

On the Rise



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Come and see the trout run!

IFC Open Day at Liawenee, 18 May 1997

One of the most unusual and most interesting events on the late-autumn tourist calendar is the Inland Fisheries Commission's Open Day at its field station at Liawenee, in the Central Highlands, on Sunday 18 May.

This long-established event never fails to draw a good crowd, probably because there's nothing else quite like it.

The main attraction is the annual spawning run of thousands of brown trout up the Liawenee Canal from Great Lake.

En route, however, the trout are trapped and stripped of their eggs by Commission staff.

The eggs, after incubation at the Commission's hatchery at the Salmon Ponds, provide stock for selected waterways throughout Tasmania.

On Open Day, visitors can stand on the banks of the canal and clearly see the amazing spectacle of vast numbers of trout swimming by.

Great Lake browns are in premium condition this year – "the best they've been for years", according to Inland Fisheries Commissioner Wayne Fulton – so anglers will be especially keen to have a look.

Egg-stripping takes place next to the canal, and visitors are able to watch the process.

Children are encouraged to touch and feel the trout eggs – a unique educational experience in itself.

Education plus entertainment

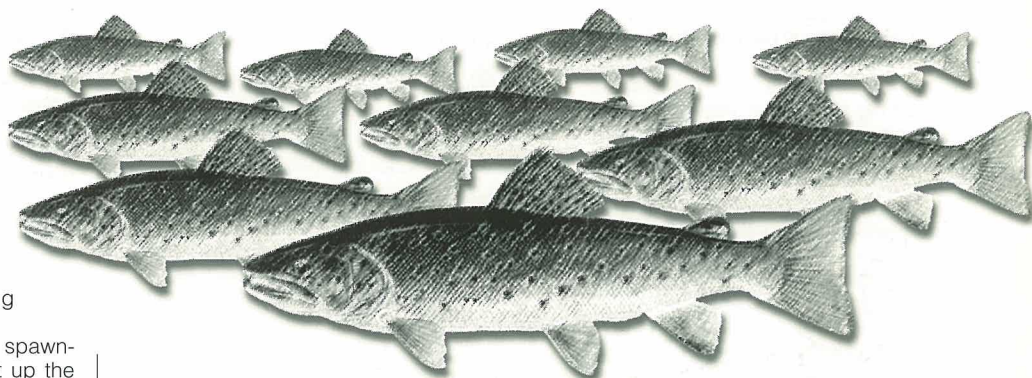
Indeed, Open Day at Liawenee is an irresistible mix of education and entertainment for people of all ages.

The Commission mounts a number of displays, all to do with its careful management of Tasmania's inland waters and associated industries.

Although the trout fishery is perhaps the most visible of the Commission's management functions, it's by no means the only one, and this year's Open Day will reflect the diversity of its duties.

As well as the trout fishery, it is responsible for managing the freshwater aquaculture and aquarium fish industries, the growing eel fishery, and the preservation of native species of freshwater fish.

Only this year, the Commission has had a major breakthrough in its efforts to save the



very rare and endangered Pedder galaxias, a diminutive fish native only to the original Lake Pedder. (See *Promising news on most-endangered fish*, page 3.)

Also on Open Day, there will be aquarium displays of Tasmanian native fish, some of them rare and endangered.

One that's always a crowd-pleaser is *Astacopsis gouldi*, the world's largest freshwater crayfish species.

It takes about as long as a human being does to reach sexual maturity – about 14 years – and may live to be 30 or 40 years of age. Mature specimens may weigh 4kg and be up to 500mm long.

Another display will report on the Commission's fight to contain and eventually wipe out the European carp, which has been illegally introduced into two Tasmanian lakes and which is a serious threat to the trout fishery and to many species of Tasmanian native fish.

Discovered here in early 1995, carp seem to have been confined by prompt and decisive Commission action to Lake Crescent and Lake Sorell, although a prolonged wet spell could result in carp eggs being washed into other inland waters, dramatically worsening the problem. (See *Carp update*, page 2.)

Admission to Open Day, which is from 10am to 3pm on Sunday 18 May, is free. There is ample parking, also free, close to the displays. Hot snacks and drinks will be available for sale.

The venue is the Inland Fisheries Commission's Field Station at Liawenee, on the Lake Highway at Great Lake.

It's just past the hamlet of Miena, if you're coming from the south, or just before Miena if you're coming from Deloraine.

All you have to do to see the trout run is

drive along the Lake Highway and follow the signs near Miena.

Most of the displays are under shelter, so Open Day will be held despite inclement weather – but Central Highlands weather is notorious and changeable, so be sure you bring warm, waterproof clothing regardless of the weather forecast.

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Carp update

The carp program is proceeding well after a long period of uncertainty amongst staff, largely as a result of difficulties in controlling water flows and water levels. The following notes report on progress in the various areas.

Containment and water level management

The Inland Fisheries Commission is confident that the structures now in place are capable of keeping carp confined to lakes Sorell and Crescent.

This task has been a major problem and has taken more time and resources than expected. Staff members have had to spend a lot of time manually cleaning screens because they did not perform to design specifications. Some Occupational Health and Safety issues have also resulted in extra cleaning time. The ingenuity and perseverance of IFC staff were largely responsible for a new screen set up on Lake Crescent which is now working well.

Additional work is planned for May to further improve current facilities and dredge silt from the outlet canal, so that our capacity to manage water levels is improved.

Our inability to control water levels within the lakes, due to heavy rain in the 1995-96 summer and low outflows because of screening problems, apparently made conditions suitable for carp breeding that summer, and similar problems occurred in the summer of 1996-97. We have now overcome them and should be able to properly control water levels in future, with implications for both management of water requirements downstream and carp control within the lake.

However, it appears that the public is losing track of the reason that Lake Crescent is closed, and pressure is mounting for the lake to be re-opened to fishing. The possibility of carp spreading remains a very real threat and it is most important that thinking anglers support the IFC, not make our job more difficult.

