

TARGET TAUPO

A Magazine for Taupo Anglers

JULY 2011, ISSUE 63



Department of Conservation
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TARGET TAUPO

A Magazine for Taupo Anglers

JULY 2011, ISSUE 63

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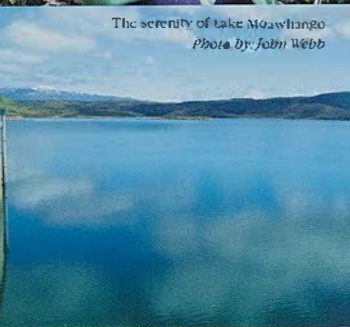
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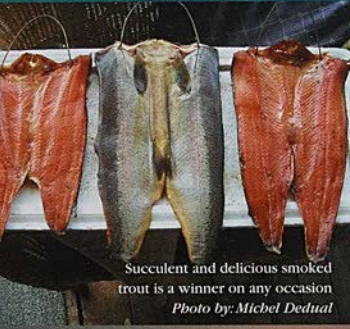
Caption: Uh-oh snags and white water approaching!
Photo by: Aaron Loder




Caption: Now I, Stephen and Hamish Martin on the Waitahanui River
Photo by: Ian Martin



The serenity of Lake Moawhango
Photo by: John Webb



Succulent and delicious smoked trout is a winner on any occasion
Photo by: Michel Deduat



Another day in paradise
Photo by: Thomas Yee

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Fishery Foreword

By Dave Lunley
Area Manager

KIA ORAAN WELCOME TO ISSUE 63 OF TARGET TAUPO.



Photo by
Klm Alexander-Tarla

I hope that you enjoy this magazine as much as my staff and I enjoy bringing it to you. This publication provides us with the ideal forum to tell you about the work and activities many have been involved in as well as the challenges and issues that go along with managing a wild fishery like Taupo.

During the past six months we have been busy bedding in our new Taupō-nui-ā-Tia Area and starting to make the most of the efficiencies created by having a bigger pool of staff available for the biodiversity, recreation, community relations and fishery operations work programmes. It has been especially rewarding for me to see many staff with no previous fishery experience taking up the opportunity to be involved in the fishery. This has included taking part in harvest surveys, fish trapping, maintenance of fishery access tracks and lending support to children's fishout days at the Tongariro National Trout Centre.

Unfortunately change also has its downside and sadly we say fare well to Glenn Maclean undoubtedly our most experienced Taupo fishery operations staff member. Glenn has been involved in management of the fishery since the early days of DOC and his experience and technical ability will be sorely missed. Also leaving us is Carolyn Newell who many of our license agents will have got to know through her management of the fishery license system.

Change has also been a feature of the fishery itself over the past few months with trout, and their favourite food smelt being hard to find over summer. However, the trout and smelt have been turning up in good numbers in the last month or so. Because of the extraordinarily long and hot summer it is possible they spent time in the deeper reaches of Lake Taupo where it is cooler. The smelt were certainly late in turning up and we plan to put some effort into understanding why the most productive period of the food cycle in the lake appears to have shifted a couple of months. Unfortunately there has been no change to the late spawning runs in the Tongariro River with a very similar pattern this year to that observed last May and June. Glenn Maclean talks about this in his article on page 4.

If you haven't yet been to visit our new Genesis Energy Freshwater Aquarium at the Tongariro National Trout Centre I would encourage you to do so. Our native freshwater species so seldom seen are on display in a unique and natural setting. The aquarium has neatly complimented the TNTC experience which has broadened from a facility solely about trout to one focussed fully on freshwater advocacy.

A key part of the Department of Conservation vision is that more people participate in recreation and that there are more business opportunities delivering increased economic prosperity. The Taupo fishery is well placed to deliver on both counts. With this in mind ensure that you have your say on the future management of the fishery by being involved in the consultation processes for the upcoming Taupo Sports Fishery Management Plan review. We are in changing times indeed and it is essential anglers provide feedback to help shape the future of our great Taupo fishery.

Restoring the Tongariro

By Glenn Maclean
Programme Manager
Technical Support

In the last decade the Taupo spawning runs and in particular the Tongariro spawning run has been recognised as occurring much later in the year. For example in 1995 two thirds of the annual Whitikau run had passed through our trap by the end of July, whereas in recent years approximately only 15% of the nearby Waipa run has been trapped by this point.

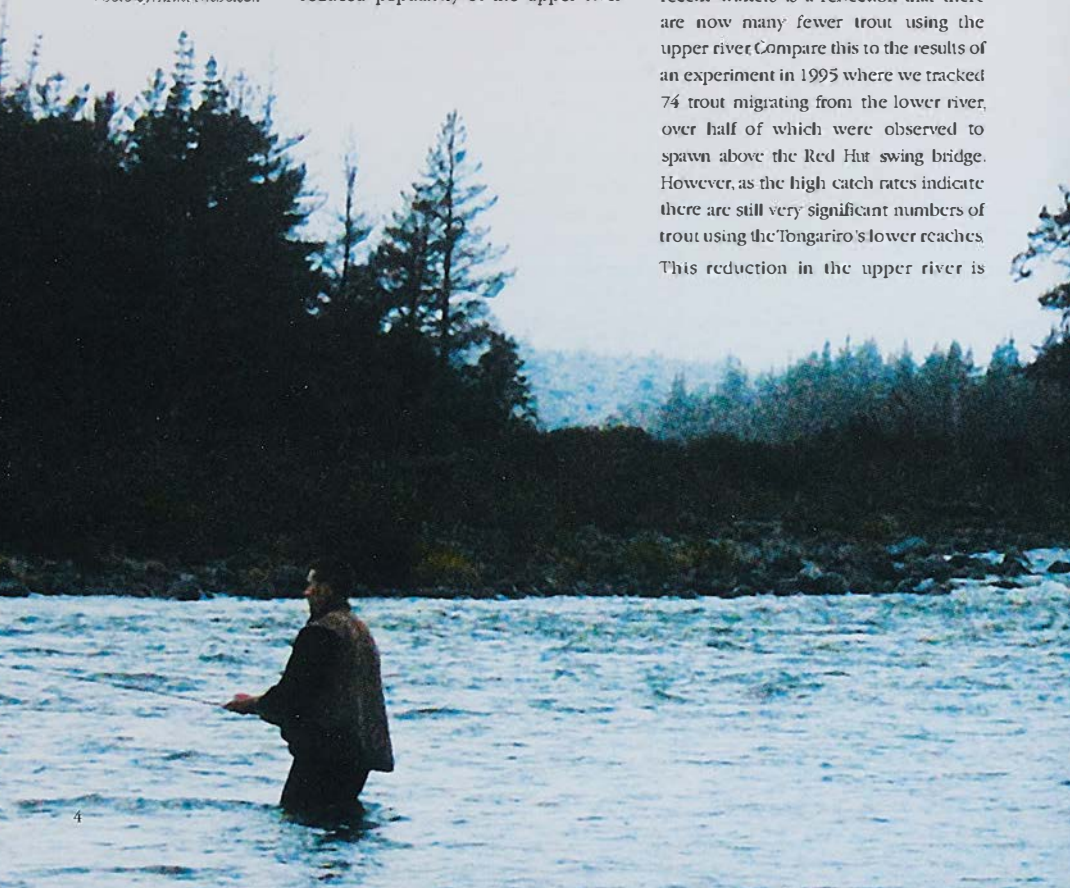
Coinciding with this is a significant decline in the total Waipa trap run, yet this reduction in fish numbers is not reflected in the high average catch rates measured on the Tongariro River over winter. However the other significant change that may in part explain this apparent anomaly is the greatly reduced popularity of the upper river

for fishing, best captured by the harvest survey results. In the 1990/91 season, on average two thirds of all anglers counted as part of aerial surveys were fishing above the highway bridge, with 22% of anglers above the Red Hut swing bridge. By comparison in over 39 flights in 2010 only half the anglers were above the highway bridge and only 1 in 10 above the Red Hut. Obviously anglers tend to go where the fish are and not surprisingly the average catch rate measured in the lower and middle river was 0.44 legal sized trout per hour compared to 0.28 fish per hour higher up.

This shift in angling use combined with the trap data and very low escapement (spawning) counts in the Whitikau in recent winters is a reflection that there are now many fewer trout using the upper river. Compare this to the results of an experiment in 1995 where we tracked 74 trout migrating from the lower river, over half of which were observed to spawn above the Red Hut swing bridge. However, as the high catch rates indicate there are still very significant numbers of trout using the Tongariro's lower reaches. This reduction in the upper river is

A threatening day at the Boulder Reach Pool in the upper Tongariro River. Preserving the angling experiences and trout recruitment that pools like this offer is essential.

Photo by Mike Nicholson

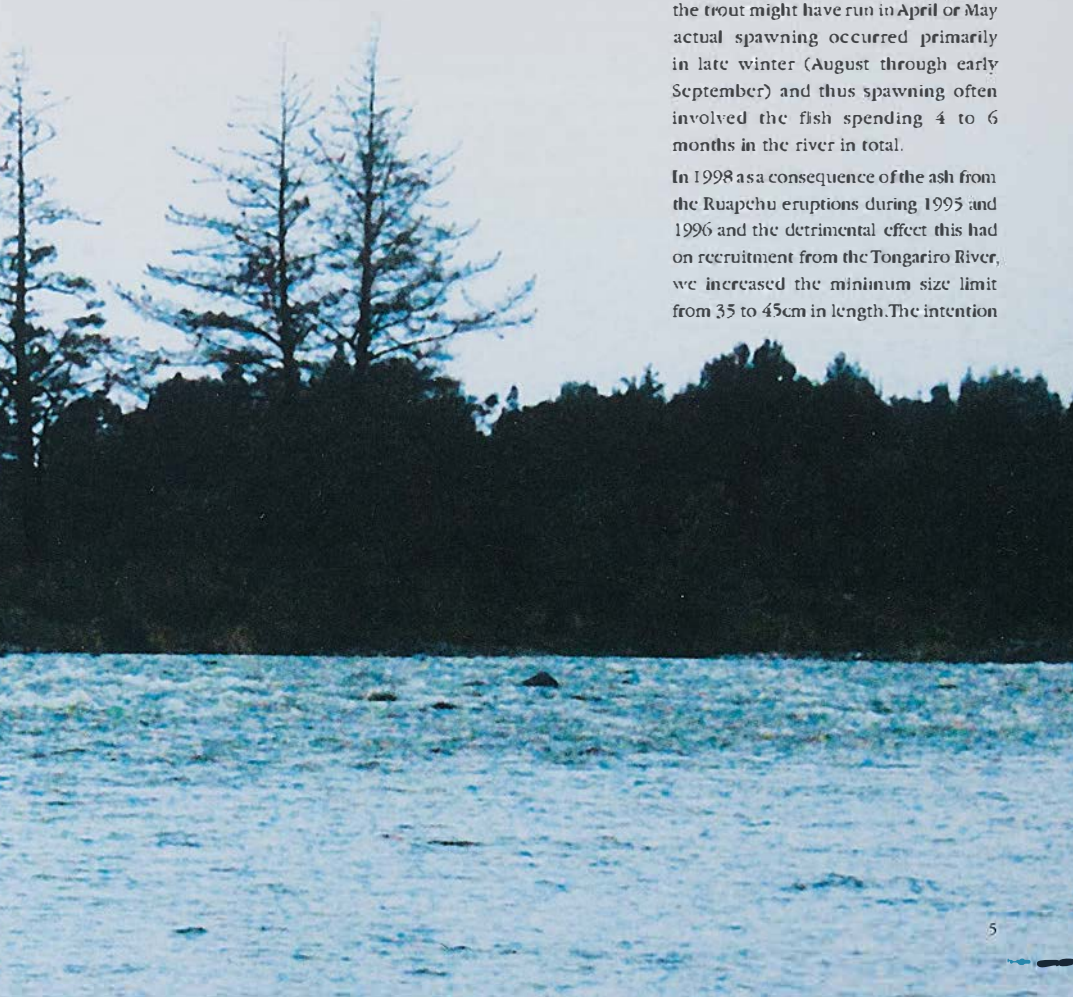


likely to impact on the total recruitment, given the vast extent of suitable spawning water that is no longer fully utilized. Equally this also represents a significant loss of angling opportunity. For example when I began fishing the Tongariro in the mid 1980's the upper river was my spot of choice along with many other anglers, occasionally I might drift into the middle reaches but never did I fish below the highway

The reasons for this change are likely to be complex and involve a number of different and interacting factors.

Previously most of the run was an autumn one, the fish migrating slowly but steadily up the rivers before holding close to the spawning areas for several months. Our tracking projects show the migration of these fish was largely influenced by weather events, the trout tending to hold in a pool during settled conditions and moving during freshes. Even though anglers talk of trout passing through the river in a week or less, in fact the tracking showed that in 1995 it took on average 30 days for trout to move the 18.5km to the Whitiakau Stream. However, while the trout might have run in April or May actual spawning occurred primarily in late winter (August through early September) and thus spawning often involved the fish spending 4 to 6 months in the river in total.

In 1998 as a consequence of the ash from the Ruapehu eruptions during 1995 and 1996 and the detrimental effect this had on recruitment from the Tongariro River, we increased the minimum size limit from 35 to 45cm in length. The intention





A fabulous maiden rainbow. A comprehensive strategy mandated by the fishery management plan will be needed to ensure early run fish like this continue
Photo by: Steve Crouley

of this change was to reduce the angling harvest in the lake of the few young fish that had survived so to ensure that a reasonable proportion of these fish got to spawn. In many ways the change went unnoticed. However, other changes in how the lake functioned (and perhaps the fact there were many fewer trout) saw these fish reach an average size of 2.4kg, well above any limit anyway.

In the aftermath we left the size limit as it was, it made sense at the time to let the fish get a bit larger before they were taken and potentially this meant more survived for the winter angler. It didn't affect the river angler either as nearly all the trout were well over 45cm by the time they matured and ran the rivers to spawn.

However, perhaps this wasn't so clever in hindsight. What it did was put additional pressure on those trout that exceeded 45cm in length over summer. Initially it wasn't much different to what was already happening in practice - indeed our catch data from before the change shows that only one trout in four kept by anglers was between 35 and 45 cm long, the rest larger than this. This reflected that many of the fish in the lake at this time were beginning their spawning migration in April or May, and so were nearly fully grown by late summer. By contrast spring run fish had another 6

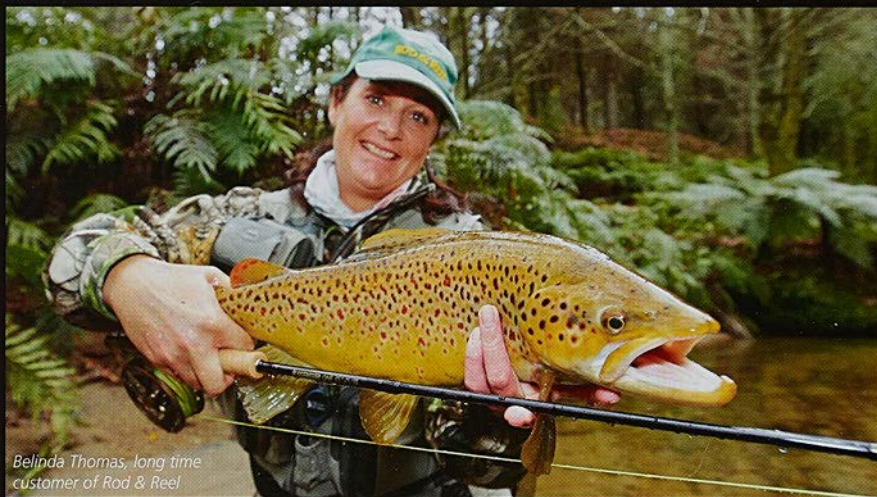
months of growing to do in the lake and were that much smaller.

It's quite possible that this selective harvest of the large, early maturing fish was already having an effect, after all the runs had been slowly getting later over the decades. The change to a 45cm limit may just have exacerbated the impact on this part of the population.

● Often with these sorts of changes it is about a number of factors coming together to create a special situation where the population is vulnerable - a year of low numbers or poor growth for example and the harvest suddenly becomes critical. Interestingly in the years following the size limit change the lake harvest doubled, coinciding with a high point in the trout population which allayed any fears we might have had. However perhaps this very high harvest, focused on the largest fish, actually did have a significant impact on the early running part of the population.

Who knows what all the factors may have been but there were certainly changes on the Tongariro River as well. Following the millennium the first few years were especially settled through autumn and early winter - it's funny how you notice these things when you are operating fish traps. As I commented above, the migration of the early run fish

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is triggered by changes in the weather and river flow, during stable periods these fish simply remain where they are. Similarly angling effort on the Tongariro increased by approximately 50% over the decade following the eruptions in late 1995 and it is still noticeable how many anglers continue to fish the river through April to June. So potentially at a time when the early runs were declining, weather conditions were conspiring to hold the remaining fish in the lower and middle river where they were exposed to very high angling pressure.

At the risk of oversimplifying what is undoubtedly a complex issue, trout which matured late in the year and so were small over summer and then ran only part way up the river to quickly spawn were many times more likely to survive than early maturing fish which exceeded the 45cm size limit over summer and then took 4 to 6 months to work their way through the whole river to spawn.

The net effect of this is that the early part of the run has become more and more depressed and the later spawning fish dominant. However it may not be all roses for the late spawners either. Spawning which now occurs during November and December risks water temperatures becoming too high for successful egg incubation. It is recognised egg mortality in rainbow trout increases significantly once temperatures exceed 12°C, particu-

larly if they fluctuate. This may well be a significant issue particularly in shallow open stream beds exposed to the sun and goes a long way to explain the collapse of the run in the Whitiākau. Similarly, assuming the offspring enter the lake at approximately 18 months old as occurred previously then they now enter in mid winter. We know when trout enter the lake is key in determining the final population size, if they find food quickly they do very well but most don't and die.

Previously the fingerlings entering in late summer coincided with the peak in larval smelt numbers following smelt spawning over spring and early summer. However a few months on and the smelt population is significantly depressed as shortages of food before the lake mixes again causes widespread starvation - a whole different and much less appealing scenario for the young trout desperate to find food quickly. Similarly these fish now have to go through two winters or low points in smelt numbers rather than one which may in part explain their smaller size at maturity. Again this is complicated by the lack of food generally over the last couple of years (bought about by the lake not mixing) but even in good years these trout will do it tougher than previously.

So all in all it would be preferable for an early run if possible - bigger fish in the lake, more fish in the rivers in autumn and

Rearing and releasing fry into the Whitiākau Stream may help kick start the early runs in the upper Tongariro River
Photos by John Webb and Petrina Francis



early winter when anglers want to target them and trout spread right through the Tongariro. However whether the fishery can rebound to this state without some help is extremely dubious.

So is there a way forward? Well currently the number of spawning fish in the upper Whiti kau and Waipa Streams in the period April to August each year is almost nil. Compare this to earlier escapement counts in the Whiti kau above the grotto which regularly reached six to seven hundred fish or even more through these months. Such low numbers suggest that simply putting in place new measures to protect the remaining fish would probably be insufficient to see the run rebuild, at least in the short to medium term. Therefore it would be necessary to restock this part of the river to give it a kick start, albeit with accompanying regulation changes to better protect these fish both in the lake and river. However on the other hand, any improvement (or not) will be very obvious.

A genetic study nearly complete by Elizabeth Heeg suggests that there are some genetic differences between early and later run trout in the same river. If the final report due shortly confirms this then this is very useful - rather than the pattern of running later simply reflecting a behavioural change which would be very difficult to influence we may be able to select

for early running trout. Furthermore the study currently suggests that trout from all the Taupo tributaries are genetically similar which opens up the opportunity to use early run stock from the Hinemaiaia for example.

