

# TARGET TAUPO

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

JULY 1995 ISSUE 19



Department of Conservation  
*Te Papa Atawhai*

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A newsletter for hunters and anglers in the  
Tongariro/Taupo Conservancy

JULY 1995, ISSUE 19

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*Cover Photos:*

*Lake Taupo - Len Birch*

*Angler - Len Birch*

*Hunter - Glenn*

*Maclean*

# Welcome to the new-look *Target Taupo*

Welcome anglers and hunters of the Tongariro/Taupo region.

Issue 19 of *Target Taupo* marks a couple of major changes in its development.

Our original intention in producing the newsletter was to provide information on the fishing and hunting resources of the region and their management. We also wanted to encourage informed feedback by resource users. This continues to be our prime objective.

It has never been our intention to be a commercial publisher competing with established outdoor magazines, and indeed we don't for a moment compare our production with those.

Since Issue 1 in July 1989 there have been changes in DOC's roles and responsibilities.

Gamebird management in the region has passed to the Eastern and Taranaki fish and game councils, so we no longer cover this aspect in *Target*. Our focus now is on the Taupo sport fishery, recreational hunting of the region's wild animals and associated conservation issues.

Three other changes are marked in this issue. Most noticeable is the changed format of the magazine resulting from the introduction of new standards for DOC publications. We hope you like the new layout and design and we welcome your feedback.

For the first time this issue is being sent free of charge to all whole season fishing licence holders for whom we have current addresses. Our intention is to replace the annual anglers' newsletter, which marked the start of the new season, with a complimentary copy of the July *Target*.

Current financial subscribers will have their subscriptions

*The views expressed in Target Taupo do not necessarily reflect Department of Conservation policy. The publication aims to inform the public and to promote informed debate on hunting and fishing issues. We welcome the reproduction of the material that appears in Target Taupo. All we ask is that full acknowledgement is given to its source.*

extended by one issue to ensure they too get their money's worth.

In another change of policy, you will see authors' bylines with the major articles. Because *Target Taupo* is a team effort we have avoided this in the past. However, the major articles are invariably the product of one person and we feel their work should be properly acknowledged. It will also allow many of you to put a human face to the information and views expressed.

Without giving too much away, I know you will enjoy the articles inside. By the time you read this the roar will be well and truly over and the sika trophy awarded for another year. Cam Speedy covers the autumn summary. Glenn Maclean and Michel Dedual have some exciting news on progress with fishery research and survey projects as well as prospects for winter anglers.

Have a great read and enjoy your sport.

John Gibbs  
Fishery Manager

## New Price for *Target Taupo*



Since its introduction in July 1989, *Target Taupo* has been available for a small fee three times a year, in March, July and November. However, as discussed in the editorial, we have decided to send this issue of *Target Taupo* free to all adult whole season holders in place of the annual anglers' newsletter. The regular March and November issues will still be produced and available at a cost as previously occurred. It has been decided to raise the cost of these issues from \$3.35 to \$5.00 each.

For those of you who are part way through an existing annual subscription you will receive one extra copy which will be at the old price. For example, July issue is the last issue on many current subscriptions. These people will now receive the November 1995 issue as well as the free July issue. However all renewals and new subscriptions will be at the increased rate. In reality the annual subscription for three issues of \$9.95 is unchanged because although two issues are at an increased price, the remaining issue is free. While the July issue is free, the print run is limited and it is not always possible to take a name and address from a licence duplicate. Subscribing ensures you will receive a copy of future issues.

## Putting Faces to the Writing Team



Left to right - Glenn Maclean, Rob McLay, Cam Speedy.

When *Target Taupo* was first designed a policy decision was made not to publish the names of the authors of the feature articles. This was in recognition of the fact that managing the trout and deer resource was a team effort. Whilst some team members had particular skills in writing and as such wrote most of *Target Taupo*, this should not diminish the credit due to other team members.

However, over the six years since, we have often been asked by readers who wrote particular articles and why we don't publish the authors' names. Are they written by management staff or by a public relations writer, typical of government organisations?

Three of the writers are pictured above. We doubt we are too much different to many of our readers except that we have been fortunate enough to make our interests our careers as well. Indeed between us we have spent many many hours deerstalking, pheasant and duck hunting, trout and

saltwater fishing and diving. Hopefully this background allows us to write *Target Taupo* in a way which appeals to any hunter or angler whilst still managing to inform you about the management and use of the resource which is the key goal of this magazine.

Starting with this issue you will notice the author identified with each feature article.

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# Radio Tagging Rainbow Trout in the Tongariro River

by *Michel Dedual*

Until recently, direct observation of trout movement in a stream was only possible by drift diving. However, a major disadvantage of drift diving is that fish like rainbow trout often take fright from the divers. Nowadays though, with the development of reliable and effective radio tags and tracking systems, remote observation is being practised more and more. It has been particularly used to explore relationships between the migration of Atlantic salmon and water flow or water quality.

Such a study is particularly applicable and relevant in the context of the Tongariro Power Development (TPD) consents process to assess the optimum flow in the Tongariro River during the rainbow trout spawning migration.

By analysing how fast the fish move up (and on some occasions down), and where they rest in the river, we will be in a position to assess if there are favourite holding pools, runs or riffles and also if there are areas which are avoided. It will be very interesting to compare favoured trout holding pools with those favoured by anglers! To understand what makes these areas more desirable than the others, features like water velocity, bed material, depth and presence or absence of cover, will be measured. Most of these parameters are largely controlled by the flow of water. By tracking tagged fish and noting habitat characteristics at different flow conditions we should be able to assess what flow would maximise the amount of preferred habitat for migrating trout. This then becomes part of the equation to be considered when we try to determine the best flow in the Tongariro River to enhance the fishery whilst still meeting

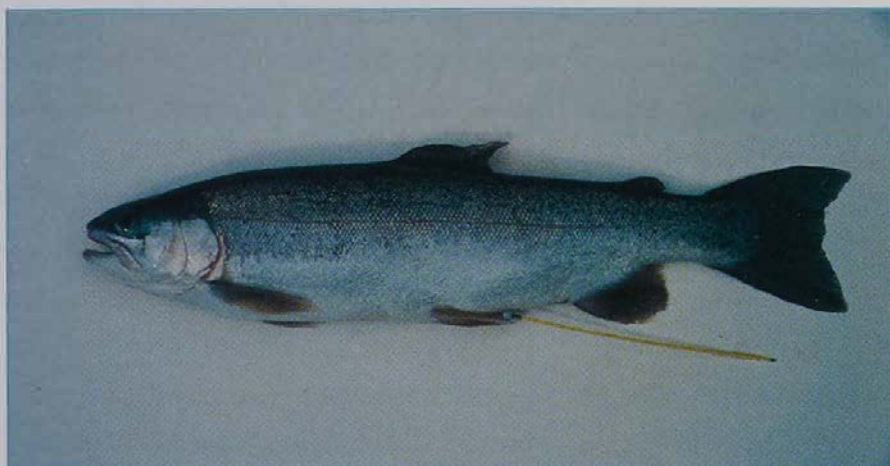
the requirements for energy production. Other considerations include those flows which optimise spawning success, juvenile rearing and perhaps catchability by anglers.

This study will also provide information on how fast fish move through the river which may help resolve an age old argument amongst Tongariro anglers.

How will it be done?

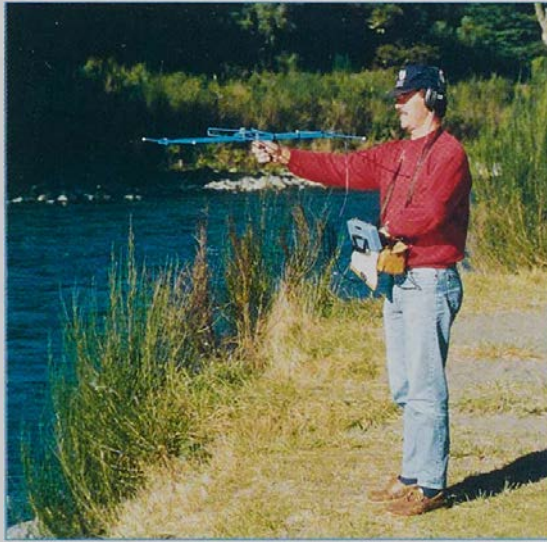
About 100 fish caught in the trap in the lower Tongariro between May and September will be tagged. The fish are first anaesthetised and then supported upside-down with a water feed to their gills. A 2.5cm incision is made along the centreline of the abdomen and a radio transmitter and its antenna are placed into the largest part of the abdominal cavity; the yellow thin wire antenna will extend 150mm outside the fish, near the vent.

The most obvious indication that the fish is carrying a radio tag is the yellow plastic-coated antennae extending from near the vent.



