

TARGET TAUPO

A newsletter for Taupo Anglers
in the Tongariro/Taupo Conservancy

DECEMBER 2007, ISSUE 56



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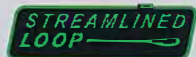
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Photo by: Kim Alexander-Tuna

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Fishery Forward

By John Gibbs
Taupo Fishery Area Manager



Photo by: Pat Gibbs

WELCOME TO THE SPRING ISSUE OF *TARGET TAUPO*.

In the forward to the last issue I wrote about didymo algae. Inside were two further articles – one titled *No Didymo* – detailing the current situation with this invasive plant and describing the measures to ensure it doesn't reach our valued fisheries.

Well, since then, the unthinkable almost happened. At the end of October routine monitoring showed the presence of dead didymo cells in samples from 6 sites on the Whakapapa, Mangatepopo, Whanganui and Tongariro rivers. The Central North Island Regional Response Group immediately swung into action. Within an hour of receiving the reports from the laboratory the group had gathered at Genesis Energy's Tokaanu power station and had begun implementing the regional response plan. Key members of the group participating were Biosecurity NZ (BNZ), Genesis Energy, Fish and Game NZ, DOC, Tuwharetoa Maori Trust Board and NIWA. BNZ is the government agency responsible for managing incursions of unwanted organisms and new pests. The other members represent key stakeholders in the region who have agreed to contribute their resources to dealing with an incursion.

Once the initial area of possible infection was known, decisions were made to almost completely shut down the diversions of the Tongariro Power Scheme to avoid transferring didymo between catchments. Field teams were gathered to begin an intensive programme of further sampling for possible didymo presence in all main rivers in the Lake Taupo catchment, including those outside the natural catchment but connected to it by hydro diversions.

The next stage was to gather crews to go out and actively sell the didymo "Check, Clean, Dry" message to anglers and other river users. They took plenty of spray bottles to hand out, as well as undertaking decontamination of fishing gear, boats, and even a few swimmers and dogs! Scores of extra signs were erected and, at the group's request, the Tuwharetoa Maori Trust Board closed the four access roads from State Highway 1 to the upper Tongariro River. BNZ established a communications plan developing media information and stakeholder updates.

The next five days were a marathon of intensive effort. Some of the field and incident management teams worked up to 18 hours a day to update plans and collect and deliver water samples to laboratories all round the country. The first two days revealed only two positive samples – again only dead cells and both from Tongariro River sites that had earlier tested positive. From that point on no didymo was found in any samples. By 5 November we were sufficiently confident of the clear results to agree that the emergency was, for now, over. Hydro diversions were resumed, Tongariro access roads reopened and field advocacy scaled down.

So where did the didymo come from? BNZ have completed an audit and trace-back which has now confirmed that the lids of the sample containers used for the positive tests were contaminated during storage in NIWA's Christchurch premises. It seems that there were high concentrations of dead didymo cells in the room where the lids were stored and unfortunately they were then sent to be used in the North Island.

There were lots of invaluable lessons learned from this event but the most important message is that we must not think of the event as a false alarm. It wasn't! It is absolutely certain that dead didymo was detected in some samples. Although it wasn't in the rivers themselves, this should serve as a big wake-up call to all river users. While didymo has consumed a huge amount of the Fishery Area team's time recently, we haven't lost sight of our central role – managing the wonderful Taupo trout fishery. Inside you'll find a wide range of articles on all aspects of the fishery. These include current technical and research work, new insights into the issue of trout size, some great tips on summer angling and a mouthwatering smoked trout recipe.



Trout Size and Condition: Anything Wrong?

THERE HAS BEEN A LOT OF DISCUSSION RECENTLY ABOUT THE SMALLER SIZE OF THE TROUT THIS YEAR. THIS ARTICLE LOOKS AT THE POSSIBLE CAUSES AND WHETHER WE SHOULD BE CONCERNED.

By Michel Dedual and Glenn Maclean
Michel is our Fishery Area Scientist and Glenn is our Programme Manager, Technical Support, and manages the research and monitoring work done in the area.

The Taupo trout fishery is a wild fishery. Wild in this case means the fishery is totally sustained by natural spawning and there is no additional stocking undertaken. This in turn means it is the natural environment, combined with fishing mortality caused by anglers, that largely defines the quantity and quality of fish available at any time. As we all know, nature especially in our part of the world, fluctuates widely from year to year. Take the weather for example, as some winters are much colder and wetter than others.

The same variability extends to the wild fishery. The numbers of juvenile trout that ultimately reach the lake and survive the transition to life in the open waters,

along with the feeding conditions that subsequently exist, will largely determine the quantity and quality of fish produced. We can have years when many juvenile fish survive entry in to the lake but then encounter poor feeding conditions, in which case we end up with a large number of poorly conditioned fish. On the other hand we can also have less fish surviving but with better feeding opportunities, so we end up with fewer but larger well conditioned fish as was the case in 1998.

However it is not quite as straightforward as it first appears. As we discuss later the trout's primary food resource, smelt, are also a wild population and so also fluctuate.

Top: Another small fish this winter for Richard Knight.
Photo by:
Kim Alexander-Turley

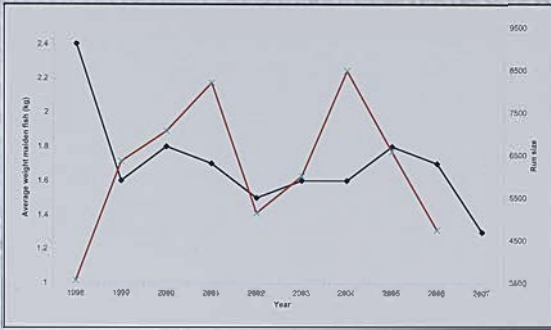


Figure 1: Average weight of maiden rainbow trout (blue line) and total number of fish caught in the Waipa trap (red line).

tuatc widely in response to conditions in the lake. Therefore it is possible to have years which favour juvenile trout survival but also result in a strong smelt population. This is what you hope for, lots of trout in excellent condition. Of course the converse is also possible and these are the dramatic low points in any wild fishery. Therefore the combinations of survival rate versus available food will make years to remember or to forget with several "typical" years amongst them. That is what a wild fishery is all about.

Two things are important to remember. The first point is that to have many more fish of much larger size in Lake Taupo is simply not possible, as the system is already limited by its maximum carrying capacity. Too many fish in the system may be more detrimental than beneficial and there have clearly been periods in the history of the fishery when there were too many trout, including since smelt have become established. The 1950's were characterised by large numbers of poorly conditioned fish and in response fishery managers significantly relaxed the angling regulations. These included removing the bag limit, later adjusted to 20 trout per day, allowing winter river angling and also the use of deep trolling methods, all aimed to significantly increase the trout harvest and reduce the population size. Ultimately Lake Taupo is not very productive, which is why it is so clear as there is minimal algae (plants) growing in the water column. Algae forms the basis of the food chain, so

less algae means less plankton, which in turn means less smelt and therefore less trout. This relative lack of algae effectively limits the carrying capacity of the lake.

Secondly, as it takes between 2 and 4 years for a trout to grow, what we observed this year is the result of what occurred in the rivers and the lake over the last 2 to 4 years.

This year we have received numerous comments from anglers concerned by the size and condition of the fish. The size of fish that have so far returned through the Waipa trap shows also that the average length and weight are lower than the previous years (Fig 1).

The trap data indicates that so far this year the maiden fish are on average 500 grams (1.1lb) lighter than in 2005 and 360 grams (0.8lb) lighter than the average over the whole period from 1999 to 2006. Figure 1 also indicates that in general when the total run is large then the average weight of maiden fish returning is less, such as in 2001 and 2004. Statistically, 50% of the changes in size of the run each year can be explained by the average weight of maiden fish (trout spawning for the first time) returning the same year. This gives us a first pointer; when there are a lot of fish in the lake there is about a 50% chance that they will be smaller. However, there are other factors which when combined are as important as the number of fish to explain the average size of the trout each year.

Judging by the average size of brown trout through the trap, 2007 was not a great year for them either although not outside of the norm. However, contrary to the rainbow population, there is no such relationship between the run size and fish length. In fact, when brown trout are abundant in 75% of the cases they are larger (Fig 2).

As brown trout primarily use the lower parts of the rivers and nearshore zone of Lake Taupo, they are not as affected as the rainbow trout in the pelagic (open water) zone by the conditions existing in the

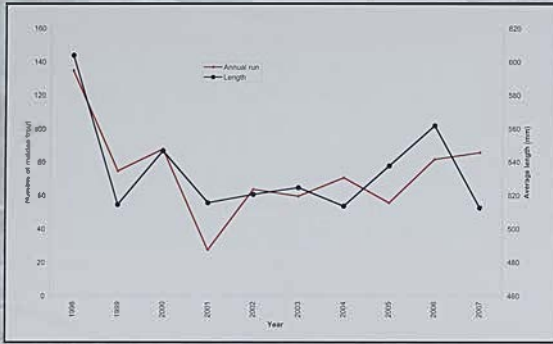


Fig 2: Number and length of maiden brown trout caught at the Waipa trap

lake. This provides another clue, as what has caused the smaller size of rainbow trout this year has clearly not affected brown trout, suggesting that part of the explanation lies in what happened in the pelagic zone of the lake.

The Waipa trap data also indicate that for the last 9 years, if we exclude 1998 as an “unusual” year because of the 1995-1996 eruptions of Mount Ruapehu, then the size of the run appears to have gone through 2 cycles of 4 years, each having very similar maximum and minimum numbers of fish. However, previous trapping programmes tend to show a longer cycle and it is much too early to be confident this four year cycle is real and will occur again in the future.

So, is the small size and poorer condition of trout this year just the signature of less favourable conditions that occur sometimes or is it something more sinister? In the rest of this article we will investigate the most likely explanations. Using results of our routine monitoring we can explore if there are any measures that might help curb the downturn or even avoid it in the future. We will also comment on some of the potential solutions that anglers have proposed.

Is there a shortage of smelt in the lake?

Smelt comprise more than 90% of the diet of rainbow trout in Lake Taupo. Therefore a shortage of smelt might have major

implications for the trout population.

The data from our monthly monitoring along the margins of Lake Taupo indicates there is a very large seasonal variation of the number of adult smelt. The abundance is generally highest in summer when smelt congregate to spawn and lowest in winter when most are in the pelagic zone of the lake. From the data it appears that adult smelt were not as numerous in 2007 as they were in 2005 and 2006 but were more abundant than in 2003-2004. Interestingly, the high density of smelt in 2005 coincides with the heaviest average weight of maiden trout returning to the Waipa since 1998. Furthermore, a lower abundance in 2006 was reflected in the lower weight of trout that year. In 2007 numbers of smelt were lower still and the average weight dropped further. This provides a second pointer: when smelt are abundant during the summer, trout which run later that year are more likely to be heavier. However there are exceptions such as in 2003-2004 when even though smelt abundance was low, the average weight of the trout was normal.

Overall though, the data indicates a downward trend in the abundance of smelt since 2005 which coincides with a decrease in the average weight of maiden trout returning to Waipa to spawn.

What could affect smelt abundance?

Smelt abundance can be limited by trout predation and/or by the biological conditions existing in the lake. Previous studies on smelt dynamics in Lake Taupo suggest the population of smelt could cope with a much larger population of trout before predation had a major impact on the smelt population size. The increase in catch rates on the lake over the last 10 years seems to point toward an increase in the size of the trout population, though this is not reflected in the trap data.

Some anglers have identified catfish and shags as being possible culprits. However

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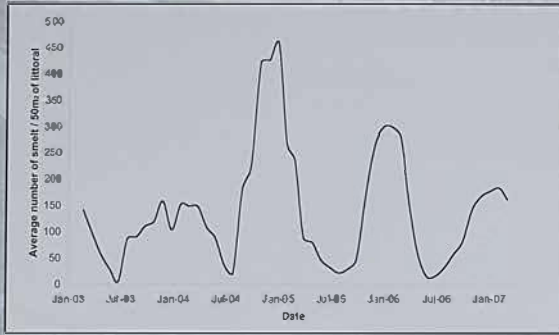
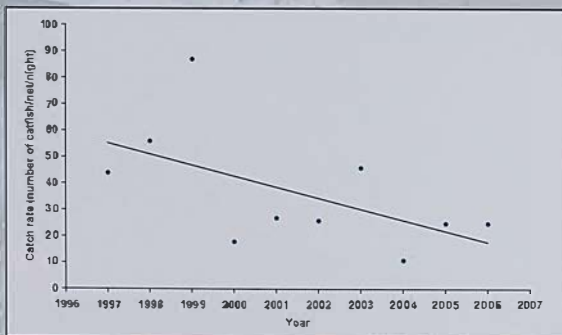


Fig 3: Running average abundance of smelt caught by beach seine at three different locations around Lake Taupo.

looking at the catch rate of catfish from 3 locations around Lake Taupo during the last 10 years doesn't indicate any increase in catfish numbers. In fact it would rather suggest the opposite; there are less catfish now than 10 years ago (Fig 4). Furthermore the well recognized peak in trout numbers across the fishery in 2000 coincided with the maximum abundance of catfish.

An early study of the catfish diet in Lake Taupo indicates that during the summer of 1995/96, fish of any species were not important prey items. Since then we have analysed the stomach contents of more than 1000 further catfish. Amongst these we have found no more than 50 smelt (and not a single juvenile trout). This is not a surprise as our own observations of catfish trying to feed on smelt at night indicates they are very clumsy feeders, lunging forward quite unsuccessfully only after having felt the smelt close to their head. Catfish predation is therefore very unlikely to explain any shortage of smelt.

Fig 4: Average catch rate of catfish from 3 different locations around Lake Taupo between 1998 and 2007



The twist is catfish may themselves be a valuable source of food for brown trout in particular, which are regularly found with catfish in their stomach.

We don't possess any data on the population trend of shags. There is no doubt that shags will chase and eat smelt when they are in large concentrations as they have always done, but we haven't received any comment from anglers having witnessed unusually large densities of shags (but see also *Target Taupo* # 47). Rather the real explanation for the shortage of smelt in 2007 is more likely to be found in the lake conditions that existed during the last few years.

When smelt are healthy they have the potential to spawn three times per year. However Taupo smelt are not that healthy as revealed by their very low body fat content. In fact they are frequently on the verge of starvation and indeed winter die-off due to starvation is the major determinant of the size of the smelt population. This precarious situation has two consequences. Firstly the vast majority of smelt in Taupo die after the first or second spawning, and secondly a small change in the growing conditions can have a major impact on the number of smelt that survive.

Have conditions changed in Lake Taupo?

With the expectation that the trophic status (productivity) of Lake Taupo will slowly change to reflect changes in land use, a long term programme monitoring the lake's water quality was commissioned by Environment Waikato. This programme commenced in October 1994 and is conducted by Max Gibbs from NIWA (the full report can be downloaded from the Environment Waikato website <http://www.ew.govt.nz/publications/technicalreports/tr0721.htm>

This monitoring shows that there is a long-term trend of increasing phytoplankton (algae) biomass in the upper 10m of the



Top: The catfish population has stabilised in the lake in recent years.

Photo by: Mark Venman

water column over the monitoring period. However the phytoplankton concentration was unusually low in winter 2005. This low concentration was attributed to the incomplete mixing of the lake which usually occurs over winter when the surface waters cool. This reduces the density difference between the warmer surface waters and cooler bottom waters so that the agitation from winter storms with their high winds can mix the two layers. Mr Gibbs estimated that as result of incomplete mixing as much as 50% of the nutrients (nitrate and phosphorus) remained in the bottom waters rather than being circulated up into the surface waters. The surface water is where nutrients can be used by phytoplankton (plants) and transferred through the food chain to eventually reach smelt and trout. As a consequence the concentration of nutrients was lower in autumn 2006.

