TARGET TAUPO

A newsletter for Hunters and Anglers in the Tongariro/Taupo Conservancy

MARCH 2001, ISSUE 36

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Front cover: Tongariro Forest, in the shadow of Tongariro National Park, is a magnet for hunters and anglers. Increasingly this forest is recognised as an ecological treasure chest, hosting a large number of threatened native species, including kiwi.

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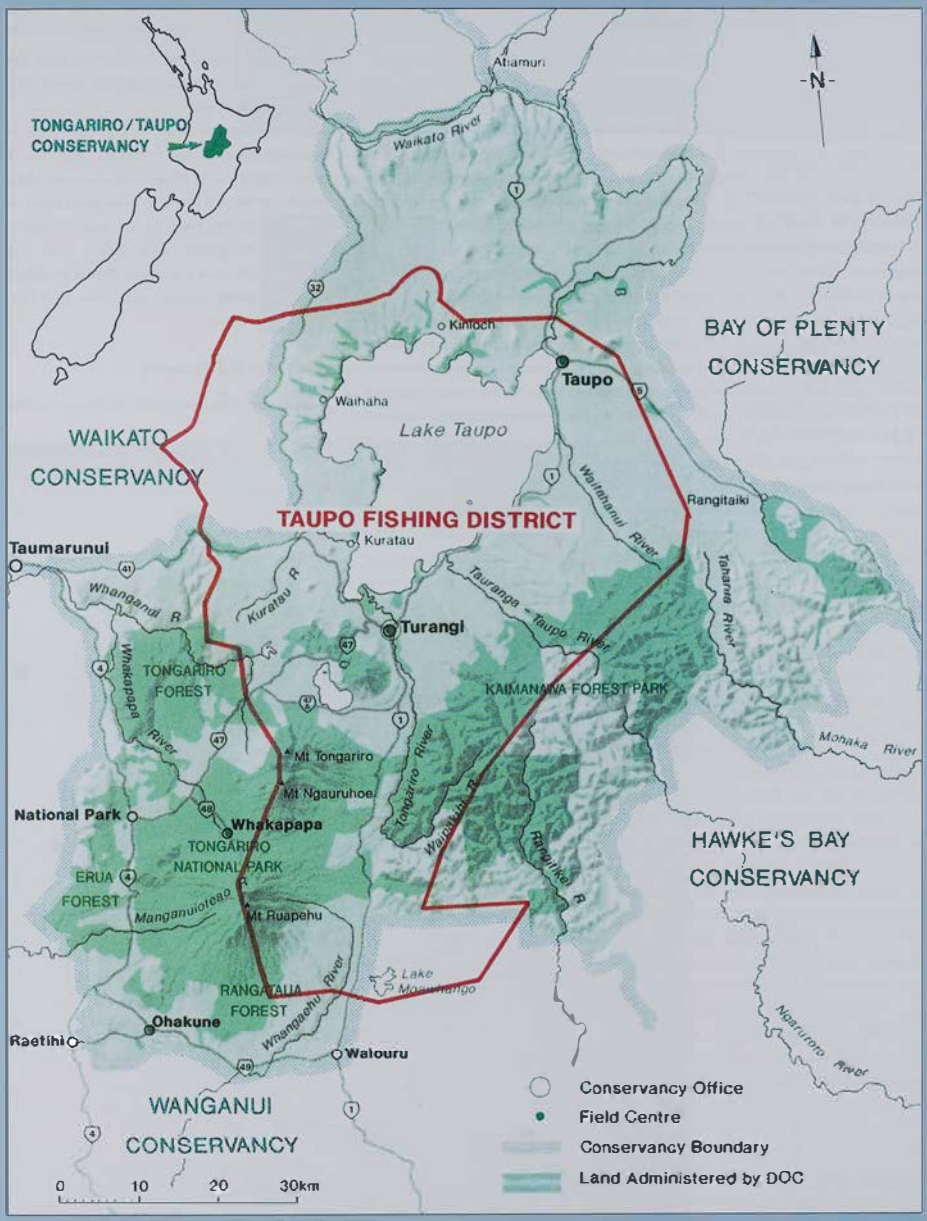


A Return of the Good Old Days?

By Glenn Maclean & Michel Dedual

Michel Dedual is the Fishery Area Scientist. Hailing originally from Switzerland, Michel is also a very enthusiastic angler.

Glenn Maclean is the manager of the research and monitoring programme in the Area. He is also responsible for fishery advocacy and is the editor of Target Taupo.

There has been a lot of comment over the past couple of years about how good the fishing has been at Tāmpo and many comparisons made with past years.

No one has suggested that the fishing matches the first few glorious years following the introduction of trout in the early 1900s when the fishery boomed in what proved to be an unsustainable way. However there have been numerous statements suggesting that the fishing is as good as at any time that contemporary anglers can remember. So it came as a surprise to many people when Fishery Manager John Gibbs commented at the Tongariro Power Development consents hearing in Taupo last December that the Tongariro fishery is no longer the world class fishery it once was.

"the Tongariro fishery is no longer the world class fishery it once was"

Taupo fishing has been very good in recent times and when we consider how many more anglers now share the resource then surely the fishery must be in as good heart as at any time in the past 50 years. However let's delve into the numbers in more depth to check if the picture is as rosy as it first seems.

A wild wild fishery

A common misconception amongst anglers

Climatic events such as major floods influence the size of the Taupo trout production.

Table 1. Minimum and maximum densities of spawning trout recorded in five Taupo tributaries

River	Number of years surveyed	Minimum fish/km	Maximum fish/km	Magnitude of variation
Hinemaiaia	11	184	1381	7.5x
Waimarino	10	223	496	2.2x
Waiotaka	8	131	505	3.9x
Whitikau	10	62	258	4.2x
Tauranga-Taupo	3	341	648	1.9x

we talk to is that the Taupo fishery is artificially stocked, no doubt fuelled by an awareness of the hatchery at the Tongariro National Trout Centre. However the fishery is totally wild, sustained by natural spawning in the tributary streams. The fishery was only stocked in its initial years at the turn of last century while it was established and as part of several experimental releases since then.

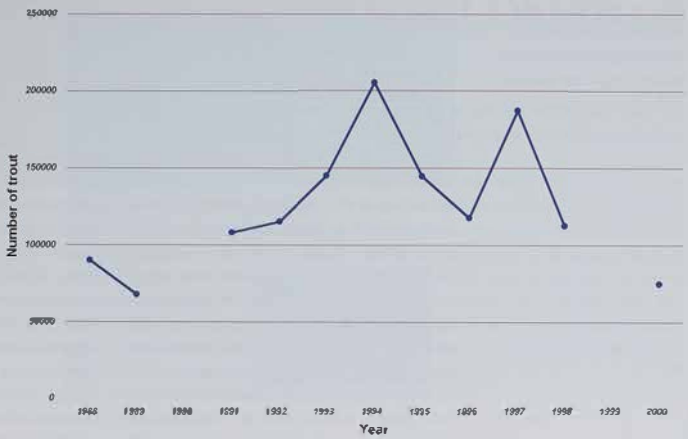
Each winter mature rainbow trout run the Taupo rivers to spawn. These are the fish which sustain the winter fly fishing and most are going on three years old. Trout spawn all year round at Taupo but the bulk of spawning occurs in August and September. The female trout digs a small depression in the gravel using her tail and lays her eggs in this 'redd'. The accompanying male trout immediately fertilises these eggs while the female moves slightly upstream to dig another hole and lay more eggs. The current washes the gravel excavated from the second egg pocket over the first thus covering the first eggs. In all each female will lay approximately 3000 eggs in her redd.

Approximately two months later the newly hatched fry, which are about 25mm long, emerge from the gravels. These fish live in the stream for the next 6 to 18 months. Each fish defends a feeding territory, the number of which will dictate the number of young trout that the river can produce. Fish which cannot defend a territory are pushed downstream until they can find a vacant territory. Those which cannot find a "possie" eventually arrive into Lake Taupo where their chances of survival are slim because they are still too small to feed on smelt – the small fish that provides most of their diet. However life looks much better for those trout which reach a size of 100mm (lingerling) before entering the lake. Once in the lake feeding on smelt they grow at a rate of 1mm a day. Growing at this pace it takes only one more year for the fish to reach 500 to 550mm in length and to mature. In autumn the trout begin to collect off the mouth of the stream where they were born and soon they are swimming back upstream on their own spawning migration and the cycle is once again complete. The majority of these adult fish will not survive the stress of spawning but approximately one third will return to the lake, albeit as emaciated specimens anglers describe as kelts or slabs (*Target Taupo* issue 35). Those that arrive back in spring find a bountiful food source in the smelt which at that time are spawning in the shallow margins around the lake. These spent fish quickly regain condition and by the following winter are once again ready to make another spawning migration.

To maintain the spawning trout population at a constant level only requires that two fish return to spawn from the 3000 eggs laid, a survival rate of just 0.06%. This highlights two key aspects of the Taupo fishery. Firstly the two year period from when the eggs are laid in the gravels until the fish reach approximately 350mm length in the lake is particularly hazardous for the young fish. Secondly a very small change in the survival rate will make a huge difference to the size of the subsequent adult population.

The streams flowing off the mountains of Tongariro National Park and the ranges of Kaimanawa Forest Park and the waters of Lake Taupo inherently provide exceptional spawning and rearing habitat. This is reflected in the numbers and the quality of the fish produced. However it is a harsh environment which does not take any prisoners. For example summer floods may displace and kill juvenile trout and so reduce the subsequent size of the adult population.

Thus in most years the fishery fluctuates in response to variations in seasonal weather patterns and habitat quality. Very occasionally an event may be catastrophic such as occurred when volcanic eruptions in 1995 and 1996 caused huge ash inputs into the Tongariro River, temporarily suffocating the streambed. However the trout population can quickly rebound under more favourable conditions. Just occasionally a year class develops under optimum conditions



Graph 1. November acoustic estimate of the number of trout greater than 35cm in Lake Taupo 1988 to 2000 (gear failure prevented completion of surveys in 1990 and 1999)

without any setbacks and the trout population reaches a memorable peak.

As a consequence it is characteristic of the Taupo fishery that the trout population fluctuates widely. This can be seen in several ways. For example in graph 1 the number of trout greater than 35cm estimated in Lake Taupo each spring by acoustic survey is presented for the years 1988 to 2000 (a discussion on the 2000 results is presented on page 25).

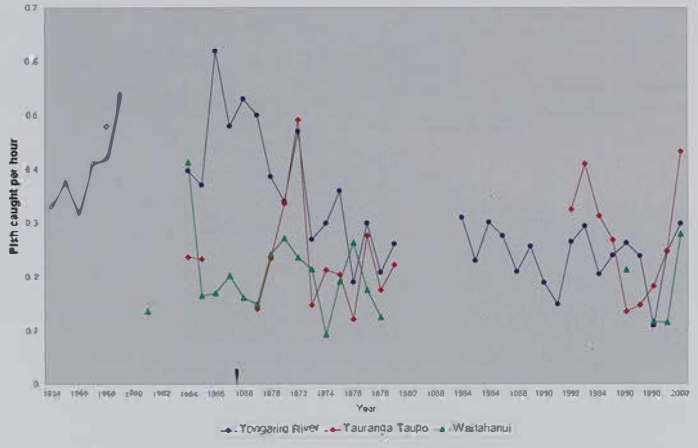
Over the 12 years the estimate ranges from 67,700 to 205,200, a three fold variation. A similar variation between years is evident in our peak counts of spawning trout in selected stretches of five Taupo tributaries (table 1).

Such year to year variation, which tends to be periodic, is characteristic of wild salmonid fisheries.

How do these numbers compare with 50 years ago?

Not surprisingly there are no comparable counts of fish numbers in the 1950s or earlier. However there are very extensive catch records collected by rangers undertaking routine licence checking on the Tongariro and other Taupo rivers and on Lake Taupo. On each visit rangers collected data from every angler encountered, whether they were a good or bad angler, friend or stranger, had caught fish or not. Several of these rangers were well known for their determination that no one should fish 'their' river or lake without a licence and surveys were undertaken throughout the season at any time of the day. In those days managing the fishery comprised largely ranging and as a consequence a huge number of angler checks were done each year. The use of creel surveys (surveys of angler catch) as a measure of the quality of a fishery is the most common and widely applied sampling technique employed by fish and game agencies around the world. Because of their importance, surveys have received extensive analytical attention in recent years. With the intense scrutiny and advances in knowledge it has become clear that the way

Graph 2 The catch rate (total fish caught/total hours of effort) of anglers interviewed on the Tongariro, Tauranga-Taupo and Waitahanui Rivers for the years 1953/54 to 2000



catch data was collected in the past was not always without flaws. However in the case of the Taupo fishery the very large number of surveys in the past necessitated that surveys were spread throughout the season and across all sorts of conditions. Inadvertently this overcomes potential biases that could have occurred with the simple survey design used prior to 1985. Since 1985 the surveys have been rigorously planned using statistical theory to ensure the data collected is robust and defensible.

From the data it is usual to calculate a measure of the success of the anglers interviewed. The most often used measure is catch rate or catch per unit effort (cpue) which is usually expressed as the number of fish caught per hour of angling effort. For example a catch rate of 0.25 fish per hour equates to catching one fish every four hours.

Catch rate data collected for the Tongariro, Tauranga-Taupo and Waitahanui Rivers since the 1953/54 season is presented in graph 2. Prior to the 1959/60 season a closed season existed over the winter months. However in 1954 and 1955 special experimental winter seasons were permitted. As many anglers are aware this is the period of peak fishing success on Taupo rivers and including the data for the experimental seasons on the Tongariro with the remaining data for the 1954/55 and 55/56 seasons increased the overall Tongariro catch rates by 32.5% on average. The catch rates recorded for other seasons on the Tongariro and Tauranga-Taupo Rivers through the 1950s have been adjusted using this mean increase in annual catch rate and the adjusted catch rates are shown as the

Graph 3 Average annual catch rate for anglers trolling on Lake Taupo 1958/59 to 1999/2000.

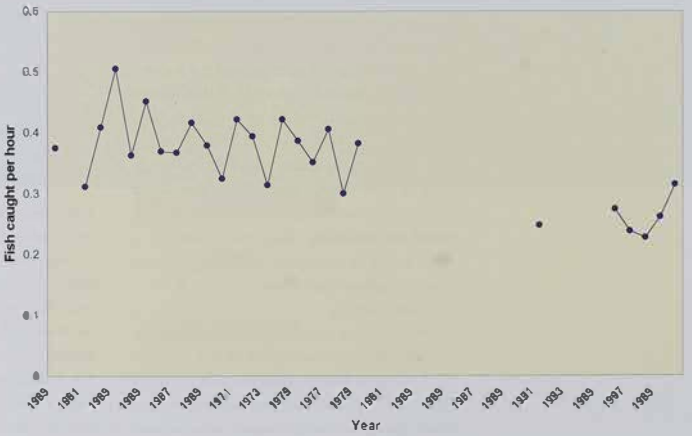


Table 2. Mean annual catch rates before and after 1980 for the Tongariro, Tauranga-Taupo and Waitahanui Rivers.

	Cpue pre 1980	Cpue post 1980	Statistically different (P <5%)
Tongariro	0.38	0.24	Yes
Tauranga-Taupo	0.25	0.27	No
Waitahanui	0.20	0.18	No

open circles and triangle in graph 2.

Looking at graph 2 the year to year fluctuations characteristic of a wild fishery are evident. However it is also obvious that the mean catch rate on the Tongariro has declined. In table 2 the mean catch rate for each river over the last twenty years is compared to the mean catch rate prior to 1980.

The Good Old Days. Murray Greig with a limit of eight rainbow trout from the Tongariro River.

The mean catch rate recorded on the Tongariro since 1980 is significantly lower than that pre 1980 but there is no measurable difference on the Tauranga-Taupo and Waitahanui Rivers.

The other long term records of catch rates are those from anglers interviewed while trolling on lake Taupo. These are presented in graph 3.

The mean catch rate on Lake Taupo prior to 1980 was 0.38 fish per hour (one fish every two and three quarter hours) which compares to a mean catch rate of 0.26 fish per hour since (one fish every four hours). This difference is statistically significant.

So on the lake and on the Tongariro the largest river in the fishery, there has been a significant decline in the mean annual catch rate. However catch rates remain unchanged on the Tauranga-Taupo and Waitahanui Rivers. Essentially catch rate is the product of the fish abundance and how easy it is to catch them. The ease of catching fish is known as 'catchability'. A more precise explanation is provided by I. Small of the University of Liverpool, who found the following relationship held for a wide range of migratory salmonid populations in England and Ireland.

$$Cpue = qN^{1}/_{\delta}$$

where q is a constant expressing catchability, N is the abundance of fish, and δ is a constant lying between 2 and 3.

The significance of this relationship is that small changes in angler catch rates mirror large changes in fish abundance. On the face of it the significant decline in angler catch rates on Lake Taupo and the Tongariro River is indicative of a very large reduction in the number of adult trout. However a decline in catch rates could also be caused by a reduction in the catchability of trout.

The catchability of migratory salmonids is affected by many factors including water temperature, the skill of anglers, method used, weather conditions and river flow. It is also possible that on some heavily used fisheries anglers 'interfere' with each other, and so reduce the probability of success for the next angler through disturbance of the water.

