

## NATIVE FISHES OF THE CENTRAL PLATEAU AREA - TASMANIA

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In comparison with the northern hemisphere, the major continents of the southern hemisphere have a relatively small freshwater fish fauna. This is probably due to the fact that the predominant portions of the main southern hemisphere land-masses lie in tropical, subtropical or temperate zones and except for the southern-most extremities are not overendowed with rivers and lakes. Consequently the potential for invasion of fish into freshwater areas where they can become established is limited. Most freshwater fishes living today are considered to be derived from marine ancestors which have subsequently invaded freshwater. Evidence for this can be found in the fact that many groups of fishes which are considered to be predominately freshwater species periodically descend to the sea or to the estuaries to spawn or carry out some other phase of the life cycle.

In Australia, including Tasmania, by far the largest number of freshwater fish species are to be found in the estuarine and coastal areas around the continent with only a few groups of species penetrating any great distance inland, or in the case of Tasmania, upland.

Many species such as the sprats (*Clupea*), anchovys (Retropinnidae) are considered to be freshwater species on account of their ability to penetrate inland rivers, but most species require to return to the sea or estuaries at some stage in the life cycle for breeding.

Other groups of fish in this category are the lampreys, freshwater catfish, mullets, hardyheads and silver fish of which there are altogether about ten species in Tasmania. One species of smelt *Lovettia sealii* (Johnston) forms the basis of the commercial whitebait fishery and was a species of some considerable economic importance up to about the 1950's.

In considering the distribution of freshwater fishes in Tasmania the state can be conveniently divided into two areas. The first, which comprises the estuarine and coastal region around the state contains the large majority of diadromous and freshwater species. The second region

consists of the upland region in the central, north and western areas and including the west coast ranges. Only a few groups of fishes have managed to penetrate these areas.

The blackfish, *Gadopsis marmoratus*, and the Australian bass *Percaletes colonorum* have been recorded from the northern part of the state but are very limited in distribution and do not penetrate the upper reaches of the Central Plateau. The blackfish was introduced into the upper reaches of the Derwent River system at some time during the last century but no specimens have been recorded in recent years.

The freshwater flathead or "Sandy" is another species, (*Pseudaphritis bursinus*), which can tolerate either fresh or sea water and achieves a penetration further inland than most other species (cf Jordan River).

Only three groups of native freshwater fishes have successfully invaded the major lake and river systems of the Central Plateau. The short-finned eel, *Anguilla australis* is widely distributed throughout the whole of Tasmania including virtually all the Central Plateau together with the lakes and artificial storage areas created for hydro-electric schemes. This species which is capable of attaining a size of three feet or more is becoming increasingly important as an economic species principally for the export market. Catches of eels are currently in the range of some thousands of pounds annually and this figure is steadily increasing. During the breeding season the eels descend to the sea and the juvenile eels or elvers then migrate back up the rivers where they grow to maturity.

The two remaining Central Plateau groups are two families of salmoniform fishes, the Galaxiidae and the Aplochitonidae. Both these groups belong to the Order Salmoniformes which also contains the salmon and trout of the northern hemisphere but whereas the salmon and trout are only found in the northern hemisphere, the Aplochitonidae and the Galaxiidae are wholly confined to the southern hemisphere. The distribution of these two families in the southern hemisphere not surprisingly parallels the distribution of the northern hemisphere Salmonidae. This is a logical situation. As the two families are fairly closely related, it is not surprising to find them occupying similar situations.

The family Aplochitonidae has two species in Tasmania, one *Lovettia sealii*, mentioned previously is the commercial whitebait species. The other, the grayling *Prototroctes maraena*, was once widely distributed throughout Tasmania but is now very rare and may possibly be extinct. The grayling is very similar in appearance to a trout and has fine scales and a small adipose fin behind the main dorsal fin. Robert McKenzie Johnston writing in the 1880's had high praise for the grayling both as a sporting and food fish. "This fine little fish is the most delicious of our freshwater fish. It is found abundantly in the Mersey and northern and western rivers and affords excellent sport to anglers". (cf New Zealand)

The remaining family, the Galaxiidae, is by far the most abundant and widely distributed of all the native freshwater fish, and the only group to have invaded virtually all of the Central Plateau area. The family Galaxiidae is found in all the southern hemisphere landmasses with the largest number of species occurring in Australia and New Zealand. They are locally known as native trout, mountain trout, jollytails or minnows. The use of the words "trout" or "minnow" is to be deprecated however as both are inaccurate and misleading. Prior to the introduction of trout in the 1860's fishes of the family Galaxiidae existed in enormous numbers in virtually all the lake and river systems of the Central Plateau. Currently about twelve species in four genera are recognised but recent investigations have shown that there are probably only about nine or ten valid species, the remainder probably being merely varieties of earlier described species.