The objective with water level management is to maintain the level of Lake Crescent below the marshes to prevent carp getting into this area. Lake Sorell is to be lowered coming into winter to provide storage for the winter rains, so it is expected to be high by early spring.

The overall policy is intended to avoid an uncontrolled flood spill that could spread carp downstream. There is also a need to provide sufficient water for domestic and irrigation requirements downstream.

The Hydro-Electric Corporation has prepared a water management plan that is basically a modelling exercise describing the operation of the lakes under certain inflow and outflow parameters. This enables target levels to be set so that carp management objectives can fit in with the objectives of other users.

Distribution surveys

Carp have still not been found outside the Sorell/Crescent area. Surveys have been undertaken down the Clyde River, in associ-

ated off-stream storages, and in Lake Meadowbank. Only small numbers have been detected to date in Lake Sorell.

The IFC will continue these distribution surveys and investigate any reported sightings. More attention is to be given to determining the extent of the problem in Lake Sorell.

Life history

Assessments of the reproductive condition of carp have shown that they are maturing under normal Tasmanian conditions.

Probable spawning aggregations were observed in marsh areas in Lake Crescent in November 1996. It appears that a year class of young fish has resulted from this.

The IFC believes that carp will spawn between November and February and that spawning will probably be successful if water levels are elevated at that time.

Water level control therefore appears to be a feasible method of controlling spawning.

Captures

More than 3000 carp have so far been removed from Lake Crescent. While this is not many in comparison to mainland populations, the important finding is that targeted fishing, using electrofishing, gill nets, fyke nets, and seine nets, has significantly reduced the number of adult carp in the lake.

Recently, the Commission has had some success with radio tracking. Carp with radio transmitters attached were released into the lake and were seen to aggregate not long after release. The radio-tagged fish were targeted and a large number of adult fish were subsequently netted or electrofished. This method is very promising and will be further refined. As the tagged fish are highly mobile and move all over the lake, they are likely to lead us to other carp.

This part of the project would benefit from further development and updated technology.

Summary

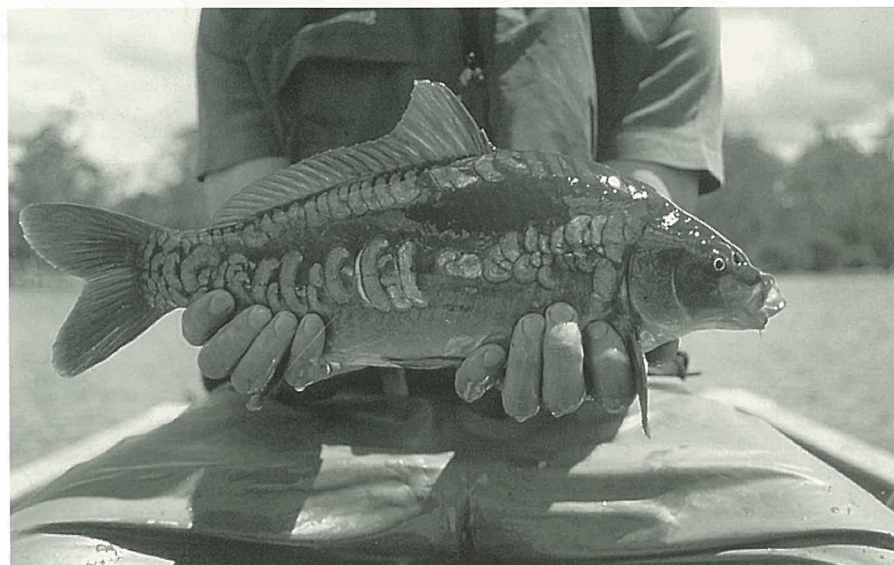
After a somewhat stop-start beginning to our investigations of the potential for eradicating or controlling carp, we have had a number of encouraging results in the last 12 months or so, including:

- No evidence of spread of carp outside Lake Crescent and Lake Sorell before or since their discovery there.
- Secure containment structures in place at Lake Crescent to prevent any possible escape of carp.
- Domestic water supply and irrigation releases from Lake Crescent have been provided without compromising carp security.
- The adult carp population in Lake Crescent has been fished down effectively by a combination of electrofishing and various forms of netting.
- No evidence of a large population of carp in Lake Sorell.

A large amount of additional biological information on carp has also been collected during the study, enabling carp management strategies to be founded on a sound biological basis and to take advantage of weaknesses in carp behaviour and reproductive biology to limit their success.

Poisoning remains the only possible method at this stage for completely eradicating carp. IFC consultants are presently investigating prospects for successfully implementing a poisoning program; a report is expected soon. The report and the results of all our other work on carp will be presented to the Government by the end of June, which is the end of the initial carp investigation funding period.

The report will include recommendations for specific future strategies for dealing with carp in Tasmania. It is almost certain that whatever strategies are followed, the report will recommend continued efforts beyond June this year to restrict carp from spreading any further and to continue to limit any potential for damage resulting from their presence in lakes Crescent and Sorell. In order to achieve this, and to protect the State's water resources, recreational fishery, tourism image, and aquatic environment, the IFC is seeking a continuation of Government funding for the carp program beyond the life of the current commitment.



Heavy fishing is one method being used to control the carp populations of two Tasmanian lakes

IN BRIEF

Bronte Lagoon subdivision

The proposed subdivision of HEC land has only recently become common knowledge, largely due to a breakdown in the planning approval process and only superficial consultation.

The lots are quite large, the smallest being about 85ha, so it will not result in large-scale development around the lakes. However, access to the lake and the preservation of the lake shore are not satisfactory. Other issues such as future camping areas are also of concern.

In summary, the IFC is not satisfied that conditions attached to the subdivision are in the best interests of anglers and these will be pursued further.

Lake Sorell fish to be marked

The Commission needs more information on overall numbers of trout in Lake Sorell. To get this information, it is intended to mark by fin clipping a large proportion of the brown trout spawning run in Mountain Creek this year.