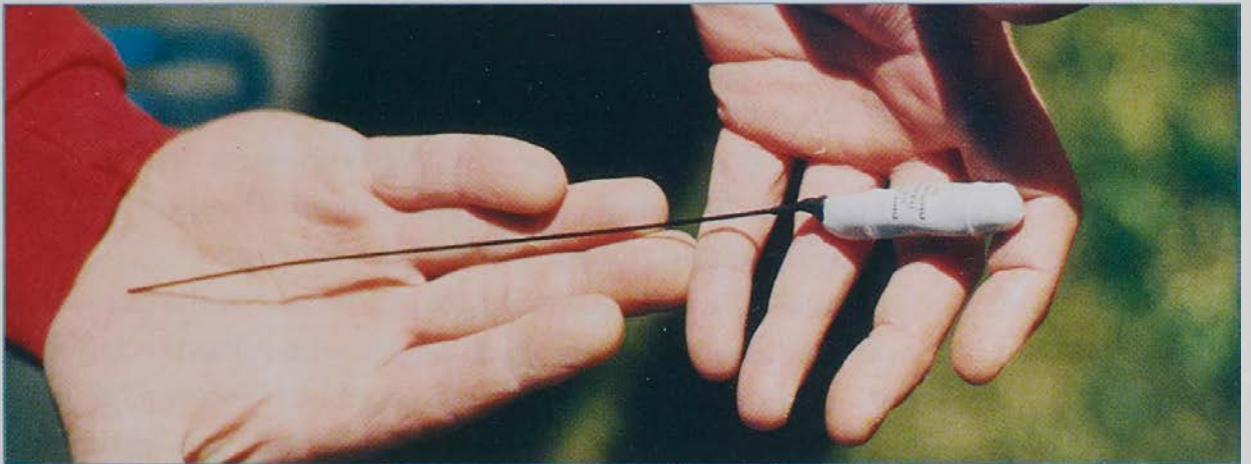
To close the abdominal cavity takes three or four stitches and the whole operation is over in 3-5 minutes. The fish, when awake again, is allowed to recover until it can swim freely before release back to the river. The trials we conducted under the supervision of the DOC Animal Ethics Committee have shown that the fish recover very well from the operation and return to normal behaviour 2 to 3 days

This winter anglers can expect to see DOC staff tracking trout with radio antennas along the Tongariro River banks.



after the insertion of the transmitter. Two months after the insertion of the tag the incision scar is barely visible. In order to perform any research involving manipulation of animals it is necessary to gain consent from the Ethics Committee who are

responsible for ensuring that the animal is not subjected to any unnecessary suffering.



A radio tag used in this project. Anglers returning these will go into a draw to win one of ten free whole season licences.

The radio-tagged fish is tracked by using a handheld directional antenna (like a television aerial) and a receiver and headphones. A bearing is determined by listening for peaks in the signal level. The fish can then be located by obtaining several bearings and determining where they intersect. The radio band used is VHF. VHF transmitters can be made with fewer than ten components and weigh less than a gram which is a reasonable burden for the fish to carry.

Transmitter size however, will largely be determined by the battery size. The radio transmitters used for the Tongariro study are cylindrical, 5.6cm long and 1.3cm in diameter.

In all, these weigh 14 grams (less than 1% of the trout weight). The battery life is four months and it is rechargeable. Larger batteries give a longer life but an advantage of a shorter life is that after four months the same frequency can then be assigned to a new transmitter. Each transmitter has its own distinct frequency and pulse. A second reason for the choice of VHF is that it can be detected with a small, portable antenna, as antenna size is directly proportional to the signal wave length used.

The signal emitted by the transmitter can be detected 600m away. The precision will depend upon the distance of the receiver from the transmitter. If the radio tagged fish is 500m away then the location precision will be about 50 metres. If a tagged fish is 50m away then the location precision will be around 7 metres. Such precision will allow us to determine if the fish are at the head, in the middle or at the tail of the pool. The results of this study will be presented and discussed in detail in the final report of TPD Study 09 and in a future issue of *Target Taupo*.

If you catch a radio-tagged fish, please return the tag along with details of the fish. Each angler who returns a tag will go into a draw for one of 10 free whole season fishing licences. The more tags returned, the more data gathered, and ultimately the more useful the study will be. Obviously much of the information gathered will be of great interest to anglers trying to better understand how trout move through the river and when and where to catch them.



# Autumn Hunting Summary

*by Cam Speedy*

The autumn of 1995 was one of the wettest on record. The frequent rain storms and mild temperatures had a major influence on rutting activity throughout the conservancy but despite less than favourable conditions, some good hunting was experienced, particularly in more remote parts of the Kaimanawa Range such as the Rangitikei and the Waimarino headwaters. Some blocks within the Recreational Hunting Area also produced well for experienced hunters.

As usual in late March the red stags in western parts of the conservancy were very active. The 27 and 28 March saw some good roaring in Tongariro Forest, but activity was very spasmodic after this date. Monday, 10 April was perhaps the best day. By Easter most vocal red stags had either had a scare or been shot so the long weekend was unproductive for many this year. Hunter numbers were high in Tongariro Forest this year, as they were through the growing season, probably as a result of hunters displaced from Pureora Forest (Waikato Conservancy) following significant reductions in deer density which resulted from 1080 possum control operations there last winter. The extra hunting effort placed significant pressure on the Tongariro herd. While numerous young stags with heads carrying six to eight points were taken through the rut this year, few good red deer trophies were shot on public land. Reports suggest, however, that some better quality heads were taken on private land where restricted hunting access allows a higher proportion of stags to reach maturity.

This highlights a major problem common for trophy hunters on public land throughout New Zealand. The heavy, uncontrolled exploitation of deer herds typical of most ac-

cessible public areas does not create a good climate for trophy production. Young average age, despite in many cases excellent genetic stock and good habitat, reduces the avail-

ability of trophies. Many breeding hinds in forests such as those present in the Tongariro area are serviced by stags carrying their first or second heads, simply because these are the only sires available. This is certainly not as nature intended!

The sika rut in more eastern parts of the conservancy also suffered from the rain. Many sika stags struggled to maintain their scrapes under almost daily downpours making the identification of active territories difficult for hunters. The week following Easter gave a few days respite, but the peak time during late April was another complete washout. As a result, May has continued to be productive and rutting should

continue well into June. Despite unfavourable rutting conditions for stags and not as much “roaring” as some hunters might have liked, a good number of stags were taken with over 100 heads entered into the 1995 Sika Trophy Competition. Some of the heads registered are of very high quality, but as has happened in the past two years we have run the competition, large numbers of small heads are also registered. While some of these smaller heads are definitely the result of poor quality habitat or poor breeding, many suffer only from a lack of age.



This young red stag, although large in body size, is typical of those harvested in Tongariro Forest every year. At two-and-a-half years old he is well short of his prime.

Unfortunately this issue of *Target Taupo* had to go to the printers before the measure-up day so we will have to wait until the November issue to provide details of what was shot and where. The great response to the competition from sponsors and hunters alike is certainly very encouraging. Watch this space!!

A total of 2897 hunters obtained permits for the Tongariro/Taupo Conservancy this autumn. This is down slightly on last year but very similar to 1993. Staff reported high numbers of hunters in Tongariro Forest, the Whakapapa catchments of Tongariro National Park, and in Rangataua Forest. Other popular areas included the very accessible Kiko Road, Clements Road and Desert Road accesses to Kaimanawa Forest Park. The full carparks at air transport companies around the district suggest the backblocks were also fairly full again this year. All in all it seems hunting in the central North Island is as popular as ever.

Unfortunately this high pressure also resulted in an unusually high number of hunting accidents. Most of these involved misidentification of target by members of the same party. No hunting administration/block allocation system can stop accidents of this nature. It is a hunter education issue. A number of search and rescue operations also kept local Police and volunteers busy throughout the late March/April period. Fortunately all these operations had a favourable outcome.

Because of the earlier than usual deadline for copy required for this issue of *Target Taupo* we cannot bring you any meaningful hunting data from the February-May permit period. A total of only 60 hunting returns were available at the time of writing this article and only fifteen of these hunters shot deer, although they took 33 deer including 21 stags between them. Many respondents so far actually cancelled their hunting trips due to bad weather, which says it all really! We hope to bring you a summary of the data obtained



from upwards of 700 hunters who visited the central North Island over the roar in our November issue. Likewise the winners of the \$1,230.00 worth of prizes in the autumn hunting diary prize draw will also be identified in November. This draw will be made in late June and the winners notified by mail in early July. If you hunted on public land in the central North Island this autumn, please return your hunting diary detailing where you hunted, how much hunting you did and what you saw and shot. You never know, you may win a prize! Remember, we are also very interested in any observations you make of special wildlife, e.g., kiwi, kaka, bats, etc., or stoats, goats, deer numbers, forest condition or facilities. Because hunters are such a significant, wide ranging user group, they can provide a wealth of useful information for managers. Your diary is a great way to convey this information.

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While most of the autumn 1995 data is still to come, almost all of the data from 1994 that we are likely to get is now in. This information is presented in table 1, overleaf, and shows some very interesting trends in deer harvest. Unfortunately it also indicates a declining trend in the proportion of hunters supplying data. Because of this, it is important to take into account the total number of days of hunting for which the data from each specific hunting area relates when comparing the actual kill reported. Correcting the totals on a per 1000 days hunted basis, as is done at the bottom of the table, gives the best indication of conservancy wide trends in deer harvest. 1994, overall, was the worst year since data collection in this format began. The decline was most evident for sika hunters in western Kaimanawa Forest Park outside the boundaries of the Recreational Hunting Area. Part of this decline is almost certainly due to the poisoning of deer during last winter's 1080 possum control operations which covered some 19,000 hectares of land administered by the Department of Conservation in this conservancy. This area, prior to being poisoned, provided some of the best hunting available on public land in the conservancy, particularly the Whiti kau and Waiotaka catchments. It is not unexpected, then, that support from hunters in providing data has declined.

While deer numbers have been heavily reduced in these areas, the recovery of the forest this summer has been outstanding in the absence of deer and possum browse coinciding with an exceptional growing season. The birdlife too has had a bumper breeding season with the additional food resources available and low rat numbers. This general increase in forest health will benefit hunters in the next few years as the deer population re-expands in far superior habitat. Five years down the track, look to these areas to be producing some of the better trophies. Time will tell .....

