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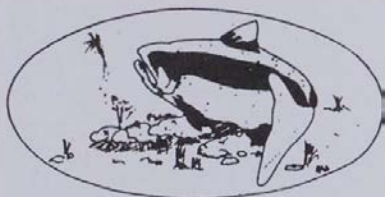
A Newsletter for Hunters and Anglers in the
Tongariro / Taupo Conservancy



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TARGET AUPO

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

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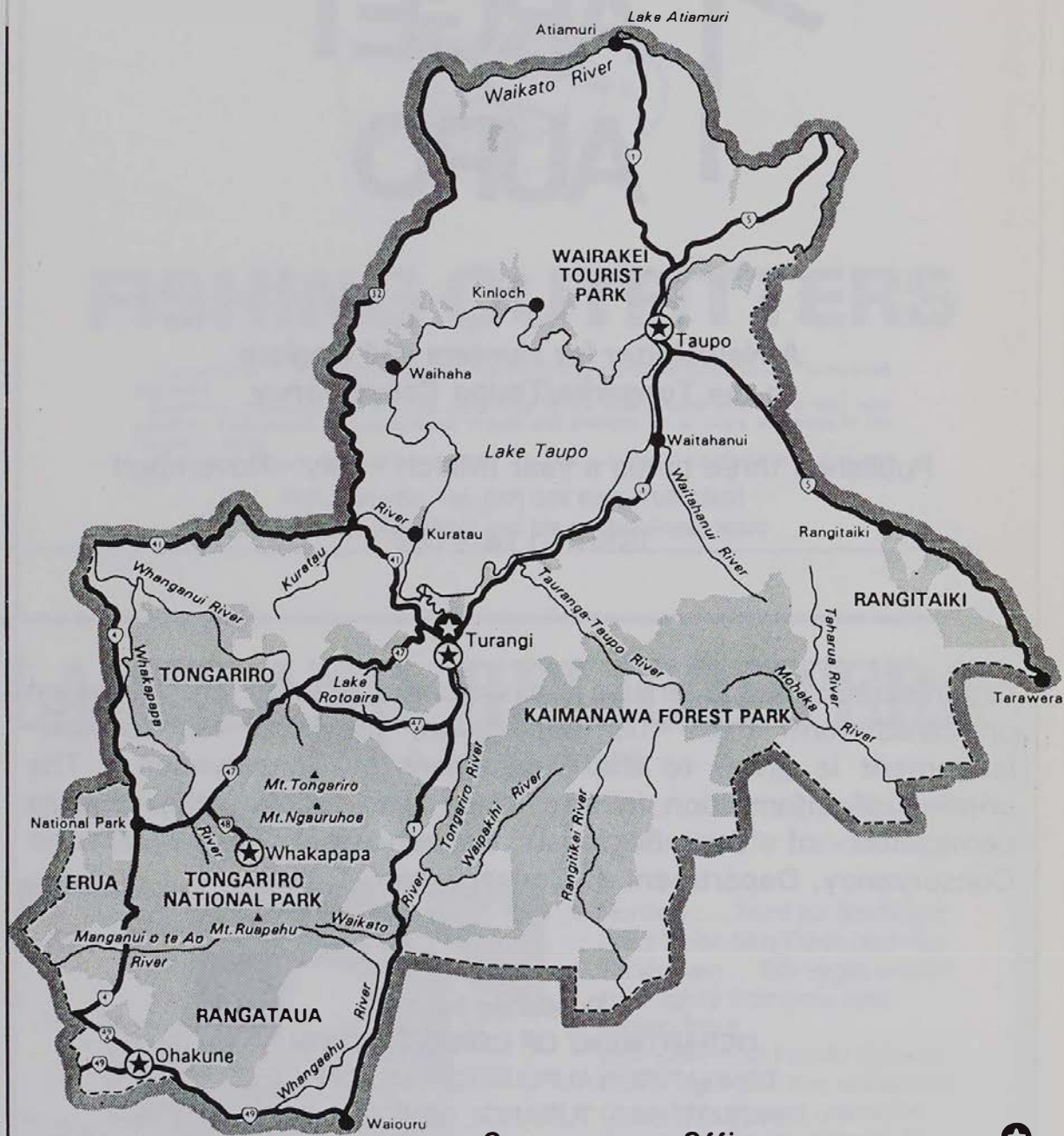
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 — Conservancy Boundary
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CONSERVATION
TE PAPA ATAWHAI

DEAR SPORTSPEOPLE,

Welcome to the Autumn 1993 issue of "Target Taupo". You will note we are printing colour photographs in this issue for the first time in an attempt to improve the quality of the publication. We are aware that the quality of photographs has not been a strong point in previous issues but now that our distribution exceeds 1,000 copies we feel an improvement in this area is warranted. We hope the quality of photographs generally will be of a higher standard in future and that this will improve the magazine.

It has been an interesting spring and summer. Research into trout survival associated with catch and release provided useful information which will have important implications for the way the Taupo fishery is managed in the future. Our thanks to the local commercial boat operators for their assistance with this project. Lake Otamangakau has produced good numbers of outstanding fish and unlike last year the cicadas really made an appearance during January and February. The summer fishing on Lake Taupo was consistently productive and there were even fresh run fish to be had on the dry fly in the Tongariro. Things are looking good for the winter ahead!

The damp December allowed for an excellent though late growing season at lower altitudes. However the cooler temperatures up high have meant almost nil growth in the alpine zones and the impacts of this on deer quality in these areas after the harsh winter may well affect the roar this year. There were numerous reports of dead deer in the mountain beech forest again this spring but there have been plenty of good conditioned deer taken in the front country. We shall just have to wait and see what April brings.

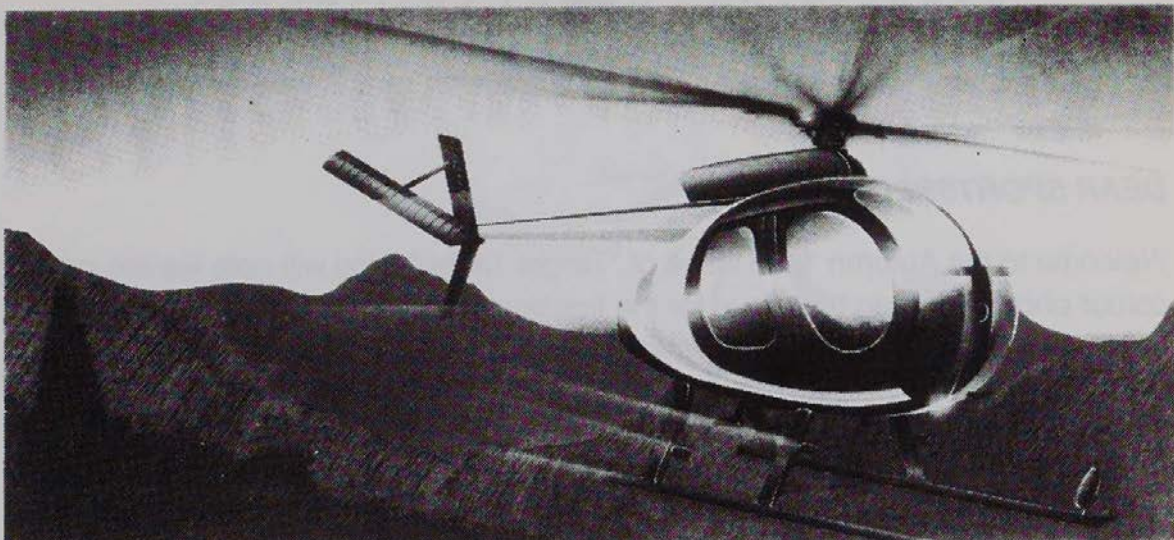
A feature of the roar this year will be the sika trophy competition we are running. Any head entered has a chance to win the rifle, so make sure you're in to win. Read on for further details!

Whatever your interest in the central North Island we wish you all the best for this busy and most exciting time of year.

Hot barrels and tight lines.

Cam Speedy

Co-editor



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HELI-SIKA offer a specialised service providing clients with excellent hunting for both red and sika deer and mountain river fishing for brown and rainbow trout. We operate from Poronui Station in the heart of the Kaweka and Kaimanawa ranges servicing the forest parks and our exclusive private land.

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- NGARURORO — Rainbow trout, 5-6lb average, double figure potential, good numbers.
- RANGITIKEI — rainbow trout, 7-8 lb average, plus excellent double figure potential. Average numbers.
- RIPIA — Brown trout, smaller fish, low numbers.
- TAHARUA — Brown trout, smaller fish, good numbers.
- TARUARUA — Rainbow, average size, average numbers.

COMMERCIAL WORK Hughes 500 — lifting.
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Information about illegal activities is only of use when it is passed on immediately.

Please contact compliance staff:

Wayne Boness, Taupo Phone 378 5450 (work) 377 0112 (home)
Bryan Taylor, Turangi Phone 386 8607 (work) 386 6549 (home)
Sid Puia, Turangi Phone 386 8607 (work) 386 6700 (home)
or Conservancy Duty Officer Phone 386 8607 after hours.

ANYTIME

1. YOUR VIEWS

In keeping with the intention that Target Taupo should serve as a vehicle for discussion and debate, we provide this opportunity for you to put your views forward on particular issue or aspects of the management of your resource.

The editors of Target Taupo will publish any letter so long as we feel that it displays a reasoned approach which contributes in a positive way to the discussion. All letters will be published under the author's or organisation's name.

"Having just read the November issue of Target Taupo I must write and say that I didn't entirely agree with the general tenor of the fishing articles, which mainly were a message of 'good news' covering the Tongariro and Tauranga-Taupo Rivers.

The question I pose is "what about the other smaller eastern Taupo rivers – how do they rate?"

As an elderly angler of many years of fishing the Hinemaiaia and Waimarino let me give you my thoughts.

My memory precludes me from going back more than thirty years when it was a delight to fish these streams – there was no show of bad manners and everyone faced in the same direction, i.e. downstream. The trout were not always plentiful but it was possible, by scouting around, to catch one or two a day. A week of holiday per year, about April or May, was keenly looked forward to and as old habits die hard I still, despite the changing scene, visit these streams in the autumn. But oh how the scene has changed. It was back in the seventies when things really began to alter; nymph fishing (weighted of course) hit the scene (in more ways than one), limit bags were now common place. The majority of anglers were now predominantly young in years and their stamina such that they could cast incessantly from sunrise to sunset with their floating lines and nymphs. As pools filled with fresh run trout so they were attacked relentlessly by the new found (to most) technique. Physically I couldn't match them and so I had to persist with the old leisurely style of wet downstream.

We are now in the nineties, all the "nymphers" have gone, no doubt discouraged by the lack of fish.

But I still go there and will probably do so for as long as I am able. I catch very little, if any, and I wonder why it has changed so much. Perhaps it will improve next year!

Gordon Erridge

Tokoroa

2. STUDY INTO THE SURVIVAL OF TROUT CAUGHT & THEN RELEASED

Inherent in a number of angling regulations is that anglers can release unwanted and undersized trout. For example daily bag limits and minimum size limits. In addition there has been a rapidly growing awareness amongst anglers that the Taupo fishery is not inexhaustible and that we all need to limit our kill.

As managers this is a very welcome trend but always niggling away has been the thought of whether releasing unwanted fish was actually achieving anything. Were these fish surviving or were they dying wasted on the bottom. Was catch and release biologically sensible?

A lot of work has been done on the survival of salmonids caught by different angling techniques overseas but nearly all of this has involved fish caught at shallow depths and often using hatchery reared fish.

To the best of our knowledge the only studies comparable to the situation which occurs on Lake Taupo where many fish are taken as deep as 30 metres was work done in British Columbia by Dr T Gjernes and others. However in these studies the fish caught were Chinook and coho salmon in saltwater, rather than rainbow and brown trout in a lake.

We decided to undertake an experiment to determine the mortality associated with the common trolling methods used on Lake Taupo. Gjernes' study involved holding the captured fish for several days in a shallow pen floating at the surface. We considered this approach but realised that if significant mortality did occur we still wouldn't know whether these fish might have survived had they been able to return to the depth from which they were caught. This might possibly alleviate the effects arising from pressure or temperature changes.

Therefore we designed a holding net 4 metres by 4 metres which extended down 30 metres. Aluminium spacers at intervals down the net maintained its shape and a flotation collar kept the top of the net at the surface.

The experiment involved catching 50 fish by each of four methods and holding them in the net for 48 hours. One consistent and useful piece of information from overseas studies was that nearly all deaths occurred within 24 hours of capture.

The net was sited off the Oreti timeshare at Pukawa Bay close to good fishing areas and relatively sheltered from the incessant south westerlies which had prevailed since Christmas.

Installing the net proved a good test for all the fisheries staff with skills ranging from towing barges through narrow gaps to working at 30 metres deep. However the theoretical design actually transferred to practical reality with few hiccups and no unpleasant surprises.

In the first trial in mid-February the trout were caught using wirelines and downriggers. Downriggers allow anglers to fish at depths greater than the 30 metres reached by conventional methods and were used to accentuate the effects of pressure and temperature changes (see "Something Fishy" for more comment on downriggers). The second trial repeated two weeks later involved catching the fish on leadlines and harling rigs.

Members of Taupo Commercial Launchmen's Association, several local Turangi guides and private anglers enthusiastically donated their boats and time to catch the fish for us. In keeping with what actually happens on the lake the anglers were of mixed levels of skill. However, having professional guides in charge meant we obtained the required numbers of fish relatively easily despite having to use methods not always suited to the conditions.

The boats were required to fish within an area from the Waiotaka Stream mouth round past the Delta and up to the Whareroa sub-division. This area was defined by the distance our transfer boats could travel in 10 minutes to get back to the net.

On hooking a fish the skipper would call a controller on a barge tied alongside the net, who despatched one of four transfer boats to pick up the fish.

If the fish was brought to the boat before the transfer boat arrived it was allowed to swim around and not handled until the boat arrived. The fish was then netted and carefully unhooked and passed directly into a large bin full of water in the waiting transfer boat. While it is possible and indeed preferable to release the fish without netting or holding them, for the purposes of this trial we have to recognise that the majority of anglers on Lake Taupo are always going to land their fish with a net.

Information about the time of capture, length of time to land the fish, method used and how the fish was hooked, e.g. bottom jaw, was included with the fish. The bin containing the fish was rushed back to the barge where the fish was measured, individually tagged and placed into the holding net and the information recorded.

Most fish when released into the net swam straight down out of sight though several fish taken deep trolling showed obvious depressurisation effects and could only splash about on the surface before dying.

After 24 hours two divers dived down beside the net and counted the number of dead fish on the bottom of the net. When both trial days are combined at least seven of the eight fish which died more than 15 minutes after release were dead within the first 24 hours.

Two days after the trial began the net was raised, the dead fish removed and their tags recorded and the surviving fish released into the lake.

THE SURVIVAL OF THE FISH IS SUMMARISED IN TABLE 1:

<i>Method</i>	<i>Fishing Depth</i>	<i>Number Caught</i>	<i>Immediate Deaths</i>	<i>Delayed Deaths</i>	<i>Total Deaths</i>
Downrigger	35-45M	52	6	2	8 (15.3%)
Wireline	20-30M	50	3	3	6 (12%)
Leadline	8-15M	51	2	2	4 (7.8%)
Harling	3-5M	46	0	1	1 (2.2%)

Immediate = died on the surface within 15 minutes of release

Delayed = died after 15 minutes but within 48 hours

One further fish died in the first trial involving downriggers and wirelines but had lost its tag so the capture method is unknown.

On lifting the net blood samples were taken from a sample of the surviving fish to measure stress levels to get an indication of the extent of the recovery made by those fish. Analysis of these blood samples is complex and will take several months.

Early analysis suggests no relationship between the number of deaths and length of time to land the fish or to transfer it to the net. However, no analysis of the impact of different hook injuries on survival has yet been undertaken.

The initial results have proved a pleasant surprise for managers. This experiment was carried out when conditions are likely to be least favourable for trout survival. In late summer the lake stratifies (a layer of warm water develops over and does not mix with the cooler bottom waters). The transition between the warm and cold waters is called the thermocline and this February occurred at 35 metres. This means trout caught deeper than 35 metres were exposed to a sharp temperature change as they were brought up. High surface water temperatures could also affect survival. Trout caught at other times of the year when the lake is more mixed and cooler would be subject to less thermal stresses though effects such as depressurisation would remain similar.

Even so, the trials indicate 85 to 98% of all trout survived; in other words at least five out of every six trout released can be expected to survive to be able to spawn or be caught again. Releasing those unwanted or undersized fish does make a real contribution to the fishery. ■

3. SPRING/SUMMER HUNTING SUMMARY

For the second year in a row the central North Island had a late spring and a cool summer. It has snowed regularly on the tops with frequent frosts, hence the alpine growing season has not been particularly productive. Hunters continue to report poor conditioned red deer and evidence of continued deer die off in the form of carcasses and skeletons from the high country. Aerial reconnaissance in January showed few hinds with fawns and many deer still in their winter coats. It has been a difficult 24 months for the deer up high!

