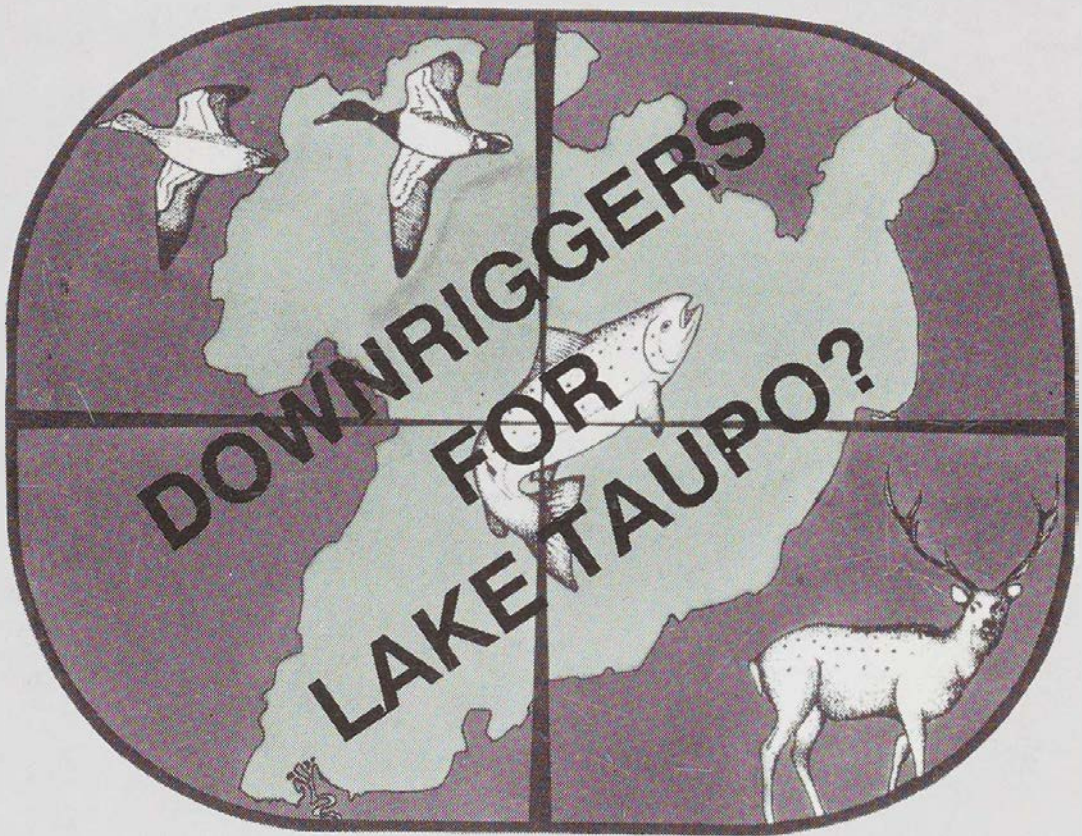


JUNE 1993
Special Edition 2

TARGET AUPO

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



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DOWNRIGGERS FOR LAKE TAUPO?

In recent years managers of the Taupo fishery 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.

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. In this situation we were very reluctant to consider any new method which might potentially further increase the harvest.

However, since then the natural production has increased significantly. A combination of a reduced daily bag limit and reduced angler numbers has held the harvest within acceptable limits. These changes are reflected by a major 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 could be used.

What are downriggers?