TABLE 1: RECREATIONAL HUNTING STATISTICS,  
TONGARIRO/TAUPO CONSERVANCY 1990-1994

AREA HUNTED	YEAR	DAYS OF HUNTING REPORTED	PROPORTION OF TOTAL SPECIFIED EFFORT - %	KILLS				CPUE * KILLS/DAY HUNTED
				SIKA DEER	RED DEER	PIG	GOAT	
Kaimanawa RHA	1990	2376.5	34.3	388	23	3	-	0.174
	1991	2431.0	37.8	404	27	4	-	0.179
	1992	1923.5	35.0	318	27	10	-	0.184
	1993	1886.5	35.9	300	8	5	-	0.166
	1994	1580.0	31.0	210	18	5	-	0.148
Kaimanawa Forest Park (excluding RHA)	1990	2212.0	31.9	304	250	21	-	0.260
	1991	1999.5	31.1	306	211	15	-	0.266
	1992	1860.0	33.9	300	210	5	-	0.277
	1993	2016.5	38.4	350	200	11	-	0.278
	1994	1679.5	32.9	169	126	2	-	0.177
Rangitaiki Forest	1990	166.5	2.4	25	9	-	-	0.205
	1991	141.0	2.0	31	9	3	-	0.305
	1992	84.5	1.5	17	4	-	-	0.248
	1993	120.0	2.3	19	7	1	-	0.225
	1994	130.5	2.6	24	3	-	-	0.207
Unspecified Returns	1990	1107.0	-	85	135	11	85	0.285
	1991	747.0	-	53	102	7	95	0.344
	1992	64.05	-	21	91	19	35	0.259
	1993	446.0	-	25	65	15	7	0.252
	1994	377.0	-	17	64	3	28	0.289

Tongariro National Park	1990	1251.0	18.0	16	313	6	16	0.281
	1991	980.0	15.2	18	275	6	8	0.305
	1992	731.0	13.3	14	192	5	1	0.290
	1993	741.0	14.1	12	244	4	-	0.351
	1994	643.5	12.6	7	194	5	-	0.317
Tongariro Forest (including Pukepoto)	1990	764.0	11.0	3	190	31	245	0.614
	1991	702.0	10.9	-	145	11	153	0.440
	1992	718.5	13.1	-	146	4	88	0.331
	1993	663.0	12.6	-	143	5	95	0.367
	1994	515.5	10.2	1	115	2	61	0.347
Erua Forest	1990	166.5	2.4	-	48	4	172	1.345
	1991	167.5	2.2	-	38	2	76	0.705
	1992	147.0	2.7	-	35	-	65	0.680
	1993	185.0	3.5	-	42	1	73	0.627
	1994	135.0	2.7	-	35	-	37	0.533
TOTALS	1990	8042.5	-	821	968	76	518	0.261
	1991	7180.0	-	812	811	48	325	0.344
	1992	6131.5	-	672	710	43	189	0.263
	1993	5698.0	-	682	679	43	162	0.275
	1994	5099.0	-	439	556	17	143	0.227
Conservancy Totals corrected per 1000 days hunting effort	1990	1000	-	102	121	10	65	-
	1991	1000	-	113	113	7	46	-
	1992	1000	-	110	116	7	31	-
	1993	1000	-	120	120	8	28	-
	1994	1000	-	87	109	4	28	-

\* CPUE = Catch per unit effort (that is, kills per day hunted)

Number of four-month hunting permits issued to recreational hunters

Average return rate (% of issues)

Proportion of successful hunters

1990	1991	1992	1993	1994
6,865	7,033	6,668	6,344	7,237
31.6%	30.75%	29.0%	26.5%	23.1%
38.4%	33.9%	33.9%	35.4%	31.8%

# Prospects for the Coming Season

by Glenn Maclean

All the indications suggest that the winter of 1995 will be a bumper season.

A count of legal size trout in the lake in November using sophisticated echo sounding equipment was two to three times greater than similar counts undertaken in the late 1980s. These counts, carried out each November, are shown below.

TABLE 2: ACOUSTIC COUNTS OF TROUT NUMBERS IN LAKE TAUPO

DATE	LEGAL SIZE TROUT (IN 1000S)
November 1988	89.9
November 1989	67.7
November 1991	108
November 1992	115
November 1993	145
November 1994	205.2

This count is a snapshot of the number of legal size trout present in the lake rather than the total number of trout available over the year. Throughout the year juvenile fish are entering the fishery while others are being removed through being caught, from natural mortality or running up the rivers to spawn. A good analogy is a



## Taupo Fishing Regulations & 1995/96 Licence Prices

*Don't forget to get  
your new fishing  
licence for the 1995/96  
season, which begins  
on 1 July.*

*There have been no  
regulation changes in  
the Taupo Fishing  
District for the new  
season.*

*Licence prices for  
1995/96 will remain  
the same:*

<i>Adult Season</i>	<i>\$46.50</i>
<i>Child Season</i>	<i>\$ 6.00</i>
<i>Adult Month</i>	<i>\$30.50</i>
<i>Adult Week</i>	<i>\$22.50</i>
<i>Adult Day</i>	<i>\$ 9.00</i>
<i>Child Day</i>	<i>\$ 2.00</i>

sink full of water with the tap on and the plug out.

The improvement in numbers was reflected in the success of anglers trolling on the lake over spring and summer. See *Something Fishy* for a discussion on the catch rates measured this summer.

This winter many of these trout will mature and make their spawning migration up the rivers providing exciting fishing for anglers. Already the spawning runs are far in excess of those at the same time last year. For example, 1130 more trout had passed through the Whiti kau trap on the Tongariro River by the end of May (up 48%). Many of these fish are prime 2.5 to 3kg and so strong they are extremely difficult to handle even in the trap. Interestingly anglers always struggle to get onto these early run fish. Any anglers who fished the Tongariro over Easter might be interested to know that in the week immediately following, a hundred or so fish were passing through the Whiti kau trap every day. Several large fish have been recorded through the traps including 6.5kg, 6kg and 5.7kg browns in the Whiti kau and a 5.85kg rainbow in the Tokaanu Stream trap.

As the winter progresses large runs will occur every few days through to early October. Even after this, through to about mid-November, less frequent runs will enter the river. Many anglers give river fishing away by August but there is excellent fishing for two or three months yet. Perhaps not quite as many fish in the river, but many fewer anglers to compete with.

Last year a combination of an unusually wet winter and operational constraints on how ECNZ could operate the Tongariro meant the river ran for long periods at close to its natural flow - much higher than what anglers were used to. Many anglers found the river much more difficult to fish with the increased flows and nymphing, in particular, was less successful than in recent years. This was despite an increased number of fish in the river. Under such conditions

anglers need to change their approach. Trout lie in areas they would not normally use and anglers should target shallow runs and edges more suited to the nymphing technique than much of the big turbulent water.

Don't overlook how effective the sinking line and wetfly can be either.

A consequence of the upturn in both the fishing and the economy has been an increase in the number of anglers on the river. As a result it can be crowded but a little commonsense and a friendly approach will go a long way to making a more enjoyable day for all concerned.

The smaller rivers have also begun well this season. A feature of the runs has been the occurrence of some very big fish including 6.8kg (15lb) and 5.7kg (12.5lb) rainbows taken from the Waitahanui. Several double figure fish have

been taken from this river this year though the exact number is hard to determine given the propensity for fish to grow in proportion to the number of times the story is retold. The Straight is not everyone's cup of tea but if you are passing the Waitahanui and the run is on (the number of anglers will leave you in no doubt if this is the case) it's worth stopping just out of interest. It's a different sort of fishing.

Last winter seemed to be just one flood after another and there were also several major floods in spring. These were large enough to turn the river beds over and will have affected spawning success and juvenile survival. However whether this will ultimately limit the size of the trout population is difficult to assess. The vast proportion of fry hatched never survive to adulthood and many of those lost as a consequence of the floods would probably have died from other causes. Those which remain may have an improved chance of survival because of less competition. An-



A 6kg male brown trout which passed through the Whitikau trap in early June.

other feature of the Taupo fishery is that several key spawning tributaries, such as the Waitahanui, are spring fed and much less susceptible to flooding. Offspring from these may buffer the population against other losses.

Nevertheless, Taupo is a wild fishery and a characteristic is that trout numbers will fluctuate widely in response to the prevailing conditions. In the lake trout feed predominately on the huge shoals of smelt which in turn feed on zooplankton which feed on the phytoplankton (tiny microscopic plants and algae). Phytoplankton are referred to as the primary production. Evidence suggests that the smelt population at any time in the lake is so large that it could not possibly limit the trout numbers. However there are also hints that trout numbers and condition reflect the level of primary productivity in the lake. Primary productivity is influenced by all sorts of things including climate. The situation is extremely complex and changes are very difficult to predict. We know the decline in trout numbers in the late 1980s mirrored a similar decline in primary productivity and conversely, we are aware that all levels of production have thrived in the lake in the last couple of years.

At some stage a downward trend in the system must occur. Perhaps recent climatic events are the conditions to evoke this change. Such a trend should not be viewed with too much concern. It is a fluctuation, not a one way spiral and, as recent years have shown, with good conditions and sensible management the fishery quickly bounces back.

The first indications of the effect of last winter should be apparent in the next November acoustic counts in the lake though the most likely impact will be in the year class which should enter the legal size fishery in spring 1996. Time will tell but I suggest that at least you make the most of what is likely to be the best winter's fishing for some years. That is, if the rain ever lets up.

# Lake Otamangakau Harvest Survey

by Glenn Maclean

In recent years managers have become concerned about the state of the Lake Otamangakau rainbow trout fishery. As part of a major project to better understand how this fishery functions, trout in the Te Whaiiau Stream, the principal spawning tributary, were trapped last winter. This confirmed our suspicions that rainbow trout numbers were not as high as we had thought. There are a number of plausible reasons as to why this might be so, including the impact of increasing harvest as a consequence of the angling pressure the lake has been subject to in recent years.