In contrast, the growing season at lower altitude was a good one with the damp December producing plenty of grass, good conditioned deer and plenty of fawns about.

Just over 2,100 hunters obtained permits for the October to January period and from 450 diaries received to date, it appears a good proportion of these hunters were successful with 40% reporting at least one kill.

The Waipakihi Valley hunted well although the wet weather reduced the hunting effort somewhat. The sign still in the valley suggests this area will hunt well over the year. Keep it in mind!

The southern areas of Tongariro National Park also produced a good harvest this period. The jaw data collected from Ohakune suggests this herd is definitely not suffering any ill effects from the cooler weather with 83% of jaws from animals three years old or younger and all two and three year old hinds reported to be in fawn or in milk. These animals may not be that numerous, but they are in good condition.

The Clements Road jaw box produced its usual array of young deer jaws through the period. Again animals were reported to be in good condition with most hinds in fawn. There may not be as much roaring in this block due to the hunting pressure it gets, but look to Clements Road to produce some nice stags in April.

The Oamaru seems to still be suffering from the extensive harvest pressure it has had over the past few years but the benefits in terms of improved habitat will begin to show rewards over the next few years.

The Boyd area produced good hunting for some, however we received many complaints about the hunters who hunt "Aussie style" with dogs in this area. It may be a successful hunting method but it sure stirs the deer up making stalking difficult for everyone else!

Very little hunting was reported from the Rangitikei/Ecology areas and no meaningful conclusions can be drawn from the data. However we did receive

reports of dead deer in this area. This seems a waste considering so many hunters passed up shooting hinds when they were authorised to fly there last roar! (See the article on deer populations in this issue). Tongariro Forest was a little late coming on this spring but by mid-December it was providing local hunters in the know with some of the conservancy's finest red deer. This, and neighbouring Erua Forest, are the spots for those after a big red this roar. There are still a few isolated pockets of goats in these forests, so if you're in there, we would appreciate your continued assistance in culling them.

Thanks to all hunters who provided hunting diaries, deer jaws and gut samples this period. As our database grows, so does our understanding of what's going on. As our understanding improves (hopefully) so will our management decisions. But remember - management is only as good as the information it has to work with!

Winners of the diary prize draw were as follows:

AIR TRANSPORT WITH HELISIKA : A WILKE, WAIROA

**AIR TRANSPORT WITH LAKELAND HELICOPTERS : DAVID HALL,
AUCKLAND**

AIR TRANSPORT WITH AIR CHARTER, TAUPO : M SCHNEIDER, HAMILTON

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AMMO FROM THE NZ AMMUNITION CO LTD : KEVIN MCILROY, OHAKUNE

ACCOMMODATION AT SIKA LODGE : IAN LYNCH, PAPA KURA

Ten hunters also receive a free copy of this issue of Target Taupo.

A summary of the hunting diary data obtained for the period is presented for your information in Table 1. Table 2 summarises all data collected over the past three years. It shows some interesting trends in goat harvest!

Have a good roar and we look forward to receiving your diaries, jaws, gut samples and trophies, later in the year. ■

TABLE 1. TONGARIRO/TAUPO CONSERVANCY RECREATIONAL HUNTING SUMMARY

AREA	BLOCK	DAYS HUNTED	ENCOUNTERS			KILLS			KILLS/PER DAY					
			SIKA	RED	PIG	GOAT	SIKA	RED	PIG	GOAT	SIKA	RED	PIG	GOAT
KAIMANAWA RECREATIONAL HUNTING AREA	Clements	302	174	1	3	46							0.152	
	Hinematia	33	29	6		8				1			0.273	
	Cascade	12	9	3		3							0.250	
	Kaipō	56	54	3		16				1			0.303	
	Oamaru													
	Tikiki													
	Te Iringa													
	Jap Creek													
	Upper Oamaru													
	ALL	457	315	11	3	84	2							0.188
	KAIMANAWA FOREST PARK (excluding RMA)	Waipakihi	161	101	80		30	26						0.348
		Desert Road	19.5	20	4		9	2						0.564
		Access 10	9.5	4	5		2	3						0.526
Umukanan		19	1	15		10							0.526	
Mount Urchin		10	6			2							0.200	
Waotaka/Whitika		20	8	16		3	4						0.250	
Waimano		18.5	15	6		5	6						0.596	
Kiko Road/Tauranga-Taupo		11.0	62	24		20	6						0.236	
Tiraki														
Rangitiki		5	4			3								0.333
Ecology		1	1			1								1.0
Ngaruoro		60	38	1		8								0.150
ALL		451	267	157		85	61							0.324
TONGARIRO NATIONAL PARK	Rangataua	31		21			11						0.355	
	Ohakune	11		2			1						0.090	
	Southwest	36.5		32			13						0.356	
	Hauhangatahi	21.5		9			1							
	Whakapapa	20		21			9						0.450	
	Phangai/Thia	10		10			1						0.100	
	Desert Road	6.5		1			1						0.154	
	ALL	195	4	147	3	2	74	2					0.400	
TONGARIRO FOREST	148.5		152	4	88	69	4	12					*0.492	
ERUA FOREST	32		18		16		13		7				*0.625	
RANGITAHI FOREST	34.5	14	5	1		4	1						0.143	
LAKESHORE RESERVES	ALL	NO DATA SUPPLIED BY HUNTERS FROM THIS AREA!												
UNSPECIFIED RETURNS	95					3	16						0.242	
TOTALS	1443.5					180	233	6	23				0.290	

* Deer and Pig Only

TABLE 2:

(Note: Much of the 1992 data is still coming in. The information presented is up to the end of February 1993)

Area Hunted	Year	Days of Hunting Reported	Proportion of total Specified Effort %	KILLS				CPUE*
				Sika Deer	Red Deer	Pig	Goat	Kills/Day
Kaimanawa RHA	1990	2376.5	34.3	388	23	3	-	0.174
	1991	2431.0	37.8	404	27	4	-	0.179
	1992	1785.5	35.8	292	27	9	-	0.183
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	1726.5	34.6	281	192	5	-	0.276
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	681.5	13.6	13	180	5	19	0.318
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	582.5	11.7	-	125	4	45	0.298
Erua Forest	1990	166.5	2.4	-	48	4	172	1.345
	1991	167.5	2.2	-	38	2	76	0.705
	1992	116.5	2.3	-	30	-	45	0.644
Rangitaiki Forest	1990	165.5	2.4	25	9	-	-	0.205
	1991	141.0	2.0	31	9	3	-	0.305
	1992	77.5	1.5	16	4	-	-	0.258
Unspecified Returns	1990	1107.0	-	85	135	11	85	0.285
	1991	747.0	-	53	102	7	95	0.344
	1992	554.00	-	15	86	15	3	0.214
TOTALS	1990	8042.5	-	821	968	76	518	0.261
	1991	7180.0	-	812	811	48	325	0.344
	1992	5661.0	-	625	660	40	126	0.214
Totals Corrected per 1000 days hunted	1990	1000	-	102	121	10	65	-
	1991	1000	-	113	113	7	46	-
	1992	1000	-	112	117	7	23	-

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

	1990	1991	1992
Number of four-month hunting permits issued to recreational hunters	6,865	7,033	6,668
Average return rate (% of issues)	31.6%	30.75%	26.0%
Proportion of successful hunters (those who obtain at least one kill - deer, pig or goat)	38.4%	33.9%	33.9%

Recreational Hunting Permit Statistics: Tongariro/Taupo Conservancy 1990-91-92

4. THE HINEMAIAIA RIVER: OUR POINT OF VIEW

The charm of the Hinemaiaia River attracts a small but dedicated group of anglers. Many of these anglers share concerns over the continued erosion and slumping of the banks and increased numbers of snags in river over recent seasons. Frequently we are asked what we are doing about it. The following article is derived from a letter written in December outlining the DOC position.

In April 1984 the Wildlife Service with assistance from local anglers cleared many of the snags from the lower Hinemaiaia River. This was in response to requests from anglers concerned over the loss of available fishing water. There was also concern that the rapidly spreading willows along the river banks were hindering angling access and opportunity as well as affecting the river hydrology. In particular it was suggested willows might be playing a significant role in causing the river to cut through 400 metres upstream from the existing mouth, taking a much more direct route to the lake. In the mid-1980s the Wildlife Service began to clear the encroaching willows and this work was completed by the newly formed Department of Conservation of 1989.

A number of anglers and local Hatepe residents have commented to us that they believe that this willow clearance is the primary cause of the severe bank erosion experienced along the Hinemaiaia River.

The Department shares the concerns over the changes in the river but we disagree over the causes.

Willow clearance has allowed erosion in some stretches, most notably just above the main road bridge. Here the river was overgrown with willows and the bed had become matted with willow roots. This mat in turn trapped the fine material which was normally swept through the system, the bed built up and the flow spread over the surrounding ground. This is often a consequence of unchecked willow growth. Since these willows have been removed the roots have gradually rotted away and the river is scouring back into its previous channel.

However, a great deal of the erosion in the lower Hinemaiaia is occurring amidst stands of mature Kanuka forest in areas where there never were willows or any clearing work done and hence willow removal cannot be the cause.

For some ten years now, Department of Conservation and its predecessor, the New Zealand Wildlife Service, have tried many times to have the causes of the erosion assessed and treated, without much success.

The frequency and extent of this erosion, which often occurs independent of natural floods, indicates to us that artificial factors probably play a major part. Unlike the erosion associated with floods where the whole bank is abraded away, erosion in the Hinemaiaia appears to occur through slumping. The underneath of the bank is washed away leaving an overhanging bank. The overhang increases until finally it subsides into the river, often complete with the mature vegetation from on top of the bank. It seems to us that the regular daily flow fluctuations from the HB powerhouse are a major contributor. A possible mechanism suggested has been that as the river level rises the soils in the bank become waterlogged. As the level falls again this water drains away taking with it the fines from in the soil. Perhaps it is just coincidence but the twice daily peaking flow regime also began in 1983, about the same time as the willow clearance which is so often blamed.

Unfortunately under the terms of the licence issued some 40 years ago which Taupo Electricity Limited (TEL) operates the HB power station, there are effectively no constraints on the way powerhouse discharges are manipulated.

Until a proper assessment is made of the causes of the erosion and its remedies, we will generally not support treatment of the symptoms. To us removing the many snags which are continually falling into the river, is simply throwing good money after bad and not solving the problem.

While not being able to offer a solution immediately, we are much more optimistic in the medium to long term. The Resource Management Act which came into force last year requires TEL to seek resource consents (formerly water rights) for their generation operations no later than the year 2001. Furthermore the act has as one of its basic premises, that to use any natural resource, any adverse effects of that activity on the environment must be avoided, remedied or mitigated.

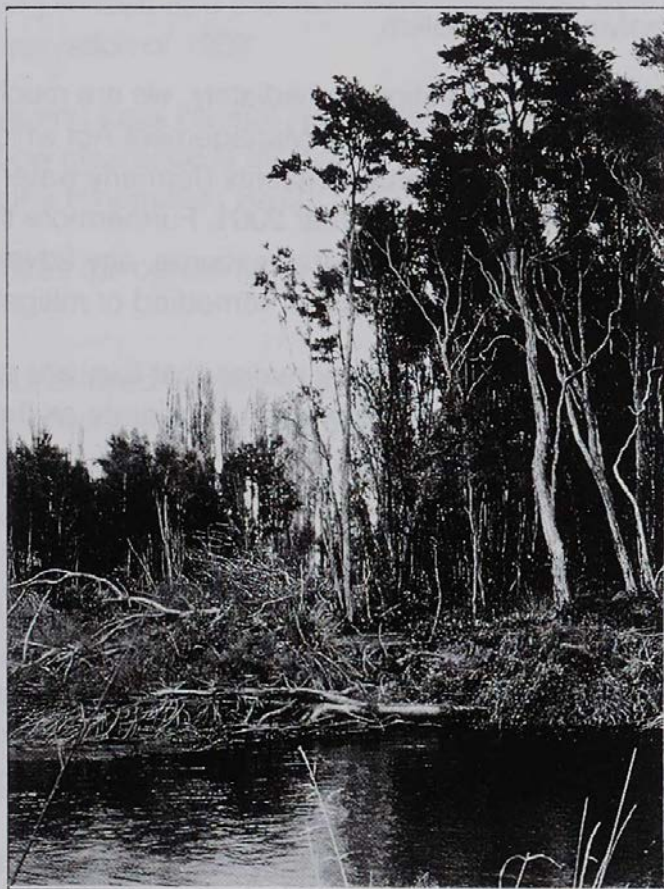
TEL have already indicated to us that they realise that they are extremely unlikely to ever get a new consent which will allow them to operate as they do at present.

This is very useful, because while they do not need a new consent for another nine years, they are at present considering replacement of major plant in the HB station. To be most effective and therefore maximise the economic return, this plant is designed to operate under quite narrow flow regimes and to be in place for many years. TEL realise constraints are likely to be placed on their operation under the new consents. Hence they have approached us now for some idea of what flows we will seek, with the intention of designing the new plant to work optimally at somewhere around these flows. Obviously once this plant is in place they are likely to voluntarily release the flows which optimise its performance. We have had preliminary discussions with TEL staff and their engineering consultants and have also encouraged them to consult with other affected parties.

For our part, we have commissioned a study of the effects of fluctuating flows on the trout fishery. Although the final report has not yet been received, preliminary indications are that there may be significant impacts on trout production and angling opportunity.

A second aspect of this report was to consider whether the angling season was appropriate in light of requests to keep the upper river open to angling for another month after the end of May. However, it appears that the fry from spawning early in the winter may comprise the bulk of the successful recruitment into the fishery from the Hinemaiaia. This is not the case in other Taupo rivers and whether it is a natural feature of the Hinemaiaia River or an artefact of the flow regime is open to speculation. Whatever the case, we are adopting a cautious approach to any change in season which is likely to increase the pressure on these early run fish until we better understand what is going on here.

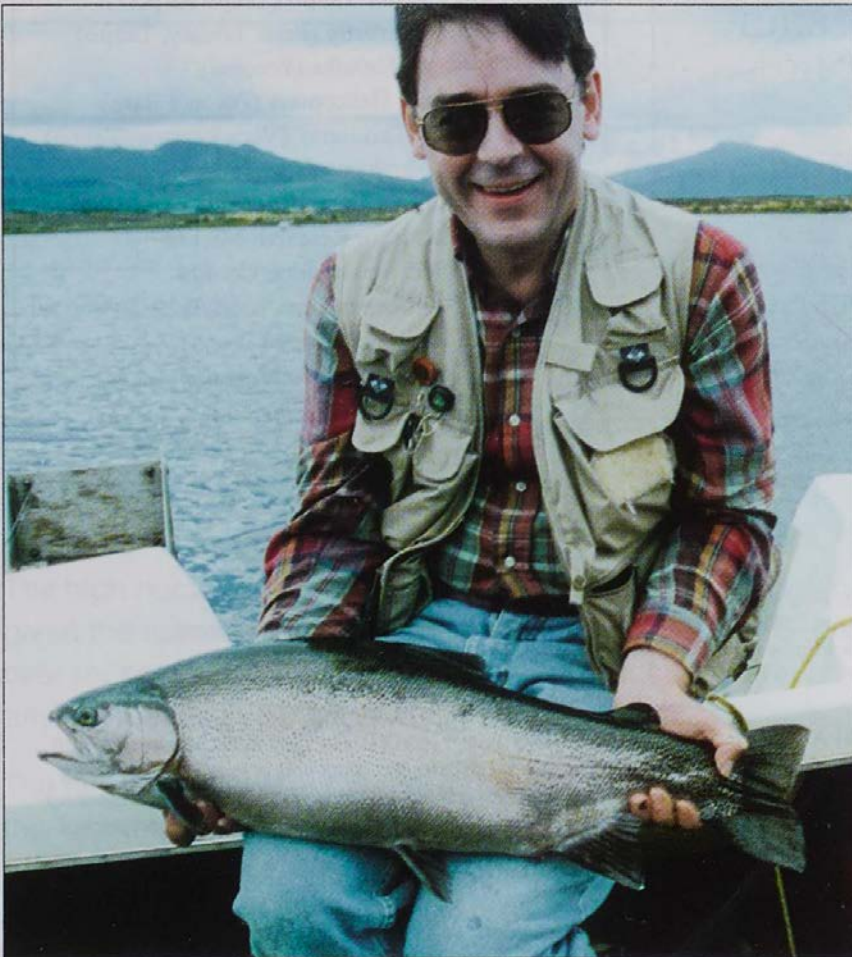
It is unfortunate that there appears no short term solution to anglers' concerns. However from our point of view the issue is much more than just the visible erosion and until we can resolve the underlying problem there seems little value in removing the snags, only to watch more bank cave in. ■



Banks covered in mature Kanuka regularly subside into the Hinemaiaia River.



Typical terrain in the central Kaimanawa Ranges.



A very good reason to protect the water quality of Lake Otamangakau. Australian visitor Bryan White with a 27" 12-1/2 lb rainbow, c.f. 68. Photograph by Ron Burgin.



