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VALUATION OF A RECREATIONAL FISHERY - A CASE STUDY.

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ABSTRACT

The economic benefits associated with trout stocks for recreational fishing in the New England Region of New South Wales were evaluated using Contingent Valuation and expenditure methods. Approximately 17 000 trout anglers either living within the region, or connected to fishing clubs in the region visit the trout streams in the New England region more than once a year. A sample of 159 of these anglers were surveyed using a mailed questionnaire which elicited data for both methods.

Using the expenditure method it was found that the benefit from the maintenance of the trout stocks was \$15 242 930. A Contingent Valuation analysis was conducted to determine anglers' willingness to pay to maintain the resource. It was found that willingness to pay exceeded costs by \$156 489.

This paper is a brief summary of a fourth year research seminar undertaken by Stephen Kelly as part of the requirements of the Bachelor of Agricultural Economics Degree at the University of New England, Armidale.

The authors wish to extend their thanks to Associate Professor Jack Sinden for his comments on the methods used in this paper, to the anglers belonging to the New England Trout Acclimatisation Society, especially Mr Bill Fugh, for their cooperation and helpful comments throughout 1991, and the help of John Sheather, manager of the L.P.Dutton Trout Hatchery at Ebor run by the New South Wales Department of Fisheries.

All errors of presentation and interpretation remain the responsibility of the authors.

1.0 INTRODUCTION

Recreational fishing is Australia's largest sport in both participation and economic terms.

The New England region of New South Wales is the northern limit of viable freshwater trout habitat in Australia. Trout were successfully introduced in this region in 1902 by the New England Trout Acclimatisation Society (NETAS) after early settlers were disappointed by the lack of freshwater native species of angling interest.

It was soon discovered that trout would not spawn in large enough numbers to maintain a viable population. Due to this problem, trout stocks have been artificially maintained by the annual release of both fry and fingerlings into the region's rivers. NETAS, currently consisting of an affiliation of 13 member clubs, and personnel of the New South Wales Department of Fisheries have been responsible for the release of trout into local waters.

Since 1947 the supply of fry has been the responsibility of the L.P. Dutton Hatchery at Ebor, located 70 kilometres east of Armidale. Rainbow trout are bred at the hatchery and brown trout are brought in as eyed ova from the Gaden Hatchery located near Jindabyne.

In this paper, the details of a study comparing the costs of maintaining the New England trout fishery with the benefits generated by a viable recreational trout resource are compared.

The null hypothesis to be tested was that the benefit from the fishery was zero. The alternative hypothesis was that the benefits were greater than zero.

2.0 TERMS OF REFERENCE FOR THE RESEARCH

2.1 Geographic area. The area under study was the New England region of New South Wales. The geographic boundaries of the study region are shown in Map 1. These

trout waters are at altitudes above 600 metres (shaded areas in Map 1) and so are geographically isolated from other trout areas by low altitudes and warm water. The upper limit of trout survival is a water temperature of 27° Celsius (Pollard 1973). For the purposes of this study, the fishery is defined as those waters above 600 metres that hold trout stocks that are under the jurisdiction of NETAS.

2.2 Recreational anglers. The authors assumed that a trout angler was a person who pursued trout for purely recreational purposes and that no income was derived from these pursuits. It was also assumed that a recreational angler went trout fishing at least once each season.

Catch was not included as a variable in the analysis as it was thought by the authors to be hard to define. Since no income is derived from catch, it was thought catch was an "incidental benefit". For example, what is the definition of a good fishing trip; for some people it would be catching one trout of 1 kilogram, for others it would be catching ten 400 gram fish. Due to these sort of problems it was assumed that the fishery was viable and that was suffice for recreational anglers to fish the region for trout.

3.0 DATA COLLECTION AND METHOD OF ANALYSIS

3.1 The Survey. The main objective of the survey was to elicit information on the expenditure of anglers who use the fishery each year. The survey questions used are shown in Appendix 1. Listed below are the groups of questions used for each method of analysis.