Another option would be to use early running adults from the lower Tongariro as brood stock. That they are fish from the same system is attractive though the practical difficulties of catching sufficient suitable brood stock are significant. Similarly some of these fish are exactly what we seek in the upper river and if they are going there naturally then maybe we are better to let them do just that.

A third option is to collect maiden brood stock from Lake Tamangakau as they pass through the Te Whaiia itap. From a practical perspective this is the easiest. They are certainly nice fish and there is a surplus of spawners. However these fish behave quite differently - yes they run early (May to August) but their whole spawning migration is very short and quick, often over in a month or less. Similarly their life from fry to adult is spent in the lake feeding on an invertebrate diet, quite a different strategy to Taupo fish which spend 18 months or so rearing in the rivers before making the transition to the lake and a diet of smelt. Whether they are actually genetically different though is uncertain at this stage, both populations are from the same source and the differences in behaviour may simply reflect the different environmental influences.

What we don't want to do is introduce genetics which when mixed with the existing fish reduces the fitness of the overall population. In New Zealand we make a great deal of hybrid vigour - by introducing a new genetically different parent we may get offspring that are superior to either of the parents. What we often overlook is that only some hybrids are genetically superior and do better, others inherit traits from the parents that are not fully compatible and which maybe



very detrimental to the population (called outbreeding depression). In controlled circumstances such as on a farm where the unwanted offspring can be culled then hybrid vigour is an important tool to improving the desired traits. Similarly we are often selecting for only one or two qualities, the fact that sheep are becoming progressively less intelligent over time is immaterial on a farm where food is provided, predators controlled, hazards fenced out and the like.

However would most of New Zealand's sheep flock survive back in the wild now? Well there would be some very fat wolves I think. This highlights that the key for wild populations is that they need to possess a whole range of traits that allow them to survive a wide variety of challenges and these may change from year to year depending on climatic and other events. Related to this geneticists speak about the importance of wild populations having high heterozygosity or genetic variability, so that the organism has the genetic potential to successfully adapt to whatever environment they may be faced with. Certainly where you have a wild population that has already successfully demonstrated an ability to thrive then we need to think

very carefully whether we want to upset the genetic apple cart.

In terms of actually releasing trout into the upper Tongariro River there are several options as to how we might do this. Firstly we could collect maiden spawning adults and release them directly into the upper river to do their own thing naturally. However there are two risks with this approach. The fish may on realising that this is not their natal waters may head back downstream in search of where they themselves were spawned, or conversely in such a big area struggle to find a suitable mate.

A second option is to hold suitable parents in the Tongariro National Trout Centre until they are ripe, strip and rear the eggs to fry stage and release these along the length of the river. The advantages of this approach are that very large numbers can be reared and released at low cost, and they essentially begin their life in the wild free from any hatchery influences. To do well in the hatchery favours tolerating your brothers and sisters close by but this is not necessarily a desirable trait in the wild. The disadvantage however is that they will face very significant mortality, after all this is why trout have so many eggs.

In the long run regulations for ever and lake anglers will be needed to protect early run fish
Picture by John Webb



The final option is to rear to fingerling size which allows the fish to be marked and recognized in the future, and which improves their chances of survival. The downsides of this approach are that costs increase very significantly, and it risks that the young fish may not become imprinted with the release site as the place they themselves should return to spawn.

We also need to recognise that it is unlikely any single action will rectify the problem on its own. For example we could release earlier spawning fish in the upper river, however without reducing the angling impacts on this group of fish and their offspring then the problem will likely keep reoccurring. In other words if we are serious about this there needs to be a collective group of actions, not all of which need to occur immediately but nevertheless do need to be addressed over the next three or so years.

Among the aspects which need consideration is how to reduce the pressure on the large, early run fish in the lake over summer and these same fish as they pass through the Tongariro. This needs to be worked through carefully for it is not as simple as just locking them up. For example requiring fish over a certain length to be released on the lake may not have the desired outcome if they then die because of poor handling. Similarly we wouldn't want to lock up the Tongariro River for several months over winter, not least because this would cripple Turangi. We do know however from earlier trials that fish caught by fly fishing in the river have a very high rate of survival so long as they are released with a modicum of care, which does open up some other options.

The review of the Taupo Sports Fishery Management Plan is shortly about to begin which is opportune and makes an excellent vehicle for this discussion. Ultimately for this project to go ahead the plan will have to allow for this approach, as simple as that.

If we were to pursue this project there would be no improvement seen for at least 3 years when the first progeny released will hopefully return as mature adults. If we wait for the final genetic study report and completion of the management plan before starting then conceivably any improvement may therefore be 5 or more years away. However the other approach is we could start collecting suitable brood stock now to be stripped in the next few months, even though not all the questions have been answered yet. If the genetic study or the management plan doesn't ultimately support this approach then we can pull the pin without too much cost, however if not we are that much further down the line.

Ideally we would initially release in the order of 100,000 fry into the upper Whiti kau Stream which we might expect to give a return of approximately 100 or more spawners in three years time. The reason for concentrating on the Whiti kau is that the results of this experiment will be that much more apparent here than in the upper Tongariro. However if it is successful then we can extend releases into the main stem.

On the basis that each female has approximately 3,000 eggs this represents a need for 33 female trout and a similar number of males to strip. In practical terms this is a lot of trout to obtain given that not all fish are suitable to use as brood stock, and similarly it is a lot of breeding stock to remove from the source population. On the other hand this does ensure a wider genetic base in the new population.

So long as the genetics are suitable the obvious source is from Lake Taumangakau. These are great looking fish, we can capture suitable stock readily through the Te Whai au trap and the population can certainly withstand the removal of a few spawners.

Therefore the proposal is to strip 100,000 eggs from fish trapped at Te Whai au in

June and July each year from 2011 to 2013, rear these to swim up stage (when the fry would naturally emerge from the gravels) and release these along the length of the upper Whitikau Stream. In the following weeks we will then electric fish adjacent to the release sites to check if the fry have been able to successfully establish.

A second experiment would involve radio tagging a small number of suitable adult trout collected from Te Whaitau in 2012 and releasing these in the Whitikau Stream above the grotto. A remote data logger sited near the mouth would record whether these fish remained in the stream or not – hopefully no trout would be detected indicating they had. If in fact if the fish remain we can assume they have spawned somewhere in the stream which in turn opens up this technique as a potential tool to use in the mainstem of the Tongariro. In this case we could release a significant number of suitable spawners just downstream of Poua Intake.

However before the first fry release we need to undertake a comparison of the genetic makeup of Lake Otamangakau fish with those in the Tongariro system. We already know the genetics of trout through the Waipa trap and the Whitikau Stream so it is simply a case of taking 50 fin samples from trout through the Te Whaitau trap over the next couple of months and getting these analysed in the same way. If the results are contrary to our expectations and indicate the fish are significantly different then we will need to shelve any release and explore options to source the brood stock from other sources like the Hūemaitia. From a practical perspective this is a less easy option which is why we would prefer to use Otamangakau fish if possible and would certainly require we wait another year before starting.

Similarly the management plan discussion and review is beginning now. This needs to be completed and subsequently allow for the manipulation of the wild popula-

tion in this way in order to release the fry and to provide the basis for making any regulation changes. It could be argued that the current plan already allows for this though clearly it is the new plan that will apply going forward.

The crux of this is that if the new management plan supports this approach then over the next year there needs to be considerable discussion about how to structure the regulations so as to reduce the impact of the angling harvest on the early run fish. It is easy to jump to some obvious potential solutions, however the more we think about it the more options we can identify. The key is that we want to make sure we achieve the desired outcome, not inadvertently create other problems as perhaps occurred when we increased the size limit. Secondly the issue is about limiting the excessive harvest of the early run fish rather than limiting angling opportunity. In other words closing the Tongariro River to fishing over April to June is not seen as a solution, however catch and release only or release of all fish over a certain size or some variation of this during this period may well be part of the answer.

Actually the more difficult problem surrounds managing the harvest, either deliberately or accidentally (through fish not surviving release) that occurs on the lake. At the end of the day this is not a discussion to be rushed. However what we are proposing is to take the initial steps now (and at relatively low cost) so that if we can find an effective solution we are already that much further down the path to putting this in place.

AND A FOOTNOTE – TIME FOR A CHANGE

The above article is my last contribution to *Tararangi Teupō*, an association which goes back to Issue 1 in 1989. Along with my then co-editor Cam Speedy we were very proud of that little blue book, even if it does look a bit plain now.

As much as I would like to see the project described above through, in the bigger picture and after 24 years its time for new waters and new challenges. My job was once described as the best you could have if you liked fishing and the outdoors and for much of this time this might just have been right. Magic places great adventures (some of which were slightly risky but that was all part of the attraction too), some truly groundbreaking stuff and the opportunity to meet and work with some very special people. It's been a great time - hell it could hardly be anything but when you are regularly working with prime Taupo rainbows in such a wonderful setting.

However all good things come to an end and I would like to take this opportunity to thank the many anglers, busi-

ness people, iwi, landowners, industry representatives and the wider community who I have talked and worked with over the years. The debate has often been robust as you expect when people are talking about something they care about, however invariably the discussions have been constructive, with respect and ultimately in the best interests of this special fishery.

The Taupo fishery is pretty bloody special. Yes it will have its ups and downs like any wild fishery but it will do just fine so long as we continue to care about it and do our best by it. That's our collective challenge.

All the best

Glenn

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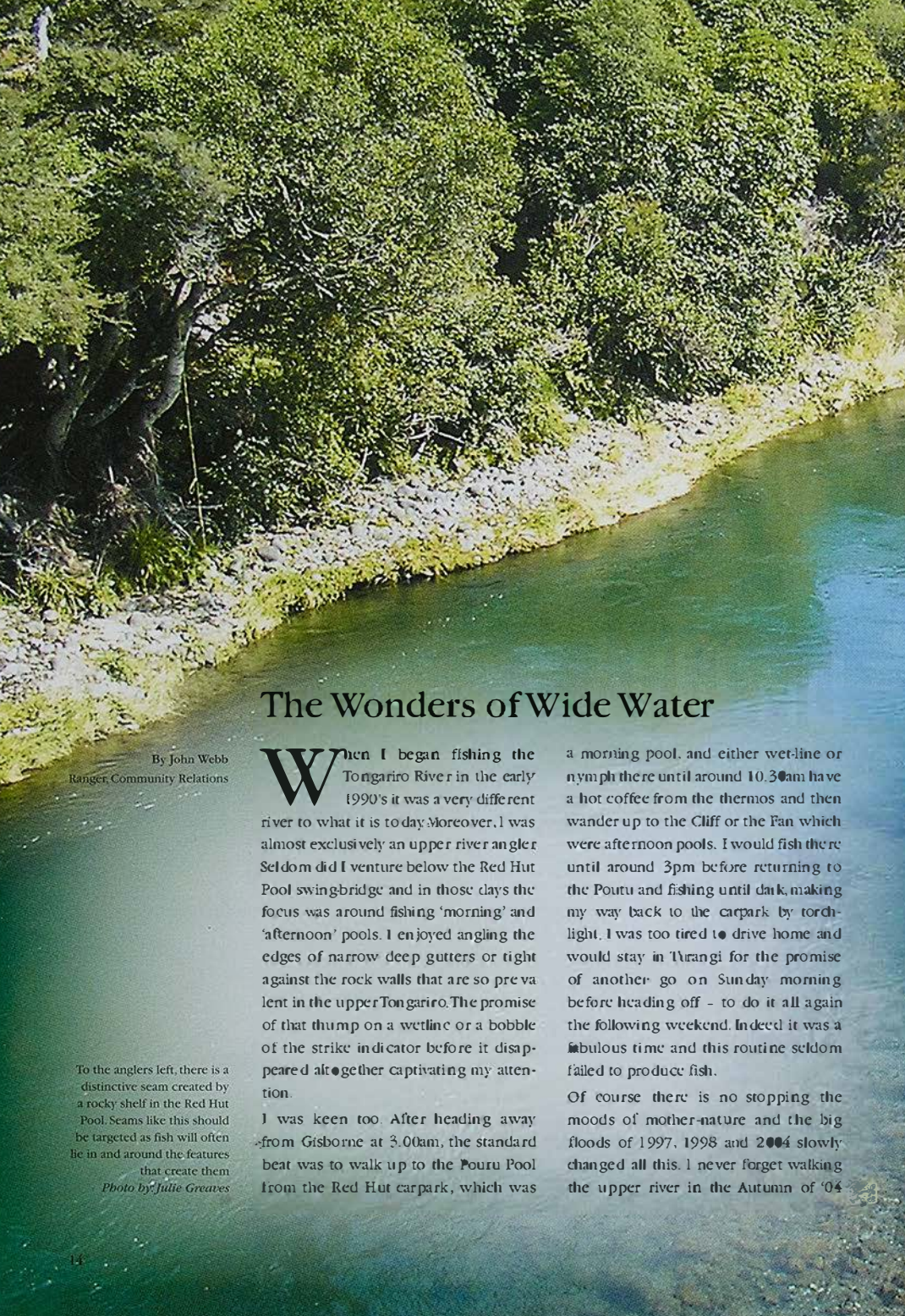


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The Wonders of Wide Water

By John Webb
Ranger, Community Relations

When I began fishing the Tongariro River in the early 1990's it was a very different river to what it is today. Moreover, I was almost exclusively an upper river angler. Seldom did I venture below the Red Hut Pool swingbridge and in those days the focus was around fishing 'morning' and 'afternoon' pools. I enjoyed angling the edges of narrow deep gutters or tight against the rock walls that are so prevalent in the upper Tongariro. The promise of that thump on a wetline or a bobble of the strike indicator before it disappeared altogether captivated my attention.


I was keen too. After heading away from Gisborne at 3.00am, the standard beat was to walk up to the Pouru Pool from the Red Hut carpark, which was

a morning pool, and either wet-line or nymph there until around 10.30am have a hot coffee from the thermos and then wander up to the Cliff or the Fan which were afternoon pools. I would fish there until around 3pm before returning to the Pouru and fishing until dark making my way back to the carpark by torchlight. I was too tired to drive home and would stay in Urangi for the promise of another go on Sunday morning before heading off - to do it all again the following weekend. Indeed it was a fabulous time and this routine seldom failed to produce fish.

Of course there is no stopping the moods of mother-nature and the big floods of 1997, 1998 and 2004 slowly changed all this. I never forget walking the upper river in the Autumn of '04

To the anglers left, there is a distinctive seam created by a rocky shelf in the Red Hut Pool. Seams like this should be targeted as fish will often lie in and around the features that create them

Photo by Julie Greaves

A person is wading in a river, fishing. The river is surrounded by lush green trees and a rocky bank. The water is clear and blue. The person is wearing a white shirt and dark pants. The background shows a dense forest of green trees.

swearing I was on the surface of the moon. The huge sweeping mounds of silt and rocks that had been deposited by the Tongariro's fury were quite a sight. By this time old haunts of the Poutu, Cliff, Fan and Breakaway pools were gone or unfishable; and there was water in the "Bypass" - a split in the river that diverted close to a third of its flow around an island behind the Poutu Pool, something that hadn't occurred for more than 30 years.

However, despite the disappearance of these favoured pools the angling was still great. Other spots took their place and up until 2006 angling in the upper river was still outstanding at times. Those that fished the true left of the river during this period at places such as Waddells, Boulder, Blue Sand and Fence Pools will attest to this. Unfortunately as most are aware, since 2007 there has been a lull in the fishery which has been addressed in many previous issues of Target Taupo. Almost in parallel, there have been changes in the Tongariro River system too, both in terms of the physical nature of the river and the fish dynamics. This was highlighted in the 2010 season when the upper Tongariro River fished very poorly. Although not the focus of this article, the number of trout making their way to this part of the river appears to have declined. The reasons why are complex and something that has been reflected by the Waipa Trap data. Glenn Maclean discusses the issue in detail through his article 'Restoring the Tongariro' on page 4.

Although things need to be viewed in the context of a recovering fishery, by

contrast the lower Tongariro fished well in 2010. However, changes in the water targeted by anglers and the techniques being used to catch trout in the lower Tongariro have not gone unnoticed. For example nymph anglers began to twig, particularly late in the season that good numbers of fish were available in the wide railours of pools rather than from the traditionally deeper edges and riffles. Targeting this water was productive and has been followed by a real resurgence of the wetline, which is ideal for fishing such localities.

Some anglers specialise in fishing wide water, particularly with a wetline, but more often than not, the wide expanses found on the lower Tongariro are ignored. They are certainly not viewed as traditional nymphing spots because fish are not being concentrated together as in the narrower reaches. They also tend to have a sedate oily surface and are slow moving causing heavier nymphs to catch the bottom and impede the drift. However, a fast sinking wetline with a shooting head can be thrown a long way. They cover this extensive 'real estate' occupied by trout in wide sections of the river superbly. Some anglers did very well wetlining this kind of water last season particularly after a fresh, when there was a bit of colour in the water. Often I would avoid wading deep and relied more on casting almost directly across (rather than down) using the swing to catch them. A short leader of around 1m with an olive, black or orange Woolly Bugger or Rabbit usually did the trick.

The wetline is great but interestingly I

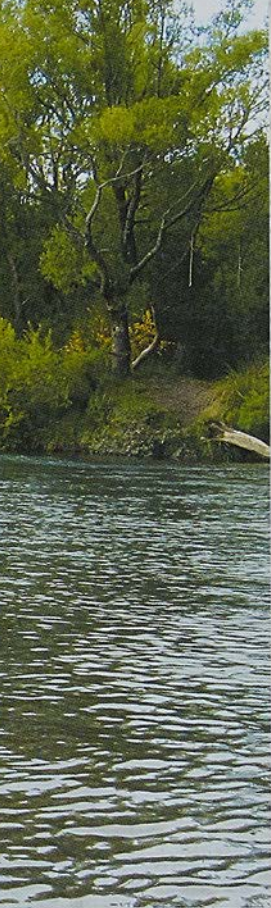


One nice fish and another one on the way for this angler in the wide water of the lower Tongariro
Photo by: Glenn Maclean

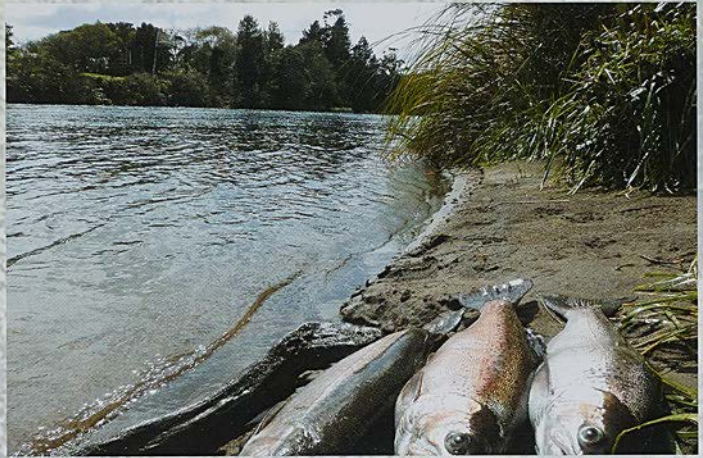
slowly realised that nymphs could be just as lethal in this wide slow water. The key was to target the right place and use the right rig. Casting a floating line a long way across this kind of flow is usually going to be hard work. Wide sections are common in the lower Tongariro but are often a swirling mass of water with untamed and irregular currents making mending lines and a natural drift of the nymph difficult. So in the wide water don't attempt to cast a long way across the flow when using a floating line but rather get your distance by casting upstream. Long shallow casts also mitigate limited backcasting room which is present on some wide tailouts - depending on your casting hand and side of the river you are angling. For example,

when standing at a steep angle to the true right bank, almost facing up river, a right handed angler can get considerable distance in the back cast when casting shallow. One disadvantage with this of course is if you are surrounded by other anglers. Usually this isn't an issue but in some circumstances you will be forced to adapt the distance and direction of your cast so they don't become a nuisance to others. This is where the roll cast comes into its own if you are proficient with the technique.