Could a change in any of these factors have caused a decline in the catchability of trout in Lake Taupo or the Tongariro River which might explain the decline in mean catch rates?

We examined these and other factors in considerable detail. The full discussion is too long to present here but can be summarised as follows.

Water temperature and weather conditions

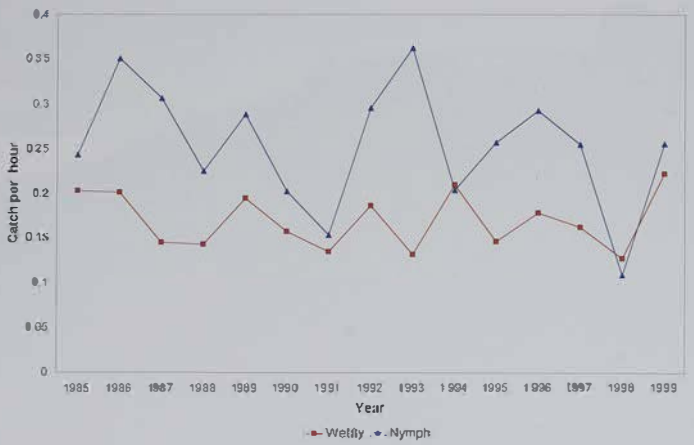
Taupo anglers have long recognised the influence of weather on fishing success. For example bad weather and heavy rain which causes the barometer to fall and the rivers to flood in winter is eagerly anticipated. We are all aware of global warming, which in the long run will affect the Taupo fishery. However no measurable changes in weather patterns have occurred over the past 50 years and we can assume that the effects of weather on catchability have remained constant.

Fishing methods

The continual quest to refine fishing equipment and techniques in the exploration of new or improved ways of fooling the quarry characterises the history of angling. Improvements in gear efficiency will increase the catchability of the trout and result in higher catch rates for a similar level of trout abundance.

The Tongariro River has been restricted to fly fishing since 1934 and traditionally has been the preserve of the "downstream angler".

Graph 4. Mean catch rate by fishing method on the Tongariro River since 1985.



Through the 1950s and 60s anglers fished almost exclusively with a wet fly and sinking line swung downstream. Nymph fishing using a floating line cast upstream first became widespread on the Tongariro in 1978 and now accounts for approximately 70% of total angling effort each year. This reflects the fact that this method is much more successful overall than modern wetfly methods (graph 4).

In turn, modern wetfly methods are much more effective than those which prevailed prior to TPD. Initially anglers used flylines made of silk which, if not dressed with floatant, sank but not very well. Other anglers used homemade lines involving coating silk or other lines with such materials as powdered lead or tar. In the 1950s the first synthetic flylines made of terylene appeared. These lines, which were denser than water, sank deeper than silk and were followed by the first sinking lines made by Scientific Anglers under the Gladding name. However the greatest advance occurred with the introduction of Scientific Anglers WetCel line in 1962, which sank at a rate of approximately 5cm per second and the WetCel HiD in 1964, which sank twice as quickly. Compare these to the lines used nowadays such as the DeepWater Express or the Teeny TS series which sink at rates of 20 to 25 cm per second! In addition the use of modern rods of graphite and carbon fibre, which have been widely adopted over the past 20 years, with shooting heads and the double haul casting technique allow many anglers today to cast further and with greater ease. On the end of the line are flies of materials and designs unknown 30 years ago.

Clearly the equipment used by today's wetfly angler is far more effective than that used in earlier years. These major improvements in the catchability of trout in the Tongariro would have been reflected in a significant increase in mean catch rates had nothing else changed.

Other advances have affected trolling on Lake Taupo, in particular the advent of echo sounders which allow anglers to run their lures close to the bottom, the key to successful deep trolling. Downriggers, which were first permitted in 1994, do not allow anglers to fish any deeper than was possible with wire lines but do allow anglers accurate control of fishing depth.

The effect of flows

From our radio tracking of fish in the Tongariro it appears that river flow influences the behaviour of trout and hence their catchability. In the lower river, higher, more variable flows cause the trout to move closer to the edge and into shallower water where they are more accessible to anglers using the traditional wetfly technique. However in the smaller middle river, under low flows, few if any fish are out of reach of anglers and in these conditions they appear to hold for longer in the pools.

The radio tracking experiment also highlighted that low flows favour increased spawning in the main stem of the Tongariro. Greater numbers of spawning fish, which are under stress and easily upset or spooked,

may in turn disturb migrating fish resting deeper in the pool. Under low flows anglers are also able to wade deeper and cross the river at the tail of many pools, disturbing any fish lying in these areas. If fish in the pool are disturbed angling success will be limited.

A positive effect of having a reduced flow is that the water clears quicker following floods, which allows anglers to more fully exploit what is an optimum fishing time.

Angler skill

Obviously the more skilled anglers are, the greater their success is likely to be. Success in the Taupo fishery is linked to how familiar an angler is with the lake or river. Familiarity is normally measured by asking the angler how many days they have fished that particular water in the current season, but the type of licence held can also be used as an index. The proportion of long term licence holders, who can be expected to be more successful than short term licence holders, has increased over the past 50 years. The effect of this is to increase the catchability of the trout, which should be reflected in increased mean catch rates.

Angler numbers

It is conceivable that the number of anglers in the fishery in recent years is such that they interfere with the success of their fellow anglers. Let's examine the most obvious situation where this could occur, that on the Tongariro.

When the river is crowded some anglers are forced to fish less productive water or at less productive times. Furthermore, the disturbance from all the anglers may force the fish to seek refuge under the banks or in the deep holes where they are less available or prepared to take a fly. Practical experience suggests there are times when, if a run of fish is in a pool and you are the only angler, your catch rate will be higher than if you have to share the pool with others. However this begs the question – how often did one get a popular pool to oneself in the past when the fishing was good?

Intuitively the number of anglers fishing on the Tongariro River must have increased dramatically over recent years, reflecting the increase in fishing licence sales. Implicit in this assumption is that the more anglers there are using the Taupo fishery, the more anglers there are on the Tongariro River at any one time. However the river can only carry so many anglers because there are only so many spots suitable for fishing. At some point this capacity will be reached. For example over the 1995/96 season 24% of anglers interviewed as part of routine satisfaction surveys regarded the river as being overcrowded. Over the same season 81 aerial counts of the number of anglers on the river recorded a maximum of 90 anglers on any one flight. Ninety anglers out of peak sales of nearly 84,000 licences in 1986/87 represent 0.1% of licence sales and only 0.25% of the low point in sales (35,572 licences in 1960/61). In other words the number of anglers fishing the Tongariro on any one day is a veritable drop in the bucket in comparison to the total number fishing the wider Taupo area over the season. Therefore it is quite likely that the river has been at its capacity for many years.

Quantitative data describing the trends in angler numbers is sparse. However there are a number of anecdotal comments reaching back to the 1930s. The tenor of these is summed up by the following comment from the *NZ Fishing and Shooting Gazette* in 1933:

"There is much grumbling by the overseas anglers who have been unaccustomed to fishing in a crowd and who, attracted by the far flung fame of the Tongariro River, arrive to find the famous pools occupied by a dozen rods or more, to their profound astonishment and disgust, many of them finding it hard to find a place where they can get fish as most of them are not inclined to take part in the unseemly rush to get there first, which has, of late years, become the common order of the day. Surely it must be evident to the Department's Officers who visit the river from time to time and who, like myself, may have counted 13 rods in the Hut Pool, 7 in the Stump, 8 in Judges, 11 in Jones and so on, that it is high time more water was opened up". L. Hanlon, President, Upper Waikato and Tongariro Anglers' Club.

and in later years:

"By 1955 we had our own bach in the Hut camp, ... The greatest number of fishermen I can remember fishing the Hut pool at one time was twenty-five: seventeen from our bank (the correct side) and seven on the stones and in the gaps between the kowhai trees. Everyone of those anglers had a good chance of catching a fish. Often the pre-breakfast session which started with daylight and was usually completed by about 9.30am, would yield thirty or forty fish. The occasional exceptional morning would see almost double that tally" John Clemance, long time President of Tongariro and Lake Taupo Anglers Club writing in *Trout and Salmon Sport in New Zealand: An Angling Anthology* compiled by Tony Orman.

Derisley Hobbs, a scientist with the Marine Department responsible for investigating the high proportion of ill-conditioned trout in the early 1950s, wrote in a report to the Conference of Angling Clubs and the Department of Internal Affairs in July 1953:

Perhaps the most valuable are comments by

The 1990/91 and 1995/96 harvest survey data contradicts a common perception about angling numbers on the Tongariro River. When we drive over the highway bridge and see 8 or 10 or even 15 anglers fishing the Bridge Pool it is natural to assume this reflects the numbers of anglers along

" ... additional angling effort tended to be competitive between anglers with the result that cropping of the stock did not increase proportionately to the enormously increased sales of licences..... [a closed winter season may] cause an inconveniently heavy concentration of angling effort on the rivers in May when fish are less abundant..... and when competition between anglers sharply reduces the individual bag..... the approach of the Easter holidays causes an undue concentration of anglers relative to available fish – a position which persists in May when, in effect, river fishing becomes more popular than the numbers of fresh fish entering from the lake really warrants. It seems necessary, further, to consider the mere disturbance effect on the fish of heavy angling concentration, especially when rivers remain low and clear."

Pat Burstall, the then Deputy Conservator of Wildlife. In a letter to the Controller of Wildlife in 1964 he wrote

So how does this compare with recent years?

the whole river. In all likelihood had we driven over the bridge prior to the 1958 flood we would have counted similar numbers in the-then Hut Pool.

"It should be appreciated that today especially on the Tongariro River, angling pressure has virtually reached saturation point, especially in the period from April to the end of June"

As part of two year long harvest surveys in 1990/91 and 1995/96 instantaneous aerial counts were made of the number of anglers on the Tongariro River. During the two harvest surveys 144 counts were made on 45 days between April and September. The maximum instantaneous count was 121 anglers spread from the Delta to the Whitikau Pool. The average count though over the 1990/91 season was 44 angers and 42 anglers in the 1995/96 season. If we assume all the anglers were above the Downs Pool a count of 121 anglers corresponds to a density of 8.6 anglers per kilometre and the mean counts to a density of three anglers per kilometre. Another way of looking at it is to work out the number of anglers per pool. At the time we calculate there were 34 widely recognised pools. This estimate does not include a number of productive spots known to a minority of anglers. Converting each count to an average per pool and taking the mean of all these results in a mean of 1.3 anglers per pool over 1990/91 and 1.2 anglers per pool over 1995/96.

From this data it is clear that while there are days when the river is crowded, days which stick in angler memories, for the great majority of the winter the density of anglers is much less than two anglers per pool. There are very few pools on the river which cannot comfortably hold two anglers both fishing the best lies (spots).

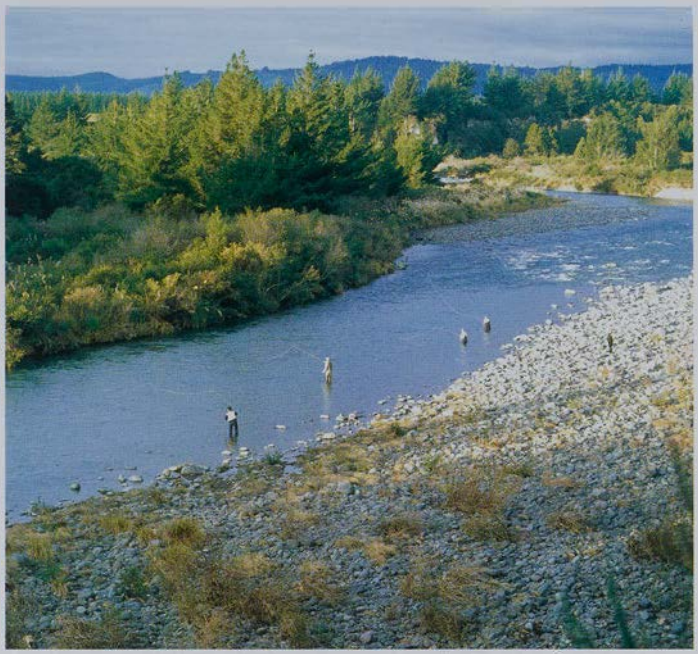
This concentration of anglers in a few pools is no different from what happened in the past. The reality is that each season there are a few pools which consistently produce very good fishing. These pools attract a large number of anglers because of this. If there were fewer anglers in these pools those remaining might well catch more fish. However it is clear that sharing these hotspots with a number of fellow anglers was as much a feature of the fishery 50 years ago as it is now. These pools were popular because that is where anglers consistently caught fish. As Vice Admiral Hickling so appropriately put it in 1960:

On a daily basis it is apparent that even back then, anglers faced the choice of competing to be first through the pool for the best fishing or of fishing in a more relaxed if less successful way later in the day. For example George Ferris wrote in his book *The Trout are Rising* in 1964:

'There are many stretches of water [in the Tongariro] where you wouldn't catch a fish in a hundred years, for the simple reason that there aren't any, never have been, and never will be."

The discussion over angler numbers relates to the fact that it is possible that a greater numbers of anglers will reduce the catchability of trout in the river. We have examined

Sharing a popular pool with other anglers has always been a feature of fishing the Rangairo River.



this assumption using data collected over the two harvest surveys.

Firstly we can compare the aerial counts of anglers just after dawn with the catch rates recorded for this period on the same day. Using the dawn count removes any influence of preceding anglers on fishing success. If there is a direct effect from increasing numbers of anglers on the river, perhaps because some anglers are forced to fish less optimum areas or to share hotspots with other anglers, we expect to see a general trend of decline in mean catch rate with increasing numbers of anglers. The data for 41 surveys spread between April and September collected over the 1990/91 and 1995/96 seasons is presented in graph 5.

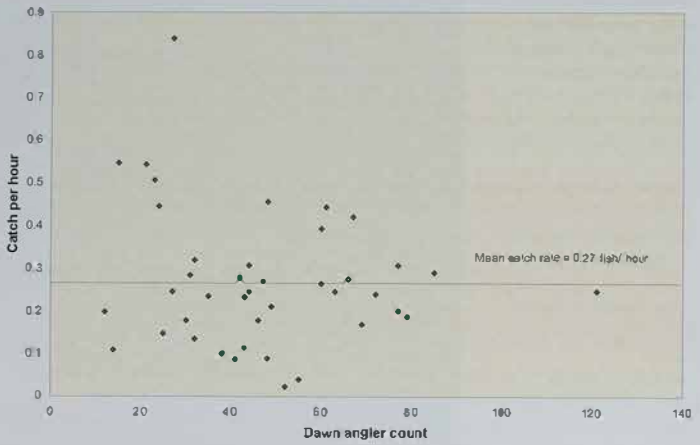
> *"To be successful in the main tributaries of Lake Taupo it seems necessary to be on the pool not later than 4 a.m. I have a feeling that it is not a matter of the early bird getting the fish but the early angler getting the pool, or at least the best vantage point."*

From graph 5 it is apparent that there is no relationship between the number of anglers on the river and their overall catch rate.

We can also compare whether the success of anglers is affected by the total fishing pressure over the whole day (graph 6).

Once again it is clear that there is no rela-

Graph 5. Number of anglers on the river versus their mean catch rate for the period dawn to mid morning, 1990/'91 and 1995/'96 seasons.



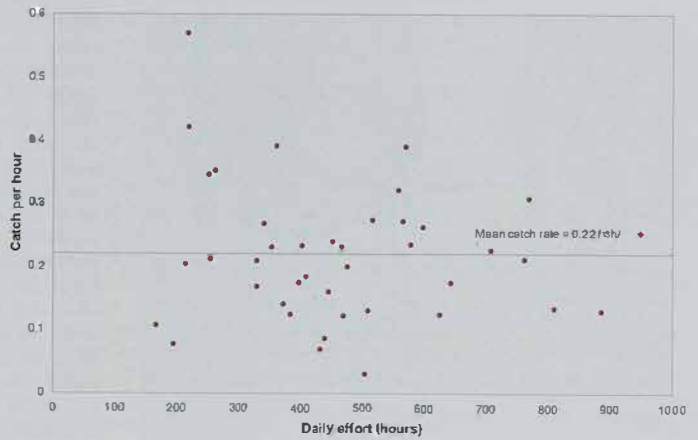
tionship between the total number of anglers using the river and the mean daily catch rate. Perhaps the best way to assess the effects of a possible increase in angler numbers is to give an example. In late July 2000 the first unsettled weather for nearly a month occurred. Anglers anticipated that this would bring a run of fish into the river. An aerial survey just after dawn on Saturday 23 July 2000 gave a record count of 167 anglers. Nearly every angler our staff encountered commented on the number of people on the river and the difficulty of finding somewhere to fish. Yet our interviewers recorded an exceptional catch rate of 0.55 fish per hour. It is clear that if sufficient fish are present the river can sustain very high catch rates despite extreme angling pressure.

Catch and release

Catch rate data is calculated by using the number of legal sized fish caught, whether they have been killed or released alive again. The practice of catch and release became much more common in the early 1980s as highlighted by table 3.

Some studies have shown that fish caught and released learn from the experience and become more difficult to catch a second time. However at least there is some opportunity to catch them again. In earlier years there was no chance of catching fish a second time because almost invariably they were killed

Graph 6. Mean daily catch rate versus total daily fishing effort 1990/'91 and 1995/'96 seasons.