The exact effects these "anomalies" in the biological processes within Lake Taupo had on the production of smelt is not clear, but considering that smelt are close to starvation then upsetting the nutrient balance in the lake is likely to coincide with a decrease in smelt production as our monitoring attests. However the lake mixed once again in winter 2006 and the biggest

impact might have been expected to have been on the smelt population over 2005/06, and on the trout which spawned in 2006, rather than this year.

If there is a shortage why not stock smelt?

To supply extra food for the trout in the lake would require the production of huge quantities of smelt. We have seen in a previous issue of *Target Taupo* (#47) that the production of smelt in Lake Taupo is roughly 4000 tons per year compared to about 250 tons of trout produced. This means for each ton of trout there are 16 tons of smelt required. In other words if you want each trout another 100gr heavier you would need 1.6kg of smelt (about 4000 smelt) per trout. So if you have 150,000 trout which need to grow by 300gr you will need to produce about 720 tons of smelt. To illustrate the extent of the task, the Tongariro National Trout Centre at full capacity including the fish pond is able to produce a maximum of only 20 tons of fish per year...

Another very substantial complication is that smelt would have to be alive when released into the lake. This is a major problem as producing live smelt is no easy task. Smelt are very fragile and do not cope with any handling at all. During the smelt



Callum Bouike and Jill Larsen Welsh netting smelt. This smelt monitoring programme showed a downturn in population in summer 2006/07
 Photo by John Crose

monitoring we use the extreme sensitivity of smelt to handling to differentiate them from the more robust koaro, which are very similar in appearance but which survive more than 15 seconds out of the water! To sort out the koaro we just look for the active fish lying in the seine net.

Finally and perhaps most importantly, the reason there is a shortage of smelt is most likely due to the lake conditions not being able to support a larger population. Adding additional smelt is completely futile and may make the matter even worse.

What about increasing the nutrient input to increase the productivity?

Adding nutrients to water is like putting fertiliser on grass. The extra nutrients stimulate greater phytoplankton (plant) growth which in turn may support more zooplankton upon which the smelt feed, ultimately benefiting the trout. Or at least that's how the theory goes. It's not as straightforward as this as it depends on which species dominate under the new conditions, where they are in the water column, what feeds on them and so on.

Furthermore any increase in productivity is accompanied by a drop in water clarity and quality. In essence when there are many more phytoplankton in the water column, the combined effect of these tiny specks makes the water appear turbid. The

water clarity of Lake Taupo has been identified as the most valuable asset of the region, as attested by a survey amongst the Taupo community. As a consequence significant efforts are being made by local and regional government, Tuwharetoa Maori Trust Board and other stakeholders to preserve this clarity and avoid any further decrease in water quality. There are now plenty of examples showing that the increase of nutrients from poor land use practices has resulted in irreversibly affected water quality. The balance that drives the food web in the lake is delicate and it is not as simple as adding more nutrients as change may upset or ruin the entire system.

The key in Taupo is that lake water quality has declined significantly over recent decades, and the recognition of this is the impetus for the efforts to protect it. Therefore the trend in the productivity of the lake is already one of increase, not the reverse. Furthermore due to the lag time of several decades that it takes for the nutrient rich groundwater to enter the lake, then even if land use practices change today the water quality is likely to continue to decline further yet.

What about supplementing the trout population?

Releasing more trout in the lake would not achieve anything if the system is

already at maximum carrying capacity. Adding more fish may even make matters worse. It is necessary to look at the ecology of trout to understand why.

The age and the size of trout when they return to spawn are two of the most important life history traits affecting the fitness of fish and the robustness of the fishery they support. Ultimately for an organism to survive it has to successfully reproduce. It's a bit theoretical but ecologists talk about a species making choices which maximise the individual's ability to pass on their genes. For example if trout mature at a young age they will have more chance of surviving to reproduce. However if they delay their maturation they prolong their growing period and increase their body size, which in turn will increase their fecundity (number of eggs and milt they produce). Therefore there is a trade-off between the probability of surviving to reproduce and maximising their fecundity.

Trout are highly adaptable and they will adjust their age and size at maturity to maximize their reproductive fitness, often in response to how quickly they grow. Generally slow growing fish mature at an older age and smaller size than fast growing fish. For example recent studies have suggested that Pacific salmon have adapted to lessen the effects of reduced growth rate by changing their life history, decreasing size at maturity and increasing their age at maturity.

How quickly trout grow depends on how easily they can feed and also on water temperature. Access to food in the lake varies depending on smelt density and distribution. If smelt are dispersed trout will encounter them regularly and feeding will be easy, whereas if they are clumped trout will have to swim a lot to find them as we have seen during our acoustic tracking experiment (Targe-Taupo #50). The ease or not of feeding on smelt affects the fitness of the fishery by influencing the trade-off between the probability of future reproductive success and survival.

There are several possible explanations for the changes in trout body size in Taupo this year, and they are not mutually exclusive. The explanations include: selective effects of fishing, genetic selection for size or age at maturity; changes in growing conditions in the lake (either lake productivity or density-dependant competition for food), abundant smaller river resident fish, and shifts in spawning run timing.

Selective effects of fishing

Obviously over-fishing can kill too many fish, but selection for particular traits caused by fishing has also long been suggested as being a contributory factor to the changing size at maturity of commercial fish. In fact during the 20th century the size at maturity of heavily exploited fish stocks decreased dramatically. Until the 1940s, most of the salmon returning to spawn were the larger fish that stayed out in the ocean as long as four or five years. Now they are much smaller and they don't stay in the sea as long, because each year at sea exposes them to another fishing season and the likelihood of being caught and therefore not passing on their genes. A 1980 study by renowned Canadian fish biologist W. E. Ricker concluded that the average size of Chinook salmon "has been declining since at least 1920, and continues to decline". Present average weights are half or even less than those obtained 50 years ago. Another study reports a marked decrease in the average age of Chinook salmon caught in the ocean from 1919-30 to 1949-63, which he characterized as typical of an overexploited population. The same phenomenon has also been observed in other fish species. In essence the longer a fish is exposed to intense fishing activity the more likely it is to be caught, so those fish with long maturation times are less likely to breed and over time are removed from the population. In Taupo most of the fish harvested come from the lake, so a trout living for an extended period in the lake

is at a higher risk of harvest than a fish which matures early.

Well-intentioned fishing regulations are often designed to avoid the wastes associated with harvesting immature fish. Generally fishery managers regulate the size limit to allow smaller, immature trout to grow and reproduce at least once. However, minimum size limits mean greater pressure on larger fish and can apply strong selective pressures if the regulations require that large numbers of undersized fish are released in order to obtain a suitable fish to keep. Think of it this way. If you can keep virtually any fish you catch then the selection pressures are minimal – if you catch it and you like it then you kill it. However if you have to wade through half a dozen fish to find one that meets the criteria then clearly there is very strong selection for a particular trait, in this case large size (whether that be by quick growth or older age).

In previous years the minimum length regulation had minimal impact on Taupo anglers except for anglers fishing on the lake prior to Christmas. However this year as many of you can attest both on Lake Taupo, and on the Taupo rivers especially early in the run, it was necessary to release a significant proportion of the catch. With the smaller size of the fish this year then this may have exacerbated the high selective pressure on those that were above the limit. Similarly if the smaller size of the fish was because they were struggling for food then ideally you would have a significant angling harvest to reduce the trout population size. Instead the minimum length regulation required that many of the fish caught were released.

As we will see later fishing pressure and the minimum size limit is unlikely to be the most important factor contributing to the short size of the fish this year. However it may well have had a significant influence once this situation occurred.

If the reduced size of spawning fish is due to a genetic loss as a consequence

of increased pressure on larger fish then it would make sense to limit the fishing impacts by having no size limit (but still a daily bag limit) to protect more of the large valuable fish. This would allow anglers to keep smaller fish spreading the angling harvest across much more of the population rather than just the large spawners. The daily bag limit would remain a safeguard against over harvest. Similarly if the small size is due to too many trout competing for a limited food supply then an increased harvest may well be desirable to reduce the size of the trout population. The difficulty at this stage is understanding if indeed there is a shortage of smelt, is it a annual variation, or a more permanent downturn? If it is a long term trend then increasing the harvest is worth exploring but it comes at the cost of fewer mature fish available for winter river anglers, so we want to be confident it is in fact a real change.

Environmental changes and stocking

Environmental changes have also been suggested as contributing to the changing age and size at maturity of Pacific salmon. Japanese researchers found that an increase in abundance due to stocking and decrease in sea surface temperature were significantly associated with reduced body length. Hatcheries have been used to create or maintain fisheries by mitigating for habitat degradation and circumventing factors identified as limiting production from a specific region. Hundreds of millions of Pacific salmon are now cultured and released into coastal ecosystems throughout the North Pacific from United States to Japan.

Recent studies in British Columbia and Alaska argue that if the increase in salmon abundance exceeds the improved ocean productivity it would lead to increased competition, decreased food availability, and reduction in body size. The same studies also indicate that fish abundance



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

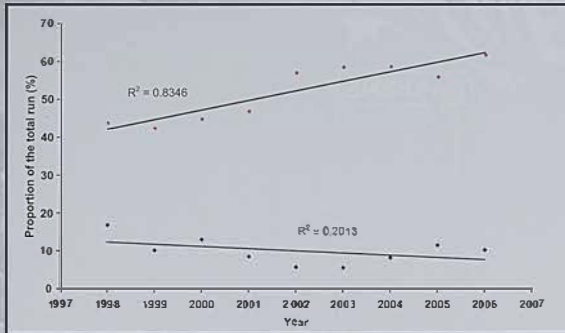


Fig. 5: Proportion (%) of the total run of rainbow trout passing through the Whipps trap from 1998 to 2007. The blue dots represent the autumn (March – May) run, the pink dots the spring (September–November) run and the solid lines indicate the trend.

appeared to have a much greater effect on body size than ocean temperature.

Therefore, environmental conditions and management actions that increase abundance of fish, through stocking for example, may indirectly reduce body size and hence the economic value of each fish caught as well as the number of eggs produced by each female. This further supports the view which argues stocking of trout in lake Taupo would not be a good idea.

River resident v. lake migrant fish

As we mentioned earlier the incidence of smaller fish this year appears to be more obvious in the Tongariro than in the other rivers like the Taupō, which have consistently produced better and larger fish. The Tongariro is the largest tributary of lake Taupo and as such can produce a substantial number of fish that can spend their entire life in the river. As the growth rate of these resident fish is smaller than those going to the lake, we have seen they are likely to mature at an older age and at a smaller size than lake reared trout. Until recently it was difficult to distinguish if adult fish caught in the Tongariro were resident or if they were fish returning from the lake. The analysis of stomach contents could only reveal the recent feeding location of the fish but was not sufficient to unequivocally attest if the fish had spent most of its life in the river or in the lake. We certainly have had

our suspicions in recent years, as have some anglers, that some of the early run fish in particular which tend to be small and quite different in appearance were possibly river residents.

New scientific tools are now available to answer this question. We have started a pilot study to explore if we can differentiate Tongariro River and Lake Taupo trout and will keep you informed of the outcome in future issues of your favourite magazine. At the moment we cannot rule out that an unusually high abundance of resident fish may be part of the explanation for the shorter size of the fish this winter in the Tongariro, though this does not explain the smaller size of the fish in the lake.

If there are more river residents this raises the obvious question as to why this year? Good conditions in the river including the absence of extreme floods and a good production of food could certainly be an explanation. If the results of our pilot experiment allow us to monitor the proportion of resident fish that live permanently in the river, and if this proportion is important then we will certainly explore the reasons that cause river production to be high or low.

Shift in the spawning runs

In the Northern Pacific where Taupo trout originated from steelhead, trout generally have two distinct spawning runs. The first run occurs in autumn when the fish move from the sea into the rivers. These fish spend the whole winter in the river before spawning the next spring. The second run occurs in spring when the fish arrive from the sea, move upstream through the rivers and spawn quickly. So overall there are two runs of fish which move at different times of the year but spawn at the same time.

Until recently rainbow trout in Taupo had a clear autumn run and it was usual to see the first fish arriving in the rivers in March, with Easter the unofficial opening of the

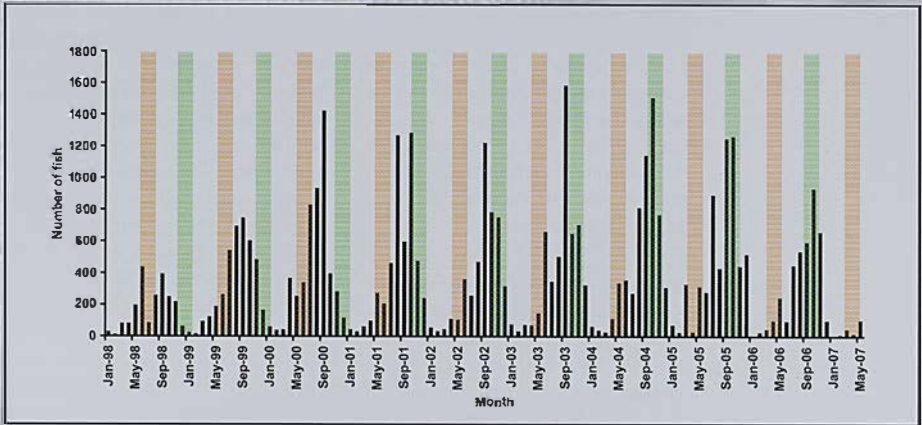


Fig 6: Monthly run of rainbow trout through the Waipā trap from 1998 to 2007. Brown bars represent autumn (March-May) and green bars represent spring (September-November).

season. Over the history of the fishery this run moved several months later but was still well underway by May. However, for the last few years this early autumn run that supports the river fishery during winter has shifted toward a more typical spring run. The size of the runs in October and November is a clear proof of that. The autumn run is getting smaller and the spring run larger (Fig 5-6).

Another interesting difference between the autumn and spring migrations through the Tongararo is the response of the fish to flow variations. The Waipā trap data tells us that between March and August, autumn run fish typically pass through the trap when there is a fresh in the river. However after August trout movement appears much less linked to freshes and they arrive at the trap in any kind of flow conditions. This has some relevance from an angling point of view: In autumn when the weather is settled and the flow stable the fish will not move much and remain in the same pools. If the stable flow conditions extend over a several weeks or months then anglers are targeting the same fish in the same pools, and as a result the fishing will get harder and harder. Come a fresh and the opportunities are reshuffled, as another pulse of fish arrives from downstream. Similarly when fish move during the autumn they

generally enter the trap during the night. In spring it's a different story, the fish move at any time and can be found anywhere. Furthermore, the trap data indicates that in spring many of the fish arrive at the trap during the day time. This signifies that fishing can be good at any time of the day in contrary to early in the season when the fishing is particularly good first and last thing during the day.

As the autumn running fish support the fishery throughout the winter the fishing pressure in winter could potentially affect the size of this autumn run. However, it is unlikely. Even if fishing pressure in winter was responsible for the decrease in the numbers of early running fish it still wouldn't explain why the spring run is getting larger.

A more plausible explanation for the shift in spawning runs timing would be in a shift of the genetic make-up of Tāmo trout. A full research project in collaboration with Victoria and Montana universities will start next January and should provide a big piece of this puzzle.

