawning and rearing habitat in the Taupo district. However, reaching these grounds is never an easy journey for Whitikau trout. First they have to negotiate the 'Grotto', a narrow gorge situated between the Hautu and Rangipo

prisons. The grotto, with its sheer ignimbrite walls, is extremely susceptible to blockages, especially after a decent fresh.

Nearly every winter a team is dispatched to clear a log jam here and this year was no exception. Several large logs had wedged into one of the narrowest sections of the gorge, subsequently raising the stream bed and creating an impassable 2.5 metre high waterfall. The way the log jam formed caused the water below the fall to be extremely aerated. This causes additional problems for the trout as the aerated water makes it very difficult for them to swim and jump as they are unable to get enough "push" or "drive" due to the amount of air in the water.

Although only 200 metres from the site of last year's log jam which we could access

Top: Gallum Bourke (centre) inserts an explosive charge while Glenn Maclean reads another charge.
Photo by: Julie Grauer

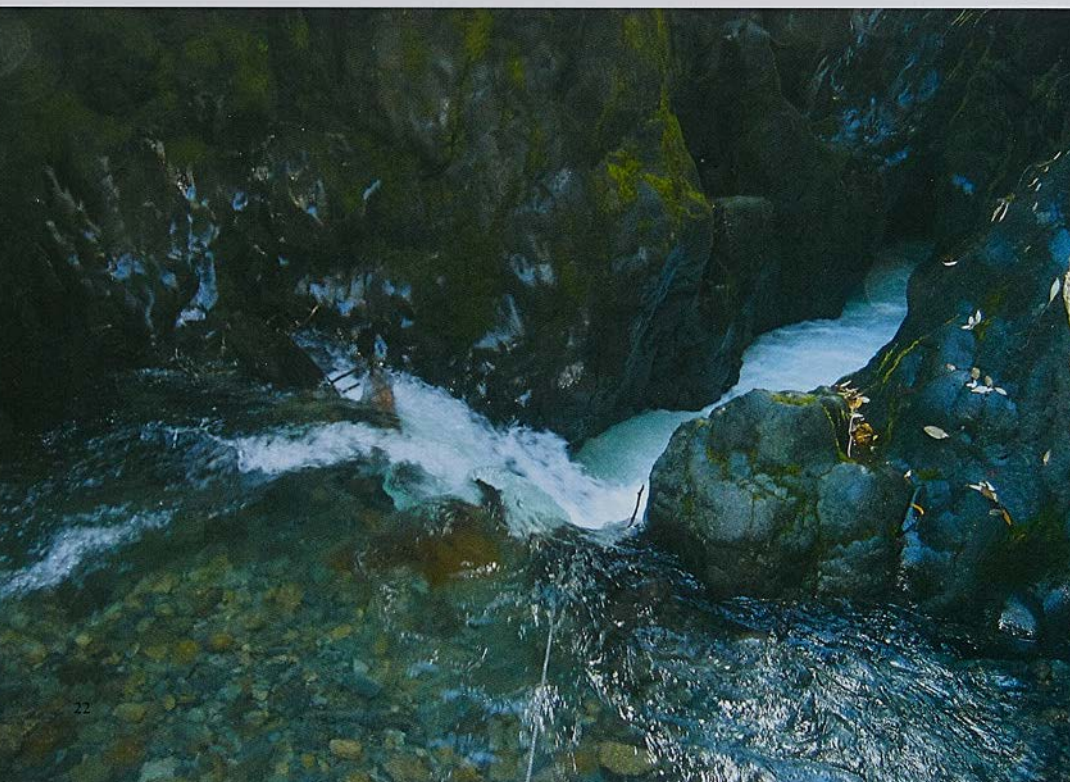
by foot and remove with chainsaws, this time we would have to abseil down to the log jam from the cliff top above and set explosive charges to clear the blockage. After a temporary track was cut to the top of the gorge, a trial run was undertaken to assess the logjam close up and to establish what equipment and the amount of explosives needed to do the job. Fortunately we were able to call on Terry Blumhardt of "Naturally Adventurous Limited" to provide expert supervision of our abseiling activities. Terry has a wealth of experience abseiling and climbing in the district and has been involved in numerous search and rescue operations. We were hoping he wouldn't need to search for or rescue anyone on this occasion though! Once we had abseiled safely down to the blockage, it became clear that this would be no easy task. The rock walls were very slippery and the water velocity considerable and it was not possible to work from below the log jam.

A week later it was time to deal to this log

jam once and for all! The team consisted of Julie Greaves (team leader), Terry Blumhardt (abseiling supervisor), Glenn Maclean and Callum Bourke (explosives), Nathan Walker, Joel Houthuijzen and Mark Venman (general assistance and traffic control).

Once Glenn, Terry and Callum abseiled down to the site the first step was to remove rocks built up against the blockage, with the hope of exposing the logs that were the main cause of the problem. It was crucial that staff remained safe and avoided being swept away, so the team wore safety harnesses clipped to ropes that were anchored back to a rock wall. These ropes were fully adjustable and the length of the rope controlled by Terry back at the anchors. After a couple of hours of removing rocks and debris by hand, the stream started to scour out large holes exposing the troublesome logs. Several sticks of explosives taped to Manuka poles were then wedged in behind the logs, and then several more.

Logs wedged in the grotto created an impassable waterfall
Photo by Julie Greaves



After the explosion there was
lots of white water left but
no waterfall
Photo by: Julie Greaves



Once the explosives were in position, the team retreated to the safety assembly point and the charge was connected and detonated. When the smoke had finally cleared and the fumes dissipated, a quick peek over the edge revealed a clear passage and no more log jam, a successful outcome indeed. Glenn takes the view of more is better rather than have to come back a second time.

Maintaining fish access is a practical but very important aspect of managing a wild fishery. By removing this log jam we regained 8.5 kilometres of superb spawning habitat which otherwise would have been unavailable.

Next on the list is the Waipa Stream, another important Tongariro tributary that has two potentially impassable log jams that need clearing. Thanks must go out to the team, in particular Terry Blumhardt, for a job well done. Now what will we find in the grotto next year!

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The image shows the interior of a sporting goods store. The walls are decorated with several taxidermy mounts of deer heads with large antlers. In the foreground, there are fishing rods displayed in a rack. A counter or display area is visible in the background, and various fishing gear and supplies are scattered throughout the store. The lighting is warm, and the overall atmosphere is rustic and outdoorsy.

LEARN THE TONGARIRO ROLL CAST

Herb Spannagl has fished the Tongariro River for 36 years. A highly innovative angler and the author of many articles on fishing and casting he has been at the forefront of introducing the Tongariro Roll Cast to Taupo anglers.

The Tongariro River has been the birthplace of many fly-fishing innovations and the gateway

for quite a few introductions from other parts of the fly-fishing world. Just think of the shooting head, Red Setter wet fly, Globug, Tongariro bomb, and all the adaptations to upstream nymphing for migrating rainbow trout. All these can be traced to this famous river and all of them during the thirty-six years that he has fished there.

TIMING OF DAY:

- Meet at the Whakapumautanga Downs Learning Centre (Classroom), Tongariro National Trout Centre at 10.30am (4kms South of Turangi).
- Introduction and Video
- Demonstration of cast at the Upper Birch Pool
- Lunch at 12 noon at the Classroom (Rolls, coffee and tea can be pre-ordered at a small cost or you can bring your own lunch).
- Depart for the Tongariro River for instruction 1pm (location for instruction will be decided on the day as it will depend on the wind direction & a location that will least interfere with other anglers)

CONDITIONS:

- Limited to 20 Anglers (on a first in first serve basis)
- Making a donation will secure your booking
- For cancellations, refunds will be given up to 10 September (No refunds after this date).
- Anglers must supply all their own gear, waders, typical Tongariro rod with a "long belly" WF or Double Taper floating line and small well treated indicators (No flies or bombs are needed as this cast is difficult enough to learn without the handicap of weighted flies).

Note: The clinic is not suitable for fly casting beginners. It is an advanced cast, which is a lot easier to learn if the double haul is already part of an angler's casting routine.

'Thank you for supporting the Tongariro National Trout Centre Society'

The Tongariro Roll Cast is the latest contribution to fly-fishing that has come from this illustrious water:

In conjunction with the Tongariro National Trout Centre Society, Herb Spannagl will undertake a casting clinic on 15 September 2007 (back up date 16 September for bad weather).

Herb has kindly donated his time to conduct this clinic with the expectation that participants will donate \$50 per person to the Society.

For bookings please contact the Society on 07 386 8085 or email: troutcentre@reap.org.nz





Helping trout climb to new heights

By **Kim Alexander-Juria**
Kim is our Programme
Manager, Community
Relations for the Taupo
Fishery Area

The life cycle of trout requires that they move up rivers and streams from lake Taupo in the winter to spawn. While in the rivers, trout travel long distances to their spawning grounds. It is fortunate that the Taupo region has a large number of streams and rivers that provide high quality habitat. However it is vital for the ongoing welfare of the fishery that we ensure trout have access to as much spawning ground as possible and young fish have the opportunity to seek and find suitable habitat in which to feed and grow.

Top: Dan Bustard (right) with Dale Bustard & Scott work on the fish pass display.

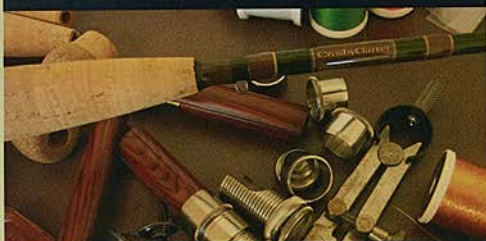
Photo by: Dave Conley

Ensuring access for trout can mean removing log jams and the build up of natural debris in waterways, perhaps after a storm or flood. It may also mean

ensuring that stream mouths do not get blocked by a build up of sand and therefore prevent fish from entering the stream. However, often it is man-made obstacles that impede access for fish upstream, especially road culverts, fords, weirs, dams and water intakes.

In these instances allowing fish to pass upstream can be achieved by modifying culverts and weirs or installing fish passes. Within the Taupo trout fishery area, there are 23 culverts that cross spawning streams. These are mainly road culverts made of concrete with a couple constructed of steel and aluminium, 8 of these have been modified to correct features that stopped spawning trout. An illustration of a culvert

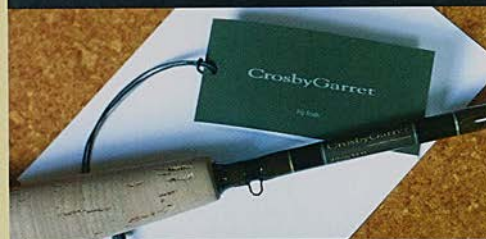
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that allows fish to pass under a road is (Picture 1). Such culverts need to be designed so that they allow enough flow and depth of water for fish to swim through with suitable resting places. Culverts need to be constructed so that entry is below the level of the stream and not "perched" higher and extending out over the stream. Some culverts can become "perched" over time due to erosion at the downstream end and once this happens, fish are unable to enter. This can be remedied by installing a weir downstream of the pipe made of rocks, wood or concrete. This weir raises the water level to a sufficient height to enable fish to swim into the culvert. Suitable pools created by weirs also provide enough water depth so that trout can jump or propel themselves into the culvert.

Inside the culvert, baffles can be installed at an angle to the water flow and across the width of the culvert. These baffles or ladders deepen the flow and break the current assisting fish to pass, particularly in times when stream flow is low. They also create areas where fish can hold up for a time to rest.

Other designs are used for native fish and vary depending on the swimming and climbing abilities of the various species.

As fish passage is such a crucial and important part of the life of trout, it is appropriate that we show how this is achieved by a display at the Tongariro National



Top opposite page:
 (Picture 1) A culvert that allows fish to pass under a road.

Right: (Picture 2) The Auckland Regional Council fish pass display. The culvert is essentially cut in half horizontally to provide a view of the interior. A similar concept will be used for the display in the trout centre.

Trout Centre. The centre's primary focus is education, whether it is educating the public about the wild fishery, the importance of good water quality, fishing as a recreation, or the importance of fish not being prevented from reaching crucial spawning and rearing habitat. Over 50,000 visitors enjoy the centre each year.

The Department of Conservation administers the Freshwater Fisheries Regulations which require people building culverts, dams and weirs to provide suitable fish

passage wherever required.

Part of the work of the Taupo Fishery Area team in managing the trout fishery is to check culverts and other stream obstacles on a regular basis. Culverts are checked yearly, and more regularly after heavy rain, flooding or slips.

Ongoing maintenance checks need to be made to ensure:

- baffle condition is adequate
- determine and check adequate flow
- there are no log jams upstream or debris blockages

- any pools created are of adequate depth
- check steepness
- no "perched" culverts due to erosion under outlet of pipe

An additional issue for fishery management is that if fish pile up below a culvert due to not being able to pass upstream, they become an easy target for poachers.

The new display to be installed at the Tongariro National Trout Centre has been designed to show how fish can pass through a culvert or weir. The round culvert is cut horizontally in half so visitors can see inside it from the viewing platform, looking down into the interior and watch as the fish make their way through. A similar display has been constructed by the Auckland Regional Council (Picture 2).

The display demonstrates a management tool that is used to look after the Taupo trout fishery to help ensure its sustainability. It also shows that, in an often unnatural man-made world, we

can still make allowances and find ways to ensure nature is able to function.