CONSERVATION
TE PAPA ATAWHAI

1993 Sika Trophy Competition



CONSERVATION
TE PAPA ATAWHAI

\$5,000 IN PRIZES

MAJOR PRIZE VALUED AT \$1,849

Remington Model 7, .243 rifle with 4 x plex full field Burris scope
(Drawn at random from *all* entries)

ADDITIONAL PRIZES

Top three heads mounted free
(Measured on Douglas Scoring System)

Lots of spot prizes drawn at random



MAJOR SPONSORS

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18 Heu Heu Street
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- Custom Cartridges (Taupo)
- Landcare Research NZ Ltd
- NZ Ammunition Co. Ltd
- NZ Deerstalkers Association
- Outdoor Living (Taupo)
- Rod and Rifle Magazine
- Sportsways Distributors

OFFICIAL REGISTRATION POINTS

(Marked above with *)

MEASURING-UP DAY

Sunday 23 May, 1993 at the *Spa Hotel, Taupo* (off Spa Road), beginning 11:00 am.
Prize-giving begins at 2:00 pm. Bring along the family and enjoy a day of hunting yarns,
top sika trophies and quality refreshments in pleasant surroundings.

CONDITIONS OF ENTRY

- (1) Animals must be feral. (2) Animals must be taken from the central North Island (any land) between 1 April and 20 May 1993. (3) All heads must be registered at an official registration point within seven days of being taken. (4) The lower jaw must be produced together with the boiled out head before 1:00 pm on the measure-up day. (5) In the event of either a dispute over authenticity of a head or a hybrid head being entered, a panel of judges will be consulted and their decision will be final.

We hope you will show your support by entering your sika trophies in the competition!!

5. PROSPECTS PROMISING FOR THE WINTER OF 1993

Many anglers have commented that the river fishing last winter was a big improvement on recent seasons, particular the size and condition of the trout caught. This was in line with our own observations and counts of spawning trout in selected streams (see Issue 11 of Target Taupo).

Indications from our monitoring over summer are that anglers can look forward to another good winter fishing this year on the Taupo rivers.

The acoustic survey of trout numbers in the lake last November indicates similar numbers of adult trout to 1991 (Table 1), significantly up on those of 1988 and 1989. The increase in trout numbers measured in November 1991 was reflected by the large improvement in the subsequent winter river fishing when the majority of these adult trout ran the rivers to spawn.

TABLE 1:

	<i>Undersize</i>	<i>Legal</i>	<i>Total</i>
November 1988	144.5	89.9	234.4
November 1989	118.9	67.7	186.6
November 1991	227	108	335
November 1992	205	115	320

November trout estimates (x1000) made from acoustic surveys on Lake Taupo

The high numbers of undersized trout are also encouraging and not unexpected given the apparent good river and lake rearing conditions which have prevailed over recent years. This year has been no exception and juvenile trout numbers arising from last year's spawning are very promising.

The high trout numbers are also reflected in comments by anglers and guides on the lake this summer. Good catches, especially after Christmas have been reported all round the lake particularly around the Horomatangi Reef, Stump Bay and in the Western Bays. (A summary of the interviews designed to measure anglers' satisfaction with the lake fishing will be published in the next issue of Target).

Another interesting aspect has been the unusually high occurrence of two to three kilogram immature fish in lake anglers' bags this summer. These fish can be expected to grow further over summer before maturing and running the rivers to spawn. They are in exceptional condition and anglers hooking them in the river next winter are likely to find them a handful to land.

The superb condition of the maiden-trout in the lake is reflected in the average size of the 102 trout taken by downriggers and wirelines as part of the catch and release experiment in February. The average size of these fish was 52cm, which is larger than the average size of mature fish through the hatchery trap in most years.

In the late 1980s it became apparent the harvest of trout could have a significant impact on the fishery in years of poor productivity. As well as monitoring production through the acoustic surveys we now also keep a check on the trout harvest over several periods identified by the year long harvest survey in 1990/91 when particularly high harvest occurs. The periods surveyed are spring weekends which contributed 11% of the total harvest and the Christmas break including the holiday weekends in late January which accounted for 16% of the total harvest.

Table 2 compares the results from the year long harvest survey in 1990 with those from 1991 and 1992.

TABLE 2:

	<i>Spring (16 days)</i>	<i>Christmas (14 days)</i>
1990/91	7660	9255
1991/92		11800 (+27.5%)
1992/93	5180 (-32%)	11180 (+21%)

Estimated trout harvest from Lake Taupo over spring weekends and the Christmas holiday break

The reduction in the harvest this spring is likely a reflection of the poor weather which characterised this period. Strong winds limited angling opportunity and the unseasonal cool temperatures appear to have delayed smelt spawning and the subsequent harling which contributes to so much of the catch at this time of year. It wasn't until after Christmas that large numbers of spawning smelt and smelting trout showed up around the lake. However the harvest this Christmas was significantly larger than that of 1990/91, largely due to increased numbers of

anglers using the fishery this year. Table 3 summarises the average dawn count of anglers made over the four survey days in each period.

TABLE 3

	<i>Spring</i>	<i>Christmas</i>
1990/91	195	353
1991/92		435
1992/93	139	454

Average counts of the total anglers on Lake Taupo just after dawn for each survey period.

A record count of 732 anglers was made on 2 January this year which compares to a previous highest count of 632 made on 1 April 1991.

From these results it seems that the trout harvest is similar to that measured in 1990/91 and given the increased levels of production over that of the late 1980s, we are comfortable with the current impact of angling on the fish stocks.

All in all there is no reason to believe the river fishing this winter will not be at least as good as that of last year. We hope you can get an opportunity to experience it. ■



Department staff Iain Maxwell (left) and Wayne Boness (centre) interview an angler about his day's catch as part of the harvest survey. Photograph by Len Birch.

6. UNDERSTANDING THE DEER POPULATIONS OF THE KAIMANAWA RANGE

By Cam Speedy

Wild Animal Manager, Department of Conservation, Turangi

Most hunters when visiting the Kaimanawa Ranges tend to encounter only a handful of individual animals, perhaps successfully harvesting one or two of these. Their impression of the deer population is typically influenced by a small amount of hunting, in a relatively small area, and by these few individual animals.

In contrast, the managers' impressions of the deer population are influenced not by individual animals, but by the overview obtained from information provided by many hunters in the form of hunting diaries, from the herd itself in the form of deer jaws, stomach samples and carcass autopsies, and from the habitat, in the form of vegetation monitoring data. If the manager is also a hunter, then he or she will also add personal observations to this pool of knowledge.

For these reasons, hunters' perceptions can often be vastly different from those of the manager. This article has been prepared to help hunters understand the complexity of factors which influence the deer populations of the Kaimanawa Range. With this information not only will they better understand observations they make in the bush, but hopefully they will also make better utilisation of their deer resources and help maintain the integrity of the whole ecosystem.

The article assumes that with current technology and resources, the eradication of deer from the Kaimanawa Ranges is not achievable. Given the mandate the Department of Conservation has from the Conservation Act (1987), the best the department can hope for is the maintenance of deer populations well below those that could be supported by the habitat. If hunters can achieve this, not only will such a situation have benefits from a conservation perspective, it will also have significant benefits for the hunters themselves through an increase in animal quality and herd productivity.

POPULATION DYNAMICS

Although red and sika deer inhabit the whole of the Kaimanawa Range, the herds are not distributed evenly and can be thought of not as one population but as a combination of many sub-populations. Each sub-population has varying proportions of the two species and may occupy a variety of different habitats which can include pine forest, red beech forest, mountain beech forest, tussock, or

manuka scrubland to name just a few. Each habitat provides a differing range of resources required by deer to complete their life-cycle.

Although food is an essential component of habitat other factors such as climate, shelter and disease also affect animal numbers. I will discuss these in more detail later. The accessibility of different sub-populations to humans is another a very significant factor. Road-end areas, especially in habitat which is open and easy to move through, will mean hunting mortality is more significant than in areas where access is difficult and the going (for hunters) is tough.

Depending on habitat and accessibility, different sub-populations have different growth rates. Population growth can be positive, where mortality and migration (to other areas) are less than the annual fawn crop plus immigration (from other areas), or negative where the converse applies.

Population increase can be stimulated in three ways:

- Release of animals into suitable unstocked range (for example, when deer were first liberated in the Kaimanawas 100 years ago). The response would be the same for animals migrating or dispersing into similar unstocked range.
- Increase in carrying capacity of the range (for example, habitat management such as fire which was used extensively in the central tussock regions of the Kaimanawas when the area was farmed for wool earlier this century).
- Rapid decrease in the base population (for example, sudden high mortality caused by: disease, extreme environmental conditions, a booming venison industry).

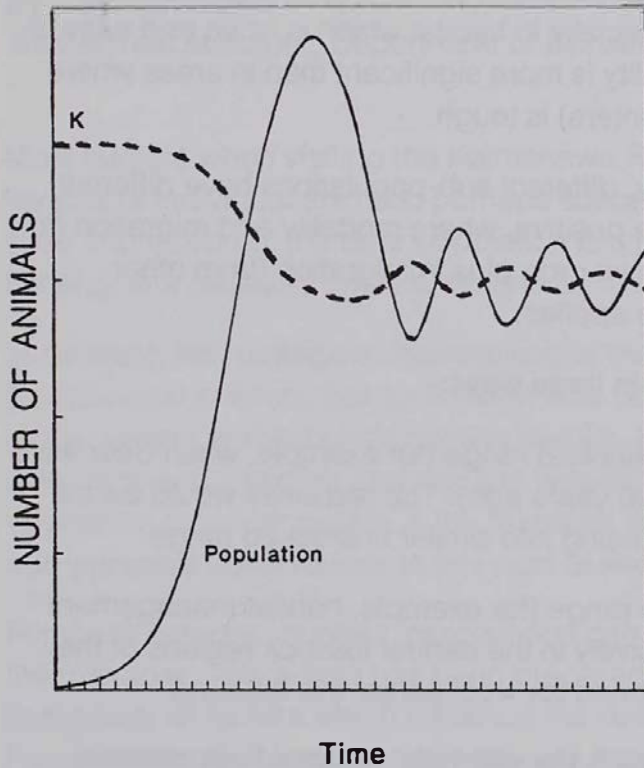
A theoretical population growth curve for red or sika deer released into unstocked range could be expected to look something like Figure 1, where 'k' (the dotted line) is the carrying capacity of the range.

There are a number of definitions for carrying capacity. The one that appears to best fit the Kaimanawa situation is one in which carrying capacity is not a stable value but one that fluctuates both with the pressure placed upon the habitat by the deer population and with natural fluctuations in habitat quality caused by drought or severe climatic conditions (hence the nature of 'k' plotted in Figure 1).

Habitat recovery may be quite rapid once the deer population is reduced from previously higher levels but in sensitive areas, damage may be substantial and permanent. For example, certain palatable plant species may be completely eliminated in our Kaimanawa situation. Others may become extremely restricted in their distribution by heavy browse pressure completely altering the structure of the habitat, with subsequent impacts on the native organisms that depend on those

habitats. This is perhaps one reason why those concerned with protection of New Zealand's remaining natural areas continue to have an attitude which appears to some hunters to be very 'anti-deer'.

FIGURE 1:



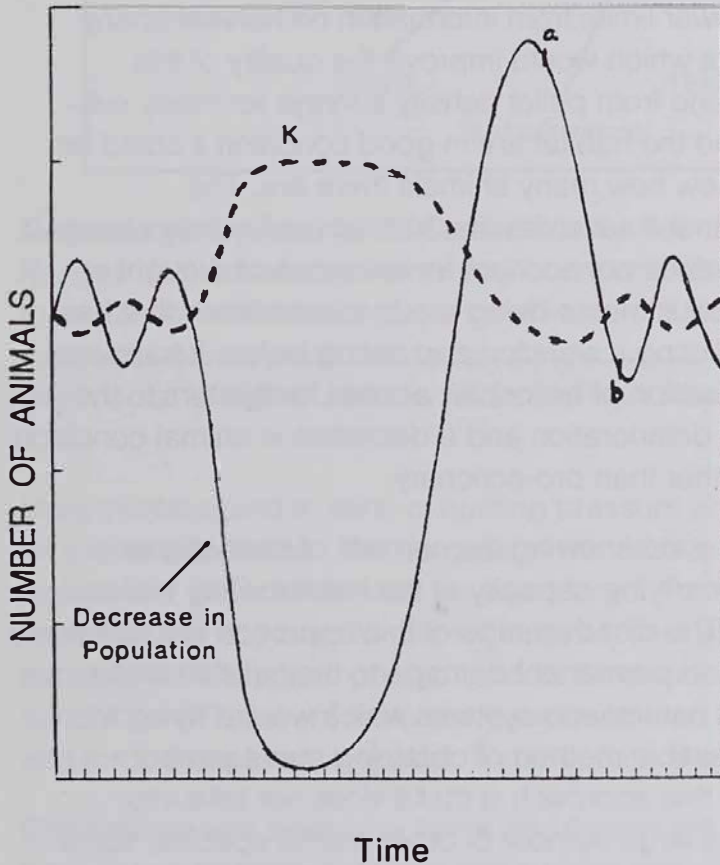
A theoretical population growth curve of a deer population released into suitable unstocked habitat. In this example the population is not hunted and increases to a point where it exceeds the carrying capacity (k) of the habitat. [From Mayze and Moore (1990)].

In an expanding population the thrust of population increase does not stop when carrying capacity of the range is breached. In fact, it overshoots in response to the strong reproductive growth stimulated by the previous seasons. The resultant peak in animal numbers cannot be sustained and the population crashes as a result of high mortality and a substantial decrease in reproductive rate.

At high population levels, high numbers of parasites can effect the health of individuals in the population. The condition of all animals also falls in response to a decline in the quality of food available. When the quality of food declines, such as during winter or on overstocked range, the energy obtained from food becomes less than the energy used to obtain it. The deer must then call upon fat reserves stored away during better times. Once these reserves are used up, the animal is in serious trouble! The deer will become emaciated and susceptible to disease and hypothermia. Many will die as has been the case in much of the mountain beech forest habitat in the Kawekas, and to a lesser extent the Kaimanawas, in the past two years.

It is likely that the different sub-populations inhabiting various parts of the Kaimanawa Ranges have gone through varying degrees of the growth and decline cycles such as those shown in Figure 1 since their liberation. Sub-populations in many accessible areas will have reached a relatively stable state because hunting largely controls mortality. Such areas as Clements Road, Kiko Road, Waipakihi Valley and the Oamaru area are all likely to fall into this category. However, in the more remote blocks, a more dramatic fluctuating effect is likely. Figure 2 illustrates what is more likely to have happened in these areas.

FIGURE 2:



A theoretical population growth curve of a deer population which has undergone major population reduction and subsequent recovery. [Adapted from Mayze and Moore (1990)]

A large decrease in population as illustrated is likely to have occurred in the Kaimanawa Range during the 1970s and early 1980s as a result of the venison industry. The model above suggests this would have created an improvement in habitat quality (carrying capacity) and a corresponding increase in the reproductive rate of the remaining population. Five to ten years of heavily reduced hunting pressure now will have allowed the population to re-expand. Over the last three winters, and 1992 is likely to be the worst by far, these populations have suffered significant natural mortality (that is, not caused by hunting). It is postulated that such populations, as a result of increased numbers, reduced feed quality and severe winter conditions are now in a declining stage (between points

a and b in Figure 2).

It can be seen from these examples that one of the most important factors governing population growth is carrying capacity. The relationship between population size and carrying capacity of the habitat is reflected in animal health, size and condition, reproductive rate, natural mortality and the state of the habitat.

Many hunters ask 'How many deer are there in the Kaimanawas?' This is a very difficult question to answer precisely as animal density varies considerably from habitat to habitat depending on quality and hunting pressure.

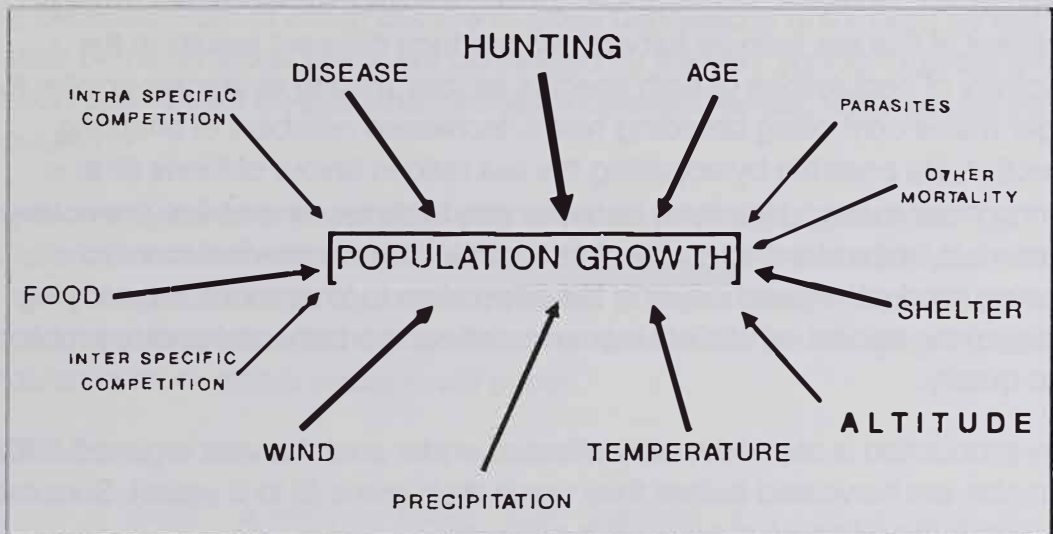
We can estimate the upper and lower limits from information on harvest (many hunters do not submit hunting data which would improve the quality of this information), from age structures and from pellet density surveys for many sub-populations. Provided the deer and the habitat are in good condition it could be argued that there is no need to know how many animals there are. The disadvantage of this approach is that it assumes that habitat quality only changes in response to deer numbers and does not account for extremes of drought or cold. It also leads to population adjustments being made to a situation that has already occurred rather than predicting a situation and acting before it happens. The classic example is the authorisation of helicopter access for hunters to the Rangitikei catchment after habitat deterioration and a decrease in animal condition were detected. It is reactionary rather than pro-actionary.