When the fish return to the lake the actual population size can be calculated from the proportion of marked fish in the catch as seen during creel census or other recapture surveys.

The marking project was planned for about two seasons ago but low rainfall delayed the spawning run and it was abandoned.

Little Pine Lagoon

The Environmental Management Plan for Little Pine Lagoon is now at the draft stage, having taken input from all groups with interests in this prime trout fishery, and the recommendations will be of considerable interest.

As far as angling goes, there has been a slowly growing antagonism among users of this water, primarily aligned along boat users versus shored-based anglers. The IFC is most reluctant to intervene as the result would probably be some restrictions for both groups.

The solution: please try a little tolerance and recognition of the rights of individuals to choose how they fish – provided such actions do not inconvenience others.

Four Springs/Brushy Lagoon

After many years of tireless effort the plug is finally in the dam at Four Springs and the water is starting to fill what promises to be an exciting new fishery.

Many people can be proud of their efforts in bringing this project to fruition. Commissioner Wayne Fulton expects all of them to be on the water come opening day!

The nearby Brushy Lagoon will see the reverse happen this summer as its plug is removed and the water drained to facilitate removal of redfin perch. The IFC hopes to rehabilitate this once-prolific fishery in due course.

In future, these two lakes will be managed as a pair, with Four Springs offering fishing for high quality browns and some rainbows and Brushy being managed to produce greater volumes of rainbow trout.

More information will be provided on these lakes in future newsletters.

Promising news on most-endangered fish

There's good news about Australia's most endangered fish, the rare Tasmanian species Pedder galaxias (*Galaxias pedderensis*).

In 1992 it was estimated that only between 50 and 200 of the fish still existed, but efforts by the Inland Fisheries Commission to ensure its survival by establishing it in Lake Oberon appear to have been successful.

In February this year IFC scientists found enough young adult Pedder galaxias in Lake Oberon to convince them that the species is breeding and that it has established itself in numbers likely to ensure its survival.

Endemic to the original Lake Pedder and its feeder streams, Pedder galaxias declined dramatically in numbers within a few years of the lake's controversial inundation in 1972.

The cause is uncertain, although thought to be a combination of predation and competition from brown trout and an introduced native species.

"This is very exciting news", Mr Fulton said when the first Lake Oberon-bred fish were found.

"Just a few years ago, Pedder galaxias looked like being the first Australian fish species to become extinct.

"In 1989 it was listed as endangered by the Australian Society for Fish Biology and was considered likely to be extinct by 1997.

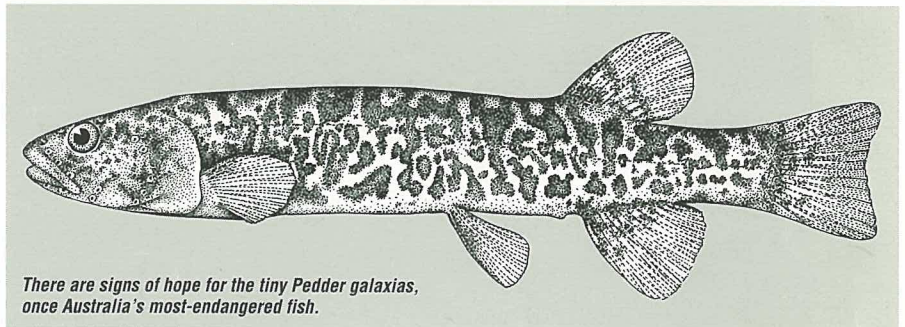
"We tried to breed Pedder galaxias at the Salmon Ponds but were unsuccessful.

"They spawned but most of the eggs seem to have been unfertilised.

"Then we tried artificial fertilisation, again with only a very low success rate.

"So we took the remaining Salmon Ponds fish with the few we'd been able to catch at Lake Pedder and moved them all to Lake Oberon.

"Now the outlook for the species is very much brighter.



There are signs of hope for the tiny Pedder galaxias, once Australia's most-endangered fish.

Recovery plan

In an effort to save the fish, the Commission devised a recovery plan that began with a captive breeding program, after which 5000 Pedder galaxias were to be moved to Lake Oberon, with more to be transferred later to another lake.

The intention was to establish breeding colonies of the rare fish in safe waters without natural predators and free of introduced species and human interference.

"We needed a remote lake like the original Lake Pedder, with a sandy bottom, a wide range of microhabitats, abundant cover and inflowing streams", Commissioner of Inland Fisheries Wayne Fulton said.

"Several lakes were surveyed, and Lake Oberon had all the features we needed.

"It has a small inflowing stream providing an ideal spawning site, with several winding branches and a route through a small, flat, heathy wetland.

"There's plenty of rock and vegetative cover at the mouth and lower reaches to provide habitats for adults and juveniles, and the rocky shore and sandy bottom of the lake opposite the stream provide an ideal nursery for larval fish."

But the captive breeding program, at the Salmon Ponds, near Hobart, was largely unsuccessful.

The 18 fish remaining from it were moved to Lake Oberon in late 1991, as were another 13 the following year.

Subsequent monitoring of the lake gave little reason for believing that the colourful fish had established itself – until February 1997.

"Pedder galaxias will probably stay on the endangered list for a while yet, but the signs that it's established itself in Lake Oberon are very strong indeed.

"Recovery work is expected to continue for several more years, with the Hydro-Electric Corporation funding redevelopment of the Strathgordon water supply as an artificial habitat for Pedder galaxias.

"In the meantime, we're doing additional surveys of Lake Pedder to collect broodstock for the Strathgordon site."

The Lake Oberon surveys were funded by Environment Australia, with contributions from the Parks and Wildlife Service and *Australian Geographic* magazine.

New evidence

Further evidence that Pedder galaxias has established itself in Lake Oberon was released in March by the Inland Fisheries Commission.