Pods of fish will be quite evenly distributed across the river in wider places, often not too far from the shore, particularly if there is a little bit of depth or colour in the river. Fish will also hug the edges of wide water at first and last



Top right: This top limit was taken angling the wide water seams of the lower Major Jones Pool after a fresh
Photo By: John Webb



light when they feel less vulnerable. The perfect place to observe fish distribution in a wide piece of water is standing on the Red Hut swingbridge at lunchtime on a sunny day when the river is low and clear. With the polaroids on, small pods of fish can usually be clearly seen occupying several different spots in the wide tailout of the Red Hut Pool. Sometimes they are no more than a few metres from the beach. I have also seen nymph anglers have great success on the true left of the lower Major Jones Pool or the true right of the Hydro Pool by flicking a nymph upstream and letting it drift down the edge. Sometimes fish will take right at their feet. They are difficult to land in these locations but the close quarters angling can be fabulous despite the width of the river.

Therefore a long shallow cast upstream will provide similar odds of success to fishing across the pool when nymphing. Little mending will be needed by casting shallower although some skill in line retrieval and feed out as the indicator drifts past will be important to maximise keeping nymphs in the "strike zone". For large tailouts and pools I seldom cast nymphs more than two thirds of the way across the current reading the river and getting progressively further out as I

go. Don't spend a lot of drifts in the large expanses of flat oily water but don't ignore them either. Instead focus more on the permanent 'seams' in the river which are the cracks or lines that appear in the surface. This folding together of the water often marks a small gutter or feature beneath the surface and fish will regularly sit in and around them. Seams might be numerous so run a few drifts down each one until you hit a lye - you will soon get to know which ones are the producers. Don't be afraid to fish the full length of the tailout either. Obey river etiquette, but move through the area 'feeling the water' as you go.

When nymphing wide water I tend to use a smaller indicator and slightly shorter leader, say a rod length, particularly if the river is quite clear. This is because pools are shallower in wide places and big indicator shadows will spook fish. Interestingly, I find the most successful nymphs in these circumstances are small naturals, perhaps a consequence of the rocky, gravel strewn bottoms of tailouts that are home for a great deal of invertebrate trout food. A lighter bomb (heavy weighted nymph) with a small size 14 or 16 green caddis, hare and copper, pheasant tail or red tipped governor nymph on a 35cm

dropper below it will reduce the chance of a snag and get hit regularly. If the fish are there. You can go up to size 10 and 12 if the water is murky but watch the weight you want to be on the bottom but not so much that it stifles the drift. For many natural nymph patterns, small gold or tungsten bead heads can add to the success. Glo-bugs will work but are more successful when there is colour in the water after a fresh.

In many of these locations the river will be bank to bank with very few landing spots – this is what puts many anglers off. But don't be discouraged, fish don't need a beach to be there. Although not a common sight on the Tongariro, I always carry a small mesh landing net if I plan to fish such places. Quickly play the fish to the net and then deal with it on the bank while it is still in the water. This is a gentle way to handle fish where landing is difficult and will maximise the

chances of survival should you want to release it.

The upper Tongariro is a great place to fish with lots of native vegetation and a rocky, boulder strewn riverbed. Some of the larger rocks can be used as a perch to roll cast that nymph right into the pocket water or to drift that dry fly down to waiting browns in the summer months. It is a favoured part of the river for many, including myself. There is no doubt that angling on the Tongariro has been a challenge in the last few years and unfortunately this has been particularly so for the upper river. However, I look forward to the days when the upper Tongariro flows again – and it will. Until that time comes I suspect the wonders of wide water in the middle and lower Tongariro River fishing pools will more than suffice by nymphing down the seams and swinging across the current. Tight lines.

The seam just off the far bank of the lower Hydro Pool is created by the inflow of the Mangamawhitiwhiti Stream and has produced good numbers of rainbows and big browns over the years.
Photo By: John Webb

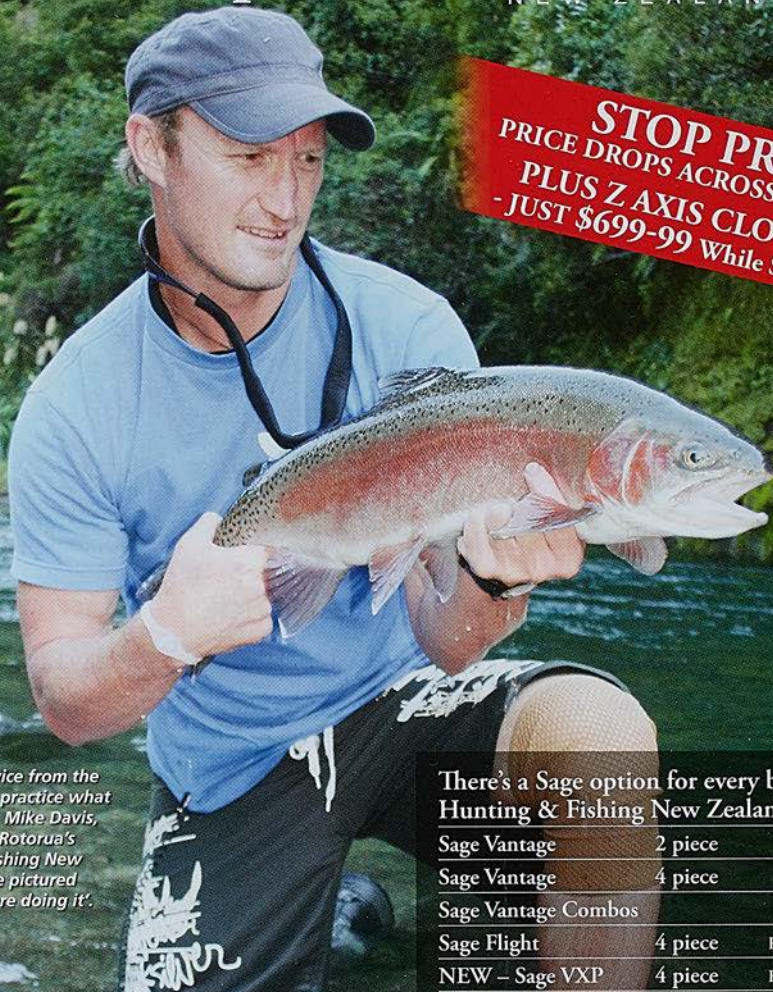


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Engaging Young Minds – A Time of Growth at Taupo For Tomorrow

By Mike Nicholson
Teacher, Taupo for Tomorrow

Above: The Tongariro River is a great place for both anglers and education. Photo courtesy of Waijapipi School

The last year has seen some major changes at the Tongariro National Trout Centre (TNTC), which have significantly progressed the ability to deliver new and engaging learning experiences for visitors to the site. The Genesis Energy sponsored Taupo for Tomorrow (T4T) education programmes continue to be hugely popular and well supported by schools from right around the country when visiting the Central Plateau region.

The opening of new Genesis Energy Freshwater Aquarium and recently redeveloped TNTC Visitor Centre has meant that an already engaging and valued facility has become a truly outstanding learning environment for visitors both young and not so young. Adults and children alike are often amazed when engaging with the species on display. For instance, at the kokopu tank when they realise the remarkably sizable and beautiful fish they are observing is in fact



Tongariro
National Trout
Centre Society



one of 5 species of galaxiid commonly found in the traditional whitebait fritter, the learning becomes real. What also intrigues young minds about these particular fish is when they learn that galaxiids were so named because their striking and unique markings look reminiscent of the Milky Way galaxy. Being able to see and engage with native species like these invariably leads to better learning outcomes for all, and what's more they are hugely enjoyable for students.

The aquarium and revamped visitor centre allow us to present to students a coherent 'big picture' learning journey, incorporating the Taupo trout fishery, native and pest fish species as well as the role of Genesis Energy as a major fresh water resource user in the region. We are able to ask students very important questions about the sustainability of our fresh water resources for the future. More and more 'fresh water' is making the news and often includes some form of debate around its use and allocation rights. Being a highly topical issue and one demanding our attention, teachers in schools are seizing on this context to really get their learners thinking

deeply and taking action. Our hope is that the Taupo for Tomorrow education programmes significantly support the ability of teachers to provide the real and lasting learning experiences around this topic for their students. Below are just a couple of examples of how this is being achieved.

Waipahihi School learns that 'Water Sustains Life'

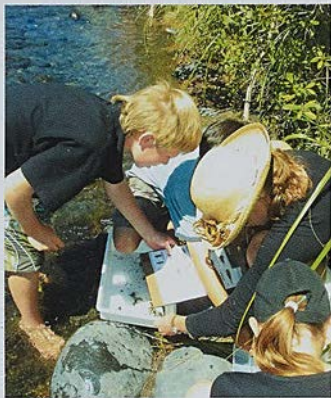
Waipahihi School from Taupo took the plunge this year and hooked the entire school, some 450 students, into a Taupo for Tomorrow learning programme called 'Water Sustains Life'. This topic was Waipahihi's learning context for the term and what better place to engage with fresh water than at TINTC. Learners were able to visit the new Genesis Energy Freshwater Aquarium and learn about some of our less well understood native species, relating these to the river and lake environment they rely on. They were able to visit the Tongariro River, draw conclusions about its health and explore the hidden yet fragile food chains that support life there. It was also important to explore the role of Genesis Energy as a user of a freshwater



Protecting the future of our freshwater and the biodiversity it supports relies on educating young minds like these
Photo courtesy: Waipahihi School

Ultimately freshwater supports all life and many students go away from Taupo for Tomorrow realising this includes themselves

Photo courtesy of Waipahia School



Below: On a rainy day at the Whakapapa River, Babs Smith fields questions about the endangered waho and its importance to monitoring the health of our rivers

Photo courtesy of Hastings Intermediate School

resources and how water sustains the needs of people as energy consumers. Students also spent some time learning about the influences of storm water in our region and how we can help make sure that the 'what goes down the drain goes in the lake' philosophy protects to our lakes and rivers. In Taupo this ultimately means effects on the trout fishery which is so valuable to our local economy. All in all it was an engaging look at the role quality fresh water has in sustaining our fishery, our native and introduced aquatic species, ourselves and our economy.



Hastings Intermediate Trials “Fantastic Whio”

Hastings Intermediate School were the first group of students to participate in this new programme offered by Taupo for Tomorrow. They chose a two day programme fully immersing themselves in the world of the whio (blue duck). Day one saw the students getting to grips with how whio are suited to surviving in a river habitat and the relationships between whio and other life that exists in a clean, cool, clear, river environment. Given that whio are in many ways the ultimate ‘indicator species’ for water quality, these students were able

to appreciate why community groups are working so hard to assist in whio recovery efforts and why GenesisEnergy and the Department of Conservation are keen to support initiatives such as those developed by the Central North Island Blue Duck Trust.

Day two saw the learners up close and personal with whio on the Whakapapa River, ably assisted by local whio expert Bubs Smith. It was certainly very clear that the learning which occurred in the classroom was foremost in their minds when working on the river with Bubs. The evidence for this was the high quality questions and thoughtful dialogue presented to Bub’s when working with him.

LEARNZ ‘Freshwater Ecology Fieldtrip’

The LEARNZ team arrived in June this year. They undertake a series of ‘virtual’ field trips enabling schools from all over the country to engage and ask questions by phone and web links. The fieldtrip this year, ‘Fresh Water Ecology’, gave learners from across the country another opportunity to see places and meet people they ordinarily wouldn’t be able to. LEARNZ provides yet another vehicle, via the interactive online field trips, to present some big picture learning to students from all around New Zealand. Students were able to interact with a whole variety of people including fishery scientists, Genesis Energy and DOC staff, avid anglers and fresh water tourism operators.

They were also able to get up close and personal with our precious fresh water resources and the life that it supports. This year, learners were given the opportunity to raft the Tongariro River with Tongariro River Rafting and see first hand the importance of water to recreation, tourism and business. We were fortunate to encounter a pair of whio and a trout or two along the way. This was a great practical exercise and



● In a LEARNZ virtual field trip with Tongariro River fishing, Mike Nicholson of Taupo for Tomorrow, Elaine Watson of Genesis Energy and Andrew Penny of LEARNZ discuss with participants the importance of striking a balance so the benefits of freshwater can be available to all
Photo courtesy of LEARNZ



helped students learn about why who are returning to the Tongariro River in ever increasing numbers and why trout value the Tongariro river environment so much. There were at least 66 classes following us on the LEARNZ fieldtrip this year, that's an incredible amount of learning taking place at once!

In many ways 2011 is the start of a new era. Our vision is to present a learning

programme that is challenging, engaging, relevant and real. We want our young people to identify with their fresh water environments and be passionate about playing their part in ensuring a bright future for our rivers, streams and lakes. Ultimately this also encompasses the life they support, which many go away realising includes themselves

Leavers from across the country get the opportunity to speak with a variety of experts on LEARNZ virtual field trips. 66 classes participated in 2011
Photo by: Mike Nicholson



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The Heart of the Taupo Fishery is Still Beating

By Dr Michel Medial
Fishery Scientist

We all agree that the fishery has been through a downturn in recent years both in terms of fish numbers and quality. The reasons behind this are multiple and complex however experiencing this low point in the fishery has provided an excellent opportunity to understand more intimately how the fishery works. In this article I would like to explain what we know and what we don't know about the causes of the decline and what we can do and not do to accelerate its recovery. Later in the article I will highlight several trends in the fishery that clearly point to the recovery being well underway.

The Taupo Fishery is a wild self-sustaining fishery and as such the trout don't need any human input to complete their life cycle. However, what the fish will have to endure from the time they are deposited as ova in the gravel until they come back as adults ready to spawn is extremely difficult and only the fittest and luckiest will accomplish it. Therefore, it is not hard to understand that at any stage of their life cycle events can happen that will ultimately impact on population numbers, condition or both. An important concept in all of this is that these events can create both high and low points in the characteristics of the trout population and often there is

Above: Lyn Hissell rugged up and fishing a blood red Tongariro Delta on a stunning dawn
Photo by Craig Russell

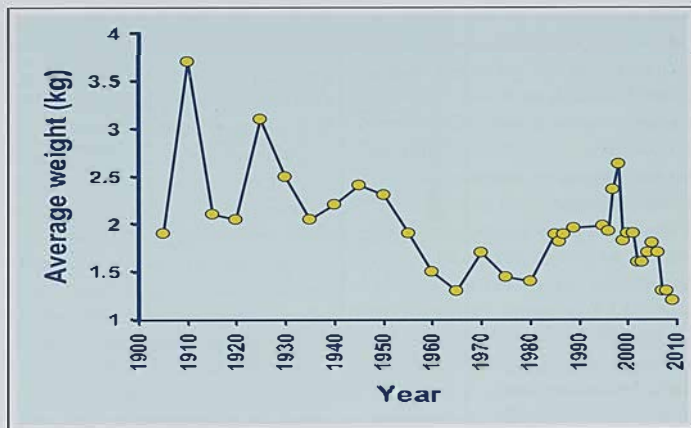


Figure 1: History of the average weight of trout caught in Taupo

no way of avoiding them - even if we tried. In some ways this is highlighted no more strongly than in the Rotorua fishery. Because of the low number of spawning streams in Rotorua, managers are almost entirely reliant on stocking to maintain the trout populations. Incidentally they are doing a very good job. However, despite controlling everything from selecting the size and vigour of the parents, the speed of juvenile growth and the timing of releases in the lakes, the fish populations are still better some years than others. In other words there are other wild influences at play.

The best illustration of the natural ups and downs of Taupo trout is presented in Figure 1. The early data represents the average weight of fish recorded from angler diaries and that from the last 40

years or so was obtained from trap data. At a first glimpse it becomes obvious that the average weight of Taupo trout has been highly variable throughout history and that downturns are not new, they have occurred before. A closer look at the data also reveals that the average weight of trout was better during the period from late 1985 to 2005 than between 1955 and 1985. In fact we have to go back to 1930 to find fish of the quality of those caught during 1998. Not many anglers can remember the good old days of 1930 but many can remember the 1970's and so can compare. This is the first important point, that the size of trout over time in Taupo is highly variable. The second point is that size changes rapidly depending on what is happening in Lake Taupo. For example

The Taupo fishery is completely dependent on Lake Taupo Phytoplankton or tiny plants (left) and Zooplankton or tiny animals (right)
Photos by: Dr Michel Berland

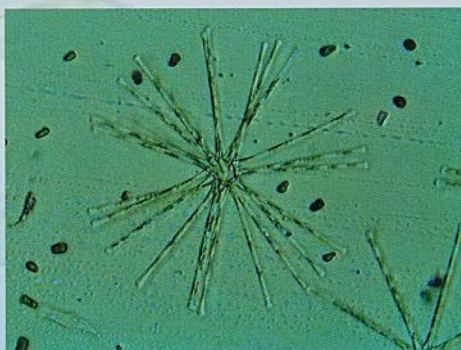
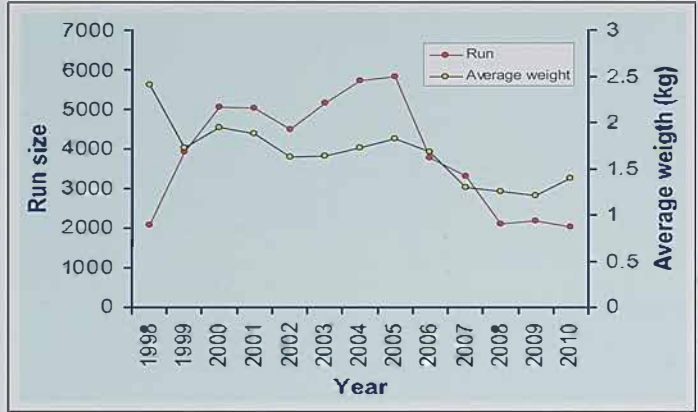


Figure 2: Run size and average weight of the Waipa trap spawning run



the extraordinary size of trout in 1998 didn't last very long and by 2000 it was back to "normal". This fleeting size increase has since been primarily attributed to the increased nutrient input to Lake Taupo from the 1995 Mt Ruapehu eruption.

The fishery is not only about the size of trout but also their number. Unfortunately the data on the number of fish present in the fishery has not been systematically collected for such a long period and therefore doesn't allow us to unequivocally explain a historical trend. Nevertheless, Waipa trap data provides some insights that are important for the

rest of this discussion. Figure 2 above shows that even during a short period of 12 years the size of the run through Waipa has been fluctuating between 2 and 6 thousand rainbow trout. More interestingly, usually when the number of fish is high so is their size. This appears somewhat opposite to what we would expect because logically the larger the number of fish the more they have to share the food supply. The positive relationship between the trout number and size highlights the importance of that part of their life cycle spent in Lake Taupo. When conditions in the lake are right, they are very right resulting in



Once in the lake juvenile trout need to quickly seek out small snails for survival. These ones were caught in a recent survey
Photo by: Jill Larsen/Waipa

good numbers and many fish reaching a larger size.