Conversely though, it is not much good knowing the number of deer in your population if you do not know the carrying capacity of the habitat. Only trial and error will provide this information. The disadvantage of this approach is that if every 'boom' cycle causes substantial and permanent damage to the habitat, and in our Kaimanawa situation the habitat is natural eco-systems which we are trying to preserve, then this is a very undesirable method of obtaining management information. Another problem with this approach is that it does not take into account that the habitat supports a large number of other animal species, some extremely threatened, which depend on a certain quality of habitat for their survival.

POPULATION CONTROL

There are many factors that either singly or in combination can act to constrain the deer populations in the Kaimanawa Range. Hunting mortality is by far the most significant factor at lower altitudes where climate is less severe and good access enables a large hunting effort. But at higher altitude where climatic conditions can be severe, where hunting is spasmodic and where this hunting is generally more difficult due to access problems and the nature of the hunting conditions, a number of other environmental factors influence populations. Figure 3 illustrates a hypothetical comparison of the relative importance of a variety of environmental constraints.

FIGURE 3:



Comparative Environmental Constraints for Red and Sika Deer in the Kaimanawa Ranges. Individual constraints vary in importance from area to area and in relation to one another. For example, a combination of reduced food supply, increased competition from possums and prolonged winter snow storms, would be more detrimental at higher altitude. [Adapted from Mayze and Moore (1990)].

Many hunters tend to think of hunting pressure and food as the only limiting factors on a deer population. The purpose of this section is to create an awareness of the many other factors that must be considered. For example, shelter is extremely important. As any deer farmer will tell you, deer are averse to strong wind especially if it is accompanied by cold temperatures, snow or driving rain. Such conditions will prevent them using exposed feed areas at certain times of the year and force them to seek shelter. If inadequate shelter exists, they perish.

Competition with possums, hares and horses are likely to be significant in some Kaimanawa habitats at critical times of the year. Parasites such as worms and ticks, and diseases such as bovine tuberculosis are likely to have significance in others. Again, all these factors have a relationship with the size of the population and the carrying capacity of the particular habitat concerned. Generally however, if the population is healthy and well nourished these factors are less significant.

EFFECTS OF HUNTING

As hunting is a very significant population constraint its impacts should be discussed more fully. Different harvest regimes will produce different responses in the population with corresponding flow-on effects on the habitat.

Sex ratio and age structure give the best indication of how hunting is affecting the

population. It is generally accepted that both red and sika deer produce fawns at a sex ratio of 1:1. However, subsequent hunting will cause this ratio to change. Adjustment of this sex ratio by harvest will produce different results in the productivity of populations of both species as their mating strategies involve the stronger males controlling breeding hinds. Increased numbers of offspring (productivity) is possible by adjusting the sex ratio in favour of hinds (that is, removing more males). However, because productivity, as we have previously discussed, is limited by the quality of the habitat, care is needed to avoid increasing productivity and causing the population to 'overshoot' the carrying capacity of the habitat, which will increase natural mortality and create problems in habitat quality.

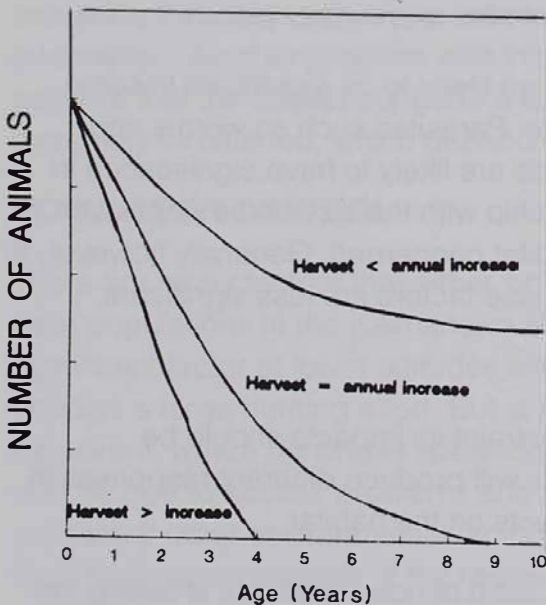
Trophy production is also adversely affected under such harvest regimes since most males are harvested before they reach their prime (6 to 9 years). Success in trophy production can be measured in two ways:

- the occasional appearance of a truly outstanding head (Murray Matuschka who breeds trophy red deer from New Zealand stock caught from the wild suggests this occurs at a frequency of about 1:200 on his property but this ratio is likely to be extremely variable depending on the environmental conditions); or
- the more frequent appearance of a number of good quality trophies.

Obviously the latter is preferred since this allows the spoils to be shared among more hunters!

According to Mayze and Moore (1990), the latter can be achieved "under an equal ratio of the sexes when the population is maintained below carrying capacity".

FIGURE 4:



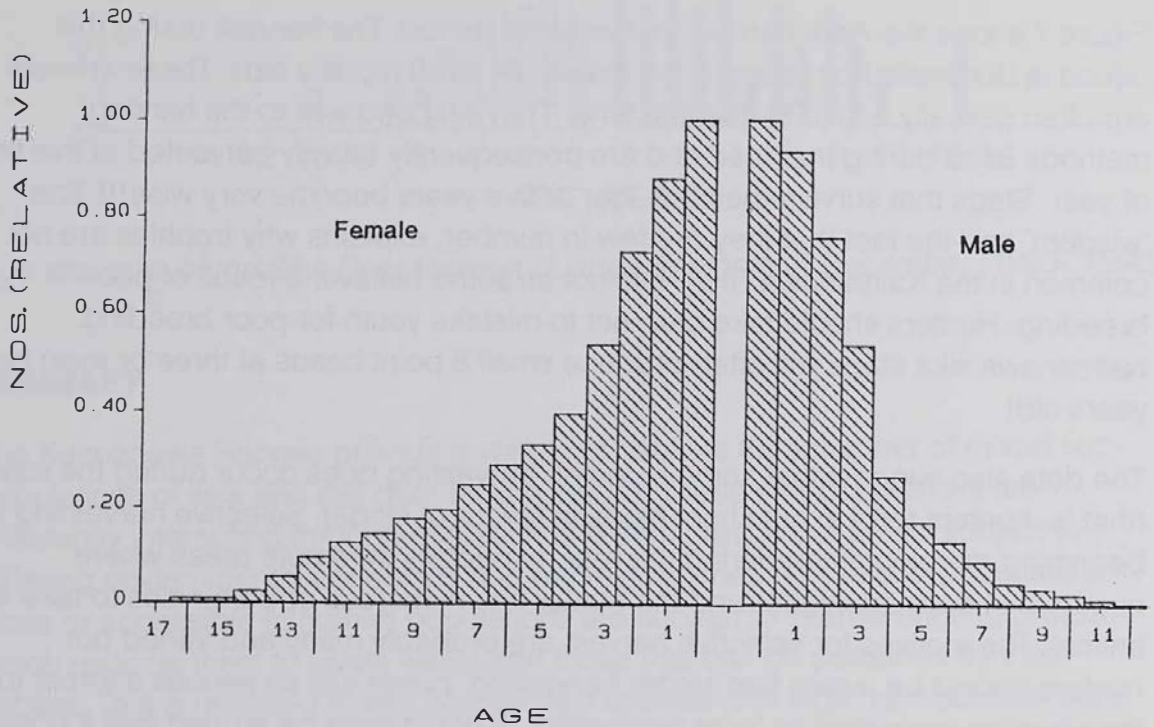
The Theoretical Effect of Deer Harvest on Age Structure. Note: Environmental factors are not considered. [From Mayze and Moore (1990)]

The age structure of a population also has a vital bearing on productivity and trophy potential, both of which decline in those populations dominated by animals past their prime, or those which are dominated by the very young. Figure 4 shows the theoretical impact on age structure when different harvest rates are applied to a population.

Removal of only a few animals each year will lead to an ageing, increasing population. Conversely, continued removal of too many animals each year will lead to a very young declining population. If harvest is approximately equal to annual increase (recruitment), and the population remains below the carrying capacity of the habitat, a more stable situation will occur.

FIGURE 5:

AGE STRUCTURE OF DEER IN THE WILD
KAIMANAWA R.H.A. (SIKA)



The estimated age structure in the wild of the sika deer population in the Kaimanawa RHA based on life tables calculated from over 1,000 deer jaws and harvest information collected between 1983 and 1991.

The age structure and sex ratio of the sika deer population in the Kaimanawa Recreational Hunting Area (RHA) (Figure 5) show stags are being harvested at about their rate of recruitment while slightly fewer hinds are being harvested than

are being born each year. (Note: the Kaimanawa RHA is generally lower in altitude than much of the Kaimanawa Ranges, the habitat is in good condition and the deer are intensively harvested. The current population is likely to be below the areas carrying capacity and hunting is likely to account for most deer mortality).

The biased sex ratio of this population is likely to be caused by the behaviour of young males which makes them more vulnerable to harvest, since the majority of hunters in this area do not practise selected harvest hunting (that is, most hunters shoot any deer they see).

The harvest structure during different periods of the year helps explain this situation. Figure 6 shows the December sika harvest in the Kaimanawa RHA between 1983 and 1990. Some 35% of all deer harvested during this period are sub-adult males (that is, 24 months old or less). These animals are inexperienced and are often fending for themselves for the first time after being driven away by their mothers.

Figure 7 shows the April harvest for the same period. The harvest during this period is dominated by young adult males (24 to 60 months old). These animals are often sexually active for the first time. They respond well to the hunting methods used during the 'roar' and are consequently heavily harvested at this time of year. Stags that survive their first four or five years become very wise!!! This 'wisdom' and the fact that they are few in number, explains why trophies are not common in the Kaimanawa RHA. It is not as some believe, a result of poor breeding. Hunters should take care not to mistake youth for poor breeding. Kaimanawa sika stags will often produce small 8 point heads at three or even two years old!

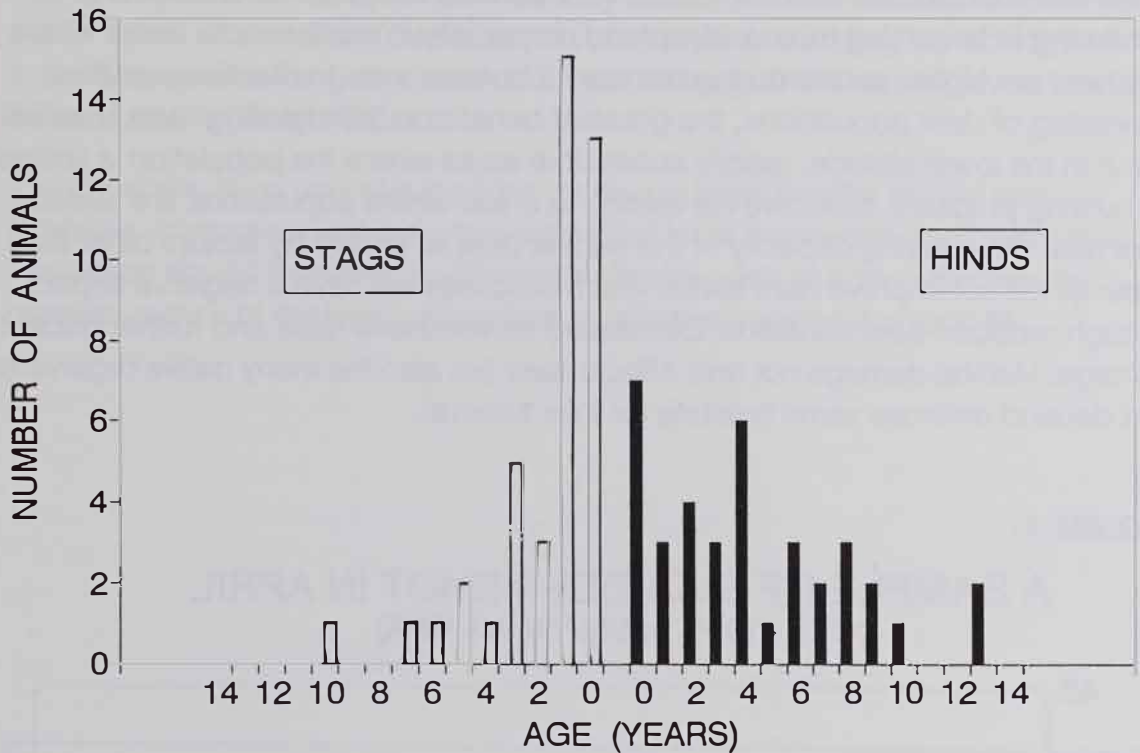
The data also suggest that some selected harvesting does occur during the roar (that is, hunters tend to not shoot hinds in favour of stags). Selective harvesting is becoming more common during the roar, especially in remote areas where numbers of deer are higher and the hunter has numerous opportunities to take an animal. The motives for selective harvest are probably many and varied but hunters should be aware that 'under harvesting' poses just as serious a threat to their hunting resources as 'over harvesting'. It could even be argued that it poses a greater threat since a deer population can always recover from 'over harvest', but the habitat may not always recover from 'under harvesting' of its deer population. Aldo Leopold once wrote:

"Just as a deer herd lives in mortal fear of its wolves, so does a mountain live in mortal fear of its deer. And perhaps with better cause, for while a buck pulled down by wolves will be replaced in two or three years, a range pulled down by too many deer may fail of replacement in as many decades."

[From 'Thinking Like a Mountain']

FIGURE 6:

**A SAMPLE OF SIKA DEER SHOT IN DECEMBER
1983 - 1989 (KAIMANAWA RHA)**



Age structure of the Sika Deer Harvest during the month of December (1983- 1990)

SUMMARY

The Kaimanawa Ranges provide a variety of habitats for a number of mixed sub-populations of sika and red deer (and hybrids). These sub-populations are constantly interacting through migration and immigration but are all subject to differing environmental conditions and harvest regimes. Those sub-populations close or accessible to human populations are subject to intense hunting pressure which restricts them to levels well within those that can be sustained by their habitat. This is reflected in well conditioned animals with high reproductive rates.

In more isolated areas which are difficult to access or hunt effectively, sub-populations tend to be more constrained by environmental conditions than hunting pressure. This produces a situation in which sometimes large fluctuations in population size occur. At times when populations are near or above carrying capacity, animal condition declines and reproductive rates decrease. Winter die-offs occur when these problems are compounded by severe climatic conditions.

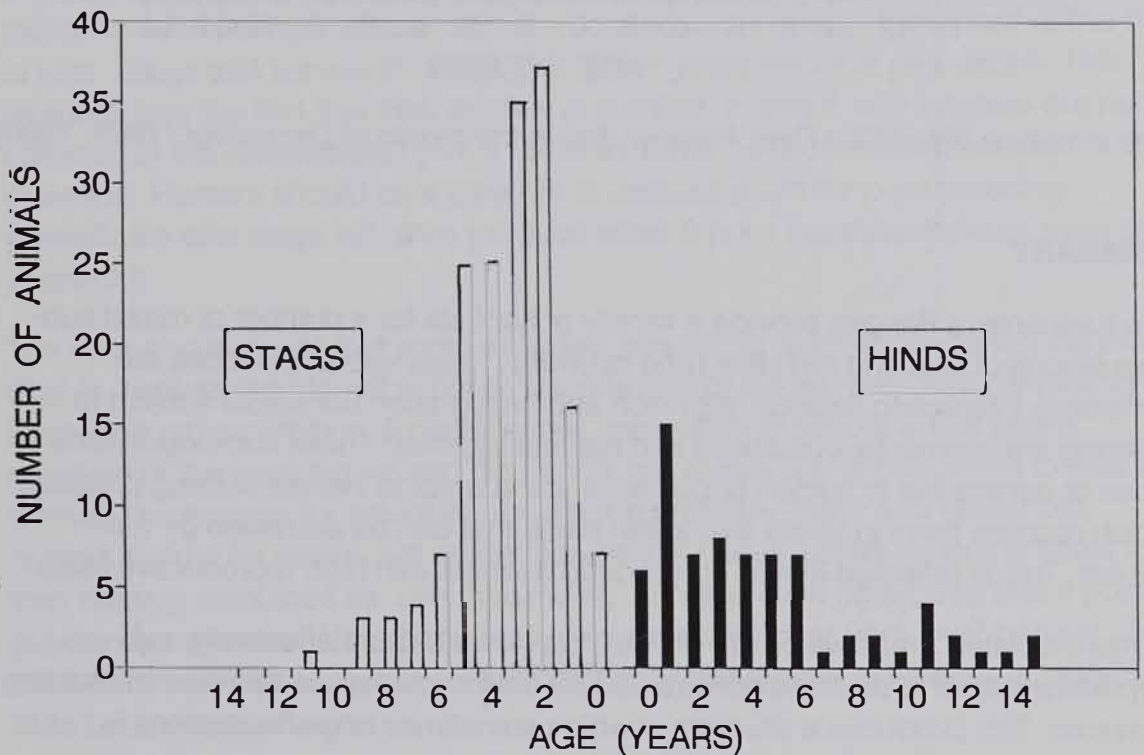
Deer density and indeed carrying capacity vary greatly throughout the Kaimanawa

Ranges depending on habitat type, accessibility to hunters, altitude and climate. In some areas competition from other animals is likely to be a factor.