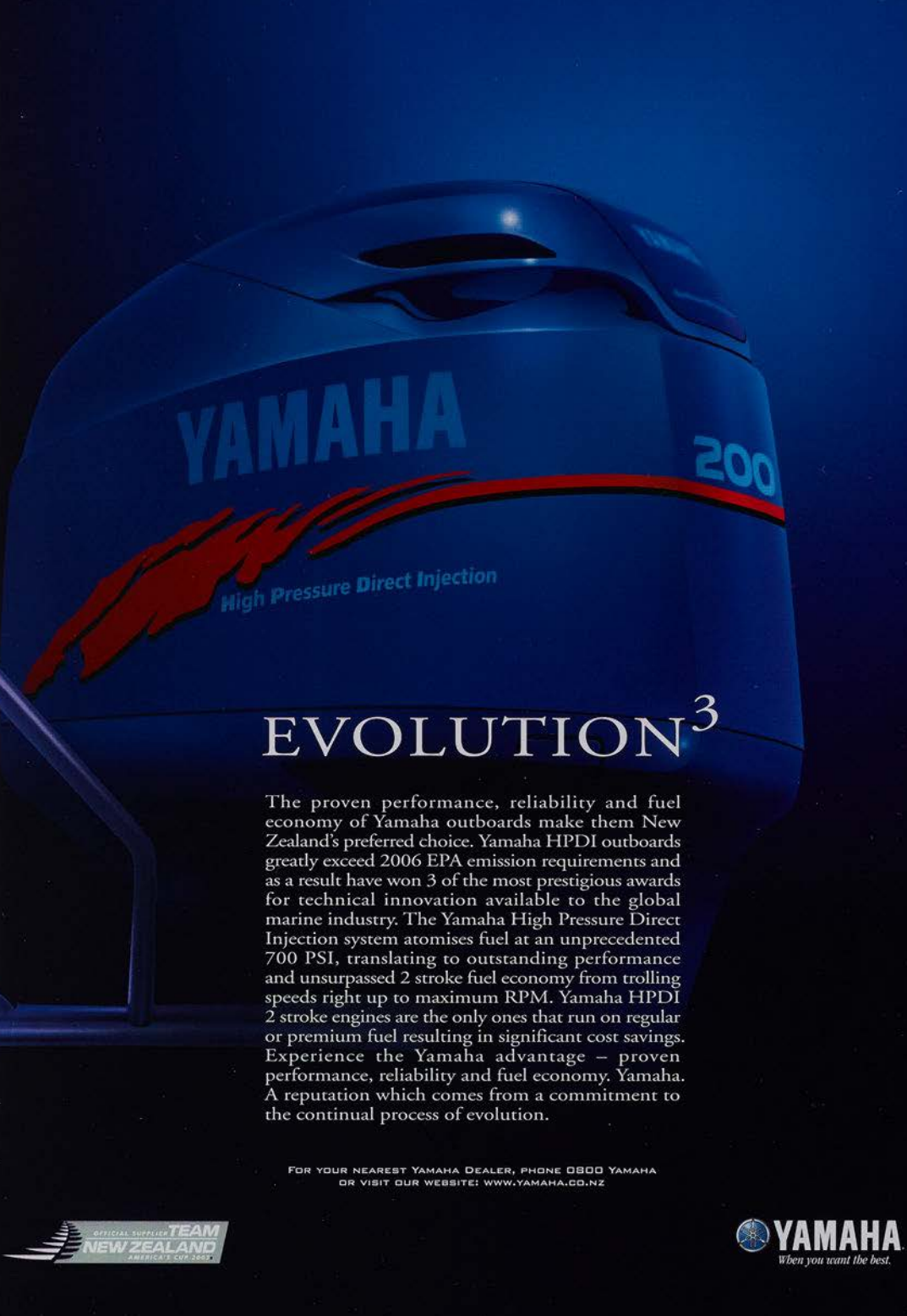


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Table 3. The percentage of legal sized fish released by Tongariro anglers.

Period	Percentage of fish returned
1953 to 1979	4.1
1985 to 1999	34.1

the first time. Therefore the catchability of these fish has increased.

In summary catchability should have increased in recent years as a consequence of:

- improved angling equipment and new angling techniques.
- a greater proportion of long term licence holders who are more experienced,
- the ability to fish the Tongariro River sooner after floods.
- lower flows favouring angling in the middle Tongariro River.
- the development of the practice of catch and release

and should have decreased as a consequence of;

- lower flows in the Tongariro River causing the trout to be less accessible to traditional wetfly angling techniques.
- increased disturbance of fish resting in the rivers.

Any negative effects appear to be more than balanced by the corresponding improvements in catchability. This is borne out by the maintenance of catch rates on the Tauranga-Taupo and Waitahanui Rivers.

If changes in catchability do not explain the reduction in mean catch rates in Lake Taupo or the Tongariro River then the change must reflect a change in trout abundance.

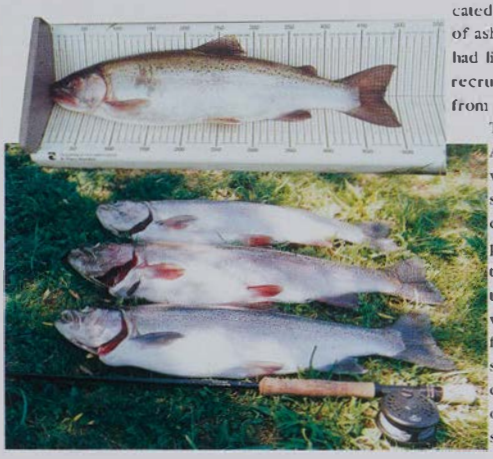
Why are there fewer trout?

In 1990 the fishery went through a well publicised low point which is reflected in the acoustic estimates and escapement (spawning) counts at that time. An intensive year long survey over the 1990/91 season estimated a total harvest from Lake Taupo of 69,250 trout and a total harvest from the Taupo fishery of 113,000 trout or 175 tonnes.

In 1991 Dr Martin Cryer completed a four year study into trout production in Lake Taupo. He estimated a total trout production of 510 tonnes in 1988 and 340 tonnes in 1989. An estimated harvest of 175 tonnes represents 30% and 50% of these figures respectively. This is a considerable proportion of the trout production and is significantly higher than the best estimates of the theoretical 'maximum constant catch' that is the catch estimated to be sustainable at all future levels of production.

As a consequence we sought to reduce the angling harvest by reducing the daily bag limit from eight fish to three in December 1990. Monitoring of angler catches from Lake Taupo indicated this would save 10% of the previous harvest. This move coincided with an observed improvement in natural productivity and river rearing conditions.

In 1996, following the 1995 and 1996 eruptions of Mount Ruapehu, monitoring indicated that the continual inputs of ash into the Tongariro River had likely resulted in almost no recruitment of juvenile trout from the main stem of the Tongariro.



Anglers are now subjected to severe harvest restrictions including a three fish daily bag limit and 45cm minimum length.

As a consequence, in 1997 we increased the minimum size limit from 35cm to 45 cm. This was designed to protect a greater proportion of the immature fish in the lake so that more of what had been produced from the Tongariro would survive to spawn. Catch data collected from anglers over the previous two seasons indicated this

would save 25% of the harvest.

Harvest rate is the number of fish killed per hour, as opposed to catch rate which is the number of fish caught per hour, whether they are killed or released alive. Harvest is a product of harvest rate multiplied by the amount of angling effort. For example if anglers spend 500 hours fishing and the harvest rate is 0.2 fish per hour then the harvest is 500 x 0.2 = 100 fish.

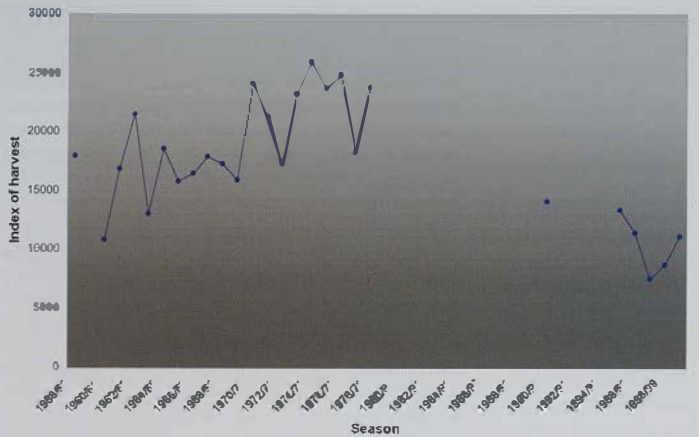
We have harvest rates for Lake Taupo but no data for the annual angling effort prior to 1990/91. However we can obtain an indication of the trend in the harvest over the years by using total licence sales as an index of the angling effort.

Any estimate of harvest needs to take into account the reduction in harvest brought about by decreasing the bag limit in 1990 (saving 10%) and increasing the size limit in 1997 (saving 24%). The index of harvest calculated by multiplying total licence sales by the harvest rate and adjusted to take into account these changes is presented in graph 7.

It is clear that the harvest in the 1960s and 70s was much larger than that in recent years. This is largely a consequence of the significantly lower harvest rate during the 1990s which in turn is due to the significantly lower angling success in recent years compounded by an increase in the practise of catch and release. The index of harvest suggests that harvest has probably been a significant influence on the trout population for the past 40 years.

In the past the harvest was large because catch rates were high, which in turn reflects the fact that the trout population in the lake was also very large. In the 1990s the lake catch rates were significantly lower. For the same period catchability is likely to have increased, reflecting advances in angling equipment and techniques. Therefore the lower catch rates in the 90s were the result of a smaller trout abundance. The harvest was also smaller than in the 1970s, which implies that the smaller trout population is a consequence of reduced recruitment, not

Graph 7. Index of harvest from Lake Taupo 1958/59 to 1999/00 (missing data points reflect years in which no or incomplete angling data was collected)



increased harvest. However as occurred in 1990, production can now fall to such a low level that a high harvest has a dramatic effect on the quality of the fishing.

What has caused a reduction in trout production?

The rivers and streams of Lake Taupo for the most part flow through unmodified catchments or are protected by the Lake Taupo Catchment Control Scheme initiated in 1976, or by Lake Taupo Forest which was planted primarily for *"preventing soil erosion, reducing pollution of the waters of Lake Taupo and of the streams and rivers flowing into and out of said lake, and minimising adverse changes in river and lake water"*. The impetus for these schemes arose out of concerns in the 1940s and 50s regarding the state of the surrounding catchment. In particular extensive land clearance and associated roading and stocking had exposed the vulnerable Taupo pumice soils and widespread erosion was occurring. Sediment clogged the streams, stock broke down the banks and poorly installed culverts blocked fish passage to spawning areas. The success of the Taupo catchment initiatives is

The Lake Taupo catchment Control Scheme retired stream margins from grazing

Lake Taupo continues to provide ideal conditions for the survival and growth of trout

such that the catchment is now in better condition than it was 50 years ago.

Lake Taupo is oligotrophic (poor in nutrients) and continues to have very high water quality. Growth of phytoplankton in Lake Taupo is considered to be nitrogen limited (see *Target Taupo* issue 35). Recently a trend of increasing nitrogen inputs into lake Taupo has been identified and lake clarity has reduced by approximately one metre since the 1970s. Increased nitrogen inputs will increase the lake productivity and in the short term favour increased trout production. However if lake productivity continues to increase there will be a point where the reduced clarity severely limits trout feeding and so fish condition and eventually numbers.

Brown bullhead (catfish) were first discovered in Lake Taupo in 1985 and have since spread all round the lake. In shallow, weedy areas they now occur in very high densities. However extensive research has found no evidence of any direct impact on the trout population. Large bullhead do take some smelt and koura but not at levels which we believe would affect trout growth or survival in the lake. This is supported by the fact that the highest densities of bullhead coincide with the highest trout numbers and fish condition over the past 20 years.

The effects of hydro electricity generation appear to be the only reason left to explain the decline in trout production in lake Taupo. The Tongariro, Hinemaiaia and Kuratau Rivers and Lake Taupo have all been dammed and their flows regulated for electricity generation purposes.

The Tongariro is the largest tributary of Lake Taupo and the major spawning and rearing tributary. In 1995 we estimated the total spawning run in the Tongariro was 60,000 fish. This estimate is 30% of the preceding November (1994) acoustic count of 205,000 trout in Lake Taupo over 35cm in length. The acoustic count is a 'snapshot' there are fish entering the catchable population and others dying throughout the summer but it gives a measure of the significance of the production from the Tongariro. If there have been changes in trout production from the Tongariro as a consequence of the Tongariro Power Development Scheme (see *Target Taupo* 34 for a history of the scheme) this is likely to have significantly impacted on the lake fishery. It has been suggested that a decline in the Lake Taupo fishery could be responsible for the decline in the Tongariro fishery. Instead it is clear that the reverse applies; a decline in the Tongariro fishery has had a major effect on the Lake Taupo fishery.

Last year (2000) a major peak in production occurred in the Taupo fishery as evidenced by counts of spawning trout in Taupo tribu-

Table 4 Mean catch rates measured on Lake Taupo and tributaries 2000.

Water	Mean Cpue (Total fish/total hours)
Lake Taupo	0.32
Waitahanui	0.28
Hinemaiaia	0.44
Tauranga-Taupo	0.43
Tongariro	0.30

tatics and the success of anglers (table 4).

Mike Stent, Taupo tackle shop owner, professional fishing guide and member of the New Zealand Flyfishing Team wrote in the November 2000 issue of *New Zealand Fishing News* "*...it has to be said that Taupo has had one of its best fishing seasons ever..... The Waimarino in my opinion has been the best of our rivers throughout this past season*"

The exception is the Tongariro where the catch rate is only 20% greater than the mean catch rate of 0.25 fish per hour post TPD and significantly less than the pre TPD mean catch rate of 0.42. Our escapement (spawning) counts in the Whitikau Stream, the major tributary of the Tongariro, indicate the highest spawning density since monitoring began in 1990, consistent with the parte erin the other rivers. In 1995 the Whitikau attracted one quarter of the spawning fish running the Tongariro and we believe the slightly higher catch rate in the Tongariro last year simply reflects the strength of the Whitikau spawning run.

Had the Tongariro peaked like the rest of the fishery it is likely that the mean catch rate for Lake Taupo would also have been consistent with those of the 1960s and 1970s. These results highlight that for some reason the Tongariro no longer performs like the rest of the fishery. Clearly the production from the main stem is much lower than, and out of character with the rest of the fishery.

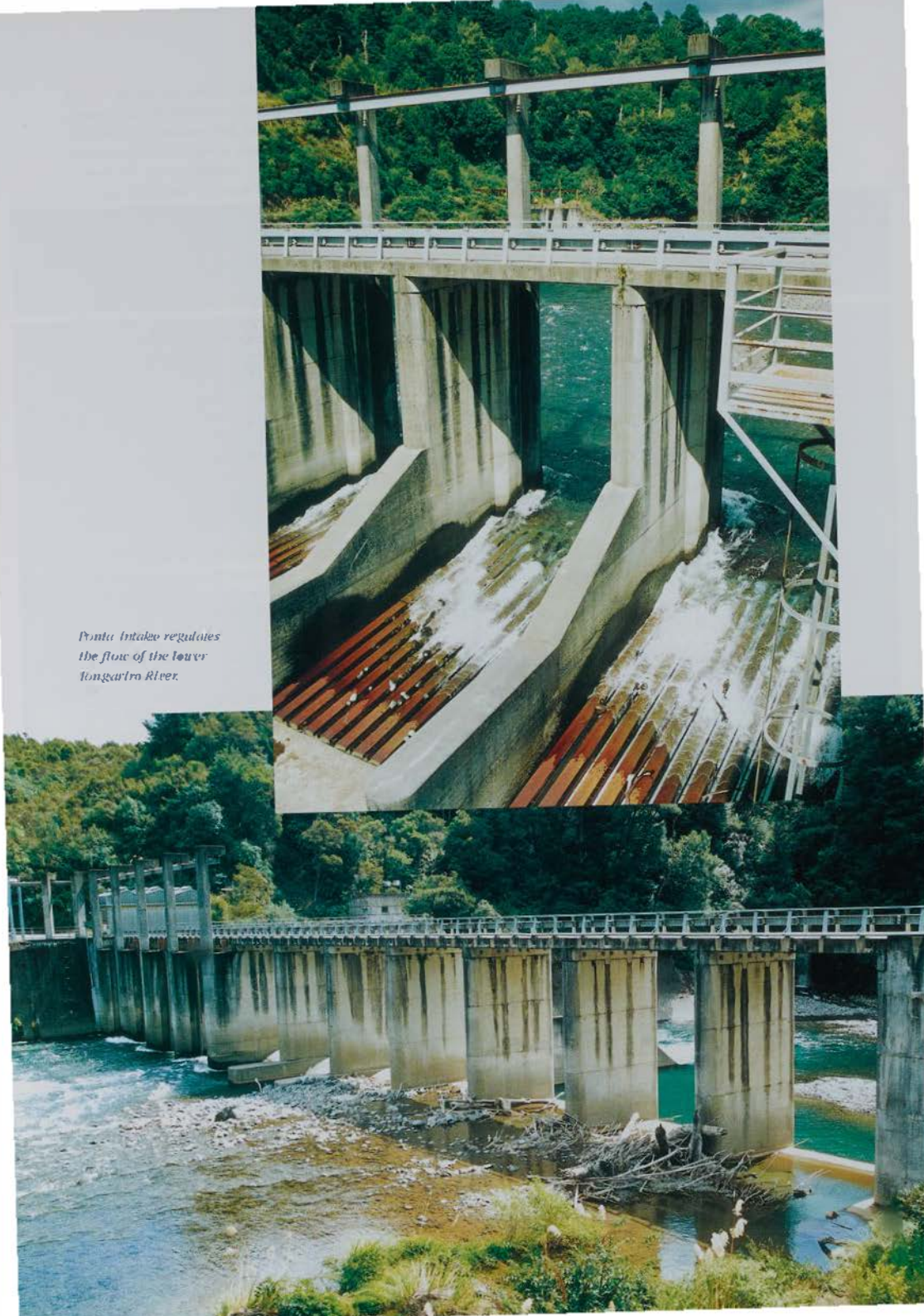
This is not the only indication that the Tongariro now functions differently from the rest of the fishery. Our spawning counts indicate that the numbers of fish entering the rivers each winter can typically vary 3 to 400% or even more over a 10 year period. Such years of peak numbers are reflected in the success of anglers. For example since 1974 we have recorded the variation in catch rates shown in table 5.