The number of fish that are produced is initially determined by the conditions existing in the rivers. We know that huge numbers of juvenile trout are produced each year. But a large number of juvenile fish in the rivers doesn't necessarily correspond with a high number of fish returning to spawn in 1-3 years time. It is a common misconception. Similarly a small number of fish doesn't imply that the fish will be larger because they have more food. The key here is that when the lake provides an adequate quantity of food at the right time there will be a lot of fish in good condition. Juvenile trout entering the lake need to find smelt fast or they will starve and die. We have a good idea of the movement of adult fish in the lake but we have virtually no idea of the movement behaviour of juveniles. The only thing we do know is that juvenile trout rely on smelt even more than adults and as a result they use the pelagic (upper) zone of the lake extensively. It also follows that small trout cannot catch large smelt. Therefore lots of small smelt at the right time and the right place equals good survival and condition which equals large recruitment.

There is no argument that since 2007 the population of adult trout has been down

in number and in weight. Poor condition of spawning trout will have two key effects. First, if the fish are not in good condition then the production of ova will be smaller resulting in less production of juveniles. Secondly the contribution of previous spawners to the total run will be reduced as their chance of survival from one spawning event to the next is compromised. The survival of previous spawners (or kelts) is also integrally connected with the condition of Lake Taupo. If food is scarce then survival will be low and vice-versa. It is difficult to quantify the impact of a reduced production of ova but we can certainly look at some of the factors affecting survival between spawning events.

Figure 3 indicates that the survival between spawning events is also highly variable. This supports the notion that feeding conditions in Lake Taupo are critical to trout survival. The graph indicates that conditions in the lake started to seriously deteriorate from 2005 reaching a minimum in 2007. However, conditions have started to improve again from 2008, albeit slowly. Therefore, survival between spawning events after taking fishing mortality into account provides the most robust indication of conditions that existed in Lake Taupo during the preceding calendar year.

Adult trout in Lake Taupo have access

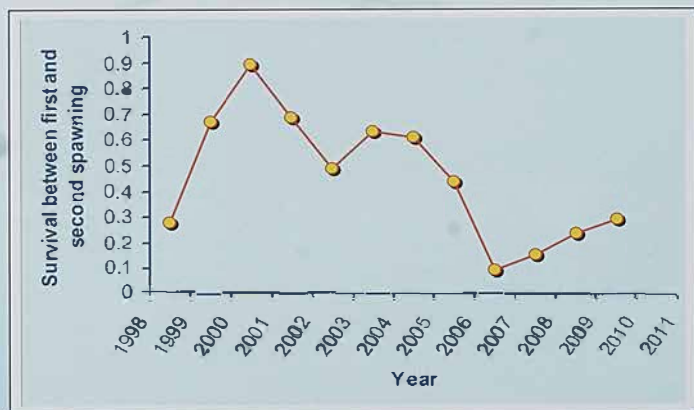


Figure 3: Survival of rainbow trout between first and second spawning at Taupo

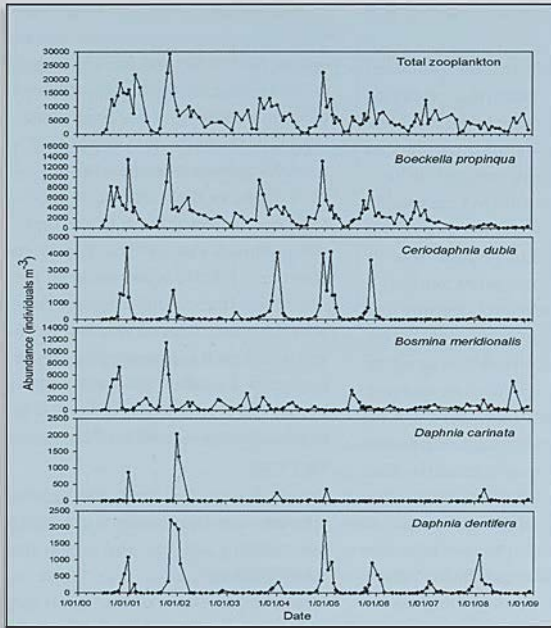


Figure 4: Abundance of various species of zooplankton in Lake Taupo
Graph courtesy of Kate Wills, NIWA

to two main prey, smelt and bullies. The energy content of these fish, measured by a calorimetric bomb, indicates that bullies contain about twice the energy of smelt. Despite this smelt remain the favoured prey item. This is probably because of their abundance and behaviour. Smelt can concentrate in large thick schools while bullies are more evenly spread. Bullies also seek cover more intensively than smelt making them less vulnerable. Bullies invariably live close to the bottom and in shallow water close to the shore as well making them less accessible.

Interestingly bullies and smelt give differing colours to the flesh of the trout feeding upon them. Trout taking smelt that have fed on zooplankton, which are tiny crustaceans, will produce the nice appetizing orange colour of the flesh. This comes from a chemical called astaxanthin. Many anglers believe that the orange colour comes exclusively from eating koura (freshwater crayfish) but this is not so.

Of course if they do eat koura exclusively the orange colour will be deep and intense but trout relying only on this prey are not very abundant and can be easily identified. They have distinctive reddish fins and a substantially enlarged vent necessary to expel the remains of koura carcasses that, as you can imagine, are not very comfortable to get rid of. Many also have a scars on their jaws due to the rubbing on the rocks where when trying to catch koura in hidden crevasses.

On the other hand bullies feed more on detritus and trout feeding on them will have a paler colour. Despite the pale colour, if fish like this are in good condition they can still have good oil content and make superb eating.

The Lake Taupo food chain has two main characteristics. First, it is a simple system as it doesn't involve many species. The second main characteristic is that Lake Taupo has a low primary productivity and this is reflected by its high water clarity. The combination of low productivity and a simple food chain means that it is a very responsive ecosystem. We know from fat content analysis that smelt in Taupo are about twice as lean as those in Rotorua's Lake Rotoiti and many are starving at the best of times because of the intense competition between juveniles and adults for the same limited zooplankton resource.

This is where things get intriguing. As seen in Figure 4 for the last few years the overall zooplankton abundance in the lake has been declining. This is very significant for the fishery concerning one species in particular (*Boeckella propinqua*). As it happens, *Boeckella p.* is a favourite prey item of smelt.

We are working with other scientists from NIWA to try to understand what has caused a decline in zooplankton abundance but so far we have no clear explanation. Further information on this phenomenon can be obtained on the NIWA report commissioned from Environment Waikato at the following link.



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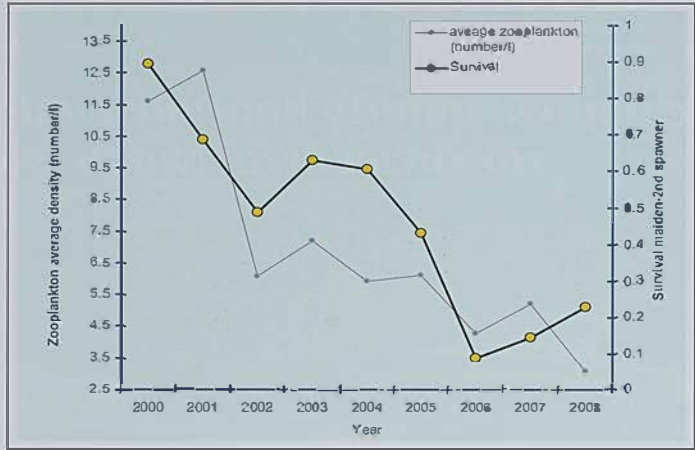
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Figure 5: The relationship between zooplankton abundance and post spawning survival of trout



(<http://www.waikatoregion.govt.nz/Publications/TechnicalReports/TR-201027/>).

Good zooplankton numbers are crucial and Figure 5 illustrates how important a healthy abundance of zooplankton is on post-spawning survival of trout. There is almost a direct relationship.

Given this we now know that if there is a drop in primary productivity in Lake Taupo for any reason then the zooplankton and subsequently smelt will pay the price as they are naturally on the verge of starvation anyway. A sharp decline in productivity is what occurred in 2005-2006 when Lake Taupo didn't mix. This decline was estimated by NFWA expert Max Gibbs at 50% which is extremely serious. To make matters worse, rivers were still producing large numbers of juvenile trout. When these young fish moved out into the lake they faced a population of smelt that was depleted and emaciated. At this time trout predation rather than inter-age class competition was the limiting factor on the abundance of smelt.

As a general rule, smelt are distributed in patches and when there are less of them there are fewer patches. Trout already have to swim great distances to find smelt as shown by our acoustic tracking. With reduced numbers of smelt they

have to swim even further and inevitably some of them are not able to catch up with smelt at all.

Ultimately this led to almost the entire run through the Waipa trap being made up of poor fish in 2007. The 2008 run was almost identical with very few nice fish. The good fish started to turn up again through 2009 and 2010 and we expect this trend to continue this year even if the numbers are still down. One of the reasons the recovery has taken longer than anticipated is because the smelt population virtually collapsed in the winters of 2005 and 2006. However, the smelt populations are beginning to increase again and interestingly the average size of smelt is larger in 2011 possibly indicating that adult smelt suffer less from competition with their young and/or a low abundance of trout.

Another way to look at the state of the fishery is to look at the relationship between the number of females spawning and the number of adult maiden fish or first time spawners that they produce (Figure 6). This relationship is called a stock-recruitment curve. Generally these curves use the number or mass of females spawning and the number of ova or juveniles produced. However, we don't have this data and instead we look at the rela

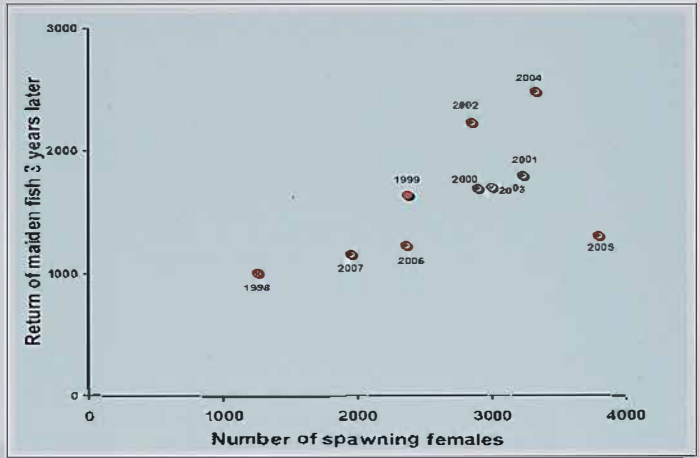


Figure 6: Number of spawning females and returning maiden fish 3 years later

relationship between the number of females spawning and the number of adult maiden offspring running in the trap three years later. Note that Taupo trout are about 3 years old when they undertake their first spawning run. This has been determined from previous tagging experiments. The number of maidens that are trapped have also avoided capture by anglers, so the relationship includes fishing mortality. The most noticeable result of this rela-

tionship is that more females spawning doesn't necessarily mean more maidens are produced. For example 2005 was the year with the largest run of females on record but the number of returning maidens was low. In comparison 2006 had a significantly lower number spawning females but a similar number of returning maidens to 2005. Once again this points to 2005 as the time when something went awry in the fishery.

Sigs of life: This top-class limit was taken from the Taurangi Taupo River in May 2011
 Photo by: John Webb



Fortunately since that time things have been slowly improving.

This improvement has also been borne out by the results of our PIT tagging programme. Female and male trout in Taupo lose on average 26 and 17% percent of their body weight respectively during spawning. Therefore, they rely on good food conditions in the lake to survive and recover enough to spawn again. Through the pit tagging programme we have seen that spawning survival and fish weights between spawning events has been on the increase. Trout that spawned in 2007 had regained 94% of their weight when they were recaptured in 2008. Those in 2008 had regained 107% of their weight by 2009 suggesting more favourable conditions in Lake Taupo overall.

We all would like to see the fishery recovering faster but what can we do and what can't we do?


There are several actions that could help but conversely there are some that clearly don't. The most common suggestion we get from anglers is to stock smelt in the lake to boost the food resources available to trout. This obvious solution would work but only if the food supply for smelt is adequate in the first place. This is obviously something we cannot be certain about considering the unexplained low abundance of zooplankton at the moment. Furthermore, even if the zooplankton abundance was sufficient a serious hurdle would remain. Trout need roughly 45 kg of smelt to grow by 1kg and our echo-sounding surveys indicate that there are between 50,000 and 200,000 adult trout in the lake in a bad and good year respectively. For the purpose of this exercise let's assume that there are 50,000 adult trout currently in the lake. You would need at least 100 tonnes of smelt to increase the average weight of the adult trout from 1 to 1.5kg. As a comparison when the hatchery at the Tongariro National Trout Centre is in full swing it can produce about 20 tonnes of trout per



year. It doesn't require a mathematician to see that we simply don't have the infrastructure, technology, or financial resources to achieve this. Further, a key objective for the project would be for the reared smelt to feed juvenile trout at the exact time they arrive in Lake Taupo. Unfortunately entry of juvenile trout to the lake doesn't happen all at once or indeed at an exact moment in time making the project even less viable. Another complicating factor is that smelt are extremely difficult to handle. Even relatively gentle handling can result in very high mortalities.

Along the same lines we have received



This 40kg rainbow jack is a "koura mwanher". His size, reddish fins and the scars around his mouth a dead giveaway. The fillets were almost fire engine red too.
Photo by:  Michal Dedual

various other suggestions from anglers that include culling shags, seagulls and catfish. The culling of shags has been done before in Taupo but it didn't change a thing as the number of shags simply reflects the abundance of fish. Anglers should be pleased by the presence of shags as they are a sure sign of good fish numbers whether they be smelt or trout. Seagulls are scavengers and don't catch many live fish relying more on fast food leftovers than fish to survive. Something that is often forgotten is that the Taupo fishery was established in the presence of shags and seagulls. If they were detrimental to the fishery it wouldn't have even

got off the ground. Catfish are scavengers and ambush feeders unable to successfully catch smelt on a large scale, therefore they pose little threat to the trout fishery. However, if we do want to accelerate the recovery of the fishery the easiest way to do this is to influence the food chain or in more technical terms the trophic chain and subsequently the direction of the trophic cascade. At Taupo an example of a simple trophic cascade is trout relying on smelt, in turn they rely on zooplankton and in turn zooplankton rely on phytoplankton (tiny plants) as shown in Figure 7.

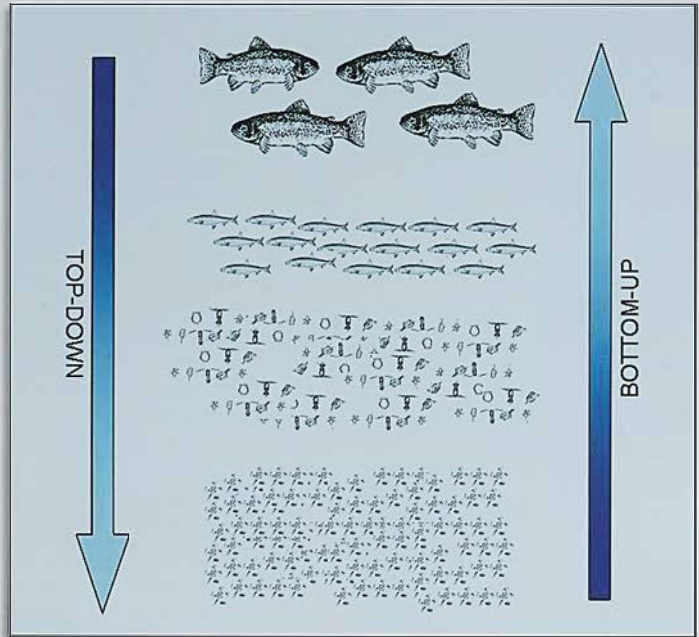


Figure 7: the Lake Taupo trophic cascade

Figure 7 also shows that there are two directions to manipulate the trophic cascade, from the top-down or from the bottom-up. Basically a top-down approach implies controlling the predators in order to boost prey abundance and a bottom-up approach increases primary production which increases production up the trophic chain finally allowing the predator population to increase. These two approaches of management are routinely used in farming operations. If there is not enough grass following a drought for example then stock numbers are reduced to allow grass to recover and to maintain the condition of the remaining stock – a top-down approach. However, generally farmers work in a bottom-up direction. That is they fertilize the land to increase grass production which in turn allows them to increase stock numbers.

The two approaches have very different outcomes. To adopt a bottom-up management of the trophic chain in Lake Taupo would require increasing the overall nutrient inputs to the lake. This is fine in

principle, except we know that increasing nutrients will inevitably result in a decrease in water clarity. Lake Taupo would go from its traditional deep blue to a more greenish colour. This would be against what nearly all people in the Taupo basin want – clean clear water that can be consumed, used for swimming and water sports as well as angling. Indeed, the community also wants clear and clean water in Lake Taupo to maintain its range of ecosystems and natural habitats.

The prominence of environmental values in the Taupo Community and a strong preference for preserving lake water quality was reported in surveys conducted by Environment Waikato. According to a survey undertaken in 2000, 90% of the urban community and 91% of the rural community consider preserving the water quality of the lake as the most important issue for the Taupo District. The survey also reported that 78% of the respondents want the protection of lake Taupo to occur ahead of development. Therefore, the only acceptable approach

to improve the trout fishery is to adopt a top-down approach, that is, to control the adult trout population to relieve pressure on smelt and allow them to recover. In the next issue of *Target Taupo* we'll discuss how we can expect the trout population to change in response to different regulation scenarios including size and bag limits, gear restriction, closed season and catch-and-release.

We should certainly cherish the wild aspects of the Taupo fishery which is the envy of the rest of the world. The way by which the fishery adjusts and bounces back following changes in environmental conditions is simply incredible and we should have faith that trout will not disappear. After all they have been around for more than 100 million years and survived the disappearance of dinosaurs. Our job as fishery managers is to hope

fully achieve a balance, making sure good water quality and quantity persist in the Taupo catchment but at the same time have good numbers of quality fish available. But the Taupo fishery exists on a knife edge and sometimes we can't have our cake and eat it too. At the moment we believe that most of the time both goals of great water quality and a world class trout fishery is maintainable. But in a wild fishery with wild conditions there are going to be good and bad years. We have had some bad ones, let's look forward to the good ones yet to come. Our research and history tells us the heart of the Taupo fishery is still beating.



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Trials, Tribulations and Rewards

Tongariro National Trout Centre Ranger Randal Hart speaks about the challenges and rewards of running a diverse freshwater aquarium.