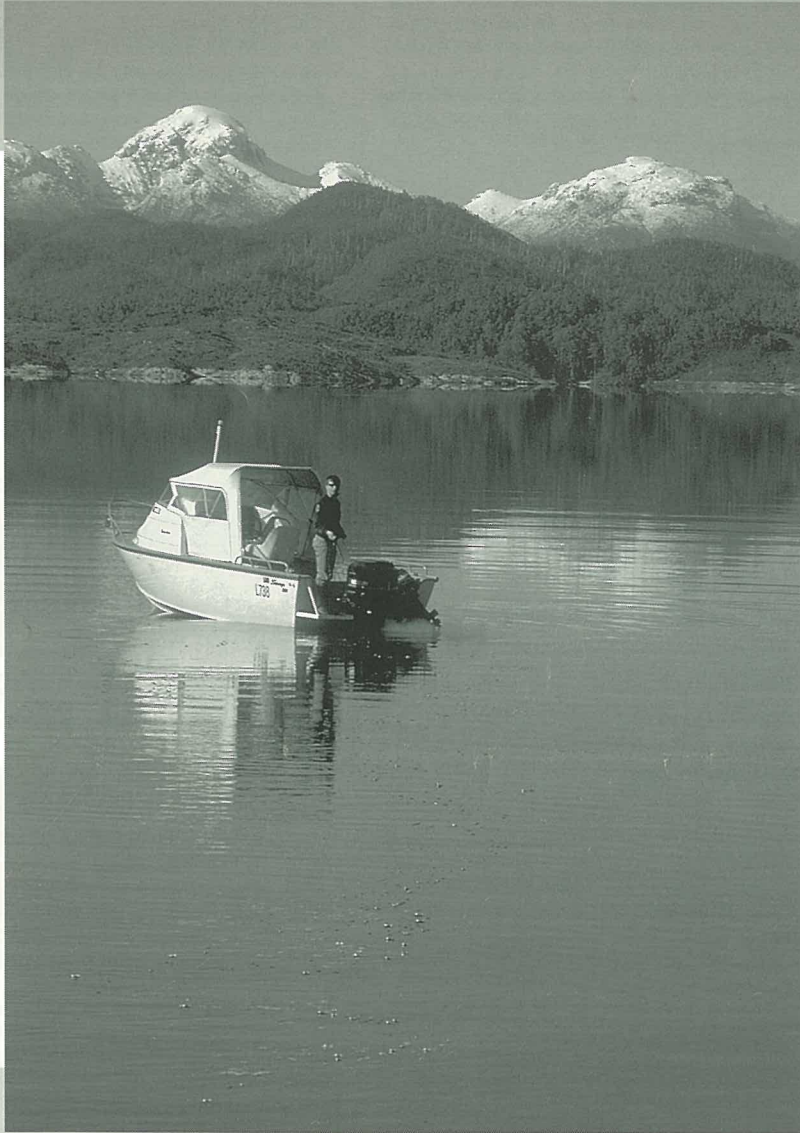
The Commission now has videotape footage of two young adult and one juvenile Pedder galaxias, filmed below the surface of the lake using a submersible remote observation vehicle.

"This videotape is important because it confirms the presence in the lake of adult fish too young to have been translocated there, and for the glimpse it gives of a recently hatched juvenile, which supports the other evidence", Commissioner Fulton said.

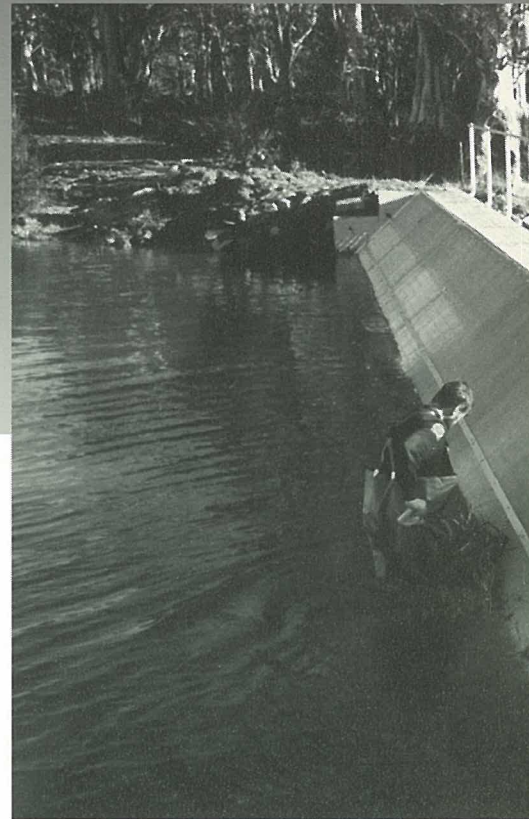
"That helps make us reasonably optimistic about its future."

All in a day's work

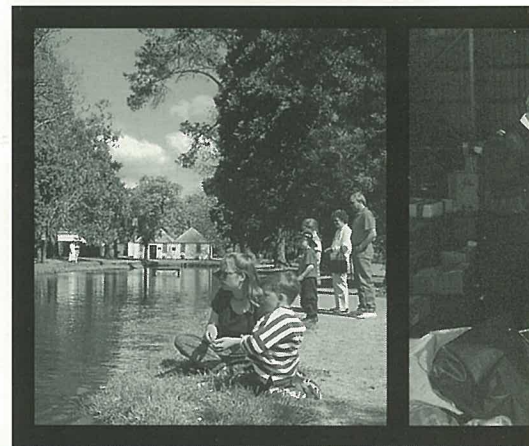
The Inland Fisheries Commission on the job



Testing the quality of water in inland waterways is an essential fisheries management tool.



Checking the state of fish screens at Lake Crescent.



A popular tourist destination, the Salmon Ponds, near New Norfolk, was Tasmania's first trout hatchery and has been supplying stock for Tasmania's inland waterways for more than 130 years.

Fisheries inspectors include helping Service intercept at ports and airports.