Table 5 Catch rates recorded on the Waitahanui, Tauranga Taupo and Tongariro Rivers since 1974

River	No. of years	Minimum Cpui	Maximum Cpue	Mean Cpue	Coefficient of variation
Waitahanui	9	0.09	0.28	0.18	37.5%
Tauranga-Taupo	15	0.12	0.43	0.25	37.6%
Tongariro	19	0.11	0.31	0.24	21.6%

On the Tongariro catch rates have varied between 0.11 and 0.31 fish per hour over the 19 years of records since 1974. Despite a mean catch rate similar to that of the Waitahanui and Tauranga Taupo Rivers the coefficient of variation is substantially lower. The coefficient of variation is a useful statistic tool for comparing variability between several samples and indicates there is much less variability amongst the Tongariro data.

If we remove the two years affected by over harvest in the lake (0.19 in 1990, 0.15 in 1991) which are not included in the data for the other rivers, and the one-off catastrophic impact of the 1995 and 1996 eruptions which was confined to the main stem of the Tongariro (0.11), then the range is only 0.21



Ponta Intake regulates the flow of the lower Tongariro River.

to 0.31 fish per hour and the coefficient of variation just 13.2%.

This compares to a pre TPD variation of 0.27 to 0.62 fish per hour between 1960/61 and 1972/73. The minimum catch rate during this period is higher than the mean catch rate since 1985.

Clearly the number of mature fish running the Tongariro is less, as is the year to year variation since TPD. We conclude that recruitment from the main stem of the Tongariro is less than that pre TPD and determined by different constraints from the rest of the Taupo fishery. It is now far less variable largely because the peaks evident elsewhere in the fishery, and in the past on the Tongariro, are missing.

We can identify no reason other than TPD why the Tongariro should function differently from other rivers and streams in the Taupo fishery. This is supported by the evidence that the unaffected tributaries of the Tongariro vary in a manner consistent with the other rivers. The decline in productivity has occurred in the main stem, the area affected by the regulated flows of TPD. The reduction in flow in the river means that the Tongariro is now a smaller, shallower and narrower river. We have discussed that juvenile trout need to have a territory which provides them with food and shelter and so allows them to grow to a sufficient size that they can survive in Lake Taupo. As a consequence of the reduction in the size of the river owing to TPD only a fraction of the territories are available for juvenile trout that existed previously. The regulated Tongariro does not produce as many "viable" juveniles as it used to when it was a bigger river and this is reflected in the overall reduction in production of the Taupo fishery.

The effects of the Hinemaiaia and Kuratau hydro power schemes are slightly different from those of TPD. In these rivers the base flow in the river hasn't changed but the flow can fluctuate widely on a daily basis, mimicking the demand for electricity. As a result the fish no longer have a "stable" habitat and have to continually readjust to the flow fluctuations. This is not without casualties and effect on the overall adult production.

The construction of the Lake Taupo control gates in the 1940s isolated that area of the Waikato River between the gates and Huka Falls. The water in this stretch of river is warmer and rich in aquatic insects. Research in New Zealand and overseas has shown that lake outlets such as this are heavily used for spawning and juvenile rearing. The loss of access to this stretch of water may have also affected the overall trout production of Lake Taupo.

So is the fishing as good as ever?

Perhaps on the smaller rivers unaffected by hydro power generation, all things considered it is. However the Tongariro River achieved its fame because it produced exceptional fishing year in, year out. Rivers like the Tauranga-Taupo and Waitahanui had their devotees but the bottom line was none of these rivers could consistently match the quality of fishing on the Tongariro. That is not a slight on these other streams because there was probably only a handful of rivers, if that many, in the world that could match it. As a consequence it was the Tongariro which attracted the anglers and the plaudits.

Our satisfaction surveys and catch rate data clearly indicate that this is no longer the case. The Tongariro is now just another Taupo river. In fact it lacks the highs of the other rivers. The Tongariro is still a good river but as a number of older anglers have told us *"it is simply not what it used to be"*.

Anglers across the whole fishery are now subject to catch and size restrictions not necessary prior to TPD and the smaller hydro schemes in order to ensure the sustainability of the fishery. For sure the fishing at times can still be outstanding, but only as a consequence of these severe harvest restrictions.

Anglers who have never known any different may well be satisfied with their current success on the Tongariro or lake. However saying that the river or lake is still good is not an argument to retain the status quo. Instead it is a measure of just what a wonderful fishery it was that it can undergo a significant decline and still be rated good. We are not talking about just another river, the Tongariro was *'a very, very exceptional river"*.

"the fishing at times can still be outstanding, but only as a consequence of severe harvest restrictions"

It is with this in mind that John Gibbs commented that the Tongariro River is no longer world class.

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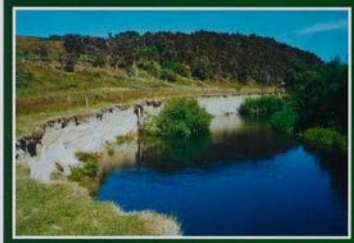

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How Good Was The Tongariro?

The following is an example of the fishing that made the reputation of the Tongariro River. This is a record by Noel Wright of rainbow trout caught on the Tongariro River between April 19 and May 2 1924 by C.H. Bradford of Matangi, R.E. Durrant, J. Hurdle, E.H. Stockwell and N.O. Wright of Fielding. The figures listed are the weight of each fish caught in pounds.

	APRIL												MAY			
	19	20	21	22	23	24	25	26	27	28	29	30	1	2	TOTAL FISH	AVERAGE
Joe Hurdle										15 11 1/2		13 8	7 1/2 8 9 9 11 1/2		9	10 1/4 lbs
Earl Durrant			11		Flooded river dropping very dirty			12		14 8 13 7	Fish in river very discoloured	14 1/2 12	12 11 10 7	14 1/2	13	11 lbs
Frank Stockwell			13 1/2	Flooded river rose 5 feet			14 1/2 10		Wet day no one fished	12 9 7			8		7	10 1/2 lbs
Charlie Bamford						Still discoloured	14 11 12 11 9 8	8 1/2 8 8 13 8 1/2 7 1/2		11		7			15	9 1/2 lbs
Noel Wright	12 1/2 10 1/2 9	8 8 14	12 1/2				13 11 9 1/2 7 1/2	13 15 8 8 1/2 7 1/2				11 17	7 8 1/2		20	10 1/2 lbs

Mounting Your Trophy Fish

taxi = to arrange derma = skin

The concept of taxidermy is not new, having been practised most spectacularly by the ancient Egyptians, but also by most other ancient peoples in some form or another. The technique of taxidermy involves skinning the specimen, treating the skin so it will dry without rotting, preparing an artificial body and other parts if necessary and finally, putting the mount together in a lifelike and natural arrangement. Trout in particular have always been a challenge, the level of difficulty being accentuated by the delicate structure of their skin, the superb streamlining and subtle beauty of colour.

At last you have caught that trophy trout of a lifetime, the one you have spent years fishing for. What do you do now to ensure the final mount captures the moment?

We have been advised by world-acclaimed trout and fish taxidermist, Richard Abraham of Taupo, on the do's and don'ts of how to treat that trout from the time it is landed until the time it is handed over to the taxidermist.

- Pick the best side "for show" i.e. no scale damage or scarring
- Keep the "show side" uppermost – don't cover with other fish or wrap in a wet towel.
- Keep the fish cool and moist – don't leave it in the sun to "cook". Pour water on it if necessary.
- If unable to deliver the fish immediately, place it flat on a board and freeze uncovered.
- After freezing for 24 hours seal it in a plastic bag.
- Take close up photos for colour matching before freezing.

A skilled taxidermist can do a lot to improve the appearance of a fish but ultimately the better the condition of the fish when it is handed to the taxidermist, the better the final result.

For further information contact Richard Abraham at Taupo (07) 378 0935 Or Bruce Abraham at Turangi (07) 386 6423

Taupo Trout Numbers Down

The effects of the July 1998 floods are now being seen in the Taupo fishery. The annual acoustic survey of trout numbers in Lake Taupo indicates fewer trout than the exceptional numbers of last year.

Each November we undertake a count of trout larger than 35cm across the lake using a sophisticated echosounder which is able to estimate the size of each fish detected. The count is a snapshot of the population rather than the total number of fish available to anglers over the year, as there are always fish entering the adult population and others dying or being caught. A good analogy is that of a sink with the plug out and the tap on full, which remains half full of water.

Last year's count of 80,000 fish was the second lowest recorded since surveys began in 1988. The lowest was 67,000 fish in 1989 and the largest 205,000 in 1994 (counts could not be completed because of gear problems in 1990 and 1999). Such variation is typical of a wild fishery at the mercy of the elements. In most years the fishery fluctuates in response to variations in seasonal weather patterns but very occasionally a year class develops without any setbacks and the trout population reaches a memorable peak like last year. Similarly just every now and again something occurs which is very tough on the trout such as the extreme floods in July 1998 which wiped out all of the year's spawning up to that point.

While last November's count was low, the current fishery is stronger than the count indicates. Monitoring of the rivers during 1998 and 1999 showed that a lot of spawning occurred after the floods, the effect of which was to cause the peak in juvenile trout numbers to be three months later than normal. Whereas most young fish in the lake are normally 35cm in length by November and included in the count, this time many of the fish were still too young and therefore too small to be counted. Anglers are still commenting on the number of young fish in the lake which are growing at one millimetre a day and so will rapidly become the large fish we all like to catch.

While the number of trout is low, the reduction in the daily bag limit from eight fish to three fish in 1990 and the increase in the minimum legal size to 45cm in 1998 will protect a third of the fish which would have previously been harvested and ensure many more fish survive to run the rivers to spawn this winter. Overall we predict a reasonable season on Taupo rivers this winter, not at the level of last year, which was the best season for 20 years but considerably better than the low point in 1990.

FIRE Threatens Kiwi Sanctuary

A fire in early February, in the lower Waione Valley threatened to destroy the Tongariro Forest Kiwi Sanctuary, only recently established under the government's Biodiversity Strategy.

The habitat that occurs in the Waione Valley is the result of a very large fire that burnt for many weeks in the early 1970s. The toi toi and second growth vegetation are extremely flammable and had kiwi staff not been in the forest to report the fire soon after it took hold, it could easily have spread to burn vast areas of kiwi habitat. Up to four helicopters at one time and 35 fire fighters took three days to control the fire which became deep seated in the heavy fuels associated with the many old podocarp spas, tree stumps and fallen logs. Approximately 25 acres of habitat were destroyed in the blaze which cost the Department of Conservation over $180,000 to extinguish.

The source of the fire is not known but DOC staff suspect a carelessly discarded cigarette butt or even arson may have been the cause as the fire was well away from traditional access tracks or camp sites. Fortunately, a very wet February has significantly reduced the fire risk this season, but all forest users are reminded of the dangers fire poses to our protected areas and wildlife.

Fire destroyed 25hectares of kiwi habitat within the Tongariro Forest Kiwi Sanctuary in early February.

Information about illegal activities is only of use when it is passed on immediately

If you see such an activity, **whatever the time**, please contact compliance staff

Telephone: (07) 386 8607

After hours, an answerphone message will provide you with the number of the Conservancy Duty Officer. He/she will take your call and pass on your information to the appropriate person

Note this contact number is also printed on your Taupo District fishing licence

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Otago's Robbie McPhee with double figure Canterbury trout caught on Kilwell Innovation fly rod earlier this year.

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Some stores still have small numbers of two fly rod models we ran as specials over the spring. Built on Kilwell's Legend II blanks, these rods are called "Progression L" and are 9' 6/7# and 9' 8/9# models. Special price is $299.95! (Compare this with the regular Legend II price!)

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Photo: Courtesy Chappie Chapman (right)

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DOUBLE POINTS

Note: Any store selling out of Custom Down Unders will substitute the regular Down Under at the same promotional price with free Fly Line, but unfortunately no rod tube.

Deer Policy

In late February, the Minister of Conservation released the Department of Conservation's Deer Policy. The Minister's press release and a summary of the policy are reproduced below. While some hunters may feel the policy offers little in terms of the hunter aspirations expressed during the public discussion phase of preparing the policy, the challenge for hunting groups now is to work within the framework provided by the new policy to achieve both conservation and hunting outcomes.

Hon Sandra Lee *Minister of Conservation*

MINISTER'S DEER POLICY PRESS RELEASE

The Minister of Conservation, Hon Sandra Lee, has announced the permit system to hunt deer on public conservation land will be streamlined and unnecessary restrictions on recreational hunting removed, as one of the key elements in a policy statement on deer.

Ms Lee today released the Department of Conservation Policy Statement on Deer Control. It focuses on deer primarily as a serious conservation pest but also takes account of the needs of recreational and commercial hunters and of the deer farming and game estate industries.

"The Labour-Alliance coalition's approach to the management of deer on public conservation land has been guided by the New Zealand Biodiversity Strategy which seeks to halt the loss of our indigenous plants and animals and promote their restoration," Ms Lee said.

She says the policy's over riding goal for deer control is "to reduce the impacts of deer, along with other threats, on public conservation lands so as to maintain and enhance forest regeneration and indigenous ecosystem protection.

"The Government wants to make it easier in future for both recreational and commercial hunters to hunt deer on public conservation land because there is clear scientific evidence the animals pose an ongoing threat to our native forests and grassland ecosystems," she said.

"Deer hunting is a popular recreational activity that introduces many people to the outdoors. Recreational hunting will be encouraged but deer numbers will not be maintained at levels that cause severe and long lasting forest damage just to provide easy hunting. Opportunities to hunt will nevertheless remain plentiful on public conservation land."

Ms Lee said the Deer Control policy signalled a move away from single species plans towards a more integrated approach to pest control, with decisions on deer eventually being made alongside initiatives to control possums, goats and other threats.

"The Department of Conservation's priorities for deer control will be to eradicate new and isolated populations, such as those in Northland and Taranaki, which have historically been deer-free and to control deer to low levels on priority sites.

"Under the policy," Ms Lee said, "the Department of Conservation will encourage regional councils to include deer in their Regional Pest Management Strategies particularly in areas historically free of the animals."

The Conservation Minister said DOC would also work with deer farmers to reduce the risk of farmed deer escaping and forming new wild populations. She said new regulated and non-regulated areas for deer farming and associated fencing standards would be gazetted following consultation.

Ms Lee said no changes were currently planned for requirements for holding deer and other wild animals in game estates.

SUMMARY OF THE DEPARTMENT OF CONSERVATION POLICY STATEMENT ON DEER CONTROL

Key points

Goal: To reduce the impacts of deer, along with other threats, on public conservation lands so as to maintain and enhance forest regeneration and indigenous ecosystem protection.

Scope of Statement: The statement applies primarily to deer control on public conser-

vation lands but also includes actions to restrict the feral range of deer, which will occur across all lands.

Priority Outcomes for Deer Control: The feral range of deer, or species of deer, should not be allowed to expand into new areas, including deer-free regions, catchments and islands, and where possible the existing feral range should be reduced.

Natural habitats and ecosystems will be maintained in, or restored to, an indigenous natural character, through effective control of deer and other threats.

Hunting: The Department recognises that commercial and recreational hunters value deer as a hunting resource and that commercial hunting in particular provides effective control in those areas that are most suitable for hunting by helicopter. Hunting on public conservation lands will be encouraged where this is consistent with management for conservation. Commercial and recreational hunters will generally have open access to public conservation lands.

Recreational hunters kill large numbers of deer in total each year but generally cannot kill deer faster than they can reproduce. Recreational hunting is not able to reduce deer densities to low enough levels to allow regeneration of palatable seedlings and saplings. The Department sees no need to set up new areas to be managed for recreational hunting, it will not seek to devolve the issuing of hunting permits to a hunter organisation. The existing hunting permit system will be streamlined and where appropriate will move to longer-term area wide permits. The option of removing the requirement for written hunting permits for deer entirely will be explored. This would require legislative change.

Deer Farming and Game Estates: The Department will work with deer farmers to reduce the risks of deer escaping and establishing new populations. No changes are currently planned to areas where farming of deer is generally prohibited. Nor are any changes planned for requirements for holding deer and other wild animals in game estates (safari parks).