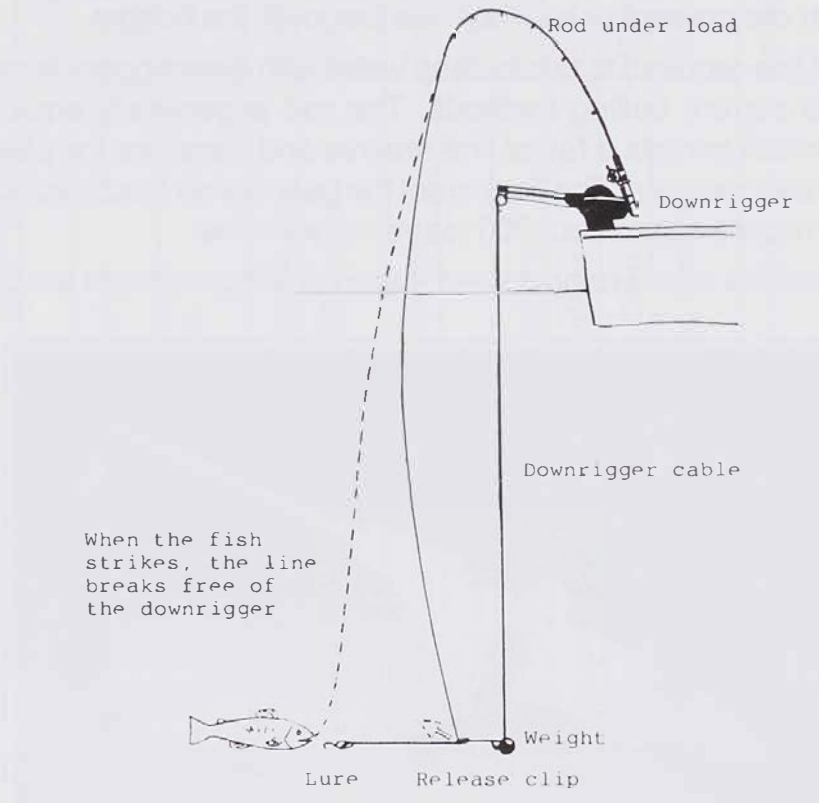


Figure 1: Diagram showing a simple downrigger setup

Downrigger fishing started in the Great Lakes 25 years ago and was 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 shown on the holding reel. 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. A simply analogy is the use of outriggers in big game fishing. The outrigger is used to hold the line wide of the boat, the line breaking free from the outrigger at the strike.

The simplest downrigger versions are small enough to be used on a small dinghy but more complex systems can involve 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.

Downriggers can be used at much greater depths than the 30 to 35 metres reached by wirelines and almost always are used in conjunction with an echo sounder so as to ensure the weight is not hung up on the bottom. It is possible to control the depth fished with downriggers to within a few metres of the desired depth. Using an echosounder allows the skipper to accurately target the depth at which the fish are present or run the lures just over the bottom.

The length of line required to fish in deep water with downriggers is much shorter than with the current trolling methods. The rod is generally equipped with a geared reel which permits a faster line retrieve and therefore the playing time of the fish is usually reduced. The time to set the gear is also much reduced on the 5 to 6 minutes required to run out 200 metres of wire line.

The characteristics of downriggers and current trolling methods are compared in Table 1.



A downrigger setup showing rod and reel, the lead weight and release clip.

TABLE 1

COMPARISON OF DOWNRIGGERS WITH CURRENT TROLLING METHODS

COMPARISON	HARLING	LEADLINES	WIRELINES	DOWNRIGGERS
Rod	Soft	Medium/Stiff	Stiff	Soft
Reel	Fly reel	Free spool or 'Steelite' type	Large freespool or 'Steelite' type	Baitcaster, level wind or fixed spool
Line	Fly line	Lead cored braid	Wire	Light monofilament
Fishing depth	3-5 metres	8-20 metres	15-35 metres	1-60+ metres
Length of line trolled	50-100 metres	100-200 metres	100-200 metres	50-100 metres
Time to set	1-2 minutes	3-4 minutes	5-6 minutes	1-2 minutes
Ease of use	Easy	Reasonable	Difficult	Reasonable
Rod holders	Sometimes	Usually	Usually	Essential
Echosounder	Sometimes	Sometimes	Usually	Essential
Fight by trout	Very Good	Mediocre	Poor/Mediocre	Mediocre/Good
When most effective	Spring-Summer	Spring-late Summer	Late Summer-Mid Winter	All year
Cost of basic outfit	\$100-\$120	\$180	\$150	\$130-\$700* for downrigger and \$100 for rod, reel, line

* Does not include an echosounder which is almost essential to avoid expensive gear loss

Should downriggers be permitted?