There was an existing display at the centre, however it did not adequately tell the story. Frame Group Limited from Auckland was commissioned to provide the technical specifications for the fish pass. Tenders were sought to build the fish pass and Dan Bustard Contracting from Waihi was awarded the contract.

Now that we had the design and the builder we needed funding. Ken Kimmins, Administration Manager from the Tongariro National Trout Centre Society sought funding and was successful in obtaining grants from the Waikato Catchment Ecological Enhancement Trust, Horizons Regional Council, Palmerston North and the Lion Foundation.

Special thanks to the society for supporting this important project and to all the funders that have provided assistance. So come on down and check out the new fish pass display at the Tongariro National Trout Centre.



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On the right track

By Julie Greaves
Julie is a ranger responsible for visitor assets management and is also part of the field operations team

It's that time of year again, where more anglers head out on the rivers to dangle a line and the traffic on fishing tracks increases.

To ensure that anglers have adequate access along the rivers a contractor is employed annually at this time of the year to cut vegetation back and open up tracks along the Tongariro, Waiotaka, Waimarino Tauranga-Taupo and the Hinemaiiaia rivers. Unfortunately track maintenance along the Waitahanui was delayed due to land ownership issues, but much of this has since been completed.

determination the work was completed in a record of a week and a half.

The forecast wasn't promising for the time planned to do the contract but the weather wasn't too harsh on them and they just missed the heavy rain and howling winds although Nick still swears that it is a lot cooler here than Galatea.

Armed with scrub bars and chainsaws that fitted neatly into a backpack the workers mowed through the overhanging vegetation and grass in no time. Most anglers didn't mind the disruption of peace and tranquillity for the roar and hum of machinery for a few days so they could gain easier access to their favourite fishing pools.

A new track has been opened up along the lower reaches of the Tongariro River from the Log Pool down to the bottom of the Bends Pool. Small narrow tracks were originally created by anglers through this area. But after seeing the growing fishing potential on this stretch of the river and the number of anglers already trying to scramble through the blackberry and willows we decided to open it up. So now you can walk along this defined track with waders and fishing rod without getting tangled and scratched by the blackberry bushes and other nasty scrub. Access to this track is off Grace Road.

The old four wheel drive tracks along the Waiotaka and Waimarino have been cut for walking only as the rivers have eaten into the banks and driving a vehicle along these tracks is no longer safe. The team from Moorland have enjoyed their time working along our famous fishing rivers and were surprised by the number of anglers taking the opportunity to enjoy New Zealand's most popular fresh water fishery.



Moorland Contractors, Nick Doney (left), Angus Te Amo, Julie Greaves (ranger), Retimana Rurelie (bottom left), Duce August

The challenge of this task was taken up by the contractor Moorland Services from Galatea. Moorland Services is a business run by Nick and Tania Doney. Nick has just recently left the Department of Conservation where he was programme manager in Visitor Assets to go out on his own and run his own company.

He had a team of five including him, and as a new contractor on the scene they were eager to get smacked and impress. With this

No Didymo!

by Glenn Maclean

It is now nearly 3 years since the invasive alga didymo was first discovered in the South Island, yet it has still not jumped Cook Strait. The campaign to keep didymo out of the central North Island has continued to develop over recent months and there is real hope that that didymo will not get here, so long as each of us do our part and rigorously clean our gear every time we have been in a river or lake.

However, it also clear that if it does once become established in the North Island that there is relatively little we will be able to do to limit its impacts. A recent simulation of a didymo find in the Mangetepopo River west of Lake Otamangakau highlighted the difficulties we will have in controlling public access and how quickly didymo could spread to the point where eradication became impossible. Similarly the results of a trial to control didymo with chelated copper show that it is likely to only be possible to eradicate a localised infestation and only if it is discovered early before it has established visible mats. However there are significant detrimental side effects including substantial juvenile trout mortality downstream. If there is an option to eradicate didymo then the ecological cost maybe worth bearing but as an



ongoing control method it will be difficult to justify. Once the mats are firmly established it appears copper is unlikely to achieve a total kill, and so becomes a control option only. Furthermore while the copper kills the majority of didymo when it is in a thick mat, it still requires a flood to slough it off so in many cases there will be little to be gained.

What both the simulation and copper control trial highlight is the need to have a regular and comprehensive didymo monitoring programme in the North Island with the results coordinated and readily at hand. This way if didymo does get across Cook Strait then ideally it will be detected early in a single site where eradication is still an option. Furthermore through a new web site which coordinates and collates the results, we will within a few hours of a didymo detection be able to show that the rest of the North Island is didymo free. In turn this provides an opportunity for the Minister of Biosecurity to immediately declare a Controlled Area around the infected site, rather than waiting for a full delimiting



Rangers Dave Conley (left) and Mark Mahe promote the didymo message at the Red Hut carpark.

Photo by:
Kim Alexander-Turia

survey to be carried out and the risk that the didymo spreads further in the mean time. A Controlled Area is fundamental to stopping the spread as it allows control of public access in the infected area. There are a range of options from no access to some form of permitted access where if you meet certain conditions such as how you have cleaned your gear you are issued a permit.

In terms of a surveillance programme recent research at Waikato University has developed a technique based around identifying didymo through its DNA. This technique is proving very robust and allows detection at tiny concentrations and the opportunity to readily detect didymo while the incursion is still at a microscopic level. Over the next few months a number of agencies are working together to put a coordinated surveillance programme in place around the North Island to hopefully ensure early detection of any incursion.

So it is good and bad news. It is clearly possible to keep didymo out of the North Island if we all rigorously clean our gear. Otherwise it would already be here! This has to be the main focus for everyone, clearly the best option is simply to keep

it out. However if didymo does get here there is a second chance, albeit small to eradicate it if we find it early, but we don't want to rely on this. If didymo is widely spread then its here to stay and that is a very ugly thought.

What does it mean for you and I? Clean your gear every time you go in freshwater, anywhere, any time, any activity. For all any of us know didymo could already be in that stream or lake we are fishing and we will be the person who spreads it to another stream before it is detected. As I've just emphasised, if it is widely spread when it is first found then the problem has just got a great deal more difficult. It doesn't matter that you only fish the Tongariro River, our chances of successfully eradicating didymo could be the difference in finding a single microscopic detection at the Bridge Pool versus finding multiple detections spread along the whole river. It is about taking personal responsibility for what is important to you and encouraging your friends to do likewise. Make sure you do your part, we have one chance at this!

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FROZEN BOOTS

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Photo by: Dave Conley

Putting the Boot In

By Dave Conley
Dave is the recently
appointed Community
Relations Ranger at
the Tongariro National
Trout Centre

When the question was raised with me as to what stories I could contribute to the next issue of *Target Taupo* I have to admit I felt a little unsure as to what I had to offer. After all, I had only been at DOC for a matter of weeks, and didn't feel I had much experience to rely on. My road to Damascus experience occurred while I was participating in a riverside didymo awareness campaign. I became aware of the extent to which responsible anglers were beginning to question the use of their felt soled boots, even several anglers who had only just got their boots out of the box. As we sat by the river I discussed the spread of didymo with our fishery scientist, Michel Dedual and between his seemingly endless amusing anecdotes about hunting he elaborated on the potential for felt boots as a vector for didymo.

The last issue of *Target Taupo* 51 contained an article by Glenn Maclean called 'Still No Didymo', in which he outlined the need when treating for didymo to take extra care in cleaning wading boots, even to the extent of freezing them between trips to the river. I thought I might be able to wade into this debate based on my recent experiences as a full time fishing guide in the local region, and offer a perspective on the wading boot issue.

Like many others I had joined the mass exodus from the traditional boot footed wader as soon as the evidence was in that Gore-tex and similar products offered a viable, comfortable alternative to the heavy and relatively cumbersome, neoprene bootfoot. I followed the rising trend to match my new stockingfoot waders with a pair of feltsoled wading boots, and enjoyed the extra grip and stability they offered. However, having got increasingly tired of having to re-sole my boots after every 100 days or so, I eventually plucked up the courage to try a relatively new product on the market, a rubber soled wading boot with a removable screw-in studs. Having not looked back since, I thought I could offer some insights for those other anglers who may be thinking its time for a new pair of boots, but are unsure if rubber soled boots are what they are looking for.

This is not an attempt to discredit the use of felt soled boots, which I can personally attest offer excellent grip in most wading situations, but rather seeks to support the use of modern rubber soled boots as a credible alternative. They do still need to be rigorously cleaned to prevent the threat of didymo infection, but they have the benefit of not utilising felt, one of the most problematic materials in the battle against the spread of didymo. After all if

didymo gets here we may not need a sort of fancy wading hoot because didymo is very easy to walk on, its just you wont want to go fishing anyway.

To illustrate my argument, I have broken the debate down into several components which I think are critical to the issue, cost, durability, and most importantly, grip. I'll try to look at each issue separately, but there is some crossover, as maximising one of these components generally means compromising one or both of the others. From what I see looking around the local tackle shops, there is little to differentiate between felt and rubber boots from a straight out cost comparison. In each case, there are boots on the market at a variety of prices. At the end of the day, you can spend up to \$400 dollars, and find rubber or felt soles at each price point along the way. For me, the area in which rubber soles begin to develop an edge is in regard to costs after purchase.



wading studs

Felt soles in my experience need to be replaced after every 100 days or so. As felt ages it seems to compact as well as wear and loses its edge over rubber in terms of straight out grip-ability. If you don't replace it regularly, at a cost of up to \$80 a pop, felt can quickly become a liability for the wading angler. It no longer grips well on slimy rocks whilst retaining the general disadvantage felts have on mud or smooth surfaces. What you can end up with is a product which has none of its original advantages, whilst retaining its original disadvantages. Felt hoots on mud can be like roller skates on ice. This

effect can be mitigated to a limited extent by the purchase of felt soles with studs inserted in them, but in my experience these studs are too small to have any significant impact on muddy tracks.

The durability of rubber soles is one of the areas in which they shine by comparison to felt in my opinion. Rubber soles, and those traditionally placed on the soles of neoprene wading boots, have up until recently been made from hard rubber and plastic compounds designed to offer maximum durability, but this tends to diminish their grip-ability. Modern rubber compounds have changed this however, as compounds developed for industrial uses have crossed over into the recreational market. As Graham Whyman from Sporting Life explained to me, the earlier rubber compounds, known as gristle, were developed for use on surfaces like concrete floors, and wearability was the significant driving factor in their design. Modern rubber wading soles have drawn heavily from the construction industry, which has developed softer nitrile compounds designed to grip on wet smooth surfaces such as steel and roofing iron. Another sporting endeavour which heavily relies on these nitrile compounds is the sport of rock climbing. These compounds have proved ideal for wading applications, offering vastly improved grip whilst still retaining their edge in durability. I personally have a pair of rubber soled wading boots which have had over 400 days wear and tear on them. The original nipples on the soles have been worn as smooth as glass, yet they still offer excellent grip on clean, slime free rocks like you are likely to find in the Raupo region in winter, after a fresh has scrubbed the rocks clean of periphyton. However without their nipped soles, they now are as treacherous on muddy banks as a regular pair of felts, but the big difference is that this can be easily overcome by the addition of some screw-in stainless or tungsten studs. These have the advantage of being bigger than the studs in felt soles, and offer some realistic grip

on mud and frost.

This brings us to the last differentiating feature in this debate, and that is the all important issue of grip. I have already touched on this during the preceding points, but there are some issues yet to be discussed. I don't think even the most vehement supporter of rubber soles would argue that rubber is the match of felt soles in the worst of wading conditions, particularly with regard to slime and algae. In conditions where the rocks have a good covering of slime, rubber soles in my view are perhaps at best 80% as effective as felt. Again, the disparity can be reduced a little by the use of screw in studs, but felt clearly retains an edge in grip. However, apart from the middle and upper sections of the Tongariro and the Tauranga-Taupo, these wading conditions are rare in the Taupo fishery. Most of our wading is across gravel, pumice sand and small cobbles certainly nothing approaching horizontal waterfalls like the Waipunga and Whakapapa.

Another thing to consider I think, is that felt's advantage quickly disappears as the felt ages, and unless it is replaced regularly at not inconsiderable cost you will end up with a boot that doesn't grip anywhere near as well as a modern rubber sole with similar wear. As previously suggested, felt performs much more poorly than rubber on muddy or grassy banks, or on frosty smooth surfaces.

In the final wash up, the wading angler has compromises to make when considering replacing old wading boots.

Compromising on cost will dictate that you are unlikely to be able to purchase the newer rubber compounds, as these tend to be present on the more expensive boots. Cheaper rubber soles tend to be very durable, but not as effective in the grip department as their more expensive cousins. By comparison, felt is felt, and good felt soles are available in the lower price brackets. Durability and grip have a close relationship, with a general rule of thumb applying in most cases. The greater the grip offered by your new boots the lesser the durability of the soles. However in my experience I believe that whilst rubber soles are not the best grip option in the worst high summer wading conditions, they wear better, are cheaper in the long run, and continue to offer good grip well past the age you would expect similar performance from felt soles.