Tongariro National Park provides an impressive backdrop to Lake Otamangakau.



In order to get an appreciation of the level of harvest, an intensive survey was undertaken last summer and autumn. This period was divided into 7 day types or strata (table 3) and within each type, except for Easter, 4 or 5 sample days were selected at random. In all, 31 days were sampled. On each day regular counts were made of the number of anglers and they were interviewed, usually at the end of their trip about their catch. This gave an estimate of the total catch for the day which was then extrapolated for all days of that type. This design is a simple version of that previously used on Lake Taupo.



TABLE 3: NUMBER OF DAYS WITHIN EACH TYPE

DAY TYPE (STRATUM)	NO. OF DAYS IN STRATUM	NO. OF DAYS SURVEYED
Pre-Christmas weekends	30	4
Pre-Christmas weekdays	30	4
Christmas holidays	20	5
Cicada hatch	24	5
Autumn weekends	22	5
Autumn weekdays	59	6
Easter	4	2

*The cicada hatch covered the period of cicada activity which was from 14 January to 6 February.*



Stalking cruising brown trout in the shallows of Lake Otamangakau.

## Results

Some very interesting results have come out of this study. The total effort expended by anglers for the period 14 November to 30 April was 8787 hours with a 95% confidence interval of  $\pm 1420$  hours. The average daily effort for each fishing method is listed in table 4 and total effort for each day type in table 5, both over-

leaf. The number of fish shown in brackets in table 5 are those kept (harvested).

**TABLE 4: TOTAL FISHING EFFORT (IN HOURS) FOR EACH METHOD**

METHOD	NO. OF HOURS	% OF TOTAL EFFORT	AVERAGE TRIP LENGTH (HOURS)
Fly fishing from boat	5785	65.8	4.7
Fly fishing from shore	2210	25.1	3.1
Trolling	740	8.4	3.6
Spinning from boat	15	0.2	2.7
Spinning from shore	36	0.5	1.8

**TABLE 5: THE EFFORT, CATCH AND HARVEST OF LEGAL SIZE TROUT BY TYPE**

DAY TYPE	EFFORT (HOURS)	RAINBOW		BROWN	
		BOAT	SHORE	BOAT	SHORE
Pre-Christmas weekend	590	28 (12)	0 (0)	26 (16)	26 (16)
Pre-Christmas weekday	670	64 (14)	18 (5)	0 (0)	9 (0)
Christmas	1665	104 (25)	8 (4)	12 (4)	21 (12)
Cicada hatch	2740	232 (40)	62 (17)	85 (11)	79 (11)
Autumn weekends	555	21 (9)	4 (0)	9 (0)	0 (0)
Autumn weekdays	2280	209 (91)	13 (13)	91 (13)	13 (13)
Easter	287	36 (19)	0 (0)	0 (0)	0 (0)
Total	8787	694 (214)	105 (39)	197 (37)	148 (52)
% of catch kept		30.8	37.1	18.8	35.1

This represents a total catch of 1144 legal size trout  $\pm$  360 (95% C.I.) and a total harvest of 342 trout (253 rainbow, 89 brown).

Rainbow trout comprised four-fifths of the catch from boats (including float tubes) but brown trout were slightly more common than rainbows in the bags of shore-based anglers (three out of five fish).

Similarly, 87% of the rainbow catch was taken by boat-based anglers but only 57% of the brown trout catch.

The catch rates (catch per hour fishing) for each method are summarised in table 6. Catch rate is given as the average number of fish caught per angler per hour of fishing.

TABLE 6: AVERAGE CATCH RATES BY METHOD

FLY FISHING		SPINNING		TROLLING
Boat	Shore	Boat	Shore	
0.15	0.15	0	0	0.14

The overall catch rate for all the methods combined was 0.15 fish per hour.

Three-hundred-and-fifty-four angler interviews were collected over the 31 survey days. However the actual number of individual anglers involved is less as some regulars were interviewed on several occasions. Table 7 gives a breakdown of where these anglers came from. This is biased by those anglers interviewed more than once but does give a measure of the use of Lake Otamangakau by people from different regions.

TABLE 7: ORIGIN OF ANGLERS INTERVIEWED

RESIDENCE	NO. OF INTERVIEWS	% OF TOTAL
Taupo	34	9.60
Turangi	38	10.70
National Park/Ohakune	16	4.50
Auckland	48	13.60
Wellington	18	5.10
Wanganui	14	4.00
Other New Zealanders	99	28.00
Overseas	87	24.50
Totals	354	100.00

Not surprisingly, the majority of overseas anglers were professionally guided, (see table 8). The average catch rate for guided anglers was 0.21 fish per hour compared to 0.13 fish per hour for non-guided anglers.

TABLE 8: ORIGIN OF GUIDED AND NON GUIDED ANGLERS INTERVIEWED

	NEW ZEALAND RESIDENTS	OVERSEAS VISITORS
Non-guided	258	39
Guided	9	48
% Guided	3.4	55.2

Nearly all interviews were of completed trips and on 24 occasions out of the 354 interviews, anglers had caught at



least three legal size trout. However, only three limit bags were actually kept.

The largest fish measured was a rainbow female of 800mm and 5.45kg, caught and released by a client of local guide Ron Burgin.

### Discussion

It soon became apparent to interviewers that the majority of anglers struggled to consistently catch fish. Even those few regulars with a lot of experience often did not catch many trout. The estimated total catch of 1144 fish averages out

over the 169 days at 6.8 trout per day, at a catch rate of 0.13 fish per hour or approximately 8 hours per fish. The period of 14 January to 6 February, which coincided with the cicada hatch this year, saw the largest daily catches. However, this reflected the much higher numbers of anglers present rather than any increase in the average catch rate. It was not a great cicada season despite some reports. There were huge numbers of cicadas present around the lake but an absence of south-west to westerly winds and bright sunny conditions rarely saw them end up on the lake in any numbers.

This survey did not cover the first six weeks of the season or the last two months. These periods are characterised by unsettled weather and low angler numbers. A handful of fish were reported on opening day but otherwise very few trout were taken before

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the start of the survey on 14 November. Conversely by the end of the survey on 30 April nearly all anglers had given away fishing the lake, though several targeted Lake Te Whaiiau and the canal. Staff checking the lake after 30 April more often than not did not see any anglers. These periods will contribute to the total catch for the whole season which will be slightly larger than the estimate obtained for the survey period. However we do not believe it will be much larger.

It was apparent that experienced anglers had much more success than first time visitors. This is highlighted by the catch rates of guided anglers which was 0.21 fish per hour compared to 0.13 fish per hour of non-guided anglers. This is similar to the results of the harvest survey on Lake Taupo four years ago when 11.6% of anglers using the troll fishery were guided but took 24.6% of the harvest.

A total catch of 799 legal size rainbow trout compares to a trap run of 413 fish through the Te Whaiiau Stream last year. Similarly the brown trout catch of 345 compares to a trap run of 601 fish.

From this data we can make an estimate of the size of the rainbow trout population in Lake Otamangakau.

Given the high rate of release of legal size rainbows caught (70%) there is likely to be a number of recaptures amongst the anglers catch. We have no data for this for Lake Otamangakau so for this exercise we have chosen two scenarios. Firstly, that 1 fish in 5 (20%) was a recapture, and secondly, that 1 fish in 10 (10%) was a recapture. The comparison of the second scenario is given in brackets in the following calculations.

If 20% of the catch of 800 rainbows are caught more than once, then the number of individual fish caught is 640 (720). Twenty-four percent of the rainbows checked in anglers' bags were also fin clipped indicating they had passed through the trap last year. Twenty-four percent of the total

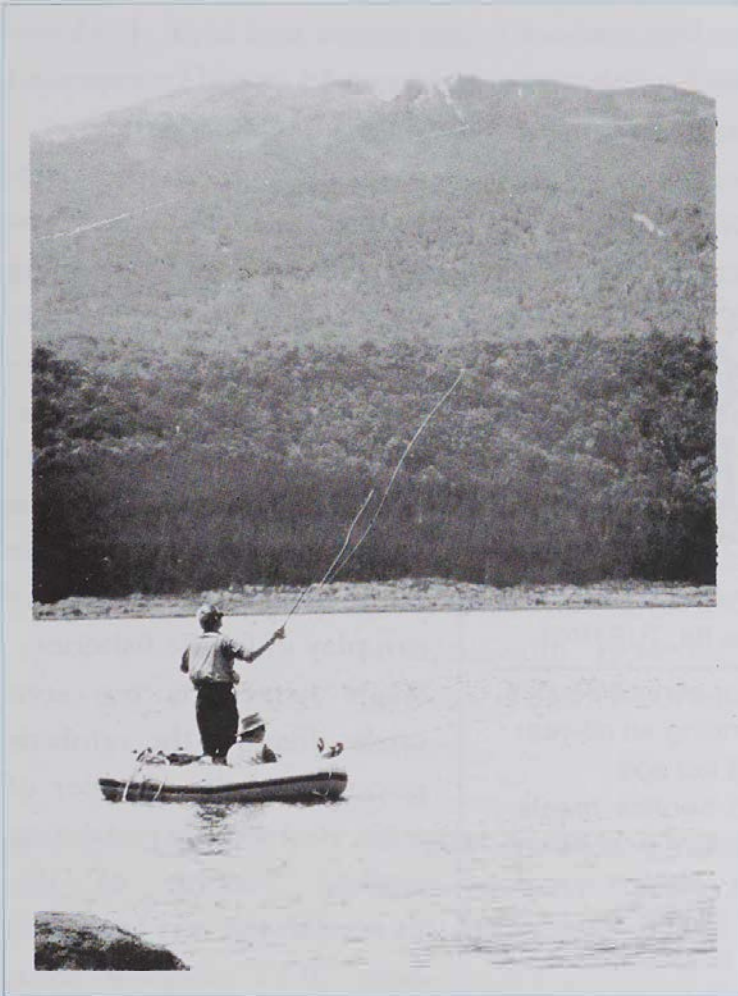
catch of 640 rainbow trout represents 155 trapped fish (173 if a 10% angling recapture).