In regard to the use of downriggers, two aspects need to be considered. The first is whether downriggers would impact on the trout population in such a way as to threaten the biological sustainability or the recreational quality of the overall fishery, including the winter river fishing. The second aspect is whether the majority of anglers actually want downriggers. This report concentrates on the biological impacts of downriggers only. There is also a need for anglers to debate the issue and make their views known to the department.

Biological aspects of the use of downriggers

A three year study into the Lake Taupo trout production showed that the bulk of the lake population is to be found in water deeper than that which can be reached by present fishing methods (approximately 35 metres). Current downrigger techniques and equipment have a practical capability to reach approximately 60 metres and, therefore, to target previously unexploited fish.

At some times of the year, eg spring, where there are large numbers of trout near the surface, this may not be important. Downriggers are unlikely to be any more effective than conventional methods and ultimately the daily bag limit acts to restrict the total catch. For example, if an angler was to keep three fish caught at 60 metres this is likely to replace three fish they would otherwise have kept from shallower depths.

However in late summer through winter when trout concentrate around the thermocline at 35 metres or deeper, the fishing becomes much more difficult. The total harvest is determined by what anglers can catch rather than any constraints such as bag limits. In this situation unrestricted use of downriggers will increase the harvest allowing anglers to fish at depths where they are more likely to be successful.

The question of harvest is very relevant because it is a significant influence on the size of the trout population. When harvest becomes too large, insufficient fish survive to reach maturity and to provide satisfactory winter river angling. This is the situation which occurred during the late 1980s when we realised the Taupo fishery is not inexhaustible. In the worst case, spawning fish numbers might not even be sufficient to ensure long term sustainability of the trout population.

Currently the fishery is undergoing a marked upturn as a consequence of increased levels of natural production and reduced harvest brought about by the lowered daily bag limit and fewer anglers. However, something as subtle as a slight change in the prevailing climate could easily change this. At this stage, as managers we favour a cautious approach to managing the fishery preferring to leave a little in reserve rather than attempting to manipulate the harvest right to the limit.

Given that the main arguments so far put forward in support of downriggers have centered around a perception of increased enjoyment rather than a desire to catch more fish, we do not support use of downriggers at depths greater than those reached by conventional methods (approximately 35m).

Are downriggers likely to increase the harvest of trout from depths less than 35 metres?

The size of the harvest is determined by the catch rate and fishing effort. Trials suggest downriggers are not any more efficient than conventional methods when fished at the same depth though it seems a higher percentage of strikes may be successfully landed. This may well reflect the shorter line used which allows the angler to keep in more direct contact with the trout. However, the need to use an echosounder in conjunction with downriggers may well improve the catch rates of anglers who previously had not used such tools. It is likely that some anglers who don't currently use deep trolling methods would be attracted to the deep troll fishery if they could use downriggers, though we don't believe this would represent a significant increase in total angling effort.

Effective fishing time is also higher for downriggers which take only a minute or two to set compared to the five or six minutes to run out 200 metres of wire line. However anglers are still fishing for the same fish as they would be using conventional techniques. The daily bag limit and minimum size limits will ensure that the harvest is unlikely to be significantly increased by the introduction of downriggers if restricted to a maximum depth of 35m.

This supposes that the fish which are released do in fact survive. Is it biologically sensible to have these regulations? Do they in fact achieve the goals for which they have been put in place? Are such regulations also sensible for controlling the harvest by downriggers?

We addressed this issue by conducting an experiment on two days a fortnight apart during February 1993 to compare the catch and release mortality caused by the current legal fishing methods (wirelines, leadlines and harling) and also downriggers.

We designed a holding net 4 metres by 4 metres which extended down to 30 metres depth. 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. Overseas research indicates nearly all fish which die after release, die within 24 hours.