When you look in it, most of us started fishing in the good old boot foot, with its plastic compound sole, and they served us well for the most part. We survived our formative years so we can continue to bore those around us with tales of how good the fishing used to be. If we didn't need felt then, why do we tend to think of it as being so indispensable now? The newer rubber soled boots, either with built in or screw-in studs are a very viable alternative to the predominant felt boot. Particularly with the ugly spectre of didymo looming over the future of our pristine fishery, and the difficulty in cleaning felt soled boots, perhaps it's food for thought?

Cleaning felt soles

The difficulty with cleaning felt soles for didymo is that the various decontaminating agents are not readily absorbed through the felt and so viable didymo cells may remain even after prolonged soaking.

Hence the preferred cleaning method is freezing the boots or immersing in hot water (45C) for 40 minutes.

However it is important to recognise that there is added risk with any boots with absorbent material uppers or linings inside the boot. For this reason it is recommended you freeze any wading boots - better safe than sorry.



The Straight Returns

By John Gibbs

Arguably the most iconic image of the Taupo fishery is the Picket Fence at the mouth of the Waitahanui River. Rows of anglers, lined up shoulder to shoulder silhouetted in the setting sun create the most lasting memories of the fishery for many.

Integral to this scene is The Straight; a long stretch of river flowing from the highway bridge parallel to the road and separated from the lake by a narrow spit of sand before spilling into The Rip. The Straight is probably the most heavily-fished stretch of water in the fishery as scores of anglers manoeuvre to get first crack at the fresh-run rainbows that choke its length as they start their spawning migration.

For as long as there have been trout in Lake Taupo the lower Waitahanui River

has been a fishing mecca. Ever since, it has been a special place for anglers from all backgrounds. Many Taupo angling authors, such as Budge Hintz, Keith Draper, John Parsons, Peter Gould and Gary Kemsley, cut their fishing teeth on the Waitahanui and wrote fondly of it and its characters. For tangata whenua it has become a place not only for recreation, but also a valuable food source.

The sand bar or spit that creates The Straight is actually the product of a phenomenon called longshore drift. Prevailing southwesterly winds drive currents northwards up the lake towards Wharewaka Point. Coupled with strong waves on this exposed shore, the currents winnow sand from the beaches to the south and wash it northwards. The river flow emerging from the Waitahanui

Top: Waitahanui River Mouth, 29 February 2004, lake level 357.282m.
Photo by: John Gibbs



March 10 2006. spit
approximately 50m long lake
level 357.04m.
Photo by: John Gibbs

interrupts this current, creating a back eddy to the south which causes some of the sand to settle. Gradually this builds up a sand bar, exposed as lake levels fall, which steadily pushes the river mouth further north. Eventually the river takes a long straight course parallel to the shore before finally breaking out into the lake.

It's tempting to think The Straight has always been there unchanged over the years, but this isn't so. There is some evidence that at times long past, the river actually flowed north some 3 km, as far as Five Mile Bay, before entering the lake. Very recent history also shows us that the river flowed directly from the bridge to the lake with no Straight intervening. Mostly these changes have been due to natural causes - lake levels, storms and

floods - but not always. In the 1950s the Ministry of Works built a rock groyne to protect the highway about 300 metres north of the bridge. This turns the river towards the lake and has largely determined where the mouth lies since. But at times, the river has simply kinked around this obstacle and continued its course up as far as the old Crystal Brook lodge at the northern end of the settlement. Years ago, while digging through some old Wildlife Service files, I came across an official report written in the 1930s by one of the early Taupo fishery rangers, Gerry Potts. He records somewhat indignantly, that he came across two Maori youths who had dug through the base of the spit, diverting the river directly into the lake in order to plant potatoes on the dry land thus exposed.

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September 26 2006, sDh
approximately 250m long,
lake level 356.37m.
Photo by: John Gibbs

He names one of the culprits as Taxi Kapua. Taxi later became a respected Tuwharetoa kaumatua and has since passed away. But I'll never forget his laughter and delight when, years later, I presented him with a copy of Potts' report.

The one event most contemporary anglers will remember is the great leap year flood of 28-29 February 2004. Overnight this caused the Waitahanui to cut its way through the base of the spit and run directly into Lake Taupo. Many people, fearing the new course was permanent, decried the loss of a wonderful angling opportunity. There were all sorts of suggestions how to restore The Straight, mostly requiring substantial intervention with excavating machinery and huge quantities of rocks and gabions

Over the years I had watched the movements of several Taupo river mouths, especially the Waitahanui, Waihaha and Whanganui and had come to the conclusion that they were naturally dynamic and had patterns that tended to repeat. I have a crude understanding of the hydrological processes involved and was not as convinced as some that this was a permanent change. Periodically then, I made a photographic log of the Waitahanui River mouth which has captured its gradual re-establishment.

The photos with this article show the initial river breakout on 29 February 2004, followed by a slow rebuilding of the spit up until March 2006, when it was only 50 metres long. An apparent spurt in growth occurred from late 2006, likely boosted by a period of steadily falling lake level. By March this year the



August 15 2007 spit approximately 400m long, lake level 356.79m. The highway groin, which used to define the river mouth is in the centre of the picture opposite the long driveway.

Photo by: John Gibbs

spit was approximately 400 metres long, extending up to the site of the former Waitahanui service station.

The Straight now extends some distance north of where the river mouth was when it broke through in February 2004. As the channel stabilises trout

lies become established and already this winter The Straight has shown signs of its former angling glory. After just 3 years, what may have seemed to have been the sad demise of one of the most treasured places in the Taupo fishery has instead witnessed its return.

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Bringing the Taupo Fishery to Denmark

by Michel Dedual
Michel is our
Fishery Area Scientist

In June I attended the 7th Conference on Fish Telemetry held in Denmark. The dictionary tells us that telemetry is a technology that allows the remote measurement and reporting of information. Telemetry comes from the French word *télémetre* derived from Greek roots *tele* = remote, and *metron* = measure. *Télémetres* were first used by the French artillery to measure distances between the cannons and their target. Nowadays telemetry has many more peaceful applications. Without telemetry it would be impossible to make a reliable weather forecast but it is also used in many other diverse activities like the car industry, intelligence, medicine, business, water management, farming and animal and bird studies. Here in Taupo we use it to study

fish behaviour, following their movement through the use of different types of electronic tags.

The conference took place in Silkeborg situated in the lake districts in central Denmark. The venue was the Danish National Institute of Freshwater Research. The conference attracted 170 participants from 24 countries who shared an interest in how telemetry could be applied to fishery research. The methodologies described ranged from what we might term conventional to some best described as science fiction type experiments.

In the science fiction department the most original innovation is probably the development of what is called the "business card tag". This tag shortly to

Top: Michel up close and personal with a giant pike

be released on the market acts as a transmitter and a receiver at the same time. What are the advantages of such a tag you may ask? Well, this means that the tagged fish becomes a mobile receiver to track other fish, and will go where the "action" is. With traditional fixed receivers such as those we used in Lake Taupo, we can only obtain signals when the fish were close by, but we can't describe what fish are doing when they were out of range of the receiver. Business card tags on the other hand will allow researchers to follow fish more closely and over very large areas or depths that couldn't be covered by arrays of fixed receivers.

The description of salmon movement in the North Pacific Ocean is a good illustration of the advantage of using business card tags. Salmon roam very widely in the northern Pacific Ocean over vast areas many times larger than New Zealand. They need to follow schools of crustaceans and small pelagic fish to feed and grow, much like rainbow trout need to follow smelt in Lake Taupo. Deploying arrays of receivers to try to track tagged salmon over such an area is unrealistic. However, the business

card tag is in itself not the answer either, because in its current size it is too big to fit to a salmon.

This is where it gets clever. Salmon in the sea are themselves a favourite prey sought by many other animals. Therefore it is possible to describe the movements of salmon by tracking an animal which follows and preys on the salmon. The salmon shark is an obvious candidate, it is big enough to carry the 200 gram tag and there are plenty of them. In 1989, the abundance of salmon sharks (*Lamna ditropis*) in the North West Pacific was estimated to be at least 2,000,000 fish. The author of the study estimated that these salmon sharks could consume between 76,000,000 and 146,000,000 salmon per year. That's about 12.6% to 25.2% of the total annual run of Pacific salmon.

The salmon shark is not only a salmon predator and large, it also displays a particularly useful swimming behaviour. Salmon sharks like many other shark species swim most of the time with their dorsal fin emerging out of the water. This triangular piece of the shark body out of water provides an ideal tag anchoring point for a GPS as GPS are useless under the water. The GPS is the size of



Entrance of the aquarium at the Danish Institute of Freshwater Research where the 7th Fish Telemetry Conference took place.
Photo by: Michel Dedual



© 2004 Canadian Shark Research Lab

Shark carrying a GPS anchored on its back. As the shark swims the GPS will float and location of the shark will be transmitted through the aerial visible at the left hand side extremity of the "cigar"

a Cuban cigar and records the shark's position with great precision. The cigar will record and transmit the shark location to the biologist's computer via satellite.

In addition to the GPS a "business card tag" attached to the shark will scan and record if any salmon carrying an acoustic tag similar to those we used in Taupo, are close by the shark. The combination of GPS and business card on the shark and acoustic tag in salmon will allow researchers to explore fascinating aspects of the sharksalmon interactions as well as track the movements of salmon across huge distances. For example it will be possible to determine if salmon travel in schools, if sharks follow the same group of salmon, and what the behaviour of the salmon is in the presence of the shark.

An always challenging task for technology is the miniaturisation of the existing equipment to broaden its application for use with smaller fish. It was however interesting to learn that for the first time technology has reached a limit in the miniaturization of acoustic transmitters. According to the leading manufacturers these are unlikely to become substantially smaller, at least in the foreseeable future. The reason is quite simple; it is difficult to produce a loud noise with a

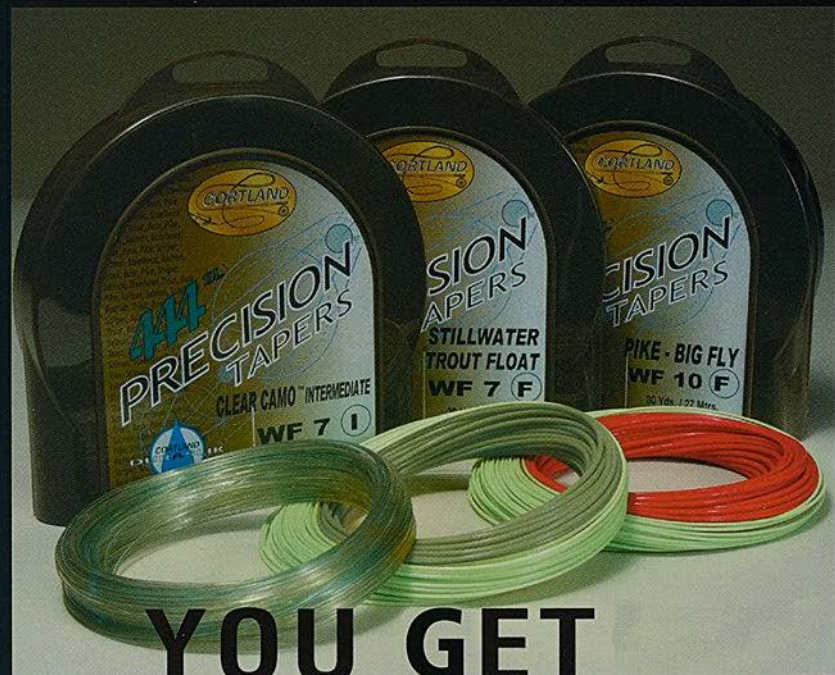
small device.

Another tack is to enlarge the scale at which research could be carried out. The most ambitious project presented at the conference is the Ocean Tracking Network. The idea behind this is the deployment and coordination of arrays of receivers in shallow water (< 300m deep) worldwide that should allow tracking fish roaming anywhere in the oceans. Such arrays of receivers have already been installed along the west coast of North America and will eventually cover the Pacific continental shelf from California to Alaska. Parts of the Canadian Atlantic, Hawaiian Islands, South African and Australian coasts are also involved. Arrays of receivers are also planned to be installed in Europe, and in the Strait of Gibraltar between Europe and Africa. No doubt that if this works the next logical step will be tracking in deep water. Some fish biologists will be satisfied only when fish can be tracked anywhere in the oceans like animals can be tracked anywhere out of water.

There was also a consensus amongst scientists present that substantial gains in our understanding of fish and fisheries could be achieved if telemetry is combined with other technology. Fish physiology, behaviour, molecular genetics, and limnology are some examples of technologies that could be integrated into telemetry.

This multidisciplinary approach to study fish biology has already been undertaken here in Taupo through the adult trout acoustic tracking work. In Denmark I presented results looking at swimming and thermoregulation in adult trout during a period of exceptional conditions that existed in the lake at the same time. The full details of this work will be revealed in the next issue of Target-Taupo. All in all it was another very interesting and stimulating conference about technologies which pose huge potential to further our understanding of the

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Graeme Sinclair with his 11 pound South Westland brown trout caught on a G.Loomis 8wt GLX Rod, Shimano BioCraft 7/8 LA reel, Cortland 555 Line.



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The Real Deal.



Prompt Service

By Julie Greaves

On June 5, after wild night of stormy weather and a morning of gusty winds two anglers found themselves in an awkward situation. They had risen early to go to their favourite fishing spot before heading to work. But once finished and starting for work they found themselves trapped by a large tree that had fallen across the exit road.

