INLAND FISHERIES COMMISSION
NEWSLETTER

VOLUME 22 NUMBER 1 – APRIL 1993

IN BRIEF

Arthurs Lake water level agreement

Following negotiations with the Hydro-Electric Commission an agreement has been reached to set a new minimum level for this lake.

The main concern of the HEC is that the lake should not be allowed to spill as that water could not then be used through the more productive Great Lake storage. Anglers may see little chance of a spill on recent levels but the HEC must assess the long term climate cycles given that the pump capacity is limited.

Following this assessment they have determined that the risk of a spill is acceptable with a new minimum level of SL948.0m. This is some 5m higher than the old minimum operating level and equates to the level of Arthurs Lake at about mid-February 1993.

Hopefully levels will rise above SL948.0m this winter but it may take a couple of seasons to see the best of Arthurs Lake as the aquatic insect numbers build up again in the weed beds.

Clarence Lagoon track upgraded

Following the publication of the World Heritage Area Management Plan the prescriptions for access to Clarence Lagoon were considered by the relevant Government agencies. It was decided that access to the lake shore should be available for camping but that further access over the creek or to the south should be prevented.

As part of its contribution IFC staff, along with some willing local volunteers, placed about six ute loads of rocks in wheel ruts on the last 30m of the track. Two large free standing fire places were formed and the area was generally cleaned up.

Thanks to the volunteers (pictured) for their assistance and it is hoped that in future the area can be kept clean and living trees left intact.

Track upgrade – Left to right: Jim Davis, Ray Lowe, Mick Sward, Chris Wisniewski and Peter Lowe

Cumbungi spraying – Brushy Lagoon

Cumbungi sprayed at Brushy Lagoon

An infestation of the problem water weed, Cumbungi *(Typha orientalis)* has been expanding around the shores of Brushy Lagoon. This weed has the potential to completely block shore access if left to grow.

Associate Commissioner Norm Scott and Acting Senior Inspector Charles Thompson attacked the weed with herbicide earlier this year and a follow up application has since been made.

There has been good success so far and it is hoped that total eradication can be achieved in due course.

Open Day 1993

The regular IFC Open Day will take place on Sunday 9 May 1993.

Visitors will once again be able to see the brown trout spawning run in Liawenee Canal and watch the stripping and fertilizing of eggs for the Plenty Hatchery. The Commission's research and management activities will also be displayed in the laboratory.

Enforcement, research and hatchery staff will be present to explain the Commission's activities on the day.

A hot food stall will be present and visitors may also wish to put in a tender on some boats and other equipment that is surplus to Commission requirements.

In any case, an interesting day is always guaranteed.

Plenty Trap Reconstruction

The Bridgewater Anglers Association has recently taken on the reconstruction of the Plenty River fish trap as a club project.

The trap was used for many years to monitor runs of fish in the Plenty River and hence keep an eye on the health of the Derwent River populations. The trap fell into disrepair following flood damage.

The club has had a couple of working bees at the trap, the most recent being on 20 March 1993. The washed out area has now been refilled and the site prepared ready for boxing and concreting of the race-way structures.

The project is a great club activity and it is likely that eggs will be obtained from migrating fish for possible enhancement of sea-run brown trout stocks.

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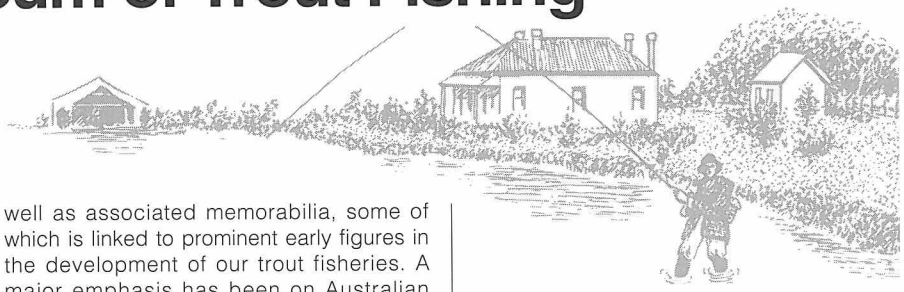
Australian Museum of Trout Fishing



Since the last report on developments at Salmon Ponds, considerable further progress has been made with the museum project.

The Precinct Study has been completed by consultants, Godden Mackay. This report details the significance of the various elements of the Salmon Ponds site and outlines a strategy for conservation and restoration of the site. The final report has been accepted by the IFC and adopted in principle.

Work is now proceeding on several phases.

Restoration works

A builder has been engaged to undertake restoration works on the main house and on Stannards Room. Jack Bobbi, a builder with considerable experience in this type of work, has been contracted. Jack is sure to enjoy working at the ponds and it fits in well with his favourite pastime – trout fishing.

Some old outbuildings have already been demolished with the assistance of members of the Bridgewater Anglers Association and plans have been approved for the construction of a new toilet block near the hatchery. All buildings will also receive a new coat of paint based on colours similar to the original shades.

Interpretation/Museum

A contract has also been let to Sarah Waight of Heritage Interpretation of Tasmania to produce an interpretation plan and a museum concept for the site.

Interpretation of the site will focus on the hatchery building and perhaps Stannards Room with the museum developments utilising one or both of the houses. The grounds will remain low key and uncomplicated as they are now.

Collection of exhibits

Slowly but surely we are assembling very good collections of rods, reels and tackle as well as associated memorabilia, some of which is linked to prominent early figures in the development of our trout fisheries. A major emphasis has been on Australian made fishing gear of all ages and quality. This will be a major focus of the collections.