Of the fish which spawned last year a number can be expected to die from natural mortality. Mortality is likely to be

less than in populations undertaking more demanding spawning migrations such as occur in Lake Taupo. Trap data indicates less than 30% of Taupo spawners survive to spawn a second time. However for this exercise we have assumed 70% survival in Lake Otamangakau or 290 fish out of a total trap run of 413 fish available to be caught by anglers over summer. When we have run the trap over several more winters we will be able to refine this estimate of mortality. It is evident already, however, from the trap run so far this year that previous spawners comprise more than half the fish in the run.

A catch of 155 (173) trapped fish out of the 290 available represents about 53% (60%).

Assuming previous spawners are no more susceptible to being caught than any other rainbows in the lake then we can calculate that a total catch of 640 (720) fish also represents about 53% (60%) of the total population of the lake. Scenario 1 therefore yields a total population estimate of 1210 legal size rainbow trout compared to 1200 fish calculated using scenario 2.



Fly fishing from a small boat is the most popular way of fishing Lake Otamangakau



The harvest (those fish actually kept), however, was only 253 rainbow trout or approximately 60 (20%) of the trap run from last year. If we assume the whole rainbow population is harvested at a similar rate, then harvest is high but not excessive. What this means is that a fish reaching legal size has about an equal chance of surviving another three years in the lake and not being caught and kept. Evidence suggests such a fish surviving to age 4+ could be expected to have grown to over 4.5kg in Lake Otamangakau.

This data suggests that over-harvest of the rainbow population is not occurring in the lake though potentially it could if catch and release was not so widely practised (70% of rainbows caught were released). This provides a graphic example of the role catch and release can play in fragile fisheries. While harvest is not seriously affecting the rainbow population, the number of trout is obviously restricting angling success as evidenced by the very low catch rates (0.11 rainbow trout per hour). From our own observations and those comments of long time Lake Otamangakau anglers the brown trout population appears in better shape. Unfortunately we cannot apply the same cal-



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culations used to estimate the size of the rainbow population to the brown trout fishery. Critical to the previous calculation is the assumption that previously spawned fish are no more susceptible to being caught by anglers. However for brown trout in Lake Otamangakau this is doubtful. Most brown trout are caught by anglers around the shallow margins. Observation and anecdotal evidence suggests immature brown trout make less use of this habitat than the larger, older fish. Anglers' catches may therefore be biased towards these older fish and contain an over-representation of trap clipped trout. Nine of the 21 browns checked in anglers' bags bore last year's trap clip (43%).

These figures are only approximate because until we run the trap for several years we cannot refine any estimates of the natural mortality of previous years spawners or the year to year variation in trout numbers. Neither do we have an assessment of how many fish are captured more than once over the season. Given the small population size, large angling effort and high rate of catch and release this is likely to be significant. However, this study does give us ballpark figures to advance our knowledge of the functioning of this fishery.

### **So What Next?**

While the harvest comprises a few hundred fish, the small population sizes mean it is still significant. It is readily apparent that the impact could be much greater if catch and release was not so widely practised on the lake.

However harvest is unlikely to be the underlying cause of the low catch rates. Whether a population of 1200 legal size rainbow trout is less than in the past is unknown. However when we released 2000 fingerlings into the lake in 1987 they formed only a small proportion of the reported catch in subsequent years (approx 17% of legal size fish in the 1989/90 season), suggesting the fishery was much larger.

Another feature of the fishery in those years was a much greater incidence of undersize and smaller fish taken by anglers. Of 138 rainbow trout caught by Jim Ward and friends over the 1987/88 and 1988/89 seasons, 63 (46%) were less than 35cm in length and 72 (52%) less than 45cm. Over 1988/89, R. Stephenson caught 95 rainbows of which 34 (36%) were undersize. This compares to 12.5% of fish taken by anglers interviewed last season reported to be undersize. Conditions for growth appear ideal in the lake and the quality of many of the fish in anglers' bags or through the trap recently has been superb. There seems no apparent reason why the lake couldn't support a higher population. We are wondering more and more if the problem is related to a lack of recruitment of juvenile trout.

In late 1987 we released 600 Taupo strain and 600 Ruakituri strain juveniles into the upper Whakapapa river in an attempt to develop a non-migratory resident population in the headwaters. All of these fish were individually tagged as were 600 more juveniles of each strain released directly into Lake Otamangakau. Over the next three years anglers fishing the lake returned 104 of these tags. Of the 53 Taupo strain fish caught, 26 had been released in the upper Whakapapa and 27 released into the lake. The nearly identical number of recaptures of fish from the two release sites suggests equal size populations of the two groups of fish in the lake, or that all the upper Whakapapa release had migrated down the Western Diversion tunnel to the lake. Such a downstream movement of the juveniles is typical of river resident rainbows which later return to the headwaters as adults to spawn.

In the Ruakituri River a series of major waterfalls prevent adult migration upstream yet above the falls the rainbow population has been established for nearly 50 years. Some of these fish have obviously developed a non-migratory life history and it was hoped their offspring might adopt a simi-

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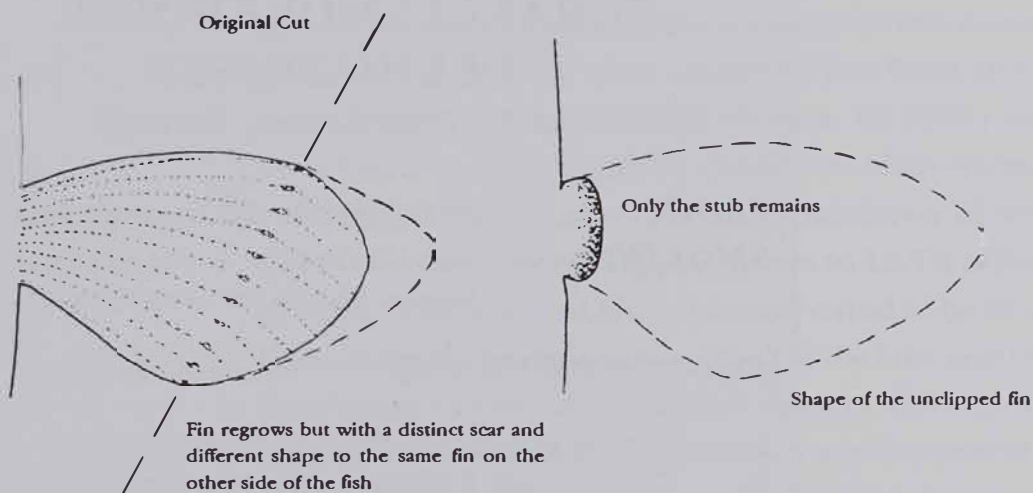
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lar strategy in the upper Whakapapa. Only half as many Ruakituri strain fish from the Whakapapa release showed up in the lake, suggesting that not all of this release migrated down the tunnel. Neither did they survive, however, in the upper river, judging by reported catches.

So we know from this experiment that juvenile trout can pass through the Western Diversion tunnel and end up in Lake Otamangakau. We also know that a downstream migration of juvenile trout is typical of river resident rainbows in rivers such as the Rangitikei. However, with the Whanganui minimum flows ruling several years ago, much less Whakapapa water is diverted over summer and the opportunity for migration into Lake Otamangakau is greatly reduced. Perhaps these fish were more important to the Lake Otamangakau fishery than initially thought.



## TRAP CLIP

## FIN CLIP

*A trap clip involves removing half the fin which regrows leaving a scar. A fin clip involves removal of the whole fin which never regrows.*

Last spring we released 500 fin-clipped juvenile rainbows into Lake Te Whaiau and another 500 into the upper Whanganui River. When these start to appear in anglers' catches later next summer and subsequently return to the trap the proportion of clipped and unclipped fish of the same year class should give us a good measure of the total recruitment. From this we can assess whether recruitment is small, or is large but with some factor acting to limit juvenile survival. Hopefully it will be the former as some relatively easy management actions to alleviate this problem are readily apparent. If you are fishing the lake regularly next season please keep a record of any small fish you catch (50-500mm long) and whether they are clipped or not, and drop the information into us at the end of season. Fin clips involve the removal of the whole fin which never regrows as opposed to trap clips used on spawning fish. These involve cutting half the fin off which rapidly regrows leaving a distinct scar. If you contact me I will collect your data at the season end. We will also regularly undertake creel surveys. The results will be interesting.



# Something Fishy

## National Trout Centre News

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376 8607 (wk)  
386 6549 (bm)*

*Sid Puia, Turangi  
386 8607 (wk)  
386 6700 (bm)*

*Duty Officer  
386 8607 after hours.*

### Kids' fishing

The first children's fishing day for 1995 was held on 7 May and 304 budding anglers caught trout ranging from 70-702g, averaging 282g.

Attendance was up on last year by 48% but still down on the previous five years when it topped 500 on two occasions.

The day began with showers which may have deterred a few people but it soon cleared and the action began. Even the trout seemed reluctant until the sun came out but then Bill Colston's band of 15-20 volunteers began working in earnest with no let up until the end of the day.