Again, because of the widespread distribution of the Galaxiidae in Tasmania it is necessary to divide the state into two areas, the coastal margin and the Central Plateau. Some species notably *G. maculatus* (Jenyns) spawn in estuaries and deposit their eggs on the river banks. The eggs subsequently hatch and the larvae are washed out to sea where they undergo a developmental period and return later as transparent juveniles. This species in New Zealand forms the basis of the commercial whitebait fishery and is probably the most widely distributed of all freshwater fishes as it is found in Australia, New Zealand, Lord Howe Island and South America together with many of the subantarctic islands.

Another predominately coastal species *G. truttaceus* Valenciennes, the spotted mountain trout, has a much deeper penetration (inland) than *G. maculatus* although the largest population densities usually occur only a few miles from the sea. There is evidence however that the Central Plateau area may have at one time been extensively invaded by this species as small populations have been recorded from the Great Lake and areas around Bronte Park. If it is assumed that the invasion of the Central Plateau by this species occurred via the Derwent River system subsequent to the retreat of the Pleistocene glaciation, then it appears that no further invasion can take place as the Derwent River is now barricaded by a series of dams.

The remaining Tasmanian species of Galaxiidae are entirely confined to freshwater and most appear to be able to carry out the entire life cycle confined to one body of water without the necessity of descending to the estuaries to spawn. The most abundant species, *G. brevipinnis*, Gunther, is found on the Australian mainland, Tasmania, including Flinders and King Islands, and New Zealand. In Tasmania the species is more or less evenly distributed over the entire state although the populations in much of the Central Plateau area have been fragmented by introduced species. It is also common in some coastal areas and is frequently encountered in whitebait catches along with *G. truttaceus* and *G. maculatus*.

The wide distribution of this particular species is due in part to its unique climbing ability involving the use of large flattened pectoral fins. For this reason it is frequently found in situations which would be completely inaccessible to other species. The distribution in the Central Plateau is considered to have taken place following the withdrawal of the glaciers which covered parts of the area during the Pleistocene. Prior to the 1930's the species was abundant in the Great Lake, Lake St. Clair, Arthurs Lake and Lake Echo. The species is also found in most of the lakes in the Cradle Mountain area and the west coast ranges. It is among the largest of the Tasmanian galaxiids and individuals of eight or nine inches (20-22.5cm) in length are not uncommon

Another Central Plateau species, *G. auratus* Johnston, is found in the two adjoining lakes, Lake Crescent and Lake Sorell. This species is a conspicuous golden colour and at

certain times of the year is present in very large numbers, particularly in Lake Crescent.

The remaining species found in the Central Plateau are largely small and restricted in distribution. Consequently little is known of the biology of these species. *G. johnstoni* Scott has only been found in a few small sections of the Clarence River and its nearest relative would appear to be *G. olidus* Gunther, from the Australian mainland. The species may possibly have had a wider distribution in the past and the present indicates a relic pattern, probably the result of competition with other species.

Another somewhat unusual species is known to have occurred on the Central Plateau. During the early 1930's specimens were collected from that once famous stretch of water leading from the old multiple arch dam at Miena into Shannon Lagoon. This short stretch of water, about half a mile in length was formerly the site where the "Shannon Rise" took place. During certain times of the year spectacular hatches of the snowflake caddis moth took place in the waters and attracted large numbers of trout which provided good angling. This species, *Paragalaxias shannonensis* Scott differed so markedly from typical galaxiids that a new genus was created for it and some ichthyologists expressed the view that it was not a galaxiid at all. At one time it was thought to be related to a South African species but this has subsequently been disproved. This species is unknown from other areas except for a few incidental specimens recovered from trout stomach contents. The present status of the species is unknown as the site where the "Shannon Rise" took place which consisted of a fast flowing stream over boulders is now not flowing at all. Only two or three specimens have been collected during the past twenty years and recent attempts to collect this species have failed.

Only two further species are at present known to inhabit the central area of Tasmania. Both these species, *G. parvus* Frankenberg and *G. pedderensis* Frankenberg are restricted to a small area of the south west in the Lake Pedder - Mt. Anne area and were discovered as recently as six years ago. Very little detailed information is presently available concerning the ecology and distribution of these species.

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