Whilst we are making good progress in this area we would still be pleased to hear from anyone with anything that may be of interest – it doesn't have to be really old or very expensive to qualify. The Commission will accept donations and also has a modest budget for purchases.

Future management

A Management Committee or Board will be established to oversee future directions once the general framework has been determined. This group will consist of representatives from angler groups around the State.

The opening in February 1994 is not far away and further updates will appear in future newsletters.

Reel making – Hardy factory, c1900 *(Courtesy Hardy Museum, UK)*

The 1992 Whitebait season

The recreational fishery for whitebait was opened again in 1992. The season was for four weeks as in 1991 and the Little Henty River was included in the list of open waters.

The restrictions that the Commission put into place on this fishery still applied, as the fishery is still under trial. It will remain so until we are certain that it can sustain the current catch levels.

Licence Sales

A total of 470 licences were sold during the season, mainly from the north-north west region. A summary of the sales is as follows:

Region	Licences sold
Queenstown-Savage River	16
Smithton-Wynyard	219
Burnie-Latrobe	73
Launceston	16
Scottsdale-Bridport	86
Derwent	52
Huon	8
Total	**470**

The sale figures were less than last year, by 17%. A marked decrease occurred in the Burnie-Latrobe area, with increases in the south.

Questionnaire Results

The licence form information sheet included a questionnaire that could be returned to the Commission voluntarily. Some 5% of licence holders chose to do so.

The return rates were too small to be broken down for individual waters, other than for the Great Forester where around 140 people fished to catch an estimated total of 1 100 kg at an average of 7.5 kg per person for the season. The overall average figures were as follows:

Average number of days fished:	10
Average number of hours per day	4.2
Average catch per person	5.7 kg
Proportion who had caught between 8-10 kg	35%
Average catch per day	0.6 kg

Many reported that part of the season was poor due to high river levels. However, most reported good runs late or early in the season as floods subsided. Most people who fished the Don, and many that fished the Great Forester River, were able to catch their 10 kg quota. There was a good run of bait in the Derwent this year and several people also caught their quota.

The Commission's policing staff were heavily involved in policing both the legal recreational fishery and the illegal fishery. It was noted that several people would catch significantly more than their quota on some of the open waters and that this contributed to the poor catches experienced by others.

In summary, with an average catch of around 5kg it is considered that the season is still justified. It should not be expected that unrestricted access will be given to whitebait, certainly not in the foreseeable future. Therefore, fishers should not regard the fishery as anything other than an enjoyable form of recreation.

GUM BEETLES

by David de Little, Forest Research Manager, APPM

The common name 'Gum Beetle' or 'Great Lake Beetle' used by Tasmanian anglers for many years, refers to a complex of leaf-eating beetles which feed mainly on the foliage of gum trees (Eucalypts). About 35 species occur in Tasmania and they belong to the subtribe Paropsina of the beetle family Chrysomelidae. They are oval, dome-shaped beetles about 10 millimetres in length and of varying colours from bright, iridescent specimens to dull, brown specimens. In some seasons vast numbers of these beetles are drowned in the lakes of the Central Plateau, hence the common name by which anglers know them.

The most common species is *Chrysophtharta bimaculata* a shiny species, with colour varying from brown to pale, pearly green. Two distinct black marks on the prothorax distinguish this species. Another very common species is *C. agricola* which is similar but a dark crimson-brown to grey with silvery metallic tessellations. Young beetles also have a red margin to the wing cases. Two very handsome species are *C. nobilitata* and *C. aurea*, the former species having four large metallic golden-green spots on a background of red and black on the wing cases, and the latter having metallic golden-yellow to green wing cases often suffused with a brilliant crimson-orange pigment towards the base of the wing cases. Larger duller species with rougher wing cases, often strongly patterned with grey, fawn, cream, yellow and brown belong to the genus *Paropsis*. Smaller, dark-brown warty beetles belong to the genus *Trachymela*.

Habits

Gum beetles feed on the leaves of gum trees as both the larval (grub) and adult beetle stage. Since they are only capable of feeding on soft, new leaves, they are only active during the spring, summer and early autumn seasons when such foliage is present. They over-winter as the beetle stage in clusters under loose bark, in tree crevices and in clumps of sword grass. Rising spring temperatures trigger activity, and the beetles emerge and aggregate in warm air currents around the canopies of trees from which they make specific flights to areas containing significant quantities of attractive foliage. There is evidence that colour of the foliage may play a role in attracting the beetles. These flights only take place when the temperature is above 20°.

C. agricola *depositing eggs on blue gum*

Upon arrival on the target foliage beetles test feed and, if suitable, mating and egg laying occur. If the foliage is not suitable for larval feeding, or after considerable egg laying has occurred, beetles will again use warm air currents to be carried up and search for more attractive foliage. In this way in the course of spring and early summer, beetles progress from lowland valley sites to alpine sites, following the spring foliage flush. It may well be that some of the mass-strandings which occur on lakes surrounded by gum trees are caused by the beetles being attracted to reflections of the trees. In coastal areas the beetles start to be active from late September, but they are usually not about in the Central Plateau until early December, following which beetle flights can occur right through the summer months.

Eggs and larvae

Eggs are oval shaped, often brightly coloured and deposited in distinctive patterns, often unique to each species, on or near to the soft young leaves on which the grubs will feed. They take about ten days to hatch. On hatching, the young grubs first consume their egg shells, and then commence feeding on the gum leaves. In some species, the grubs from an egg batch will stay together in a colony to feed and move about the foliage. The grubs shed their skins four times in the course of their development which takes three to four weeks. During this time, colonies may coalesce, forming larger colonies, with a variety of sizes, and sometimes even different species. Many of the grubs of the different species are quite distinctively coloured and patterned. The grubs of *C. bimaculata* for instance are olive green with a black head, while the larvae of *C. agricola* are black. Some species of *Paropsis* have very brightly coloured larvae.