At the same time at the DOC offices in Turangi I was preparing to meet contractors who had driven down from Murupara to cut the angler access tracks. I had printed off maps and was planning to start work on the upper Tongariro River and work our way downstream.

Meanwhile besides having a good excuse not to turn up to work that day and continue fishing, the two trapped anglers decided to ring DOC Fishery Area to report their problem and see if we could be of any assistance.

I was just heading out the door when the call came for help. With the contractors in tow it was obvious what the solution was. Within five minutes myself and a ute full of five eager contractors keen to impress on their first day on the job were at the fallen tree on the Blue Pool road. The job was attacked with two chainsaws and the tree removed in a matter of minutes. The two stranded anglers were then able to drive their vehicles through and turn up to work on time. It's not always possible to respond to fallen trees quite so quickly but I'm sure these anglers appreciated the help. A big thanks to Moorland Contractors for their prompt services.

Although we undertake surveys and track inspections regularly we do appreciate information and phone calls regarding fallen trees or washed out angler tracks. Please call the DOC office on 07 3868607 or Julie Greaves on 07 386 9268.

Top: Contractors make short work of clearing the tree.
Photo by: Julie Greaves

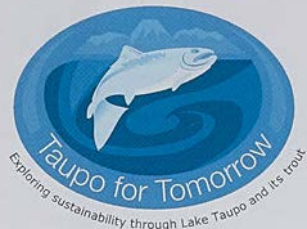
Wonderful Wai - Collaboration in Action

By Thea DePetris
Thea was the educator responsible for developing Taupo for Tomorrow, the education programme located at the Tongariro National Trout Centre (TNTC). Wonderful Wai was Thea's final contribution before she left us in July.

How to involve local schools from the Taupo district with the Taupo for Tomorrow education programme? This is the question I remember repeatedly asking myself when I first came on board as educator at the Trout Centre.

Due to the fact that many school groups come to the Central Plateau for a week long camp experience and are looking for activities to undertake, the Trout Centre has been visited by schools from all over the North Island. Prior to the commencement of Taupo for Tomorrow these schools were able to participate in a tour and fish out experience arranged by the Tongariro National Trout Centre Society.

However, after talking to a few teachers from local schools, I soon realised that most schools from the Taupo District were not visiting the TNTC. This was of



concern to me because many of these students will become the long-term residents of Taupo, whose decisions may impact the district's freshwater resource and fishery. Therefore, I decided to find a way to get the local schools involved with the programme. At the same time it just so happened that Chris Todd an engineer from Taupo District Council Infrastructure Services was thinking about an educational initiative to help minimise storm water pollution into Lake Taupo. After

Temporary Educator Dave Conley completing a dissection of a trout.
Photo by:
Kim Alexander-Tavia



Class from Waipahihi School, Taupo after participating on the Wonderful Wai programme
 Photo by: Thea DePetris



much discussion between the two of us, we decided that trout and the Taupo Fishery could be used as an excellent tool to teach students about the effects of stormwater pollution and the ways which it can be minimized. Thus, a joint educational venture (called Wonderful Wai) between Taupo for Tomorrow and the Taupo District Council was established.

The Wonderful Wai programme is split into two separate learning programmes, each delivered in alternate years. Part one of Wonderful Wai is currently being taught to Year 3/4 students. It explores the key themes of resource use, the water cycle, and cultural uses of freshwater. Next year, part two will be delivered to Year 5/6 students, where they will revisit the cultural uses of water in our community and then examine how human impacts affect this resource and the ways to minimize the detrimental effects. The overall aim of both these programmes is to help students gain an appreciation of the Taupo freshwater environment and to minimize their impacts on the resource.

WONDERFUL WAI HAS FIVE MAJN COMPONENTS:

1. Teacher workshop with Taupo for Tomorrow educator.
2. Educational resource kit related to Taupo's freshwater environment.
3. Each class receives a fully funded field

trip to the Trout Centre for a Taupo for Tomorrow programme.

4. Educator support for each class to develop and implement an action-based project in relation to the protection of the freshwater resource.
5. End of year competition with prizes.

This joint venture between Taupo District Council and Taupo for Tomorrow makes good use of the different resources each group has available. The council is able to take advantage of the programme's established classroom facility at the Trout Centre and teacher who was already delivering programmes related to protecting freshwater environments. On the other hand, the extra funding from the council has enabled Taupo for Tomorrow to become involved with each of the district's sixteen primary schools. The funding is used to develop educational resource material specifically related to the Taupo District as well as covering the transport cost for approximately 40 classes to attend a full day Taupo for Tomorrow programme every year as part of their freshwater inquiry unit.

The Wonderful Wai resource kit is available to any school interested in learning about Lake Taupo and its associated ecosystem. Contact the Taupo for Tomorrow educator to receive your free copy.

Primary sponsor:



Tongariro National Trout Centre Society

Hilltop School
June 21 2007

Dear Thea and Dave,
I had a great day on
Tuesday. I loved fishing
and I caught a big fish.
I liked the water fishing.
I learnt that fish need
cool, clear water. That
was the best day ever.

From
Travis

Hilltop School
June 21

Dear Thea and Dave
on Tuesday was the
best day of my life.
I loved fishing. I
learnt how trout
lay their eggs.

From
Cole

Hilltop School
June 21

Dear Thea and Dave
Thanks for the fishing. I had
an awesome day. Thanks for
for every thing. Now I know
how to fly fish.
I liked the feeding. It was
the best day of school.

From
Henry

Hilltop School
June 21 2007

Dear Thea and Dave
I had an awesome day. My
favourite part was the insect finding.
My second favourite was the fishing.
My dad took the bones out and
flavoured the fish and I helped too.

From
Shaun

Hilltop School
June 21

Dear Thea and Dave

Thank you sooooo much. I had one of
the most fun days at school, when
I got home I loved the rain, but I
never knew they looked like that.
Now that I've fished, I have a habit
of fishing.

Love
Jason

Hilltop School
June 21 2007

Dear Thea and Dave
you were the best
rainbow trout
teachers ever to live.
Thank you. That day
was so much fun. I
never knew toe
biters were next to
flies. I learnt a lot
about cool-clean-clear
water.

Thank you
from
Reilly

Hilltop School
June 21

Dear Thea and Dave
I had a wonderful day on
Tuesday. Thank you lots for
letting me come and spend a
day at the Rainbow Trout
Hatchery. I learnt about cool,
clean and clear water and
about the trout habitat. They
eat stoneflies and other insects.
I enjoyed fishing. I helped my
Dad cook the trout. It tasted
fresh.

Love From
Charlotte
XOXO XO

New Zealand LEARNZ all about trout

By Dave Conley
Dave is acting as the temporary Educator for the Taupo for Tomorrow programme until we replace Thea D'Arcy



Mike the LEARNZ teacher

Mike (left) with Ranger Callum & ambassador Snowy from Karoro School and Glenn Maclean, Programme Manager Technical Support with Kupe the LEARNZ ambassador in a teleconference with students.

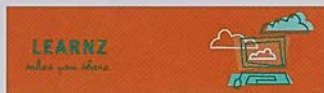
Photoby
Kim Alexander/Taria



“Hi I’m Mike the LEARNZ teacher and we are here on the bank of the Tongariro River to take you on a field trip of the Taupo Fishery”. This is typically how every day of filming started while the LEARNZ film crew were in the area, and so began an exciting if some what exhausting week of interviews and activity, all designed to help kids from all over New Zealand appreciate just what a stupendous resource the Taupo fishery is. LEARNZ is an online education programme for students in New Zealand. Through their online “virtual” field trips, students stay at school but visit places they would never otherwise go to and interact with people they would never meet.

Day 1, 8 August

Day 1 focused on the management of a wild fishery. Our rangers, Callum, Rob, Dave and John demonstrated a number of management techniques, including how we go about electric fishing, fish trapping and tagging. Mike Clemens, the virtual teacher for the LEARNZ primary programme, and Audrie McKenzie, the LEARNZ project manager, videoed each activity as we went along. Each video is edited and uploaded to the web at the end of each day. This enables the students to keep track on daily events. There are also two live audio conferences per day



where students fire questions to rangers like the one posed by Karoro School. “How do you catch the trout and weigh them without hurting them?”

We had many such excellent questions from participating schools, each one generated as a response students had from pre-reading that they undertook before the virtual field trip started. Students can pose any further questions they have as result of the videos and audio conferences through the “Ask an Expert” page on the LEARNZ website.

Day 2, 9 August

On day two Mark Venman and I took the LEARNZ team out into the bush, visiting the upper Whiti kau stream to demonstrate the abundant wild spawning that goes on in the Taupo fishery. The focus of the day was the ecology of the fishery and understanding the biology of trout, and the trip to the grotto was a perfect setting to explain the incredible efforts trout make to get up our rivers and streams to spawn, and what DOC does to help them along the way. We also looked at how we collect samples for dielymo testing of the Tongariro River, and setting fyke nets in Waihi bay for catfish monitoring.

The best question of the day was Ashburton Borough School. “How can native fish be protected from predators like trout? How can you keep the balance right between the native fish and introduced ones?”

Day 3, 10 August

This was a fun day, both for us as participants, and for the students at school. We really wanted to get across our message that recreational fishing is a really fun activity, and also explain why we have rules. This links to the wider concept of why does the Department of Conservation protect our natural resources?



Mike (left) interviews Mark Venman on Didymo, filmed by Audrie McKenzie
Photo by: Dave Couleby

We began the day by collecting our fyke nets, which contained a number of catfish. We took these back to the lab and dissected them on camera, with Harry and Glenn explaining to the students how we ascertain the sex of the catfish and sample their diet. It was then on to the Trout Centre where we took Mike fishing, and mocked up a variety of typical compliance and law enforcement scenes, which are an everyday part of our role. This allowed John Gibbs in particular, to demonstrate his true ability as a wily old poacher. He was so convincing we couldn't help thinking he had done it before!

Day 3's best question was shared between Karoro School, "Can you explain what a 'detritus-based food chain is?" and Ashburton Borough "When a tagged fish gets caught what happens to the tag? What happens if the trout gets eaten by a shark or bigger fish?"

It was a fun way to end what had been an exceptionally fun and educational week. Thanks to all the rangers and staff who participated, and really entered into the spirit of things to show the students what a diverse and interesting job we have in managing the fishery. You learn more about LEARNZ by logging on to www.learnz.org.nz

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Fishing with Electricity

By Michael Hill

Michael is a ranger in our field operations programme

The electric fishing machine (EFM) creates an electric field in the water that interferes with the central nervous system of any fish within the field. The current immobilises the fish enabling the fish to be easily collected in a hand net for closer study. This is a very effective way of collecting data, particularly for small or juvenile fish.

There are two types of electric fishing units. A larger land based unit that is powered by a generator and a battery powered backpack. Here at Taupo we use electric fishing for a variety of reasons, most commonly for monitoring juvenile trout where we collect samples for diet and fat analysis as well as getting an overall view of fish numbers. We also use electric fishing for fish salvage and collecting fingerlings for tagging.

To use a backpack electric fishing machine

which is what we routinely use, there must be two operators qualified in the use of an electric fishing machine present. So as to become qualified I recently attended an EFM operators course conducted by the National Institute of Water and Atmospheric Research Ltd (NIWA) held in Christchurch. Training was carried out by NIWA Ecologist Marty Bonnett. Marty has been training people for many years and has a lot of experience in this field. Safety is paramount and participants learn where not to use an EFM such as in water with a high conductivity (e.g dirty water), salt water and water more than a metre deep. Also fast water, streams in flood and slippery boulders are things to look out for.

Direct contact with the water is not the buzz you are looking for so operators wear neoprene or rubber waders to insulate themselves from the electric field and use electrical safety gloves for added protection. Similarly the use of nets with wooden handles is best and conductive materials such as metal or carbon fibre are definitely to be avoided.

An EFM operator's training manual was provided prior to the course giving an understanding of the principles of electricity and how it affects fish. Operators are taught how to maximise the catch while minimising harm to the fish. The course lasted for two days, during that time we performed a practical exercise on the Cust River which joins the Waimakariri near Kaiopoi, north of Christchurch. I was surprised with the quantity of fish and variety of species present. We caught short fin and long fin eel, brown trout, common bullies, blue gill bullies and torrent fish which were all interesting to see. At the completion of the course I am pleased to say I passed having demonstrated a level of knowledge and practical application in all aspects of electric fishing.

Fishery staff using a backpack electric fishing machine to catch juvenile trout in the Waipa Stream

Photo by: Thea DePetris



New Fishing Licence Software

By Renee Williams
Renee undertakes
licence administration
in our service area.

I wondered how to make this article bright and exciting so that anglers who get the *Target Taupo* will say WOW, a new licensing system I've GOT to read this!! But I'm not sure that's possible so instead I will let you all know what's been happening in the administration side of fishery. I'm new to the Taupo Fishery Area, standing in for Storm in the Ranger Service role which involves the administration of about 52,000 licences that go out each year to 115 agents nationwide. Storm has over the last 12 month spent time researching the need and organising a new license administration and tracking system.

Presently the system we use is a combination of 3 different systems which we use to run our accounts, to do reports for month/year end figure and partial tracking of licences. Having a patchwork system has meant double handling & inputting of information in order to tack things efficiently. So after a couple of years talking about getting new licensing software, in 2006 we set out to get a computer package that suited our needs. Requirements included the ability to track individual licences so at any time we could see where a particular licence was. Another requirement was a system that

didn't require any patch working (adding on new parts to an existing program).