However it maybe that once the run shifted to a spring run that angling pressure and in particular the minimum size limit has acted to reinforce this. While autumn run fish don't spawn until spring, once they are in the river they essentially stop feeding and so they have had to have

reached their full body size by this time. In contrast spring run fish continue to grow in the lake through the winter. As a consequence the autumn run fish are likely to be among the larger fish in the lake each summer. Clearly at present with the smaller average size of the fish there is strong selection by anglers for the larger fish that are in the lake.

Similarly the early run fish that are in the rivers are now subjected to extreme pressure. Research indicates that the catchability of individual fish increases when there are fewer fish. All sorts of factors may contribute to this, not least that when there are only a few fish they are all in the prime lies which are known and targeted by the anglers. While there are fewer fish now early in the run, anglers have not changed their patterns of use to nearly the same extent, and over the months of May to August the Tongariro River in particular is still subject to very heavy angling pressure. Therefore this autumn run part of the population is now subjected to greater pressure than previously.

Conclusions

There are many possible explanations, but no unequivocal one, to explain the smaller size and poorer condition of rainbow trout this year. The scientific literature provides a range of clues but there is consistent agreement that the trend in fish size and age at return of salmonids is mainly dictated by environmental conditions, hatchery operations, fishing selectivity, and genetics.

The results of our monitoring suggest that for Taupo trout lake conditions during the last few years and maybe a shift in the genetics of the population are largely responsible. However now the changes have occurred our angling regulations may no longer be optimal and also be applying unintentional pressures.

If genetics are involved it may be possible to rectify by adjusting fishing regulations to protect parts of the popula-

tion carrying the "best" genes. However, the biological processes driving Lake Taupo are completely beyond our control, though there is no reason to indicate this is anything more than a naturally occurring low point. Think of it like a firm - the number and quality of stock reared will be quite different in a drought year compared to a year of regular rainfall. However you still expect it will rain the following year. Such a low point combined with a very high angling harvest was the cause of the crisis in 1990, a crisis which was much more severe as the whole sustainability of the fishery was under threat, but as you may remember the fishery quickly rebounded. The only thing we can do is to pursue all that is possible to maintain the water quality in the lake and the water quality and quantity in the rivers. Unfortunately the water quality in the lake is decreasing. Simultaneously, global warming is becoming more obvious and the increased incidence and amplitude of extreme weather events like floods, droughts, storms, and warmer water temperatures are to be expected according to New Zealand meteorologists. These events combined with changes in water quality will without doubt affect the biology of trout in Taupo in the future.

There are two critical questions. The first one is how much environmental change can trout cope with without producing any noticeable impact on fishing? The second one is whether we are witnessing the first adjustment by trout to the long term changes occurring to the lake or is 2007 just an "unusual" year? Almost certainly there are a number of influences acting, the subtle interactions between these ultimately resulting in smaller fish this year. Will these continue? We will just have to wait and see what happens over the next 12 months.

For the latest see 'fishery Update' on Page 18.

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Fishery Update

By Glenn Maclean

Top: The condition of the trout improved noticeably in October
Photo by: Glenn Maclean

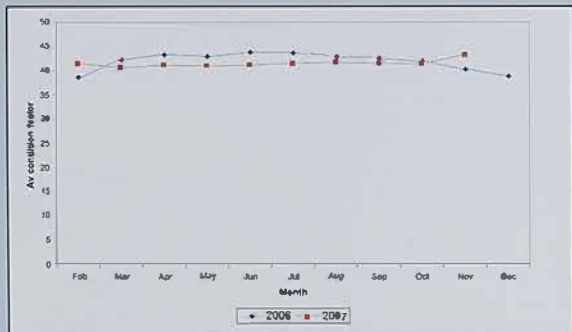
Figure 1: Average condition factor of maiden trout passing through the Waipa trap by month in 2006 and 2007

As discussed in the feature article in this issue the average size of trout this winter has been smaller than normal. Trout passing through the Waipa trap are on average 40mm (1.5 inches) shorter and 0.35kg (0.75lb) lighter than last year. The trend of smaller fish has continued through the winter but it is noticeable in the last month or so that there has been an improvement in the condition of the

trout as reflected in figure 1.

To some degree we might expect the late spawners to be in better condition than the early fish if they have migrated quickly from the lake and therefore lost minimal condition. However the same would apply to last year so perhaps the decline in trout condition late in 2006 was the first indication of a problem in the lake. Conversely the increase in condition last month maybe an indication of a recent improvement in feeding conditions in the lake. That the fish are in better condition but still small has also been reflected in anglers' catches in recent weeks.

The timing of the run in the Tongariro River mirrors recent years with the peak in the Waipa trap so far occurring in October (figure 2). Note that these figures have not yet been adjusted to account for fish which circumvent the trap when it is overtopped during large floods. At this stage it appears the run



A nice limit by
Paddy Strange of New
Plymouth, October 2007
Photo by: Glenn Maclean



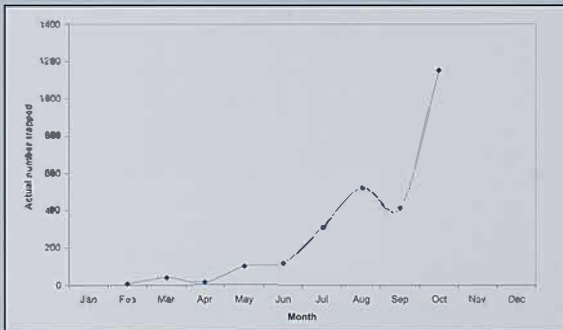
Figure 2: Unadjusted monthly rainbow run through the Waipa trap 2007

will be average though as anyone who walked the Tongariro in November will know, there were still a very large number of fish lying through the river. Similarly our monthly counts of spawning

run in other eastern rivers show numbers peaked in October in the Tauranga-Taupo, Waumano and Waiootaka Rivers. Only the Hinemaiia count peaked in September, consistent with the historical trend for the run in this river to be earlier. These counts were generally around the long term average reflecting a fairly typical spawning run, albeit that many of the fish were running after many anglers had given their winter fishing away.

Consistent with the trend of recent winters, angler catch rates of legal sized trout on the Tongariro River were well above the long term average (figure 3).

An average catch rate of 0.36 fish per hour (one fish for every 2.8 hours fishing) is the second highest recorded



Long time Tongariro identidy
Ray Legg with a small but
nice fish from the Tongariro
River October 2007
Photo by: Glenn Maclean



but highlights the difficulties of using catch rate as a surrogate for fish numbers. Rather than reflecting an outstanding run which is not supported by our trap results and other data, it suggests fish are becoming easier to catch in this river. There could be several reasons for this including that the lower river in its current form below the highway bridge is ideally suited to nymph fishing. The ability to find and share information particularly through the internet may also be having a big effect; nothing stays a secret for long now.

So overall it appears the spawning run was of typical size across the fishery, that once again the majority of trout run in spring and the fish were generally smaller and in fairly ordinary condition.

So how do the next 12 months look?

It's very early days but the recent improvement in trout condition is a promising sign. Similarly our monthly smelt monitoring is recording high numbers around the lakeshore and anglers are reporting trout full of smelt, particularly in the Western Bays. The next few months on the lake will reveal whether the fishery has turned the corner or not. However in assessing whether the fishery is on the mend it will be important to distinguish between fish which are small in the lake because they are young, and fish which are small because they are not growing. With the current late spawning there will be a lot of fish in the former category, irrespective of the conditions in the lake.

Think of it this way. Young trout in the lake normally grow very rapidly up until they reach the legal size of 45cm. The often quoted figure is 1mm a day or 3cm per month. Above 45cm their growth slows to $\frac{1}{2}$ a mm a day or even less. Let's say a typical fish in the spawning run is 52.5cm long, that then is approximately 5 or 6 months of growth from the time it reached the current legal

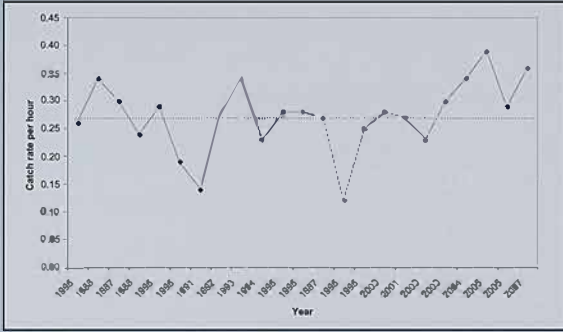


Figure 3: Estimated catch rate of legal sized trout per hour on the Tongariro River 1985 to 2007 (dotted black line is long term mean catch rate)

length of 45cm. In past decades this fish would have entered the Tongariro River on its spawning run in June or July. It won't grow once it is in the river so if it is 52.5cm in June then it will have passed through the legal limit about November the preceding year. And that's what used to happen, the limit set at 45cm to protect fish through to about Christmas.

Now though this fish runs in the spring (see the feature article) continuing to grow in the lake through winter and

entering the river sometime around September. Working backwards, then this fish reached 45cm about late March: that's the effect of the late spawning. Therefore there will be a lot of trout under the legal length this summer simply as a consequence of their move to a spring spawning run and later spawning. Clearly also the minimum legal length is not working as it used to or as intended and is overly restrictive. As reported in the last issue of *Target Tauho* we have agreed to reduce the limit but unfortunately that can not occur until the start of the new season on 1 July 2008.

So we expect to see lots of small fish this summer but what we hope to see is these fish in good condition and growing well. That is the key. Certainly at the moment anglers are reporting large numbers of small fish in the lake so let's hope they thrive. We can only wait and see.

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BOATIES

LEARN TO CATCH MORE TROUT!

The annual **FREE** Lake Taupo boat fishing seminars will again be held over the Christmas holiday period.

This is a chance to learn from Taupo fishery staff how to fish the lake successfully and is directed particularly towards visitor or beginner anglers.

The seminar will cover:

- Lifecycle of trout
- Where and how to fish
- Boat fishing methods – harling, deep trolling & jigging
- Echosounders
- Handling and releasing trout
- Key regulations/etiquette on the lake

Seminars are held outdoors. If the weather is poor, they will be cancelled and held the following day (the alternative date above), same time and place. No bookings required.

Ring the Fishery Duty Officer, mobile 027 290 7758 to check for cancellations.

Where: Kinloch Marina

When: Wednesday 2nd January 2008

Time: 10am -12 noon

Bring: Deck chair and sunscreen

(Alternative date if cancelled – Thursday 3rd January, same venue and time)

Where: Tokaanu Wharf

When: Friday 4th, January 2008

Time: 10am -12 noon

Bring: Deck chair and sunscreen

(Alternative date if cancelled – Saturday 4th January, same venue and time)

Glenn Maclean showing how different techniques target different depth zones
Photo by: Kim Alexander-Turia



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River Swimming in Winter

By Michael Hill
Michael is a ranger working
in our field operations
programme

Each year we drift dive a number of Taupo Rivers over the winter months from June until October, although with the later spawning in recent years this has extended into November. The purpose of these dives is to make monthly counts of spawning trout, the technical term being escapement counts. The objective is to identify trends in the size of the mature trout population returning to spawn in particular streams from year to year. This allows us to identify changes in overall trout density between successive years and the timing of peak density in any year.

Drift diving allows us to have a clear view of what lurks below and see under old tree trunks, into flood debris, deep pools and undercut banks. It can be physically demanding and all fishery staff involved in drift diving undergo a yearly medical. Swimming down rivers is also potentially hazardous and staff must be trained and familiar with safe diving procedures and river rescue techniques. Before drift dives can commence the visibility underwater must be sufficient

to allow an accurate count to be made. This requires a minimum visibility underwater of 3 metres, which is measured by holding a black disc under water while a diver slowly floats away until they can no longer see it. The visibility underwater is always less than it appears when looking down into the stream, which is why in some months of regular rain the stream may never clear sufficiently to be counted.

During winter the rivers are extremely cold and this plays a part on enthusiasm. We wear full 7mm wetsuits, thick gloves and booties but entering the water is still a moment of anticipation. It is a matter of taking a deep breath and making the plunge. Quickly the body adjusts but over time the fingers and toes become numb and lips lose slight function making it difficult to relay messages back to the person keeping the tally. For this reason dives are limited to one to two hours maximum; any longer and we find we have drifted through a pool and forgotten to count the fish! On really cold dives when the water is down to 5 or 6 degrees Celsius, putting

Top: Drift diving allows us to see and count trout hidden under the bank or in deep pools.
Photo by Nathan Wiltzer



Overhanging vegetation provides cover for trout but is also a hazard for the divers
Photo by: Nathan Walker

your head underwater usually means an instant headache but this disappears after a minute or two.

Each diver counts fish which pass between them and the next diver to the prescribed side. The dive leader will announce what side divers' count to, usually in the direction from shallow to deep. Each diver lowers one arm perpendicular to the river bed to allow the diver facing their back to see where to count to. Only fish which pass in an upstream direction are counted. Generally rainbow trout will drop downstream ahead of the divers until in the tail of the pool where they will look to dash back upstream. It's a matter of opening a 'door' for them and they will stream through like sheep in a raceway. At the height of the spawning runs we may be counting in multiples of

10 there are so many fish - 10, 20, 30, 40, 50, 60 and so on. Counts from a single pool by one diver of over a hundred are not uncommon.

By contrast brown trout are much more sedentary and will often lie in a nook or cranny or on the bottom beside a bedrock bank unless actually disturbed by the diver. In many ways they are harder to count because the diver must actively check each hole or overhang for a hiding fish.

To cover wider rivers such as the Tauranga Taupo requires at least 4 divers. The divers float down in line to cover the whole width of the river. Maintaining this line across the river is the key for good coverage and this can be quite tricky as flow speeds differ across the width. Divers in slow water have to kick hard to

keep up whereas those in the current are trying to slow down. Duck dives are performed when approaching deep pools, to view the bottom if it cannot be seen from the surface. Often a pair of divers will take turns, one descending as the other ascends. It can be physically very hard work performing 5 or more duck dives at one time over a long stretch of a deep pool or gorge. It is also a hazardous time, typically the deep holes are on the outside of the bank where often snags and branches are lying. The biggest risk we face is becoming entangled while our head is underwater and a big part of our diving is team work and keeping an eye on each other.

Small rivers need only one diver and a walker. The diver counts to the bank and the walker out to the diver. These rivers are shallow and a lot of the river can be counted without entering the water. In many cases the diver acts more like a dog

to scatter the fish out from under cover so the walker can count them. Who will dive and who will walk is determined with a game of rock, paper & scissors or who has done the most dives during the week.

There are 6 rivers that we monitor by drift diving: the Hinemaiaia, Tauranga Taupo, Waiotaka, Whiti kau, Waimarino and Kuratau. The stretches we count were selected based on being able to achieve good coverage, suitable spawning habitat and ease of access.

So it can be cold and it's a funny feeling to be going swimming with a good frost on the ground. However it is all worth it once in the water. It's a special feeling to be drifting quietly through a gin clear pool, tens or hundreds of large trout wheeling around in front of you. Not really working at all!



Visibility is measured by taking the distance we can see a black disc underwater. Note the clarity is often not what it seems from above the water

Photo by: Michael Hill



Access at Risk

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

The Tauranga Taupo River is one of the most popular rivers in the Taupo Fishery, second only to the Tongariro. However unlike other Taupo rivers the 1926 Act right of way for licensed anglers on foot does not extend as far as the winter fishing limit and access to much of the river is at the goodwill of the neighbouring landowners.

In recent years and with the support of the owners we have undertaken a major track development to enable anglers to walk up from the newly formed car park just south of the Tauranga-Taupo Garage to the winter fishing limit (Rangers Pool). The concept was a track that anglers could walk along at a good pace with a fishing rod and backpack, and it is well marked so that anglers can confidently follow the track and avoid wandering off across the private land. This was an essential part of our agreement with the owners, who were very supportive of anglers using the river but didn't want people wandering everywhere over the rest of their properties. Pretty damn fair I reckon!