Working with Regional Councils: Regional councils will be encouraged to include deer in Regional Pest Management Strategies, particularly in deer-free areas.

Copies of the full policy statement are available from Sue McCabe, Department of Conservation Head Office, (04) 471 3117 or 025 846 810 or smccabe@doc.govt.nz

Insert image of front page of policy document

Summary of the Waipa Trap Results - 2000

By Rob Marshall. Rob is the Fishery Area Ecologist and is responsible for the fishery monitoring programmes. He is also a very keen angler.

Another successful trapping season was completed last year on the Waipa Stream, a tributary of the Tongariro River. The year 2000 was the third year of trapping the stream and we are starting to build up a long term picture of the spawning run in this stream. Collecting data over a long period of time is very important and we are pleased that so far the Waipa trap has survived every thing nature has thrown at it including the July 1998 floods. Hopefully this will continue and the trap will be around for a long time to come.

Table 1 The number of trout trapped in the Waipa Stream adjusted to take account of those fish that bypassed the trap during floods

Species and sex	1998	1999	2000
Rainbow female	1949	3666	4109
Rainbow male	1151	2451	2707
Total rainbow	**3100**	**6117**	**6816**
Brown female	312	287	413
Brown male	257	157	257
Total brown	**569**	**444**	**670**
OVERALL	**3669**	**6561**	**7487**

The largest run since trapping began.

Last year trapping results show an impressive number of fish migrated up the Waipa Stream to spawn. An estimated 6820 rainbow and 670 brown trout ran the river. These are 11% and 51% increases on the previous respective year's runs. Table 1 shows the total number of rainbow and brown trout trapped since monitoring began in 1998. The size of the run in the Waipa Stream supports the results of the 2000 escapement (spawning) monitoring which recorded some of the highest densities ever of spawning fish in many other Lake Taupo tributaries. For example, in the Tauranga Taupo River the highest monthly count recorded this year was 648 fish per kilometre, 262 fish per kilometre more than the previous high. The Hinemaiaia and Whitikau Rivers showed very similar results. Anglers reaped the benefits of this with higher than usual catch rates.

Graph 1 shows the peak rainbow run occurred in September with 1421 fish trapped this month. The brown trout run peaked three months earlier in June, when 161 fish were trapped.

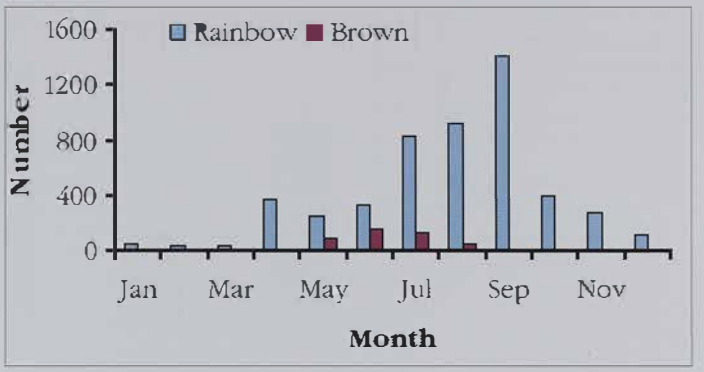
Not only lots of fish but a good average size

Anglers were blessed last winter with not only a lot of fish and a very good catch rate but also with good sized fish. Table 2 shows the average weight of rainbow trout last year was 1.95kg (4.3lb), an increase of a quarter of a kilogram on 1999. The size of brown trout also improved with an average weight of 2.79kg (6lb) and an average length of 603mm.

Table 2: Average length and weight of trout trapped in the Waipa Stream since 1998

	Length			Weight		
	1998	1999	2000	1998	1999	2000
Rainbow male	579	528	542	2.29	1.68	1.85
Rainbow female	581	524	542	2.48	1.75	2.02
Total rainbow	**580**	**524**	**542**	**2.4**	**1.72**	**1.95**
Brown male	647	591	616	3.39	2.56	2.84
Brown female	622	585	593	3.17	2.59	2.75
Total brown	**633**	**587**	**603**	**3.26**	**2.58**	**2.79**

Graph 1: Actual number of brown and rainbow trout trapped each month in the Waipa Stream 2000



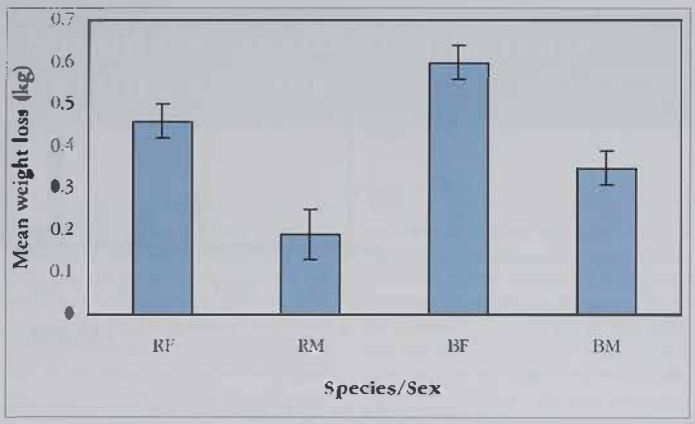
How long do trout spend in the Waipa Stream spawning?

The figures shown in table 1 are adjusted to take into account those fish that bypass the trap in floods. At the completion of the trapping season we know the total number of trout actually trapped each month. What we don't know is exactly how many fish managed to avoid the trap during floods and therefore are not included in the total run. In order to overcome this we clip part of a fin of every fish that is trapped going upstream. We then trap as many fish moving back downstream after spawning (kelts) so we can to determine the proportion of these fish that don't have their fins clipped, and therefore the proportion of fish that bypassed the trap during their upstream migration. If we adjust the actual number of fish trapped by the proportion of kelts that don't have a fin clip we get an estimate of the total run size.

However in order to estimate the total number of trout using the Waipa Stream we also need to know how long they spend above the fish trap (residence time). For instance, if we know that rainbow females stay above the trap for an average of two months then we can adjust the number of

The fishery team reinstate the Waipa trap in January 2001 to begin the fourth year of trapping

Graph 2: Average weight loss by species and sex of fish spawning above the Waipa trap 2000



rainbow females trapped in July by the proportion of unclipped kelts recaptured in September.

In order to establish the residence time we tagged 30 rainbow and 30 brown trout every month between April and October in 1999 and 2000. The tags used are small lengths of coloured plastic that resemble short pieces of spaghetti, hence their name spaghetti tags. When the fish are tagged their weight, length and maturity are recorded. Each fish is then released upstream of the trap and allowed to continue spawning as usual. The fish are then trapped again as kelts moving back downstream to the take and the tag number, date of recapture and weight of the fish recorded.

The length of time spent above the trap and the amount of weight lost by each fish was established and the average for each sex and species of fish calculated. On average rainbow females and rainbow males spent 53 and 64 days above the trap respectively and browns spent around 80 days. For the purposes of calculating the adjusted run total we rounded these times to two months for rainbows and three months for browns.

Dr Michel Dedual, the Taupo Fishery Area Scientist completed a study in 1996 that established how long it took for trout to run from the lower river to the upper spawning reaches of the Tongariro River (*Target Taupo* issue 22). Michel discovered that it took on average 41 days to make the journey but notes that the fastest fish took 12 days and the slowest 87 days. From the results of the two studies it is possible to estimate how long some fish actually spend in the river each year. The degree of variation between individual fish is obviously very high but it is appears that on average spawning fish in the upper Tongariro spend between 100 and 140 days (three to five months) in the river or its tributaries.

While in the river the fish essentially stop feeding. Compounding this is the amount of effort exerted undertaking the spawning migration and while actually spawning. The net result is a substantial loss of weight and condition. By tagging individual fish and weighing them before and after spawning we were able to establish just how much weight is lost. As graph 2 shows females of both species lose around 0.5kg (1lb.) while males lose between 0.19kg (0.4lb.) to 0.35kg (0.7lb.) Little wonder most people don't keep these kelts or 'slabs'. They don't look very nice and they don't taste very good either but as discussed in issue 35 of *Target Taupo* these fish still have a very important part to play in the fishery.

Fishing Regulations Review

The Taupo Fishing Regulations 1984 were created pursuant to Section 14 of the Maori land Amendment and Maori Land Claims Adjustment Act 1926 and Section 48A of the Conservation Act 1987.

The last major review of the regulations occurred when the current version was written in 1984. Since that time, there have been many changes in attitudes and fishing practices in the fishery. We are aware that some regulations have omlived their usefulness and so we are now conducting a review of all of the regulations.

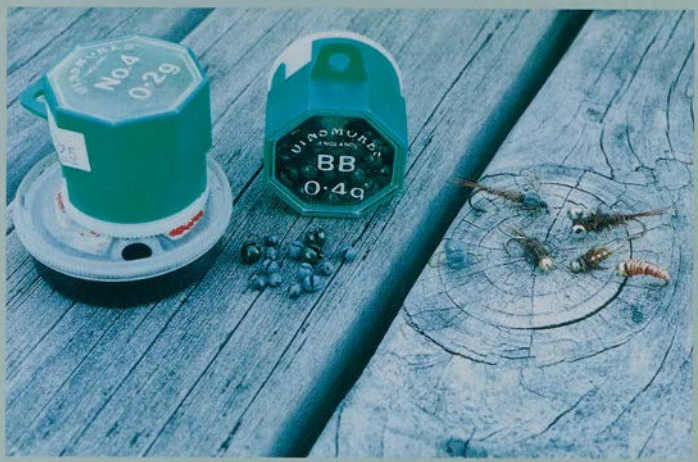
Many anglers have strong opinions about the relevance of some of the existing regulations and you now have an opportunity to help shape any new changes. Possible changes will be discussed with the Taupo Fishery Advisory Committee before being implemented.

The process is expected to take some time and therefore anglers will not see any significant change in the existing regulations for the coming season, which commences in July of this year.

If you wish to make comment on the regulations, please write to:

The Taupo Fishery Area Manager
Department of Conservation
Private Bag
Turangi

Some anglers have suggested it should be possible to use splitshot (eft) to directly weight the leader. They argue many of the weighted nymphs already used are simply weights attached to the leader via a hook. What do you think?



Four Wheel Drive Access in the Taupo Fishery

Once four wheel drive vehicles were sturdy little jobs with rippled sides, scratched, dented, bereft of paint, with big mud-gripping boots and a winch out front.

Maybe Crumpy and Scotty did it; they must have helped. Now four wheel drives are big, fat, smooth and shiny, with street shoes and trim, music and tinted glass. All in all a vehicle that owners are proud to have parked on the gravel bank beside the river while they cast in the background. Just like the ad really. However it went a bit far the other day when a bloke rang and asked if we would clear the nasty scratchy bits from the track access across the riverbed to the Bridge Pool on the Tongariro or else pay for restoring the vehicles that use it. The simple fact is that for a number of reasons we do not encourage vehicle access on to the riverbeds and so any informal track is just that.

If you drive off formed roads in the Taupo Fishing District, you have no right to be there without landowners' permission. That includes the riverbeds.

Rights of way for licensed anglers in the Taupo fishery are spelled out in *Target Taupo* issue 32. They allow walking access along the banks of specified rivers for specified distances and do not include any rights of vehicle access. We maintain two wheel drive access over land that we either manage or have an agreement with the owners to cross, for anglers to gain access to rivers, tracks, or fishing spots. So unless you have the owners permission you should not be driving on to the riverbed by Bridge Lodge along the Waitoraka between Waitoraka Road and State Highway One, along the Waimarino upstream of State Highway One, beyond the end of Tuki Road nor up to the Crescent on the Tauranga-Taupo.

Catfish Numbers Appear Stable

By Rob Hood

Rob is one of Taupo Fishery Area field staff which special responsibility for the day to day running of the 2000/2001 harvest survey

Since 1996 the Department of Conservation has been monitoring and assessing the impact of the brown bullhead (catfish) on the lake Taupo trout fishery. Last year a significant diet analysis programme was initiated as a component of the monitoring to be repeated every three years. The monitoring programme provides information on catfish distribution, population and diet and allows any changes or trends in these to be recognised.

On the basis of our results it appears that currently there is no impact by catfish on the Taupo trout population.

Monitoring the catfish population

Every second month, three fyke nets are set at selected lake edge sites in Waihi, Motuoapa and Whakaipo Bays. The nets are set 20 to 40 metres apart at a depth of one metre and left overnight. The following morning they are retrieved and the catch checked. The lake level and weather conditions are also recorded. Any clipped or tagged catfish that are caught have their length recorded and are then returned to the lake unharmed. The remaining catfish are then processed. This involves firstly killing the catfish by giving them a benzocaine overdose and then recording their length. A random sample of 25 large (>250mm in length) and 25 small (<250mm) catfish are then selected and these fish weighed before being dissected to determine the gender of the catfish (which sometimes is still impossible to determine in very small specimens). The stomach/gut/digestive tract is checked and if any food is present this is identified and recorded. Any other relevant information is also noted, such as the general health of the catfish or any unusual features.

In addition a small sample of catfish longer than 250mm in length are speared by SCUBA divers using Hawaiian sling spears. This is done at a depth of approximately five to ten metres near the drop off at Tauranga-Taupo and Pukawa. The aim of catching these catfish is to determine if there is a difference in diet between catfish living in different habitat types. The deeper water has a rock or sand bed with little weed while the shallow habitat is weedy, muddy and has poor visibility.

What do catfish eat?

Results show that the catfish diet consists primarily of aquatic plant life, freshwater mussels and snails and small invertebrates (insects). Larger catfish also eat small kouri and small fish such as bullies, goldfish and a few smelt. Of the 1236 catfish that were in shallow water, only 200 (approximately 16%) contained food in their gut. This low figure is possibly a result of the method of capture (fyke nets) and the feeding habits of the catfish. Most of the netted catfish were likely caught soon after they move out into the shallows in the early evening to feed and therefore had empty stomachs. The low percentage with anything in their stomach differs from the small sample of 41 catfish caught in the deeper water at Pukawa and Tauranga-Taupo. Thirty one of these fish (76%) contained food in their gut. These fish were taken early morning and therefore had all night to feed. There were also differences in the diets of catfish between the shallow and deep areas which could be expected owing to the opportunist feeding nature of catfish. For example, catfish that inhabit the deeper water had a lot less aquatic plant material in their stomachs, likely reflecting that there is less weed present. However small fish which are more available in this habitat featured more in the diet. Feeding on koura and fish appears linked to the size of the catfish and their ability to hunt, as only larger catfish (>250mm) contained this prey. Several larger catfish from both areas contained a full gut of fish, some containing large goldfish or bullies approximately 80mm in length (the largest found was the remains of a 100mm bully that was in a catfish only 285mm long).

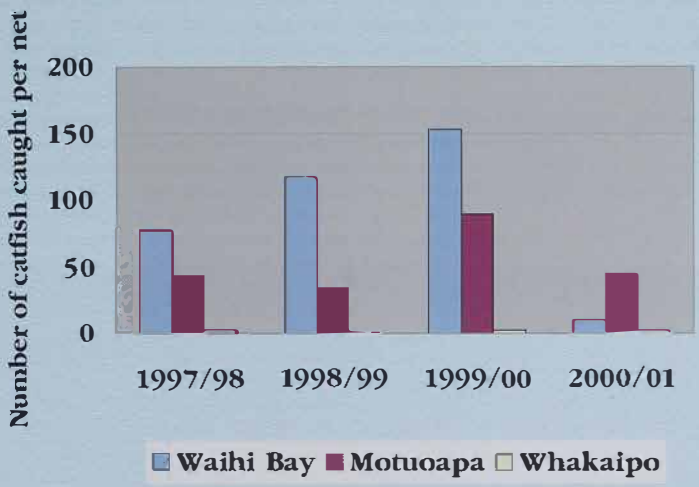
A concern which has been raised is that catfish may affect koura populations. Results from the diet analysis show that of the 231 catfish that had food items in their gut, only 13 contained koura remains (approximately 6%). These catfish were all over 275mm in length. The results for both small fish and kouri fit in well with observations made by Department of Conservation SCUBA divers who have seen large catfish attempting to catch live fish and koura. They were gener-

ally unsuccessful unless the catfish was able to trap or pin its prey against the bottom. While koura are more susceptible living on the bottom, catfish appear to ignore large koura which seem to be able to defend themselves in a more than satisfactory manner. Many of the small fish and koura found in the gut are likely to have died naturally, for example large numbers of smelt die after spawning, and have been found by the catfish rather than been hunted. It is also interesting to note that juvenile trout remains have not yet been found in catfish.

and size of the catfish have not changed either. The largest catfish we caught last the year was 370mm long (15 inches) and weighed 600 grams (1.3lb). The average size of the sample was 220mm in length and 205 grams in weight. Most of the large catfish we caught were in noticeably poor condition. The smallest that we were able to catch using our standard fyke nets was only 85mm in length and there were several others at 90mm.

So at least at present it does not appear the catfish population is increasing in size. The

Graph 1: Catch per net per night of catfish at three sites around Lake Taupo summer 1997/98 to 2000/01.



Catfish also eat some strange things at times. One catfish was found to have a stomach full of small pieces of pumice and several others had eaten small twigs. The palatability and nutritional value of a diet like this would not be that great!

small average and maximum sizes of the catfish also suggests that the conditions for growth are not ideal.