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.

Information about the time of capture, length of time to land the fish, method used and how the fish was hooked, eg. bottom jaw, was recorded for each fish. The fish were individually tagged as they were placed in the net. Fish which died immediately on release into the holding net were removed and after 24 hours two divers counted the number of dead fish on the bottom of the net. The observed survival of the fish is shown in Table 2. 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. 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 and if there is any fishing technique more stressful for the fish than the other. Analysis of these blood samples is complex and will take several months.

Table 2: The observed survival of the fish

Method	Fishing Depth (m)	Number Caught	Immediate Deaths	Delayed Deaths	Total Deaths
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 trail involving downriggers and wirelines but had lost its tag so the capture method is unknown.

First analysis suggests no significant difference in mortality between downriggers and wirelines. A closer look indicates, however, that the mortality related to downriggers occurs sooner after release than on wirelines. It is interesting to note that severe hooking injuries were not the primary cause of death. Assuming that injured fish may not have the same probability of long term survival as uninjured fish then the figures above are probably low and could be increased a few points.

The initial results have provided 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 cooler bottom waters). The transition between the warm and cold waters is called the thermocline and in February, this occurred at



Michel Dedual (centre) tags a trout prior to placing it into the holding cage behind, while Sid Puia (right) readies the next trout for tagging. Glenn Maclean sends the chase boat away to collect yet another fish.

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 other effects such as depressurisation would remain similar.

The trials indicate 85 to 98% (or five out of every six) trout released can be expected to survive to be able to spawn or be caught again. Regulations such as daily bag limits or minimum size restrictions which require anglers to release unwanted fish are therefore appropriate for all methods trialled, including downriggers to depths of 45 metres.