Questions 1 and 2 (Appendix 1) were used to elicit the respondents usual abode and whether they were a member of a fishing club and if so, which one.

Questions 3, 4, 5, 6, 8 and 9 were used in estimating the annual expenditure of the anglers. From these questions an estimate of the benefit from the fishery using the expenditure method could be calculated.

Questions 10 and 14, the fishing licence and donation questions, were used in the Contingent Valuation of the fishery.

Questions 7, 11, 12 and 13 were questions used to measure the motivation and preferences of fishermen that use the resource under various scenarios.

3.2 Sample population. The survey (Appendix 1) was sent to members of the 13 member clubs of NETAS. These clubs were seen to be representative of trout anglers in the region. A total of 470 surveys were distributed and there were 159 responses; approximately 34 percent.

The St Kilda Angling Club, a "pub club" based in Armidale was the only non-NETAS club targeted by the authors with surveys. Several other survey respondents were from "pub clubs" based in the Tamworth region and at Glen Innes. This was done to verify whether there was any difference between anglers who are members of clubs that do not specifically target trout and NETAS clubs whose members fish mainly for trout.

It was quite difficult to contact non-club member trout fishermen as the survey was undertaken in May to July 1991. This was near the end of the trout season and hence few fishermen could be found on local streams in easily accessible areas. Most fishing pressure occurs during the early part of the season in October and November. Another peak occurs in the period from March to April.

Despite the problems mentioned above, there were 27 responses from non-club members.

To attain a large sample size and therefore avoid possible biases, a mailed survey was used. It was thought using face-to-face interviews, as is normal with the Contingent Valuation method, would lead to a small sample size and biased results (R.Gill personal communication, 3rd May 1991).

3.3 Survey Analysis. The analytical techniques used were to calculate the means and standard deviations for each of the numeric questions. From these answers an estimation of the expenditure to go fishing and the willingness to pay per person were estimated.

Preference questions were analysed using binary code; a 1 for a yes answer, a 0 for a no answer. For various subgroups an average value near one indicated a strong agreement with the statement, a low average value indicated disagreement with the statement made. From the binary data, preferences for alternative recreational fishing in the absence of the fishery were assessed.

3.4 Estimating the benefit of the fishery. As stated in Section 3.1, two methods of analysis were used to estimate the benefit of the New England trout fishery; expenditure and contingent valuation.

3.3.1 The expenditure method. This method was used to estimate the annual expenditure of anglers who live in the region and also those that travel to the region to use the resource. The annual expenditure per angler showed a "willingness to pay" to use the resource. If anglers were assumed to be utility maximising individuals they would have spent money up to the point where marginal benefit equates marginal cost. It is similar to the travel cost method but does not include the concept of consumer surplus.

The annual expenditure of anglers was broken down into several types; travel (frequency of use and distance travelled), accommodation, food and refreshments and depreciation on trout fishing equipment.

Expenditure on travel to use the resource was calculated on the average distance travelled in kilometres multiplied by a pro rata rate per kilometre multiplied by the frequency of fishing trips. The distance travelled was multiplied by two as the question asked only the distance travelled one way. Question 5 in the survey asked what was the engine capacity the vehicle used for

fishing. From this figure the pro rata rate was estimated using figures from the Australian Taxation Office's Taxpack for 1991.

$$\text{\$TRAVEL} = 2 \times \frac{\text{Distance}}{\text{Travelled}} \times \frac{\text{Number of}}{\text{Trips}} \times \text{Cents per km}$$

<u>Engine Capacity (cc)</u>	<u>Pro rata rate c/km</u>
< 1600 cc	38.2 cents
1 601 - 2 000 cc	46.4 cents
2 001 - 3 000 cc	48.7 cents
> 3000 cc	52.0 cents

Source: Australian Taxation Office Taxpack for 1991 p.77.

The answers to the value of trout fishing gear question were in 1991 dollars and so a replacement value could be estimated. The depreciation was calculated as ten percent of the value of the answer to Question 9 as it was assumed that the life of fishing gear was ten years and salvage value was zero.