Pupae

After larval development is completed, larvae become sluggish, and eventually drop from the foliage to the ground where they burrow into loose soil and enter a pupal or chrysalis stage. This can last from two to four weeks depending on soil temperature.

Adults

Adult beetles then emerge from the soil and climb up low vegetation from which they fly back to the trees on which they fed as grubs to again commence feeding. By this time, even as early as February, decreasing day length triggers a diapause reaction in these young beetles whereby they develop fat reserves for maintenance during the winter instead of undergoing sexual development. The young adults continue to feed on the foliage during favourable weather in autumn, before gathering in hibernation sites for the winter.

Adult gum beetle **(Chrysophtharta variicollis)**

Populations of beetles vary considerably from year to year, as do many other insect populations. The reasons for these fluctuations are complex and virtually impossible to predict but important factors are the weather, pathogens and population sizes of predatory and parasitic insects. Under normal circumstances there is a mortality of about 99% from eggs laid to reproductive adults and under these conditions populations remain in check. However, if this mortality rate drops to 95%, five times as many reproductive adults are present to create the next generation and an outbreak develops. In outbreak situations, the growth of the host gum trees can be severely retarded due to the repeated removal of new leaves, but anglers may be in for some good sport in these years.

Further reading

de Little, D.W. 1983. Life-cycle and aspects of the biology of Tasmanian eucalyptus leaf-beetle, *Chrysophtharta bimaculata* (Olivier) (Coleoptera: Chrysomelidae). *Journal of the Australian Entomological Society.* **22**: 15-18.

de Little, D.W., Elliott, H.J., Madden, J.L. and Bashford, R. 1990. Stage-specific mortality in two field populations of immature *Chrysophtharta bimaculata* (Olivier) (Coleoptera: Chrysomelidae). *Journal of the Australian Entomological Society.* **29**: 51-55.

de Little, D.W. 1989. Paropsine chrysomelid attack on plantations of *Eucalyptus nitens* in Tasmania. *New Zealand Journal of Forestry Science.* **19**(2/3): 223-227.

Stream flows and trout stocks

Peter Davies, Senior Scientific Officer, Inland Fisheries Commission

Over the past two seasons the Commission has received a number of enquiries from angling clubs and individuals about the apparent low numbers of trout in south eastern rivers of the State. Rivers like the Clyde, Jordan, Coal and Macquarie near Ross have been cited as having few catchable fish and not many young fish either. In order to investigate this, the Commission has instigated a survey of trout populations in several southern rivers. This survey will re-examine sites that have been previously electrofished during the 70's and 80's. This will allow us to assess to what extent the populations have truly declined and to what extent river flows are responsible.

Why stream flows?

Readers of this newsletter over the years are probably heartily sick of hearing about the North Esk and St Patricks rivers and the much quoted work of Dr Aubrey Nicholls of the CSIR. Working alongside Hector Jones of Salmon Ponds, Nicholls first electrofished sites in this river system in the mid 1950's as part of a study to assess the effectiveness of stocking with hatchery reared fingerling brown trout. He concluded that such stocking was wasteful, with less than 2% of the fish surviving to catchable size, due to the presence of an existing large head of young fish in the tributaries. The Commission revisited Dr Nicholls' sites in 1985 and found an even larger head of fish there, despite the very low levels of stocking since the 1950's.

However, on closer analysis, the story got more complicated and more interesting. The change in number of fish was particularly marked for fingerlings and fish three years and older. It appeared that river flows had something to do with it and suggested that the two dry years of 1982 and 1983 were responsible for the poorer numbers of one and two year old fish.

There appeared to be a strong relationship between changes in the number of trout and the average flow in the river in the year in which those trout were hatched (the natal year). The more flow the more trout, or conversely, less flow, less trout. Obvious? Not really, the key question was – when in the year did low flows lead to less trout? Was it summer, spawning time in autumn or hatching time in spring?

To follow up on this we then carried out a detailed study of the St Patricks River trout populations during 1989 to 1992. This study was designed to answer several questions:

- why do brown trout populations vary so much from year to year?
- what effect might this have on the number of catchable fish?
- what implications might this have for management?

Six study sights were set up in tributaries of the river and three sites were established in the main channel itself. There followed three years of intensive fish shocking, trapping and marking, surveys of spawning areas and analysis of river flow data.

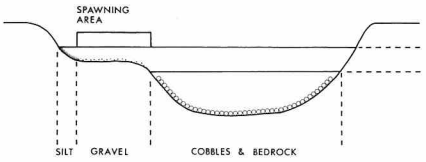
Low flows during summer

We examined the effect of low flow during summer on fingerling trout by looking at the amount of habitat in the river for the fish and seeing how it related to changes in trout numbers. We set up many standard lines across the streams and measured velocities, depths and bottom type at a range of different flows. Knowing the type of habitat that young trout preferred we were able to calculate the amount of habitat available at each site and then see how it varied over three summers in which the numbers of young trout were high, low or very low. There was **no** relationship between the amount of habitat available and the number of young fish in late summer. Low flows during summer did not appear to affect the number of trout. Of course, if the flow were to stop completely, then there would be a rather dramatic effect but this is the exception rather than the rule with the St Patricks River streams.