Are the numbers increasing?

Whilst the total size of the catfish population is very difficult to estimate, we are able to establish trends in the size of the population and distribution. There will always be natural fluctuations in any population, but as can be seen by graph 1 which shows the number of catfish caught per net at the three sites over the summer period each year, there have not been any significant increases in the population density over this period. The condition

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Taupo Fishery Advisory Committee What's It All About?

The Taupo Fishery Advisory Committee (TFAC) was set up as an "advisory user group" following the establishment of the Department of Conservation in 1987. The functions of the Committee as defined by the Taupo Fishing Regulations are to:

1. Advocate Taupo sport fishing interests.
2. Facilitate communication between the Department of Conservation and anglers, and to keep anglers informed on matters affecting their interests.
3. Foster ethical standards of angling behaviour.
4. Consider and advise the Department of Conservation on freshwater and sport fishing matters within the Taupo Fishing District.
5. Make representations, as it sees fit, to the Minister of Conservation or to the Department itself or any other government agency or other organisation, on matters affecting the Taupo fishery including national and regional policy statements, management strategies and management plans.
6. Liaise with Fish and Game New Zealand on matters of mutual interest relating to sports fish.

One of the main functions of the TFAC is to facilitate communication between the angling community and the fishery managers. The Committee consists of the following members:

Six members appointed by the Minister of Conservation from persons nominated by the following organisations:

- New Zealand Professional Fishing Guides' Association
- Taupo Commercial Launchmen's Association
- Taupo Fishing Club
- Tongariro and Lake Taupo Anglers' Club (TALTAC)
- Turangi/Tongariro Trout Unlimited
- Waitahanui Angling Improvement Association.

One member each is also appointed by the minister to represent:

- Tuwharetoa Maori Trust Board (on advice from the board)
- National angling interests
- Fish and Game New Zealand (on advice from Fish and Game)
- Tongariro/Taupo Conservator of the Department of Conservation

The current members of the Taupo Fishery Advisory Committee are as follows:

Strato Catsillnis National Fishing interests telephone (04) 472 7827, fax (04) 472 9982

Chris Jolly Taupo Commercial Launchmen's Association telephone (07) 378 0623 or email chrisj@chrisjolly.co.nz

John Davis (Chairperson) Taupo Fishing Club telephone/fax (07) 378 2303

Colin Patchett Waitahanui Angling Improvement Association telephone (07) 378 4738

Alan Simmons New Zealand Professional Fishing Guides' Association telephone (07) 386 7574 or email alan@fishnhunt.co.nz

Graham Whyman Tongariro and Lake Taupo Anglers' Club telephone (07) 386 8996 or email sport.life@xtra.co.nz

Bryce Johnson Fish and Game New Zealand telephone (04) 499 4767 or email bjohnson@fishandgame.org.nz

John Gibbs Department of Conservation telephone (07) 386 9228 or email jgibbs@doc.govt.nz

The Tuwharetoa Maori Trust Board also have a representative on the committee

The Committee encourages anglers who want to comment on any aspects of the fishery to communicate either directly with John Davis TFAC, 1003 Poihipi Road, RD1 Taupo, or to contact one of the above members. The Committee will make regular contributions to *Target Taupo* advising anglers of current issues.

The Committee meets every two months and deals with a wide variety of matters. Recent meetings canvassed the following:

- A review of Taupo fishing regulations.
- The renewal of the TPD resource consents.
- The "Trout Protection" Bill.
- Water quality issues and the effect of land development.
- Fishing guides licences

The review of the Taupo Fishing Regulations 1984 will be a major issue for the committee and anglers generally over the next year. Judging by the frequent discussions around the camp table many anglers have strong views on some of the current regulations. This is a great opportunity to have your say and perhaps influence the shape of the new regulations and we welcome your comment. This is your fishery and we urge you to get involved. Contact the committee with any comments which you feel will assist in maintaining the Taupo fishery as one of the best in the world.

Strato Catsillnis

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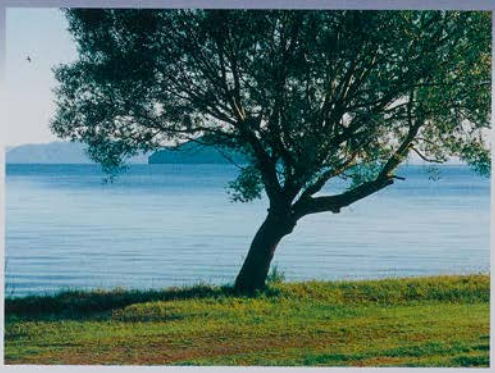
AUCTION



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HARVEYS REINZ

Tongariro National Trout Centre Society (Inc) Update

The Tongariro National Trout Centre is the visitor centre for the Taupo fishery area. It performs the same function as a visitor centre in a national park, which is to provide information, educational material and advice to visitors. As outlined in the last issue of *Target Taupo* the Centre is managed and run by the Department of Conservation (Taupo Fishery Area). DOC is greatly assisted in this function by the Tongariro National Trout Centre Society. Previously a trust, the society is now confirmed as an incorporated society.

The Tongariro National Trout Centre Society will have its first public meeting at 10 a.m on 28 April at the Tongariro National Trout Centre. The purpose of this meeting is to officially launch the Society and to elect the executive officers. You are most welcome to attend and participate in this meeting. Following this meeting a membership drive will commence. Everyone with an interest in trout fishing, freshwater ecology or in the management of the trout centre are encouraged to join the Society. The more diverse the skills represented amongst members, the more successful the Society can be.

The Tongariro National Trout Centre Society will have its first public meeting at 10am on 28 April at the Tongariro National Trout Centre.

The first major project for the Society is the refurbishment of the workshop adjacent to the hatchery building. The existing shell will be converted into an advocacy centre by renovating the building and by the addition of an extension on the eastern side. The centre will house a series of displays describing the history, use, and management of the Taupo fishery, and the ecology of the lake and rivers. Within the centre will be an auditorium to enable talks to large groups to take place in a comfortable and interesting setting.

The centre will be staffed initially by a Ranger but it is also planned to employ a full time teacher under the learning Outside the Classroom (LEOTC) programme run by the Ministry of Education. It is expected that well in excess of 50,000 people will visit this facility annually.

The Department of Conservation and the Society have been busy recently trying to raise funds for this project. The total cost of the project is $258,456 and is broken down as follows:

working drawings	$6,875
completed building	$156,300
contract administration	$5,281
interpretative displays	$90,000

So far $105,000 has been raised ($50,000 from the Tourism Facilities Development Grant and $55,000 to be provided from the Tongariro National Trout Centre Society from funds already held). An application to the Lottery Community Facilities Committee for $83,456 has just been completed, and the Department of Conservation will fund $70,000 for the interpretative displays.

If the Lotto application is successful it is hoped that construction will commence at the end of July and the advocacy centre open by the end of the year. This will represent another major step forward for the Tongariro National Trout Centre.

Winter Possum Control Operations

The winter of 2001 will see large areas of the Tongariro/Taupo Conservancy subject to extensive aerial possum control operations in a retreatment of areas done between 1994 and 1996. The operations are a combination of both Animal Health Board and Department of Conservation initiatives. These operations may affect the activities of hunters and anglers over the coming months. Planning is currently underway for operations in the following areas:

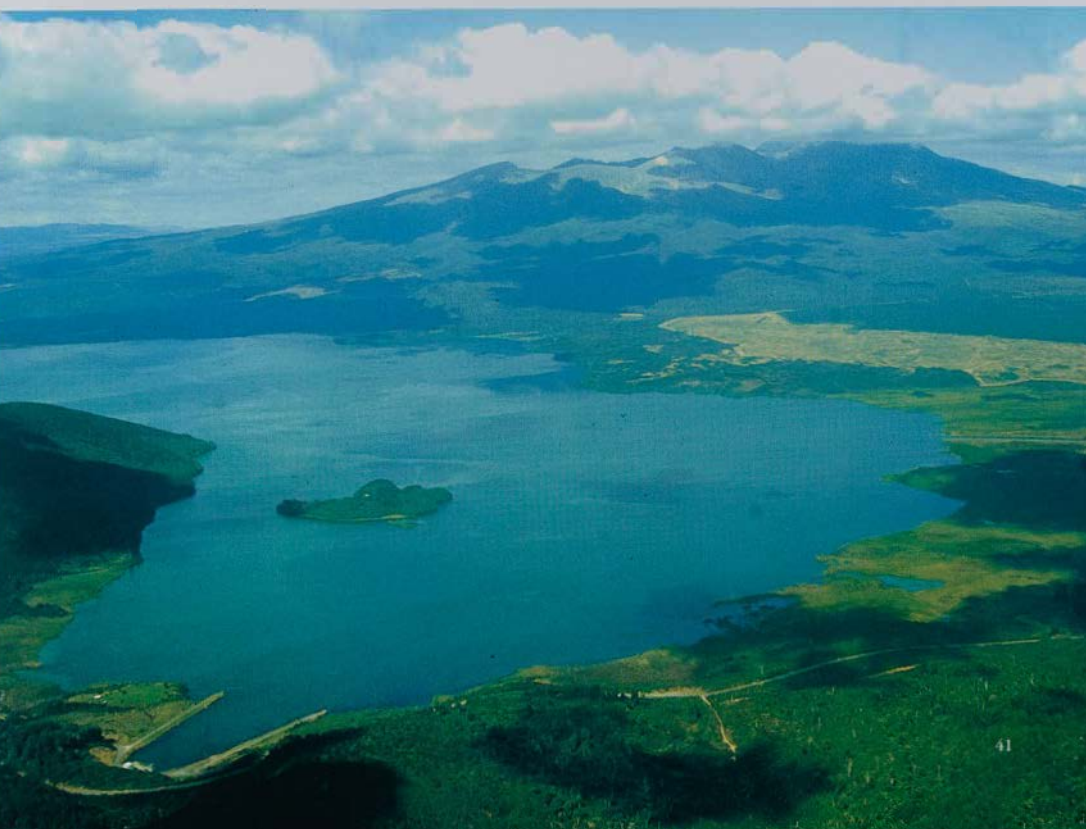
Lake Taupo Lakeshore Reserves

This operation includes land of mixed tenure and covers the northern and western shores of Lake Taupo from Mine Bay, west and south to Kuratau. Approximately eight thousand hectares will be treated with 1080 impregnated carrot baits in June 2001. The operation is funded by the Animal Health Board and is targeting possums to maintain the very low reactor rates in domestic cattle and deer in the North Taupo and West Taupo Bovine Tb Management Areas.

Pihanga/Tokaanu and Rotoaira

This operation includes 20,000 hectares of land between southern Lake Taupo and Mount Tongariro including most of the Rotoaira basin. Eight thousand hectares of conservation land are involved including the whole of the Pihanga block and most of the northern slopes of Mount Tongariro under Ketetahi Hut within Tongariro National Park, and a number of associated smaller reserves including those along the steep lakeshore cliffs between Waihi Village and Pukawa. The operation is a joint Animal Health

Possum control in the Rotoaira basin this winter will result in the protection of significant ecological values.



Board/Department of Conservation initiative and will involve the application of 1080 impregnated carrot baits applied by helicopter in June 2001. The operation is targeting possums in an attempt to maintain very low reactor rates in domestic cattle and deer in the Somh Turangi Bovine Tb Management Area. It will also prevent further totara and kamahi canopy die-back and protect threatened plant populations within the National Park.

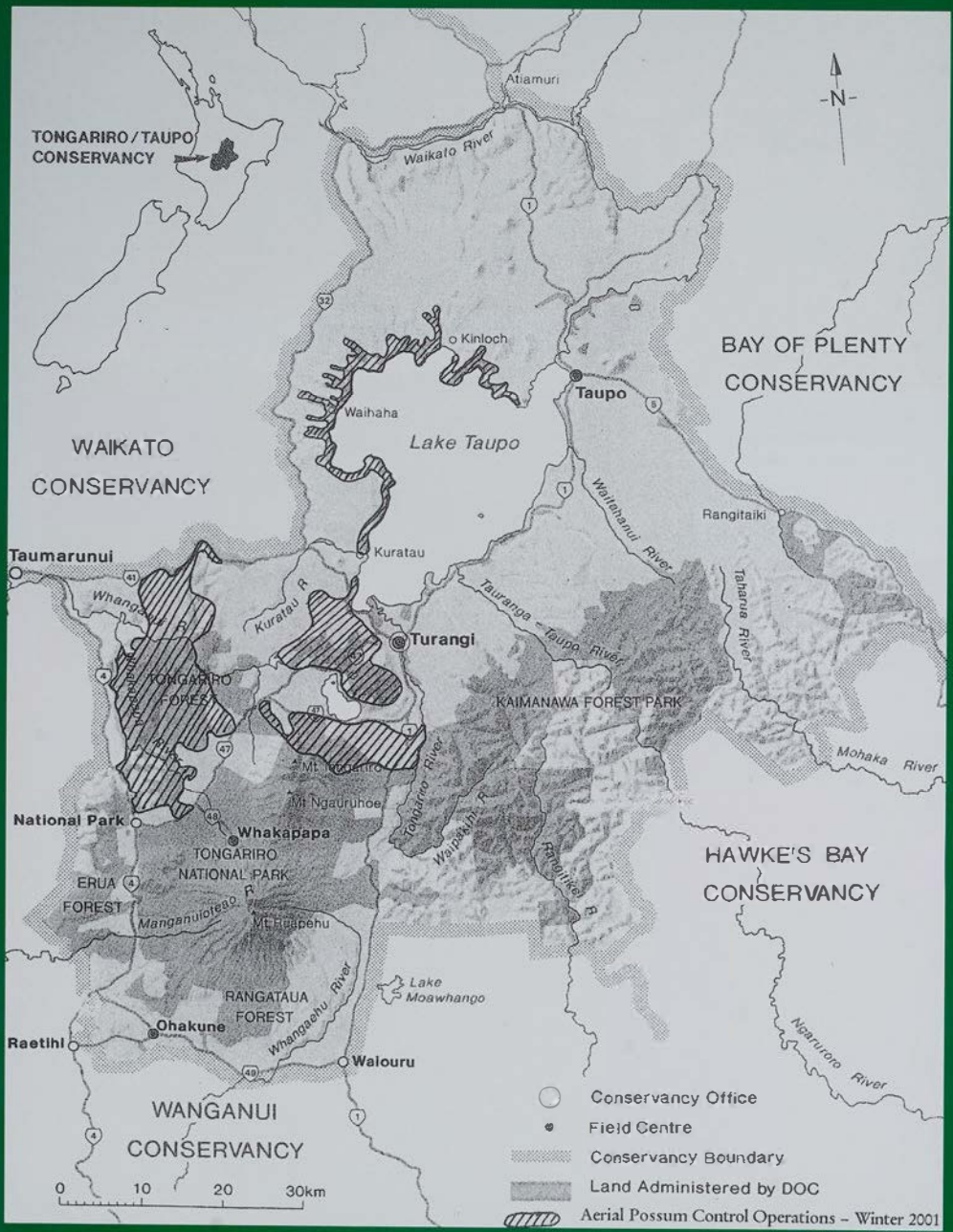
Tongariro Forest

The Tongariro Forest operation includes 27,000 ha of land stretching from State Highway 41 in the north to National Park in the somh. h includes all of Tongariro Forest west and south of the Mangerepopo Stream, parts of Pukepoto Forest and the Waituhi/Kuratau and Raurimu Spiral Scenic Reserves, as well as private land in the north. The operation is another joim Animal Health Board/Depattment of Conservation initiative and will involve acrial application of 1080 impregnated cereal pellet baits (3kg/ha) targeting possums and rodents. The operation is an integral part of managing the new Western North Island Brown Kiwi Sanctuary created within Tongariro Forest as part of the government's Biodiversity Strategy. It is planned to occur in September 2001 just prior to the hatching of the first kiwi chicks of the 2001/2002 kiwi breeding season.

In addition to these larger operations, large areas of conservation land within the Conservancy are also under maintenance control regimes using a variety of methods to maintain low possum densities after initial knockdown. Some of these may affect the activities of hunters and anglers. A *Pesticide Summary* is published by the Department three times each year detailing where toxins have been laid on conservation land within the Conservancy. Copies are distributed with all hunting permits and are available at local Department of Conservation offices.

Despite a history of logging, fire and general human abuse, Tongariro Forest still contains some of the most important and diverse ecological values in the Tongariro/Taupo Conservancy. Pest control this winter will ***significantly enhance*** *those values.*

Major Possum Control Areas in Tongariro/Taupo Conservancy - Winter 2001



Tongariro Power Development Resource Consents

The Department presented its case on the Genesis Power application for renewal of consents for the Tongariro Power Development (TPD) in November 2000. The hearing was held jointly by the two regional councils concerned (Environment Waikato and horizons.mw) until it was adjourned at the end of November. It is due to recommence to consider the western diversions part of the scheme on 16 July, with a decision expected sometime after completion of the hearing.

DOC's concerns centred on four key issues affecting conservation interests in the area of the power scheme. These are residual flows in the Moawhango River below the dam, scheme-wide effects on blue duck, compensation flows in the western diversions (Whanganui River catchment) and flows in the lower Tongariro River. The Department considered that other matters had been adequately dealt with in proposed conditions.