However in recent months we have seen and have had regular reports of anglers and other recreation users taking short cuts from the carpark through the pines

up to Maniaporo's Bend, or walking in off Kiko and Hingapo Roads. Worse still several offenders when spoken too have been totally unhelpful and continued to do this, in the knowledge that they are selfishly putting access at risk for everyone. Taking a shortcut like this or even wondering off the track into the neighbouring farmland or forest is trespassing. Imagine how it would feel if anyone just wondered through your backyard when and how they please.

We are putting up notices on along Kiko and Hingapo Roads warning anglers that it is private land and anyone entering these areas without a permit will be trespassing. We have a good relationship with the landowners and intend on keeping it this way and the fishery team will be actively checking that anglers and other users keep to the formed marked track. NZ Forest Managers also have their own forest security and will be checking people using these shortcuts.

So please stick to the marked track along the Tauranga-Taupo River, as both the fishery and local landowners are on the lookout! It would be a tremendous shame if one idiotic act of trespassing caused drastic restrictions on the access for everyone.

Top: No need to cheat use the cut and marked track.
Photo by Julie Greaves.



The Waitahanui Lake Shore Just Got Bigger

By John Gibbs

In the last issue I described how the sand spit that forms The Straight at the mouth of the Waitahanui River had reformed following the break-out of the river mouth in the February 2004 flood. Well the spit continues to grow and is now a good 60 metres longer than it was three months ago.

This growth is a result of natural shore line processes that transport sand with the prevailing winds and currents. But other forces have been at work transforming the beaches of Waitahanui.

In 2005 electricity generator Mighty River Power received resource consents to continue controlling the level of Lake Taupo to supply its power stations down the Waikato River. These consents were appealed by some affected parties on the grounds that they believed the power company's actions had resulted in erosion of their Waitahanui beach front properties.

Mighty River Power agreed to undertake work to restore the beaches and to try and increase the natural build-up of sand on them. This involved initially carting in 5,000 cubic metres of sand and placing it at three sites in the Rotongaio/Waitahanui Bay and building an artificial reef in the lake just south of the State Highway 1 bridge. The reef is intended to create a tombolo or narrowing of the channel between it and the shore by trapping sand as it is washed northwards. The trapped sand then settles out on the adjacent beach. At a certain point the narrowing results in an increase in current speed in the channel and sand is then passed on through to the river mouth spit.

Environment Waikato's regional plan allows the reef to be built without resource consents under its erosion control provisions. However, the placing of additional sand on the beaches does need consents.

Top: Another load of sand goes onto the Waitahanui beach.
Photo by: John Gibbs

The Taupo fishery Area was consulted three years ago by Mighty River Power and we were able to give advice on measures to minimise impacts on the fishery. The greater Waitahanui Bay shoreline is probably the most important smelt spawning site on the eastern side of Lake Taupo. The importance of the lower river reach and mouth for angling is legendary. Our initial concerns were focussed on the possible delay to the rebuilding of the spit if the sand supply was interrupted, as well as interference with angling and smelt spawning during construction.

The outcome of our discussions was that the company agreed to do the beach replenishment outside the main smelt spawning season from November to January. Because it intended to use the DOC car park on the south side of the river to access the reef site and place some of the sand, it agreed to limit hours of work there to between 8am and 5pm daily. This avoided the prime fishing periods in the early morning and

evening. Finally, it was to reinstate the car park including repair and protection of some old erosion on its lake edge. The Taupo Fishery Advisory Committee endorsed these conditions.

Work finally got underway in October with sand being trucked in from Genesis Energy's dredging disposal dump at Lake Otamangakau and from Three Mile Bay. Due to various delays, Mighty River Power was unable to complete the sand replenishment by the end of the month and we agreed to a variation to its consent to allow that work to continue until 7 November. It was finished then and the car park has been reinstated.

Work continues on building the reef. Boulders are loaded on to a barge - 30 tonnes at a time - down at the Pakira marae. The barge is then pushed up to the reef site and unloaded with an on-board digger. When finished the reef will be 30m long, 10m wide at the base and extend about 0.5m above the mean lake level of 356.7m. Its inner edge is about 25m from the shore.

30 tonnes of rocks being placed onto the artificial reef.

Photo by: John Gibbs





Almost done - the reef much as it will look when finished.
Photo by: John Gibbs

It is expected that the sand accumulation adjacent to the reef will take 2 to 8 years to reach an equilibrium when most sand will then continue to drift northwards. Up to 5,000 cubic metres of sand may be added down the beach each year. If necessary, Mighty River Power will add sand north of the reef to ensure the spit

is not starved of the supply it needs to grow and maintain. Regular monitoring will be done to measure changes in the beach and submerged shelf, as well as changes in the river mouth. If it all goes to plan, the future angling opportunities of the Waitahanui Rip and The Straight will be assured.

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Whoio on the Tongariro

By Julie Greaves

The Central North Island has the highest density of New Zealand's most endangered water fowl the blue duck, otherwise known as whoio. Even so they are an uncommon sight except to those hunters, anglers and other users that access the headwaters of the rivers flowing from Tongariro National Park or Kaimanawa Ranges.

So it was a special event when in early October, a family of whoio including 7 ducklings, made themselves home on a not so remote location on the Tongariro River, just upstream of the Blue Pool. Whoio have always been present on the Tongariro but tend to move around a lot, and are not as territorial as on many other rivers. Rarely are they seen these days below the winter fishing limit upstream of the Whitikau confluence.

What is also unique with this resident family is that there are 7 ducklings which is very unusual in one brood. The only other time a similarly large number of ducklings have been spotted locally was on the Manganuiateao River near Raetihi,

where a family of 8 were reported.

Whoio utilise a very distinctive habitat living in clean, fast flowing rivers. Both male and female are grey-blue in colouration and can be hard to see at times as their feather colourings merge with the river rocks. They have unique features such as a streamlined head and large webbed feet to enable them to feed in fast moving water. Their upper bills are very thick but soft at the end compared to other ducks, and have a fleshy lip that overlaps allowing them to scrape food (insect larvae) off the rocks. Whoio is one of only three species amongst the world's 159 waterfowl species that live year round on fast-flowing rivers (torrent ducks). The others are found in South America and New Guinea.

One of the most distinctive features of whoio is that they don't quack like most ducks but instead the male call is a high pitched whistle - (from which is derived the Maori name "whoio"), and the female (most appropriately) makes a grunting, rattle like call. This is a very useful tool

Top: Whoio adult and chick, a rare sight for most of us.
Photo by: Lucy Roberts

for any ranger who needs to determine the sex of a pair when banding, or equipping the birds with transmitters.

Originally thought to pair up for life, recent studies have shown this is not always so. In 40 percent of cases where they do change mates this was as a result of a neighbour that had lost his mate and was determined to do something about it. Who nest between August and October and lay 4-9 creamy white eggs. The female then sits on the nest for around 35 days and the chicks can fly at around 70 days.

The juveniles moult between December and May. Early morning and late evenings are when they are most active, preferring to hide in caves, logjams and similar places during the day. Who can be very territorial birds, with territories up to 1 km long. However territories appear to

be a bit more transient on the Tongariro, perhaps because of more human disturbance. They are a plucky bird, and defend their territory aggressively against other blue ducks, paradise ducks, and even shags and gulls.

Eight hundred years ago New Zealand was abundant with bird life, and a majority of these birds had never evolved defence mechanisms against mammalian predators simply because they didn't have any. However following the arrival of the first Maori who brought with them the dog (kauri) and Polynesian rat (kiore), and the use of fire and hunting, the bird species declined by almost a third, and the native forest by a quarter. They suffered another blow when, over 200 years ago, Europeans arrived and introduced more exotic animals and made intensive use of the land, further

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Mum, dad and the kids.
Photo by: Eubs Smith

reducing the forest by another third and the bird species by another 13 percent.

With little time for these birds to adapt and evolve to the changes to their environment, humans have had to intervene to stop them becoming extinct. However unlike other endangered birds such as the black robin and kakapo, who cannot be removed and shifted to predator free areas and islands because of their specialised habitat requirements.

Public awareness has now increased in regard to native birds including the whio. In the past 15 years, without the efforts of conservationists, scientists, volunteers and other agencies, the whio may have become as endangered as the black robin in the 1980's, or disappeared completely. Blue ducks are classified by the World Conservation Union as endangered and in New Zealand as Nationally Endangered. It is estimated that about 640 pairs remain in the North Island, and with just under 700 pairs in the South Island there is an estimated total population of between 2,000 and 3,000 individuals.

The central North Island is the main habitat for blue ducks and holds most of the North Island population. Threats to the blue ducks in this area include volcanic lahars, loss of habitat, preda-

tion, competition, flooding and disturbance. The Department of Conservation monitors four main rivers in the central North Island. These are the Whakapapa, Mangatepopo, Manganuiateao and the upper Whanganui rivers.

The number of pairs present in these areas is currently estimated at around 36. As commented earlier, these strongholds are out of sight for most of us. However the whio family which has taken up residence at the Blue Pool is at a much more popular site, especially with anglers and rafters/ kayakers. So we ask that you keep an eye out for the ducks and their chicks. If you are walking or fishing and you have a dog with you please keep it under control at all times. As the chicks get a little older they will start to leave the parents and explore more. Please report any sightings to the Turangi/ Taupo DOC area office as the location and number of chicks seen is important information. A grid or GPS reference is also useful but not essential. Thanks for this and enjoy the opportunity to view one of New Zealand's special birds.

Any sightings can be reported to Turangi/ Taupo Area Office on (07) 3868607 or email tinfo@doc.govt.nz



Left: Steve Logan (left), presenter for *Hunger for the Wild* talking to Dave Conley
 Photo courtesy of Fish Eye Productions

By **David Conley**

Dave is the Community Relations Ranger at the Tongariro National Trout Centre

Spring is well and truly underway now, and the Tongariro National Trout Centre has been a hive of bird activity. One of the features of the site are the huge kowhai trees, and they attract large numbers of tui and kereru at this time of year. There is also a lot of Australian waratahs interspersed along the Waihukahuka Stream, and these are also a great attraction for the tui. There are native falcons to be seen above the cliffs along the river, and cuckoos in the bush. If you enjoy the opportunity to see some of these birds up close, then the Trout Centre has been a great place to visit. One thing that I find surprising is just how many New Zealand visitors say they had not seen kereru (native pigeon) in the wild before. Down here I have had to shoo them off the footpaths at times!

The fishery team made an appearance on prime time TV recently, with the visit of TV One's *Hunger for the Wild*, which aired on October 20th. The show included a fleeting visit to the Trout Centre, which prompted one of my mates to suggest "if that's your 15 minutes of fame you have been short-changed. You should ask for a refund". Perhaps as a result of keeping my screen time to a minimum, the show was an excellent watch, and really showcased some of the great attributes of the fishery and the region. Sadly one of those attributes is no longer with us. Bruce Giant, a larger than life local personality who featured on the show and someone I knew through a previous job, has passed away since the show was filmed, his presence added poignancy to the whole show. For those of you who missed it, the show is available on DVD and is well worth the effort, as the producers really

seemed to get to the essence of what the fishery means to people.

Another highlight was the recent visit by Al Morrison, the Director-General of Conservation, as he made a brief trip through the central North Island.

His visit was a great chance to highlight the work being done at the Centre, and showcase the relationship between DOC, the Trout Centre Society and Genesis Energy. I was busy with a school group dissecting a trout, which is inevitably a highlight for the kids: it was interesting to see that the kids were so engrossed with what was going on they didn't even notice the presence of Al and his entourage. I think it was a reminder for us all that what we have here is a real gem, and will continue to

grow and flourish if we take the time to foster the special relationships we have with our stakeholders.

By the time this goes to print we will have lost much of our current stock of fish at the Trout Centre. In the hatchery some of the younger fry have been taken back to be released in the headwaters of the Hinemaiaia catchment (see story on page 63) and the fish-out pond will have had its annual empty and clean, the fish from the pond due to be collected by Wellington Fish and Game on December 7th.

But it is not all bad news, as we may have a novel addition to the TNTC family in the next little while. Whilst I can't say much now, there is an old saying. If it looks like a duck, and whistles like a duck..?



Dave Conley (lcf), Nathan Walker and Harry Hamilton put the finishing touches on the path to the new fish pass

*Photo by Kim Alexander
Tutia*

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

Cortland 444 SL Precision® Tapers are an exciting new line of species specific fly lines designed to turn over flies perfectly, accurately, every time. Important new features of the Precision Tapers include (on some models) the availability of half weight line sizes, two tone for easy pickup identification and an exciting new taper design called the rocket2. Driven by the tremendous diversity of fly rod actions, fly anglers will now be able to more precisely match their fly line weight to their rod's action. A color change has also been included, indicating the maximum load point for easy pickup. Finally, Cortland, the innovator of the original Rocket taper, now introduces the Rocket2 taper design – more weight up front for directional stability, with a long front taper for delicate, precise presentations backed up by an extra long back taper for maximum aerialization.



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The Real Deal.



How Long is a Piece of String?

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

Undersized fish can be very frequent at times especially during the summer, whether fishing the rivers with a dry fly or out trolling or jigging on the lake. Small fish have also appeared amongst the winter runs partly as a result of the later spawning runs, and so it is important that anglers take care when measuring fish to ensure that the ones they keep are legal. It also raises the point of handling and the need to minimise the contact with the fish to increase its chances of survival. Over the past 5 years I have seen numerous items which have been used to measure fish, with boat anglers taking the prize for good old Kiwi ingenuity. These have involved everything from plastic guttering to a piece of string with the odd DOC fish sticker in between! This article looks at a few of the options available and provides suggestions to some of the

better options in terms of staying legal and minimising stress to the fish.

After attending the recent Kinloch fishing competition weigh-in during August it was clear that several anglers had not been careful enough when measuring the fish they had brought in. This was emphasised by the fact that these undersized fish could not be entered and a DOC Ranger was present at the weigh-in. Why would you knowingly bring an undersized fish to such an event? After questioning these anglers it was apparent that both carelessness and poor understanding were the main reasons for them keeping undersized fish. However, if this is what is occurring during a competition then how many undersized fish are being taken each day accidentally?

As mentioned above, carelessness is a popular reason given for not properly

Top: Quick, accurate and easy on the fish.
Photo by: Glenn Maclean

measuring a fish - "I just used my eye-ometer", or "it looked close enough". The size limit is there to protect the fishery for future years and so by taking undersized fish you are also affecting the fishing for yourself and other anglers for years to come. As rangers we have heard many excuses for undersized fish but there is really no excuse for not taking the time to properly measure your catch.

Another common problem was anglers not knowing how to correctly measure their fish. Some anglers thought they were doing right by measuring the fish across the body taking the curvature of the fish into account, and so were actually making their small fish appear legal! The key here is to lay the fish flat and hold the tape measure straight across the fish without following the curvature of the fish from the tip of the nose to the fork or V of the tail.

Another classic yarn was one angler who had attached an official DOC fish measure sticker to the lid of his fish bin despite the lid having a raised outer edge. This had the effect of reducing the fish sticker by a whole 2 cms as it lost length as it went up over the outer lip. The scary thing was that this guy was a builder and should clearly have known better!

A piece of string is also commonly used but care needs to be taken to ensure that the string remains at the correct length. Similarly a piece of wood cut to size can also be used or a rod marked using insulation tape to show at least 45cm up from the butt. However, many of these methods are not fish friendly and involve a considerable amount of handling and time out of the water which ultimately reduces the likelihood of a fish surviving whether it is undersized or not.

