

## INLAND FISHERIES COMMISSION

### NEWSLETTER

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#### STOCKING WITH HATCHERY RAISED FISH

Evidence in scientific papers from overseas continues to show that stocking with hatchery raised trout contributes little to anglers catches and further, in some places it has an adverse affect on stocks of fish already present.

Numerous works, among them Foerster (1968), Brynildson and Mason (1975) and Fraser (1978) have reported slow growth and or reduced yields of salmonids in natural waters due to excessive intra-specific or inter-specific competition.

In aquarium studies, Fenderson and Carpenter (1971) showed that landlocked atlantic salmon voluntarily reduced their feeding rate when population density increased. Refstee (1977) clearly demonstrated that the growth and survival of rainbow trout in aquaria were inversely related to population density. A recent scientific paper by Keith A. Harvey in the American Fisheries Society Journal of 1980, showed clearly that an inverse relationship existed between stocking rates and subsequent growth and yield for four groups of landlocked atlantic salmon stocked at Long Pond, Maine, between 1952 and 1969. Jensen (1977) in his excellent paper on wild brown trout in Lake Ovre, Heindalsbatn, Norway implies that intra-specific competition at high density levels tend to produce small, slow growing trout of inferior quality.

From experiments over the years with brown trout, the Inland Fisheries Commission has shown that when brown trout were transferred from Great Lake to Lake Crescent, they were able to increase in condition and put on accelerated growth. Further, wild brown trout transferred to streams and to waters such as Lake Leake, did not increase in condition or size.

#### INSPECTION OF LIAWENEE FIELD STATION

The Commission proposes to open the field station for inspection during the brown trout spawning run. The people who are interested are cordially invited to attend on that occasion. The date of the open day will be announced later.

Should a party of anglers wish to inspect facilities at an

earlier date, the Commission would be pleased to make staff and facilities available. . . . However, as visits cause disruption to staff engaged on research and management projects, it would be desirable for visitors to inspect the station on a scheduled open field day.

#### AUDIT FEES

The Treasury Department has advised the Inland Fisheries Commission that the audit fees for the current year are \$1 575 which is a rise on that of the previous year when the fee was \$800. An audit clerk was with the Commission for a period of about six weeks.

#### NEW NORFOLK SPORTSMAN'S CLUB

For a number of years, the New Norfolk Sportsman's Club has shown commendable public spirit in carrying out a community project at Silver Plains, Lake Sorell. The club has kept the foreshore tidy and it is with regret that the club has advised that it proposes to cease this activity as from the end of February 1981. Those anglers who co-operated with the club are to be congratulated on their efforts and it is hoped that now a sign to a public tip area has been erected, litter conscious people will dispose of their refuse in an appropriate manner.

#### FISH EXPO 1984

The Tasmanian Fisheries Development Authority is planning a Fish Expo 1984 for Tasmania and it is proposed that the Inland Fisheries Commission make a contribution to the venture which is at the early stage of planning.

#### CHLORINATION

The Hydro-Electric Commission and the Inland Fisheries Commission propose to hold further discussions regarding the chlorination of the Tarraleah canals and pipes. Some experimentation was carried out on this matter in the late 1960's.

#### MAGISTRATES DECISION

The Commission is more confident in dealing with cases of poaching in rivers in the north-west, following decisions by two Magistrates in 1980, concerning whitebait offences.

## AGE AND GROWTH OF BROWN TROUT FROM LAKE MIKANY

Scale samples from seven brown trout caught on the 4 January 1981 have been examined and the ages and sizes of the fish are set out in the table below. The samples were supplied by Mr. M. Medwin.

Age and Growth of Brown Trout, Lake Mikany 1981

No.	Fork length cm	Weight g	Age
1	39.0	600	3+
2	34.5	500	2+
3	34.0	480	2+
4	32.0	400	2+
5	32.0	350	2+
6	32.0	320	2+
7	30.0	300	2+
Average	33.4	421	

## Summary

No.	Average length cm	Average weight g	Age
6	32.4	392	2+
1	39.0	600	3+

An average length of 32.4cm and weight of 392gm in the summer of the third year of life (2+), represents a similar initial growth rate to that recorded in the Pet Dam. However, it is the growth after spawning (usually after the third year), which is important to an understanding of the growth of trout in a particular water. Therefore, scale samples from a number of older fish would be needed in order to assess trout growth in Lake Mikany.