While most hunters still shoot any deer encountered the practice of selective harvesting is becoming more widespread, especially in more remote areas where numbers are higher and/or during the roar. If hunters want to practice selective harvesting of deer populations, the greatest benefits to their hunting resources will occur in the lower altitude, readily accessible areas where the population is limited by hunting pressure. Selective harvesting in areas where populations are already at or near the carrying capacity of the habitat (that is, limited by factors other than hunting) will not improve herd status. Such practises will have a negative impact through reduced deer condition, decreased reproductive rates and further habitat damage. Habitat damage not only effects deer but also the many native organisms that depend on those same habitats for their survival.

FIGURE 7:

**A SAMPLE OF SIKA DEER SHOT IN APRIL
1983 - 1990 (KAIMANAWA RHA)**



Age structure of the Sika Deer Harvest during the month of April (1983-1990)

ACKNOWLEDGEMENTS

This article has drawn heavily on the work "The Hog Deer" by Mayze and Moore (1990) who studied the species on Sunday Island, Victoria, Australia and on the author's own observations over a period of nine years studying the ecology of deer in the Kaimanawa Ranges. Useful comment on early drafts was received from the editorial staff of 'Target Taupo'.

The generalisations and assumptions made are based on the limited data available, interpreted with a certain amount of local knowledge and 'gut-feeling'. The article should therefore be seen as a helpful guide to understanding the complex nature of the topic rather than a definitive statement of fact. ■

TAUPO, NEW ZEALAND



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SIKA LODGE

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for Reservations (please book early)

7. LAKE OTAMANGAKAU & THE WHANGANUI RIVER MINIMUM FLOWS

After many years of argument and negotiation, the High Court last year set minimum flows for the Whanganui River. As a consequence Electricity Corporation must operate their western diversions of the Tongariro Power Development subject to these requirements.

At all times the flow in the Whakapapa River below the diversion intake must not be less than 3 cumecs. During the months of December to May inclusive the flow at Te Maire, below Taumarunui, must not fall below 29 cumecs or the natural flow, whichever is less.

In order to implement this requirement, ECNZ must reduce the amount of water diverted from the Whanganui catchment to Lake Otamangakau. At times, perhaps 20 days per year, all diversion would cease to restore the full natural flow of the Whanganui.

ECNZ have reached an agreement with the Manawatu-Wanganui Regional Council on how they will implement the new requirements for this current summer. This involves gradually reducing the diversion from the Whakapapa River until 75% of its total flow is returned to the natural course. The four minor tributaries feeding the Whakapapa tunnel, along with the upper Whanganui River, will continue to be diverted into Lake Otamangakau due to difficulties in operating and fine tuning their intakes. However this water will then be discharged from a valve in the Otamangakau Dam back to the Whanganui River. See the diagram below.

The valve setting will be adjusted according to how much water is required at Te Maire. Fine tuning of the Te Maire flow will be done from the Whakapapa intake until all of its diversion ceases.

You might wonder how all this affects the Taupo fishery. Lake Otamangakau is an artificial impoundment created as a collection and storage basin for the western TPD diversions. It has developed as one of the premier trophy rainbow trout fisheries in New Zealand and sustains remarkably high angling pressure. This is a particularly challenging fishery and while many anglers find it frustrating, the rewards may be great for the persistent and experienced.

A couple of years ago the then DSIR discovered that the lake, fed by a large volume of cold alpine water, actually develops a remarkable degree of thermal stratification. This occurs when the surface water heats up at a greater rate than the depths so mixing of the lake waters slows or stops. When stratification occurs

for long periods, the bottom waters may become so depleted of dissolved oxygen that they are uninhabitable for trout and other aquatic life.

After discussing our concerns about these possible effects, ECNZ arranged to have two continuous temperature recorders installed for this summer. The Fisheries team here at DOC have also undertaken a weekly sampling programme measuring temperature, dissolved oxygen, pH and conductivity at five sites around the lake. A report on results to date is included in "Something Fishy" in this issue.

One other area of impact on the fishery is the effect of reduced inflows on lake levels and habitat stability. Our first preference was for ECNZ to spill the required water over the Te Whaiiau Dam to the Whanganui River. The spill would be controlled by the gate setting in the Wairehu Canal. This would ensure that the lake was kept full over the summer months and hopefully minimise the adverse affects on water quality.

However ECNZ wished to retain capacity in the lake to store water from floods and freshes. They would have to keep the lake below maximum level to do this. As a consequence the lake level has been very low over summer and there appears to have been a lack of balance between inflows (natural and diverted) and outflows (through Otamangakau valve and Wairehu Canal).

ECNZ and MWRC have indicated their willingness to review the way in which the minimum flows are met while still adhering to the requirements of the High Court decision. We expect a review of this summer's operations in the next few months and are liaising with ECNZ to share our data.

Over the next year or so we are beginning a series of research projects to understand what makes the Lake Otamangakau fishery tick. Certainly feeding, growth, survival and behaviour are quite different from Lake Taupo trout, and are not a result of genetic differences.

Depending on the results of this information there may well be a need to make changes to the way the lake is managed to ensure the sustainability of this nationally important fishery. ■

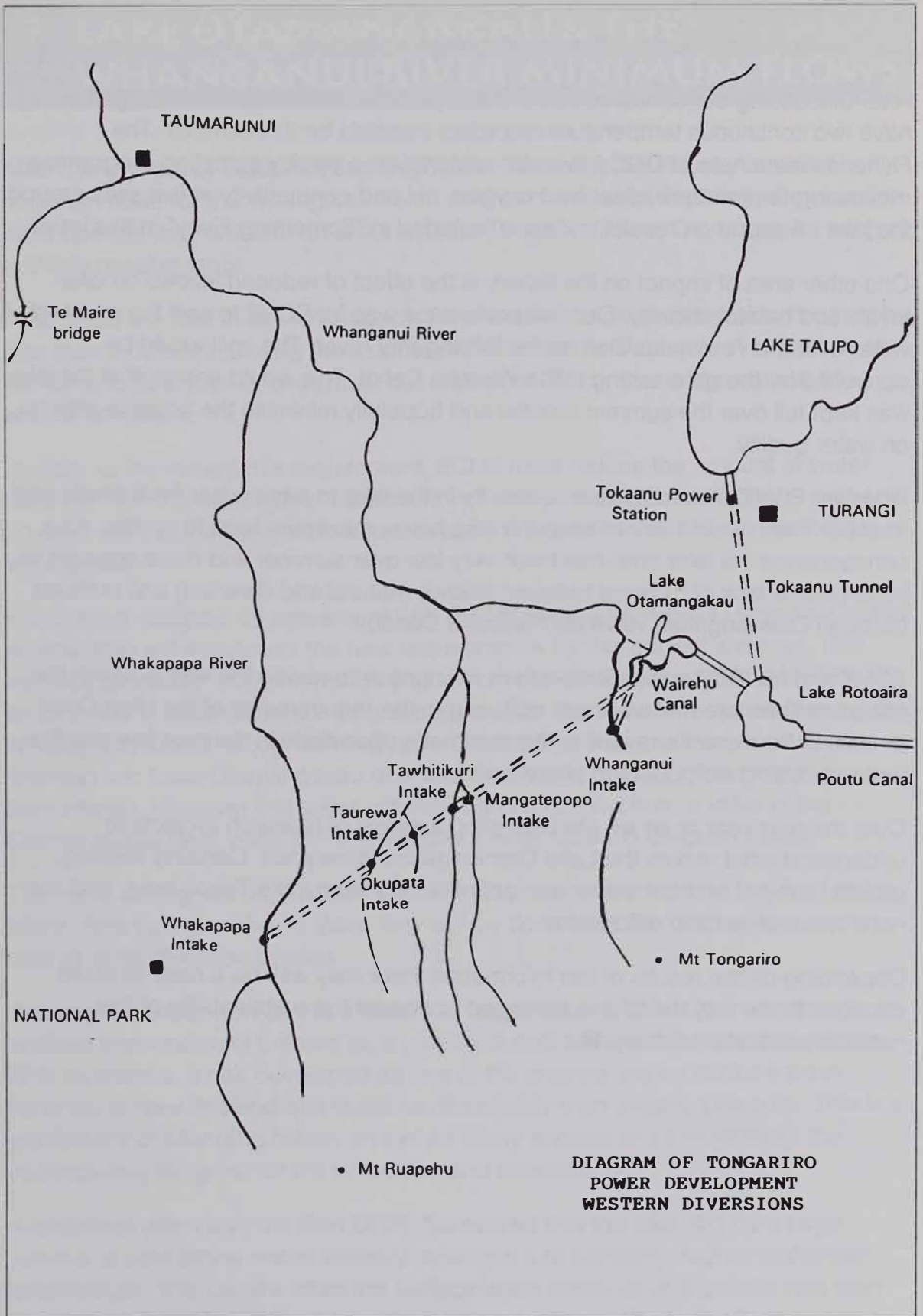


Diagram of Tongariro Power Development Western Diversions

8. FINDING YOUR WAY

THE WAIMARINO STREAM

Five kilometres north of Turangi, State Highway 1 crosses a small stream often overlooked by passing anglers - the Waimarino. The Waimarino can be a very frustrating river to fish, for as it approaches the lake the banks are prone to erosion and snags lie throughout this stretch. Casting is also made difficult by the high grass and toi toi lined banks. However, to a small group of anglers who have learned her secrets, the river proves very rewarding.

This article is not about how to fish the stream other than to say that both nymph and wetfly techniques work very well. However expect to have to use greater finesse than you might on the Tongariro and put in the time to learn the stream. Like other small Taupo tributaries it usually fishes best as a fresh recedes while the water is still discoloured. Obviously this makes it hard to work out where the many snags are, how to get the best drift through the pool or where to expect the fish to be lying. So if possible, spend a morning early in the season when the river is low and clear, getting a clear picture of the stretches you will fish later on.

The Waimarino River is closed to fishing above Korohe Crossing from 1 June to 30 November. This crossing, labelled "D" on the diagram on page 38, is the most upstream vehicle access and is reached from Korohe Road off SH1 500 metres south of the Waimarino bridge. Follow the tar sealed road until you come to a 'T' intersection. Take a left turn back towards the river. The road changes to a metal road and care is needed through the large puddles after rain. It is not recommended that you leave your car at this location.

During the open season anglers may walk up the river so long as they keep to the 20 metres right-of-way created under the 1926 Act. On the Waimarino anglers are entitled to walk the river from its mouth to its source so long as they follow the banks. However, in reality, a major waterfall 16.5km from the mouth is the upstream limit of trout.

Walking upstream from the winter fishing limit to the forestry road bridge the river widens with large shallow stretches and small deep runs and pools, bordered by large shingle banks. It takes a good day if you are stopping to fish regularly to reach the bridge and then you have to turn round and walk back down again. Upstream of the bridge several small gorges make travel along the river difficult.

The only vehicle access to the river above Korohe Road is via private forestry roads. Permission to use these roads is not normally granted to any recreational groups.

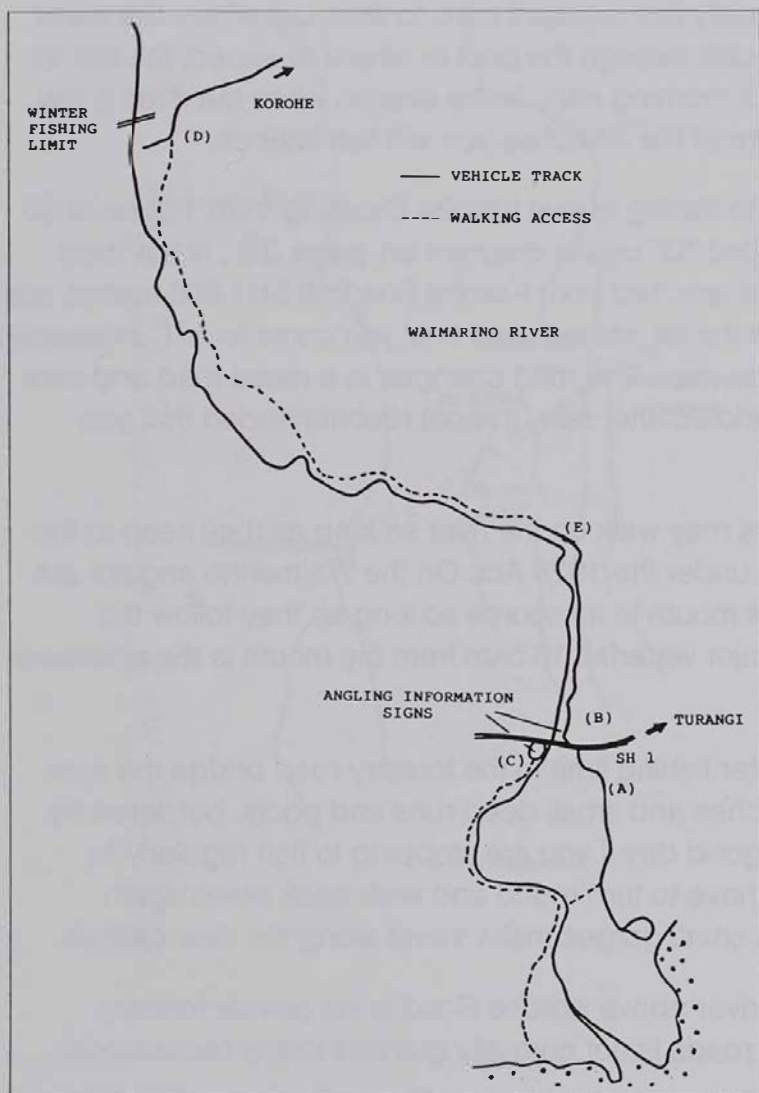
Walking down from Korohe Ford anglers can fish down to the state highway bridge following an old vehicle track.

Anglers are reminded that the right-of-way applies to walking access only and we do not support vehicles using this track above the small car park (E). It is rapidly deteriorating and we have no intention of restoring it as a vehicle track. If you must use it to demonstrate your 4WD skills don't expect us to show any sympathy when you get stuck, let alone pull you out!

The downstream end of the track comes out immediately south of the Waimarino bridge at 'B'. It is negotiable by car for the first several hundred meters up to 'E' though it does get soft after heavy rain. The other option is to park at the car park 'C' on the north side of the bridge. This also opens up walking access down to the mouth.

Like other Taupo tributaries the river mouth can provide excellent fishing. Take the road signposted 'Waimarino River Mouth' (A) and follow it down to the car park on

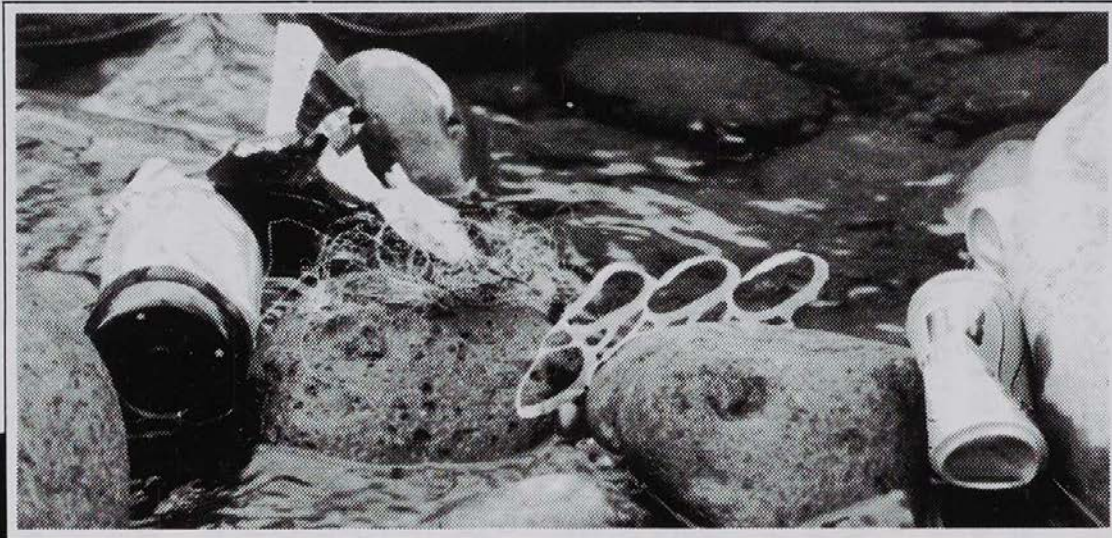
the lake edge. From here it is a walk of approximately 100m around to the stream mouth. The mouth can be easily waded but drops off sharply so take care. It is not recommended that your first visit be in the dark!