Progress was made on several of these issues, with Genesis conditionally agreeing to a 0.6 cubic metre per second (cumec) flow below the Moawhango dam (though the Department still seeks a higher residual flow of two cumecs), funding a trust to assist blue duck conservation, a 0.3 cumec minimum flow below the Whanganui River intake and a 0.5 cumec minimum flow below the Mangatepopo Stream intake.

Genesis Power argued that there should be no change from the current flow regime in the lower Tongariro River (a minimum of 16 cumecs released from Poutu Intake).

The Department disagreed and sought an increase in flows to improve the lower Tongariro River trout fishery to something closer to its original pre-scheme quality. The details of this case are in our article in the July 2000 issue of *Target Taupo*. One of the more complex areas addressed was the use of a technique called IFIM (instream flow incremental methodology) to model the effects of different flows on fish habitat. The case presented by DOC Taupo Fishery Area staff and a consultant argued that use of this model to implicitly predict fishery effects may be inappropriate where other evidence shows a different result. We now must wait for the decision of the hearing commissioners later in the year.

Summer Fishing and Harvest Survey Update

For the first time data from lake shore anglers has been collected as part of the lake Taupo Harvest Survey. Ranger Vicki McLean (right) asks Dennis and Brenda Butterworth from Wellington about their success at the Hinemaiaia river mouth

Throughout the summer, Department of Conservation staff continued with the lake Taupo Fishery Harvest Survey. Staff interviewed anglers either as they returned to the boat ramp or while fishing at the river mouths and around the lake edge.As could be expected we were kept very busy. On the 10 days surveyed in October through January, approximately 200 anglers were interviewed each day. We have been delighted with the positive response from anglers: approximately 3350 of whom have been interviewed around the lake since the start of the survey in July 2000.

The unseasonable weather certainly had a large influence on the fishing effort and at times made lake fishing difficult for anglers. The highest total number of boats counted fishing on the lake during a survey flight was 283 on 30 December 2000. This is similar to last year's peak count of 291 boats and although this sounds a lot,it is still well short of the highest count of 450 boats during the summer of 1998/99.When anglers were able to get out their success was comparable to last year with an overall catch rate of 0.31 fish per hour (one fish every three hours) for all methods over the summer months (Oct-Jan). The most productive period was in November when the average catch rate was 0.44 fish per hour (last year 0.46).

At first glance these catch rates seem at odds with the low acoustic count in November (page 25). However a closer examination of the fishing success, in particular the large number of previous spawners or kehs caught by anglers this summer, explains the variance. The high incidence of previous spawners is a consequence of the record spawning runs last

By late summer it is often very difficult to distinguish between a maiden trout (left) and a previous spawner (right). Hoani (left) and Pantia French hold a couple of typical Taupo trout caught jigging in mid March with their father Peter.

winter combined with spring floods which washed the spent fish back into the lake to coincide with the smelt spawning. Feeding on this bountiful food supply concentrated around the lake margins allowed many of these fish to regain their body condition and maximised their chances of survival. Living around the lake edge these fish are also vulnerable to anglers trolling and harling, which is why anglers reported catching so many kelts this summer. These fish sustained the high catch rates which otherwise would have been much poorer given the low incidence of maiden fish seen in anglers bags. The acoustic estimate on the other hand covers the whole lake and is usually dominated by young maiden fish living deeper in the lake. So while catch rates were similar to last summer the quality of the fish was not.

While these previous spawners often didn't look too flash when they first arrived back in the lake they have quickly regained condition and are very valuable to the fishery, particularly when the number of maiden fish is low (*Target Taupo* issue 35). The excellent conditions for growth are also reflected in the condition of the maiden fish amongst which are some very large prime specimens. For example our data for fish kept by river mouth anglers shows an average weight of 2.00kg and 540mm in length. We have heard of several large fish over 4.50kg being caught, as well as a good number of fish around 3.00-3.50kg. A feature of the maiden fish this year is the colour of the flesh, which is often red rather than the bright orange colour typical of Taupo trout.

This summer harling in the early morning and then fishing deeper later in the day with downriggers and leadlines continued to be the most popular method but jigging is finally growing in popularity. Although widely practised in other parts of New Zealand and proving very successful for the few anglers who tried the method on Lake Taupo, jigging had been slow to take off. However it was noticeable the greater numbers of anglers now trying what is a very successful method in late summer on the lake.

We will continue the lake and lake-edge surveys as well as the winter river surveys which start again in April, until the end of the season in June. Following this an estimate of the season long harvest from the Taupo fishery will be calculated from the data collected and a summary of the results printed in the November 2001 issue of *Target Taupo*.

Children's Fishing Days

The fishing pond at the Tongariro National Trout Centre (TNTC) will be open on the following days in 2001:

Sunday 6 May
Sunday 10 June
Sunday 8 July
Sunday 12 August
Sunday 30 September

Numbers are restricted to 30 children per hour from 9 a.m. to 2 p.m. and bookings are essential. You will be given a start time when making your booking. Bookings can be made by telephoning Mandi Goffin on (07) 386 9243 between 1 p.m. and 3 p.m. on any week day.

Bookings can be made by telephoning Mandi Goffin on (07) 386 9243 between 1p.m. and 3 p.m. on any week day.

The programme involves tuition at the pool-side by members of the Tongariro National Trout Centre Society. Children are shown the basics of casting and then hooking and landing their own trout. The fish is weighed, measured and presented to the child along with a certificate to take home. The programme has been operating for many years now and has proven a highlight for thousands of kids and their parents.

Children must be aged between 6 and 14 and there is no charge. However a fishing licence is required, which can be purchased on the day for $3.00 or they can bring their own Taupo District fishing licence.

While you are at the TNTC take time to also to enjoy the walks, picnic areas, interpretative displays and undercover viewing chamber.

Blue Pool Access

Thanks to the generosity and energy of an angler who wishes to remain anonymous, you will soon be able to again drive to the Blue Pool on the Tongariro River.

The floods in July 1998 washed 20 metres of the road away (see *Target Taupo* issue 24) and destroyed several of the favoured pools that it previously gave access to. Subsequently similar numbers of anglers have wanted the road left as is as want it reinstated. In addition rafters were not enthusiastic about sharing the estimated $25,000 cost of repairs, so instead a walking track was cut around the washout, a haul-out area for rafts established and the old Breakaway Pool carpark enlarged.

Work has started on the new section of road and there are plans to widen and improve the turnoff from State Highway One at the southern end of the Poutu Bridge and also the parking area near the Blue Pool with picnic areas and facilities. This should all be completed within the next four to six weeks so autumn and winter anglers can look forward to some changes.

The anonymous benefactor has gained the support of the Departments of Corrections and Conservation for the project, which he wishes to leave as a memorial to his late wife and the many pleasant days they spent fishing the river in this area.

Dog Policy for Tongariro/Taupo Kiwi Forests

In January 2001, a public discussion document was released by the Department of Conservation outlining proposals to manage the potential impact of dogs on kiwi and other wildlife within three forests in the Tongariro/Taupo Conservancy. These are the Tongariro, Ertia and Rangataua Forest Conservation Areas.

The proposal is to declare these forests controlled dog areas under the Conservation Act. This would restrict dog access to the forests to ensure ongoing kiwi management work is not put at risk by uncontrolled dogs. Dogs would only be authorised under permit for specified activities, including threatened species recovery work, DOC funded animal control work, and recreational hunting where dogs are an essential part of the success of the hunter.

Under the proposal, permits would only be issued for certified threatened species dogs, or dogs which have entered the Kiwi Recovery Programme's "Kiwi Aversion Training Scheme". This scheme involves a one day training session for the dog and handler by a local trainer at a nominal fee. The dog is exposed to various kiwi stimuli which are negatively reinforced with an electric collar. Dogs entering the scheme will be reassessed at 12 monthly intervals.

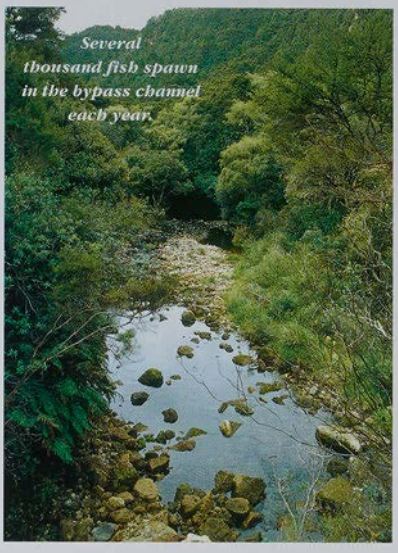
Erosion is a natural feature of the Hinemaiaia River but we believe the operation of the power scheme has in the past exacerbated this.

Hinemaiaia Consents Applied For

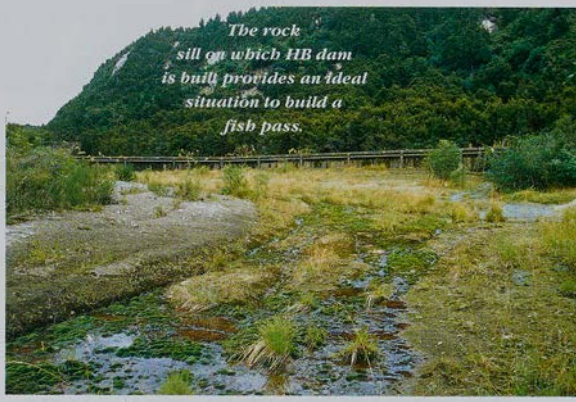
TrustPower the owner of the Hinemaiaia hydro power scheme, has recently applied for consents to operate the three hydro dams on the river. In discussions with the Department of Conservation we have raised a number of concerns regarding the past operation of the scheme, in particular the loss of access by trout to two spawning streams above HB dam, the reduction in suitable spawning habitat as a consequence of the regularly fluctuating flow, the loss of angling opportunity owing to moving the winter limit downstream, the armouring of the stream bed owing to the truncation of the sediment flow by the dam and what we believe is an exaggeration of the natural erosion in the lower river.

While the fishery has been in good shape over the past couple of years it is important to acknowledge that some severe restrictions are in place to achieve this result, most notably the reduced daily bag limit and increased minimum size. These measures were introduced to reduce the lake harvest as a consequence of reduced recruitment of young trout into the lake. As we discuss in *A Return of the Good Old Days*' on page 4 the only obvious change in the catchment which can explain the reduced production of young trout is the impact of the various hydro schemes. In the case of the Hinemaiaia a further angling restriction is the setting of the winter fishing limit at the state highway bridge, a restriction which is in place solely as a consequence of building the HB dam. Prior to the scheme the winter limit was at HA dam which meant an additional 11.25 km of fishing water was available to winter anglers.

A number of options have been canvassed to mitigate these concerns. Several involve attempting to enhance the spawning conditions in the stretch of channel between HB dam and the power house. We do not favour this approach, for while spawning conditions are not optimum the fact of the matter is that the fish already successfully spawn here. Improving the conditions will therefore not result in any more fish spawning. Our favoured options involve a much more



Several thousand fish spawn in the bypass channel each year.



The rock sill on which HB dam is built provides an ideal situation to build a fish pass.

natural flow regime in the river below HB and the provision of a fish pass to lift spawning fish above the dam so that they can utilise the Kakapo and Pahikohuru Streams as they used to.

The Department has had several meetings with Trust Power and other stakeholders to address fishery issues and we have provided comments on the draft Assessment of Environmental Effects. We will also be making full submissions at the hearing of the applications.

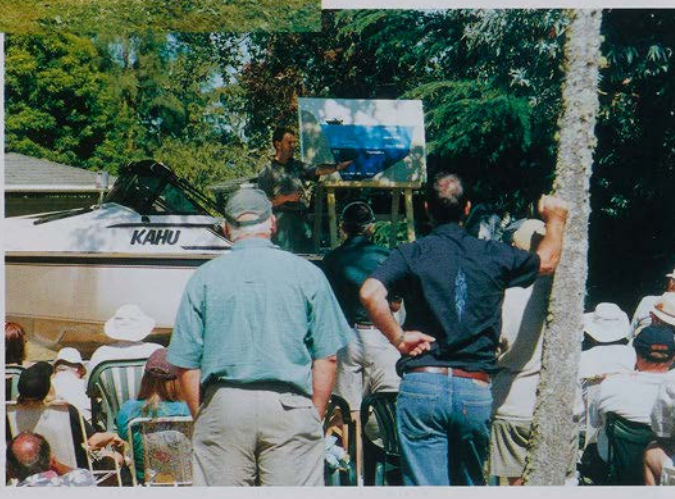
Lake Angling Seminars

Due to the success of last year's lake fishing seminars held in January 2000, we decided to make these an annual event. In spite of the success though we were unsure exactly how many more people would be keen to listen to three fishery staff talk about fish and fishing again this year. We need not have worried. This year's seminars proved as successful if not more so than last year. In total approximately 280 people attended, 130 at Kinloch Marina and 150 at the Motuoapa Motor Camp. One gentleman at the Kinloch seminar informed us that he had travelled down from Whangaparaoa (north of Auckland) that morning and was driving back immediately after the seminar. We hope he found the trip worthwhile.

Needless to say, we will be running the seminars again, which are designed to provide anglers with the basics to trolling on Lake Taupo. The dates and times will be advertised and published in the November issue of *Target Taupo* and at local boat ramps next summer.

This coming winter we will also be running two similar fly fishing seminars designed to improve the success of beginning or visiting anglers on Taupo rivers. These will be held at the Tongariro National Trout Centre south of Turangi on Sunday 3 June and Saturday 21 July starting at 10 a.m. Each session will last approximately two hours, so bring a deck chair.

Glenn Maclean passes on tips to some of the 150 people at Motuoapa and 130 people at Kinloch.



Signs advertising the winter angling seminars have been erected at popular angling access points on the Tongariro and Tauranga Taupo rivers.

Mighty River Power Consents

Many readers of *Target Taupo* will have followed the resource consent process in which Genesis Power has been involved over the past two years for the Tongariro Power Development (see page 45). For those with a bent towards natural resource management, particularly as it affects the aquatic environment and the Lake Taupo fishery, Mighty River Power is also about to also lodge resource consent applications which cover lake Taupo and the Waikato River. Its applications seek a much greater degree of operational flexibility. The new consents sought would allow Mighty River Power to hold Lake Taupo higher for longer, greater minimum and maximum levels on all Waikato River dams and a greater degree of flexibility for ramping rates within the Waikato River.

The Department, iwi, public interest groups and local authorities have been working with varying degrees of success with Mighty River Power over the past few years in order to understand its requirements and what the effects of its resource consents might be on Lake Taupo and the Waikato River. The Department of Conservation is concerned that there is a significant lack of information about the effects on the environment of the existing operation let alone the proposed increases in operating regimes.

An important evolving national debate surrounding major resource consent applications of this type is how much consideration should be given to the state of the environment that existed prior to the schemes for which consent renewals are now sought. These schemes were established under quite different legislation which took a much different view of environmental effects. Mighty River Power is in essence assuming that the current lake level management and river flow regimes are the starting point when assessing the potential impact of the consents applied for. The Department acknowledges that the structures are in place and in most cases should continue but believes that this does not mean current operating regimes must necessarily continue if serious adverse environmental effects are apparent.

The Department of Conservation has identified its key concerns to Mighty River Power. They include the lake level regime, which may adversely affect habitat on the margins of Lake Taupo. The loss of the world class trout fishery in the Waikato River near Huka Lodge in the upper Waikato River and the loss of this area for trout spawning from Lake Taupo are also of concern. In the Waikato River below Aratiatia dam right through to the coast, internationally significant wetlands and the species that depend on this habitat have been damaged through the operation of the existing scheme with the potential for further impacts from the new operating regime being sought.

Mighty River Power is lodging its consents at the end of March. For those with an interest in the process or its outcomes, becoming involved is not difficult. Community groups such as lakes and Waterways in Taupo, local angling clubs, Wild Fowlers Club, Fish and Game and agencies such as the Department will all be involved and are generally very happy to have individuals with an interest on board or to help where an individual wishes to pursue their own position in the resource consent processes.

The Genesis Power resource consent process

The level of Lake Taupo is determined by natural inflows and Mighty River Power's operation of the Taupo control gates.

has produced some valuable community and environmental outcomes though a number of issues still require resolution. Mighty River Power application has the potential to achieve similar outcomes with full community involvement.

Private Land Adjoining Kaimanawa Forest Park

THE public is reminded that there are large areas of private land in the central high country adjoining Kaimanawa and Kaweka Forest Parks. This land is leased to a number of private companies involved in air transport and wilderness tourism activities such as trout fishing and hunting.

There has been a long history of apparent unrestricted public use of much of this private land. Many people, mistakenly, believe some form of public right exists on these lands. We wish to make it very clear to all users of Kaimanawa and Kaweka Forest Parks that this is not the case. Prior permission must be obtained from the lessees of this land before you may legally access such areas. Failure to do so constitutes an offence against the Trespass Act, or, if firearms are involved, the Wild Animal Control Act. Please respect the rights of the owners and lessees of this land.

For further information on land boundaries and adjacent owners or lessees please contact Department of Conservation Turangi /Taupo Area office staff in Turangi or Taupo.