The Hamilton whanau manning the barbeque reported a steady stream of people all day with no big surges which they couldn't keep up with. That was how it appeared to those at poolside, although a few disappointed youngsters had to be turned away at the end of the day.

The fishing pond will be open on the following days, between 9 a.m. and 3 p.m. this winter:

Sunday, 9 July

Sunday, 20 August

Sunday, 17 September.

### Development Plans

A group of fishery and advocacy staff are currently looking at ways of improving and extending visitor facilities at the National Trout Centre. Some ideas being considered are aquaria, additional walkways, demonstrations of a fish ladder and fish trap and a roving guide. An initial concept plan is due shortly and it is intended to complete the improvements by mid-1997.

Final touches are being made to two outdoor displays which will be installed within the next few days, completing

the project of viewing chamber renovation and outdoor interpretation displays which began in 1990. Similarly, the fish food dispenser awaits an operating instructions sign before it becomes a fixture beside the children's pond.

#### Electric Barbeque

A coin operated electric barbeque has been bought by the NTC Trust committee to replace one of the wood-fired barbeques in the picnic area and provide a more convenient means for people to cook their lunch. It has been installed with some innovation, in an attractive housing, tiled on top, lined with river boulders and roofed with wood shingles by the Turangi Lions, principally Cam and Ian Neill.

#### Licence Sales for 1994/95

With one month of this season still remaining, sales of most categories of licences were up on the previous year. Sales at 31 May were:

Adult Season	11,329
Child Season	5,555
Adult Month	858
Adult Week	8,548
Adult Day	30,986
Child Day	5,706

This represents a 5% increase on the same period last year.

#### Structures Checked

In the aftermath of the tragic collapse of a viewing platform at Cave Creek on the West Coast, a thorough inspection was made of similar structures in this conservancy.

These included viewing platforms, walkways and bridges. Only one structure, the upper Huka Falls viewing platform, was closed for a short time while minor precautionary modifications were made.

The Red Hut and Major Jones suspension bridges over the Tongariro River both received a clean bill of health. All anglers' access bridges have annual maintenance inspections to ensure they are capable of safely meeting their design applications.

### Access to the upper Hinemaiaia Dam (HA Dam)

In our new fishery brochure *Wild Trout*, published in March this year, we stated that anglers could get access to the HA hydro dam by obtaining a key from Taupo Electricity Limited. We have since been advised by the owners of the private access road that angling access is no longer permitted. This brook trout fishery had declined significantly in recent years as a consequence of the dam silting up. Dredging last year has improved the lake habitat but given the lack of angling access we will not be attempting to re-establish the fishery.

### Update on the Downrigger Trial

It is a year since the use of downriggers on Lake Taupo was permitted. Downriggers were restricted to a cable length of 40 metres and so are unable to fish any deeper than existing trolling methods. As such they are simply an alternative method using much lighter gear to catch the same fish. So far their adoption has been very low key and regular aerial surveys throughout the summer indicate no more than 5 to 10% of anglers using them. The aerial counts are summarised in table 9.

In total 69 boats were counted with downriggers, running 122 rods (1.77 rods/downrigger). This high proportion of users running stackers is influenced by a high proportion of guides in the count.

The number of rods used from downriggers on any day as a proportion of the total number of rods in use ranged from 2.4% to 10.8% and averaged 6.5%.

TABLE 9: AERIAL COUNTS OF ALL ANGLERS ON LAKE TAUPO

DATE	TOTAL NUMBER OF ANGLERS	NUMBER OF BOATS WITH DOWNRIGGERS	NUMBER OF RODS RUN FROM DOWNRIGGERS	% OF RODS USED FROM DOWNRIGGERS
3.12.94	108	2	8	7.4
28.12.94	248	8	12	4.8
2.1.95	317	8	22	6.9
22.1.95	207	8	16	7.7
5.2.95	127	2	3	2.4
25.2.95	148	3	5	3.4
11.3.95	120	9	13	10.8
26.3.95	122	8	10	8.2

As predicted downriggers have not proven any more effective than other methods fishing at similar depths. A breakdown of the catch rates for each trolling method over the summer months is given in table 10.

Leadlines, wirelines and downriggers all showed similar success in December. At this time many fish are quite shallow and available to all three methods which, not surprisingly, proved equally effective. In January the fish started to move deeper as the surface waters of the lake warmed and leadlines were less effective compared to the other two deep methods. By February even wirelines were struggling to get deep enough to reach the fish. Unfortunately the



TABLE 10: LAKE TAUPO CATCH RATES BY METHOD AND MONTH

	HARLING			LEADLINE			WIRELINE			DOWNRIGGERS		
	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb	Dec	Jan	Feb
Hours fished	250	287	74	402	335	138	103	63	127	76	26	4
Fish kept	59	42	7	124	60	21	32	16	20	21	9	-
Returned (legal size)	31	24	3	33	9	4	11	8	12	9	1	-
CPUe (fish caught per hr)	0.36	0.23	0.14	0.39	0.21	0.18	0.42	0.38	0.25	0.39	0.39	-

Fish caught = fish kept + legal size returned

sample from downriggers is insufficient to compare but, given that wirelines are able to fish slightly deeper than downriggers, their success is unlikely to be any greater. This lull in the lake fishing will remain until perhaps July when the lake stratification breaks down returning cool waters back to the surface.

The response so far of those anglers who have tried downriggers has been positive. It sometimes takes a little practice to get the hang of them but the fight on light tackle is much superior. At this stage we are very comfortable with the results of the trial.

### Results of this Summer's Satisfaction Survey

This summer we incorporated our satisfaction survey into our regular licence checks on the lake. This survey is designed to measure your satisfaction or not with the resource and provides an opportunity to raise any concerns you may have.

To get a measure of angling success, catch rate data is also collected. A summary is presented in table 11 along with the catch rates from last summer.

CPUE is the average number of fish caught per hour of angling effort.

While the catch rates are very similar to those from last year it is not quite like comparing apples and apples. In previous years the survey has finished at the end of January whereas this year it continued through February. As the summer progresses the fishing tends to get harder and the February data pulls the overall catch rates down. A breakdown of the monthly catch rates is presented in the item on use of downriggers.

An overall catch rate of 0.3 fish is still very high for Lake Taupo and reflects the excellent angling which occurred, particularly over the early part of the summer.

Anglers were also asked how they rated the size and condition of the trout and their angling success and enjoyment

TABLE 11: THE CATCH RATE BY TROLLING METHOD FOR THE LAST TWO YEARS AND THE AVERAGE LENGTH OF FISH CAUGHT BY EACH METHOD

TROLLING METHOD	FISHING HOURS	FISH KEPT	LEGAL SIZE RETURNED	94/95 CPUE	93/94 CPUE	AVERAGE LENGTH (mm)
Shallow trolling	630	125	69	0.31	0.32	521
Leadlines	877	205	46	0.29	0.26	493
Wirelines	294	70	31	0.34	0.31	512
Downriggers	106	30	10	0.38	*	503
All methods	1907	430	156	0.31	0.3	506

*Downriggers were not permitted in the 1993/94 season.*

using a scale from 1 to 5 where 1 = terrible and 5 = excellent. The average of all the responses is listed in table 12.

TABLE 12: AVERAGE SCORE FOR EACH MEASURE OF SATISFACTION FOR LAKE TAUPO FOR THE 1993/94 AND 1994/95 SEASONS

MEASURE	NUMBER OF INTERVIEWS	1994/95	1993/94
Size	447	3.7	3.7
Quality	452	3.8	3.9
Success	453	3.4	3.6
Enjoyment	453	4.7	4.6

There is little change from last season and an indication that people still really enjoy their Taupo experience which is, after all, our underlying goal.

Anglers are asked what, if anything, detracts from their experience. Seventy-two per cent commented that nothing had but, of the concerns that were raised, nearly all had to do with bad boating manners and/or the actions of waterskiers.

Controlling the behaviour of boaties falls to the Harbourmaster and is an unenviable task. While many of the complaints are about other users, anglers also need to

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think about their actions. Boats deep trolling cannot always turn out of the way, particularly if they are trolling along the shelf. Leave them room to turn out and remember that lines may be several hundred metres behind the boat. If you cut sharply across their stern or leave them no choice but to cut across yours, a hook-up is almost certain. Similarly if a number of boats are trolling in one direction, join in rather than trolling across their paths. When it is crowded it can be frustrating but a little patience will make for a more enjoyable outing for all concerned.

## Compliance Update

### Fishing Seasons

The first of June marks the closing of the upper reaches of Taupo rivers for fishing. This is to protect spawning trout. Most of these areas re-open again on 1 December.

All closed areas are shown on the colour-coded map on the back of your licence. The information signs on the major rivers have a large map also showing winter limits. Finally, a number of new signs have been erected at the start of most (but not all) closed fishing areas.

Remember also that you must have a new season licence to fish the Taupo district from 1 July. There is no change to licence fees from this current season.

### Trout Poaching

Staff have recently apprehended two groups of offenders gill netting trout in Lake Taupo.

Usually these offences come to our notice from information provided by anglers or the general public. All too often this information comes too late to be acted on immediately, although it can sometimes confirm other intelligence.

*Changes to note from  
1 July are:  
-Lake Otamangakau,  
Kuratau Lake and  
upper Kuratau River  
closed until 1 October;  
-Lake Rotoaira closed  
until 1 September;  
-Poutu Channel  
running into Lake  
Rotoaira closed until  
1 December.*

DOC staff will respond day or night to reliable reports of serious poaching. Just ring our office (07 386 8607), 24 hours. If all else fails, contact Taupo or Turangi Police who liaise closely with us.