The Waimarino is not an easy stream to fish but it does offer different challenges to the larger tributaries. Just be prepared to spend the time to poke around into the little corners and runs. ■

Diagram of the lower Waimarino River showing angling access tracks.

IS THIS ANYWAY TO TREAT A FRIEND?



Please take your tins, bottles, litter & nylon home!

9. BITZ 'N' PIECES

NEWS FROM OHAKUNE

Judging by recent conversations with hunters renewing permits at Ohakune, most have freezers full with venison. It seems that the combination of a hard winter coupled with a late and wet spring has meant that the deer have been easier to come by.

Hunters hunting the Rangataua Forest will have noticed a lot of logging activity in the forest. At present there is a bush gang felling the top block of Pinus contorta. Once they have finished this block they will be moving into another P.contorta block between the main access road through the forest and the North Island main trunk railway. It is expected that the logging activity within the forest will continue for another two to three months. Hunters are therefore reminded to take extra care when hunting in Rangataua.

The Horopito access road over Bishop's property into Tongariro National Park has recently had a vegetation cut back carried out on it, providing for, hopefully, a scratch-free ride to the road end. Remember this is a private road and hunters require an access permit, obtainable from any DOC office within this conservancy.

At the end of February/beginning of March, members of the Waimarino Branch of the New Zealand Deerstalkers' Association will be assisting DOC in an organised weekend goat shoot in southern Erua Forest. This will be followed up by an aerial operation using a Hughes 300 helicopter and ground hunters with dogs. This follows a successful goat control operation in November last year in selected areas of southern Tongariro National Park and the Makara block Erua Forest. Any person sighting goats within Tongariro National Park should give details of their location and numbers to the Ohakune Field Centre as soon as possible.

1080 OPERATIONS

Pig hunters should note that the Waikato Regional Council began bait station poisoning using 1080 and cyanide along farm boundaries with the Western Bay Reserves around Lake Taupo on 31 January. The operational area is between the Kuratau River around the western and northern ends of the lake, to Rangitira Point. Toxic carcasses will persist for some months. The council are also planning a major aerial operation around Moerangi Station west of Turangi in May. Hunters who utilise Pukepoto Forest and the Waituhi/Kuratau area should be aware of this operation.

All these operations are targetting possums to reduce the incidence of TB in local cattle and deer herds.

SIKA TROPHY COMPETITION

As mentioned in the November issue, a Sika Trophy competition for the coming roar is up and running. The objectives of the competition are as follows:

- To maintain the high profile of sika deer so as to ensure the level of hunting interest in the herd continues to provide a high level of habitat protection in the central North Island.
- To promote the central North Island as a desirable hunting destination.
- To provide up-to-date information on the trophy status and general health of the population as a means of assessing the quality of habitats used by the herd.
- To help maintain a useful and credible working relationship with both the small industry that has developed around the sika deer herd, and the resource users themselves.

The success of the competition depends on the support it gets from hunters, so be in to win. See the advertisement in this issue or attached to your February/May hunting diary for details. ALL heads have a chance to win the rifle - good, bad or ugly!! The prize rifle will be on display throughout the roar at "The Fly and Gun Shop" in Taupo.

HELICOPTER ACCESS TO KAIMANAWA FOREST PARK - AUTUMN 1993

In addition to the helicopter access permitted to huts within Kaimanawa Forest Park, three further sites have been authorised for the 20 March to 20 May period this 'roar'. They are in the Whiti kau, Waiotaka and Tiraki catchments. The Waiotaka helipad has been shifted higher up the catchment this year to give hunters better access to the higher densities of red deer in the wind damaged forest under Ngapukeahuanga. This site is a real challenge and definitely not for the hunter who likes it easy, but the numbers are there and a keen hunter will do well if the stags are vocal. All three sites will be run on a booking system this year so see Helisika, Lakeland Helicopters or Wanganui Aerowork for bookings. These are the ONLY companies authorised to legally ferry you to these sites.

RUBBISH!!!

Litter in the form of cans, bottles, black polythene and food scraps in Waipakihi Valley camp sites is causing concern for local department staff. Despite a major "Pack It In/Pack It Out" education programme, hunters in particular are leaving most of their waste at camp sites. Often hunters who are using our "Pack It In/Pack It Out" bags are filling them and leaving them in the valley - presumably for the blowflies to carry out!

Bivvy building in the valley seems to be on the increase again and we are ending up with unsightly piles of black polythene. Construction of permanent shelters is contrary to the Kaimanawa Forest Park Management Plan and it appears that a harder line is needed to discourage park users from hacking down convenient native vegetation and creating a 'home away from home'. We would prefer if hunters used tents at camp sites and then there would be no need for the kilometres of black polythene which is a feature of this and other favoured hunting sites within Kaimanawa Forest Park.

A proliferation of fire places is also another undesirable feature of this valley. Please use gas cookers in preference to open fires and if you must have an open fire use already established fireplaces.

The Waipakihi Valley is a beautiful wilderness place, PLEASE do not turn it into a city tip.

DIET STUDY PRIZE DRAW

As many of you will know, all hunters who submitted a rumen sample and jaw from either sika or red deer taken in the Kaimanawa, Ahimanawa or Kaweka Ranges over the late autumn/winter period went into a prize draw. A total of 55 samples were obtained with the bulk of them coming from the central Kawekas and the Kaimanawa RHA. The winner of the free trip with Helisika into the Tarawera hunting block was Tim Dineen of Patoka, Hawkes Bay.

We now have 312 rumen samples from our target of 500, and will continue to collect samples over the coming year. So, if you are heading for the hills, please take one or two sampling kits and bring us back a rumen sample and jaw from any deer your shoot. Kits are available at all the locations you obtain hunting permits from, also from most air charter firms, and in many of the back country huts.

We are going to run another prize draw over the next few seasons to boost the number of samples, particularly from the summer and winter months. All hunters who supply rumen samples and jaws before September 1993 will go into a prize draw for the following:

- 1ST PRIZE – FAIRYDOWN COBRA SLEEPING BAG (VALUE \$430)
- 2ND PRIZE – FAIRYDOWN ENDEAVOUR PACK (VALUE \$400)
- 3RD PRIZE – FAIRYDOWN POLAR FLEECE JACKET (VALUE \$150)

Thanks again to all those hunters who have provided us with samples in the past. Good luck for your hunting in 1993 (and don't forget to take those gut kits!)

Wayne Fraser

*Scientist – Landcare Research New Zealand Ltd
(formerly Forest Research Institute)*

HUNTING PERMIT REQUESTS

Another plea from our Turangi receptionist. If at all possible, could you please request permits by mail or fax. Please ensure your address is sufficient to allow NZ Post to get your permits to you. Every permit period we get numerous permits returned because of insufficient or wrong addresses given by hunters. Your assistance on these matters would be greatly appreciated.

NEWS FROM TAUPO

Some concerns have recently been expressed by hunters and other users of the Clements Road area regarding spotlighting activities.

This practice is not only a potential danger to people camping in this relatively high use area but is also illegal and the department views this seriously.

A recent patrol resulted in one person being apprehended and a prosecution is pending and a warning is given that any person found hunting after the hours of darkness faces the possibility of having their firearms seized and of prosecution. The greater majority of hunters obtain permits, yet we wonder how many have actually read the conditions printed on the back!

On a brighter note, thanks to all those, and there are many, who provide information to us on track conditions, bird sightings, strange plants, deer jaws, gut samples, etc., which keep an important communication channel open between us as managers and the general public as users of these important areas.

At the time of writing all R.H.A. tracks have been cleared of windfalls and are in good condition and Clements Road is also looking good for the approaching winter.

Once again public participation comes to the fore with reported sightings of goats in the odd lakeshore reserve around the Western Bays. This has resulted in a couple of quick successful helicopter operations to eliminate these smelly pests - thanks for those reports. ■

HUNTERS – PLEASE NOTE:

Hawkes Bay Regional Council have laid 1080 pellets and cyanide baits in bait stations along Poronui/K.F.P. boundary – PLEASE TAKE CARE!!

10. UNDERSTANDING THE TROUT RUNS IN THE TONGARIRO RIVER

In recent years there has been some concern over an apparent decline in numbers of adult fish in the Taupo fishery.

However, the reduction in bag limit and several years of favourable environmental conditions has seen the fishery regain much of its former glory. However, one aspect to come out of the decline was an awareness that monitoring techniques were not providing the information we previously thought. With that in mind changes were made in the monitoring programme to incorporate methods relying more on actual counts than changes in angler catch rate. However, a problem of monitoring the total run of spawning fish in the Tongariro River, the principle spawning tributary in the Taupo fishery, remained.

Up until recently the run through a tributary of the Tongariro, the Waihukahuka Stream (hatchery stream), was used as an index for the Tongariro River spawning runs, but recent data indicates that the hatchery stream is declining in importance for spawning fish. Low runs appear not so much due to the lack of fish, as is evident by the good numbers caught in the Tongariro last season and observed by DOC staff. It seems more likely due to the trout not finding the stream entrance which was altered by the 1986 flood. Land development in the catchment has also made the stream prone to frequent flash floods and sedimentation, which may also have affected spawning success and subsequent numbers of fish returning to spawn.

We need to evaluate the usefulness of the hatchery stream as an index of the trout spawning runs and if it is not providing a reliable estimate (which we suspect is the case) then we need to develop another way of estimating the total spawning run. The most likely alternative is to measure the run in the Whiti kau Stream which is recognised as the major spawning tributary of the Tongariro. A programme to investigate the usefulness of the Whiti kau and Waihukahuka Streams has been designed by Dr Michel Dedual and will begin shortly.

The programme involves trapping migrating trout in the lower Tongariro main stem, tagging them and recapturing them in the Waihukahuka Stream, Whiti kau Stream and via anglers.

To catch the migrating fish in the lower Tongariro, a trap has been established in the Poplar Reach. The trap is much like a huge whitebait stand and covers half of the river. The screens on the trap are able to be removed during floods and to clear debris.



DOC staff Michel Dedual (in the water), Norrie Ewing (centre) and Errol Cudby, check the trap as it is put in place.

Fish migrating up the river meet the screens and are directed into a large cage trap on the true right bank.

Interestingly, this is the first time such a trap has ever been operated on the Tongariro mainstem. Pulses of migrating fish will be trapped throughout the year and individually tagged. The tag is a small silver clip that is stamped with four numbers and three letters. The tag will be placed on the base of the front edge of the dorsal fin (see photograph on page 48).

Once the fish are tagged they will be released upstream of the barrier to continue their migration. Anglers should note that fishing is prohibited within 100m of the trap under the Taupo Fishing Regulations 1984. Some of the tagged fish will be caught by anglers as they continue up the river, others will enter the hatchery stream, the Whitikau Stream and other tributaries to spawn. Traps will operate on the hatchery and Whitikau Streams to collect the fish entering these. The hatchery trap is the existing one that can be viewed at the National Trout Centre and the Whitikau trap is a barrier attached to logs which have been sunk into the stream bed. The barrier is raised and lowered by a cable and winch.

Both the Tongariro and Whitikau traps will be manned 24 hours a day when operating.

From the tagged trout returns we will be able to determine the usefulness of the hatchery and Whitikau Streams as indices of the Tongariro spawning runs. This will be dependant on whether a constant proportion of each pulse tagged enter the study tributaries. If it does, we can use this proportion and the known total run in the tributary to calculate the total run entering the Tongariro. Using a very simple example, let's say a pulse of 1000 fish were tagged on the Tongariro and released, of which 500 were recaptured in the Whitikau Stream (50%). We could then estimate the size of the Tongariro runs based on 50% entering the Whitikau

Stream. So in a season if 10,000 trout enter the Whiti kau Stream this would suggest a total run in the Tongariro of 20,000 trout.

This study will yield other information useful in managing the fishery and also of interest to anglers. For example, numbers of fish caught by anglers (as a proportion of the run), time for trout to run through the river, time trout spend in the river, flow conditions and water temperature prior to and during a run.

What can anglers expect? Hopefully you will catch a number of tagged fish over the season (February to October). Both brown and rainbow trout will be tagged, so remember to check all the fish you catch (regardless of whether you keep them or not). When a tagged fish is caught please take the following information:

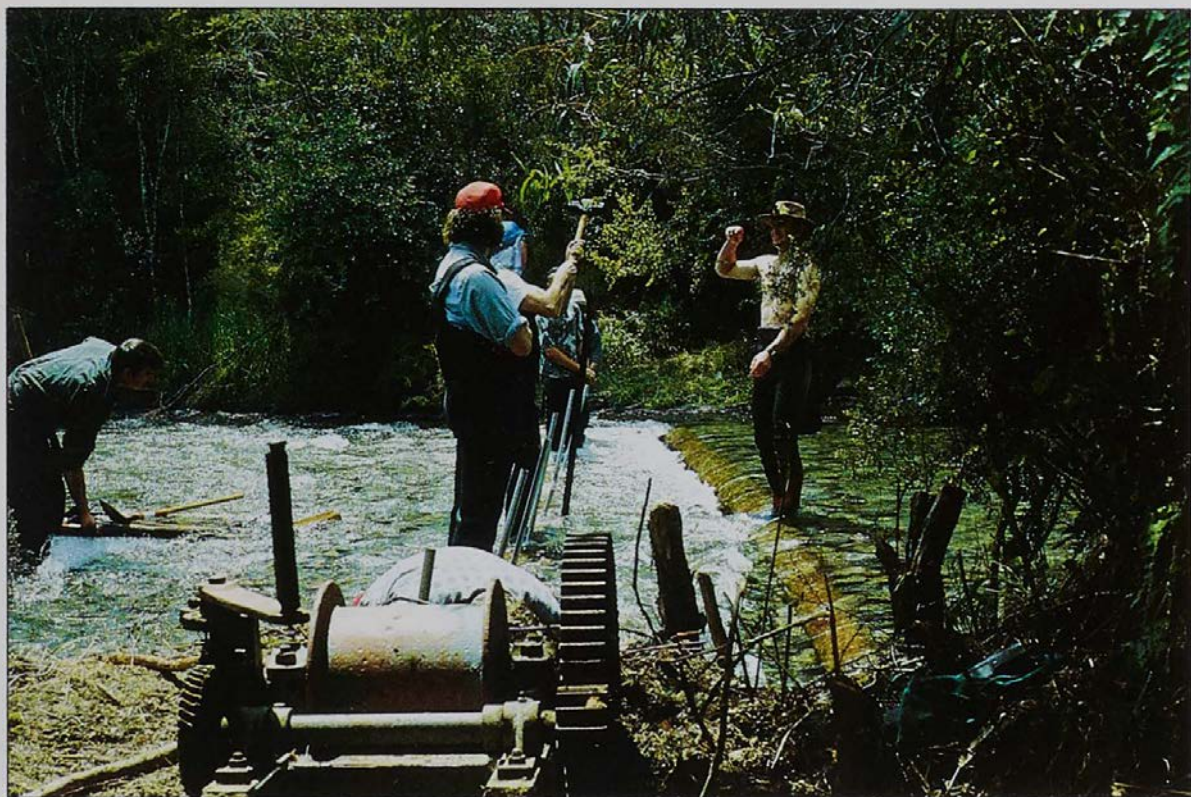
1. Return the tag if you keep the fish (if not record the letters and numbers stamped on the tag).
2. Date caught.
3. Location caught (including the name of the pool).
4. Whether the fish has spawned.
5. The total number of fish caught on that day (so we have a ratio of tagged to untagged).