Any method that requires the fish to lie quietly and flat while you line one end of the measure up with the tip of its nose and the other with the fork

of its tail is causing unnecessary handling, and a real risk of getting it wrong. The reality is that by the time you have checked the measure lines up with the nose and the tail that your hand or the fish has moved and on and on it goes. Far better is to have a board or trough with a raised edge at one end that you simply slide the head of the fish against and can quickly check the V of the tail extends past the 45cm mark. Quick, simple and accurate!

One of the best measuring devices I have seen is a piece of white plastic guttering with an end piece attached cut to a length of 45cm. This device allowed the angler to measure the fish from the boat while still keeping the fish in the water. He just simply slid the fish in the gutter pipe and could immediately see whether it was large enough or not. If too small, the fish could easily be released using long nosed pliers or forceps to remove the hook, while if it was a keeper it could simply be netted aboard. It was also very cheap to produce.

Thus although there are many ways to measure a trout, it is important to consider the wellbeing of the fish. We cannot stress enough the importance of leaving the fish in the water and releasing it quickly and carefully, as the unintentional mortality of fish especially during the summer months can be high. River anglers are also reminded to try and keep the fish in the water as a fish dragged up onto the sand and measured before being photographed, handled further and then released is unlikely to survive the whole ordeal. Official DOC fish measure stickers are available for free from our Turangi office but please ensure they are attached to a nice flat surface! Don't forget that the size limit is still currently 45cm and will remain so this season.

WHAT TO DO WITH THE KIDS THESE SUMMER HOLIDAYS?

Bring them to the
Tongariro National Trout Centre
to discover the wild world of trout!

On the 8 January 2008 and again on the 15 January as part of the Department of Conservation's Tongariro-Taupo Summer Programme, the Taupo Fishery is running two Kids Trout Habitat programmes. These are fun days for the kids from 10am to 2.30pm at the Whakapumautanga Downs Learning Centre.

Join staff for a great time, touring the Tongariro National Trout Centre – learn what a fishery is and help feed the fish. It's a hands-on day with a scavenger hunt and activities to get the kids into the world of trout.

Each day is limited to 25 children from age 7 – 12 years. Bookings are essential.

Please contact Kim Alexander-Turia, telephone 07 386 9259, email kturia@doc.govt.nz

Please bring lunch and a raincoat for bad weather, the day will still go ahead if it's raining. The cost is only \$4 for the whole day and the proceeds will go to the Tongariro National Trout Centre Society.

Fun finding creepy crawlies
Photo by: Kim Alexander-Turia



'Test Fish' the magnificent Sage Z-Axis!

By Mike Davis



The Sage Z-Axis has proven to be without doubt the finest all-round fly rod I have ever used. It's versatility makes it ideally suited to the varying trout waters and fish sizes in this great country of ours. The advanced graphite in the Z-Axis gives it a fast action but with a soft tip. For the finesse needed on spring creeks to the power and line control requirements of our large freestone wind exposed rivers, the action of the Z-Axis blends effortlessly to give the angler a fantastic all round fishing experience.

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Sage appointed Hunting & Fishing New Zealand's 26 stores as agents for its state of the art range of fly fishing equipment at the start of the 2007 season. Mike Davis, a co-owner of Hunting & Fishing New Zealand Rotorua, is a highly respected angling writer, fly fishing tutor, guide and total enthusiast. Mike believes that a Sage Z-Axis will make most anglers more successful through greater casting accuracy and effortless distance over a variety of situations. At Hunting & Fishing New Zealand stores it's now possible to take away a loan Sage Z-Axis for a 'Test Fish'. On this page Mike encourages, through words and photo's, for all anglers to seriously consider this awesome opportunity.



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Summer on the Tongariro

By David Conley

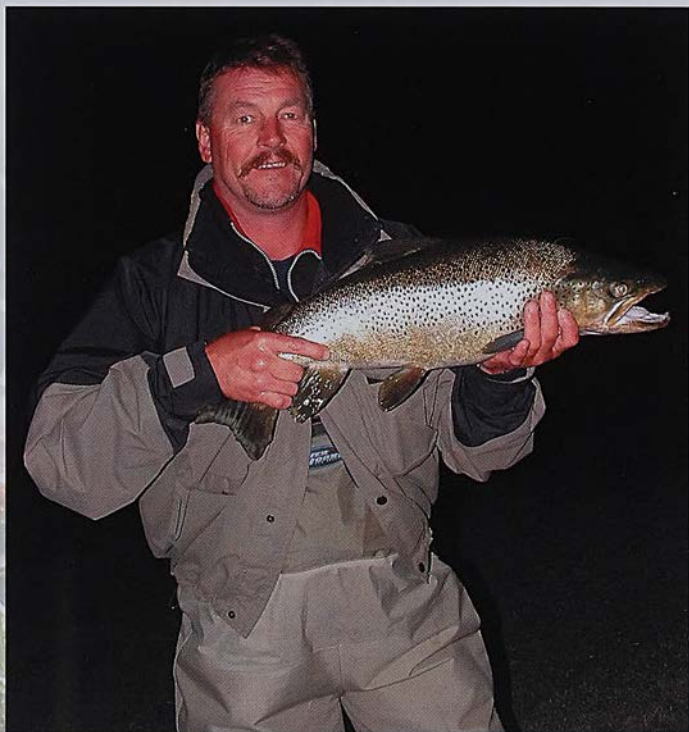
Although the Waipa fish trap can still be busy with trout running up to spawn, and the eastern tributaries of Lake Taupo continue to provide some awesome “winter” fishing, the run-up to Christmas is always a time I look forward to as it signals the beginning of what I think is the Tongariro’s greatest fishing season. If you believe the anecdotes of visiting anglers, as well as what you read in overseas books and magazines, then summer on the Tongariro is unparalleled anywhere else in the world in terms of the scope of the fishing opportunities available to anglers. I tend to agree that we Kiwis have been slow to really appreciate the Tongariro as a summer fishery.

At least once a summer I try to fish the length of the Tongariro from the lake to near the winter limit in one day. While on the face of it this might appear as a somewhat masochistic undertaking given the distance

involved, what it does is remind me what a diverse and fascinating fishery the Tongariro River is.

After conning an obliging mate into dropping me off, I start the day at dawn on the blind mouth at the Delta, where smelt and fish offer a reasonably easy target at the change of light. Armed with a 6 weight rod and clear intermediate ‘jelly’ line, the early part of the day offers a chance to target fish in the shallows around the delta, before they move out to deeper water with the rising sun. While your catch will be largely be made up of mending kelts, there is every chance you can burgle a nice maiden rainbow, or even a big brown with the right approach. In general I like to fish what I can see, rather than blindly prospecting the rip. I guess this is a reflection of my personality, afflicted as I am with some kind of piscatorial ADHD. This means I will move back and forth along

Top: The result of using a cicada chironomid
Photo by: Dave Conley



Richard Knight with an example
of a delta brownie
Photo by: Dave Conley

the drop off, looking all the time for signs of fish moving. Only when I have pinpointed a fish will I make a cast. The key to try to cover the water in front of any trout you see working or cruising the drop-off. On days with a bit of breeze the browns will often venture right up onto the drop-off itself, and often give themselves away amongst the waves as their tail breaks the surface like an olive shark fin. These fish are almost always feeding, and respond really well to a smelt or bully fly swum across their nose.

After a reasonably short, but often frenetic session, the rising sun will have put paid to the obvious activity, and I will start making my way up the river, swapping the intermediate line for a floater. Personally, I am a real fan of the old double taper. I think their ability to cope with wind is much maligned, and for me they have a definite advantage in presentation. The blind mouth is pretty hard

work for the first little bit, with the soft ash and sand which makes up the bottom of the river being like trying to wade in treacle. If you persevere though, you will be able to pop out on the true left of the blind channel, and from then on things get much easier. Keep an eye out as you go, because in amongst the shoals of rainbow fingerlings will be the big brown bruisers that make the lower river famous. As anyone who has ventured down to the bottom stretches of the river will know, these big browns lie about like basking sharks, often in barely enough water to cover their backs. They can be so indolent they almost have to be kicked before they will move out of your way, and even then they look at you with a malevolent disdain as they move off.

A good many people say these fish cannot be caught, and for the most part they are right. But over the years I have come up with a



Three keys to success down low.
Photo by: Dave Conley

couple of tactics that work well for me. The first part of my strategy is to keep moving, not wasting time to fish to every fish and likely lie, and when I do cast to a fish then nor to make more than a cast or two. In my experience, these browns respond almost instantly to the fly, or they will not respond at all. You hear of the occasional fish which takes after what seems like dozens of presentations, but I think they are exceptions to the rule, and don't justify spending time on each and every fish. Instead, once again fish what you can see.

You will spot brown after brown lying along the banks and under willows, and I think you can ignore most of them once you have taken the time to assess them. What I look

for is movement, especially lateral or side-to-side movement, and this is what I think is the second key in being successful down here. Even the merest shimmy can indicate a fish that may be willing to take, and it is these fish that you should target. The ones lying as though they have rigor mortis should be left alone, and your time better spent moving on, looking for the rare fish which betrays itself with a little positive body movement.

Choice of fly can be important, as browns will be browns after all, and it is soul-destroying to get that trophy fish to finally move to your fly only to have it refuse at the last second and immediately resume a sullen disinterest. Some anglers like to nymph to these fish, but I prefer to throw one of 3 different dry fly patterns instead. Obviously, as your ears let you know at this time of year, first cab off the rank should be a cicada. I always start with one, only changing if it becomes apparent the fish won't move to it. There are two types of cicada common in the lower river, particularly the large black cicada which frequents the willows and poplars which line the river. A second species is the small green or rust coloured cicada found in the cutty grass which hangs over large sections on the lower reaches. While these cicadas are much smaller and quieter, I tend to think they are a very important food source for the browns, and I always carry imitations in my fly-box. I alternate which pattern I use depending

A brown lying 'doggo'
 in the lower river
Photo by: Dave Conley



on the type of vegetation along the bank I am fishing, but I will always fall back on the cicada as a 'go to' pattern. Don't be afraid to fish one with a bit of size too, as these are big fish, and I think you may have to make it worthwhile for them to make the effort to eat your fly. Look at this way. If you were dozing on your couch, and someone put a peanut or two just out of reach, you may not bother moving to get them. But a bowl of peanuts may be altogether different, and I think these fish are much the same. Like any big predator they are fundamentally (but not terminally) lazy.

Having said that, the other two flies I carry down here are quite the reverse, and indicate what a perverse creature the brown can be. Be sure to have a good beetle pattern with you, smaller is better, as well as a lace moth or passion hopper pattern if you are a little late in the season. Every now and then you will watch a large brown steadfastly refuse a size 8 cicada, only to immediately turn on a size 18 lace moth. Go figure!

By late morning I will have made my way up the river to Avamare road, to pick up my car

from the angler access point at the road end. That is, if your obliging mate was prepared to help you drop it off on the way to the marina earlier.

From here on my target will switch and I am looking for resident and recovering rainbows in the middle stretches of the river. Once you get above the willow lined sections of the river (which do hold huge numbers of rainbows as well), almost any stretch of the river has the potential to fish well, and there are numerous features to look for. Two keys would be foam lines along deep banks, and slick or glassy patches in amongst more rapid sections of water. Once again, I tend to fish only with a dry fly unless a good fish is steadfastly nymphing, and I fish quickly. There is little point in making multiple presentations to a piece of water, unless you can see a fish which is actively ignoring your offerings. For the most part, fish will take in the first or second cast, or not at all.

My favourite section would be anywhere from the Hydro pool upstream, and you should always have your eyes peeled for the browns which hang out through the

Favoured water in the middle river

Photo by: Dave Conley





The Target

Photo by: Dave Coucy

mid-sections of the river. There are smaller resident fish, as well as the really large fish migrating upriver from the lake. These can be suckers for a well presented fly, and as with the lower river the keys to target the 'animated' fish. For what it is worth, my theory on these fish is that they move into the river in late spring and early summer to coincide with the downstream migration of the rainbow fingerlings, as these appear to form an important diet for the bigger predatory browns as they seek to stack on condition before spawning. It is very common for the stomach of large browns I keep for the smoker to contain 2 or 3 rainbows up to 9 inches long. I think the browns are largely nocturnal, which explains their sleepy behaviour during the day. However, the occasional brown does feed during the day likely due to having had scant pickings for the previous night or two, and they are hungry. That is why when you find one, slow down and take the time to analyse its feeding pattern. You will normally only get a couple of good chances at these fish, so it important to get your fly selection and presentation right. When in doubt, put on a cicada!

This can be a sensationally fun and visual time of year to fish, with days when it seems like every riffle and stick has a number of trout

in it willing to eat your cicada. By and large your catch will be either young juvenile fish of around 30cm in length, or older spent fish which are recovering from their recent sexual shenanigans. The youngsters are often superbly conditioned fish which 'punch above their weight', jumping and careering around the river. I always find a number of fresh run fish will take the dry as well, which I guess is not surprising when you consider that a large dry fly pattern 'skated' across the surface is a favourite technique for steelhead in North America.

By late afternoon I have worked my way up above the Rut Hut bridge, and admittedly will be a bit leg-weary at this stage. Taking a moment to sit by the river what I can't help but admire is the diversity of the fishing experience I have just had. Where else in the world would you come across a resource like this, where you can actively target fish ranging up into the double digit size bracket, with a variety of techniques and a warm summer sun on your back? When the river wants to play, I doubt there is a better trout fishery in the world, and the best bit may still be yet to happen!

This is an opportune time of day to try and manipulate yet another long-suffering friend into bringing a bite

to eat down to the riverbank, preferably with something cold to wash it down with. Wine is good, but care must be taken not to partake sufficient to cause terminal damage to your casting stroke or wading step! The ideal position to find yourself in is the true right bank of a sheltered pool, where you can watch the last rays of the setting sun as they settle on the river in front of you. Unless your hapless friend happens to be of the opposite sex, this is not with romance in mind, but instead offers the best opportunity to see the rise form of the trout beginning to harass the evening hatch!

The Tongaroto can produce huge amounts of mayfly and caddis if the conditions are right and the hatch fishing can be just the icing on what will have been a memorable day. I favour a technique where I will fish a dry fly with a small soft hackled emerger a metre or so below it. A pattern like a Goddard's caddis, tied with a dark olive hackle, is just the ticket for matching the caddis, and I will usually fish a dark caddis emerger as well. This rig has the benefit of fishing well through a full 180 degrees. That is, cast well upstream it fishes as a standard dry/dropper rig until it gets below

you, at which point allowing it to swing and skate across the current can result in an explosive take as a fish slashes after it. Fished this way, you can fish well on after dark, forgoing the upstream cast and concentrating on fishing 'across and down', just like granddad did.

Finally, once dark closes in around you it is time to drag your tired body off the river and head for a cold beer and a shower, content in the knowledge you have picked the eyes out of one of the world's great fisheries. One nagging thought remains though, 'just what do all those brownies get up to at night?'

When it comes to that, I just may know a bloke who has a tip or two. But this is for the next issue of *Target Taupo*.

Caddis are essential patterns for the evening rise.

Photo by: Dave Conley





On the Right Side of the Court

By Callum Bourke
Callum is a ranger in our field operations work.

In September, John Gibbs, Glenn Maclean, Bruce Harvey (DOC Ruapehu Area) and I attended a two day prosecution workshop at the University of Canterbury School of Law, Christchurch. It may seem a far cry from fishery management but is a necessary skill in terms of enforcing our fishery regulations.