Ultimately Storm identified a system that was impressive; every question we had it could do quickly and efficiently in the program. It has a very powerful serial number tracking system within the program, and also was able to do all the reports that needed to be done for monitoring of sales etc. and best of all it was all in ONE system.

All of this background research and planning happened before I arrived, so I came in to having to first learn the ins and outs of the old software which is old and out dated. Then in June it was time to implement the new system in time for the 2007/2008 fishing season. The cross over of licences systems has been interesting. With the end of the old licence year we have returns for last season coming in from agents which have still to be inputted to the old system. However the new system which we started to use from the 1st July 2007 is being used for all new licence orders as they come in. So currently we are using two systems. However we are nearly through that and the new system is definitely a big step forward. I hope our agents will find it likewise.

HAVE YOU BEEN GETTING YOUR *TARGET TAUPO*?

It's the new fishing season which means that a lot of you will be out purchasing your new 2007/2008 licences. Myself and a few of the other rangers have had the fun task of imputing the mailing list for the *Target Taupo* for last season. We found that generally everyone is ok with filling out their licences; however reading the addresses is sometimes quite hard. We get licences that just have the city as an address, or just the last name and the city, or in rushed handwriting that we are unable to read. If you are one of these people you won't get the new seasons *Target Taupo*. sorry but without a complete address there is no way of sending it to you

We do try our best to get them all correct but those of you who are yet to get your new season licence, can you please just keep in mind that you need to full your licence out in its entirety and write clearly. Also if you hear from a mate or you yourself have a season licence but are not getting *Target Taupo* you can fax or email me your details and I will add you to the database. The details are Fax: 07 386 7086 or email fishinf@doc.govt.nz.

Last Summer at Lake Otamangakau

By Mark Venman

Summer surveys at Lake Otamangakau follow on from our monitoring of the spawning runs of adult trout in the Te Whaia and Papakati streams during the winter and form a significant part of the monitoring that we do with this special fishery. A small number of more experienced Lake Otamangakau anglers are also contacted at the end of the season to fill in a more detailed questionnaire. Collectively this information helps identify what is occurring in this fishery. This article summarises the summer fishing and provides a few predictions for next summer based on this information and the data currently being collected at the trap this winter. It also discusses new research that is just about to begin.

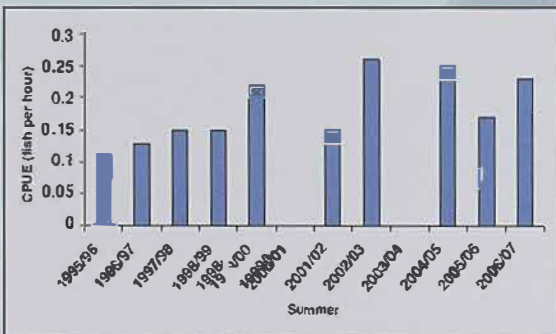
In summary, the 2006 winter spawning run provided lower than expected numbers of both browns and rainbows. The fish were also generally shorter and lighter than average which was strongly influenced by the number of smaller fish in the run of both species with 50% of both runs being classed as maiden fish. Consistent with the number of smaller fish, only 5 trophy sized trout (10lb / 4.54kg+) were trapped (*Target Tauho 53*). Based on these figures, we expected a summer where there would be plenty of smaller fish around with the odd larger fish amongst them and that appears to be exactly what happened.

The season started on 1 October and we were out surveying anglers brave enough to venture out on the cold overcast day! Some 37 anglers were interviewed but as expected given the timing and the weather, the fishing was rather slow, and undersized fish made up almost 75% of their total catch. Despite the high use on opening day, anglers generally stayed away until things warmed up with numbers peaking during January and February. A total of 21 surveys were completed throughout the summer season which produced more than 200 interviews, an average just over 10 interviews per survey which is similar to recent years.

The overall estimated catch rate for the summer of 2006/07 was good for Lake Otamangakau at 0.23 fish per hour (1 fish every 4.3 hours). This was higher than the previous year but on par with 1999/00, 2002/03 & 2004/05. Overall, the catch rate during the past 5 years has been higher than that for the latter part of the 90's (Figure 1). Boat anglers accounted for almost 75% of all interviews conducted this summer. Fly fishing with a floating line was the most preferred method (68.8%) followed by shallow trolling (13.1%), spinning (9.7%) and fly fishing with a sinking line (8.7%).

Fishery staff measured and weighed a total of 7 fish during the summer months all of which were rainbows. These fish averaged 547mm & 2.5kg. This small number of fish weighed and measured reflects that anglers released 94% of legal sized fish they caught. Undersized fish caught and returned accounted for 64.2% of anglers' total catch which is up on the 56% calculated for the previous summer and the highest since surveys began back in the mid 90's (Figure 2). However, smaller fish have started to appear in the trap run during recent years and so the presence of smaller fish

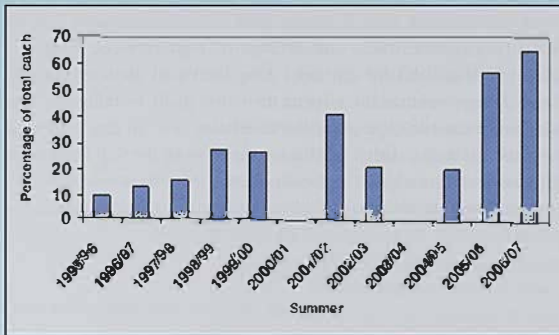
Figure 1: Estimated Catch Per Unit Effort (CPUE) for summers 1995/96 through to 2006/07, where data is available, based upon creel survey data.



in the lake was to be expected. We are currently unsure though about why we are getting so many smaller fish and the consequences for the fishery.

In order to better understand the growth and survival of trout within this fishery we have embarked on a new tagging project. This involves using PIT tags (Passive Integrated Transponders) like those currently being used to track juvenile fish in the Waipa Stream. We have

Figure 2: Percentage of undersized fish amongst the total summer catch since summer 1995/96 where data exists



begun by tagging a number of these smaller maiden fish as they pass through the trap. This makes each of these fish individually recognisable and we will collect lengths and weights from them each year as they return to spawn, to construct composite growth curves. By fitting the measuring board with a PIT tag reader, each tagged fish would be detected as it is processed through the trap. This reduces the cost of the project and eliminates many of the problems we have encountered when using a much larger trap aerial in the Waipa Stream. Fishery staff could also scan angler caught fish for tags during surveys and gain further information about their movement throughout the lake system. Fish are tagged in the back using a specially designed tag injector and so far 200 fish have been tagged this winter. Tagging fish will continue for at least another 4 years. Fish of various ages will also be tagged to investigate the growth and survival of older fish.

The growth rate of rainbow trout remained the same between 1970 and 1980 but a reduction was observed between the 1980's and the mid 1990's. Rainbow trout continue to grow after they mature in Lake Otamangakau until they reach approximately 650 to 700 mm in length. A small number of rainbows traditionally spawn after 2 years (450-510 mm) but most will spawn first at least aged 3 (480-630 mm), with even fewer spawning at age 4 (580-680 mm). The combination of continued growth after each spawning event and a long life expectancy is the main reason for the presence of trophy sized trout in Lake Otamangakau.

Since the 1970's, trout have changed their feeding patterns from mid water surface feeding on midge pupae to benthic foraging on snails and damselfly larvae. This change could be related to the expansion of the weed beds since the lake's creation. The change in invertebrate prey species and foraging patterns that has occurred over the last 35 years has affected trout growth. This new tagging method will hopefully provide a more accurate measure of growth and allow us to identify and compare what the current rate of growth is.

It is an exciting time as we attempt to unlock some of the secrets of trophy trout in this unique fishery using some modern technology and get a better understanding of what will occur here in the future. As for next summer, we predict much of the same with lots of younger fish and a slightly higher average size as another strong year class comes through. Trophy sized trout will still prove elusive given the low numbers that have passed through our trap so far though doesn't necessarily mean that only a few will be around next summer - time will tell!

Into the Trap

By Nathan Walker

Nathan is a recently appointed ranger working in our field operations programme

Before being set loose in any of the Fishery Area's various operational tasks, comprehensive training is given to ensure we know what we are doing. In relation to lish trap work, this first encompasses staying overnight at each trap site accompanied by an experienced colleague. Whilst there the 'newbie' is run through the various tasks they will undertake while living and working at the site. This includes the operation of the fish trap (e.g. fish handling, measuring) and of the accommodation and surrounds (hut or caravan), the statistical recording methods (e.g. fish data, stream conditions), and the various health and safety precautions (important when the stream is in flood!).

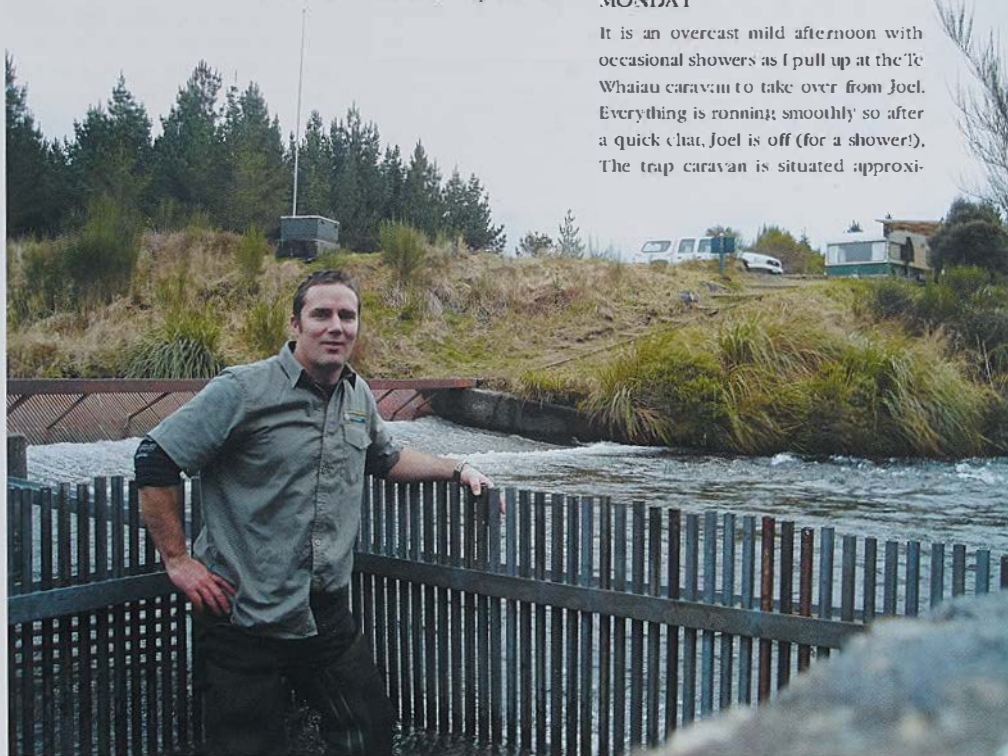
The data collected from the departments'

four fish traps (Te Whaitiam Papakai, Waipa, and Hinemaiaia) forms an integral part of our monitoring programme and therefore, ultimately, the management of the fishery (the collection and utilisation of this data is covered in another article). The trapping programme is therefore an important part of what we do and although we seasonally employ dedicated trap operators, 90% of our staff (managers included) spend on average 1-2 nights a week working a trap. One such staff member recently spent their first night working the trap at the Te Whaitiau site. To give a view of what it's like to work the trap I will share the experience that this person had. Not a difficult task given that the person I'm talking about is ... me!

MONDAY

It is an overcast mild afternoon with occasional showers as I pull up at the Te Whaitiau caravan to take over from Joel. Everything is running smoothly so after a quick chat, Joel is off (for a shower!). The trap caravan is situated approxi-

Photo by: Joel Houtbuijzen



mately 10m from where the Whanganui Outfall and Te Whaiiau Stream converge. The constant bubbling of the water makes a relaxing backdrop to life at the trap. Although situated on open ground the caravan and trap are further surrounded by pine forest. The caravan itself is comfortable with heating and gas for cooking. It's starting to show its age however, so after doing its job well for so many years it is down for replacement next season.

After unpacking my gear into my new home for the next few nights, I have a quick look over the trap log book. This is a handy record of what's going on at the trap and surrounds for the arriving operator. The figures show that there'd been 14 mm of rain in the previous 2 hrs to 9.00am this morning. That was enough to give Joel 42 fish to process compared to 23 the previous morning with a corresponding rainfall of 4.5mm. All this means that if it continues to rain tonight there is a possibility of a long night clearing the barriers of debris and processing of the fish on their travels.

Everything is in tip-top order so I wander through to both traps for a quick look. They are practically clear of debris with no fish. This is easy! The water level is nearly back to normal after only a few drops of rain all afternoon. The skies are clearing too. With this good news its time for a cuppa and a flick through a few more pages of the book I'm working on.

As dusk arrives, it's time for some trap housekeeping while it's still light. A small amount of debris (mostly punice) needs clearing from the trap bars, it's all about keeping the barrier clean and the water pressure off the trap. Another 5 spawning trout are waiting to be processed. This entails sequentially: netting, identifying species and gender, clipping, measuring, weighing, releasing, and duly recording this data for each individual trout. These fish won't lie still but I'll get the knack with practice. A stroll over to

Papakai sees no fish and minimal debris at the smaller site. After putting the traps to bed for the night its back to the caravan to tally up the daily data totals and settle in for the night. With a favourable forecast and such small amounts of debris coming down both streams I think I will be lucky and there won't be a need to get up during the night and clear the bars.