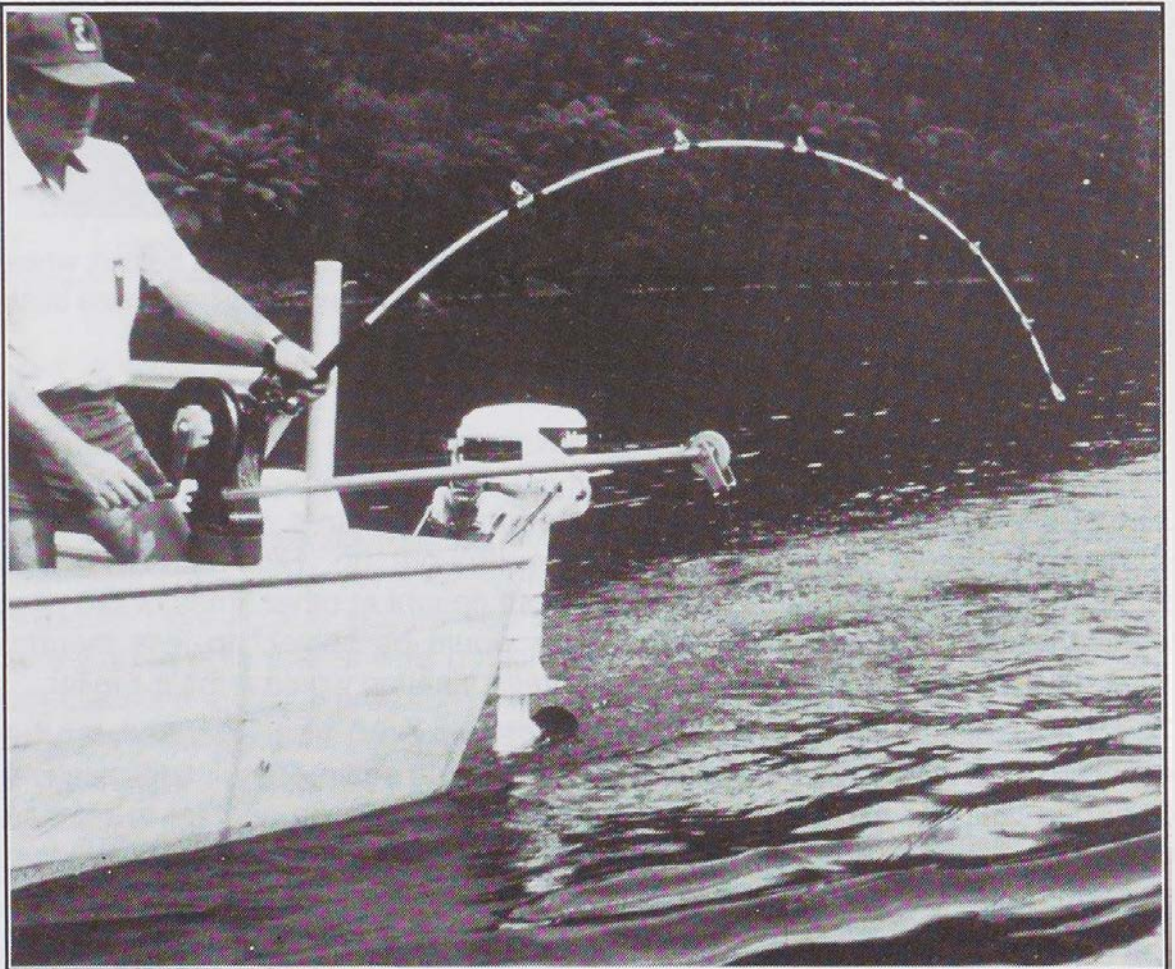
Summary

Downriggers are unlikely to have any significant detrimental effect if limited to a fishing depth of 35 metres. Setting this limit is a conservative approach intended to protect the presently unexploited portion of the trout population. This is considered prudent in light of the experiences of the late 1980s and in the absence of further information on the relationship between fishing depth and mortality. It is intended to repeat the mortality experiment next summer on fish caught on downriggers from much greater depth (60-70m) to resolve this aspect. If limited to 35 metres fishing depth downriggers are simply an alternative method to catch those fish currently taken by conventional methods. The impact on the winter river angling should be no greater than presently occurs.

The advantages and disadvantages of downriggers are summarised in Table 3.

The practicalities of a 35m depth limit

Depth can be easily limited by restricting the length of wire permitted on the downrigger spool. We believe we have a practical way of quickly and simply measuring the wire length in the field.



Fishery Manager John Gibbs demonstrates a downrigger setup in action.

TABLE 3**ADVANTAGES AND DISADVANTAGES OF DOWNRIGGERS
IN THE TAUPO FISHERY**

Advantages	Disadvantages
Controlled depth fishing with lightweight rods and lines maximising the fighting ability of the hooked fish	Can potentially increase the trout harvest by enabling anglers to fish for trout at depths which previously they could not reach
Allows anglers to use the same rod and reel for all their trolling	The costs to set up can be relatively high compared to existing trolling methods
Suitable for the smallest dinghy to the largest launch	The survival of fish released after capture from the greater depths may be reduced
Gear-setting efficiency maximises fishing time at depth	Echosounder almost essential
More manoeuvrable than other trolling gear	Can only be used when all anglers on boat are licensed (rodholders)
Can be more easily used by very young, older or frail anglers	The rod can not be held prior to the strike

So where to now?

We believe that downriggers with the above constraint will not affect the wellbeing of the trout population. However anglers themselves will have to make their own decision whether they actually want downriggers or not in the Taupo fishery.

We do not envisage that downriggers would replace any existing method but they would be an alternative method that anglers could use. There is a cost of several hundred dollars to a few thousands dollars to set up a boat with downriggers and many anglers will be content to remain with existing techniques.

If you wish to make your views known please get in touch with your representative on the Taupo Fishery Advisory Committee or the Fishery Manager, Department of Conservation. A simple questionnaire is attached for your convenience.

The Taupo Fishery Advisory Committee has a statutory role to represent the interests of Taupo anglers, to facilitate the exchange of information between the department and others and to consider and advise the department on freshwater and sport fishery matters within the Taupo district.