Above: A giant kokopu. Many juveniles of this fish end up in whitebait fritters
Photo by: Randal Hart

Top right: This koura (freshwater crayfish) got into trouble when he started fighting with the inanga and damaged their tails
Photoby: Kim Alexander/Turia

The opening of the Genesis Energy Freshwater Aquarium was the realisation of a vision held for many years by the Department of Conservation and the Tongariro National Trout Centre Society. The prime objective of the aquarium is to showcase iconic New Zealand native fish species in a natural environment and to educate people about the value of freshwater ecosystems in New Zealand. It is important to realise that under ordinary circumstances most people in New Zealand would never get to see many of

the native fish species displayed at the aquarium in their lifetime. This is what makes this aquarium so special and real. As discussed previously in Target Taupo, many aspects of the aquarium were the first of their type in Australasia and as such presented many challenges for everyone involved in its design, construction and commissioning. This article outlines the fish species in each tank as well as the operational aspects and challenges in the day to day operation of an aquarium of this type. The fish were sourced from various

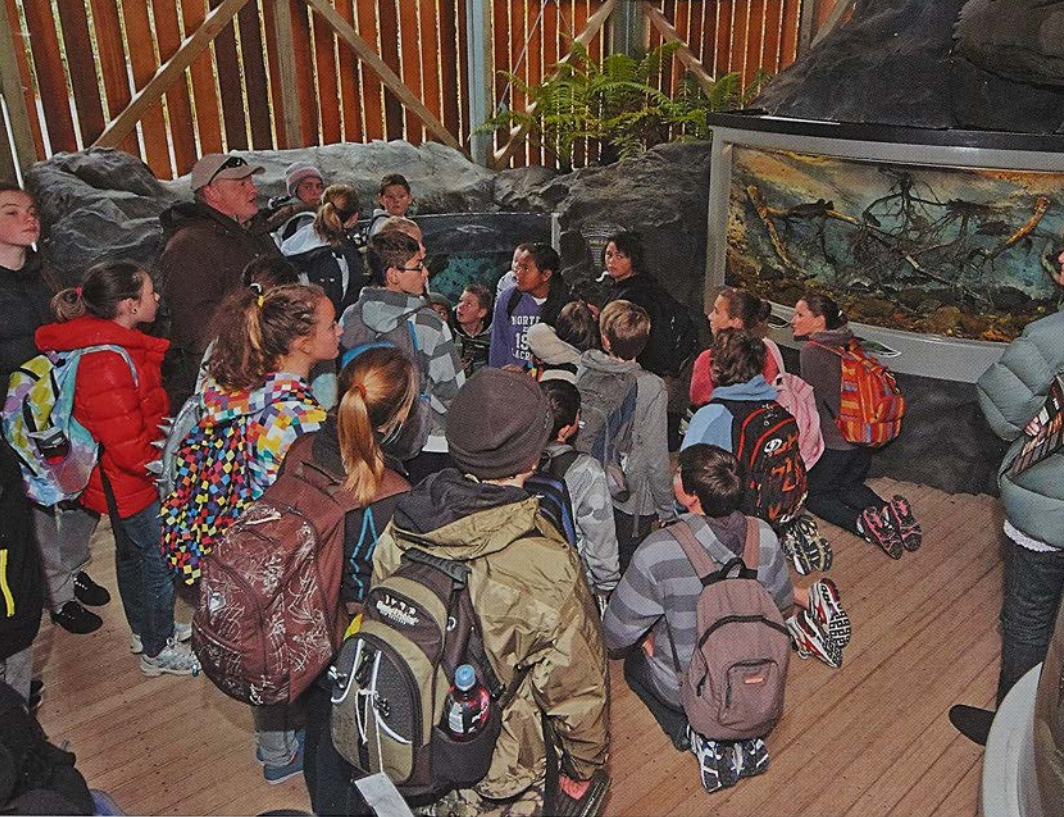


locations and the following table outlines the environment and species currently in each tank.

After the tanks were tested and themed for each species, the first operational challenge was to manage the transition as they were introduced to their new homes. At the planning phase some serious decisions needed to be made on the mix of species and numbers in each tank. These decisions were based on what happens in the natural environment and the risk of predation between species for obvious reasons. Both of

these can create significant issues regarding the long term welfare of fish in confined spaces and if not managed correctly fish can become distressed or ultimately part of the food chain. Most of the decisions were correct although there were a few minor problems including the declining number of inanga in Tank 10. It soon came to pass that they had become snacks for the giant bullies that were initially put in with them. So the bullies (no pun intended) had to be promptly removed to a "haughty" tank in the quarantine shed. Then to top it

TANK NO.	ENVIRONMENT	SPECIES
1	Waterfall Pool	None
2	Stony Upland Pool	Bullies (incl.giant crans, redfin, upland & common)
3	River Rapids	Koaro, Bullies, Torrent Fish, Shortjaw Kokopu
4	Swampy Pond	Brown Mudfish
5	Stony Forest Pool	Giant & Banded Kokopu
6	Lowland Stream	Shortfin & longfin Eels
7	Lakebed	Native & Exotic Aquatic Plants
8	Exotic Fish Pond	Gambusia (mosquito fish)
9	Exotic Fish Pond	Koi Carp, Catfish, Petch & Tench
10	Lake Edge	Inanga, Smelt, Freshwater Mussels



A key component of the Genesis Energy Freshwater Aquarium is its ability to educate young minds
Photo by: Len Birds

all off the koura (or fresh water crayfish) were fighting with the inanga at feeding time damaging their tails As with the giant bullies the koura also had to be relocated to solitary confinement and will be placed elsewhere soon.

Tank 9 displays exotic fish such as perch, catfish, koi and tench and uses a closed recirculation filter system which has mechanical and bio filters installed. The bio filter controls the ammonia, nitrite and nitrate levels in the tank because if any of these chemicals build up to unacceptable levels the fish can get easily distressed and develop other diseases or die. The biological agents in the filter take a number of months to reach appropriate levels and perform their function correctly so careful management of the tank environment was required when fish were first introduced. This proved quite difficult for Tank 9 in the early days

of aquarium operation and consequently some fish in the tank became infected with the white spot parasite. White spot is very common and found regularly in home aquariums too. Despite this it is highly infectious and can be fatal if not treated properly. Treatment of the white spot took some time as the parasite can only be killed during one phase of its lifecycle. However, the tank is now healthy again and all of the fish are displaying well.

Just when we thought the fish were settling down all was not well at the eel tank. They started to get grumpy with each other and the long fin eels started biting the short fins. The short fins became distressed so they were removed temporarily from the tank until the bullying long fin could be identified and dealt with.

When fish are first introduced into a tank there is a settling in period before they



start to display well. A good example of this is the brown mudfish that immediately hid in the peat and leafy substrate that they love so much. Initially they would only venture out during darkness but now they can be seen all the time, particularly when there is food on offer. In fairness the bullies, inanga and eels were shy initially and hid behind the rocks and logs in their respective tanks for a while also. This is a natural survival instinct of any wild animal when they feel threatened or insecure. It was several weeks before most species became accustomed to their new environment and with regular feeding all of them started to come out of hiding and swim around freely.

Each fish species has its own personality and reacts differently during the day. Interestingly, despite their initial shyness, the brown mud fish are actually very curious and if they sense any movement near their tank they will come out and investigate. The giant and banded kokopu are like puppies who will chew on anything that is put in their tank during feeding, including your fingers. They will actually break the surface and 'bite the hand which feeds them'. This is a bit disconcerting because when feeding you cannot see them coming. The eels are cool and calculating and are always trying to convince you they are hungry by coming up and looking for food. They are hand fed too and like the kokopu are not adverse to sneaking up and grabbing your fingers, albeit more sedately. The bullies, koaro, torrent fish and shortjaw kokopu in the large centre tank are very secretive and dart in and out of the holes and crags in the rocks. The inanga and smelt are voracious, feed as a shoal and actively chase the food down as it settles in the tank. The koi carp is like a huge vacuum cleaner and the perch, tench and catfish have learned that it is important to get in early at feed time before the koi vacuums all the food up.

Once established, the next operational

challenge was to find out what constituted a normal and natural environment in each tank. A lot of the norms are generic for any aquarium while some are unique to the Genesis Energy Freshwater Aquarium. These environments are kept as natural as possible for example using water from the nearby Waihukahuka Stream. Testing the water regularly, monitoring the environment, the behaviour of the fish, water temperatures and water flows in each tank are important daily tasks. The skill of interpreting what was normal and how to rectify it was something staff had to learn very quickly. Fortunately there were some excellent industry mentors. Many phone calls were made to these people to resolve some of the problems experienced during the early days of the aquarium operations.

As confidence in the aquarium increased, a schedule of the routine operational tasks was developed and documented which included feeding and cleaning regimes to maintain the health and welfare of the fish. The fish have a base diet of ox heart and shrimp which is supplemented with fish, meal worms, white worms, earth worms, mosquito larvae and insects. Fish respond well to a varied diet and live food is used where possible to stimulate them. One of the biggest risks is overfeeding. Therefore a strict feeding regimen is used specifying the size, quantity and type of food for each tank. This regimen reduces the risk of fish getting overfed and the tanks becoming contaminated from uneaten food lying on the bottom.

Cleaning of the tanks serves two functions. The first is to maintain a healthy environment for the fish and the second is to keep the visual display appealing. The aquarium water supply from the Waihukahuka stream comes from a spring maintaining that constant cool temperature and high water quality all year round. This has significant benefits for the aquarium including limited algae



The aquarium is designed to be enjoyed by people of all ages

Photo by: Len Birch

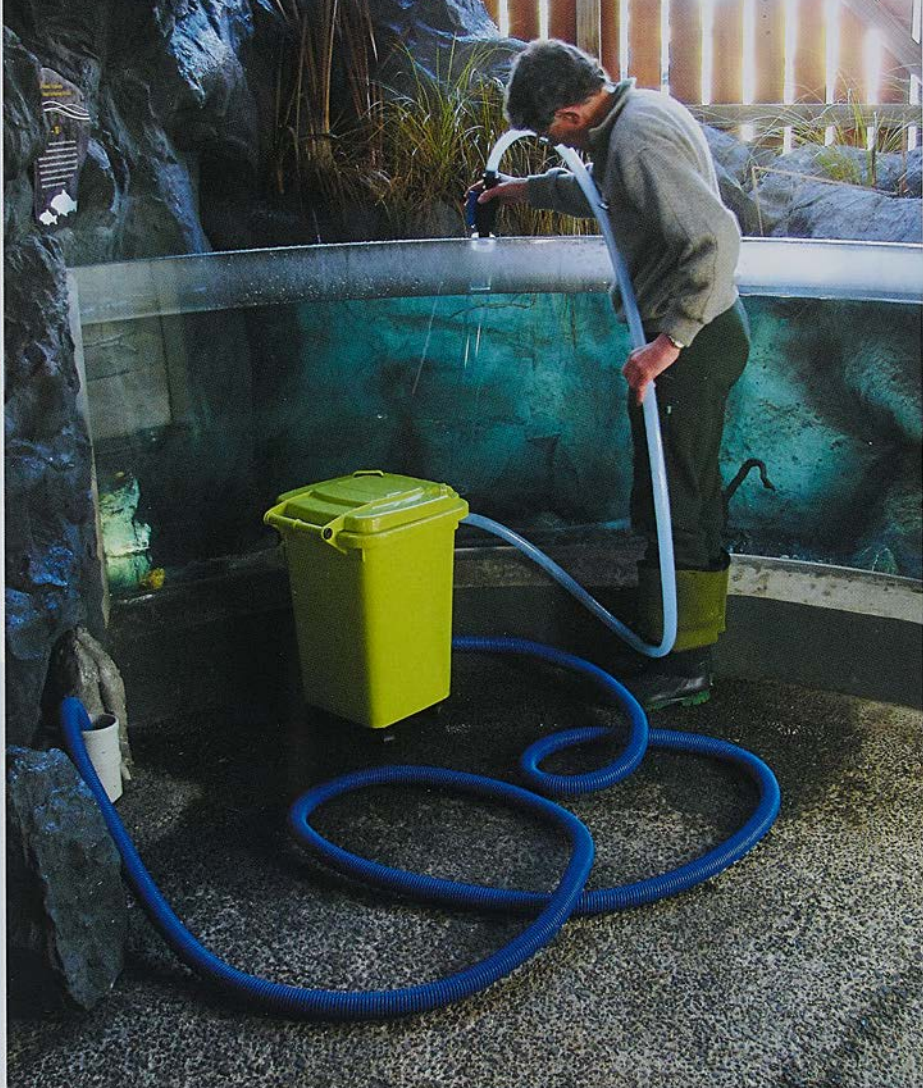
growth and minimal sediment deposits associated with other water supplies. Consequently the tank environments are relatively easy to maintain so long as the tanks and filters are regularly cleaned. The tank floors are vacuumed using a locally developed system and the acrylic panels cleaned using a modified window washing sponge. The external surfaces of the acrylic panels are also checked for mechanical damage such as scratches which impede the view and are polished as required.

There are many filters and discharge systems within the aquarium water supply. The exotic fish in tanks 8 and 9 are in an enclosed bund which ensures any drainage goes directly to ground and is totally isolated from any water ecosystem on site. All the remaining tanks have a 'flow through' system with filters to prevent fish migration. The outflow of water from these tanks and the hatchery goes through an external filter system and a further settling process at the children's fish out pond before being

discharged back into the Waihukahuka Stream. The cleaning of all the filters follows strict protocols to ensure the existing Lake Taupo ecosystem is not affected.

There have been other operational challenges such as dealing with the condensation on the external surfaces of the acrylic tanks under certain weather conditions. The addition of suitable lighting for some tanks and an increase of fish numbers for the large river rapid tank have been identified as required modifications and are in the pipeline.

As with any large aquarium there is a lot of "backroom" activity associated with the daily operations. There is the facility where the fish food is grown. Food items such as meal worms are grown using baker bran in a temperature controlled environment while white worms are grown in a peat mixture. There is an open tank for growing mosquito larvae and the insects and earthworms are gathered from various areas around the site. The ox heart, fish and shrimp are



Aquarium management is about the mundane too. Vacuuming aquarium tanks is about as exciting as vacuuming the floor at home.
Photo by: Randall Hart

bought in. There is also a fully functional quarantine facility where sick fish or new fish are treated in separate tanks before they are put in the aquarium. Natural remedies such as salt and a solution made from manuka oil are the preferred choices for most ailments. However stronger solutions need to be used if the fish do not respond well. When new fish are brought onto the site they are put in quarantine tanks first to ensure they are not infected by unwanted parasites

such as white spot or any other diseases. When they pass their medical they are introduced into the aquarium.

There is also the ongoing training of staff involved with the daily operation of the aquarium. It is essential that staff are experienced enough to ensure that the health and welfare of the fish is maintained. Once again the use of industry mentors has been invaluable in this training.

To help visitors identify and learn about the various species of fish in the

aquarium an interpretation brochure was printed and is distributed from the Tongariro National Trout Centre Society Riverwalk building. This brochure has pictures of the various fish and a short description of their natural environment. It is an invaluable aid and visitors are encouraged to read the brochure and take time walking around the aquarium as the fish are, in some cases small, secretive and hard to find.

The Genesis Energy Freshwater Aquarium is like a developing piece of art. There is always something to improve or change to ensure these iconic native freshwater fish are protected and displayed in an environmentally friendly

way. More species will arrive as they become available and there is the challenge of displaying the koura and giant bullies better. An important message this aquarium brings is that native freshwater fish are small and often inconspicuous. Because of this sometimes we don't look after them or their environment as well as we could. Eventually some may become endangered as a result. Their welfare is the responsibility of every New Zealander, so take some time and visit the Genesis Energy Freshwater Aquarium. Experience the value and joys of New Zealand native freshwater fish species. They are an important part of our heritage.



All of the outflow from the aquarium goes through a series of filters to ensure clean water is maintained and fish do not migrate to the surrounding ecosystem
Photo by: Randal Hart



Giving Teeth to the Penalties - Whats it all about

By Jill Larsen Welsh
Area Compliance Officer

For many years the Department has been making successful prosecutions against people who offend against the Fishery regulations. However, the time has come to look at the approach used to bring prosecutions before the Court and ensure that penalties are appropriate for the level of offending. The hope is that this will help to deter others who are considering whether crime might pay.

Offences are always assessed for their individual level of severity and impact, and those that are considered minor and fall within acceptable criteria are sometimes dealt with by offering diversion. Diversion is a conditional agreement between the parties which allows offenders the opportunity to pay for their offences through performing certain tasks or satisfying certain conditions, within a specified timeframe. In return they avoid a criminal conviction. Diversion is initially processed

in much the same way as a formal prosecution in that charges are laid in Court and the offender is issued a summons to appear on a given date. Diversion often consists of writing a letter of apology to the department and making a donation to a charitable cause. The amount of that donation is set by the department's Legal Advisory Committee and reflects the seriousness of the offence. Usually it will be similar to what the Court would normally hand down as a penalty if the matter was formally prosecuted. If all the diversion conditions are satisfied within the set time, then the department will seek leave of the Court to withdraw the charges and once this has occurred, the matter is finished.

The department's diversion criteria considers things like the age of the offender, whether they knew what they were doing was wrong (guilty knowledge), the level of remorse shown, the

Above: Poaching fish from spawning areas such as these netted from the Waimarino River can have serious consequences for the fishery. The Tameke method will hopefully help deter offenders from continuing this kind of laughter
Photo by Glenn Maclean

It is important that the penalty given for fishery offences reflect the seriousness of the crime and that illegally captured fish like these do not die in vain
*Photo by: Kim Alexander
Tuiia*



nature and severity of impacts for the offence, environmental sustainability, cooperation and Ranger safety. ● On the whole only a small number of offenders are offered diversion each year. A key aspect of diversion is that it can only be offered once so in many circumstances it is a final chance to maintain a clean criminal record.

In recent years the department has noticed that some types of offences are not decreasing and additionally there has been an increase in instances of offenders giving false or misleading information to Rangers at the time of apprehension. These, along with other factors suggest that for some offences there is a lack of deterrence occurring under the current legal framework. Fish and Game, who operate under similar legislation to the Taupo fishery have noticed similar trends. In light of this the department and Fish and Game representatives recently met with two of the departments legal team Mike Bodie and Kevin Smith to discuss a range of issues including common offences, and prosecution outcomes. During the meeting protocols regarding consistent sentencing approaches were established and the legal team made those involved aware of a particular methodology used widely

in New Zealand to seek sentences that reflect the nature and seriousness of the crime. The methodology is known as the "Taucke method". It is recognised by the Courts in New Zealand and is familiar to the legal fraternity. Taucke is commonly used to assess the appropriateness of fines particularly. It assists us in deciding exactly where an offence sits in the scale of severity, and also assesses the offender using sound reasoning that is both fair and transparent. Under this method aggravating or mitigating factors are also taken into account for both the offence and the offender. Use of Taucke gives the Court a good starting point from which to work out the final penalty if a conviction is forthcoming.

For example, let's pretend we are prosecuting one of the more serious offences of using a net to catch trout in a spawning stream which carries with it a maximum fine of \$10,000. We begin applying Taucke by looking at the offence. We assess its seriousness by weighing up impacts on the environment, effects on the future sustainability of the fishery and where it sits in relation to the scale of other offences. Taking all these factors into account we may come up with a rating of 75%. This could be called our starting point and represents 75% of the

maximum penalty, in this case 75% of \$10,000 or \$7,500.

Next we would take into account the offender, assessing the amount of premeditation or planning involved, the number of persons involved in the offence, the age of the offender, the level of remorse, previous convictions, the amount of guilty knowledge and an early guilty plea. The early guilty plea is an important consideration for the offender because the declaration of guilt at the earliest possible time affords them an automatic 25% rebate from the starting point. Subsequent to this each aggravating or mitigating factor either adds or subtracts as a percentage from the resulting figure. So in our example an early guilty plea will reduce the starting point of \$7500 by 25% or \$1500 which now gives us a figure of \$6,000. There may have been aggravating and mitigating factors which ultimately resulted in a final figure of \$6,250. This would be presented as a final recommendation for a fine to the Court.

Donation amounts when diversion is

handed down can be worked out using the same methodology. Therefore the penalty will be similar, just as if the matter had gone through a formal prosecution before the Court. The only real difference is that the offender does not incur a criminal conviction.

This methodology is sound. It assists the department and the Courts to arrive at a level of sentencing that reflects the seriousness of both the offence and the offender. It is completely transparent, auditable and fair. Further, it is accepted and welcomed by the Courts. We regard Tauke as a tool that will assist us to make penalties for fishery offences more realistic. It will also reflect the department's serious attitude toward conservation law offences, give teeth to the penalties and provide more of a deterrent to would-be offenders. The ultimate goal is for penalties to be imposed that suit the seriousness of the crime, hopefully making offenders think twice about the consequences of their actions.