That information (and the tag) can be forwarded to:

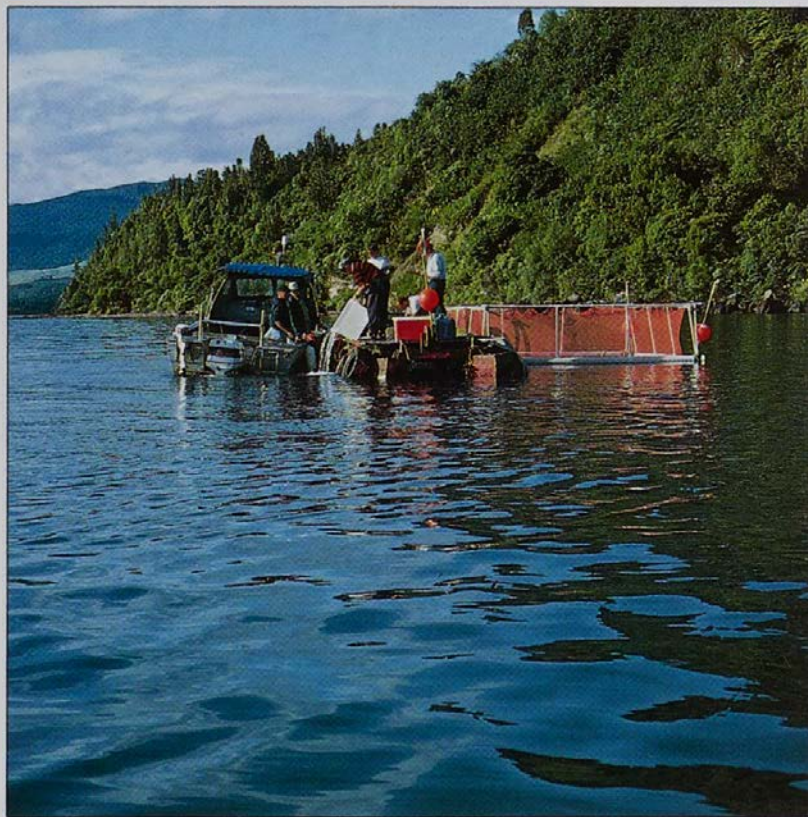
Fishery Manager
Department of Conservation
Private Bag
TURANGI

Signs will be placed at the major access points along the river to remind you of the information needed. You may also be approached by a Conservation Officer while you are fishing on the Tongariro this winter, who will ask if they can check any fish you have caught. They will only take a minute or two of your time and your co-operation will be appreciated.

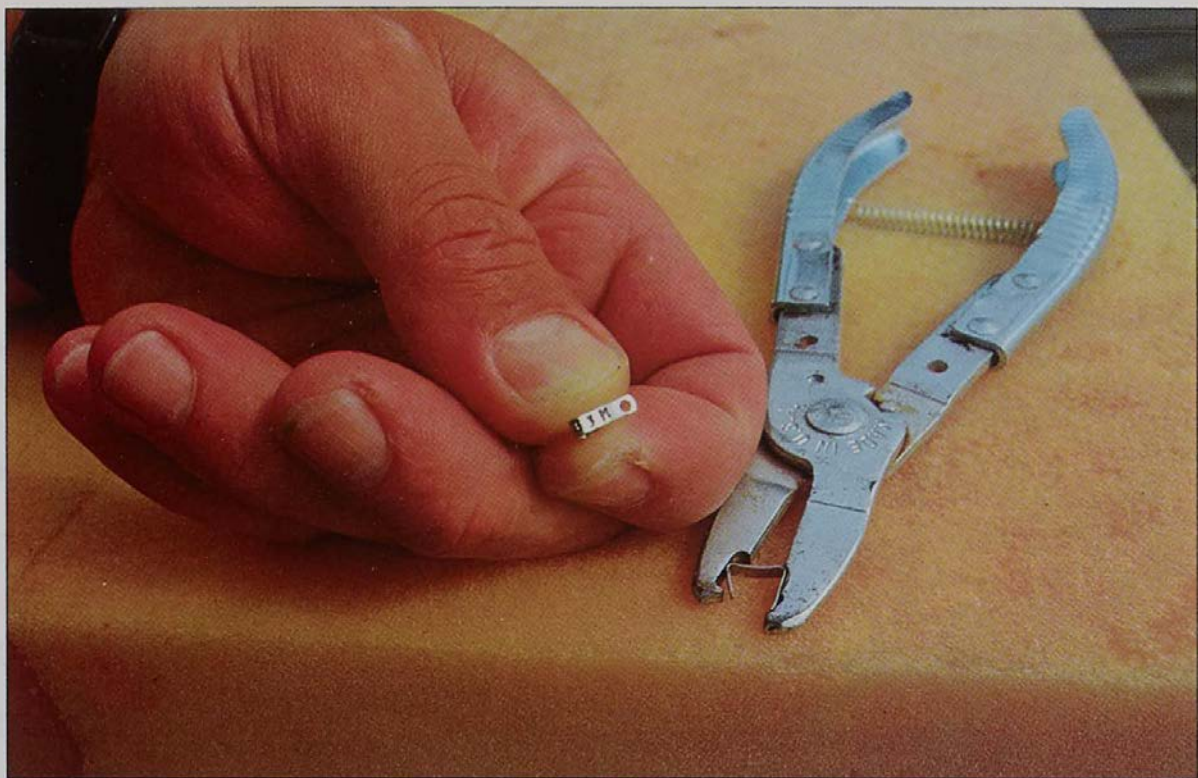
As with other projects undertaken, the success of this research depends on the co-operation of you, the anglers. We look forward to hearing of your catches. ■



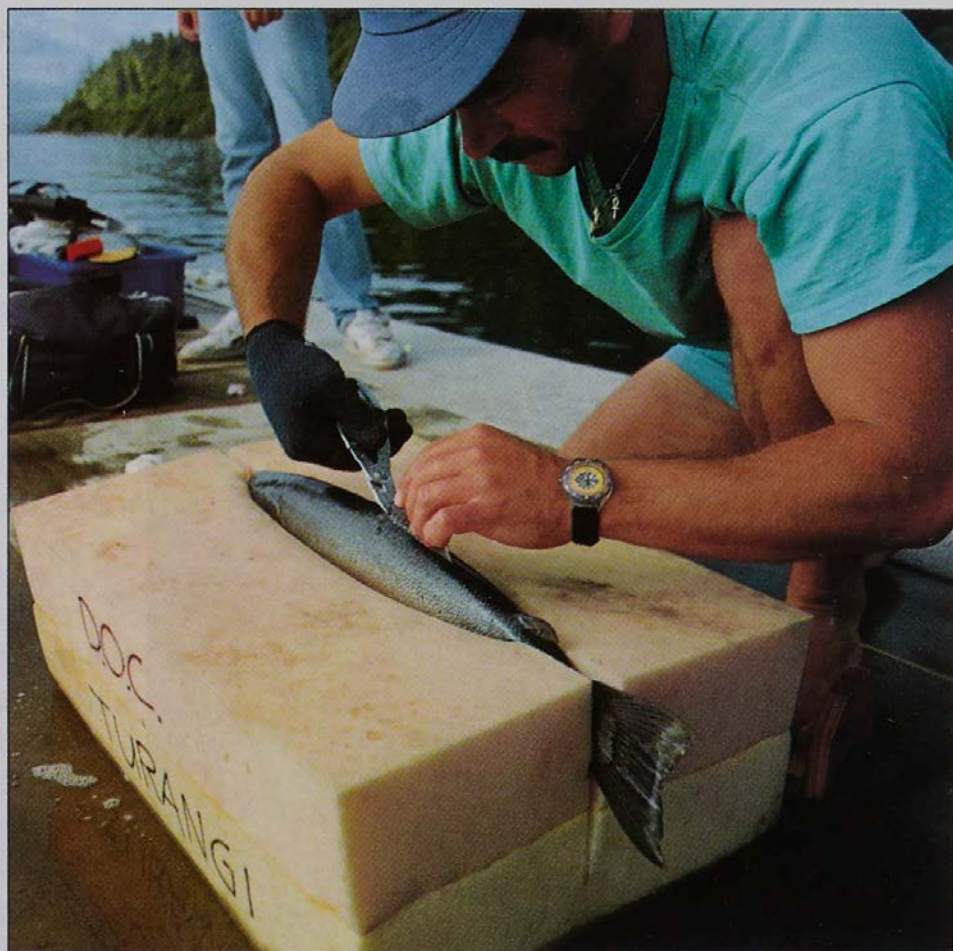
Volunteers help DOC staff pin the Whikau trap bedlog. This trap will be used as part of the project investigating the trout runs in the Tongariro River.



The catch and release experiment involved transporting the trout in fish bins back to the barge where they were tagged and placed in the holding pen. Photograph by Len Birch.



The clip which is placed on the front edge of the dorsal fin.
Photographs by Len Birch.



11. SOMETHING FISHY!

COMPLIANCE NEWS

As usual the Christmas/New Year holiday period was very busy for the Compliance and Law Enforcement team. The team made contact with 839 people, but only eight offences were detected and another 14 persons were given verbal warnings for minor infringements. This high level of compliance is very pleasing. Advice and assistance was given to many anglers by the friendly CLE team.

It is noticeable that people are becoming more waterwise and safety conscious with whole families wearing life jackets and keeping their boat speed down. We will always have those who have no regard for their own or other's safety but fortunately they are in the minority.

It is recommended that anglers read the "Summary of Taupo Fishing Regulations" printed on the reverse side of all Taupo District fishing licences. A considerable amount of information is printed on the licence for your assistance.

It is pleasing to note that the courts are reflecting the seriousness with which we view poaching offences, through the level of fines imposed.

In a recent court case at Taupo an offender was convicted and fined \$1,000 and court costs of \$95, for taking fish from a spawning stream with a hand net. A number of other alleged poaching cases arising from last winter's compliance operations will shortly be before the court.

MANAGEMENT PLAN

The draft Taupo Sport Fishery Management Plan has been completed and should be printed and published by the time you read this issue of Target Taupo.

The public has 40 working days from the date of plan publication to make comment or submissions on the plan's contents. We urge you to make your views known.

Following the closing date for submissions, these will be summarised and a copy of the summary together with the draft will be sent to the Minister of Conservation. He will either approve the plan or require changes based on the public submissions.

A copy of the draft plan can be obtained by writing or telephoning the Fishery Planner, Department of Conservation, Private Bag, Turangi (telephone (07) 386 8607).

ACCESS TRACKS

Another step in the upgrade of the Waitahanui River access track on the true left bank from the main road bridge to Cliff Pool bridge has been undertaken.

Over the past several months a 200 metre portion of this track which was constructed using several different methods has been trialed to see which could stand up best to the constant demand placed on access tracks.

Tenders will now be called and the contract let so that the whole track can be upgraded and completed in time for the winter fishing.

BRIDGE UPGRADES

With Easter not too far away we have been preparing for the annual influx of anglers on the rivers. Part of this has been the upgrade of seven access bridges across the Waitahanui River, the Red Hut and Major Jones swing bridges across the Tongariro River and a small bridge across the Poutu River.

Tenders were called to do this work and a contract was let to Fletcher Engineering, Taupo.

Work involved hanging a cotton screen between the two banks on the river below the bridge. This allowed the bridges to be waterblasted but prevented the paint chips and flakes entering the river. The waterblaster cleared most of the dirt, stones and moss from the bridges which were left to dry overnight.

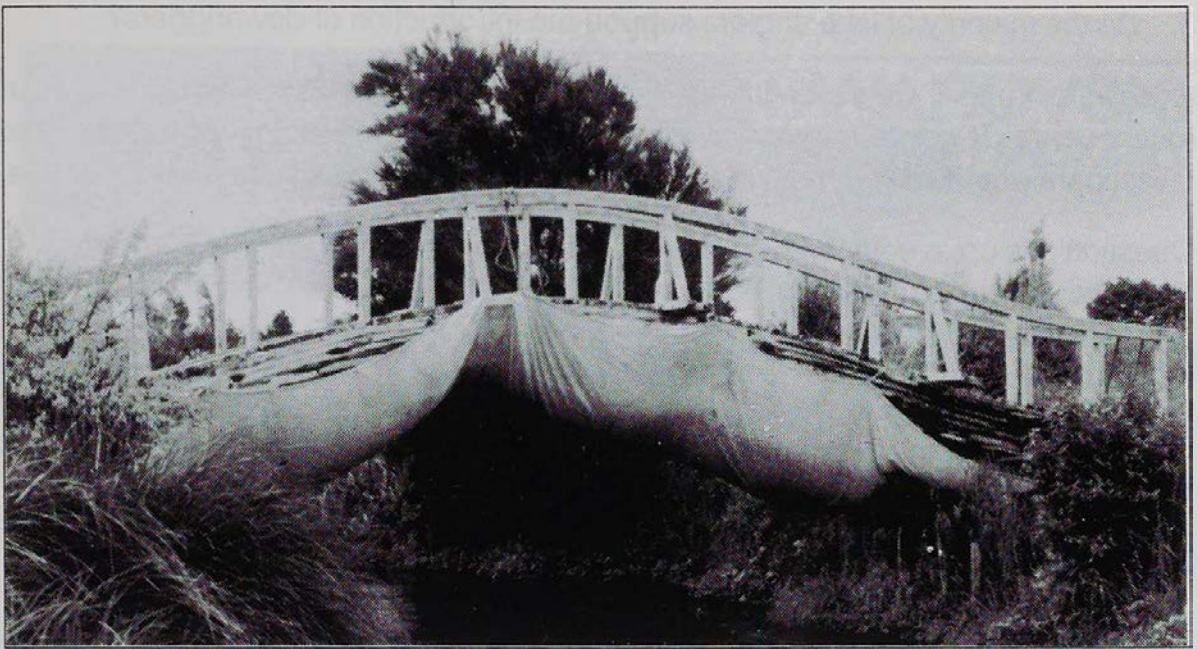
A disk grinder was then used to remove all the paint residue down to bare wood which was then sanded to a smooth finish.

Two coats of English Walnut stain was applied and this will now be left for nature to weather to a pale brown colour. The Waitahanui bridges have been completed, and at present the two swing bridges over the Tongariro are half finished. Comments from local anglers and guides have been favourable towards the upgrade of these bridges.

While this maintenance is expensive it will prolong the life of these bridges which provide essential access, by many years.

SHOULD DOWNRIGGERS BE ALLOWED IN THE TAUPO FISHERY?

In recent years we have been increasingly asked whether downriggers could be permitted in the Taupo fishery. This has been largely due to a perception that catching trout on downriggers would be more enjoyable than on current deep trolling methods using wire or lead lines.



The Mangamutu bridge at Waitahanui ready for staining. The cotton cloth stops debris entering the river.

In the late 1980s though we faced a situation of poor natural production and very high trout harvest which pushed the fishery into a well publicised decline, best reflected by several winters of very poor river angling. Downriggers can be used at much greater depths than the 30 to 35 metres reached by wirelines and the last thing the fishery needed was any new method with the potential to further increase the harvest.

However, since then the natural production has increased significantly as reflected by the acoustic monitoring results (see discussion in this issue) and a combination of a reduced daily bag limit and reduced angler numbers has held the harvest within acceptable limits. These changes are reflected by the improvement in the fishery.

Given the improvement and our better understanding of the relationship between production and harvest, we are now prepared to consider whether downriggers should be permitted.

Basically this will involve consideration of three questions:

1. Do downriggers threaten the biological sustainability of the wild fishery?

If not:

2. Do downriggers threaten the recreational quality of the winter river fishery, i.e. will they result in an unacceptable exploitation of maiden fish reducing the number available to the river anglers?

3. Do the majority of lake anglers support the introduction of downriggers?

Questions 1 and 2 are essentially desk top exercises using information collected in recent years. The catch and release trial though, proved a valuable opportunity to investigate whether fish released after capture on downriggers were likely to survive.

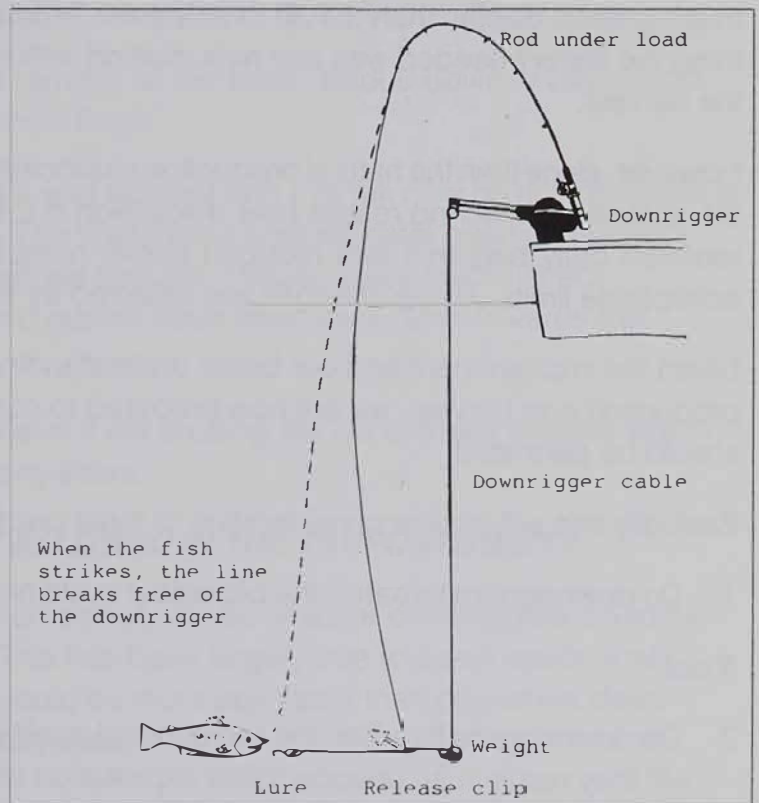
Question 3 is up to you, the anglers. On preparing our report, hopefully by mid-April, we will put it to the Taupo Fishery Advisory Committee as the anglers' representatives. If you wish to make your concerns or support known please get it touch with your representative (see later paragraph on how to contact members).