At 7.00pm its time for the D.O. (duty officer) call on the VHF radio. This is a check in for the trap operators at the various sites to make sure firstly that we're OK and secondly to pass on any relevant information. Likewise the D.O. can update the weather forecast for example. With that done, its time for dinner, my book, and an early night. After turning off the radio and settling into my sleeping bag for the night I can hear the occasional rattle of the trap bars 30m away. I'll have at least a few feisty rainbows to deal with in the morning me thinks.

TUESDAY

Up at 7.00am in time for some breakfast and a quick look at the traps. I first stroll down to the Te Whaiiau trap and peer in. WHAT TIME ...! The upstream pen is black with trout! Ironic given that in my trap training we were struggling for trout to process and then when I do get set loose, well, it's all on. I wander through the pines to the Papakai trap and find it too full of fish. It's going to be a busy morning!

Back at the caravan for the morning D.O. call I get asked if I have many fish through. *'Yeah there's quite a few, about 30-40'* All's good with the call so I grab the gear to process the fish, jump into my waders and get back to the trap.

First I clean the bars and close the downstream kelt entrance so the fish I will release upstream don't drop back into the pen as they recover. I then block the entrance to the upstream pen and start processing the fish. The trout are banging



A cool start at Te Whaiau
 Photo by: Joel Huntmeyer


into my waders and I don't even have to move to net them as there are that many. After an hour it is obvious there were a few more than 30 odd in the pen. I have processed more than that already and the pen was still 'chocka'!

At 9am it is time to record the meteorological data that is done each day at this time. There is only a couple of mm in the rain gauge for the last 24 hour period. This shows that a small fresh (predominately light drizzle) in the previous 24 hours (1.4mm), was enough to stimulate the trout to travel approximately 500m from Lake Te Whaiau. After completing my weather duties I'm back into the moving pen of trout.

Soon after, I net a particularly big brown jack. By the previous year's fin clip (a scar across the right pectoral fin where it was clipped) I can tell it is his second spawning trip up this stream. He comes in at just over 10lb at 4.74kg and at a length of 735mm. The heaviest fish of the trapping season thus far - you beauty (but unfortunately soon to be overtaken by Mark Milne's whopper 4.95kg rainbow).




I have to make a quick trip to the caravan to transfer some data as the whiteboard has run out of room, but by 10.45am I have finally finished at the Te Whaiau trip. I have processed 93 spawners and a handful of kelts (spent fish) heading back down. Whew! I grab a muesli bar and a drink and headed over to Papakai. After more-or-less completing the same process over here, I process another 16 fish.

I arrive back at the caravan after a decent morning's toil at about 12.30pm. Whilst eating lunch out in the sun I transfer and tally the figures into the data book. One hundred and nine upstreamers processed for the morning. Far and away the biggest daily total recorded for the season thus far. Not bad for the new guy's first day out. I have now gained my 'trap wings'. Gaining my 'flood wings' however, is another story. Catch the next issue of *Target Trout* for a roundup.




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WHAT'S UP?

It seems like I have barely started at the Tongariro National Trout Centre (TNFC), and already it is time to put together a new "What's Up" for Target Taupo.

When I first took up my role as the Community Relations ringer, we were still looking after a large number of fish for Eastern Fish and Game. These fish have now all been returned to their rightful owners at Ngongotaha, and some have even achieved international notoriety in the process! Hundreds of the larger fish were released into Lake Pupuke after their stay at TNFC, and the release was reported on TV3 News. Overseas journalists then picked up the story and a follow-up piece was subsequently published in International Hatchery magazine.

The hatchery has been given a well needed spruce up, having not had much in the way of freshening up for many years. The hatchery building has had its walls and ceilings repainted, along with other general tidying up, including fixing the holes in our roof. The troughs and tanks have also been painted, and in general the building is looking spick and span for the new



Releasing a Ngongotaha Brownie after stripping
Photo by: Mark Sherburn, Eastern Fish and Game officer.



Rob McLay stripping a jack
Photoby:
 Kim Alexander-Tavia

season's brood. Stripping of fish for the children's fish-out program took place on July 31, and should give the young fish plenty of growing time before they provide an angling challenge for a new clutch of budding young anglers in 2009. The next project in the hatchery building is to take a fresh look at the visual displays, watch this space...

The fish in the outdoor rearing pond are growing well, and look to be well on their way towards smashing through the quarter kilo barrier in time for the 2008 fish out season. Better get the volunteers to have the drags on the reels serviced!

A particular, non-fish related highlight was the discovery of the rare native yellow mistletoe at the TNTC recently. As Nick Singers, Technical Support Officer with the Tongariro-Taupo Conservancy reports *"The official kissing spot is now at the TNTC."*

He further states *"The grounds of the*

TNTC have been recognised on numerous occasions as a place of romantic nature having been used many times for wedding ceremonies. However it now can be seen as a place for other romantic pursuits with the discovery of mistletoes being present. Recently at least eight plants of the yellow mistletoe (Ampelis flavida) were discovered growing on red and black beech trees. The yellow mistletoe was once common in our beech forests but is now a chronically threatened plant because it is eaten and killed by possums. In the North Island it is by far the rarest species of mistletoe with less than 15 populations known, most of which are of only a few plants each. All of the mistletoes at the TNTC are healthy, which is evidence that the pest control undertaken at the centre is benefiting the forest flora. Additionally, when discovered many of these mistletoes were covered in fruit which tui and bellbird were feeding on, so we are hoping that more plants will result. Possum control will be increased around these plants to protect the centre's best kissing spot!"

Another highlight was the visit to the Taupo Fishery Area by the prime time cooking show *'Hunger for the Wild'*, which is soon due to air at 7pm Saturdays on TV1. Steve Logan, part of the hosting duo from the show, visited the Trout Centre as part of collecting background information and footage. While he was here we discussed the history of the fishery and he was brave enough to let me prepare him a favourite trout recipe. He was very polite, and even said it was nice. Given that no-one got sick, I felt it was a great success! Apparently Steve was so impressed that the recipe may even make it to the final version of the show, but I'll believe it when I see it.

A new service has been offered at the latest children's fish-outs. With the inestimable help of Arthur Gallichan, who filleted and boned out even the smallest trout, Kim and I spent several hours at



Above: The yellow mistletoe (*Myrica foetida*) in full fruit
Photo by: Nick Singers

the latest fish-outs smoking fish for the children it is a great chance to spend a few hours educating the visiting public about the fishery, fishing and the role of the Department of Conservation. It was also a great reminder about the efforts and dedication of the TNTC volunteers, and they deserve all the support they get.

Lastly, the month of July ended with a two day trip to the Ngongotaha hatchery run by Eastern Fish and Game. It was a fantastic opportunity to learn at a facility which produces what are nearly commercial numbers of fish, around 280 000 ova per year. Hopefully I will be able to put what I have learned into practice without causing genocide amongst the resident population at the trout centre! Here's hoping.....will let you know what's up next time.

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UP IN SMOKE! - IT'S THE CHILDREN'S FISH OUT DAYS

By Kim Alexander-Turia

It's been exciting times so far at our children's fish out days. The year started in April with our first fish-out. The days are run monthly usually to coincide with a long weekend or the school holidays.

In June we decided to try something new and in partnership with the Tongariro National Trout Centre Society (TNTCS) volunteers, we offered to fillet and then hot-smoke the trout caught on the day.

It was recognised in previous days that after the children caught their trout, many for the first time, they really did not know what to do with them. Take them home to mum and dad who were equally unsure, feed them to the cat or even dump them in the bins on the way

out. In this generation of television and computer games it's important to teach young kids some of the life skills many of their grandparents grew up with.

Arthur Gallichan from the society became chief filleter and Dave Conley, Community Relations Ranger and I hot-smoked the fish for the kids. The first time we set-aside two hours for this little venture of ours, we were unsure if there would be enough interest to go the whole day. However the little customers wouldn't stop coming and it was literally 6 hours filleting and hot-smoking non-stop. Arthur takes the time to show the kids and parents how to fillet a fish and then the kids have the option of taking it home to cook it themselves (with the



A freshly smoked batch of trout

Photo by:

Kim Alexander-Turia

hardest job being taken care of) or have it hot-smoked right on site. With a bit of salt, brown sugar and a splash of tomato sauce (Arthur's secret tip) it goes in to the hot-smoker with manuka sawdust to give them that special flavour.

The kids and parents just love it and notably no dead fish have been found in the bins since. Donations are made to the TNTCS for this service and help the society towards their vision.

Special mention must go to the TNTCS

volunteers who turn up every month on these days and help young children to catch their first trout and impart important angling skills. If you are interested in helping out then please contact Ken Kimmins, Administration Manager, TNTCS on 07 386 8085 or email troutcentre@reap.org.nz If you can't give time then think about joining the TNTC society, it only costs \$25 for a years subscription and this money helps the Society with volunteer coordination.



Arthur Gallichan fillets a trout with eager on-lookers

Photo by:

Kim Alexander-Turia

Tracking our Juvenile Delinquents

By Michel Dedual

Since May 2006 we have been implanting PIT tags (transmitter that is activated when trout pass through an electric field) into juvenile trout in the Waipa Stream, a tributary of the Tongariro River. In issue # 52 of *Target Taupo* we explained the background and purpose of this experiment. The main objectives were twofold; to trial the use of the PIT tags and to analyze the returns of tagged fish returning as adults to spawn in the Waipa to determine if any particular characteristics of the tagged juveniles led to them being more likely to survive and return as adults. For example perhaps there was a link with the size they grew to in the stream before they migrated out or the timing of their migration downstream.

However, after only one year of PIT tagging we have already learned several lessons. The original plan was to tag juvenile trout throughout the year. However

the electric fishing technique we use to catch the juveniles is stressful on the larger fish also in the stream, so we decided to stop catching fish between early June and December to avoid disturbing spawning. Furthermore, the density of juvenile fish of suitable size (>90mm) present at any time in the stream is not as high as first expected. This in itself might be a revealing hint that these larger juveniles are not the key to sustaining the Waipa spawning run. As a consequence we have only caught and tagged 106 fish so far, and it will take a little longer to have a sufficiently large number of tagged trout to obtain robust information.

The powering of the PIT tag detector has proved to be another substantial challenge. At the moment, the system runs from large batteries that are recharged at the nearby Waipa trap hut with a solar panel. The amount of sun hitting the roof

Superglue is used instead of stitches to close the small cut made to insert the pit tag.
Photo by: Mark Newman



of the hut is adequate during periods of high solar radiation but when the sun disappears the charging efficiency rapidly becomes marginal and the time to fully charge the batteries gets much longer. The net result is that it becomes very difficult to have fully charged batteries which are required to produce a reliable and adequate power supply. Currently we are exploring what can be done to fix these problems. Several solutions are potentially feasible; we can produce a reliable source of power by installing a micro hydro turbine or by increasing the number of solar panels to recharge the batteries more quickly.

Nevertheless we have already gathered some encouraging and interesting albeit very initial results. The recapture of 7 juvenile trout that were tagged one year ago as part of ongoing tagging proves that the technique does work i.e. that the fish survive tagging and that they don't lose their tag. These recaptures allow us to calculate that a typical juvenile trout in the Waipa Stream grew by 107 mm between May 2006 and June 2007. One juvenile was detected at the trap 410 times on 3 November 2006 between 2026 and 2030 hours. The interesting point was that contrary to our assumption that juvenile will move downstream, this fish was actually moving upstream as he was initially caught downstream of the detector. The number of times that fish was detected also indicates that it must have remained for several minutes very close to the arial. Now we just have to wait the couple of years to see which fish return as spawning adults through the trap.

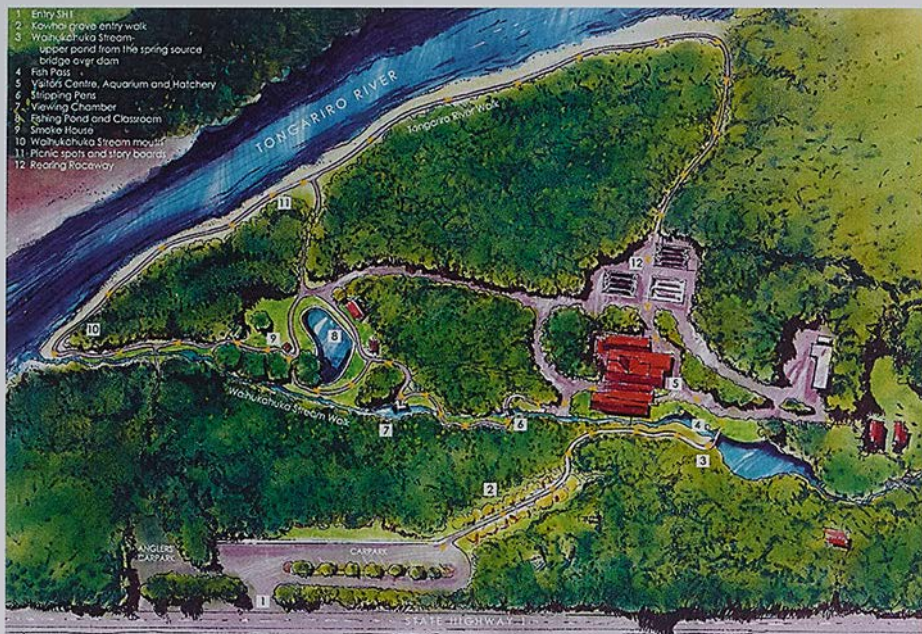
The other pilot tracking experiment involves tracking 20 juvenile rainbow trout tagged in the Tongariro with acoustic tags. These are very similar to those we used in our experiment to track the movement of adult trout in Lake Taupo, only smaller. The aim of this trial is again to test this technique as a tool to look at the downstream migration of juvenile trout in the Tongariro system and their initial



Michel Dedual inserting an acoustic tag on the banks of the Tongariro
Photo: Julie Greaves

survival and dispersal into Lake Taupo.