The expenditure of anglers that fish the region can be calculated using the formula below.

$$\text{VAL} = \sum_{i=1}^n \text{Grp}_i \times \text{\$FISH}_i$$

where VAL = total annual expenditure

Grp_i = Number of anglers in sub group i

\\$FISH_i = annual expenditure for one angler in group i

i=1..n are the sub-groups mentioned in Table 1.

3.3.2 The Contingent Valuation Method. This method was used to estimate the willingness to pay of fishermen to utilise the resource. Prior 1988, there was a New South Wales Freshwater Angling Licence that anglers had purchase to fish in freshwater legally. The licence fee prior to its abolition was ten dollars annually. Anglers were familiar with the concept of a licence and would be able to estimate their willingness to pay for a licence. (Question 10 in Appendix 1).

The contingent market for licences was assumed by the authors to be a proxy for an estimate of the willingness to pay to use the resource. It was assumed that the licence fees collected would be used to maintain the fishery in its current state in terms of management and the existence of the hatchery.

The danger of using a licence fee question was that anglers may, given the licence fee of ten dollars prior to 1988, have a downward bias in their answers. Question 14 (Appendix 1) was structured to give an estimate of a one-off donation to a fund that would guarantee trout fishing on the New England. A comparison of these answers would take account of any inherent biases between the two questions.

The formula used for calculating the Social Benefit under this method is shown below.

$$VAL = \sum_{i=1}^n Grp_i \times \$FISH_i$$

where VAL = total annual expenditure

Grp_i = Number of anglers in sub group i

\$LICENCE_i = licence fee for one angler in group i

i=1..n are the sub-groups mentioned in Table 1.

3.3.3 Costs of the fishery. There were assumed to be three costs associated with the maintenance of the fishery at the current level; cost of running the hatchery, cost of the services of a fisheries inspector and the costs of releasing fry into the region's streams. The first two costs were assumed to be provided by the New South Wales Department of Fisheries; the costs of release were assumed to be provided by anglers who were members of NETAS clubs.

The costs associated with releases done by NETAS club members was the cost of travel for one box of fry and zero labour cost for the actual release. It was assumed that the opportunity cost of the anglers' labour was zero

as they were using their leisure time to release trout. The estimated cost formula is shown below.

$$\text{Cost of Release} = \text{Boxes used} \times \text{km travelled} \times \text{cents/km}$$

It was assumed that a total of 1 100 boxes of fry were released each year at an average distance of 150 kilometres from Ebor. The cost per kilometre was calculated by using the set cents per kilometre rate in Taxpack 1991 (the average engine capacity of all survey respondents was used in this calculation).

3.5 Population size. One of the problems associated with a study of this type was an accurate estimate of the population that use the resource. In this particular study it was assumed that all trout anglers were over 18 years of age as minors would normally go trout fishing as part of a family outing and hence would not incur the full expenditure of an adult.

Surveying of anglers was a difficulty that the researchers found as was explained in Section 3.2. It was hard to estimate how many anglers actually fished the New England region and for what species. A random telephone survey was conducted in August that was used to estimate the number of people who went fishing, the proportion of people who went trout fishing and the proportion of people who were members of fishing clubs.

To overcome the problem in estimating the population size, it was decided that the electoral roll for the Federal seat of New England for 1991 would be used. Most respondents to the questionnaire lived within the boundaries of this division. The estimated population of the New England region was 243 000 people (Keith Smith, pers.comm., July 24th 1991).

3.6 Participation rates. Once the population size was established, an estimation of the participation rate of trout anglers was undertaken. Thirty percent of the population was considered to be the proportion of people that go fishing (Frank Prokop, personal communication,

April 1991). In this study, a species specific fishery was being valued and so it was thought that the proportion of population that go trout fishing would be lower than thirty percent.

A random telephone survey was used to estimate the proportion of people that fish, people that fish for trout and the proportion of people who are members of fishing clubs.