High stream flows at spawning time

Flows during spawning time

Could low flows reduce the ability of fish to spawn? Trout prefer to spawn in gravel in moderate to high current speeds. Most gravel of a size suitable for spawning is located on the edges of Tasmanian streams in bands or bars. This is because the lighter material is washed to the stream banks during floods, often settling on the inside of corners where water velocity drops. Spawning only occurs when the low flows of summer are finally relieved by rising flood waters in late autumn to early winter. Trout need consistent high water in order to spawn. Some early spawning activity can be observed on gravel bars during the first few floods, but as these soon drop back, the spawning act is rarely completed at this time.



Stream cross-section showing usual location of spawning areas.

Trout generally appear to be able to delay their spawning until suitable flood flows arrive. In Tasmania, they eventually do spawn by around late May to early July, unless the winter is exceptionally dry. Low flows in themselves do not completely disrupt spawning.

Flows at hatching time

Following spawning, trout eggs are buried in the gravel in small pockets called redds. The eggs lie buried for between two and four months, depending on the water temperature.

Research overseas has shown that fertilised trout eggs can withstand long periods of low water levels – up to two weeks – without any mortality. The early Tasmanian salmon and trout transportation experience with the keeping of trout and salmon eggs in wet moss for several months attests to this. So, if the flows do drop during winter, the eggs buried in the gravel can still survive adequately for up to a fortnight. Rarely is there a fortnight in a Tasmanian winter that does not experience rain (there was such a period in 1982)! So, falling water levels during mid-winter are unlikely to be a problem.

Flows during the post hatching period

After the eggs hatch, small fish with egg sacs still attached, called **alevins**, emerge from the egg shell. The alevins stay buried in the gravel for another four to six weeks while they absorb their yolk sacs. They then wriggle out of the gravel and up into the stream current in search of food.

In contrast to the egg stage, alevins are very sensitive to declining water levels. In fact, severe mortality is observed in alevins still buried in river gravel within 24 hours of dewatering. This alevin period occurs in the six weeks between the first of September and mid-October – could this be the key period?

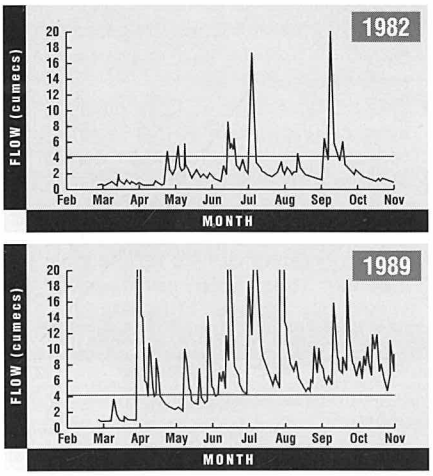
How could we establish this in the St Patricks River? The first step was to set up some standard survey points across known spawning beds and then see how low the

river flow had to drop, before these beds were exposed. We did this at several sites along the river and measured the water levels at a number of flows. The average flow at which the spawning beds were exposed was 4.2 cubic metres per second (cumec).

We then examined the relationship between the number of days in which the flow was lower than 4.2 cumec during the period when the eggs were buried in the gravel and the number of young trout surviving from that spawning. There was no such relationship. In other words, the lowering of water levels during egg development had no significant effect on the number of young trout after hatching. This was not surprising, given what is known of the ability of eggs to survive dewatering.

The story was very different when we looked at the relationship between the number of days in which the flows fell below 4.2 cumec in September and October, ie the alevin period, and the number of young trout. For this the relationship was very strong and it immediately became obvious that if we knew the flows in these two months, we could predict, for most of the time, whether the yield of young trout was going to be poor, fair or good.

It therefore seems that the number of trout produced in any one year in the St Patricks River depends on the river flow and consequently the rainfall during September and October. The lower the flows at that time, the greater the chance that alevin trout still buried in the gravel would die and therefore fewer young fish would survive to become fingerlings.



Water levels in the St Patricks River in 1982 and 1989

But what about floods?

We have information about the level of young fish in the St Patricks River system from thirteen years data (that of Nicholls plus our own surveys). For eleven of those years, we can say that the number of fingerlings produced is determined by whether the flows were too low or not. But for two of the years, the number of trout was actually much lower than predicted. Both years should have shown high numbers of young trout, but both of these years had experienced high flood levels during the September – October period. One of them was a one in ten year flood, the other (1992) was a one in thirty year flood – the big one that many of you will recall in October. Both of these floods had the capacity to completely scour out or bury the gravel spawning beds that trout have been using in all the more peaceful years.

Temporary trap used to catch spawning trout on the St Patrick River

After last year's flood, we went back and looked at our sites. Indeed there had been major changes to the bed of the river, including the spawning sites. So, every now and then those rarer, really big floods, if they occur at a critical time, are also going to knock down the numbers of fingerlings as they sweep away or bury the eggs or alevins resulting from the previous autumn's spawnings. This will be a relatively rare occurrence however, and it is the low flows in spring that are the real problem for our trout stocks.

- Is this the reason for changes in trout populations in other rivers?
- What does it mean to the angler?
- What can be done to improve the stocks again?

Other rivers

Following the string of enquiries about the stocks of trout in the south east rivers, we examined the flow records for four of them. In each case it appears that river flows during September and October have been low on at least one occasion in most of the last five years. This was not the case in the late 1970's and early 1980's. This suggests that the supply of young trout in these rivers has been affected in the same way that we have found in the St Patricks River system. The real answer will be revealed when we have completed our electrofishing survey of our old sites in these streams. We will then see if there is a link between the pattern of spring flows and the changes in the numbers of fish of different ages.