Again this trial has provided a fair share of challenges and surprises. The first task was to catch small fish in the Tongariro River and after trying trapping and electric fishing it became obvious that the most efficient way was to catch them with a dry fly during the evening rise. We caught fish in several pools between the Blue and the Jones Pools that were kept overnight in a floating bag before we inserted a small acoustic transmitter the next morning. The fish were then released within metres of where they were captured. Automatic listening stations were installed along the river and in each river arm around the Delta as well as in Lake Taupo. This experiment is not completed yet as there are some receivers that are still deployed. These remaining receivers will be retrieved in August and a full presentation of the results will be presented in the next issue of *Target Taupo*.



TONGARIRO NATIONAL TROUT CENTRE
VISITOR CENTRE, AQUARIUM AND HATCHERY

SITE PLAN
13 June 2007
not to scale

& STOUT architects

Tongariro National Trout Centre Visitor Centre Makeover

By Rob Lester

Rob is the Tongariro National Trout Centre Society Deputy Chairman

The River Walk Visitor Centre is sited at the Tongariro National Trout Centre just south of Turangi. The visitor centre was completed and opened to the public in 2003 and is designed to introduce visitors to the special world of trout, show how the fishery is managed and portray the history of fishing at Tampo. The centre is managed by the Tongariro National Trout Centre Society in partnership with DOC.

As reported in *Target Taupo*, issue 53, three years into its operation interpretation specialist Sonia Frimmel was approached to complete a peer review and visitor based analysis of the centre. Her brief included an evaluation of the current displays and identification of further opportunities to

improve the delivery of messages

Surveys were conducted with visitors which examined both the form and function of the Centre. These surveys highlighted areas that could be developed and improved to give visitors a greater appreciation of the values of the fishery and improve visitor enjoyment. The results of this survey has largely driven the proposed changes, building upon the vision of the original trust and, now, the Tongariro National Trout Centre Society members, with the expansion of the visitor centre and realignment of the site and walkways.

Progress with the design upgrades for both the site and visitor centre are now well advanced. The plans are being quantity surveyed and concurrently a pro

spectus with which to begin the fund raising is all but finalised.

All this has come about by a project team, comprising society and DOC personnel who in turn, commissioned a professional design team to bring all the ideas together. Funding for Stage 1 of this programme has come from a general grant from the Sargood Trust.

The theme that is central to the planning process is trout, fishing, water quality, education and conservation – all equally important. An exciting inclusion in the final project will be a state-of-the-art aquarium; an idea first mooted at the beginning of the development and gelled by a paper produced in 1999 by DOC officers, Glenn Maclean and Herwi Scheltus. Siting of this attraction will be between the hatchery and the extended visitor centre, providing a whole new dimension for visitors, and the increasing number of school groups using the Whakapumautanga Downs Learning Centre.

Plans for the facility development will

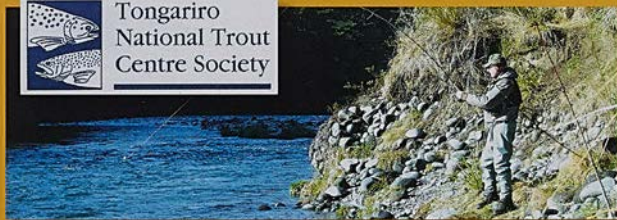


be available to interested parties from August.

The Tongariro National Trout Centre Society is an incorporated society with charitable status and so relies on donations, special grants and membership to fund much of what it does. If you would like to contribute to the work of the society, become a member or benefactor by phoning 07 3868085 or e-mail trourcentre@reap.org.nz or complete and post the membership form available in this publication.



Tongariro
National Trout
Centre Society



The society encourages and promotes public interest in trout fishing, an understanding of the Taupo fishery and trout habitat. The River Walk Visitor Centre has been developed to provide a modern learning experience about trout for visitors of all ages. Throughout the year Society volunteers publicise and conduct children's fishing days at the Centre to teach children to fish for trout and to encourage respect for our environment.

To join the society please fill in the form and include the annual subscription of \$25

Name: _____

Address: _____



Hi Taraute – (fishing for trout)

By Kim Alexander-Turia

On 11 July the Tuwharetoa Māori Trust Board together with the Taupo Fishery Area of Office sponsored a day out at the Tongariro National Trout Centre for Ngāti Tuwharetoa tamariki.

Twenty children and parents from Ngāti Tuwharetoa marae around the lake attended and participated in the Taupo for Tomorrow education programme with temporary Educator Dave Conley at the Whakapumautanga Downs Learning Centre.

THE PROGRAMME AIMSTO:

- Raise awareness of the importance of and how to protect freshwater habitats,
- Develop a better understanding of how natural resources are sustained and shared amongst different users,
- Examine DOC's work in management of the Taupo Fishery and the issues of human impacts
- Promote angling as a recreational activity.

The day started with a tour of the centre, talking about the life-cycle of trout. After a shared morning tea the kids dived straight into an activity about trout habitat which is designed to help them understand what makes up a trout's home and why we need to protect it.

A frenzied scavenger hunt around the centre followed, which is a fun way for the kids to gather knowledge of the life cycle of trout and to learn a little about the seeds and leaves of some of our native trees. They then went down to the Waihukahuka Stream and did some water quality testing; the kid's favourite was looking for aquatic insects. They showed particular skill in collecting an impressive army of toe-biters (Dobsonfly larvae).

To: The kids with their
days catch!
Photo by:
Kim Alexander-Turia

Jasmine Tupaea (left) and
Desmond Ribia
looking for insects
Photoby:
Kim Alexander-Turia



After lunch there was a general question and answer session about the management of the Lake Taupo fishery, this is designed to help the kids understand why DOC does what it does

The day rounded off with fishing from the children's fishing pond with a nice trout to take home to mum and dad for dinner. Licences were donated by the Tuwharetoa Maori Trust Board and the Taupo Fishery.

Dave Conley, Educator said "The kids were really enthusiastic, and showed a real affinity for the habitat and water quality activities, which is a reflection of the environment they live in"

Thanks to the parent helpers and also to the Tuwharetoa Maori Trust Board for sponsoring the event for all the tamariki, the day was tau ke (awesome)!

Kiana Turanga (left) and Neal
Turanga counting
their toe-biters
Photoby:
Kim Alexander-Turia



A Day at Ngongotaha Hatchery

By Joel Houthuijzen
Joel is a trainee ranger
currently with the Taupo
Fishery area

New water supply installed
after the destruction at
Ngongotaha Hatchery in
January.
Photo by:
Kim Alexander-Turia

Our day started at 7am when Kim Alexander-Turia, Programme Manager Community Relations, and David Conley, Community Relations Ranger, arrived at the staff quarters to pick me up. Now one last stop on the way through to pick up Rob McLay, Programme Manager Special Projects, and we were on our way to Ngongotaha Hatchery.

As we left Turangi a conversation on salt water fly fishing arose, this topic lasted until just before Taupo when it changed to pheasants and ducks. A sweet topic for the lads to talk about but it made Kim's eyes roll back in her head.

The Ngongotaha trout hatchery is located on the western side of lake Rotorua on the Ngongotaha stream. Access to the hatchery is off Paradise Valley Drive. When we arrived we were greeted by Mark Sherburn and Lloyd Gledhill. Mark and Lloyd are both Fish and Game officers working in the Eastern Region and their main role is running the hatchery operation.

We started off with a tour of the site with a walk around the outside ponds and talking about their history. Then we moved on into the hatchery building where we had a look at the techniques they use for fertilising trout eggs and the rearing young fish. It was interesting to see Kiwi ingenuity at its best with a device they use to apply an antifungal solution to help stop the spread of fungus over the eggs while they are incubating.

After the talk in the hatchery building we went and had a look at the landslide that blocked the hatchery's water supply inlet in January (See article in Target Taupo April 2007). A quick chat and catch up with every one and Kim and I headed out to help Lloyd do some fin clipping. We cut and removed the left pelvic and adipose fins at their base which then never regrows. This helps Fish and Game identify the fish when doing surveys. Each release of fish has a different fin clip so with a quick glance staff can tell when the fish was released and how old it is. After clipping a few hundred fish we were well due for another brew.

After lunch Kim and I got straight back



Joel Houthuijzen and Eastern Fish and Game Officer, Lloyd Gedhill tin clip fish
Photo by: Kim Alexander-Turla



Below left: Kim tin clips her way through a few hundred fish
Photo by: Joel Houthuijzen

Below right: Joel Houthuijzen (left), Rob McLean, Lloyd Gedhill & Mark Sherburne (Eastern Fish and Game Officers) and Dave Conley inspect recently stripped eggs
Photo by: Kim Alexander-Turla

into more clipping while David went with Mark out to Lake Tarawera to see their fish trap and also pick up some ripe fish for stripping. There was about a 300-400m walk around the edge of the lake to the Te Wairua fish trap which is fully enclosed and poacher proof.

On David and Mark's arrival to the trap they selected the best conditioned fish (all rainbows) to take back to Ngongotaha. They transferred the fish to the tanker using carry sacks, and then placed them into the holding tank on the back of the truck. The tanker is equipped with oxygen so that the fish

can be transported over long distances. On arrival back at the hatchery the guys transferred the fish into what is called Fort Knox which is an area they use for holding their stripping fish.

With that our visit to the Ngongotaha hatchery was at an end. It was a great day, enjoyed by all and a valuable experience for us to experience hatchery operations on a much larger scale than we undertake at the Tongariro National Trout Centre. Many thanks to the staff of Fish and Game Eastern Region for the opportunity, it was much appreciated.





Thanks Thea

By Kim Alexander-Turia

In 2003 an exciting new project was about to begin. As a result of discussions between DOC, the Tongariro National Trout Centre Society and Genesis Energy (primary sponsor), Taupo for Tomorrow was launched.

The Tongariro National Trout Centre was fast becoming a popular experience for schools visiting the Central Plateau and Taupo for Tomorrow was an ideal conservation opportunity to develop a comprehensive education package promoting freshwater ecology and the need to look after the Taupo trout fishery. The next step was to find someone to lead this exciting new project. The position would be challenging and diverse. Framework for the programme needed to be developed from ground up, utilising resources from within the community and within DOC.

Jump in Thea DePetris! Thea was appointed by the representatives of each of the programme's partners. We all still remember interviewing her, her passion for conservation and that she *REALLY* wanted the job and promised to never leave us!

Thea was born on Elbow Lane, New Jersey in the United States, a far cry in both location and culture from Taupo,

New Zealand. She was educated in her homeland and as part of her honours geology degree came to New Zealand for a one year study. Here she fell in love with both the country and Jim, her soon to be husband.

In her early twenties Thea became heavily involved with multi-sport racing, competing in events like the one day Coast to Coast and Southern Traverse. This full on racing schedule in conjunction with her love for learning led her to pursue a career in secondary school teaching. It was during this time she spotted the Educator position and it seemed for her an amazing job at DOC that would combine both her love of the outdoors and teaching. She was caught, hook, line and sinker! I remember working late one night when Thea disappeared, only to come back live minutes later dressed in thermal clothing, head-lamp on her head and announcing that was going to climb Mt Ngauruhoe that night. I knew then she was crazy.

Her passion was about being in the outdoors and challenging herself in any situation that may arise. That passion also drove her to realise how important Taupo for Tomorrow was and to give



Thea in action
 Photo's by:
 Kim Alexander-Turia

students a chance to experience the outdoors – whether it be from testing water quality in a local stream or trying their hand at fishing – and realise the importance of looking after it. Thea believes that these experiences are vital for young children today growing up in a very urbanized world.

The thing she liked most about teaching the programme was having so many children tell her that their Taupo for Tomorrow experience was one of the best things they have ever done at school and seeing their beaming faces as evidence of this. She enjoyed being part of the Fishery team as she loved working with like minded people who shared her passion for conservation and the outdoors

Eventually the time came for Thea to leave. The saddest part of leaving for her was giving up something she knew was truly making a difference in regards to her values, but knowing that it was necessary to achieve greater things in the long run.

She has recently taken up a position at Cheal Consultants Limited in Tampo and her future aspirations are to gain skills as an environmental planner so that she can actually make a difference to sustainable land use and the conservation of big, wide open spaces for people to roam free.

The fishery will miss her vivacious personality and her ability to draw people in to engaging in conservation within minutes of speaking to her. However those in the offices next door, Glenn, Mark and Michel, have noticed that the decibels have decreased significantly since her departure!