This survey was conducted over two evenings in the Armidale and Guyra districts. Each person was asked the following questions:

1. Did they go fishing? Yes/No.
2. Did they go fishing for trout? Yes/No.
3. Were they a member of a fishing club? Yes/No.

4.0 RESULTS

There were a total of 159 survey responses. Of these 105 were from NETAS club members, 28 were from non-NETAS clubs and 26 were from anglers that were not members of clubs. The response rate from all clubs is shown in Appendix 2. Several clubs from the Tamworth region, not specifically targeted, had members who returned surveys. It was thought that several members of fishing clubs in the Tamworth region had dual membership.

4.1 Annual Expenditure of Anglers. From the analysis of the surveys an estimate of annual angler expenditure to go trout fishing was calculated.

$$\text{\$FISH} = \text{TR} + \text{ACC} + \text{REF} + \text{DEPR}$$

where, $\text{\$FISH}$ total annual expenditure

TR total travel

ACC accommodation

REF food and refreshments

DEPR depreciation on trout fishing gear

Table 1
Results for Sample Sub-Groups

Question	<u>Responses</u>				
	total	M&C	NETAS-M&C	clubs	non-NETAS non-club
3)no. of days	15.20	12.70	16.80	13.80	14.50
4)Km's/trip	151.00	379.00	97.00	112.50	137.00
6)people/group	2.50	2.33	2.40	2.60	2.60
8i)length/trip	2.10	4.00	1.80	1.35	2.00
8ii)\$Accom/trip	24.00	125.00	7.72	5.00	2.69
8iii)\$food/trip	50.00	87.50	36.00	43.03	57.90
9)\$gear	1494.00	2483.71	1501.00	934.64	1180.20
10)\$licence	22.00	26.00	21.54	18.75	24.11
14)WTP/donation	58.00	69.00	61.40	49.29	45.77
\$FISH	937.66	1284.85	859.40	915.62	903.49
<u>yes/no questions (percentages)</u>					
7)purpose	86%	100%	85%	86%	77%
11)salt	18%	12%	20%	14%	19%
12)fresh	76%	67%	73%	93%	77%
13)other areas	64%	88%	60%	57%	62%

Table 2
Club v's Non-club

Question	<u>Responses</u>	
	average of all clubs	non-club
3) no. of days	15.40	14.50
4) Km's/trip	151.00	137.00
6) people/group	2.44	2.60
8i) length/trip	2.10	2.00
8ii) \$Accom/trip	28.00	2.69
8iii) \$food/trip	47.00	57.90
9) \$gear	1559.00	1180.27
10) \$licence	21.76	24.11
14) WTP/donation	60.00	45.77
\$FISH	948.01	903.49
<u>yes/no questions (percentages)</u>		
7) purpose	88%	77%
11) salt	17%	19%
12) fresh	76%	77%
13) other areas	65%	62%

In Tables 1 and 2 the results of this calculation are shown for various sub-groups of the sample. In Table 1, the results for \$FISH were in the range \$850-950 for each sub-group except for the Mallard and Claret Club (M&C) based in Brisbane whose value was \$1284.85.

In Table 2, a comparison of the survey results between club and non-club anglers is shown. These differences were tested using t-tests to see whether they were statistically significantly different; they were not.

4.2 Contingent Valuation. The two questions regarding licence fees and donations were assessed to estimate the benefits of the fishery.

From the analysis of the licence fee answers it was found that no person registered a zero bid. The range of answers to this question were from \$5 to \$100. The mean value for clubs was \$21.76 and for non-clubs \$24.11. Comparison of the sub-groups in Table 1 show that the range of the mean values was \$18.75-26.00. Mallard and Claret again had the highest mean value. The lowest mean value was for non-NETAS clubs. T-tests were used to assess whether answers from non-club versus club members were significantly different; they were not at the five percent level of significance.