## RIVER GAUGING WEIRS AND FISH PASSES

The Commission has held further discussions with the Rivers and Water Supply Commission regarding the provision of fish passes and river gauging weirs. In the last few years, the Commission has carried out research on fish migration upstream in the Plenty River and these researches have shown that summer is the most important time for upstream migration of native fish. The Commission has had success with a project at Buttons Creek, where the Department of Main Roads constructed a fish

pass to the Commission's specifications. The Commission carried out a survey of coastal weirs, showing the urgent need for ladders on low level weirs. These are reported elsewhere in this newsletter. Little can be done to improve the position with V-notch type weirs but these are mainly located in the upper reaches of small rivers and thus do not pose such a problem to fish migrations as the larger weirs closer to the coast.

Following discussions it was agreed that a bolt-on type of fish ladder would have little effect on the gauging and any effect it did show could be analysed to provide appropriate correction factors. The Rivers and Water Supply Commission favoured permanent ladders but it was agreed to continue experimentation which may lead to a design for future weirs and for permanent inclusion on existing weirs. The Inland Fisheries Commission is to build a proposed ladder for erection on the weir at the Duck River as this would be an appropriate testing site for the new ladder. The construction of this ladder is in course.

On the 29 January 1981, the Rivers and Water Supply Commission gauging weir on the Duck River near Smithton was inspected and the river immediately below the weir was electro-fished in order to assess any build-up of migratory fish species. The fish population in order of abundance is as follows:

1.	Elver	<u>Anquilla australis</u>
2.	Jollytail	<u>Galaxias maculatus</u>
3.	Sandies	<u>Pseudaphritis urvillii</u>
4.	Tasmanian smelt	<u>Retropinna tasmanica</u>
5.	Brown trout	<u>Salmo trutta</u>

Elvers, sandies, galaxiids and smelt were found in very large numbers beneath the weir. It seems likely that sandies, galaxiids and smelt are unable to pass this barrier under the conditions of flow that existed at the time of inspection. Sandies and galaxiids were observed swimming at a 20cm high lip surrounding a cough near the centre of the weir. However, the straight edge on the top of the weir and concrete abutments on each side, appear to form an insurmountable barrier for these small fish.

Large short-finned eels and sea-run brown trout were also found below the weir and it seems likely that they were feeding on the abundant small fish. Two trout guts were examined and found to contain sandies.

A local angler, Mr. Brooks Jnr., stated that the weir prevents the upstream migration of whitebait (presumably Galaxias spp. and smelt).

He said that at times he has seen the water below the weir choked with "whitebait". Mr. Brooks also said freshwater crayfish were sometimes found beneath the concrete abutments and he claimed that they were unable to climb the weir.

There is little doubt that the gauging weir on the Duck River prevents the upstream migration of several native fish species. This situation could be alleviated by the construction of a small fish pass which need only operate from November to January each year to ensure satisfactory upstream migration.

#### EMU RIVER WEIR

The fish pass on the Emu River near Burnie was inspected at low tide on the 27 January 1981. Unpigmented juvenile galaxiids were seen below the spillway. These were later identified as G. maculatus. Small sandies, Pseudaphritis urvillii, were also collected by hand net. Freshwater shrimps, Paratya tasmaniensis, were abundant and appeared to be climbing the spillway.

From an examination of the fish pass, it appears to be suitable for sea-run trout, eels, lampreys and climbing galaxias. However, the pass in its present form could well hinder or prevent the upstream migration of G. maculatus, G. truttaceus and P. urvillii.

This fish pass could readily be improved to facilitate the migrations of these species by placing stones or cement blocks in the corner of each step, thus enabling the fish to swim without the need to jump. A wooden or steel baffle could be installed at the top of the ladder in order to reduce the water velocity at the crest of the weir.

#### DAM ON THE MINNOW RIVER - LOWER BEULAH

On the 26 January 1981, the dam across the Minnow River on Mr. Lang's property at Lower Beulah was inspected to determine the effect of the barrier on fish migration. A 40 metre section of the stream immediately below the dam was electro-fished. Above the dam the backed up water was too deep to electro-fish and a small gorge upstream prevented access. The nearest suitable stretch on the Minnow River was 2 km upstream, where the Lower Beulah Road crosses the river. Here, a 50 metre section of the river was electro-fished.

As the dam on the Minnow River is some 40 km from the sea, it seems unlikely that it will effect fish movement to any significant extent.

Although no G. maculatus were found in the upstream section, this is probably not due to the dam, as it is likely that the small gorge above the dam is the upper limit of G. maculatus distribution. Lampreys,

eels and G. brevipinnis should easily find their way over the barrier and brown trout were found to be plentiful further upstream. It was therefore concluded that a fish ladder over the dam would serve little purpose.