The same report, which will be published as a special edition of Target Taupo, will be sent to all subscribers and angling clubs on our Target Taupo mailing list.

WHAT ARE DOWNRIGGERS?

Downrigger fishing started in the Great Lakes 25 years ago, developed from more crude systems used to run lines deeper than could be achieved by other methods. Essentially downriggers are simply a reel holding up to 200 metres of wire cable to which a weight of 1.5 to 7 kgs is attached. Somewhere on the weight itself, or attached to the cable just above, is a line release that holds the fishing line until a strike breaks it free. The angler lowers the weight down until the lure trails at the desired depth. The line between the release clip and the rod is held under tension by loading the reel. When the fish strikes breaking the line free, the rod straightens helping to set the hook. The angler who is using a flexible rod and geared reel loaded with light line is then free to fight the fish unhindered by any other weights. The simplest versions are small enough to be used on a small dinghy but more complex systems involved using multiple rigs from a single weight or electrically operated downriggers which can be raised or lowered at the touch of a button, often from the helm.

Diagram showing a simple downrigger setup



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TAUPO DISTRICT FISHING LICENCE SALES

Licence sales to the end of February for the 1992/93 season are a little lower than for the same period the previous season, but there have been slight increases in Adult Month, Adult Week and Child Season categories.

Sales to date are as follows, with 91/92 figures shown in brackets:

Adult Season	9,323	(9,658)
Child Season	4,183	(4,055)
Adult Month	658	(627)
Adult Week	5,141	(5,098)
Adult Day	20,572	(20,856)
Child Day	4,125	(5,051)

an overall total of 44,002 licences sold, a drop of 1,343, or nearly 3%.

1993 KIDS' FISHING DAYS AT THE NATIONAL TROUT CENTRE

The fishing pond at the Tongariro National Trout Centre will be open for children aged six to 14 years (inclusive) on the following days this year:

Sunday, 9 May
Sunday, 13 June
Sunday, 11 July
Sunday, 29 August
Sunday, 19 September

All gear is provided, and once the children are able to cast, they purchase a licence and are assisted at poolside to catch a trout. This will then be weighed, and measured and they are presented with their fish and a certificate to take home. The pond will be open between 9 a.m. and 3 p.m. on these days.

There are picnic areas near the pond and along the Tongariro River nearby, and barbequed food, hot drinks, etc., are on sale. Bring the kids along and have an enjoyable day.

PATTERNS OF ANNUAL SPAWNING RUNS

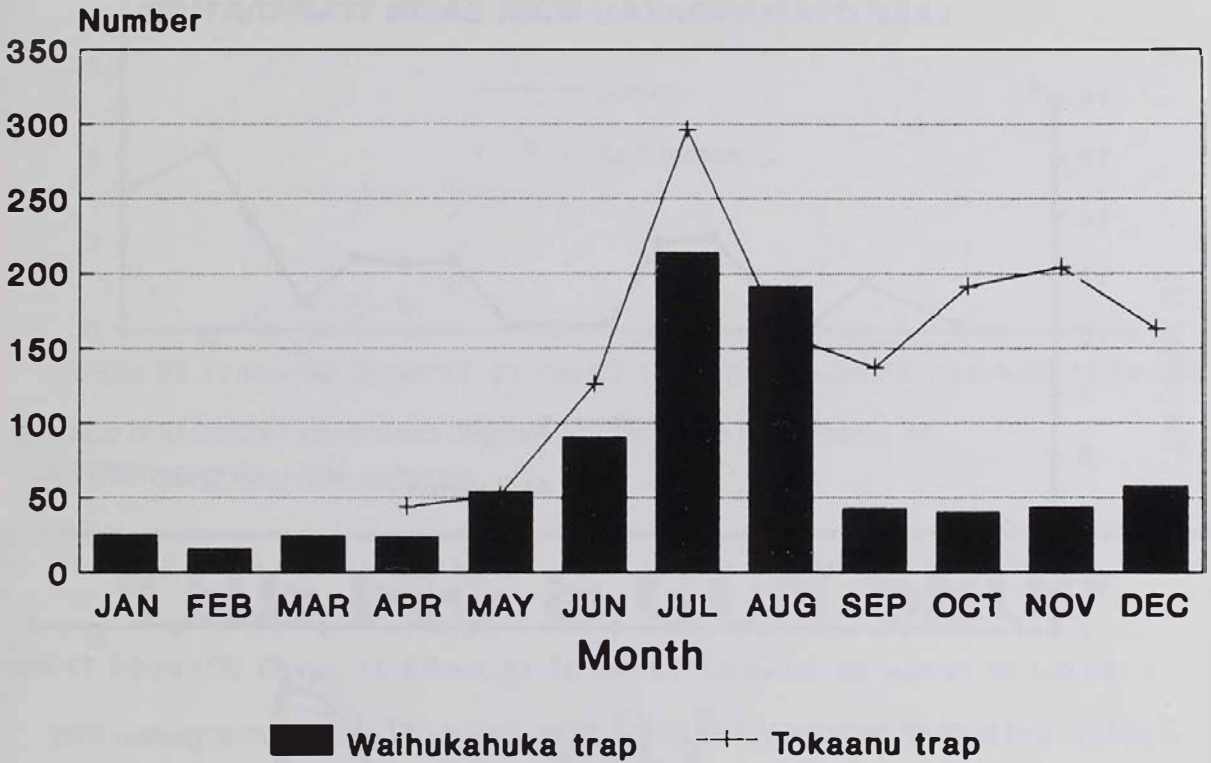
Last year for the first time the department kept the Tokaanu fish trap operating past the end of the winter. This was due to a realisation that a significant part of the run could be occurring after the trap was normally closed at the end of October.

The graph below shows the monthly trap totals through both traps in 1992. The Waihukahuka (hatchery trap) shows the expected pattern with a major peak over

winter and a smaller summer run in December. However the Tokaanu trap, while showing a peak in July, shows a second more prolonged peak occurring through spring into early summer. 40% of the trap run between April and December occurred after 1 October.

GRAPH:

MONTHLY TROUT NUMBERS Waihukahuka and Tokaanu traps 1992



Tokaanu trap not operated Jan - Mar

Monthly trap runs through the Waihukahuka and Tokaanu traps.

This is an extreme example of the differences in the timing of annual spawning runs between different Taupo tributaries.

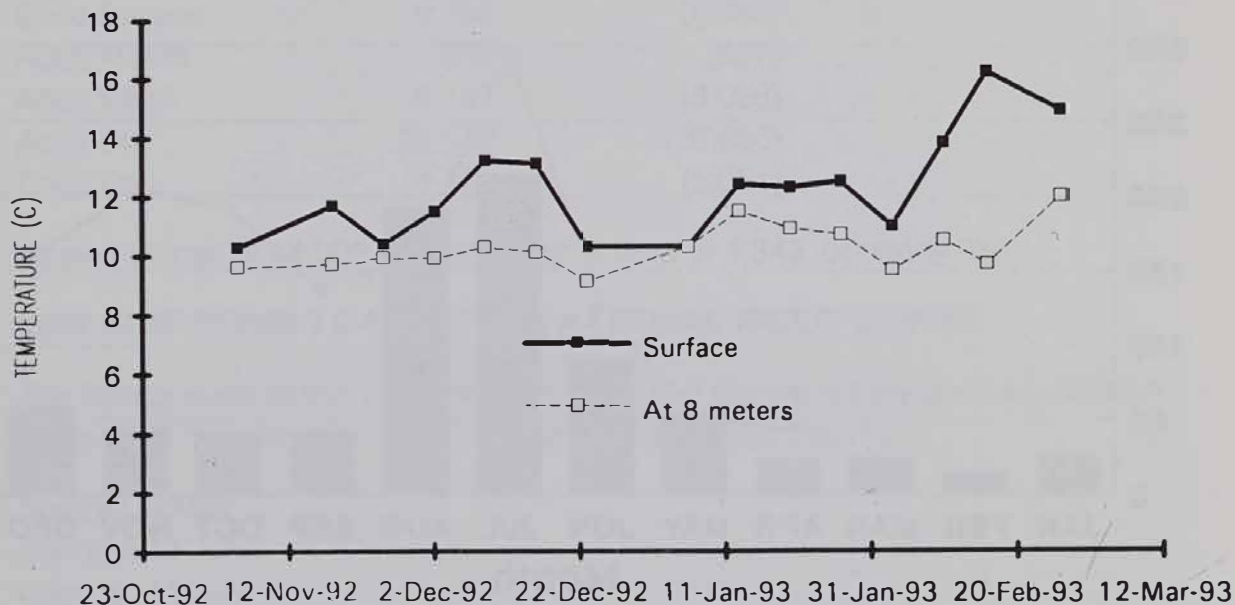
LAKE OTAMANGAKAU MONITORING

Over the summer, while many of you were fishing for those trophy fish that reside in the "O" we have been involved with a regular programme to monitor the water quality in the lake. Five sites (two in the main basin, two in the northern arm and one at Te Whaiiau inlet) were sampled once a week beginning in early November 1992 and is still continuing.

The reason for monitoring the water quality is that trout are subject to stresses when the dissolved oxygen becomes too low or the temperature becomes too high. A report from DSIR Freshwater Division in 1990 suggests that a reduction in inflows from the Western Diversions to Lake Otamangakau over the summer results in a warmer lake and it becomes stratified, i.e. warm on top and cool at the bottom, with a resulting drop in dissolved oxygen in the bottom waters.

GRAPH:

LAKE OTAMANGAKAU MAIN BASIN TEMPERATURE



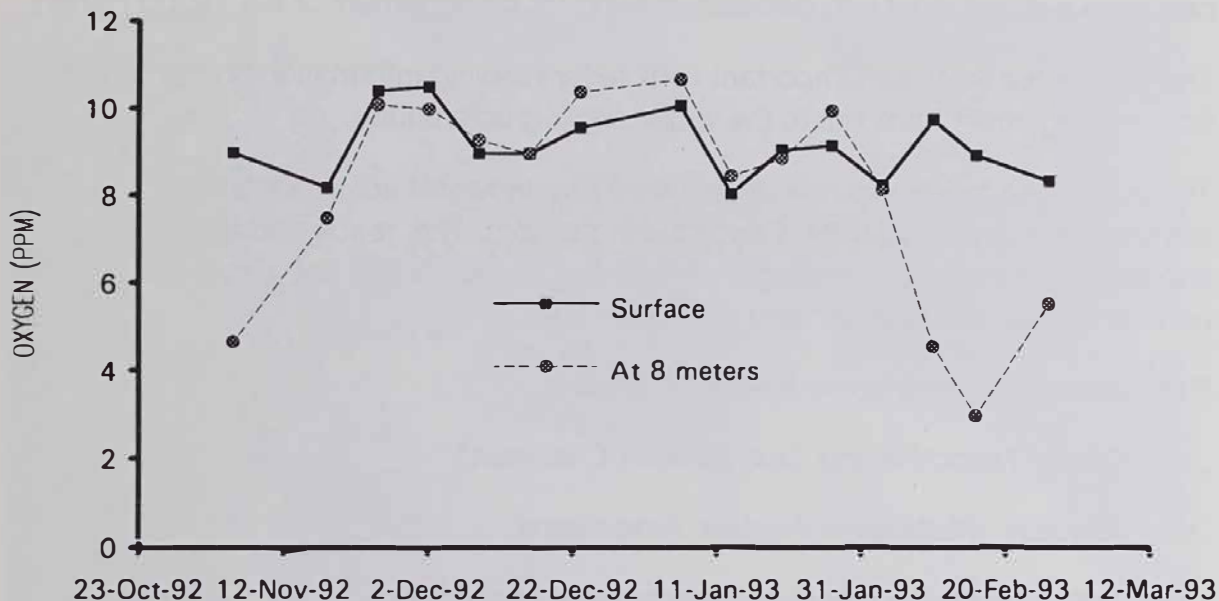
Surface and bottom temperatures in the main basin of Lake Otamangakau this summer.

As you can see from the preliminary results of our monitoring, the warmer month of February resulted in the stratification of the lake (shown by the two lines on the graphs moving further apart), and this combined with dry weather and hence low inflows to the lake, at times created conditions that would have been marginal for trout to live in. Interestingly, February was the coolest recorded for 22 years. The situation may well have been worse if summer had arrived!

With the continuing low inflows and warm weather we will be closely monitoring the water quality in Lake Otamangakau, especially now that ECNZ has to divert some water back into the Wanganui as a result of the minimum flows decision.

GRAPH:

LAKE OTAMANGAKAU MAIN BASIN DISSOLVED OXYGEN



Surface and bottom dissolved oxygen levels in the main basin of Lake Otamangakau this summer.

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TAUPO FISHERY ADVISORY COMMITTEE

This committee was established by the Minister of Conservation so that anglers can have a direct input into decision-making for management of the Taupo Fishery.

The committee is also an important vehicle for relaying information on the fishery from management back out to the wider angling community.

The committee meets with the department regularly and advises it on the development of policy for the Taupo fishing district. The needs and aspirations of anglers and appropriate management actions to meet these are also jointly canvassed by management and the committee.

Representation on the committee is as follows:

John Davis - Taupo Fishing Club (current Chairman)

John Johnson - Waitahanui Anglers' Association

Chris Jolly - Taupo Commercial Launchmen's Association

Tim McCarthy - NZ Professional Fishing Guides' Association

Graham Pyatt - Turangi/Tongariro Trout Unlimited

Graham Whyman - Tongariro and Lake Taupo Anglers' Club

George Habib - Tuwharetoa Maori Trust Board

Theo Simeonidis - National Angling Interests

Bryce Johnson - NZ Fish and Game Council

Regional Conservator - Department of Conservation

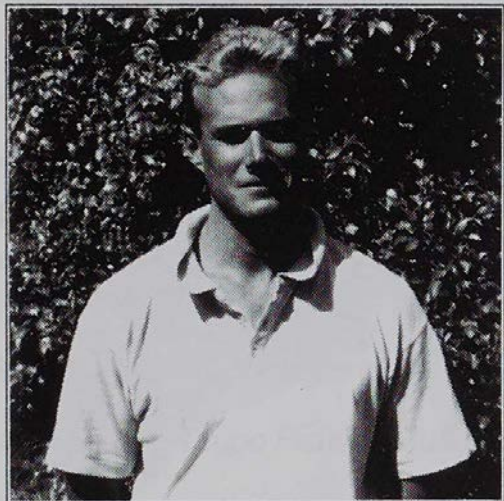
If you have a desire to influence the management of the fishery but have been at a loss to know how to do so, it would be worthwhile for you to consider joining one of the organisations represented on the advisory committee. Your views will be most welcome and you will also enjoy the benefits of up-to-date feedback from the managers. ■

12. ANOTHER BLAST FROM THE PAST!



Mr Bob Floyd of Taihape holding a 21-1/2 lb rainbow trout caught in the Tongariro River in May 1924. (Photograph supplied by Mrs F Whittaker).

13. MANAGER PROFILE



IAIN MAXWELL

Iain is part of the Taupo Fisheries Management Team and is primarily responsible for the operation of one of the traps involved in the Tongariro River runs research. However his skills are used in a range of other fishery research and monitoring projects.

Iain grew up in Kaikohe, then moved to Palmerston North where he attended Massey University and completed a B.Sc Hons (First Class) in Ecology. He worked for ten months

with Wellington Fish and Game Council before joining DOC in late 1992.

Apart from work Iain is actively involved in enjoying the resource as a keen fly fisher, game bird hunter and recent addition to the deerstalking fold. However, like many of the fishery managers around him he struggles to see many deer. Aside from hunting and fishing Iain also enjoys sailing, mountain biking and is keen to take up diving. ■

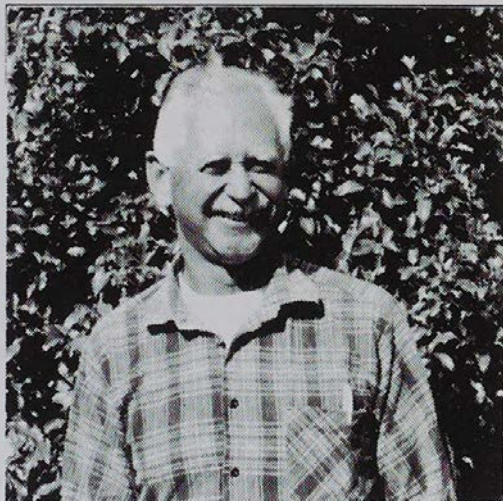
NORRIE EWING

Working under contract Norrie returns to the Fisheries team bringing a wealth of fisheries knowledge and experience from his past career in Wildlife and Conservation.

He left freshwater in 1989 to explore saltwater, living at Pukehina Beach and taking people fishing and diving from an inflatable where he offers trips "No Fish, No Charge".

Norrie finds it hard leaving the beach, but is enjoying the role reversal from "being boss to being bossed" and participating once again in the field around which he has directed most of his life.

A physically active person he enjoys most sport and while at Turangi he is enjoying hunting, squash and fishing. ■



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