The analysis of the donation answers indicated that some respondents registered a zero or protest bid. The range of answers was \$0-\$500. Several comments were written beside this question in regard to the free-rider problem. Their line of argument was that "we are paying for the fishery, how can other people who wouldn't donate money be stopped from using the fishery." On the basis of these arguments it was decided that this question was not suitable to be incorporated into the analysis.

To estimate the Net Social Benefit, the answers to the licence fee question were used. The means used were only for the club and non-club members as this was the distinction made in the telephone survey.

The responses to this survey are shown in the first column of Table 3. From this table it can be seen that seven percent of the surveyed sample fished for trout and it was assumed that this was indicative of the population. This proportion was then extrapolated to the population of the Federal Seat for New England. It was calculated that there are 17 010 anglers resident in the New England region that fish for trout.

These anglers were broken down into the following sub-groups, as shown in the third column of Table 3;

- (a) Trout anglers who weren't members of clubs;
- (b) Trout anglers who were members of clubs.

Within this second group a distinction was made between NETAS club members other than those in Mallard and Claret and non NETAS-affiliated club members.

Table 3
Population of New England Trout Anglers

Question	Responses to phone survey	Percentage	population
Total	86	100	243 000
Anglers	24	27.9	67 797
Trout Anglers	6	7	17 010
member of a club	2	2.3	5 589

The total population of trout anglers that use the fishery comprised of the following;

Non-club member trout anglers	11 421
Non-NETAS club member anglers	4 953
NETAS club member anglers	636
Mallard and Claret anglers	51

The total of the above subgroups is 17 061. The difference was accounted for by the Mallard and Claret Club members who were not included in the population of

the Federal seat for New England. It was not possible to estimate the number of people living in other parts of New South Wales or Queensland who fished the region for trout.

4.3 Costs of the Fishery. As mentioned in Section 3.3.3, three costs were assumed to be included in the running of the fishery. Bulk stockings done by Fisheries personnel would be included in the running costs of the hatchery. Listed below are the costs used in the analysis.

Running cost of L.P.Dutton Hatchery	\$120 000
Cost of inspection services	\$33 000
Cost of release by NETAS member clubs	\$70 000

The total cost of maintaining the fishery at its present level was \$223 000 per year.

There was some debate after the research was completed as to the estimate of costs.

The hatchery runs at a loss and so in the last two years sales of fresh and smoked trout for the table have been made to minimise the deficit. For this study it was assumed that these revenues remained at the disposal of the hatchery manager to offset the operating loss of the hatchery. The revenue of these sales actually goes into consolidated revenue (Frank Prokop, pers.comm., 19th December 1991). The implication of this is that the operating loss of the hatchery was under-estimated by \$40 000.

It was also assumed that the cost of inspection services provided by the New South Wales Department of Fisheries was equivalent to one inspector whose salary of \$33 000 was made up of \$27 000 salary plus \$6 000 travel. Fisheries inspectors are not species specific and so several inspectors may police trout waters in the region as part of their duties. The amount may also be underestimated as it does not include the costs of administrative services provided by the clerical staff in the New South Wales Department of Fisheries. This is a

hidden cost and is difficult to incorporated into the running costs of the fishery.

The implication of the above two points is that the cost of the services provided by the State Government that maintain the fishery may be underestimated.

4.4 Valuation of the Fishery. The results presented in Sections 4.1 and 4.2 were combined to estimate the annual benefits of the fishery under both the expenditure and the Contingent Valuation methods.

4.6.1 The expenditure method. The annual expenditure calculated for anglers that fish the region is shown below.

Group	\$(av)	population	(\$) <u>Total</u>
M&C	1 284.85	51	65 527
NETAS-M&C	859.40	636	546 578
Non-NETAS	915.62	4 953	4 535 066
Non-club	903.49	11 421	10 318 759
TOTAL			<u>15 465 930</u>

The total benefit amounted to \$15 465 930 per year in 1991 dollars. When the annual costs of \$223 000 were subtracted (Section 4.3) the net benefit under the expenditure method was calculated as \$15 242 930.