The workshop was a pilot course attended by Fish and Game and Department of Conservation staff and presented by 5 experienced lawyers. The object of this workshop was to give us the opportunity to gain knowledge and experience of the role of the prosecutor in making the decision whether to prosecute, and if so how to undertake the court process. It was a great opportunity to 'pick the brains' as it were of the presenters, who all have extensive experience as either practising lawyers or academics.

The first part was presented by Brian Dickey, a partner with Meredith Connell – Office of the Crown Solicitor, who addressed the Summary Proceedings Act. This involved discussing the prosecution guidelines and what is necessary for a prosecution to commence. The second part was presented by Dr Chris

Gallavin, Senior Lecturer of Law at the University of Canterbury, who discussed evidentiary requirements when prosecuting. Such things as determining how certain evidence can be legally gathered and what evidence would be considered admissible in court. Helen Gilbert, Barrister, took us through developing an effective Summary of Facts and Victim Impact Statement. The workshop participants certainly took note of this section as we were all required to develop our own Summary of Facts and Victim Impact Statements that we would later present in a moot court.

James Rapley, Barrister and part-time law lecturer at Canterbury University, then discussed the dimensions of effective advocacy. This involved how to present information to a judge or jury in an effective, persuasive manner. Studies have shown that that 60% of the message is conveyed by body language and physical appearance generally, 30% of the message is conveyed by tone of voice and only 10% of the message comes through the words used! This was a very interesting session to hear what works and what doesn't from such experienced practitioners. It certainly wasn't quite as TV might often portray!

Top: John Verry, course coordinator and judge in the moot court with the course participants from Fish & Game and DOC.
Photo by: University of Canterbury

Finally John Verry, General Counsel and Employment Relations Manager at Canterbury University, was responsible for overseeing the course and providing general information and feedback when required.

Each of us was then required to supply a case file of a conservation offence that we could develop and amend considering the information we had learnt on the course. Once we were satisfied with the content it was a matter of putting our newly acquired skills into practice and presenting the case in the moot court for the class to critique. In the first instance a guilty plea was assumed. It was very interesting listening to the various cases that were presented from around the country and the feedback from the lawyers, though more than a little daunting when it was actually our turn.

After presenting our initial case we then each had to take part in a status hearing. This is the next step in the process when a not guilty plea has been entered. It is an opportunity for the informant and defendant (and their lawyers) to discuss the case with the judge in a relatively informal manner instead of going straight to a defended hearing. In this forum both parties

discuss their intentions and work out what stance they intend to take. Basically, everyone lays their cards on the table and work out if it's in their best interest to proceed further. If a defended hearing can be avoided then so be it, ideally every poacher would plead guilty! I certainly was a very successful pilot and we learnt a lot about being effective prosecutors. The knowledge gained will further assist us in our enforcement of the fisheries regulations which are there to protect the resource we all treasure. Our thanks go to Brian, Helen, Chris, James and John for their expert advice and the open manner in which they transferred their knowledge.

Summer Fishing

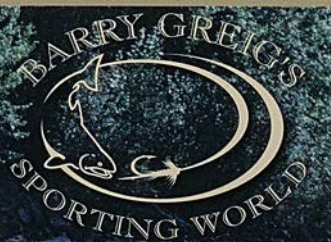
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Didymo - A Second Chance

By Glenn Maclean

What would life be like with didymo? Well on the 31 October it looked very much like we were about to find out, and as many of you know it wasn't a great feeling. Personally I was in Christchurch, ironically attending a meeting on funding our efforts to keep didymo out of the North Island when I heard about the finding of dead didymo cells in the Tongariro River. It was a lovely afternoon flying back to Taupo but a sick feeling looking down at the rivers under me thinking they might soon all be infected.

What would didymo mean for the central North Island? We don't know and despite the opinions expressed in the days following the find, neither does anyone else.

What we do know is that in the South Island it does particularly well in lake outlets, probably as a consequence of the reasonably constant flow and low sediment load. While rivers flowing from lakes are less common in the

North Island, very similar conditions are created downstream of the numerous hydro dams.

Clearly if didymo blooms as it has done in some South Island rivers (but not in others) then the huge growths will have a major impact on this area in terms of the ecological impacts, effect on angling opportunity and other recreation, and the social and economic loss. That's not rocket science but the big unknown is will it bloom?

Short of didymo getting here we just don't know. However it is simply not worth taking the risk!

On 31 October routine monthly monitoring detected dead didymo cells in samples taken from the upper Tongariro, Whanganui, Mangatepopo and Whakapapa Rivers. Immediately Genesis Energy ceased diverting water across most of the Tongariro Power Scheme to avoid spreading any didymo further. This is the first time essentially the whole scheme has been shut down and represented a very significant cost

Top: Would didymo bloom like this in the Tongariro River - we just don't know!
Photo: by Glenn Maclean

to Genesis Energy. Over the following days many further samples were taken, the surveillance net spreading wider and wider to try and establish if there was a live didymo infestation somewhere in the local or more general area. At the same time an intensive effort was put in on local rivers to ensure any didymo was contained. At any time up to 25 staff were manning access points or roving along the rivers contacting anglers, kayakers and other river users and washing their gear. The Tuwharetoa Maori Trust Board (TMTB) and Lake Rotoaira Forest Trust also closed the four access roads to the upper Tongariro River. The combined response from Biosecurity New Zealand, Fish and Game, DOC, Genesis, TMTB and Lake Rotoaira Forest Trust amounted to more than 1500 hours of staff time over 5 days and reflected how seriously the various organisations viewed this possible incursion. This effort was supported by local businesses including commercial rafting companies who stopped rafting the upper river at a considerable cost, outdoor adventure schools and recreational users such as kayakers who avoided the rivers despite the excellent conditions which prevailed with the closure of the intakes.

What has ultimately transpired is that the

samples were contaminated with dead didymo cells via dirty sample bottle lids sent from a Christchurch laboratory.

So the good news is the local rivers are still didymo free. Coincidentally a planned national delimiting survey commenced the first week of November to take samples from rivers and streams all over the North Island. This in conjunction with ongoing weekly surveillance in the Tongariro and Western Diversion rivers will be a further check that North Island rivers are still free of this scourge. This incident re-enforces two big lessons. I don't know how many times people have suggested to me that they don't need to clean their gear because they haven't been in the South Island or anywhere where there is didymo. The reality is you just don't know if your gear may be contaminated so clean your gear after every trip, simply as a matter of routine!

Secondly, the cells were dead so even if they were introduced into a river they were not going to create a viable colony. Killing didymo is as simple as drying or freezing your gear or saturating it with 5% detergent or disinfectant.

As it has turned out this possible didymo incursion was a near miss. It caused a lot of uncertainty and concern and that

Gerald Inskip of Eastern Fish and Game washes down trampers in the Waipakahi Valley during the didymo scare.
Photo by: Gerald Inskip





Rob Pitkerbley of Eastern Fish and Game decontaminates after working in the Whakapapa River.
Photo by: Gerald Inskeep

was unfortunate. However, we have got a second chance which we thought was long gone on the afternoon of 31 October, so let's make the most of it.

Over the coming summer the Central North Island Regional Partnership Group has a number of new initiatives, as well as a continuation of much of the existing programme to encourage all of us to clean our gear. These include new banners, posters, sandwich boards, advocacy staff on the rivers and lake, and working with key stakeholders. There is also a free retractable 'zinger' reel for fly-fishing anglers who sign a voluntary declaration that they clean their gear. However, at the end of the day the Group is not going to solve the problem on its own. It's about all of us taking responsibility for our own actions and making sure we do clean our gear, but also taking opportunities to promote the message in our own way. Simple stuff like ensuring our visitors over Christmas clean their gear, or in talking with a fellow angler on the river bank encouraging them to do likewise.

Personally, I have done a lot of angling surveys over the last few months and I'm really encouraged by how widely the didymo message has spread. I can't

remember when I last ran into someone who didn't know about didymo, and many of you are cleaning your gear, freezing your boots and so on. That's great! Clearly there are also those who aren't but if we all, in our own way, take any opportunity to encourage these people then with time we may change them. I have to say I don't have patience anymore with people whose excuse for not cleaning their gear is that didymo is inevitable, or they don't fish anywhere else, or any other reason. The fact of the matter is it is a 5 minute job to clean our gear at the end of each trip and it is our contribution to ensuring the rivers and lake remain healthy and our sport unaffected. It's not a big ask and anything less is selfish on their part.

It's not just about didymo; there are any number of other freshwater pests around the world which potentially pose a major problem for our rivers and lakes. Unfortunately it is the world we live in now that these pests are only a day's travel away, and as a matter of routine we should clean our gear to ensure we don't unwittingly transfer another nasty to our favourite waterway. It may not even be a pest where it naturally occurs but when introduced into a new habitat it becomes a whole different story. For example, a major concern in the western United States is a small black mud snail which can occur in densities of up to half a million snails per square metre, dramatically impacting on the ecology of the stream. Fortunately in this case this is one pest we don't have to worry about, as it came from here and is native to New Zealand!

So we have a second chance. The recent scare bought home the significance of a potential didymo infestation but fortunately it's still not here. Let's make the most of this opportunity and ensure sure we play our part by always going through **CHECK, CLEAN AND DRY** routine at the end of each day's fishing or when moving from one river to another. It's a good idea to think about replacing

Finding Didymo Just Got Easier!



By Mark Venman

In early October a didymo DNA sampling training workshop was held at the University of Waikato with the aim of familiarising field samplers with the specific requirements of the new DNA sampling technique. You may have heard about this technique during the recent didymo incursion response here, as it was an important tool to check rivers were clear of didymo.

The DNA test is very sensitive and specific and was made possible by developments in molecular technology. The technique relies on gene amplification technology that not only makes it easier for scientists to analyse large numbers of water samples but also to a much greater level of accuracy in comparison to traditional microscopy. The test is designed to help identify the presence of didymo but also provides an indication of how many cells are present thus indicating the degree of infestation if didymo is present. Professor Cary related it to being able to easily find a needle in a haystack with the ability to detect didymo at less than 1 cell per millilitre.

Participants from all over the North Island descended upon Hamilton with representatives from regional councils, DOC, Fish and Game, NIWA and Biosecurity NZ. The grouping together of these organisations also provided a good opportunity for staff from different organisations to chat about what their approach to undertaking surveillance for didymo, and also to share ideas as we all ultimately want to achieve the same outcome - a didymo free North Island.

The course was run by Professor Brendan Hicks along with Professor Craig Cary, both from the Science and Engineering part of the University of Waikato, and included a field

Top & following page:
Professor Brendan Hicks demonstrates how to collect a sample and the end result with Professor Craig Cary looking on.

Photos by: Raymond Harris Tavanaki Regional Council

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trip to the Kaniwhaniwha Stream which drains off Mount Pirongia. These two professors have been instrumental in the development of the DNA sampling technique and this new method allows for a much earlier level of detection than was previously possible. This is not only beneficial to the sampler who no longer needs to do as much work but in terms of the bigger picture, didymo is more likely to be found at a much earlier stage and so treatment may be more feasible. We can also warn river users at a much earlier stage to help prevent spreading it to other uninfected rivers.

With the field sampling now more simplified than previously, this will allow us to increase the number of samples we take. DNA analysis also allows us to cover a bigger section of the river with a single sample which will increase the likelihood of identifying didymo should it ever get to the North Island. One benefit of DNA analysis is in confirming a negative didymo status and so it is ideal for didymo surveillance programmes in the North Island where didymo has not yet been detected. The new sampling methodology also minimises any risk of any potential cross contamination between sampling sites which is another significant advantage.

Another national delimiting survey occurred in early November but we will be monitoring our key sites once a month so as to quickly identify any incursion of didymo and be able to hopefully do something about it. It is likely that other areas around the North Island will follow suit and monitor their regions on a regular basis.

Thus overall, it is very encouraging that we have discovered such a useful technique in this country that can significantly help us battle against this invasive algae. DNA analysis doesn't do away with more traditional microscopy analysis which is excellent for confirming the presence of live didymo cells but it is a valuable additional tool, particularly for early detection.

However, by the time didymo is found it may already be too late to protect our waterways and I cannot emphasise enough how important it is for each one of us to do our part and clean our gear to ensure that didymo never gets here in the first place!

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A New Tomorrow

By David Conley

It's that time of year again when we begin to reflect back on the past 10 months or so, and look forward to the New Year. For the *Tau po for Tomorrow* education programme at the Tongariro National Trout Centre, 2007 has been a year of change and challenge. Mid way through the year our founding Educator Thea DePetris moved on, leaving big shoes to fill. I had a chance to chat with her only days ago, and she was her usual irrepressible self, clearly enjoying life outside the classroom.

In her stead we have worked hard to maintain the impetus she had given the programme with her seemingly boundless energy and drive. Two rounds of interviews later and we have appointed a new educator to take the programme forward.

Mike Nicholson is currently teaching at Southwell School in Hamilton, and is due to take up his new role as the *Tau po for Tomorrow* educator in the New Year. He is a keen hunter and angler with a passion for the outdoors, and describes his new role as "a dream job". We look forward to welcoming Mike into the team, and making the most of the talents he brings with him.

There remains a great deal to be done before Mike's arrival however, with November shaping up to be the busiest month of the year. The final attendance figures for the year are yet to be finalised, but indications are we will see much the same student numbers pass through the programme as in 2006. In addition to these students has been the extra

A young student from Whakamaru School collecting bugs with Dave Conley from the Waihukahu stream.
Photos by:
Kim Alexander-Torta





What have we found?
 Photo by:
 Kim Alexander-Taria

workload of the *Wonderful Wai* programme which has fallen on the volunteers of the Tongariro National Trout Centre Society. This programme has incorporated fishing within a day of activities based around teaching the importance of cool, clean and clear water to us all. This in turn has seen a large jump in the number of fishing days which rely on the support of the Society volunteers, and they have been outstanding in responding to the extra demand. Although I have only been acting in a stand-in capacity as educator, I know the programme simply could not function in the current format without the steadfast support of these volunteers. All I can say to Ken and his band of merry volunteers is a heartfelt thank you for making my time here so much easier. I have really enjoyed my time as the energy you get from the kids as they come through is just amazing at times, and it has also been great fun to

work closely with such a dedicated group of volunteers.

While we hope to ease the strain on the society by offering less fishing days in 2008, the new year will bring new challenges for the programme and in particular the development and implementation of part two of *Wonderful Wai*. The intent of part two is to bring back schools in 2008 that went through part one this year and to focus their learning on ways in which we use our water resources, and steps we can take to safeguard them for the future. A visit to the Trout Centre is the field trip component in a wider learning unit, and will actively encourage each class to inquire into how they can make changes to the use of water resources in their own schools and immediate community.

So there is a lot to look forward to in the New Year - new faces, new programmes, and some very exciting developments.

Big ● – Smaller Fish

By Mark Venman

Lake Otamangakau on the northern slopes of Tongariro National Park is well recognised for its ability to produce large fish and this article looks at what is currently happening with this special fishery and attempts to answer why there are so few of these larger fish around at present.

In order to gain a better understanding of this fishery it was decided to build the Te Whaiu fish trap in 1994, as this would provide a wealth of information to help identify long term trends in the population, both in terms of numbers and fish size and condition. The winter of 2007 was the 14th consecutive year that we have trapped the Te Whaiu Stream and it now provides us with a very solid set of data for the Lake Otamangakau fishery. A small cage trap was also set up in the neighbouring Papakai Stream for

the twelfth successive year, with these two streams forming the key spawning areas for both the rainbow and brown trout populations. This data provides us with an estimate of the number of adult fish present within the system and gives us a good indication of their size and condition prior to spawning.