Another illegal catch seized by inspectors, this one at Lake Crescent.



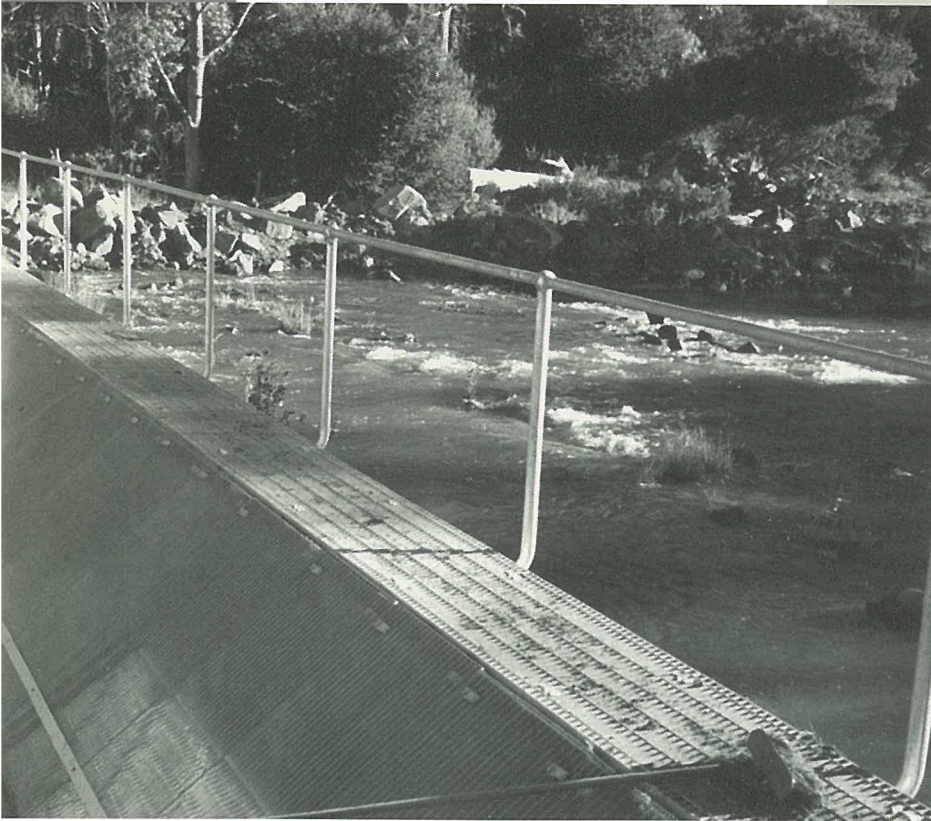
Every May, about 3000 people visit the IFC field station at Liawenee, in the Central Highlands, to watch Commission personnel stripping brown trout of their eggs.



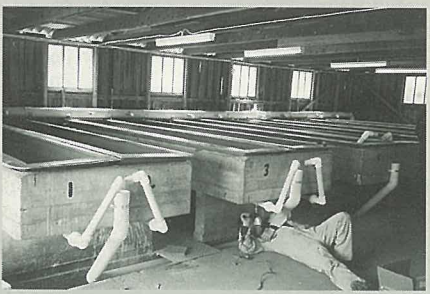
Promoting Tasmania's trout fishery, the IFC mounts a display at the Melbourne Fishing Show every year.



A major problem persists and eventually eradicated common carp, from two



IFC inspectors were quick to locate and seize this illegal catch of eels.



Repairs to trout hatchery plumbing.



Harvesting eivers (baby eels) at Trevallyn means night work for scientists Frances Ruwald and John Diggle.



... Causby's duties Australian Customs on fish and bait imports



... Facing the IFC is controlling an introduced pest, the manian lakes.



IFC administrative staff check more than 40,000 angling licence returns.



Electrofishing is a cold, wet, but very important research and management task for IFC staff.

Researcher Robert Sherrington and volunteer Kate Greenhill examine freshwater crayfish in the North-West.

Trout Stocking 1996

Following is a list of fish released throughout 1996.

BROWN TROUT OVA

South Australian Fly Fishers Association 140 000

BROWN TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
03.09.96	Rubicon River	Salmon Ponds	..Fry	250 000
12.09.96	Tooms Lake	Salmon Ponds	..Fry	30 000
12.09.96	Lake Leake	Salmon Ponds	..Fry	30 000
				310 000
28.05.96	Big Lagoon, Bruny Island	Salmon Ponds	..Fingerlings	3 000
02.10.96	Beaconsfield Water Supply	Salmon Ponds	..Fingerlings	1 500
02.10.96	"Farm", Beaconsfield	Salmon Ponds	..Fingerlings	200
08.10.96	Curries River Dam	Salmon Ponds	..Fingerlings	3 000
08.10.96	Blackmans Lagoon	Salmon Ponds	..Fingerlings	1 000
14.11.96	Lake Ashwood	Salmon Ponds	..Fingerlings	2 000
14.11.96	Lake Garcia	Salmon Ponds	..Fingerlings	2 000
14.11.96	Lake Bellinger	Salmon Ponds	..Fingerlings	1 000
14.11.96	Little Bellinger Lagoon	Salmon Ponds	..Fingerlings	1 000
14.11.96	Swan Basin Lagoon	Salmon Ponds	..Fingerlings	2 000
14.11.96	Forestry Dams, Strahan	Salmon Ponds	..Fingerlings	1 000
14.11.96	Little Ashwood	Salmon Ponds	..Fingerlings	1 000
				18 700
25.06.96	Clyde River	Hydro CreekAdults	300
				300

Prosecutions: July-December 1996

Infringement notices

During the six months from 1 July to 31 December 1996 the following on-the-spot fines were issued by IFC inspectors.