4.6.2 The Contingent Valuation method. The results are shown below.

Group	\$(av)	population	(\$) <u>Total</u>
M&C	26.04	51	1 328
NETAS-M&C	21.54	636	13 699
Non-NETAS	18.75	4 953	92 869
Non-club	23.78	11 421	271 591
TOTAL			<u>379 487</u>

The estimate of Social Benefit using Contingent Valuation amounted to \$379 489 per year in 1991 dollars. The Net Social Benefit, calculated as benefits less costs, was \$156 489. Even if the costs of running the hatchery were underestimated by \$40 000, the result was still positive.

4.7 Homogeneity. A problem that was encountered in the study was a question regarding the homogeneity of trout fishermen. The survey results were analysed in sub-groups to assess whether there were statistically significant differences between survey responses for fishermen that were not in clubs, or were not in NETAS affiliated clubs.

The general conclusion was that there was no significant differences except for the Mallard and Claret Club. It was decided that this Brisbane-based NETAS club was so different that it should be treated as a separate group from other NETAS clubs. The different sub-groups are shown in Appendix 2.

4.8 Motivation to fish. A problem that was suggested by NSW Fisheries personnel at the May 1991 meeting of the NETAS Council, was that there would be considerable bias in the estimate of the benefit of the fishery because fishing club members were targeted for the survey. A statement was made that these people had greater motivation and hence would be willing to spend more to go fishing. The results presented in Table 2 infer a different result. It may be argued that those non-club anglers who returned surveys were more motivated to fish than the average angler.

From the preference answers in Table 1, it can be seen that the Mallard and Claret Club had the highest preference percentage for travel to the New England region to pursue trout, for travelling to other trout fisheries and their responses to the licence and donation questions were also the highest. The authors conclude that this group of anglers were the most highly motivated of any group that fished for trout.

5.0 CONCLUSIONS AND LIMITATIONS TO THE STUDY.

The main conclusion reached by the authors was that it was possible to value freshwater recreational fishing by annual angler expenditure and the Contingent Valuation method. Despite problems of estimating the number of anglers that used the resource it was possible to estimate the benefits derived from the resource.

The benefit from the annual net expenditure of trout anglers in the New England region was estimated at \$15 242 930. A Contingent Valuation of the fishery denoted a positive Net Social Benefit of \$156 489. From these two results the null hypotheses stated in Section 1.0 were rejected in favour of the alternative hypotheses. That is, the annual benefits derived from the fishery were greater than the costs needed to maintain the fishery. Thus the net benefit of the fishery was greater than zero and it should be maintained at its current level.

In this paper, the authors have concentrated on the valuation of recreational fishing for a particular type of fish; trout. Participation rates for species specific fisheries are lower than recreational angling participation rates. The results show that it is possible to use economic reasoning in valuation of recreational fishing resources. Several other conclusions were reached in regard to the survey responses.

Using t-tests, it was found that there was no significant difference between non-club and club anglers' expenditure (see Table 4.2). The authors concluded that targeting club anglers for most of the survey work, did not bias the survey results as was expected. This result was surprising and may be of use to future researchers in the area of valuation of recreational fishing resources.

It was found that the only sub-group that was significantly different from other groups was the Mallard and Claret Club based in Brisbane. This was consistent

across the various methods of analysis; willingness to pay for the resource, annual expenditure and preferences for alternative types of fishing in the absence of the New England trout fishery.

Their annual expenditure was higher than the other anglers surveyed but the reasons for this were not clear. A possible suggestion was that these fishermen had to travel more which would account for some of the increased expenditure but would not explain the higher value of trout fishing equipment. Questions regarding lifestyle, occupation and disposable income were not included in the survey but may be variables that need to be included in future research work undertaken into analysing the demographic characteristics of recreational fishermen.