This year the runs of spawning fish in both of these streams were the highest since monitoring began with rainbow trout numbers in particular being considerably higher than previous years. The rainbow run has shown a trend of steady increase over the 14 year trapping period while the run of brown trout has remained relatively stable during more recent years (Figure 1). Although this is encouraging news, the increase in run size is due to an influx of smaller fish into the population with first time

Marc Milne with a 4.95 kg rainbow female which passed through the Te Whaiu Trap this winter

Photo by:

Kun Alexander-Turla



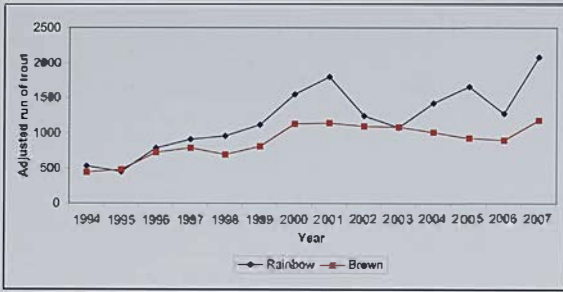


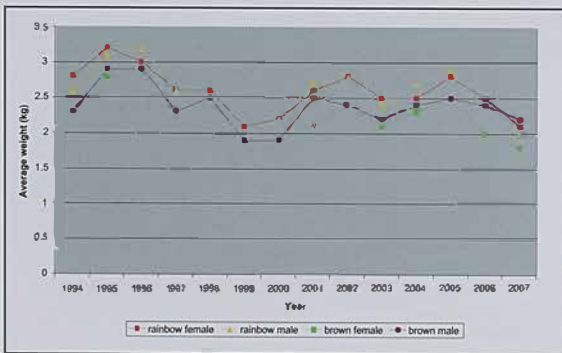
Fig. 1: Total number of trout trapped in the Te Whaiau Stream since 1994

spawners (maidens) making up approximately 60% of both trout populations. As a result the average size of both species of trout was down markedly on previous years with a slight reduction in their condition also observed.

Over the 14 year trapping period the rainbow population has increased 4 fold. However while there have been fluctuations in the average weight of these fish (figure 2) over this time, there is no consistent pattern of declining average weight as we might expect if the population was becoming food limited. This could happen if there was only a limited amount of food but more mouths to feed. The smaller average weight this winter may simply reflect the high proportion of young, smaller fish consistent with the increasing population size.

The average condition factor by species and sex may show a slight downward trend since 1997 suggesting that the fish are generally not doing quite as well as a

Figure 2: Average weight by species and sex through the Te Whaiau Trap 1994 to 2007



decade ago but the most striking feature is that trout clearly did significantly better in the lake over 1995 and 1996. It is no coincidence that this is the last period when the lake produced large numbers of 'double figure' fish and it may also be no coincidence these were the last big cicada years on the lake.

Consistent with our general findings it was not surprising to see only 3 trophy sized trout (greater than 4.54kg or 10lb) were trapped this year. The percentage of trophy sized rainbows has declined over the last three winters and was the third lowest since trapping began. The percentage of trophy sized browns has remained very low and so no double figured browns were expected this winter. The highest percentage of trophy sized browns were trapped between 1994 and 1996 with 1996 being the most productive for large rainbows and browns with 50 being trapped in total. Otherwise there were small peaks more recently during 2002 and 2005.

The small peaks in 2002 and 2005 coincided with an increase in the percentage of fish 3.6kg (8lbs) and above during the trap run the previous season. Thus, it would seem that the percentage of fish 3.6kg+ within the population is a good indicator of what to expect the following season in terms of trophy trout numbers. It makes sense, given these fish continue to grow after each spawning event. However, this pattern didn't hold true for the last couple of years despite the percentage of 3.6kg+ fish being 14% and 7.4% for 2005 & 2006 respectively. The large number of 3.6kg fish which are usually in very good condition and very respectable trout, does suggest that sufficient food is not a big issue for these trout at least, though there maybe some bottle neck acting to prevent them kicking through to reach the very largest sizes.

At this stage the lack of trophy fish would seem to be linked to their growth or lack of it once they get to a certain

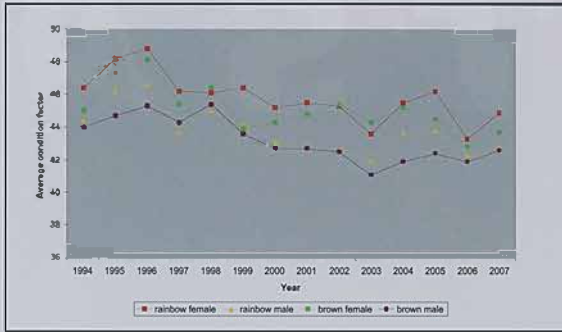
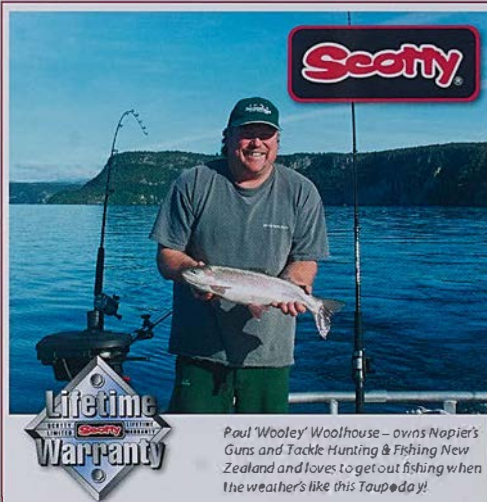


Figure 3: Average condition by species and sex through the Te Whaiiau Trap 1994 to 2007

size. It maybe as a result of the general conditions that now occur or perhaps the flux of cicadas in late January is more important than we previously thought. However trophy fish in this lake are not characterised by rapid growth but rather living to old age and continuing to grow

steadily after each spawning. Therefore it is possible that their survival is poorer now and so they don't live long enough to reach truly trophy size. The key to answering this is to follow the survival and growth of individual fish which is why we have implemented a pit tagging programme, tagging 200 rainbows this winter. We will be able to follow the survival and growth of these fish when they return through the trap over the next few years.

So this summer anglers can expect plenty of medium sized fish with the odd double figured fish thrown in if you're exceptionally lucky! Catch rates should be very high for this lake but any trophy fish is likely to be well earned.



Paul Wooley Woolhouse - owns Napier's Guns and Tackle Hunting & Fishing New Zealand and loves to get out fishing when the weather's like this Taupo day!

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Brian Johnson with happy angler Diego Rangi



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Graham Hamilton giving casting lessons

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60 volunteers spent 1500 hours over the 8 fish-outs



The Scott family of Auckland enjoy lunch



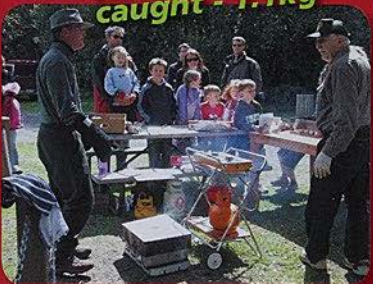
WRAP

Days for 2007

By Kim Alexander-Turia

Photos by Kim Alexander-Turia

Heaviest trout caught - 1.1kg



61 children took advanced fly-fishing casting lessons



Lightest trout caught - 150g

Owen Dyer & young angler with another successful catch

& hot smoked



It's not all hard work for Christine Kimmins (left) & Wendy Lester



John Porter (right) & Bruce Pascoe weigh & measure trout, while Val Milner (back left) & Joan Pascoe write out licences



Alex fillets trout number 2067

Shortest trout - 120mm



Mike Sadlier cooks some of the 1600 sausages



Dick Truebridge, showing a young angler how to strike!

Longest trout - 455mm

Arthur Gallichan, head trout filleter



Tongariro River Flow Changes

By **Bonny Lawrence**
- Environmental Coordinator,
Genesis Energy

Genesis Energy will be undertaking a significant maintenance programme on Poutu Canal in early 2008. The canal will be drained to allow for the replacement of expansion joints. While the joints are being replaced, Genesis Energy will also take the opportunity to undertake concrete repairs along the base of the canal. The work will prevent leakage and help ensure the long-term integrity of the structure. This is the first time the work has been done since the commissioning of the canal, apart from trial work carried out in 2005, and will add another 30 years to its life.

During the repair work, no Tongariro River water will be diverted at Poutu Intake, through the canal and into Lake Rotoaira. With no diversion the lower Tongariro River downstream of Poutu Intake will have higher than 'normal' flows.

These flows are likely to be about twice that of the present 16 cumec minimum (i.e. between 30 and 35 cumecs) corresponding to a flow at Turangi of approximately 45 to 50 cumecs. This is an increase in water level of approximately 200-250mm at Major Jones Pool. However, it should be noted that these flows are estimates only and will be subject to natural fluctuation when it rains, and rare, but possible unplanned generation flow changes.

Genesis Energy has put in place stringent operating procedures to manage flows during this period. Nevertheless with the buffer of Poutu Canal not available, the risk of unplanned flow variations occurring at any time is higher than 'normal'. During the repair works, Genesis Energy will only operate one generation unit at Rangipo at any time to limit the probability of large downstream flow fluctuations. However, it is possible that rapid changes in water level immediately downstream of Poutu Intake could occur.

Whilst the actual dates have yet to be confirmed, the works are likely to commence in early January and take up to four months to complete.

Further notification will be undertaken when the maintenance project is confirmed and notices will be placed in local and national papers in December. Flow information will also be available on the Genesis Energy website www.hydro.genesisenergy.co.nz

If you have any questions or require further information please contact Bonny Lawrence on (021) 681 360 or Jarrod Bowler on (07) 384 7220.

These flows are likely to be about twice that of the present 16 cumec minimum





Into The Flood

By Nathan Walker
Nathan is a ranger
working in our field
operations programme

Given that the Central Plateau gets its fair share of inclement weather, and there is at least one of three fish traps in operation all but four weeks of the year, then it's a case of when rather than if staff will be on a trap during a flood. After joining the team in April I did remarkably well to avoid a decent fresh, in contrast with a few others of our crew who seemed to strike the worst of conditions every time they were rostered on. *"Don't worry, you'll have your turn"* was one comment I remember and needless to say after three months of twice weekly trap duties, my 'turn' duly arrived.

SUNDAY 1ST JULY

The Waipa Stream was a raging torrent running at approximately 10 times its normal flow when I arrived at 2.00pm. My colleague Julie had only just reinstated the trap for effective operation after water had poured over the top for the previous

24 hours. However as the water level dropped to just under the top of the front bars (upstream side), Julie had been able to safely enter the stream and start clearing the gravel, pumice and debris that had built up on the front of the trap. In turn this had further dropped the water level enough to again create an effective barrier to fish.

After completing the handover it was off to the hut to store my gear and have a flick through the log book. It showed that there had been over 40mm of rain in each of the previous three days, the cumulative effect putting the trap out of action for the last 24 hours.

With further showers during the afternoon and no sign of the water level dropping, it was backwards and forwards from the trap to the hut every couple of hours. There was a significant amount of gravel and pumice coming down so it was important to keep it very clean. After

Top: High flows require Glenn Maclean (left) and John Webb to continuously clear the Waipa Trap to avoid it blocking and overtopping
Photo by: Nathan Walker



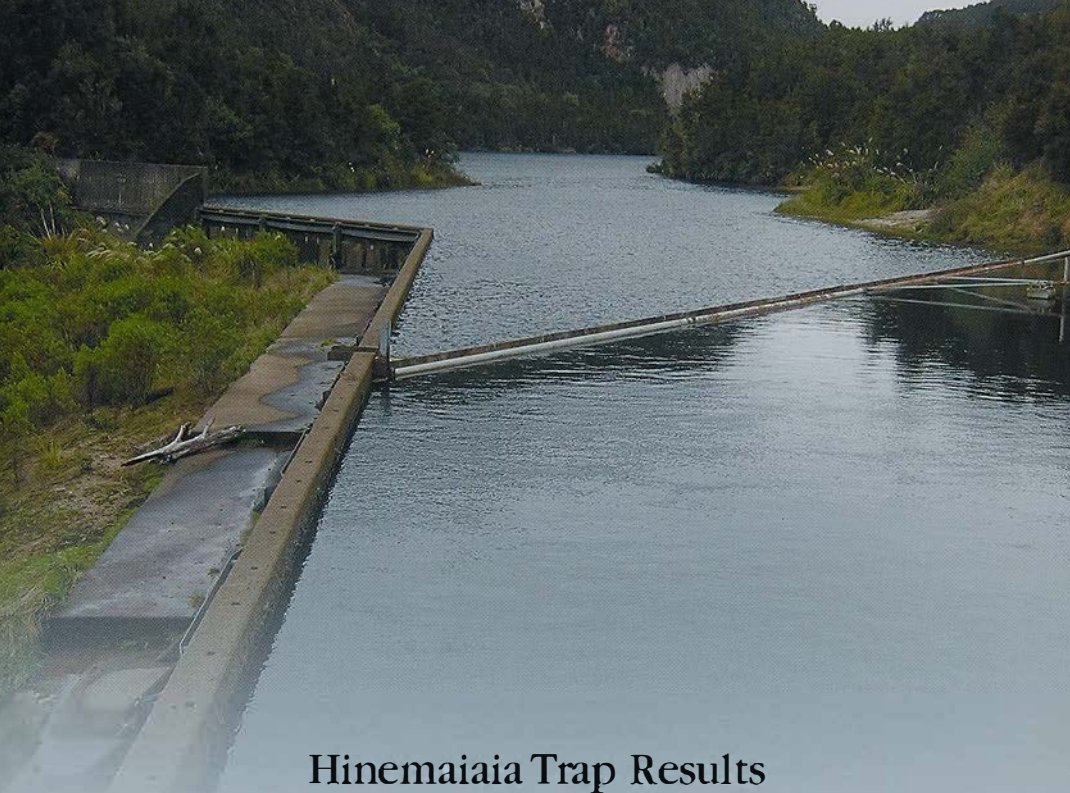
Taking a break from cleaning the trap to enter the data.
Photo by: Natban Walker

only 2hrs or so the bars were clogged enough to push the water back over the top but once cleaned down to the bedlog, the water level would drop 10cm and keep the trap in operation. Another reason for keeping the bars clean is to keep the pressure from building up on the trap structure and risking undermining it. It's a matter of being methodical working steadily along the front barrier then the back barrier, sliding the debris up the bars and then throwing it downstream. If you are unlucky then by the time you have finished the back barrier then it is time to clean the front one again and so it continues. The continual handling of the pumice in particular is hard on your hands, acting like sandpaper to wear the skin off your finger tips. As night fell it was still raining steadily as I put 8 trout upstream. By now I had to almost continuously clean the bars. It's certainly hard work battling the force of the water for hours at a time. Also, no matter how hard you try to stay dry it's a losing battle. When I did pop back to the hut for a quick feed and a coffee I lit the fire and attempted to start drying my dwindling kit. Fortunately it looks like the rain is largely over so if I can hold the trap over the next couple of hours I might just make it.

MONDAY 2ND JULY

Past midnight and with the floodlight cranked up there are another 20 trout to weigh and measure in the upstream pen. The front door to the downstream pen, which captures the trout which have already spawned (kelts) as they return to the lake, is kept firmly shut at this stage, otherwise the fish released upstream would just end up immediately back in the kelt pen as they rested up to recover from the processing. Being early in the season there were minimal spent fish returning regardless, though it is a whole different story in a few months time when in a fresh like this they may pour into the trap in their hundreds. Then it was back into the work of cleaning the bars, pushing gravel through the trap, and processing more fish. Interspersed by shuffling back to the hut for 30 minutes or so every few hours, this continued well into the next day until another Ranger turned up to take over. Then it was home for a hot shower and a well earned sleep.