Offence	Number
Fish without a licence	7
Fish with more than one rod and line	4
Use strike indicator	1
Fish with unattended set rod	1
Possession of net other than a landing net	8
Take whitebait without permit	6
Use natural bait in artificial water	1
Take fish from closed waters	1
Possession of whitebait	1

Court proceedings

Offences that were proceeded with by summons during the same period are listed below.

RAINBOW TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
20.01.96	Blackmans Lagoon	Salmon Ponds	..Fingerlings	2 000
29.01.96	Little Waterhouse Lake	Salmon Ponds	..Fingerlings	2 000
29.01.96	Curries River Dam	Salmon Ponds	..Fingerlings	10 000
04.02.96	Lake Skinner	Salmon Ponds	..Fingerlings	1 000
26.04.96	Lake Waverley	Salmon Ponds	..Fingerlings	400
26.04.96	Corra Linn	Salmon Ponds	..Fingerlings	300
26.04.96	Lauriston Dam	Salmon Ponds	..Fingerlings	400
30.07.96	Risdon Brook Dam	Salmon Ponds	..Fingerlings	700
29.08.96	Curries River Dam	Salmon Ponds	..Fingerlings	3 200
02.10.96	Beaconsfield Water Supply	Salmon Ponds	..Fingerlings	500
02.10.96	"Farm", Beaconsfield	Salmon Ponds	..Fingerlings	200
02.10.96	Wonder Dam	Salmon Ponds	..Fingerlings	100
10.12.96	Talbots Lagoon	Salmon Ponds	..Fingerlings	1 000
16.12.96	Lake Mackintosh	Salmon Ponds	..Fingerlings	10 000
19.12.96	Lake Kara	Salmon Ponds	..Fingerlings	1 000
19.12.96	Bischoff Dam	Salmon Ponds	..Fingerlings	1 000
19.12.96	Guide Dam	Salmon Ponds	..Fingerlings	4 000
19.12.96	Magnet Dam	Salmon Ponds	..Fingerlings	1 000
19.12.96	Taylor's Dam, Lemana	Salmon Ponds	..Fingerlings	800
19.12.96	Talbots Lagoon	Salmon Ponds	..Fingerlings	5 000
20.12.96	Lake Isandula	Don CollegeFingerlings	1 000
				45 600
29.07.96	Risdon Brook Dam	Salmon Ponds	..Yearlings	300
30.08.96	Curries River Dam	Uni of Tasmania	..Yearlings	1 400
18.09.96	Latrobe Disabled Dam	Salmon Ponds	..Yearlings	450
09.10.96	Big Waterhouse Lake	Uni of Tasmania	..Yearlings	2 300
06.11.96	Lauriston Dam	Uni of Tasmania	..Yearlings	330
12.11.96	Lake Waverley	Uni of Tasmania	..Yearlings	150
				4 600

TIGER TROUT

DATE	WATER STOCKED	ORIGIN	AGE	NUMBER
11.11.96	Lake Kara	Salmon Ponds	..Fingerlings	400
				400

REARING UNITS

Distribution lists for fish from rearing units are available from the IFC.

Ulverstone				
DATE	SPECIES	ORIGIN	AGE	NUMBER
25.07.96	Brown trout	Salmon Ponds	..Fry	90 000
09.09.96	Rainbow trout	Salmon Ponds	..Fry	10 000
Devonport				
DATE	SPECIES	ORIGIN	AGE	NUMBER
25.07.96	Brown trout	Salmon Ponds	..Fry	53 000
09.09.96	Rainbow trout	Salmon Ponds	..Fry	7 000

Offender	Location	Offences Summary	Total fine + costs (\$)
Barry John LOVELL, Bridport	LITTLE FORESTER RIVER	Possess net	315
Malcolm John SLATER, New Norfolk	LAKE BINNEY	More than 1 rod & line/Unattended set rod	235
Steven Sungbo KIM, Launceston	NORTH ESK RIVER	Possess eels/Take eels	835
Andrew Charles HORTON, Brighton	BAGDAD, LAKE GORDON, JORDAN RIVER	Possess indigenous fish/Take eels/Possess net/Take platypus	3 000
Ricky Peter BELLCHAMBERS, Wesley Vale	BRANDUM CREEK, GREAT LAKE	Take fish closed water/Other than rod & line/ Disturb spawning fish	185
Simon John BARTON, Devonport	BRANDUM CREEK, GREAT LAKE	Take fish closed water/Other than rod & line/ Disturb spawning fish	185
Desmond John AYLETT, Devonport	BRANDUM CREEK, GREAT LAKE	Take fish closed water/Other than rod & line/ Disturb spawning fish/Take fish with aid of light	235 Spec pen 1 400
Neville ALEXANDER, Devonport	BRANDUM CREEK, GREAT LAKE	Take fish closed water/Other than rod & line/ Disturb spawning fish/Take fish with aid of light	235 Spec pen 1 400
Mathew James COVENTRY, Latrobe	MERSEY RIVER	Possess whitebait/Use abusive language/ Threaten officer/Obstruct officer	200 2 weeks' imprisonment
Darren Ross BROWN, Claremont	LAKE CRESCENT, CLYDE RIVER TRAP	Other than rod & line/Remove fish from trap	735 Spec pen 1 000
Robin Peter TYSON, Port Sorell	LAKE LEAKE	Trolling from mechanically propelled boat	135
Grant STAFFORD, Shearwater	LAKE LEAKE	Trolling from mechanically propelled boat	135
Simon Paul SMITH, Devonport	MERSEY RIVER	Possess whitebait/Take whitebait/Possess net/ Threatening language	1 334

Arthurs Lake water levels

Some ups and downs in coming years

by David Blühdorn, Scientific Officer

Anglers have been enjoying exceptionally good fishing conditions in most of Tasmania's lakes this season, due to the universally high water levels resulting from the very wet conditions over the past 18 months. Food is plentiful, due in part to the additional food resources supplied from newly inundated areas, so trout are usually in very good condition. Arthurs Lake is no exception to this pattern, and anglers have been quick to capitalise on the excellent fishing produced by the present lake level, which is higher than it has been for many years.