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Fishery Field Ops roundup

By Mark Venman
Programs Manager,
Fishery Operations

Since last summer the field operations team have been busy directing their attention towards getting access right for the winter fishing season that is now underway. This has included a focus on the ongoing track cutting programmes allowing anglers to access their favourite rivers and pools. However there has also been some attention paid to the improvement of fish habitat particularly allowing spawning fish to move upstream unhindered. The fish traps are back operating again and with the warm but wet weather recently it is shaping up to be a busy winter in this regard.

With the winter fishing traditionally kicking-off at Easter weekend, the team undertook track cutting on many of the eastern tributaries that flow into Lake Taupo. This included the main access points and tracks along the Tongariro, Waiootaka, Waimarino, Tauranga Taupo, Hinemaitia and Waitahanui rivers. It was one of those jobs that provided an opportunity for staff right across the Taupō-nui-ā-Tia Area, not just in the fishery, to

provide their skills and expertise and get the work done quickly. It was a real team effort. Work on the Tauranga Taupo River took longer than expected because significant washouts and fallen trees made this job bigger than first planned. The river is very dynamic and the frequent floods since Easter have kept the team busy on this river. Consequently the track is one that will continue to change and evolve. If anglers are up the Tauranga-Taupo, they are reminded to please stay on the angler access tracks marked by the wooden poles with blue metal caps. The pines which line the river through much of its lower reaches are on private land and walking through them is prohibited. If you do discover any new track damage or are unhappy with any of the new tracks then please contact Mark Venman at the DOC office on 07 384 7158.

The Waitahanui River was cut in time for the Womens Fishing Day organised by Marilyn Bruton. It was nice to get this river done in time for the event and

Above: All in all it's been a pretty wet Autumn really. The Wāhā trap is under there somewhere
Photo by: Roy Pucker

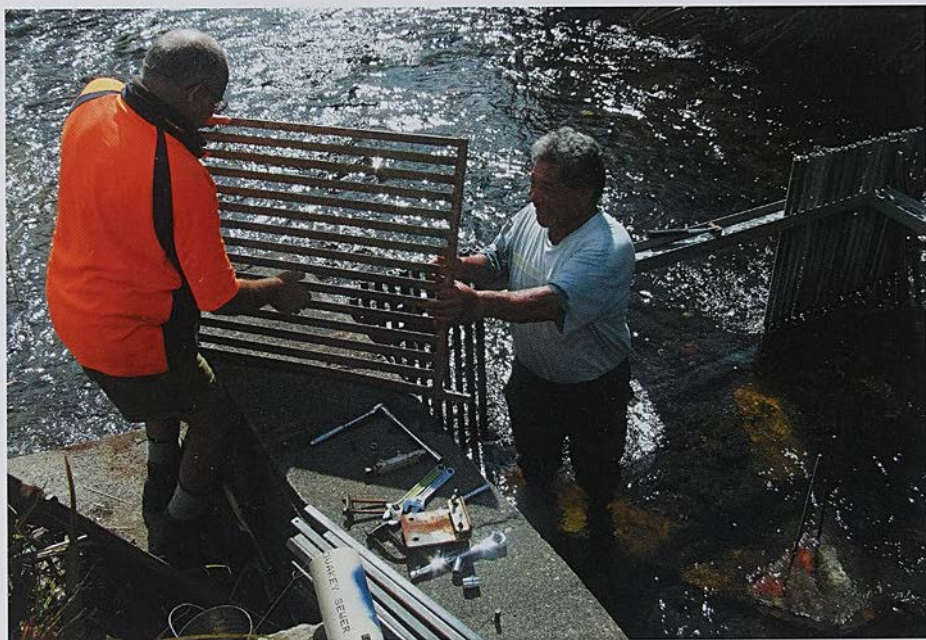
show off its true potential as an outstanding place to go angling. Marilyn talks about the women's fishing day on page 56. The Waitahanui is a great angling river and some further work on the more swampy sections of track was completed during the drier summer months. This hasn't worked perfectly on some sections and we are investigating the use of boardwalks to bridge the wet areas downstream of the Cliff Pool. We hope to undertake some of this repair work over the next couple of months.

The Hinemaiaia River has also been opened up again including a new small section of track above the main highway. Several dead kowhai trees close to the track and car parks have also been felled in the interests of safety. Other small trees were also removed from the track after gales during an autumn storm brought them down. Several wasp nests were also dealt with on the Hinemaiaia River during the summer. The treated ones were discovered along the track edges and close to car parks so needed to be removed

promptly. With help from "Diclymo Dave", the bush alongside this river is flourishing and while working on the Hinemaiaia it was great to see lots of robins and fantails curious about what we were up to. Large areas of blackberry and buddleia have also been cleared by Dave and replanted with suitable natives. When combined with an effective pest trapping programme, the future is looking very good for this particular river.

The field operations team was also involved in the removal of large pine trees at Whakaipo Bay in preparation for the Living Legends planting day and the Rugby World Cup. The felled trees were huge and required some of our more experienced chainsaw operators due to their size and location. Weed and pest control is also planned for the near future. The improvement to the native bush and visual appeal of the bay will be great for shore and boat anglers alike. Incidentally the planting day is happening on 18 September 2011 and everyone is encouraged to come out to Whakaipo

Rangers Harry Hamilton and Ian Reed help install the Whakaipo fish trap near Lake Otamangakau. Trips like these allow us to capture essential fish population statistics.
Photo by: Ray Bonel



Bay, plant some native trees and have a great day. Some famous ex-All Blacks will be there to help too.

Work has also continued over the summer in the nearby Mapara Stream which flows into Whakaipo Bay. As you will have seen in previous issues of *Target Taupo* a very intensive clearing project was undertaken to open up Mapara Stream and make it more accessible for spawning trout. It is one of the few streams and therefore one of the few opportunities for trout recruitment at the northern end of Lake Taupo. Maintenance of the stream was undertaken by trimming back blackberry and clearing flood debris prior to the start of the spawning runs this winter. The Mapara Stream has benefited from our efforts over the last couple of years and the job is becoming easier through regular maintenance. The stream banks are becoming more stable as native vegetation starts to grow with the increased light availability. The stream itself has a good flow and spawning gravels so it is worth the work.

Work also continued on the Whangantata Stream to clear Monkey Musk (*Mimulus lucasii*) from the waterway again in an attempt to improve flows and fish passage. The Monkey Musk weed was sprayed in

December and again in May with dead weed being raked out by hand. This stream is looking the best it has in years and it would appear that we might be winning the war. This is a great result not only for the fish but also river mouth anglers for whom the Whangamata Stream is very popular. Fish trap results from previous years on this stream have indicated a run of up to 2,500 trout so every bit of clear spawning gravel that can be won back is important.

April saw the successful installation of the Te Whaiiau trap for another year up at Lake Otamangakau. Although the weather has been warmer than normal, there has been plenty of rain and floods already this season. Operating this trap gives people the opportunity to handle some magnificent trout. We are PIT tagging fish at Te Whaiiau again this season to help us identify individual fish between years and track their growth and spawning cycle. The more of this data we get the better we can understand the spawning run and dynamics of Lake Otamangakau trout. Numbers of fish have been high again so far this season and as expected, smaller than previous years, although generally they

New sections of track on the Tauranga-Taupo River have had to be put through some pretty rough going. Rangers Ray Mond and Mike Hill are up to the task though.
Photo by: Ray Packer





The Monkey Musk weed in the Whangamata Stream is debilitating for trout spawning migrations and this beautiful stream itself. DOC is hopefully starting to win the war against it
Photo by: Mike Hill

are in great condition.

The Waipa trap has also been operational since January in an attempt to better understand what is happening to the early part of the winter run particularly in the upper reaches of the Tongariro river system. The pattern of the run has followed that of recent years where numbers have not been high early on indicating a later run and lower numbers of fish using the upper Tongariro might be the pattern again

this year. However, numbers of fish have been steadily increasing since May with some nice well conditioned rainbows starting to appear.

Due to staffing constraints, we have decided to move away from undertaking the Hinemaiaia trap and transfer contract this year and this work will now be completed by an external contractor engaged by TrustPower. The purpose of the Hinemaiaia trap and transfer project was to place mature fish in the H3 Dam lake in the hope they would spawn in its tributaries and improve the Hinemaiaia spawning run. This change occurs at a time when we are busy focusing on other work so it will free up staff to focus on other areas such as compliance. With more river anglers this time of year, our compliance work focuses on the rivers and so we will be returning to more general angler surveys and routine licence checks now that the Harvest Survey has finished. The team is looking forward to getting out on the rivers again and talking with anglers – just make sure that you have your licence handy.

www.sportinglife-turangi.co.nz

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Where we're at with the Wild Whio

Text and 2011 Whio Family

Day Photos by Kim

Alexander-Turja

Programme Manager,

Community Relations

Since my article "Were not Quackers" in Issue 60 of Target Taupo we have come a long way in our work to protect one of New Zealand's iconic freshwater birds. While the importance of protecting kiwi from extinction is well known throughout

New Zealand, the fate of the whio or blue duck also hangs in the balance. The highly endangered whio is not only unique to New Zealand but also unique among waterfowl. It is unrelated to any duck elsewhere in the world and many of its habits are peculiar to the species.

Raising awareness for New Zealand's bluest duck is not the hardest thing to do. Bring together a whole lot of people and organisations who are passionate about whio and open the doors to the public. The 2011 Whio Family Day was held at the Tongariro National Trout Centre in Turangi on 19 March this year and over 550 people attended. March has now become Whio Awareness Month.

Genesis Energy hosted the day with the Department of Conservation, New Zealand Forest & Bird and the Central North Island Blue Duck Charitable Trust. With less than 3000 of the species left,





this special joint partnership continues its determined drive to raise awareness of who nationally.

The day offered a range of activities for the public to experience. Whakatane DOC ranger Andrew Glaser brought his who dog Neo and he demonstrated how they locate who in the wild. Ruapehu Ranger Alison Beath showed the children how she tracks who with radio transmitters and 65 children went through the popular who recovery obstacle course which included challenges like setting off predator traps and popping off pests. Wanganui staff showcased their local community project for protecting the who. Kia Wharite. Taupo For Tomorrow educator Mike Nicholson had caught some invertebrates in the



Tongariro River earlier, and was showing children the favourite foods of who.

A number of talks were held in the classroom showcasing important aspects of who management from the latest in ground predator control to Genesis Energy talking about the use of the same rivers to generate renewable energy while at the same time looking after these special river inhabitants. The who is an important indicator of the health of our fresh waterways. Anglers should always be pleased to see who because it means the water they





fish is high quality and full of invertebrate who and trout food.

An onsite auction of donated prizes raised \$2,300 for the who Auctioneer Dan Steele from Blue Duck Lodge at Whakathoro got large bids for items such as a beautiful painting of who by Genesis Energy's environmental co-ordinator Elinor Watson, and a canvas print

of who parents and their ducklings taken by Whakapapa ranger Bubs Smith. Thanks to all those who donated prizes.

Whew what a whiotastic day it was!

With the partnership focusing on raising awareness, lets look at what DOC is doing to manage this protected species. DOC has recently released its new Who Recovery Plan, to provide direction for who recovery over the next few years

Who bring some unique challenges to those trying to ensure their survival. Unlike many of New Zealand's threatened species whose security can be ensured by placing them on a predator free offshore island, who must be managed on the mainland. There are no island systems large enough to provide the habitat requirements for who.

Instead, DOC has identified eight Security Sites across the country where in-situ management and the control of introduced predators, such as stoats will be undertaken. Four of the sites are located in the North Island. Te Urewera Mainland Island, Whirinaki Forest, Tongariro Forest and Manganui-o-te-Ao/ Retaruke. Four have also been





Shifting Sands of the Waitahanui River, Womens Fishing Day, March 12 2011

By Marilyn Bruton
Marilyn is a keen Waitahanui
River Angler

The Waitahanui is a dynamic waterway to live beside. The wide mouth entering Lake Taupo is dominated by an ever moving sandbank and a "picket fence" made up of men usually. The picket fence is the term often used to describe the line of hopeful anglers that stand side by side in the Waitahanui mouth casting flies to waiting trout in the rip. Angling this location presents a challenge and a constantly moving fishing opportunity. This became very evident between November 2010 and January 2011 when the mouth of the Waitahanui River went from 0.7km north of the Waitahanui Bridge on SH1 to straight out into the lake. The culprits were the high lake levels and strong prevailing westerlies which slowly whittled away the lakeside sandbank. When the rip went straight out into the lake in

front of Waitahanui carpark it became the best grandstand in town to watch fly fishing action and it attracted many onlookers.

I had for some time speculated privately about changing the gender balance of the people in the picket fence more towards the female persuasion and after I became a local this proposition became more realistic. My thoughts evolved into holding a women's fly-fishing day on the Waitahanui River to flush out what women wanted from an activity clearly dominated by men. The initiation of the idea was well supported by friends and a flyer was generated and circulated following the selection of a date in March 2011.

Participants covered the costs incurred which included printing, petrol and a portaloo. Twenty six women from all

Above: Participants try their luck across the Waitahanui Rip. The position of the wide rip along the beach was perfect for everyone to have a go
Photo courtesy Marilyn Bruton



Top right: Perhaps we will see more of this in future:
- women anglers with nice fresh rainbows from Taupo rivers
Photo by: Steve Crawley



over the country brought their licenses, rods, waders and enthusiasm to a fun unstructured day of fishing and were all ready to go by 10.00am. Didymo Dave set the scene with his spiel on keeping our waterways pristine. His message was clear and well received along with his handouts containing reinforcement messages and previous issues of *Target Taupo*. Women had risen to the challenge.

Some came really prepared. On a little beach below the main carpark beside the river some set up a table, chairs and an umbrella, the table replete with food. Another spontaneous congregation point was the Budge Hintz seat, which also became the registration point,

Although fish remained elusive on March 12 they don't always. Marion Hall with an excellent 10lb brown.
Photo by: Robyn Gray



and later on the BBQ area. Interesting how hunger gets people together. Sue and Roger from the Waitahanui Lodge, arrived to give out coffees, 3 gentlemen put themselves on standby mode to assist with 'eventualities' - mainly casting instruction for the newbies or knot and tangle drills as alluded to earlier. At lunchtime the BBQ manned by the local Doctor and his wife offered sustenance in the form of sausage on buttered bread. A local fishing guide had volunteered his time too but regrettably had to leave earlier than intended to rescue his dog from an unplanned visit to the pound.

The weather was stunning with just a light westerly breeze in the morning. Fortunately the picket fence itself was able to accommodate many more than usual because the river mouth had spread out along the edge of the lake making it highly accessible. It was too bad that a couple of men who turned up to fish the rip in full regalia, looked and then moved on. I hope they weren't intimidated. We would have welcomed their presence.

In the afternoon a party of approximately 10 went for a walk up the river as far as the Cliff Pool. The river trucks

had been groomed by DOC a few days before and this enhanced the beauty and accessibility of the Waitahanui. The walk was much enjoyed and resulted in an impromptu lesson from more senior and experienced women who shared their skills on river fishing.

Everyone in attendance indicated a willingness for a database of prospective attendees to be used for the promotion and the raising of awareness for women's fly-fishing in New Zealand. Unlike our UK angle sisters, NZ women are not represented on the competitive stage. One participant had in fact fished on behalf of a visiting Commonwealth Ladies Scottish Team some years ago. They had expressed disbelief that New Zealand had no women's fly-fishing team of its own.

Subsequent to the day a website has been established which is evolving, currently a work in progress. Further a link to Twitter has been made. The prospective attendee's database is steadily growing. A steering committee has been appointed to plan our next foray into promoting women's fly fishing in New Zealand with a weekend planned for September.

Shifting sands? The sandbank that disappeared in the January storms has

re-developed and the river mouth is once again stretching northwards with favourable winds and lowering lake level. Does the changing position of the mouth put the fish off their bearings? It appeared to on March 12th as not many fish lost their lives. But just as the sandbank of the Waitahanui River continues to build, many of the women who participated in the day seem keen to carry on and build their love of fly-fishing.

A feedback form was generated to determine what the participants would like to do in future and this has been very valuable for planning. Essentially participants wanted to do this again as well as network and learn from each other. However they also want to spend a longer time together, a weekend for example, one day was just not long enough.

To my peers, your presence on the day was noted and we thank you for taking an interest. One commented to me that "it was something different". It was great to see everyone donating their time and giving their support to this special day for women anglers. We were not cast aside after all.

Contact can be made through the website, Snuglines, New Zealand Women's Fly Fishing or snuglines@gmail.com



Some of the participants from the Womens Fishing Day Fun was obviously not in short supply
Photo by Anna McKillop

The floor space of the visitor centre and museum has nearly doubled and can be enjoyed by people of all ages



Adding to the Attraction at the TNTC Visitor Centre

By Kevin Farrington
Manager, TNTC Society Visitor
Centre and Museum

*All photos by
Kim Alexander-Turia*

If you haven't been to the Tongariro National Trout Centre in the last three months, you're in for a surprise. On March 11 former Prime Minister Jenny Shipley opened the Genesis Energy Fresh Water Aquarium and in unison with this the greatly expanded Tongariro National Trout Centre Society (TNTCS) visitor centre and museum. The floor space has been doubled with new, state-of-the-art displays covering the ecology of the Taupo region, the 'Big Bang' origins of the lake and everything you wanted to know about fly fishing – even where the fish are. Here is an overview of what has been added:

The Sargood Ewen Gallery

The Sargood Ewen Trust has been an important donor to TNTCS and without their help this gallery would not have

been possible. The gallery will be used for special exhibitions and at the moment hosts a fine display of works from local artists and craftsmen.

One of the more unusual items on display in the gallery is a silhouette drawing of what is reputed to be the largest trout ever caught in the region. This monster weighed in at 51½ lbs when landed in 1903 and an accompanying newspaper article describes the event. It was allegedly 'caught' with a trident spear – not something you could get away with today.

Tonks Gallery

Here you will see an extensive and recently expanded collection of trout fishing memorabilia. This gathering of antique and modern angling equipment is reputed to be one of the finest

Members of the Sargood Ewen Trust at the entrance to the new Sargood Ewen Gallery which will be used for special exhibitions



collections in the world. According to overseas experts some of the reels in particular are extremely rare. There is also the odd unconventional item in this gallery. One that has only recently been acquired is a two handed

fly rod made from the whip aerial of a WW II armored personnel carrier. It is testament to the passion some people have for angling and the lengths some will go to in order to pursue that passion.

THE BIGGEST BANG

Tongariro Mountains

Volcanic formation began at Mount Tongariro years ago and gradually moved south along to Mount Ruapehu.



Alt Tongariro

The three southern peaks of the Pacific stretch into These volc

Rivers, streams and waterways

The path of the Tongariro River is defined by basalt in the centre Kaimānuiāwāwā Range and by the remnants of Rangitāhiti (mudflow) originating from Mount Ruapehu.



...continues following the Tongariro River's descent as it flows under the main's Basin. Every loop of it will probably change the course of the river... back to both the east of the three peaks and all time of the West.



“ Nature continue moulding the Tongariro River's fishing pool”



Above and below left:
The new visitor centre and museum hosts a variety of new displays including these about the creation of Lake Taupo and use of its fresh water resources

Amos Milner library
The TNTCS has accumulated a number of rare books on the Taupo region and angling history. The Amos Milner library is largely a reference facility which means books cannot be removed from the visitor centre. They will be of particular interest to the serious student or researcher of fly-fishing. Over 400 books have been catalogued so far and this is only the start.