The catches in the two sites which were electro-fished are set out below:

Site 1 Minnow River

Location: Immediately downstream of barrier  
 Distance electro-fished: 40 metres  
 Number of runs: 1  
 Details of catch:

Common Name	Species	Number
Blackfish	<u>Gadopsis marmoratus</u>	36
Adult lamprey	<u>Geotria australis</u>	1
Ammocoete lamprey	<u>Geotria australis</u>	1
Short-finned eel	<u>Anguilla australis</u>	4
Jollytail	<u>Galaxias maculatus</u>	35
Climbing galaxias	<u>Galaxias brevipinnis</u>	1
Brown trout	<u>Salmo trutta</u>	15

Site 2 Minnow River

Location: 20 km upstream of barrier at road bridge  
 Distance electro-fished: 50 metres  
 Number of runs: 1  
 Details of catch:

Common Name	Species	Number
Blackfish	<u>Gadopsis marmoratus</u>	1
Adult lamprey	<u>Geotria australis</u>	0
Ammocoete lamprey	<u>Geotria australis</u>	6
Short-finned eel	<u>Anguilla australis</u>	10
Jollytail	<u>Galaxias maculatus</u>	0
Climbing galaxias	<u>Galaxias brevipinnis</u>	0
Brown trout	<u>Salmo trutta</u>	65

BUTTONS CREEK

On the 27 January 1981, the fish passes on the Buttons Creek diversion near Ulverstone were inspected in order to determine the extent of upstream fish movement.

Although Buttons Creek was low, there was still an adequate flow down ladders. The presence of large schools of juvenile G. maculatus above the ladders suggested that this species had migrated upstream successfully.

A 60 metre section of the creek immediately downstream of the bottom drop structure was electro-fished in order to sample any build-up of migratory fish below the weirs. A 50 metre section above the top drop structure was also electro-fished.

The electro-fishing results suggest that juvenile G. maculatus have been able to migrate upstream. There is no doubt that lampreys, eels, grayling, climbing galaxiids and trout would find no difficulty climbing the ladders. It appears that the sandy, P. urvillii, is the only species likely to encounter difficulties. An inspection revealed that the ladders could easily be improved by placing several large rocks in each step. Thus modified, all species should have little difficulty in surmounting the drop structures. Rocks were placed temporarily in each step and are to be cemented in place by Inland Fisheries Commission officers at a later date.

The details of fish caught in the electro-fishing tests are set out below:

Site 1 Buttons Creek

Location: Downstream of bottom drop structure  
 Distance electro-fished: 60 metres  
 Number of runs: 1  
 Details of catch:

Common name	Species	Number
Adult jollytail	<u>Galaxias maculatus</u>	80
Juvenile jollytail	<u>Galaxias maculatus</u>	20
Brown trout	<u>Salmo trutta</u>	11
Sandy	<u>Pseudaphritis urvillii</u>	10
Short-finned eel	<u>Anguilla australis</u>	3
Australian grayling	<u>Prototroctes maraena</u>	6

## Site 2 Buttons Creek

Location: Upstream of top drop structure  
 Distance electro-fished: 60 metres  
 Number of runs: 1  
 Details of catch:

Common Name	Species	Number
Adult jollytail	<u>Galaxias maculatus</u>	80
Juvenile jollytail	<u>Galaxias maculatus</u>	15
Brown trout	<u>Salmo trutta</u>	8
Sandy	<u>Pseudaphritis urvillii</u>	1
Short-finned eel	<u>Anquilla australis</u>	1
Australian grayling	<u>Prototroctes maraena</u>	0

## LAKE SORELL AND MOUNTAIN CREEK

An inspection of Lake Sorell and Mountain Creek was carried out on the 24 February 1981. A boat ramp installed by the Lands Department off Silver Plains Road now provides good access to Lake Sorell.

There is a rock rubble bar in Mountain Creek which, at the higher water level, expected when trout spawn, would not impede their upstream movement. The lower reaches of the creek are clear of hazards to fish.

Field staff have repaired the weir and improved access for fish in Mountain Creek. The work done so far has been well executed and considerable improvements made. Some burning is to be carried out when the fire ban is removed. The programme of improvement is to extend over several years, depending on the availability of machinery, labour and funds.

## LAKE MACKINTOSH

Rosebery anglers forwarded a brown trout found dead on the shore of Lake Mackintosh. The fish was a two year old male of 291mm in length and 400g in weight. The growth of the fish showed that it had spent two years in the river and had started a sudden growth increase in the current year as a result of the lake formation.

The trout was in excellent condition and feeding freely at the time of death. The abrasions around the body are consistent with severe net marks, rather than injuries received from a predator (e.g. cormorant, water rat or large fish). It seems likely that the fish had been caught in a graball net and either escaped or was returned to the water where it died and washed ashore.

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