Taupo Fishery Expertise Helps Out in Fiordland

As part of resource consent renewals for the Manapouri hydro scheme, Meridian Energy and Southland Fish and Game wish to know how the scheme affects the trout and salmon spawning migrations in the Waiau River. Four different species and varieties of trout and salmon run this river. There are two types of brown trout: those that spend their entire life in freshwater and those that, like salmon, spawn in freshwater but spend most of their life in the sea (searun brown trout). There are also river resident rainbow trout and recently chinook salmon.

Pushed by the urge to spawn, these fish migrate up the Waiau River. It is no easy trip though. After having escaped the anglers they next face the Mararoa weir which diverts water from the Mararoa River into lake Manapouri. This weir is equipped with a fish ladder to permit the fish to migrate further upstream. At the top of the fish ladder there is a fish trap where the fish are processed in a similar way as in Taupo before being released upstream. However this is not the end of their problems. Indeed, the flow upstream of the weir can change direction and it is possible the fish may get confused as to where to go to reach their spawning grounds (see Target Taupo issue 34). The overall success of the spawning may therefore be strongly influenced by how "user friendly" the fish ladder is and how the fish cope with the changes in direction.

These questions will be addressed by using radio-tracking technology. Essentially this involves catching the fish in the trap and fitting them with radio transmitters. The fish are then transported back downstream and tracked as they return back toward the Mararoa weir. The pattern of movement in the vicinity of the fish ladder will provide information on how easy they find the entrance to the ladder. If they move in a consistent manner and don't spend much time immediately downstream of the ladder then the ladder is working effectively. However, if they spend a long period milling around below the weir it will mean that something is not quite right in the design or operation of the ladder.

The radio-tagged fish that find the ladder and get trapped again will be released upstream of the dam and tracked by foot and plane as they migrate to the spawning sites to see how they cope with the changes of flow direction when it occurs.

Initially the emphasis will be on sea-run brown trout, which are the most prized species. Furthermore, the location of their spawning grounds is not well known. Southland Fish and Game with the support of Meridian Energy will be carrying out the fieldwork but has asked for the assistance and expertise of Dr Michel Dedual from the Taupo fishery in the early stages of the experiment, especially for the insertion of the tags and methods for tracking the fish. It is also a valuable experience for Michel working with species not found in Taupo and in a unique part of New Zealand. We will keep you updated with the results of this interesting project.

Images of the Taupo Fishery

Moerangi - 'sleeping sky'

When thinking about boats, people and places that have a special association with the Taupo fishery it is hard to go past the 95 year old Logan launch, *Moerangi*. Fifteen years ago well known Taupo family, the Pointons bought the old boat and introduced her to Lake Taupo. Since then she has graced the lake for thousands of hours, principally in pursuit of trout.

Before we discuss her life on the lake it is worth having a quick look at the colourful and sometimes mysterious past of this most intriguing boat. She was built in Auckland in December 1906 for a Mr Len Harnett, who immediately shipped her to Whangarei where she began ferrying mail and passengers from Whangarei to the heads. During this time the *Moerangi* affectionately became known as the "ghost" because of the way she moved silently through the water. Soon after, a well known game fishing family; the Waldrons bought her and the *Moerangi* got her first real taste of fishing. However it wasn't until the Cox-Smith family acquired her in 1938 for 125 pounds that things really got interesting for the *Moerangi*. With the onset of the Second World War she was fitted with a machine gun and began patrolling the Whangarei coastline in search of mines. Her war time duties extended to transporting stores to naval establishments up and down the coast, running to Sail Rock for bren gun firing practice and ferrying salvaged gold bullion from the sunken Niagara back to Whangarei.

In 1975 the Pointon family brought her to Taupo. Originally, she did little work until co-owner Steve Pointon took an interest in trout fishing. After half a dozen fishing trips in a friend's dinghy, Steve decided it was time to get the *Moerangi* out on the lake and catching fish. He admits to suffering the usual frustrations of any beginner angler and is thankful that his skills and success have improved, a fact he simply puts down to time spent on the water. Nowadays, the *Moerangi* spends many hours chasing trout and is a regular feature in the western bays. Monday is Steves day off, so like a lot of us he goes fishing. He and a mate board the *Moerangi* in the Taupo Boat Harbour at 5:30 a.m. every Monday and head for the western bays where they fish until 10 o'clock at night.

The Moerangi's classic lines including pointed stern make her very distinctive on Lake Taupo.

Steve estimates that *Moerangi* sees about 2000 fish landed every year. Again, he hastens to add, "It wasn't always like this"

The biggest trout caught on the *Moerangi* is an impressive 12lb (5.5kg) rainbow caught by Steve in 1999 from Whanganui Bay. You may have seen it displayed in his father's local menswear shop. While Steve cruised around the lake front chatting about the boat and fishing, he proudly recalled one of his best evening's fishing on the *Moerangi*. In spring 1999 he and a friend landed four fish weighing a total of 32lb. (14.5kg) all caught between Acacia and Jerusalem Bay. All in all an impressive fishing history considering the *Moerangi* has only been a recreational family fishing boat.

Steve Pointon, the person behind the Moerangi

With Steve's growing interest in fishing and the realisation that the *Moerangi* was a true classic, the family decided to give her a total refit. Over an 11month period professional Taupo boat builders Bernie and Joe Dale beautifully restored her to near original condition with the help of family and friends. The entire cabin top was removed and replaced with maltogany beams and maranti ply and new teak decks were added. Traditional finishing, including polished brass portholes and varnished interior deck beams, make the *Moerangi* a sight to behold, inside and out. The old 40hp BMC diesel was replaced with a 100hp 3BToyota Landcruiser motor, marinised by Yamaha. Steve was a bit worried that the increased horsepower would make trolling at slow speeds difficult. He installed a trolling valve that allows the engine to run at a constant 1100 revs, but lets the clutch intentionally slip to give low revs at the drive shaft and propeller. This allows him to troll at virtually any speed down to one to two knots. A very handy feature on a 40ft boat used exclusively for trout fishing.

The *Moerangi* recently featured in a Boating New Zealand article written by Mike Hunter. Upon reading the article, the son of the late Hughie Cox-Smith, who had skippered the *Moerangi* during the war, wrote to the Pointon family expressing his delight at seeing the old boat again. The letter contained some interesting stories and first hand history of the boat. One story in particular took our fancy, and is testament to the seaworthiness of the boat. Alan Cox-Smith writes, "I would like to relate a trip from Whangarei to the Bay of Islands. When we got to Cape Brett the south-wester which had been about 20 knots increased to 50 plus and the tide turned and kicked up a big ugly breaking sea. They were coming down the deck and breaking on the wheelhouse. The dinghy was lashed down up by the mast, broke free and disappeared in a welter of foam. The motor was wide open and we didn't make any headway for 3 hours until the wind dropped in the evening. We were a pretty tired crew when we finally got into Russell."

With a cruising speed of 8-10 knots Steve's ritual Monday fishing trips to the western bays cost him around $25 in diesel (plus a bit more for refreshments). A quality refit to a classic like the *Moerangi* doesn't come cheap but Steve is firmly of the opinion that if it's worth doing, it's worth doing well. An attitude that resonates around the entire boat. Next time you're on the lake, look out for the *Moerangi* and give her wave. Hopefully she will be charming her way around lake Taupo for many more years to come.

Visitor Asset Management Programme (VAMP)

by Errol Cudby
Errol is Programme Manager Visitor Assets and is responsible for visitor facilities including tracks and signs, habitat maintenance and the day to day operation of the Tongariro National Trout Centre within the Taupo Fishery Area.

The Visitor Asset Management Programme (VAMP) is a group of procedures followed by the Department of Conservation to ensure that visitor facilities are safe, appropriate and efficiently managed.

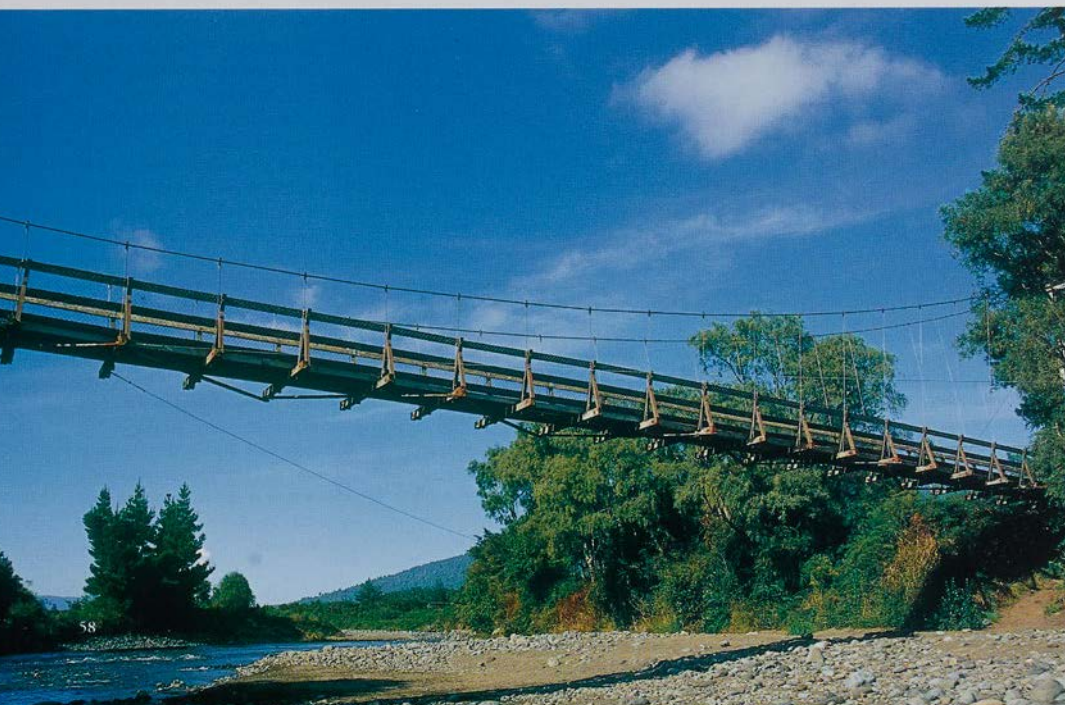
Every hut, structure, track and sign that is provided and maintained for visitors to land managed by the Department is catalogued in detail on computer and then programmed for regular inspection by engineers and suitably qualified DOC staff, depending on the assigned priority. The inspections are recorded and recommendations made regarding maintenance requirements and the urgency of remedial work or closure or removal.

Area Managers in each conservancy are responsible for the assets in their area. A Conservancy Programme Supervisor keeps an overview of all of the assets in the Conservancy and liaises with the VAMP team running the national programme from Wellington.

The Taupo fishery area has fewer visitor assets than other areas in the Tongariro Taupo Conservancy but even so there are 29 structures ranging from boardwalks to the Major Jones and Red Hut swing bridges, three buildings, 105 signs, 27 tracks totalling nearly 40km, 17 car parks and six roads of nearly 10km.

Inspection data is recorded on a handheld computer containing pick lists of descriptive terms for each feature. Measurements can be added where required and the data logger is connected to a portable geographic positioning system (GPS) to provide map references of features and assets. The little "gismo" stores a surprising amount of data, which is downloaded into the national computer system at the end of each trip. Engineers' drawings, sketches and photographs can be added where necessary.

A simple sign, for example indicating "anglers' access", will have its number, map references, type of message, materials, method fixed, dimensions, method set in ground, and maintenance recommendations recorded along with a photograph. Larger



The Visitor Asset Management Programme ensures that the footbridges across the Tongariro River are safe to use.

signs, tracks and structures have more detail depending on their classification – which depends in turn on location, number of visitors using them and the type of user.

Our angling tracks are classified as "back country adventurer" (BCA) or tramping tracks. The specified standards are less than for the Tongariro National Trout Centre walkways, which are classified "day visitor". Standards set for any class of track can be exceeded but not reduced. For example our angling tracks are cleared wider than the one metre specified for BCA tracks in recognition of the fact that anglers carry fishing rods. However the standards are maintained only while the majority of anglers use the track, which is why the fishery tracks may become overgrown during summer.

The programme is excellent for tracking the management, usefulness and safety status of visitor assets over time but does not absolve us from checking tracks, bridges and buildings after storms, floods, gales, earthquakes and volcanic eruptions, and temporarily bypassing the system to make immediate repairs to protect an asset. Rest assured public safety is paramount – remember how the Major Jones bridge was closed immediately after the 1998 floods took out two sway wires and then kept closed on engineers advice until these were repaired.

If you come across a DOC structure you feel is unsafe or wish to report some damage there is a free 0800 number that you should call to initiate appropriate action. The number is 0800 999 005.

Aquatic Weed Research

The Department of Conservation is currently investigating what existing and potential impacts aquatic weeds could have on the ecology of Lake Taupo and the trout fishery. With the recent discovery of Egeria densa (a type of oxygen weed widespread through the Waikato and Bay of Plenty lakes) in the Taupo harbour, the Department has contracted NIWA scientists to undertake a survey of Lakes Taupo, Kuratau, Rotoaira and Otamangakau. This survey will identify what weeds are present and where and how they are impacting on the lakes ecology and fishery. Additionally NIWA will produce a threat assessment identifying which aquatic weeds present within New Zealand but not yet found in Lake Taupo might have the most serious impact on Lake Taupo. A detailed report on the survey and any implications for Lake Taupo will be presented in the next issue of *Target Taupo*.

Tongariro Protection Works Underway

Work to protect the true left bank of the Tongariro below the Hydro Pool has begun. The works, which are being undertaken for the Taupo District Council, are necessary to stabilise 250 metres of eroding river bank to protect a number of properties between Kouna and Kutai Streets.

The works involve placing large rocks to form a sloping revetment similar to that downstream of the State Highway One bridge. Filling will occur behind the revetment to reclaim some of the bank lost to erosion. In order to undertake the work, which has to be completed before the end of March so as not to impact on trout making their spawning migrations, it is necessary to divert the Tongariro River down the old flood channel below the Hydro Pool.

Initially it was proposed to excavate the flood channel in a major way to capture the flow but the Department of Conservation expressed concern that major modification of the tail of the Hydro Pool might threaten its long term existence. As a consequence the mouth of the channel has only been lowered to the existing water height and a bund across the main river used to divert water down the flood channel. This has the effect of increasing the water height in the Hydro Pool during the period of the works. At the completion of the project the bund will be removed so that the water returns to the normal channel under low flows.

It was also agreed to line the rip-rap with stones out of the river to minimise the visual intrusion of the work. The Department is the manager of the marginal strip adjacent to the work and as part of our agreement to work occurring on the strip we asked that a proposed stop bank running adjacent to the revetment be built at the same time rather than later as initially planned. The work will require extensive disturbance to the site, which will be revegetated at the completion of the project and it seemed a pity to have to tear this up later on to build the stop bank.

Erosion downstream of the Hydro Pool threatened nearby houses

To undertake the work a hand was used to divert the Tongariro River down the old flood channel below the Hydro Pool.

Team Profile

MANDI GOFFIN

Mandi is the Taupo fishery team's newest recruit, filling the position of Programme Manager Licensing and Community Relations following the retirement of Shirley Oates. This position involves administration of the fishing licence system, secretarial support, raising public awareness and publication production including *Target Taupo* for the Taupo fishery area.

During the 1960s, Mandi lived in various locations around the Central Plateau including Hauhangaroa in the Western Bays, Rangitaua, and Mangatepopo, where the family was involved in the timber industry. Old habits die hard and she hopes to resume her interest in outdoor activities pursued during this time including hunting, fishing and tramping.

Mandi has returned to Turangi from Auckland, where she held various managerial positions mostly in the health and fitness industry. A qualified fitness instructor and ex body builder she is also a personal trainer part time at the local gym so watch out fishery team!

Her other interests when time permits are interior decorating, philosophy, reading, drawing and design and cooking spicy food.

As a "people person" Mandi looks forward to the challenge that this position will provide, especially with regard to the development of the advocacy role of the Tongariro National Trout Centre.

STANLEY BOOY

Stanley has temporarily taken over Jon Palmer's position as Programme Manager - Service for the Taupo Fishery Area while Jon is away on secondment. Stanley's job involves planning and scheduling all the resources for the programmes and projects undertaken and providing financial services and administrative support to the area.

Stanley originates from the Netherlands. There he studied landscape architecture and environmental management. After his studies Stanley realised a 10 year dream by immigrating to New Zealand with his wife Karin. Stanley started with the Department in May 2000 as a volunteer. Among other things he developed a management plan for the Tokaanu Stream and designed the parking area for the historic wharf in Tokaanu. As an assistant for Greg Carlyon, the Conservancy Planner, he was involved in various projects. From November 2000 until the end of January 2001, Stanley worked on Tiritiri Matangi Island in the Hauraki Gulf as an assistant supervisor on a weeding project. "It was a wonderful experience to have worked on a sanctuary island close to many rare and endangered plants and animal species."

Stanley is very eager to learn more and strives for good results, both in his job and in sports. With his team the Rainbow Runners he achieved a remarkable result in the Great Lake Relay 2001. Other activities Stanley enjoys are cycling, running and playing squash. When not physically active, he loves to read about plants and anything that has to do with landscaping.

Stanley's English has improved markedly with coaching from DOC staff, even if it did take some time to understand what being someone's gopher meant. Still we had to bite our tongue when the Olympics were on least Stanley reminded us of the success being enjoyed by the Dutch team.

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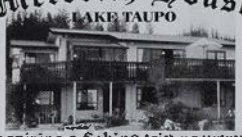

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