Lakes

Most of our lake fisheries depend on natural recruitment – that is the young produced from each year's spawning run. This recruitment shows some variation from year to year for a number of reasons. We have examined the pattern of recruitment in Lake Sorell and there appears to be a relationship between the number of each year's crop of young fish and the flows during September and October in Mountain Creek. There is no relationship with spawning flows. We believe that the supply of spawning fish is so large in this stream that its egg rearing potential is always fulfilled. So, the link between flows and supply of young fish appears to hold for some lakes as well.

Angler's catch

What does all this have to do with the angler's catch? It is important to realise that any effect of changes in the number of young fish produced by any one spawning is not going to be seen in the population of catchable fish for a number of years. It depends on how long they take to grow to catchable size in their particular water.

Based on our fish scale collections from many waters, it is apparent that in most fisheries, anglers are catching fish at a number of ages above the legal size. For example, in most rivers, up to 80% of the angler's catch consists of two and three year old fish, while in lakes they are much older. In Lake Sorell, most fish caught are five years and older. This means that if just one year's supply of young fish is poor, then there will be little effect in terms of the number of fish that can be caught a few year's later because there may be plenty of other fish that were produced in the year before or the year after. It is only when a drop in the number of young fish happens in two or more years following one another that the stock of catchable fish is going to decrease to the point where anglers notice it.

In order to see if there is an effect on angler's catches of changes in the supply of young fish, we must use information gathered over a number of years in a standard way. That is why we have sent out questionnaires to anglers every year for the past seven years. We are just starting to get clear evidence of a link between the success of recruitment (the numbers of young fish) in any one year and angler's catches. For example, there is a significant relationship between the catch per day in the North Esk River system and the flows in that river. More interestingly, we can account for the changes in the average catch per day of all anglers at Lake Sorell in the same way. The number of days of low flows in Mountain Creek allows us to make a prediction of the average catch per day in the lake. The low catch figure in the 1987-88 season was due to two years of poor recruitment five years before – in 1982 and 1983, the big drought years. This sort of information is priceless in assisting us to understand our fisheries.

Can we improve the stocks?

If there is a long period of several years in which flows in spring are low enough to

reduce recruitment, then the stock of catchable fish several years after the start of that dry period will be low enough to decrease angler's catches. There is a possibility that we may be able to stock waters with brown trout to improve the stocks until conditions improve. However, there are several limits to this. Firstly, there is no point in stocking waters that have had only one or two dry springs because they will bounce back again on their own once flows improve in subsequent years. The level of stocking must be carefully limited to avoid wastage of stock and therefore money. The type of fish stocked is also all important. Stocking with hatchery reared fingerlings will not be successful when there is a good head of trout already in the stream. This was conclusively proved by Aubrey Nicholls in the 1950's – a study on which the river stocking policy of the Commission has been based for some years. However, there may be some success if the head of fish has been heavily reduced due to several years' low spring flows. Such a stocking would have to be assessed on a trial basis with marked fish, in much the same way that Nicholls' did his experiments; bearing in mind that the mortality of such young fish is always high.

An alternative may be to stock with adults transferred from other heavily populated waters. Some of the smaller streams in the west spring to mind. The survival of such river adapted fish is likely to be high and would produce a noticeable return to the angler's rod, if the numbers stocked were sufficient. However, the expense of this type of operation tends to prohibit its widespread use.

Summary

As a general rule Tasmania usually has good spring rains and it is just occasionally that we get several years of dry spring months. Unfortunately we now appear to be experiencing such a period. The head of fish required to restock our river systems that have suffered heavy declines in trout stocks is simply enormous - in the order of hundreds of thousands to several million fingerling fish per river. This is far beyond the resources of the Commission with the possible exception of small scale selected waters. The only viable alternative, although unpalatable to many anglers, is simply to wait for nature to do its work and let the spring rains in coming years allow the populations to bounce back.

Stream flows falling to expose reeds

Giant freshwater crayfish

What is their real status?

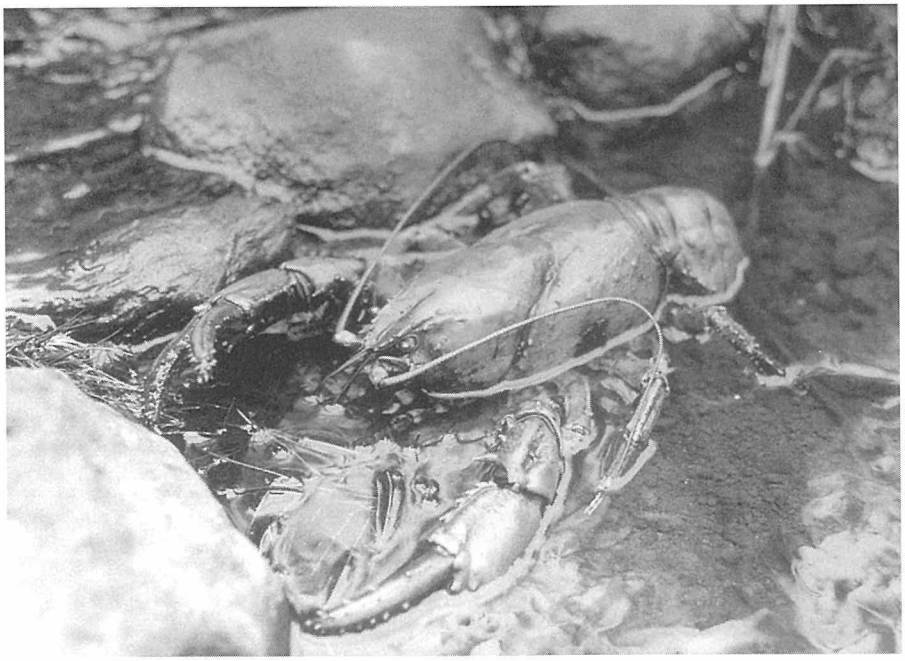
Recent media reports have suggested that the giant freshwater crayfish *(Astacopsis gouldi)* is about to become extinct. As far as the Commission is concerned this is totally false and misleading. For instance in relation to an article that appeared in *The Sunday Tasmanian* on 14 March 1993:

- The giant freshwater crayfish is in no way set to become extinct and is certainly not an endangered or rare species.
- It is relatively common within its known range but not every specimen will be 2kg or more!
- The International Union for Conservation of Nature (IUCN) status of 'vulnerable' (not 'threatened' as stated in the article) dates from 1970's information. It relates to a broad group of crayfish of which this is one species. No supporting data was given at the time.
- The survey on which the article was based is of a limited area in the Weegena district covering only six small streams. It does not represent an effective survey of the whole range of the species.

The facts are as follows:

- *Astacopsis gouldi* is widespread and relatively common in streams flowing into Bass Strait and also in the Arthur River in the north west; (it does not occur in the Tamar drainage).
- The species is known as the largest freshwater crayfish in the world with specimens in excess of 4kg recorded.
- It is a slow growing, aggressive species which doesn't reach maturity until around 14 years of age. Large specimens may be in excess of 30 years of age.
- It is therefore not surprising that the number of large specimens has declined. However, this in no way indicates that the species is endangered.
- Similarly, localised populations may have declined in some areas but again this does not constitute a danger to the species.
- An estimated total of 2 000 people fish for the species each year with an annual take of around 10 000 crayfish.
- Fishing is by baited line with no hooks, females in berry may not be taken; there is a size limit of 130mm carapace length by which time females have normally reached breeding size.
- The Inland Fisheries Commission has long considered that the regulations require revision and in 1991 called for public input for the formulation of a Management Plan. (See IFC Newsletter 20(1) – March 1991)
- Implementation of new regulations are imminent. The changes have received the in principle approval of the Minister and the Inland Fisheries Commission and will soon be drafted.

***The giant freshwater crayfish,* (Astacopsis gouldi)**



The following proposals will likely be the key elements:

- The emphasis would change from a meat orientated fishery to a trophy fishery.
- There is no doubt that the bag limit should be reduced as 12 fish per day of 130mm would eventually be unsustainable; a limit of two crayfish per day would be appropriate.
- The taking of females could be prohibited totally.
- The minimum size of males should be reviewed in relation to maturity.
- The present reserve in Caroline Creek is too small and only serves to attract attention. A realistic series of reserves/closed areas should be established.
- Whole catchments, or at least significant sub-catchments, should be closed on either a permanent or a long-term rotational basis.

In the meantime the freshwater crayfish will probably continue to be used as a pawn as is often the case with any animal that happens to find itself on a threatened species list.

Trout stocking 1992

Following is a list of all fish released during the 1992 calendar year.

Interpreting the stocking list is becoming more difficult as the Commission endeavours to keep its fish as long as possible before release. This has to be balanced each year by weather conditions as these may determine whether we have to release fish prior to summer or carry them through. An example is the stocking of Lake Leake which will normally receive about 10 000 to 12 000 brown fingerlings each year. In 1992 it received 13 000 in April/May and a further 12 000 in December. This is not an overdose as the latter fish were released early because it was not possible to keep them over summer that year.

BROWN TROUT FRY

WATER STOCKED	LOCATION	NUMBER
Lakes		
Lake Burbury		200 000
Tooms Lake		30 000
Beaconsfield Reservoir		1 000
Rearing Units		
North Motton		80 000
Devonport		40 000
Latrobe		10 000
Circular Head		5 000
Farm Dams		
Bishopsbourne		10 000
H R & J M Ball	King Island	2 000
J R Buckland	Broadmarsh	1 000
Iain Burbury	Woodbury	4 000
Ian A Elson	Springfield	1 000
Neville Harper	Montumana	200
R Mitchelson	Westbury	10 000
Hugh Skerritt	Epping Forest	10 000
G G Thomas	Westbury	7 000
Total		**411 200**

BROWN TROUT ADVANCED FRY

DATE	WATER STOCKED	LOCATION	NUMBER
28.01.92	P A MacLeod	Kingston	250
29.10.92	Andrew McShane	Melton Mowbray	300
23.12.92	Lake Leake		12 000
Total			**12 550**

BROWN TROUT ADVANCED FRY – REARING UNITS

DATE	WATER STOCKED	REARING UNIT	NUMBER
30.11.92	Curries River Dam	From North Motton	6 400
30.11.92	Brushy Lagoon	From North Motton	6 400
Total			**12 800**

BROWN TROUT FINGERLINGS

DATE	WATER STOCKED	LOCATION	NUMBER
13.04.92	Taylor Brothers	Elderslie	500
13.04.92	Compleat Angler	Miena	100
25.04.92	Lake Leake	Campbell Town	5 400
25.04.92	Lake Leake (triploid)	Campbell Town	5 600
01.05.92	Lake Leake	Campbell Town	2 000
01.05.92	Jocks Lagoon	St Helens	500
01.05.92	Old St Helens Water Supply	St Helens	1 500
Total			**156 000**

BROWN TROUT YEARLINGS

DATE	WATER STOCKED	NUMBER
23.10.92	Curries River Dam	3 000
Total		**3 000**

BROWN TROUT ADULT TRANSFERS (GREAT LAKE)