The diagram (*below right*) shows the water level in Arthurs Lake since 1990. The original minimum operating level (NMOL) for Arthurs Lake was 943.0 m. While the lake has not been down this low, dry seasons in 1991 and 1992 produced levels that, at around 946.5 m, left large areas of the lake high and dry and caused considerable problems for fishers. In 1993, in consultation with the IFC, the HEC undertook to establish a voluntary minimum operating level of 948.0 m and has operated the lake accordingly since then.

Despite the current excellent fishing conditions in Arthurs Lake, the fishing community has expressed concerns about future lake levels. This stems from the observation that water is being pumped from Arthurs Lake into Great Lake which will result in the Arthurs Lake level dropping somewhat if the season remains dry. Fishers have questioned the need for this drawdown during the fishing season.

The existing agreed minimum level

While Arthurs Lake is deservedly a prime fishing resource, it should not be forgotten that its other primary function is that of a water storage impoundment, part of the HEC's statewide network. The HEC has shown a willingness to adjust its operating procedures to assist the fishing community, but it has certain responsibilities in terms of public safety and operational efficiencies that must also be considered.

There have been calls from within the fishing community for the HEC to set the agreed minimum operating level at two metres below full supply level (ie 950 m). This is two metres higher than the existing agreed minimum and would allow only a two-metre operating range. It is obvious from the above figure that had the water level been above 950 m at the start of 1996, and had the lake filled at the same rate, then Arthurs Lake would have spilled towards the end of the year.

A function of both flood control and efficient operations is that the lake should be drawn down through the summer to provide storage capacity for winter inflows. The present operating range of four metres (from NMOL of 948.0 m to FSL of 952 m) is sufficient to cope with a once-in-10,000-years flood. A two-metre operating range is not.

From a fisheries management perspective, increasing the minimum lake level would not necessarily provide better fishing in the long term, either for the entire lake or for the Cowpaddock area. The current boom conditions in the Cowpaddock area are the result of improved conditions generated by

the raised minimum level since 1993, in conjunction with its recent inundation – that is, the result of variability in the water level. If it were permanently inundated, then the Cowpaddock would revert to the same fishing conditions as the rest of the lake. More importantly, the capacity for water level variability, which produced the present conditions, would be greatly reduced.

The IFC's considered opinion on water levels remains the same as it was when the present agreed minimum operating level was negotiated. A minimum lake level of 948.0 m provides for an excellent fishery, while allowing for the necessary flood control and operational efficiencies of the HEC, and the variability in levels needed to produce fishing conditions similar to those presently prevailing.

Planned HEC works

There is a further reason for the continued drawdown of Arthurs Lake. The HEC is constructing the Liapootah-Palmerston No 2 Transmission Line, which will pass through the Cowpaddock area about 45 m to the southeast of the existing transmission lines. Two towers will be constructed in the area currently inundated in the Cowpaddock. In order to allow construction, the lake level will need to be lowered to the agreed minimum level of 948.0 m. These proposed activities were notified in the Draft Development Proposal and Environment Management Plan, which was issued for public comment in January 1996.

Under present drawdown conditions, it is projected that the lake will be at 949.6m at the end of April 1997. This should still leave plenty of water in the Cowpaddock area for this fishing season. Depending on the following seasons' inflows, it is projected that the lake level will be down to 948.0 m by the end of summer 1998, to allow construction to occur in April-May of that year. Construction is planned to take about three weeks and refilling of the lake can begin as soon as it starts.

If the lake cannot be brought down to the minimum level before the onset of the 1998

winter rains, then the water level will need to be lowered again in late 1998 to allow the construction to be completed before February 1999.

The HEC has two construction options for the towers in the Cowpaddock area. It could draw the lake down to 947.0 m and work in a dry construction environment, which was initially the HEC's preferred option, as it would be easier and cheaper and cause less site disturbance; however, it would also take longer to bring the lake down to this level and longer to refill.

The alternative is to work with the lake one metre higher (at the agreed minimum of 948.0 m), under wet/boggy conditions. This will require some disturbance of the lake bed for the gravelling of access tracks, which will be rehabilitated after construction is completed. In the short term there may be some localised increase in turbidity due to these works. The advantage of using this method is that the 948.0 m level will be reached sooner than the lower one, and refilling will not take so long.

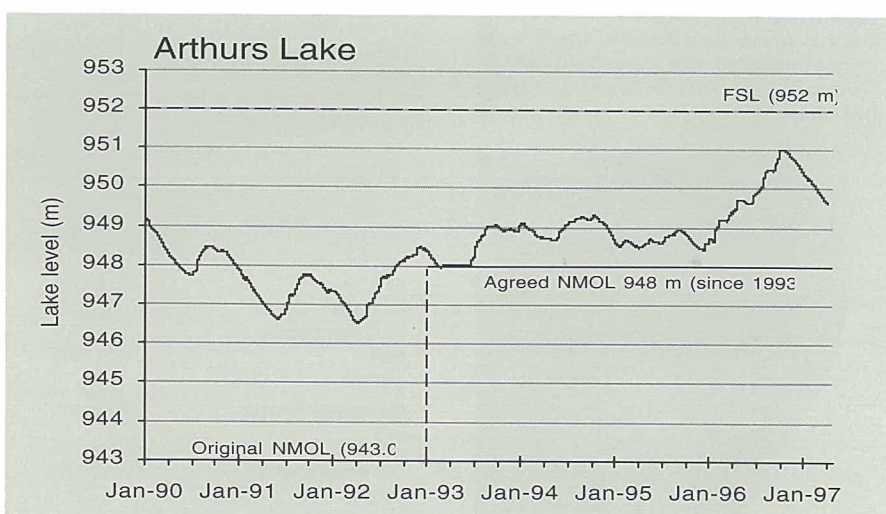
Following consultation with the IFC, the HEC has agreed to utilise this latter construction method.