### Downriggers

Following queries from several anglers we would like to remind you that the maximum amount of cable allowed on a downrigger is 40 metres. You may not have more than this, even if you don't use it.

### Bungo

We're sorry to report the untimely death of Wayne Boness' black labrador, Bungo. Many anglers have met Bungo accompanying Wayne in almost every part of his work and leisure time. True to his breed, Bungo was a sincere and faithful companion, without a bad bark for anyone.

Less well known was his ability to find trout. On a number of occasions it has been Bungo's talent that led to the discovery of illegally taken trout, providing the evidence to land several poachers in court.

### Lake Taupo harvest survey to be repeated

Over the 1990/91 trout fishing season an intensive survey to measure the trout catch and harvest from Lake Taupo and the Tongariro River was undertaken. This was in response to concerns that over-harvest could be contributing to the then decline in the fishery.

The survey involved dividing the year into groups of similar days such as summer weekends, long weekends and winter weekdays. In all 12 day types were used. Within each day type four survey days were chosen at random and on each of these, flights were made throughout the day to count angler numbers. At the same time anglers were interviewed as they returned to the ramp or car park to calculate the aver-

age catch rate for that day. This was multiplied by the total effort to obtain the daily catch. Averaging the daily catch over the 4 survey days gave a mean daily catch for that day type which, when multiplied by the number of days in the stratum, gave a total catch for the day type. By adding the total catch for each of the 12 day types the annual catch was calculated.

The survey involved more than 270 flights around the lake and river to count angler numbers and 9000 interviews to measure their success.

The results indicated a total harvest of 113,000 trout (158 tonnes) which was between 30 to 50 percent of the total annual trout production. Worldwide, fishery scientists consider such exploitation rates extremely high and it was little wonder the fishery was struggling. Eighty three thousand trout were caught from the lake of which 70,000



As part of the harvest survey anglers are interviewed about their success. Almost 9000 anglers were interviewed during the 1990/91 survey.

were kept (86.6% of the catch). Similarly 16,500 legal size trout were caught from the Tongariro River and 12,500 kept (75.5%). Fifty seven percent of anglers used nymphs and took 68.9% of the river harvest.

In the years since, the fishery has improved markedly as a consequence of the reduced bag limit, less angling pressure and the much improved rearing and growing conditions. This increase in trout numbers is reflected by the November acoustic results (see earlier article on season prospects). However in the last couple of years angler numbers have once again increased. The harvest is almost certainly much greater than when we measured in the 1990/91 season and given the demonstrated impact harvest can have on the fishery it is necessary to repeat the survey again this coming season.

So if you see a light plane buzzing overhead this season, it is likely to be us counting you, along with all the other anglers out that day. We appreciate a wave but not the fingers. Similarly if you are approached by a conservation officer or someone on our behalf please give them 5 minutes of your time so they can collect your catch data. Thanks.

A full report of the survey results and comparing them with the earlier survey will be published in the November 1996 issue of *Target Taupo*.

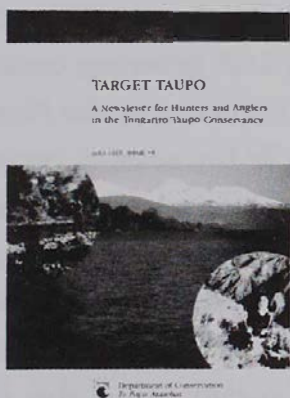
## New bridge on the Waitahanui River

Some anglers will be aware of the new footbridge over the Waitahanui River which has replaced the old 'Flat Bridge' as it was known. This bridge had been partly washed away in major floods last year.

The new bridge was designed by Booth Consultants in Taupo and built and erected by Whittaker Engineering. In order to meet safety standards it necessitated building quite a substantial structure. A far cry from the old bridge, it should last for many years.

## Wild Trout Brochure

In March we finally published our fishery brochure "Wild Trout". A 24-page colour booklet, the brochure is designed to give visitors to the Taupo region the basic information needed to explore the fishery. Information is presented on the trout life cycle, angling opportunities and techniques, licensing, regulations, the National Trout Centre, catch and release techniques, angling etiquette and other items of general interest. Some great colour photos of different aspects of the fishery, taken by Len Birch, add to the booklet which is available from local shops or the Turangi and Taupo offices of the Department of Conservation for only \$3.50.





## Fish trapping underway again

As mentioned elsewhere both the Whitikau and Te Whaiau traps are operating this winter. The Whitikau trap, on a tributary of the Tongariro River, began on 1 January and by the end of May 3500 fish had passed through. This is not all the fish as during large floods - and there have been a few of them - the barrier is laid down to avoid damage, at which stage fish can pass unhindered. However the operation of the trap is now such that it is only out of action for the shortest possible time. To get a measure of the total run we also recapture the kelts as they return downstream after spawning. By comparing the ratio of fish marked with this year's trap clip with those unmarked we can estimate how many fish we have missed. So far we are very pleased with the operation of this trap and the information we are getting. As part of the research program into the Tongariro runs we have also reinstated the trap near the Poplar Pool in the lower river. This trap, which is like a huge whitebait stand, is our most challenging because of the difficulties of trapping a river of this size and the unstable nature of the river bed. This makes it very difficult to hold any structure without large holes scouring. As a consequence it is necessary to wait until the autumn leaf fall from the overhanging willow and poplar trees finishes, which otherwise blocks the barrier screens within minutes. This year's operation has been complicated by the very high lake levels which have backed up the river by approximately 150mm at the trap site. Most of the trap is waist deep or deeper and there is not a lot of available freeboard under normal conditions, let alone with the extra of water. However, as this issue goes to print the level is dropping and prospects look promising. To be successful we need to radio tag approximately 20 fish and floy tag another 30 over the space of several days each month (see radio tagging article earlier in this issue). We achieved this target last year during a rare period of settled weather before the trap became inoperable due to the un-



The lower Tongariro trap is like a huge whitebait stand.

sually high flows which prevailed through the latter part of the season. It would be nice to have a more settled winter this year.

It is also the second winter we have operated the trap on the Te Whaiiau stream which is the principal spawning tributary for Lake Otamangakau. This trap was installed on April 1 and will

be operated through to the end of September. Last year we pulled the trap out in mid August after the runs appeared well over. However several regular Lake Otamangakau anglers maintain we removed it too early and significant runs occur after this. We're not convinced, but there is only one way to find out. Some of the fishery team are unlikely to be very keen on this extension; already night time temperatures have reached  $-13^{\circ}\text{C}$  and it hasn't snowed yet. The satisfaction, though, from handling superbly conditioned brown and rainbow trout of 3 to 4 kilograms and often larger outweighs the hardship.

### On Top of these Major Trapping Projects

Tokaanu and hatchery stream traps are also operating as they have done for many years now. We are not sure how valid the data is that we obtain from the hatchery stream because the characteristics of the stream have changed over recent years. The run may well reflect these changes rather than trends in the overall trout population.

One of the aims of the Tongariro project is to determine whether the hatchery run is proportional to the total run. If, as we suspect its not, then we may be better to concentrate on the Whitikau trap to monitor the Tongariro run. If we do close the hatchery trap it will be the end of an operation first begun in 1963.





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# BITZ 'N' PIECES

## Sika Trophy Competition

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Taxidermy  
Sporting Life, Turangi  
Spa Hotel, Taupo  
Stoney Creek  
Sportsways Gunsbed,  
Auckland  
Manaaki Whenua -  
Landcare Research NZ*

## Wildlife Manage- ment in Australia

This year's competition appears to have attracted a similar number of entries to last year but there seems to be fewer big trophies, perhaps the result of the large number of good trophies taken last year. This year's sample should take the data set to over 300 stags, aged and Douglas scored, with habitat and location data as well. This data set will provide an excellent baseline from which to compare future changes in the overall population, and between sub populations in many areas. Age (6 years plus), together with good habitat appears to be the key for a top sika trophy.

A special thanks is due to the New Zealand Deerstalkers' Association, and the Fly and Gun Shop (1993) Ltd, Taupo, for their support since 1993. Thanks also to the businesses and organisations listed for their valued contributions this year, and of course to all the hunters that supported the event. The central North Island sika herd continues to be a high profile hunting resource and the data collected on trophy production over the past three years shows just why it is world class!

Watch for results from this years competition in the November issue of *Target Taupo*.

As this issue of *Target Taupo* goes to print, our hunting editor Cam Speedy is in Australia attending a pest management conference in Hobart and investigating the Tasmanian Deer Advisory Committee's fallow deer management programme.

Over 1000 Tasmanian hunters are now hunting on private blocks with property-based game management plans in place. These plans recognise the potential conflict between deer herds and agricultural production, but through mu-



tual co-operation and active management, hunters and land owners are both benefiting. Reports suggest that so is the resource, with a sharp increase in antler quality after just two years! Perhaps there are some parallels for the New Zealand situation in this management programme?

We understand that Cam will also be spending some time hunting sambar in the Victorian high country on his way to Hobart. No doubt he will fill us in on his travels in future issues.

### News from Taupo

There is increasing concern at the proliferation of bivvies and camps springing up throughout DOC-administered areas, especially the Kaimanawa Forest Park.

Many of these camps are constructed by cutting down young trees to make a frame which is then sheathed with copious amounts of black polythene. The builders, or subsequent occupiers, then fill these structures with all sorts of gear to make life in the hills a lot more comfortable.

Unfortunately though, so often the camp rubbish is tossed over a nearby bank, another nail driven into a tree to hang just one more item on, a few more saplings cut down for another frame for a meat safe or a toilet or table and on and on it goes. After only a few trips a huge amount of junk and rubbish litter the area, as well as gaps beginning to appear in the bush where trees have been felled or damaged enough to cause the tree to die.