Your angling representatives are listed below:

John Davis, Taupo Fishing Club – 28 Motutahae Street, Taupo

Theo Simeonidis, National angling interests – 3 Fitzwilliam Terrace, Tawa

Tim McCarthy, NZ Professional Fishing Guides Assn – PO Box 98 Turangi

Graham Whyman, TALTAC, PO Box 162, Turangi

John Johnson, Waitahanui Anglers' Club – 16 Peehi Manini Road, Waitahanui

Chris Jolly, Taupo Commercial Launchmen's Assn – PO Box 1020, Taupo

Graham Pyatt, Tongariro Trout Unlimited – 48 Rangipoia Place, Turangi

YOUR VIEWS ON DOWNRIGGERS

Name:

Address:

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Please circle
appropriate answer

- | | | |
|---|--------|-----------|
| 1. Have you read the attached report | Yes | No |
| 2. Do you - Troll on Lake Taupo | Yes | No |
| - Fly fish Taupo rivers | Yes | No |
| 3. Which of the following best summarises your feelings toward the introduction of downriggers if they were limited to a fishing depth of approximately 35 metres | | |
| Support | Oppose | Undecided |
| 4. If downriggers were legalised would you consider using them | | |
| Yes | No | Undecided |

Comments:

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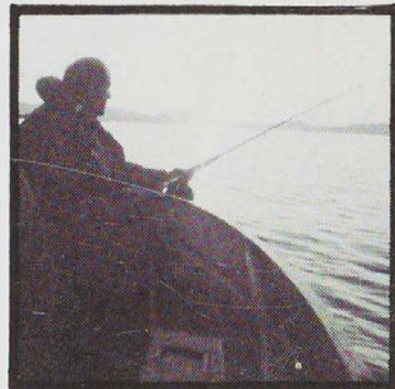
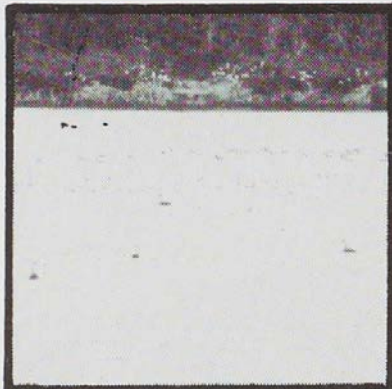
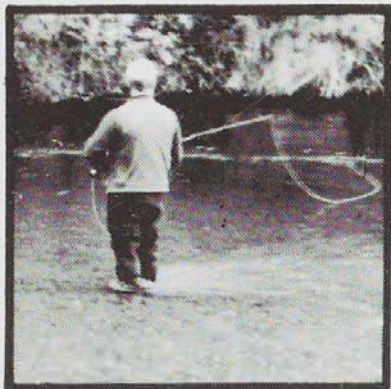
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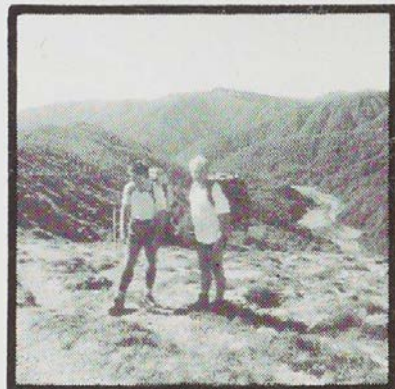
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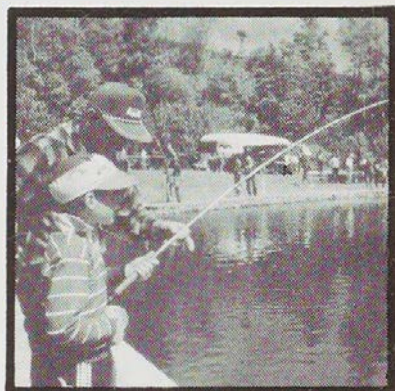
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