DATE	WATER STOCKED	NUMBER
10.05.92	Mersey River	200
29.05.92	Craigbourne Dam	150
07.05.92	Lake Kara	200
09.05.92	Carters Lagoon	200
09.05.92	Rocky Lagoon	50
09.05.92	Lake Botsford	300
09.05.92	Bruisers Lagoon	20
09.05.92	Camerons Lagoon	20
09.05.92	Lake Duncan	20
09.05.92	Lake Lynch	20
Total		**1 180**

RAINBOW TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
11.05.92	Brushy Lagoon	Tas Uni	1	4 000
11.05.92	Lake Waverley	Tas Uni	1	300
16.05.92	Tooms Lake	Salmon Ponds	1	2 500
16.05.92	Lake Leake	Salmon Ponds	1	2 500
17.05.92	Lagoon of Islands	Salmon Ponds	1	4 000
18.05.92	Lake Crescent	Salmon Ponds	1	3 000
30.05.92	Lake Bischoff	Salmon Ponds	1	1 000
30.05.92	Talbots Lagoon	Salmon Ponds	1	2 000
30.05.92	Lake Kara	Salmon Ponds	1	500
30.05.92	Brushy Lagoon	Salmon Ponds	1	6 000
08.06.92	Little Waterhouse Lag	Salmon Ponds	1	1 000
08.06.92	Blackmans Lagoon	Salmon Ponds	1	1 000
08.06.92	Bruins Dam	Salmon Ponds	1	100
08.06.92	Brandy Dam	Salmon Ponds	1	150
08.06.92	Wonder Dam	Salmon Ponds	1	50
08.06.92	Battery Dam	Salmon Ponds	1	200
16.09.92	Lake Rowallan	Tas Uni	1+	6 000
14.10.92	Hayes Prison Farm	Salmon Ponds	3+	55
15.10.92	Craigbourne Dam	Salmon Ponds	1+	4 000
18.12.92	Blackmans Lagoon	Salmon Ponds	0+	1 500
18.12.92	Brushy Lagoon	Salmon Ponds	0+	9 000
18.12.92	Little Waterhouse Lag	Salmon Ponds	0+	1 500
20.12.92	Lake Rosebery	Salmon Ponds	0+	9 000
21.12.92	Dee Lagoon	Salmon Ponds	0+	4 000
22.12.92	Great Lake	G Lake/S Ponds	0+	10 000
23.12.92	Lake Leake	Salmon Ponds	0+	3 000
Total				**76 355**

BROOK TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
26.11.92	Lake Selina	Salmon Ponds	0+	750
26.11.92	Lake Rolleston	Salmon Ponds	0+	750
09.12.92	Clarence Lagoon	Salmon Ponds	0+	3 000
Total				**4 500**

TIGER TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
19.10.92	Pet Dam	Salmon Ponds	1+	1 100
Total				**1 100**

Future rainbow trout stocking program

In 1991, the Commission recognised the need for a review of rainbow trout fisheries – particularly in those close to urban centres. Accordingly, netting surveys were conducted and the results were reported in the IFC Newsletter 20(2) October 1991. A review of the stocking programs was undertaken by Commission staff and an annual program has been proposed for the following waters:

Lake Rosebery	15 000	next two years
Lake Rowallan	10 000	fingerlings per year
Brushy Lagoon (assess)	10 000	fingerlings per year
Lake Waverley	500	fingerlings per year
Blackmans Lagoon	1 000	fingerlings per year
Little Waterhouse Lagoon	1 000	fingerlings per year
Lake Leake	2 000 -3 000	fingerlings per year
Tooms Lake	2 000 -3 000	fingerlings per year
Lake Crescent	2 000 -3 000	fingerlings per year
Dee Lagoon	4 000	fingerlings per year
Craigbourne Dam	5 000 -10 000	fingerlings per year
Beaconsfield	1 000	fingerlings per year
Lagoon of Islands (assess)	4 000	fingerlings per year
Lake Kara	500 -1 000	fingerlings per year
Guide Dam (leave this year)	500 -1 000	fingerlings per year
Talbots Lagoon	500 -1 000	fingerlings per year
Waratah Dams	500 -1 000	fingerlings per year

This annual program has been determined using the past seven years of survey data combined with the previous stocking history. Projections of the likely population of catchable rainbows have been made based on this information.

The Commission started a stocking program of these waters during 1991 and finalised an annual program in 1992. The program will now become part of the Commission's regular activities. Availability of rainbow stock may cause the numbers to fluctuate a little from year to year, but we hope this can be minimised. Each fishery will continue to be monitored and any adjustments required to the stocking rate will be made based on the results – particularly at Brushy Lagoon and Lagoon of Islands.

Newsletter subscriptions

If you have had trouble getting a copy of the newsletter from time to time, why not have it mailed direct to you?

For $10 per year you can now receive three newsletters of at least eight pages each *plus* an annual report – a new version of the familiar old 'blue book'.

Just send the $10 with your name and address to the Inland Fisheries Commission at 127 Davey Street Hobart, Tasmania and they will put you on the new mailing list.

If you wish, you can continue to take your chance of getting a free copy from your usual source, but it would be a pity to miss out!

PROSECUTIONS

Infringement Notices

Fish without a licence	19
Fish with unattended set rod	16
Fish with more than one rod and line	12
Use bottle, can, jar or similar object as strike indicator	12
Possess assembled rod when unlicensed	2
Take fish from closed waters	1
Take whitebait without a licence or permit	25
Possess or use a net other than a landing net	25
Take more than 1kg of whitebait a day	3
Possess whitebait without a licence or permit	3
Use whitebait net with device to divert fish	1

Court proceedings by summons (see list below).

Lake Burbury progress

The progress of fish populations in Lake Burbury continues to be part of the IFC research program for this water.