Being up to your waist in the middle of a raging stream in the middle of the night, often with the rain sleeting down wouldn't sound like a hell of a good time to too many people. However, there is a quiet sense of accomplishment (when it's over!) after battling the elements overnight and keeping the trap in operation. Of course this is all in the hands of Mother Nature for the most part. When the trap is close to topping over, one decent heavy shower is all it takes to put the trap out. This can be pretty frustrating if you have worked non stop to hold the trap over the previous day or two but its all part of the challenge. Sometimes we wonder why we put ourselves through it but as this season has highlighted, with all the conjecture about fish numbers and size, the only way to answer this for certain is to collect the hard data from the trap.



Hinemaiaia Trap Results

By Callum Bourke

This September saw the completion of the fourth consecutive season of the Hinemaiaia trap and transfer program in association with TrustPower Limited.

The trap was operated for 65 days between mid July and mid September to lift spawning trout upstream of the Hinemaiaia B (HB) dam, so they could spawn in the Pahikohuru and Kakapo streams as they did prior to the construction of the dam.

A total of 268 rainbow trout were trapped, 68 of which were released back into the bypass channel above the trap due to being either spent (had already spawned), or juveniles that were not quite ready for the big trip up to the dam.

During the trapping operation, the number of dead trout that had collected on the HB power station screens was recorded. Overall, 20 (10%) of the

200 fish were recovered and 16 of these (80%) had spawned somewhere upstream before dying.

The trap was removed twice during August due to excessive flows caused by the HB dam spilling. This usually occurs during periods of heavy rainfall where the catchment can no longer absorb and contain the excess water, and the 3 Hinemaiaia dams fill to capacity. This can often lead to the “domino effect” where they all spill in succession, even with the powerhouses extracting at maximum capacity. However the TrustPower control centre is very good at giving us some warning of likely spill events and with the trap operator’s diligence trouble can be averted and the trap pulled out before being engulfed by the high flows. Naturally large numbers of fish will run during the increase of flow so we try to keep the trap operat-

Top: Hinemaiaia HB dam
Photo by: Callum Bourke

Trap operator Marc Milne with a clipped rainbow male prior to putting it into the grey tube used to transport the fish above the dam.
Photos by: Al Morrison



ing as long as possible to take advantage of these runs.


When a small spill occurred during the early hours of August 13th the operator managed to hold the trap through the event. Over the space of a few hours 47 fish were trapped, 45 of which were transferred above the dam. The operator earned a cold beer that day!

On the last day of trapping approximately 6000 eggs were stripped from ripe (ready to spawn) fish that were captured in the bypass channel above the trap. These fish were caught by driving them down to the trap where they were contained, netted and any suitable jacks and hens separated into 2 pens. The eggs

were stripped from the females and fertilised on site before being transferred to the Tongariro National Trout Centre where they were hatched.

When these eggs have developed into fry, they will be liberated in the Pahikohuru and Kakapo Streams, the 2 tributaries of the 11B dam, to further assist the re-establishment of the spawning runs in these streams. It is pleasing to note that a check of these streams undertaken at the end of September showed positive signs of spawning activity. The mouth of the Pahikohuru Stream was clear and open and contained good numbers of fry. Small pockets of fry could be seen further upstream along with several visible redds. The Kakapo Stream contained a smaller flow and was shallow at the mouth and only 2 fry were seen. Thus it would appear that the Pahikohuru Stream was the most popular stream for spawning trout. Another check of these streams will occur during November when the fry are liberated.




All in all it was another successful trapping operation and we will continue, in association with TrustPower Limited, to develop the fishing opportunities of this special resource. Thanks to the team for all their efforts and we look forward to another Hinemaiaia trap season next year.




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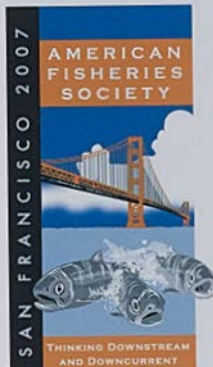




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“Thinking downstream and downcurrent”

By Michel Dedual



This slogan was the theme for the 137th Annual Meeting of the American Fisheries Society, held last September in San Francisco USA which I attended by Michel Dedual. The impact of natural hazards on the management of fisheries was one amongst 61 different symposiums presented at this conference which was attended by more than 2500 scientists and students from all over the world. I presented the impacts that the 1995-1996 eruptions of Mount Ruapehu had on the migration of spawning fish through the Tongariro River as described by radio telemetry, and the other results obtained by the diverse monitoring programs that are routinely carried out in the Taupo fishery. The presentation was well received, particularly as there are no other data obtained by radio-tracking during a volcanic eruption anywhere else in the world. This was also a great opportunity to again

appreciate how well the Taupo Fishery is managed.

Such large conferences always produce a fertile ground for new visions about water and its ecology. The San Francisco gathering was no exception and it paid homage to a Japanese scientist Shigeru Nakano who tragically died in 2002. Nakano's inspirational scientific legacy has led to the understanding of the ecological importance that rivers have, not only instream but also around them, and how important it is to maintain their integrity.

Among others things, Nakano showed that in a stream aquatic insect emergence peaked around spring, when terrestrial invertebrate biomass was low. In contrast, terrestrial invertebrate input to the stream occurred primarily during summer, when aquatic invertebrate biomass was nearly at its lowest.

Mouth of Matole River in Northern California. Note the bar blocking the river. This situation is typical in Californian rivers from June to October when rainfalls are very low. Steelhead, chinook and coho salmon will run in as soon as autumn rains raises river water levels and allows fish passage from the sea.



This reciprocal prey flux between the stream and forest alternately provided both forest birds and stream fishes 25.6% and 44.0% of their annual total energy budget, respectively

I also spent some time with the California Water Resources Board and California Fish and Game to share information about the problems regarding water use in California and in New Zealand. It was enlightening to see how many problems are similar worldwide and also frightening to see the pressure that exists on water resources all over the world. I also enjoyed being asked to present the Taupo Fishery to the Carmel Steelhead Anglers Club, and met with members of the Matolke River Anglers Club.

Right: A proud officer of the California State Parks Service ready for action displaying all the indispensable equipment required to deal with any type of situation. Note the pistol on the belt. Confrontations with armed offenders in the US are the rule rather than the exception during daily routinework.



Parked Up!



Volunteers from the Tongariro Natural History Society with rangers Dave Ploughman (left) and Dave Conkey planting red tussock

By Kim Alexander-Turia
Kim is our programme Manager, Community Relations for the Taupo Fishery area.

The carpark and new public entrance to the Tongariro National Trout Centre was opened in 1991. Since then not a lot has been done to this area and it was well overdue to have a spruce up.

A joint force from the Tongariro National

Trout Centre Society (NTCS) and Taupo Fishery Area with the help of Herwi Scheltus, DOC's Landscape Architect, came up with a new and improved design and planting plan for the top carpark.

But firstly we had to remove the plants from the centre island leaving the well

Matt Truebridge (on tractor),
Ken Kimmins, TNTCS
Administration Manager,
Dick Truebridge, TNTCS
Volunteer & Graharne Pilet
*Photo by: Kim Alexander
Tienia*



Liz Brown, Tongariro
National Trout Centre
Society volunteer and Kim
Alexander-Turin
planting pittosporum
Photo by: Dave Conley



established kowhai trees. This would have taken a few days of hard labour but we were rescued from this onerous task by Mathew Truebridge of Truebridge Contracting. Matt's father Dick is a long time volunteer of the TNTCS and happily arranged the services of his son with his tractor!

With the centre island cleared and new soil deposited, we were able to commence

planting. Dave Conley, TNTC Community Relations Ranger and Dave Ploughman, temporary ranger managed the week long project. We also received welcome assistance with the planting from volunteers from the Tongariro Natural History Society (TNHS) and TNTCS.

An array of red russock, mountain flax and cabbage trees now covers the centre island and hundreds of native trees, including kowhai and pittosporum surround the outer areas. These will provide a huge source of food for native birds as they mature, and make the carpark come alive in spring! Flax taken from the centre island was recycled and replanted along the outer areas as well.

Ken Kimmins, Administration Manager for the TNTCS, arranged funding for the project from the Waikato Catchment Ecological Enhancement Trust (WCEET). A big thank you to WCEET for their continued support of another trout centre project.

Thanks to all those involved, TNHS volunteers, TNTCS and Herwi, the place looks great!



The Tongariro Roll Cast Challenge

By Ken Kioruins
 Manager of Tongariro
 National Trout Centre Society

For the second year in a row, and by popular demand, The Tongariro National Trout Centre hosted a clinic on this famous cast on Saturday 15 September, with local fishing personality Herb Spannagl and fishing colleagues George Johnson and Bill Nikle.

Herb said that over the years he has had countless people come up to him on the river wanting to learn the Tongariro Roll Cast (TRC). It was for this reason that Herb wanted to start holding day clinics and for the funds raised to go to The Tongariro National Trout Centre Society. The Society sees its role is to assist people into the art of trout fishing and foster the Taupo region as a world class wild fishery.

The clinic was once again over subscribed, which is indicative of the level of interest these clinics have generated. Participants were treated to a full day of instruction, including an afternoon of one-on-one tuition on the river this cast is named after. By the end of the day many of the participants were getting well past first base in mastering what is a highly technically demanding cast. This highlights the value of attending one of these clinics and getting the right advice first hand.

It seems there are three secrets to succeeding with the TRC:

- Seek help or come to one of Herb's clinics
- Systematically practice the basics
- Commit to using this cast on the river

For more detailed information on the Tongariro Roll Cast, such as "*Fine Tuning the Tongariro Roll Cast*" by Herb Spannagl, please contact the Tongariro National Trout Centre Society on 07 3868085 or e-mail troutcentre@reap.org.nz

Also, lookout for the next Roll Cast clinic on www.troutcentre.org.nz

Top: Herb Spannagl
 demonstrating the cast
 Photo by: Kimi Alexander
 Turia

Further Protection for Sacred Island

By John Gibbs

Motutaiko Island is one of the most prominent features of the Lake Taupo landscape. Its sheer cliffs dominate views from most points around the lake shore. Not only is it a striking physical presence, but it has huge spiritual significance for Ngati Tuwharetoa as the burial site of many of their most revered ancestors. The island was also a place of refuge for the tribe when attacked by war parties from other areas.

This significance was recognised by governments as far back as 1926 when the island was reserved to Tuwharetoa and excluded from the land and lake beds which passed to the Crown. The public right of way over most of the shoreline did not include Motutaiko, so landing there has never been permitted.

Despite this legal protection, people occasionally visited the island and disturbed sacred burial sites (wahi tapu). Last year the burial cave was closed off

to protect those remains and signs were placed at most boat launching ramps advising boaters that Motutaiko is closed to public access. Late last month DOC staff assisted the local hapu, Ngati Te Rangitua, to place several similar signs around the island itself. These have been fastened to the rock cliffs so as to be visible to boat operators approaching from most directions. The work was done by our landscape architect Herwi Scheltus and local builder Aron Coffin, guided by our Pou Kura Taiao (iwi liaison officer) Jim Maniapoto, who is himself from Ngati Te Rangitua. Fishery ranger Julie Greaves skippered the boat for transport to the island.

Society in general is justifiably protective of memorials to and the remains of its dead and Motutaiko Island is no different. DOC supports Ngati Tuwharetoa in requesting lake users to respect this special place and not to land on the island.

DOC Pou Kura Taiao Jim Maniapoto, right, and Aron Coffin left with one of the new signs on Motutaiko Island.
Photo by: Herwi Scheltus



TAUPO TAILS

Dianne's Smoked Trout Pate



INGREDIENTS

- 1 smoked trout, flaked and bones removed
- The juice of 2 lemons
- 1x 250g carton of spreadable cream cheese softened in the microwave
- 1 tablespoon of tomato paste
- 2 tablespoons of sweet chilly sauce
- Finely chopped chives or spring onions
- 1 tablespoon of capers
- Chopped parsley or coriander
- A couple of shakes of garlic salt and pepper

METHOD:

Squeeze the lemon juice over the flaked trout and add salt and pepper. Using a kitchen whiz, mix the softened cream cheese with the trout, tomato paste, sweet chilly sauce, chopped chives, capers and parsley chill to set. Can be frozen.

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



Local angler, Jez Fanstone, enjoying the evening rise on the Tongariro.

Photo by: Jared Goedhart



Ouch! - A windy day on the Tauranga-Taupo River with a friend to help out.

Photo by: Kim Alexander-Turia

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

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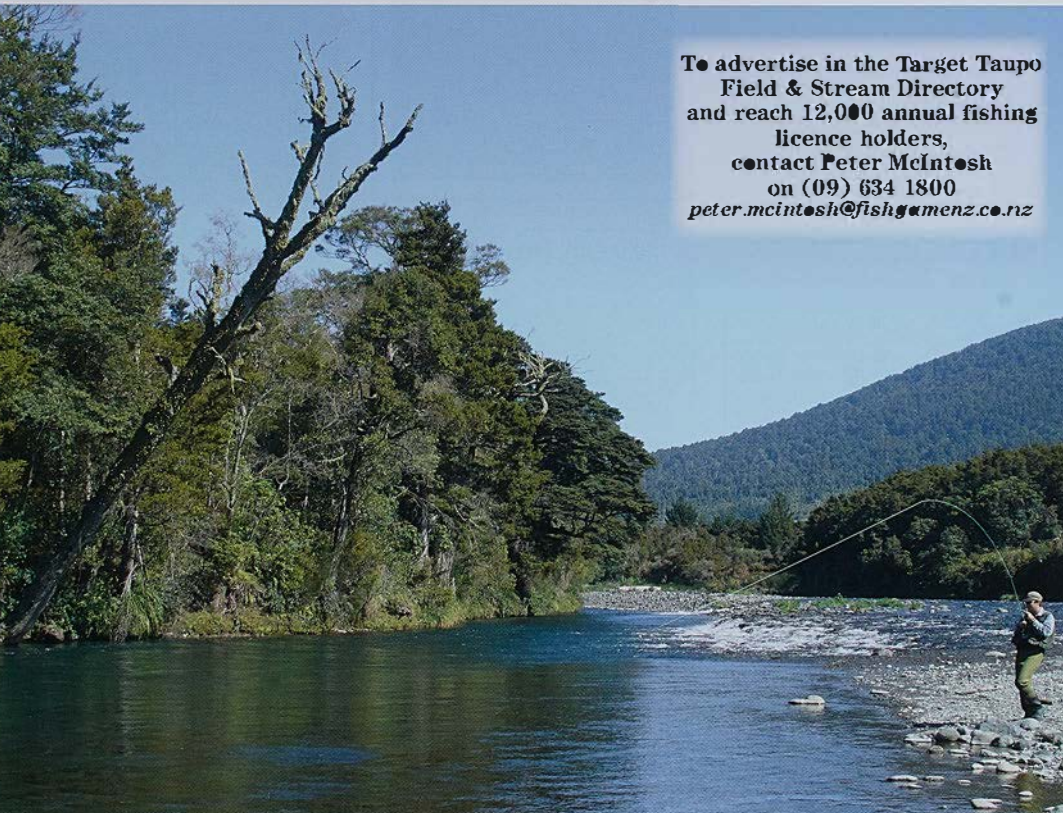
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