Thea leaves with sadness but with exciting opportunities ahead. She will always be the person who made Tampo for Tomorrow a reality as Glenn Maclean said in her farewell speech, *"What a great legacy to leave"*. Dave Conley, Community Relations Ranger at the Tongariro National Trout Centre who was a secondary teacher in his previous life is currently care-taking the role while we search for a new educator.

A tough job ahead of us!

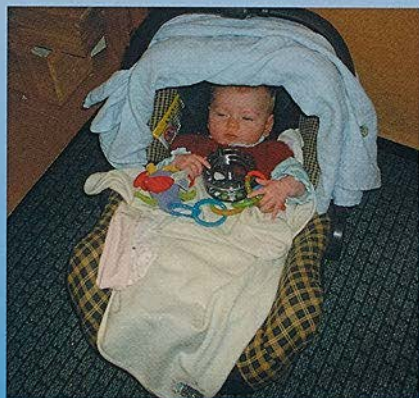
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TAUPO TAILS

Right: "Great Day" Fishing,
Hard Day Casting"
Photo by: *Sporting-Life*

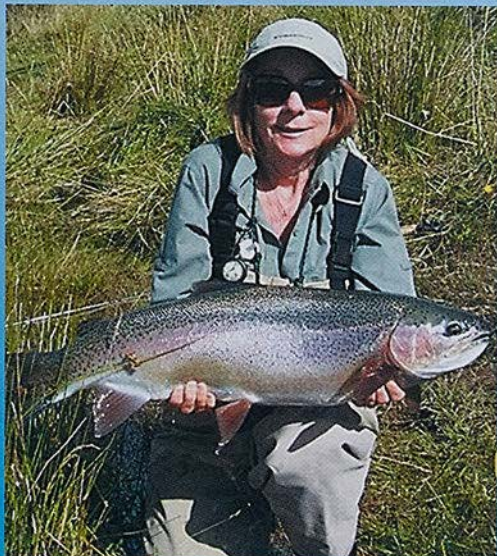
Far Right: Local Moby Marū
with an 11lb Brown trout
Caught at the Bridge Pool
in June
Photo by:
Kim Alexander-Turia



Xanthia Ellis
That's one expensive rattle
Photo by: *Sporting-Life*

If you would like to make contributions to Taupo Tails (letters, photos, anything of interest) please write to Kim Alexander-Turia, Taupo Fishery, Private Bag, Turangi or email Kim your contributions to kturia@doc.govt.nz.

Susan Stolla from Simi Valley, Canada caught and released this 15lb (6.8kg) rainbow with guide, John Baker of the Raised Hackle Fly & Tackle Shop. They were fishing around the Te Whaiti Canal, Lake Otamangakau
Photo by: *John Baker*





Smoked Trout Fish Cakes

INGREDIENTS

- One freshly smoked trout boned and flaked
- One finely chopped red onion
- One bunch fresh coriander chopped
- 1 teaspoon preserved lemon grass
- 4 medium sized potatoes
- Teaspoon butter
- Garlic salt and pepper
- 2 egg yolks beaten with a little milk
- Fresh soft bread crumbs
- Flour to coat

METHOD

Boil potatoes in salted water until cooked. Mash with butter and season with garlic salt and freshly ground pepper. Add flaked trout, onions, coriander and lemon grass and mix well.

Take a large spoon full of the mixture and form into a ball.

Coat in flour then dip in egg yolk then roll in the soft bread crumbs until well coated.

Flatten down to form a round cake shape and chill for at least 2 hours. shallow fry in a pan with olive oil and a tablespoon of butter until golden brown and crisp both sides. Drain and serve as entrée or main with sweet chilli sauce drizzled on top.

By Dianne Fussell, Friend of the Tongariro National Trout Centre Society

Hot Smoked Trout

1. Gut and bone out the trout before smoking
2. Sprinkle brown sugar, salt and ground black pepper on the trout, add a drizzle of olive oil.
3. Other flavours like sweet chilli sauce, tomato sauce, honey or dill can be added.
4. Place the trout, skin side down on the rack in the smoker.
5. Use manuka sawdust for smoking
6. Added flavour can be obtained by mixing either, rosemary, thyme or green manuka leaves into the sawdust
7. If the sawdust is moistened slightly with water, you get the benefit of a little steam and slower burning.
8. Smoking trout retains the protein content although the calories may be diminished.
9. Serve with fresh lemon juice, or creamed horseradish on fresh bread
10. Eat and enjoy as soon as possible

Arthur Gallichan, Tongariro National Trout Centre Society Volunteer, Head filleter on the Children's Fishing Days

New Faces in the Fisheries Team



Nathan Walker

Photo by: Joel Houtbuijzen

NATHAN WALKER

I'm the new Ranger for the Taupo Fishery Area and am part of the busy team that carries out operational work as part of the management of our fishery. A large part of this work entails tasks such as fish trap operations, monitoring and research work, and compliance and law enforcement. As a relative newcomer to the area and fishing in particular, I look forward to enhancing my skills and knowledge in this area.

Before joining the fishery team I was already part of the department. Based out of the Turangi-Taupo Area Office since arriving in the area 18 months ago, I was employed in the Visitor Assers team. While there I spent time as a hut warden on the Tongariro Northern Circuit and then moved on to be part of the team that

among other tasks looked after tracks and structures around the Turangi/Taupo area.

Originally from Dunedin, I have spent most of my adult life in Palmerston North until the move to the Central Plateau. Whilst there (interspersed with travel to far-flung locations) I have been actively involved in sports such as league and motocross riding to name a few. In the leisure stakes I enjoy a good book or movie, a good hack around the local links occasionally, and have also been learning the guitar for some time (as you do). In between there was time for the odd job of course (a stint as a hydrology technician at Horizons Regional Council is a relevant example) and a bit of study at Massey, where I picked up Post-grad qualifications in Tourism and Sport Management.

Those are a few things about me anyway. I look forward to meeting some of you whilst out and about conducting surveys and licence checks over the coming months. Until then, enjoy your fishing and the best of luck.



Renee Williams

Photo by: Joel Houtbuijzen

RENEE WILLIAMS

I am pretty much born and bred in Turangi. Prior to starting with Department Of Conservation I spent 3 years working in the finance industry. I then worked part time at the Turangi Alpine Smokehaus where I met many anglers as they brought in their catch to be smoked. Alongside my job at the Smokehaus, I also was working at DOC for the Conservancy office in Reception and Records. In 2006 I headed to Canada for my OE. Based in Hamilton, I travelled around Ontario & New York State, with a trip to Paris and London thrown in, before heading out West to Vancouver and Vancouver Island.

Now back in Turangi I'm here at DOC job sharing the Ranger Service role, looking after the fishing licences administration with Storm Bester. I love working in the Fisheries' team and now I know how to smoke trout, I'm looking forward to learning how to catch one!



Dave Conley with a nice queenfish caught on a recent trip to Weipa, North Queensland, Australia.
Photo by: Nat Brouneal

DAVE CONLEY

I have been appointed as the new Community Relations Ranger, Tongariro National Trout Centre to try and fill the big boots of the recently departed Greg Robinson, and am greatly looking forward to the new role. I "escaped" from Auckland in 2000 to take up a managerial role at a local fishing lodge, after a decade or so of commuting to Turangi on weekends to fish. I come from a long line of Southland fly fishermen, and have always felt drawn to the river here.

With a working history in hospitality and teaching before arriving in Turangi, I spent a number of years working in the tourism side of the fishery, first in the lodge business before moving into a role as a fulltime fishing guide. I

spent four years guiding, and feel like I have learnt a great deal over that time in regard to the local fishery and its importance as an asset that is world renowned.

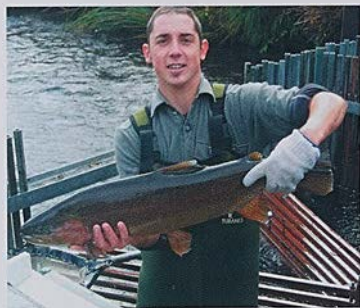
I am really enjoying taking on a more hands on role in the fishery after a couple of years with the Department of Corrections, and it feels like a return home in many ways as I am combining a couple of passions of mine. I love working with people, and have been mad keen on fishing for as long as I can remember.

I have enjoyed the role of being an advocate for the fishery to visiting anglers in the past, and I feel challenged by what lies ahead for the fishery. It looks like an exciting time to be getting involved with the fishery, when it seems to me we are facing a number of challenges, especially in regard to securing water quality and dealing with the encroaching threat of didymo.

Since I have started with the fishery team I have had the opportunity to help out in the *Tauāpo for Tomorrow* education program, and I am really heartened by the enthusiasm kids have for the key messages the program is designed to convey. I think issues around water quality and the sustainable use of our resources are going to become bigger and bigger concerns in the coming years, and it is exciting to be involved in helping kids connect with ways they can help manage change.

MARK MILNE

Although I was born in Rotorua, I lived in Tasmania for 15 years. (that explains a few things) before returning in 1998 to school in Te Puke, then heading down south dairy farming.



Mark Milne
Photoby:
Kim Alexander-Titola

This is my second season as a trap operator. I started with Department of Conservation at the beginning of 2006 for Ruapehu Area Office as a member of the track and hut maintenance team. We travel around all the tracks making sure they are up to standard so you can walk freely around on them. I have done this for the last two summers.

Before completing my contract with Ruapehu Area Office I was told about the fish trap operator's job going in Fisheries through one of my work colleges who had done it the previous season. It sounded like fun and next thing I knew I was in water waist deep processing fish in cold temperatures but I loved it. I don't know where I will end up after the winter but I am thinking of doing an OE, or it could be round three.

The Fine Art of Poaching

By Jill Larsen-Welsh

Jill is a ranger in our field operations programme and is responsible for compliance and law enforcement

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SOMEONE IS
FISHING ILLEGALLY,
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Poaching really is a fine art. To be successful, the hardened poacher requires leather skin to withstand the freezing temperatures of the icy cold streams or lake over winter. No they don't generally wear waders; the standard garb is track pants and runners.

Poachers usually work in the dead of night, although on the rivers the bold do it in broad daylight. A full moon is valued because there is no need to use a torch. A good net is a must on the larger streams and lake but on the small spawning streams a landing net or garden pitchfork is the most effective. They often work in pairs, although sometimes there are more of them – probably due to the thrill of being involved in illegal activity.

It is of course a very challenging feat to bring a net in the lake or drag it through the river – yeah right! The reality is that such fishing methods are totally indiscriminate, killing trout of any size or condition that blunder into the net. We have seen hauls of trout taken off the spawning redds that you wouldn't feed to the cat, such is their poor condition. Fishing with a pitchfork doesn't appear to be much more selective either.

Poaching is an ongoing problem within the Taupo Fishery. Perhaps some people 'don't think' about the long term implications – it is not just the loss of the actual fish taken but all their eggs and the damage done to the eggs already laid in the gravels by being walked on or uncovered.

A hen (female trout) lays approximately 3,000 eggs so thirty fish killed in a gill net may equate to 15 pairs of adult trout or 45,000 eggs. Furthermore wading backwards and forwards in the stream bed, dragging a net and throwing rocks will disturb existing redds and kill a whole lot more eggs. Sure many of these won't survive anyway but some would! These adult fish and their eggs are the most

valuable fish in the fishery, they have escaped all the other forms of mortality and will get to lay their eggs to ensure the future of the fishery – if only the poachers leave them alone. Taking 30 such fish is a major loss and one that is preventable.

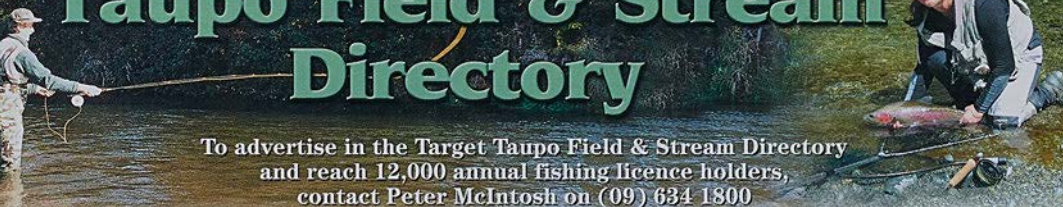
Over the years we have successfully apprehended a number of poachers though it is difficult to measure our effectiveness, that is the very nature of such illegal activity. Nevertheless poaching leaves distinctive signs and by regularly checking known areas we can be confident that it is currently not occurring on a large scale. Similarly technology has improved vastly in the last 10 years or so enabling us to utilise methods of detection and surveillance that were once unavailable to us.

A key tool in our apprehension of poachers is information that keen anglers provide. A net spotted and reported immediately is most helpful and we run a 24 hour duty officer (see your licence for the number) to take your call at any time of the day or night, in large part for this reason. Much less helpful is a report several days after the event when the offenders have long since departed, though the information may still have value for planning future operations. If you do find a net please leave it in place, quietly move away from the scene and give us a call – we like these sorts of calls!

Don't let poachers get away with stealing your trout! If you see anything you think is suspicious, then give us a call and help put an end to this activity. We take this information very seriously and you can be assured your call will be in strictest confidence. Don't think twice, just ring in. It is better for us to check out a possible incident and find it was nothing much at all, than not to know and these people get away with the senseless and wasteful killing of our precious resource.

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