The lake was again test netted on 16 February 1993 and a total of 45 brown trout and three rainbow trout were caught. All fish were weighed and measured and gut and scale samples were collected.

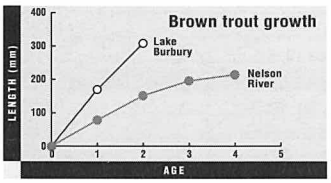
The brown trout ranged from 210 to 1 410g and averaged 912g whilst the three rainbows averaged 543g.

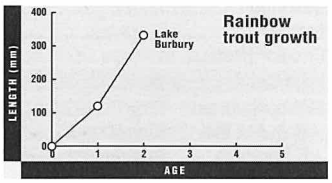
It is apparent that population numbers are rapidly increasing in this water as it now only requires one or two nets to get a sample of fish that required ten or twelve nets and two nights only 18 months ago.

The fish also continue to grow rapidly as shown in the accompanying graphs of the growth rates of young fish. The brown trout growth rate is compared to that of fish in the Nelson River.

It is known that fish up to 3kg have so far been caught from this water, both rainbow and brown. Next season should see a further increase in numbers and size and perhaps the first double figure fish (pounds that is). In the meantime moves are underway to further develop existing facilities at this water prior to next season.

We will keep you informed on the progress of fish size and numbers.





Offender	Location	Offences Summary	Total fine + costs ($)
Peter Wilford BRIFFA, Conara	(MACQUARIE RIVER)	Unlicensed	131
Terrence Geoffrey TRIFFETT, Magra	(TUNGATINAH LAGOON)	Unlicensed/Use strike indicator	271
Allan Maxwell DENNISON , South Forest	(BLACK RIVER)	Possess net	231
Douglas Lyell PEARCE, Ulverstone	(LAKE ECHO)	Other than rod and line/Littering	331
David John NICOLLE, Ulverstone	(LAKE ECHO)	Other than rod and line	231
Pete CAMPBELL- BARRY, Loongana	(LAKE ECHO)	Other than rod and line/Unattended set rod	281
Troy Richard BRACKEN, Newnham	(NORTH ESK RIVER)	Unlicensed/Possession of assembled rod	231
Phillip Lawrence HOWLETT, Rokeby	(OATLANDS WATER SUPPLY)	Hinder passage of fish/Use net/Unlicensed/Other then rod and line/Possession of net	831 spec. pen: 180
Adrian Colin BARRETT, Warrane	(OATLANDS WATER SUPPLY)	Unlicensed/Other than rod and line/Possession of net/False name and address	630 spec. pen: 180
Richard John BRODRIBB, Warrane	(OATLANDS WATER SUPPLY)	Unlicensed/Other than rod and line/Possession of net	531
Peter Richard RANSLEY, New Norfolk	(TYENNA RIVER)	Unlicensed	131
Helen Rose RANSLEY, New Norfolk	(TYENNA RIVER)	Unlicensed	131
Barry Edward SHEARING, New Norfolk	(TYENNA RIVER)	Unlicensed	131
Wayne Charles FARRELL, Caveside	(BRANDUM CREEK, GREAT LAKE)	Other than rod & line/Take fish from closed waters/ Disturb spawning fish	381 spec. pen : 50
Dale Lester LAMBERT, Smithton	(DUCK RIVER)	Possess net/Take whitebait/Obstruction	731
Mario FALZON, Rosetta	(MOUNTAIN CREEK, LAKE SORELL)	Other than rod & line/Take fish from closed waters/ Disturb spawning fish	375 spec. pen: 80
Michael John COOPER, Blackmans Bay	(LAKE SORELL)	Unlicensed	131
Michael John PRICE, Austins Ferry	(LAKE SORELL)	Unlicensed	131
Dale Lester LAMBERT, Smithton	(DUCK RIVER)	Take whitebait/Possess whitebait/Possess net	942
Raymond John RADFORD, Heybridge	(BRUSHY LAGOON)	Unlicensed/Falsely represent to be licensed	332 spec. pen: 250
Darren John RADFORD, Burnie	(BRUSHY LAGOON)	Unlicensed/Falsely represent to be licensed	332 spec. pen: 250
Kenneth Maurice BENNETT, New Norfolk	(DERWENT RIVER)	Take fish with light/Take fish with spear	182
Teresa Jane ROWLANDS, New Norfolk	(TUNGATINAH LAGOON)	False name & address/Falsely represent to be licensed	206
Baden Cedric OATES, Oyster Cove	(SCOTCH BOBS CREEK, ARTHURS LAKE)	Disturb spawning fish/Use light/Use gaff/ Take fish from closed waters	332 spec. pen: 170
Kevin Warren OATES, Oyster Cove	(SCOTCH BOBS CREEK, ARTHURS LAKE)	Disturb spawning fish/Use light/Use gaff/ Take fish from closed waters	632 spec. pen: 170
Adrian Derrick COATES, Granton	(SCOTCH BOBS CREEK, ARTHURS LAKE)	Disturb spawning fish/Use light/Other than rod & line/Take fish from closed waters	432 spec. pen: 170
Claudio Peter PETRILLI, Northern Territory	(SCOTCH BOBS CREEK, ARTHURS LAKE)	Disturb spawning fish/Use light/Use gaff/ Take fish from closed waters	332 spec. pen: 170
Danny Francis PERKO, Ulverstone	(LAUGHING JACK LAGOON)	Other than rod & line	182
Gary Ernest HOWARD, Ulverstone	(LAUGHING JACK LAGOON)	Other than rod & line/More than one rod & line	307
Roger John STANLEY, North Hobart	(DOLPHIN SANDS)	Take eels/Possession of eels	457