For the Contingent Valuation of the fishery, a question regarding an annual freshwater angling licence was used. All answers to this question were positive. The range of answers was \$5-100 per year. The authors conclude that the respondents to the survey were willing to pay for the use of the fishery even though under the current management of the fishery it is free. This is an important result for fisheries managers in assessing the "user-pays" system for maintenance of recreational fishing resources. However, care should be taken as two problems may arise, the free-rider problem and effective policing of the resource.

Another important conclusion that was reached in regard to the Contingent Valuation was the difference in responses to the annual licence and donation questions. There were several protest bids registered for the donation question and none for the licence question. It is thought that recreational anglers have been familiar with paying for freshwater fishing by annual licence fees but are not familiar with donating money to funds that would be used to manage fishing resources.

In the study undertaken it was assumed that the current management of the resource continues as at present. An important area for future research would be in assessing

alternative management strategies that could be used to maintain trout stocks in the New England region. One such topic that could be investigated would be the costs and benefits of buying fish from private hatcheries or other State run hatcheries instead of using the New South Wales Department of Fisheries' L.P.Dutton Hatchery at Ebor.

In conclusion the authors have shown that it is possible to estimate the net benefits derived recreational fishing resources using the expenditure and Contingent Valuation methods outlined in this paper.

APPENDIX 1

Questionnaire

- Q1 What is the postcode of your home address?
- Q2 Are you a member of a fishing club? Yes/No
If so which club?
- Q3 How often do you fish for trout each season (days)?
(take average number of days over last five seasons)
- 0-5 5-10 10-15 15-20 25+
- Q4 How far on average do you travel, one way, to go
trout fishing?
- Q5 What is the engine capacity of the vehicle that you
use for fishing?cc
- Q6 When you go on a fishing trip how many people, on
average, fish with you?people (including you)
- Q7 Is fishing the main reason you travel for leisure
purposes in the New England region? Yes/No (circle
correct answer)
- If you circled "NO" what other reasons do you come
to the New England region?
(e.g. visiting friends/relatives, holiday, fossicking,
fishing for other species)
- Q8 when you go fishing for trout ;
- (i) Average length of trip? days
- (ii) Total cost of accommodation? \$
- (iii) Total cost of food/drinks? \$

QUESTIONS 9-14 on back of this page, PTO.

Q9 If your house was burgled tomorrow, how much would it cost you to replace your trout fishing equipment?

Spinning rods
 Spinning reels
 Lures
 Flyrods
 Fly reels
 Fly lines
 Flies
 Fly tying gear
 Fishing bag/vest
 Waders/gumboots
 Tackle boxes
 Accessories

TOTAL \$.....

Q10 If the Freshwater Angling Licence was re-introduced which would ensure recreational fishing on the New England how much would you be willing to pay annually for this licence? \$.....

Q11-14 If Dutton Trout Hatchery closed, the trout numbers would drop to such a level that recreational fishing would not be viable. If this occurred would you? (circle right answer)

Q11 Go Salt-water fishing only? YES / NO

Q12 Fish for other freshwater species? YES / NO

Q13 Travel to other trout fisheries? YES / NO

Q14 Be prepared to make a one-off donation to a fund that would ensure New England waters are stocked with trout. If so how much would you be willing to donate? \$.....

THANK YOU FOR YOUR TIME. PLEASE RETURN THE SURVEY IN THE ENVELOPE PROVIDED BY 30th JUNE 1991.

APPENDIX 2

Response rate to Questionnaire.

a) Distribution;

NETAS Clubs	340
Non-NETAS Clubs	40
Anglers not affiliated to a club	90

b) Replies;

NETAS Clubs	105
Non-NETAS Clubs	28
Anglers not affiliated to a club	26

Replies per club;

NETAS Clubs:	Armidale	27
	Mallard and Claret	24
	Inverell	14
	Tamworth	12
	Walcha	9
	Mid-North Coast	7
	Dorrigo/Ebor	5
	Guyra	3
	Coolah	2
	Glen Innes	2
Non-NETAS Clubs:	St Kilda	20
	RRR (Glen-Innes)	4
	East-West Airlines	2
	West Tamworth Leagues	1
	Nundle	1

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