Effects on fishing in Arthurs Lake

The 1996-97 fishing season in Arthurs Lake has been exceptional, especially in the Cowpaddock area, and should remain so even under the present drawdown. This has been the result of the unusually wet seasons just passed. The need to draw the lake down to the minimum operating level by the end of the 1997-98 summer means that there will be less water in the Cowpaddock area next season. The fishing in the rest of the lake will be its normal high quality.

If the construction work is successfully completed, then the lake will again settle into the pattern of winter rises and summer falls in level, as illustrated in the figure above, and the lake level will be determined by prevailing weather conditions. If construction is not completed in early 1998, the lake level will need to be held down for the start of the 1998-99 fishing season. At no time is it projected to fall below 948.0 m.

It should be stressed that the 948.0 m water level will still leave some water in the Cowpaddock area, so fishing can continue. This level is 1.5 m higher than the low levels of 1991-92. It will also set the stage for boom fishing conditions, similar to those presently occurring, as the lake refills.



The water level of Arthurs Lake since 1990. Also shown are the original minimum operating level (NMOL) at 943 m, the agreed NMOL at 948 m and the full supply level (FSL) at 952 m. Levels from February 1997 are projected.

OTHER THAN TROUT

A regular article on animals of interest to the angler

The mysterious eel

by Wayne Fulton, Commissioner of Inland Fisheries

Included among the many myths about the life cycle of eels is the old claim that they regenerate from horse hair or that, according to Aristotle, they come from decaying material in the bowels of the Earth. The presence of numerous parasitic nematodes in their gut also gave rise to the belief that they gave birth to live young.

Such has been the mystery surrounding eels that their true life history was established only around the middle of this century. They remain a fish of great fascination and varied attention by those who eagerly seek them to eat or find them a nuisance whilst fishing for other species.

Life history

Freshwater eels breed in the sea, generally at considerable depths. For the Australian species the exact site is unknown, but it appears to be in tropical waters off northeastern Australia.

On hatching the larvae are flat and ribbon-like and known as the leptocephalus stage. They drift on ocean currents back to the coast of eastern Australia. As they approach the coast the leptocephalus transforms to the more familiar eel shape. On first arrival, which is usually in spring, they are transparent and known as glass eels. They soon take on the adult pigmentation and are then known as elvers. These move upstream, often in large migrations, to assume their adult habitat until maturity. It is at this time that large numbers of small eels may be seen trying to negotiate stream barriers such as weirs and dams.

At maturity the migration process is reversed, with adult eels moving downstream in summer to the sea. They do not return after spawning.

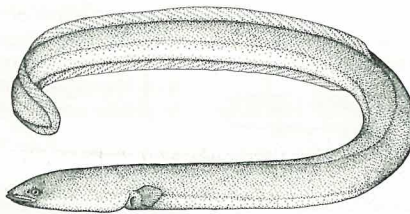
Eels are often regarded as predators on, or competitors with, trout. While this is likely to be the case for longfin eels, it is not considered to be a major problem with shortfin eels. Trout and eels will certainly feed on each other if they have the opportunity but the major diet of shortfins is likely to be small invertebrates taken primarily at night.

Two species of freshwater eel are found in Tasmania, the more common short-finned eel and the larger long-finned eel.

Short-finned eel – *Anguilla australis*

First described in 1848, this species is the most widespread of Tasmania's eels, being found in all coastal streams. Before the damming of many rivers it also penetrated well inland – for instance, as far as Great Lake.

The shortfin may grow to at least 3kg in weight and one metre in length. It is variable



Short-finned eel – *Anguilla australis*

in colour from mid to dark brown on the back, with a lighter undersurface. Mature migratory adults may be silvery in colour.

Adult shortfins are between 15 and 30 years of age at migration and vary in size depending on locality.



Long-finned eel – *Anguilla reinhardtii*

Long-finned eel – *Anguilla reinhardtii*

This is the larger of the Tasmanian species and was first described in 1867. It occurs primarily in the lower reaches of coastal streams of northeastern Tasmania, although occasional specimens stray as far as the Mersey and Derwent rivers.

It is a large predatory species that may reach 20kg in weight and 1.5m in length. The adults are dark greenish brown to black with a mottled or spotted appearance on the back and sides and a lighter undersurface.

They are known to migrate downstream in March and April and may exceed 30 years of age at maturity.

Commercial fishing

The short-finned eel forms the basis of a small commercial fishery in Tasmania with an annual catch in the region of 30 tonnes. Each of about 10 licence-holders has a discrete area to fish. The main capture method is fyke nets, and some downstream trapping of migrating adult eels is also undertaken. The catch is largely exported with some value adding, such as smoking.

The large aggregations of juvenile eels returning to freshwater are trapped at Trevallyn in the north and Meadowbank in the south. These are used for restocking rivers and lakes to support the wild fishery. Some are also being used in experimental culture trials.

1996-97 elver harvest and allocations

In terms of quantity and relative predictability, Tasmania has the most significant juvenile eel migrations identified within Australian waters. Dams obstruct these upstream migrations, so the Inland Fisheries Commission undertakes annual harvesting and elver restocking



Elvers ready for sale to eel farmers

programs to promote recruitment into Tasmania's rivers and lakes, thus ensuring the continued sustainability and commercial viability of Tasmania's eel fishery.

With an increasing demand for juvenile eels to support a rapidly expanding eel industry, Australian and overseas interests are seeking access to Tasmania's juvenile eel resource. The IFC makes available a proportion of the annual harvest to these interests by direct negotiation and public tender.

TREVALLYN HARVEST	KILOGRAMS
Tender.....	300
Interstate.....	370
Industry samples.....	3
IFC samples.....	5
Tas research/culture.....	29
Tas industry/restock.....	379
Total.....	1086

MEADOWBANK HARVEST	KILOGRAMS
Tas industry/restock.....	756
Tas research/culture.....	7
Samples.....	1
IFC samples.....	5
Total.....	769

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