The Genesis Energy Fresh Water Aquarium
The aquarium is annexed to the visitor centre and sponsored by Genesis Energy. This unique aquarium houses the country's only collection of rarely seen New Zealand native fresh water fish. Kokopu,

bullies, mudfish, koura, koaro and cels number among the newly arrived residents. Visitors will enter the aquarium via the museum will be met with the sights and sounds of the waterfall and rushing stream that provides the centerpiece of the aquarium. There is also a "rogue's gallery" (behind lock & key) of pest fish such as koi carp and catfish. These guys are stringently managed to prevent escape.

Managing this facility has been a unique learning experience for DOC staff and has not been without its challenges. This work is described by Randal Hart in his article Trials, Tribulations and Rewards on page 38. Some of the fish are quite shy and may need some patience in

waiting for them to appear. The eels on the other hand are the stars of the show, especially at feeding time. To help the visitors identify the various species and to indicate in which tank they are held, DOC has produced a very detailed brochure that you can take with you around the aquarium.

The expanded museum and aquarium are the result of a long time partnership between DOC, Genesis Energy and the Tongariro National Trout Centre Society. The latter is primarily made up of volunteers who host visitors to the centre, instruct or administer during the regular children's fish outs or provide focus on the specialized areas of the museum such as the library and artifact collection. Because of the increased complexity of the centre the society has by necessity had to put itself onto a more business-like footing and have employed three part time staff to assist the volunteers and

manage the more commercial aspects of the facility.

The number of visitors is expected to rise significantly as word gets around that this is a must-see attraction. In addition schools regularly move through the museum and aquarium as they attend the Taupo for Tomorrow education programmes focussing on fresh water sustainability and quality themes.

The management of the museum and aquarium is a continuous work in progress as more is learnt about the history of trout fishing in region and more artifacts emerge. The goal is to make this facility a must-see attraction for tourists, a learning centre for schools and a world renowned repository for the art and passion of fly-fishing. Growth times indeed.

For further information please visit the Tongariro National Trout Centre Society website: www.troutcentre.com

The Amos Milner library has an outstanding collection of books and reference material on the Taupo fishery's history and use





The Kaitiaki Crusader

By Anna McKnight
Ranger, Community Relations

Above: The Kaitiaki Crusader himself. Luckily Didymo Dave has never been one to avoid dressing up for a cause.
Photo by Anna McKnight

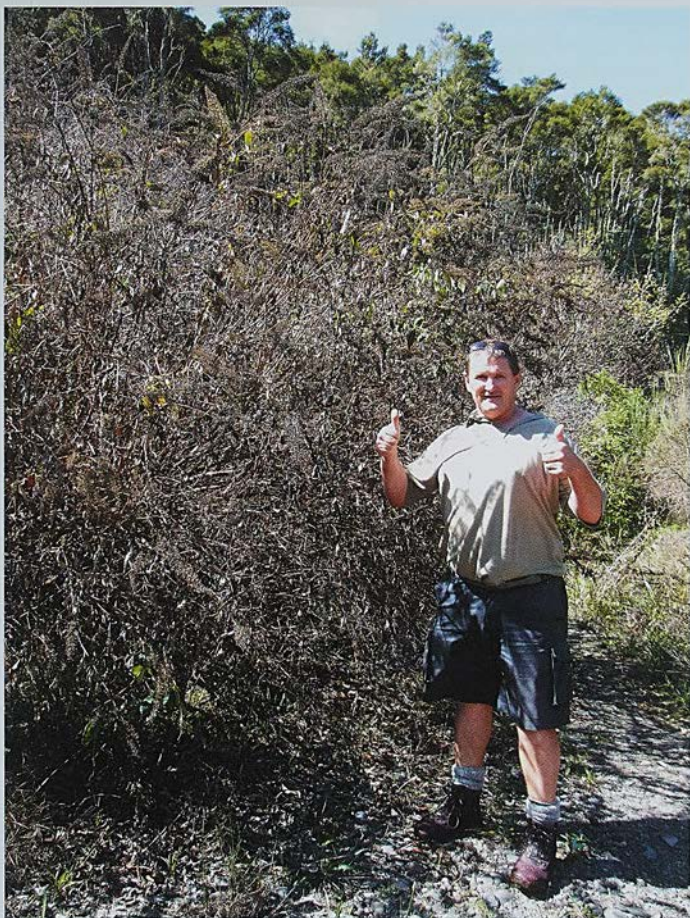
Many of you will have seen Dave Cade on our riverbanks and lakes advocating for the preservation and protection of freshwater. He is a man on a mission for the natural environment and is hopeful of recruiting you to help him keep it that way.

Kaitiakitanga is the Maori word and definition for guardianship. Dave identifies with kaitiakitanga, and his vision is that others should embrace it to help look after New Zealand as our playground as much as our source of food and shelter. Dave is no doubt a local kaitiakitanga



super-hero, but who is his alter ego? Employed full time by the Department of Conservation Dave is the Ranger, Aquatic Threats and he is dedicated to protecting Lake Taupo and its river

systems from freshwater pests. This has seen him dubbed with that instantly recognisable tag 'Didymo Dave' whose spare time is taken up as a keen angler, hunter, and trapper. Sometimes when you see Didymo Dave "off-duty" and on the river banks, it's not clear whether he is working or playing. The difference can be subtle. Most of the time diving into the scrub would be as good a place as any to find him as he may well be pulling out weeds or trapping rodents. The giveaway that he's off-duty is the holey t-shirt, old shorts and his own vehicle - although that also boldly dis-



Thanks up for another dead Buddleia. This one is on going to stop the native tree revival
 Photo by Anni McKnight



Hadlee Cade with rat number 400 on the Hinemaiaia River Bank
 Photo by: Dave Cade

plays the 'check clean dry' slogan.

So Didymo Dave not only practices kaitiakitanga during working hours, but sometimes long into the weekend. As part of his employment he spends time talking to anglers about the importance

of 'check, clean, dry'. An effective way of talking to anglers is to meet them in the fishing pool car parks. He explains about the time between anglers arriving at the car parks "I call this time 'down time' says Dave. I decide there is no point sitting in my truck waiting when many of the car parks are overcome by weeds. So I start dealing to the weeds between angler arrivals". However this work doesn't stop there. Weeded clearings are slowly popping up on several different local river banks, a sure sign that Didymo Dave has been on the job. Dave recently took me out to show me a spot he has been working on. The results of his work were clear – young shoots sprouting from natives trees cleared of the suffocating weeds, and native seedlings reaching for the sun.

Trapping predators is another skill this kaitiaki super-hero has up his sleeve. Didymo Dave was concerned about the "silent rivers" of Taupo. The Hinemaiaia River is a favourite spot for him and



Robin maybe ~~batman's~~ sidekick but in this story he is a victim to be saved by Kaitiaki super heroes
 Photo by: J. L. Kendrick, DOC Collection

Friends of the Hinemaiaia
planting native trees in areas
cleared of weeds.
Many trees were paid for by
discarded cans.
Photo by Anna McKnight

many others to fish, walk, and contemplate the joys of nature. So Didymo Dave and his trusty side kick, seventeen year old son Hadlee, have spent hundreds of hours setting up and checking 130 predator traps regularly. This has been complemented by the Hatepe Residents Association who has traps within the Hatepe Village. The Hinemaiaia River is now filled with bird song again. When Dave was showing me his weed work on

the Hinemaia, it was neat to see a juvenile robin hopping along in the clearing looking for insects. "As an ex-dairy farmer, I never thought I'd get so excited about protecting such tiny things as the robin and the tomtit. It is so rewarding to see these birds here," says Dave. The Cade duo are motivated by the numbers and have so far caught 410 rats and 95 mustelids (stoats and weasels). They are working towards to their target of 1000



vermin caught.

One thing that is not in Didymo Dave's job description is removing rubbish from the river banks and angler car parks. Didymo Dave is often showcased on local fishing internet sites and media performing such kaitiakitanga duties, but this not because he is being paid for it. He places these photos out there to remind people not to dump their rubbish in the first place. Although this is obviously the most desirable solution, it is very cool to remove rubbish if you see it and together we can keep our rivers the way they are supposed to be – clean and rubbish free. Dead carcasses of fish and deer may be biodegradable, but it takes a while and is unsightly, not to mention smelly in the interim. What is more important though, are the critters that get to the carcasses before the bacteria do! Didymo Dave introduces rubbish to the public as, "rat food". "Your hamburger wrapper still has food sticking to it, and some rat is going to say, 'Oh boy, look what they have left for me to eat today!' So the rats grow bigger and hungrier, and then they snack on our small, vulnerable native birds and their eggs such as the robin and tōtīti". So give our kaitiaki crusader a hand, next time you're on the river bank and see some rubbish, don't leave it there for

the rats to eat. You are kaitiaki of these rivers too.

Turning rubbish into native trees – is that a kaitiaki super hero power? No, the power is also in the hands of ordinary mortals! Dave checks for traffic, before swerving across the road to pick up an empty Coke can left on the road side. He also picks cans up from the river bank while he checks his trap lines. He combines these with the cans from children who have been collecting them on his behalf. When the stash is big enough he cashes in the aluminium, and buys native trees with the money. These are then planted with other friends of the rivers in the spaces cleared of invasive weeds. Graeme Moller, an angler who helped at a recent Hinemaiaia tree planting said, "David does an astonishing amount of work on the rivers, and I really enjoyed the opportunity to help him out". And this is all our humble kaitiaki super hero wants – to inspire New Zealanders to take up their role as kaitiaki crusaders for our clean fresh water, our native trees, our birds and our favourite fishing spots.

Didymo Dave is now on Facebook. Invite him to be your friend www.facebook.com search 'Didymo Dave' or phone Didymo Dave on 027 240 9603



WE WANT YOU
to help care
for our beautiful
Aotearoa.

*Photoby:
Anna McKeighlin*

Fish Bytes

Fish bytes are short interesting stories from the Taupō-nui-ā-Tia Area. Feel free to contribute if you have one



Photo by: Anna McKnight

THE MESSAGE IS STILL GETTING OUT THERE

By Anna McKnight

Ironman...again

Didymo Dave and company ran a "wetsuit check and dip" at 2011 Iron Man for the fourth season in a row making sure freshwater pests don't try and hitch a ride into Lake Taupo on competitors wetsuits. Remember, a 5% solution of dish washing detergent is all it takes.

In the pouring rain, an Iron Man cyclist passes Didymo Dave rendering his support from the roadside by clanging pots and calls out "I've checked and cleaned, but I'm definitely not dry".



KIDS SPREADING THE MESSAGE, NOT FRESHWATER PESTS

Six year old Thomas Swarbricks cares about clean freshwater - he wears the 'Check, Clean, Dry' message on his fishing vest. This is Thomas at the Easter fish out at the Tongariro National Trout Centre. He was on holiday from Auckland.

It is crucial to help our future generations make sure that the benefit of clean freshwater is available for their children also.

Photo by Kim Turia



IT'S GOING GLOBAL!

What's on the bumper sticker of that jeep? Oh that's right one Iron Man competitor took the Check, Clean Dry message all the way back to Hawaii!!

Photo Supplied.



Dear Mike

I would like to thank you for your consideration in taking time off your daily schedule to show us around your hatchery and teach us about Check, Clean and Dry.

You have taught me the trout are to not be taken for granted.

Your talk has taught me about that when people change something in a river they have to think about the plant life, fish life and all other creatures.

Yours Sincerely Thomas Martin

EDUCATION IS THE KEY!

This young student from Highland Intermediate took the Check, Clean, Dry message home from the day his school visited the Taupo For Tomorrow education programmes at the Tongariro National Trout Centre. Mike Nicholson is the teacher of these programmes.



You can get in touch with our Ranger, Aquatic Threats Didymo Dave on facebook, see the article "Kaitiaki Crusader" page 59.



The harvest survey will give us valuable information about the harvest the success of different methods and use of the fishery

Photo by Katrina Francis

HARVEST SURVEY DRAWS TO A CLOSE

By Mark Venman
Programme Manager, Fishery Operations

Following on from the update in the December 2010 edition of *Target Taupo* the 2010/11 Harvest Survey to estimate the total angling catch over an entire year has come to an end. It has been a huge effort to gather the required information by all involved. A lot of planning and preparation is required for such a large and costly project and with the changeable weather and financial restraints, some flexibility and rescheduling was required. The department appreciates the efforts of both staff and anglers for their participation and patience.

● Over 1200 anglers were interviewed over the year at the main boat ramps around Lake Taupo. The two people doing the most of the work for us at these locations were local fishing guide Peter Wilton and retired Scotsman Joe Beattie. Peter was also involved in the 2005/06 Harvest Survey and you were most likely to have been interviewed by him at the northern end of the lake this year. Peter has a good angling knowledge and was always prepared to share a few tips with anglers. Originating from Scotland myself, I always enjoyed hearing Joe's accent on the radio. Also a keen fisherman he shared a few pointers too. Joe was mainly stationed the southern end of Lake Taupo. Because survey times were based upon day length there were some very long days put in during summer. But this was important as these were also the peak times for

the lake fishery. Conversely the quiet days in the middle of winter required patience as only the very keen boat anglers are out and about this time of year. We also appreciate the help of Hadlee Cade who assisted, often at short notice.

It was great to see the cooperation afforded by many of the charter boat operators. Many provided regular catch data upon request, fielding calls about the quality of the angling. Further, allowing us to place large orange stickers on their boats to make them identifiable from the air was very useful too. What was interesting was their changing feedback on the state of the fishery throughout the year which has improved considerably since we started the survey back in July 2010. Although analysis of the data has not been completed yet, our hope is that it reflects this improvement.

The main focus of the survey was to try and estimate the total number of trout caught and removed from the Taupo fishery over an entire licence year. Basically, from the interview data we calculate the harvest by obtaining the average number of fish caught (and kept) per hour fishing. The number of boats on the lake or anglers on the rivers from our aerial counts provides information on angler effort. In simple terms the harvest is calculated by multiplying total angling effort by the average catch rate of those angling. Obviously the actual calculations are a little more involved but this is the basis. The final analysis will also provide us with a lot more information regarding the fishery such as angler demographics as well as the popularity and success of different fishing methods.

Flights were a key component of the harvest survey and it was great that our pilots were flexible with changing dates and flight times. The small dedicated team of DOC staff responsible for counting the boats on the lake and anglers on the rivers had it hard at times. A Piper Super Cub or Cessna 172 are not everyone's cup of tea when its blowing 25 knots and much of this work was undertaken on weekends and on public holidays.

The plan is to undertake the data analysis over the next couple of months and make comparisons to other harvest surveys that have been conducted as far back as the early 1990's. This will allow us to identify trends over time and help us to sustainably manage the Taupo fishery. More importantly it provides the information necessary to help make well informed management decisions. The full results will be reported in detail in a future edition of *Target Taupo*.

Thanks to all involved, a job well done.



Rivers have lots of twists and turns and it is not fun following them in a small plane in high winds while searching for anglers and writing at the same time

Photo by: Ray Hovul



Members of Ngati
Tūwharetoa with the
Rt Hon Dame Jenny
Shipley.
*Photo by: Kim
Alexander/Turia*

GENESIS FRESHWATER AQUARIUM OPENS

By Dave Conley
Public Awareness Officer

Friday 11th March marked a momentous day at Tongariro National Trout Centre in Turangi, with the official opening of the Genesis Energy Freshwater Aquarium.

Genesis Energy Chair, the Right Honourable Dame Jenny Shipley, joined local MP Louise Upston and other dignitaries from the Department of Conservation, Genesis Energy, Ngati Tūwharetoa, Tongariro National Trout Centre Society and the wider community to open the aquarium, which will be the first public aquarium in New Zealand to be focussed on New Zealand's native fish and the threats to our freshwater ecosystems.

The official delegation was lead by Paul Green, Conservator of the Tongariro, Whanganui-Taranaki Conservancy, and he spoke of the department's excitement to

have been a big part of such unique project. "This aquarium will be unlike anything else in the country, and will be something Turangi can be enormously proud of. New Zealand's freshwater species are a good indication of the quality of freshwater ecosystems, and show why it is important to manage our freshwater resources sustainably. We are excited by the opportunities the aquarium will provide to educate people about how vital our freshwater ecosystems are to our life and economy."

Dame Jenny was joined by a student from Waipahihi School in cutting the ribbon to the aquarium, and as the Chairman of the board of directors for Genesis Energy she emphasised the support of Genesis Energy for the project, saying "Genesis Energy is proud to be a part of the exciting developments at the Centre which build on our existing investment. We are pleased to be putting something back into the area above and beyond our focused mitigation programmes and this is a great way to assist and work alongside the community to do something positive."

Ngati Tuwharetoa kaumatua Te Kanawa Pitiroi then blessed the facility before the doors were opened to the public for the first time.

Tongariro National Trout Centre Society chairman Rob Lester also added his support to the project, saying "the aquarium typifies what can be achieved if you aim high. With partners who are prepared to see the big picture, we have built an asset to the local community which will add tremendous value to the local economy"

Now that the public are able to enjoy what the aquarium has to offer, we look forward to large numbers of locals and visitors coming through and taking home with them a new appreciation of our amazing native fish.

ACOUSTIC SURVEY OF SMELT GIVES SOME REALLY GOOD NEWS

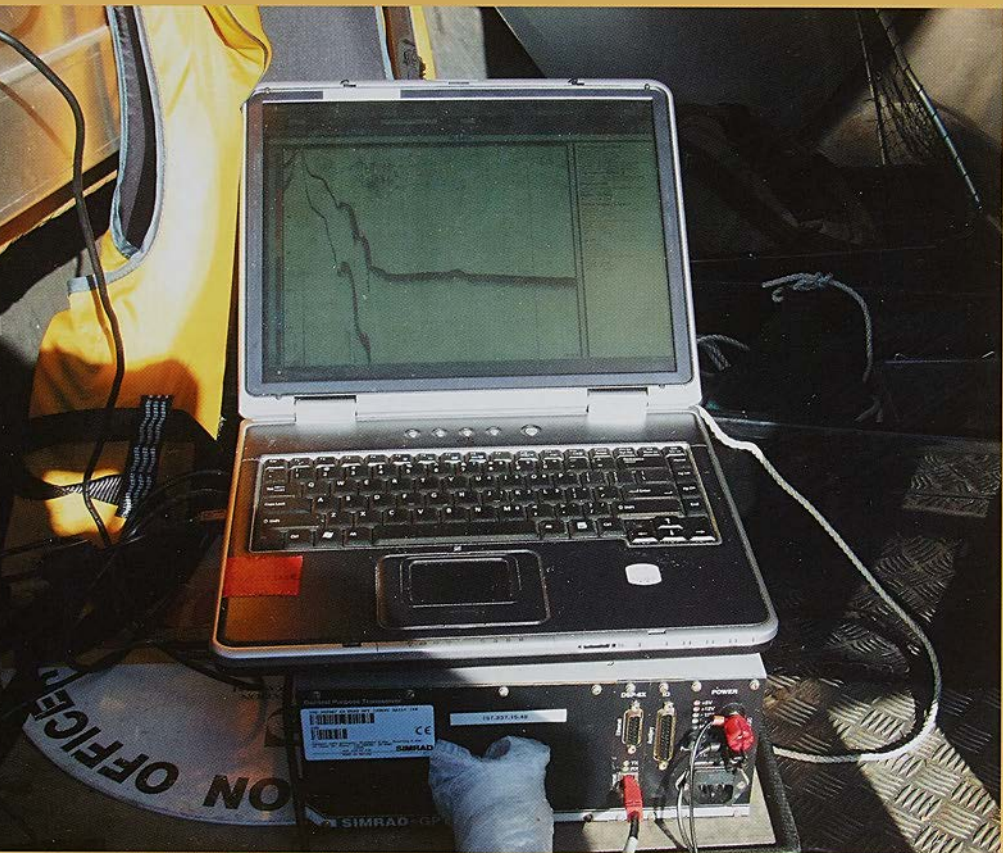
By John Webb

In late April 2011, under the watchful eye of Dr Michel Dedual, an acoustic survey of the smelt populations in Lake Taupo was undertaken. Essentially this involved towing a modified echo sounder behind a boat in a series of transects across the lake. The smelt are identifiable from the specific data signal they produce during the survey which is captured by a central computer for further analysis. It is a slow and time consuming process but gives an accurate picture of what is happening.