The building of these structures is not only illegal and a blot on the environment, but may reach beyond, as was seen after a recent flood in the upper Hinemaiaia. Pieces of polythene were ripped from campsites and scattered for several kilometres down the river.

In these days of good quality lightweight camping gear, which is readily available, there is no necessity to knock down vegetation and litter the place with junk.



An illegal camp prior to removal in early April

Those persons who have camps, gear, etc., stashed in the hills are well advised to remove them as DOC will be systematically removing all such camps and gear, particularly in the Kaimanawa Forest Park and other protected areas.

We are all trustees of this environment, not just those of us who are entrusted with its management, and if we want our children and future generations to enjoy what we are privileged to enjoy, then let's clean the place up.

Remember : If you can pack it in, there is no reason not to pack it out!

### Winter 1080 Poison Programme

There are four areas of land administered by the Department of Conservation's Tongariro/Taupo Conservancy to receive possum control using aerial 1080 poison operations this winter.

These operations are funded by the Animal Health Board and conducted by either Environment Waikato (Waikato Regional Council) or the Manawatu/Wanganui Regional Council. They are primarily aimed at reducing the number of cattle infected with the live- stock disease bovine tuberculosis for which possums are a primary vector. However

they will also have major benefits for conservation through major reductions in possum damage to native vegetation. Rat numbers will also be heavily reduced for at least next bird breeding season.

This year's programme started in March with approximately 6,500 hectares of land on and adjoining Landcorp Raurimu block near National Park. 1080-impregnated carrots were distributed by helicopter on all forests administered by the Department of Conservation between Whakapapa River and state highways 47 and 4.

In April, Environment Waikato completed their lakeshore reserve operation by distributing carrot bait impregnated with 1080 poison over some 3000 hectares of lakeside vegetation between Waikino and the Kuratau River. The DOC administered Te Hapua and Rangatukua scenic reserves were both included in this operation, as well as large areas of Maori owned land along the lakeshore.

In May, the Manawatu/Wanganui Regional Council distributed carrot bait impregnated with 1080 poison over a further 7,200 hectares of forest within the Tongariro Forest conservation area, north and east of the Whakapapa River, encompassing the southern end of Taurewa Mountain (Blue Hill), and the headwaters of the Waione and Okupata catchments. This operation was partly funded by the Department of Conservation in recognition of the outstanding wildlife and botanical values threatened by possums in this forest.

In August, Environment Waikato plan to undertake control work over approximately 8,000 ha of land between Mount Tongariro and Lake Rotoaira using 1080 impregnated pellet bait distributed by helicopter. This operation includes some 4,000 hectares of National Park on the northern slopes of Mount Tongariro.

The Department of Conservation is currently consulting with iwi over a further proposal to control possums in the



Mangamingi Stream catchment of Erua Forest. While an aerial 1080 operation is one option for control, other options are also being discussed with Iwi. This operation involves 1,000 hectares of virgin rata/podocarp/hardwood forest at the junction of the Mangamingi Stream and the Manganui-a-te-ao River on the western boundary of Erua Forest conservation area.

The areas described above are shown on the map opposite. All poison areas will be clearly identified with signs that conform to the Pesticides Regulations. Hunters should take special care if they are using dogs. If further information is required, hunters should contact the Turangi Office.

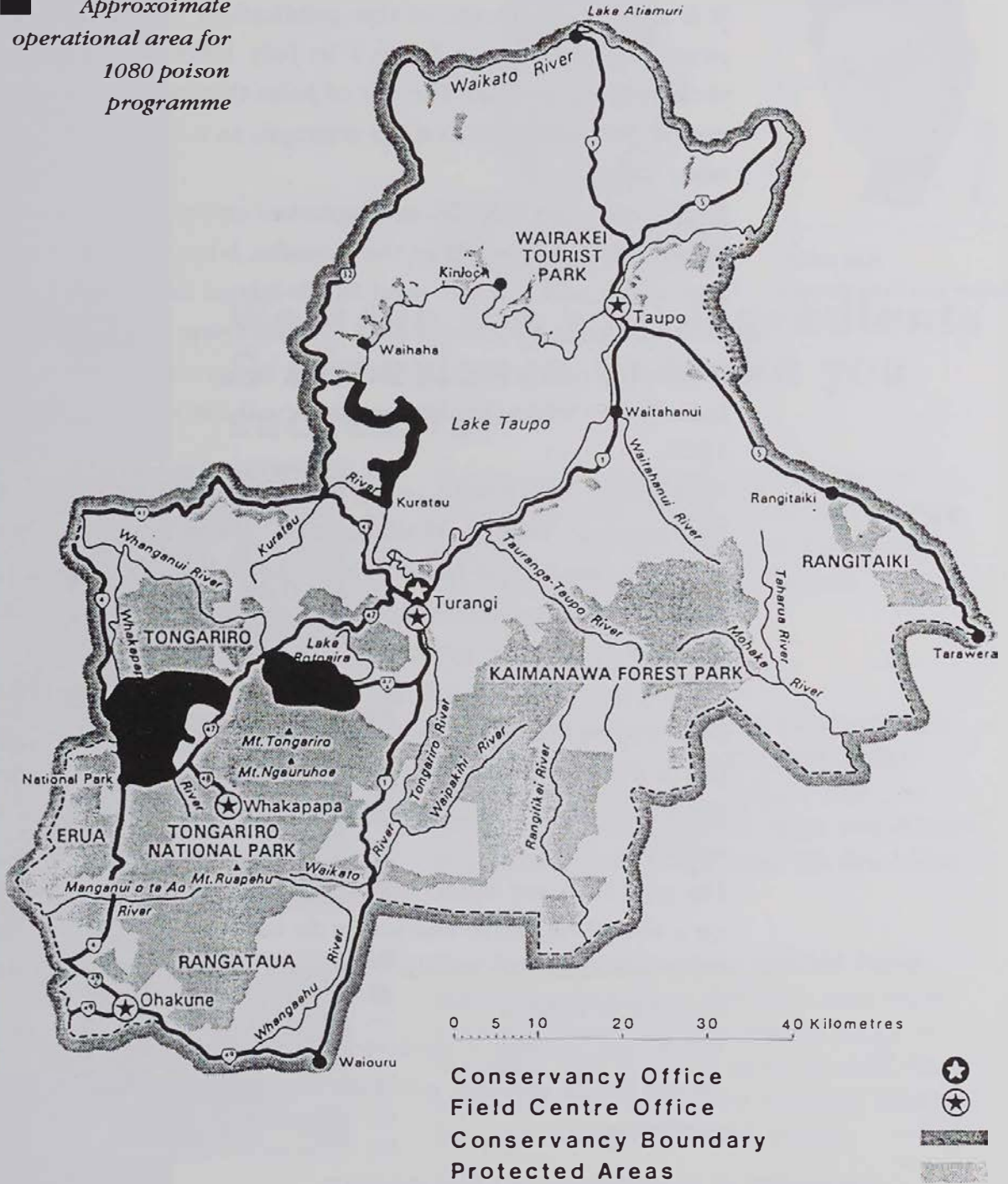
### Wild Dogs

We have received further reports of wild dogs in the Kiko Road end area of Kaimanawa Forest park this autumn. These dogs are a serious threat to wildlife such as kiwi and blue duck, but from a hunter's perspective could also have a major impact on the resident deer population. Three dogs reported from a similar area in 1993 killed many deer, apparently for sport, as evidenced by dead deer found with just their throats ripped out. If you see wild dogs in the park this winter we ask that you report their location with a date and time to the Department of Conservation as soon as possible. One dog per hunter is permitted in Kaimanawa Forest Park for hunting purposes so indiscriminate shooting of unidentified dogs in the area is not recommended.



# 1080 POSSUM CONTROL IN THE TONGARIRO/TAUPO CONSERVANCY - WINTER 1995

Approximate operational area for 1080 poison programme



# Manager Profile



John Gibbs,  
Fishery and Water Manager

John Gibbs is DOC Fishery and Water Manager for the Tongariro-Taupo Conservancy.

It is a mark of the age of this publication that he first appeared in this slot in Issue 1 in July 1989. Fishery staff reckon it is a mark of the age of John that we now have to repeat his biography and photograph, as a lot has changed since then!

John's career in fisheries management extends back over 30 years. He has worked in the Rotorua lakes, Bay of Plenty, East Coast and other central North Island fisheries, as well as Southern Lakes, West Coast, Central Otago and a number of North American areas. However, his greatest love is still Lake Taupo where his first professional involvement was in 1964.

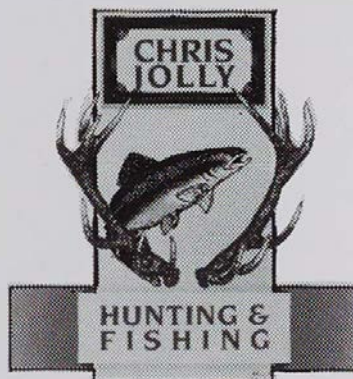
Well before that though, in the mid-1950s, he began his fishing career at Taupo. While some of his colleagues might think he was a slow learner, he is probably as qualified to reminisce and practice selective recall about "the good old days" as most other present-day anglers.

Having been responsible for the Taupo fishery since 1982, John's present role is to manage the fishery team, act as part of the conservancy senior management team and oversee the Department's regional responsibilities for aquatic conservation.

His goal is to see Taupo management continue to develop on a sound objective and scientific basis to ensure its long-term sustainability as the country's premier recreational freshwater fishery.

When not driving a desk, John's interests centre on his grown family, reading, pistol shooting, fishing, hunting and gardening.

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