Although full analysis still needs to be completed, preliminary results appear very positive indeed with good populations of smelt observed not only on the fringes of the lake but also right out in the middle. Although most smelt were observed at a depth of 20-30m occasionally there were "swarms" of the tiny fish seen in bands up to 5m deep particularly near the shore. There were very few places on the travelled transects where there were no smelt observed at all.

To find smelt in such quantities was encouraging as it is known that smelt populations suffered dramatically after the lack of lake mixing in 2005. The decline in smelt caused by a lack of their food, zooplankton, was ultimately responsible for the decline seen in the fishery in the last few years. It is a testament to the resilience and ability of smelt to bounce back after a downturn and bodes well for the recovery and health of the fishery into the future.

The results also give substance to the thought that many trout may have been hunting



The speckled band of smelt can be clearly seen at the top of the computer screen. Five recent acoustic survey showed smelt were there and in numbers.

Photo by John Webb

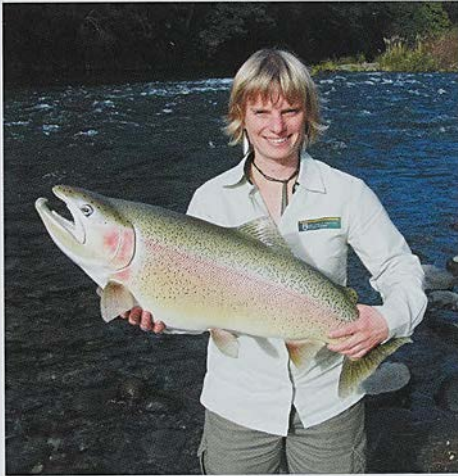
smelt in the middle of the lake rather than the warmer fringes during the very long and hot summer we have just endured. Lake anglers noted a sudden and dramatic decline in the quality of fishing in traditional spots near the lake edge when the hot weather got into full swing. Trout are a cool water fish and the fringes of the lake may have been

simply too warm for them last summer. This phenomenon is very common in shallower lakes like Rotorua for instance where trout will often congregate around cooler river mouths in the summer. The number of smelt observed in the Lake Taupo interior certainly shows that a move to the centre of the lake was feasible.

CORRECTION

The caption on the photo on page 52 of Issue 62 wrongly accused Ethan Winter of being Hadlee Cade and should have read "Out on their own now, James Williams and Ethan Winter enjoy chasing rainbows". Sorry about that Ethan, ...and Hadlee.

New Faces in the Taupō-nui-ā-Tia Area fishery team



Anna's first trout...
Yeah right!

Photo by: Kim Alexander
Tūia

ANNA MCKNIGHT

Nā Wainate ōhau

I tupu ōhau ki Tārangā-nui-a-kiwa

Ko Ngāti Pākehō tōku iwi

Kiaora

I am excited to be the new Community Relations Ranger in the Taupō-nui-ā-Tia area. My main role is to support the Taupo for Tomorrow education programmes and the aquatic pest programmes with Didymo Dave. I also help with getting our stories out there in the media and work alongside community groups.

My first DOC job was at Aoraki, Mt Cook where I learnt about climbing glaciers and kea. I then worked at Ruapehu Area Office where I learnt about skiing, volcanoes and kiwi. Now here I am learning about trout angling native fish and whio. I love learning about our

biodiversity, natural history and getting out amongst it all. Most of all I love sharing stories with all New Zealanders, inspiring them to get out, enjoy and protect what we have.



LISA BOTT

Lisa has worked at DOC for about 7 years and recently came to the Taupō-nui-ā-Tia Area. She has moved around a bit in DOC beginning in Turangi working on reception and then records. Lisa did a short 2 year stint in Palmerston North where she occupied the role of Programme Manager, Service before returning to the Turangi office, talking up another role with the accounts team.

For the last year or so Lisa has occupied the role of Ranger Service looking after the important aspects of licensing and accounts for the Taupo fishery side of things. Lisa also performs a key role with *Target Kaiti* fielding enquiries and looking after the distribution aspects of the magazine. So she will have spoken with many readers on the phone or by email already. Lisa enjoys working with license agents

"OK you lot, time to buy some lice oses so I can have my office back"

Photo by: John Webb

and will become well known to them if she is not already. "I look forward to working with the staff and people of the fishery" says Lisa.

Lisa will be the first port of call for licensing and it is great to have her aboard as part of the Service team.



"The name is Bond, Ray Bond"

RAY BOND

Hi there, I'm the latest addition to the fishery Field Operations team. I've spent the majority of my working career as a quality and technical manager in the food industry. However, I have always been envious of jobs which involve field work. I have a Bachelor of Science Degree with majors in Ecology, Zoology and Physiology, which was originally tailored for employment prospects similar to what I do now

I am thoroughly enjoying the new career path, particularly the practical aspect of the role and wide variety of work. For example, one day I could be conducting aerial surveys over Lake Taupo, and the next day I could be operating a scrub bar along one of our angler tracks. I love living in the Taupo district. My wife and I chose to return to Taupo for a better quality of life, and a great place to raise our young children. I look forward to meeting those of you who are also out and about enjoying our beautiful lakes and rivers.

Have you Enjoyed Reading Target Taupo

By Carolyn Newell
Carolyn is manager - Service

Are you enjoying reading Target Taupo? If you would like to receive the next one then read on. From the start of the new season we will be requiring your postal information again so we can send you *Target Taupo*.

So please send your contact details in via email or phone us. Receiving your postal information this way will also give us a point of contact to follow up on any vital information that may be missing, increasing the likelihood of you receiving your valued issues of the magazine. We can also use your details to send out information on the upcoming Management Plan review. We need your full home postal address rather than your holiday home address. Similarly if you are Rural Delivery, as many homes are, please remember you have to be registered for Rural Delivery with New Zealand Post to receive mail.

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If you do not have access to a computer, call Taupo Fishery Area office, 07 384 7143 upon purchasing your adult season or adult week licence. These contact details are also printed on your license.

Fishery Team Farewells

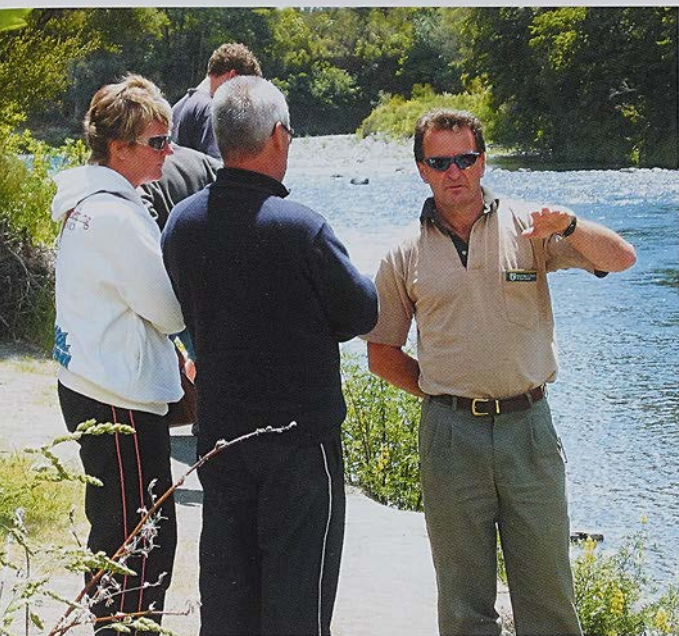


Photo by *Betrina Francis*

GLENN MACLEAN

No doubt you will have seen Glenn's footnote after his article "Restoring the Tongariro" which says it all really. Glenn has had a long association with the Taupo fishery occupying operational, community relations and technical roles during his 24 year tenure. He was involved with a huge number of projects in nearly all spheres of Taupo fishery management. Glenn has been involved with *Target Taupo* since its inception and he has trained successive staff, made consistent contributions and provided advice to help make this magazine what it is today - an ongoing, high quality publication. More recently, he had an integral contribution to the new aquarium at the Tongariro National Trout Centre. As with all the work he has been involved with, Glenn's perseverance and ability to work with a

wide array of different people has helped ensure that what started as a vision for this project has become a reality.

Many people in the community have enjoyed 'picking his brains' over the years and Glenn's skill as an accomplished public speaker has provided understanding to a great many people of all ages about freshwater fishery issues. His experience and institutional knowledge will be intensely missed. Thanks from everyone Glenn, past and present, and all the best for your new adventure.



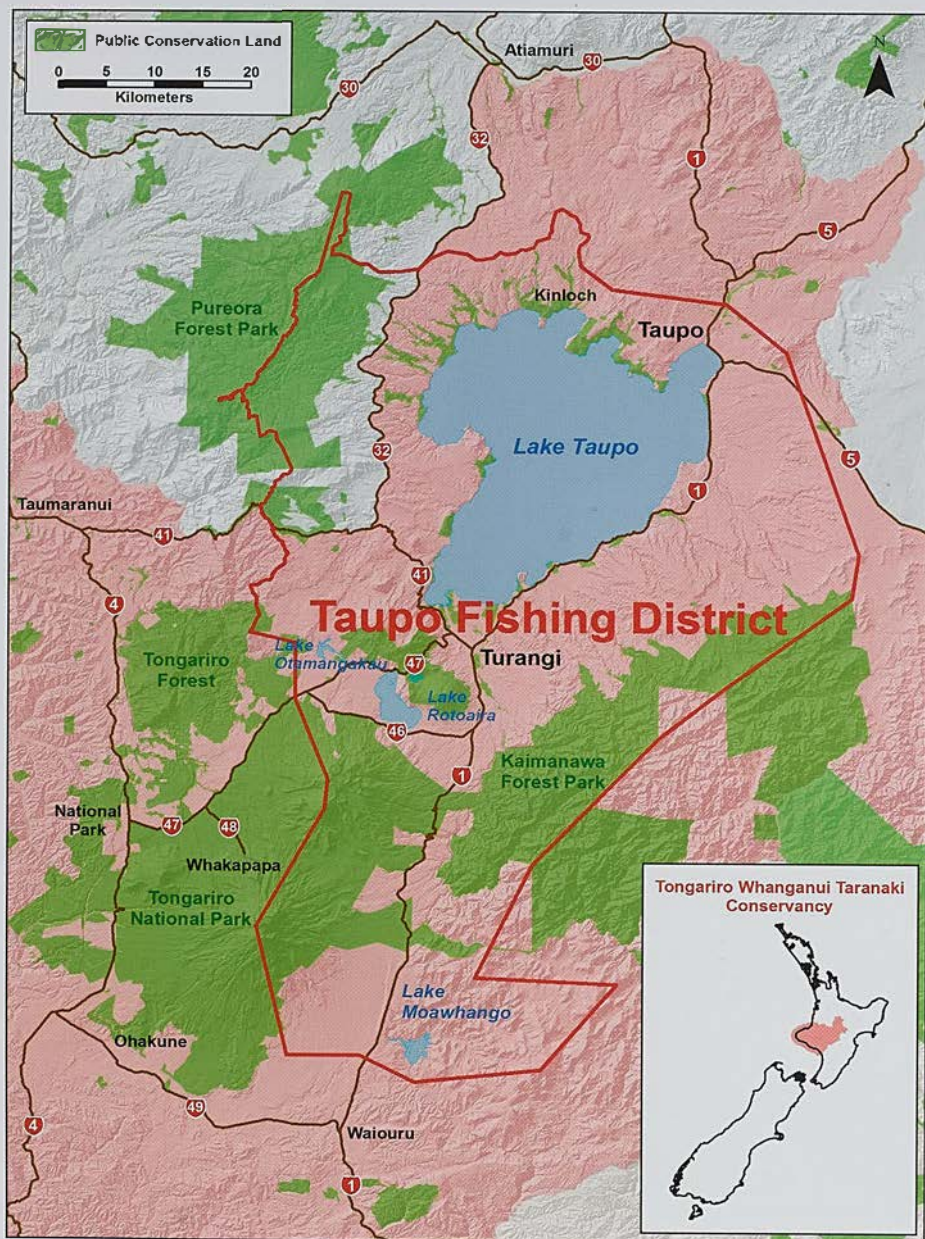
Photo courtesy *Taupo Fishery Area*

CAROLYN NEWELL

Carolyn started with DOC in 1999 at the Ruapehu Area Office as a Conservation Officer for the Whakapapa Visitor Centre. In 2003 she was appointed to Programme Manager Service for the Taupo Fishery Area. Her ability to be perceptive, keep everything running efficiently and a 'get it done' attitude was extremely beneficial at times, particularly with the challenging fishery licensing and scheduling systems.

One thing that will be greatly missed is Carolyn's ability as a host, providing delicious catering at the drop of a hat for any occasion at all, a role she relished (excuse the pun) and is now going to pursue further outside of DOC. Good one Caro we hope you enjoy it to the full.

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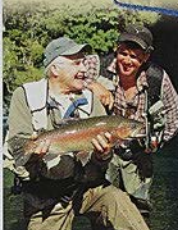
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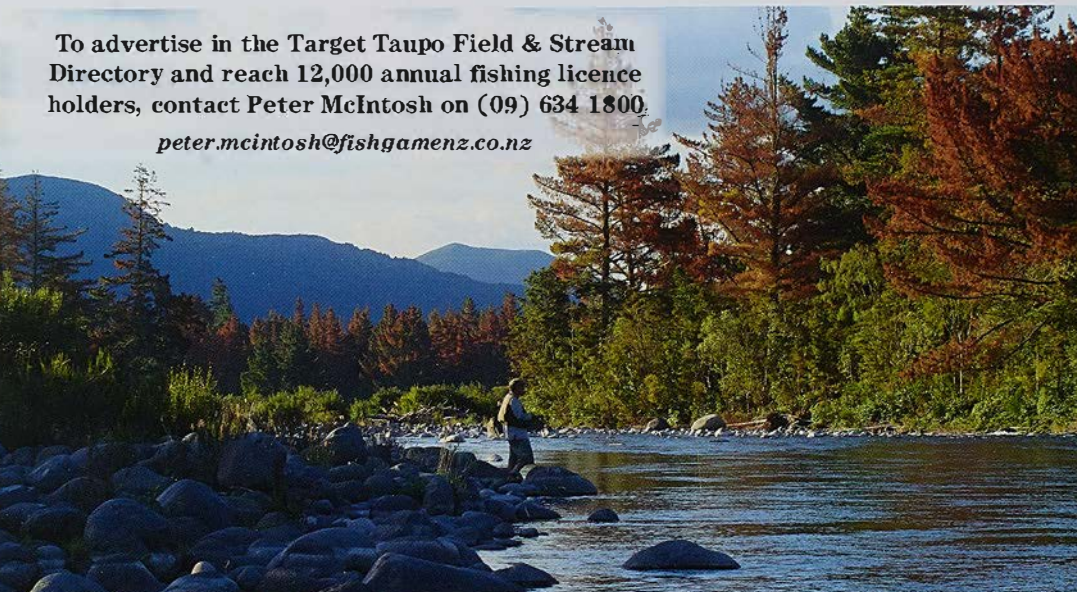
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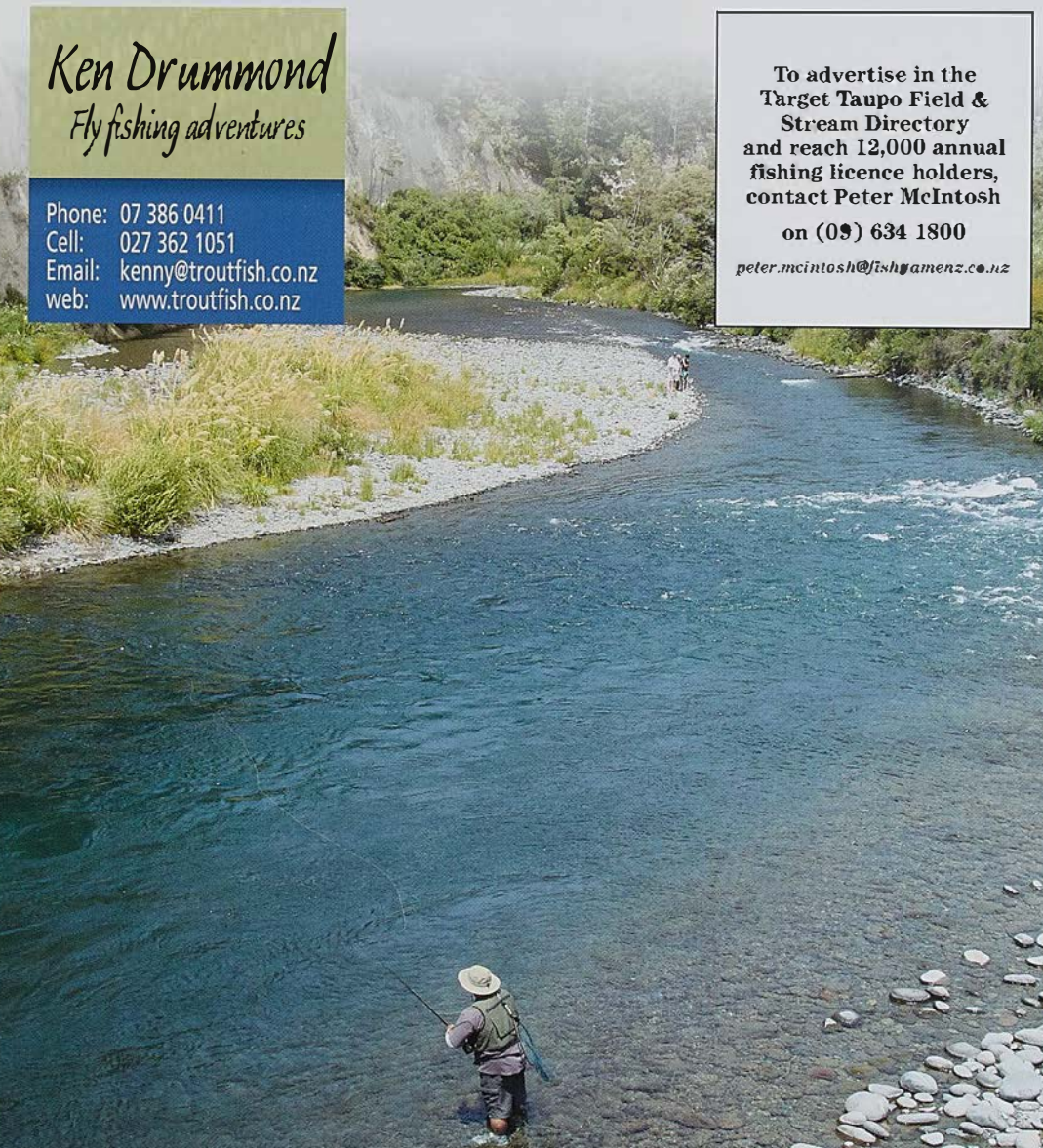
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