

Clarence Galaxias, *Galaxias johnstoni*

Fulton 1978

**Status**

Commonwealth *Endangered Species Protection Act*
1992.....Endangered
Tasmanian *Threatened Species Protection Act*
1995.....Endangered

Description

The Clarence galaxias (*Galaxias johnstoni*) is a small freshwater fish that reaches a maximum length of approximately 127mm. Juveniles are lightly coloured and begin to develop adult colouration at approximately 40mm. Adults are usually dark brown on the back with this colour extending down the sides in bars and irregular bands and patches, becoming lighter towards the underside. The belly is usually yellowish in colour. Numerous very small black spots are often present which are parasites rather than natural markings (Fulton 1990).

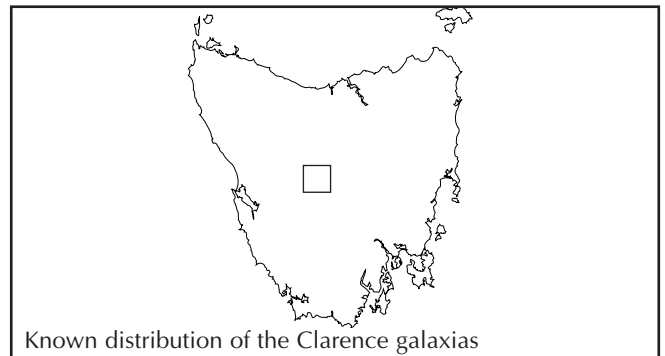
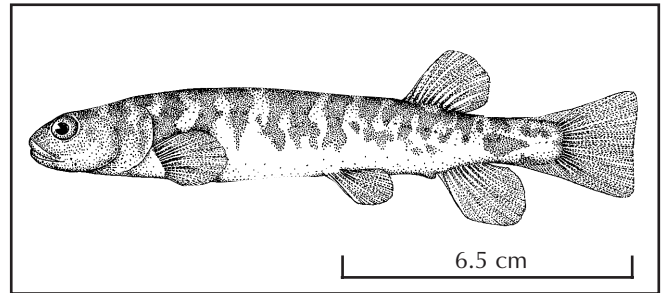
The Clarence galaxias spawns in spring. Eggs have been found laid in masses attached to rocks in the lower reaches of a stream flowing into the lagoon at Wentworth Hills. The eggs take approximately two months to hatch and hatchlings have been observed swimming in open water in small schools. Hatchlings and small juveniles feed on small insects while the diet of larger fish is comprised mainly of bottom-dwelling insects. The normal life span of the Clarence galaxias is thought to be four to five years (Sanger and Fulton 1991).

Distribution and Habitat

The Clarence galaxias is found only in central Tasmania, restricted to the Clarence and Nive River catchments. The species was first described from specimens collected from a tributary of the lower Clarence River in the 1930's (Scott 1936). By the mid 1980's, the only known population was in Clarence Lagoon in the upper Clarence River catchment (Andrews 1976; McDowall and Frankenberg 1981).

In 1987-89, a detailed survey of the species' distribution was conducted by the Inland Fisheries Commission (IFC) and a total of five populations identified (Sanger and Fulton 1991). A sixth population was discovered in 1997 and a seventh population was found during surveys conducted in 1998. Six of the known populations are located in the headwaters of the Clarence River and a seventh population exists in a small headwater tributary of the Nive River.

Distributional surveys conducted over the past decade show that despite several new sites, the range of the



Known distribution of the Clarence galaxias

Clarence galaxias has contracted and become fragmented. The decline of the species has been attributed to the gradual spread of brown trout (*Salmo trutta*) throughout the Clarence River catchment (Sanger and Fulton 1991). Currently, the Clarence galaxias is restricted to a few headwaters in the Clarence and Nive River catchments that do not support brown trout populations. The largest known population of Clarence galaxias occurs in Clarence Lagoon together with brook trout (*Salvelinus fontinalis*). Smaller populations exist in an unnamed lagoon upstream of Clarence Lagoon, in an unnamed lagoon in the Wentworth Hills, in the headwaters of Dyes Rivulet, in Dyes Marsh, in Tibbs Plains Marsh and in an unnamed marsh to the north-east of Skullbone Plains.

Adult Clarence galaxias occupy stream, marsh and lake habitats. This variety of habitat types shows that the species is not highly selective in its habitat requirements. However, requirements for spawning and/or larval development may be more specific. The distribution of the Clarence galaxias is limited by the presence of brown trout in otherwise suitable habitats.

Important Locations

All populations of Clarence galaxias are essential to the species' long-term viability and require protection and management.

The important locations are:

Clarence Lagoon - Location 1

The Clarence Lagoon important habitat is defined as all waters contained within Clarence Lagoon and all land within 100 m of the shores of the lagoon. This important habitat area should also include all tributaries of Clarence Lagoon within 100m of the shores of the lagoon and 50m buffer zones on either side of these tributaries.



Unnamed lagoon north of Clarence Lagoon - Location 2

This important habitat area is defined as all land and waters surrounding and entering the lagoon north of Clarence Lagoon.

Unnamed lagoon at Wentworth Hills - Location 3

This important habitat area is defined as all land and waters enclosed by the 1000m contour line surrounding Wentworth Hills. This area corresponds to the current Forestry Tasmania Wildlife Priority Area.

Dyes Rivulet and Dyes Marsh - Location 4

This important habitat area is defined as all land and waters surrounding and entering the rivulet and marsh.

Tibbs Plain Marsh - Location 5

This important habitat area is defined as all land and waters surrounding and entering Tibbs Plain Marsh.

Unnamed marsh to the north east of Skullbone Plains - Location 6

This important habitat area is defined as all land and waters surrounding and entering the marshes of Skullbone Plains.

Threats, Limiting Factors and Management Issues

Clarence galaxias cannot co-exist with brown trout due to predation and/or competition with the species. From a former distribution which probably included most of the Clarence River drainage area and parts of the Nive River catchment, the range of the Clarence galaxias has been reduced to only seven known populations occurring in waters that remain isolated from brown trout. Further introductions of brown trout into the remaining habitats occupied by Clarence galaxias, either by natural dispersal or illegal introduction, are a significant threat to the species.

Habitat destruction and pollution

Logging activities in the headwaters and upstream of rivers, creeks and lagoons occupied by the Clarence galaxias should be managed to ensure that there is no damage to flows or increased turbidity in waters occupied by the fish. Forestry Tasmania has established Wildlife Priority Areas to protect the species from logging in specific locations.

Captive breeding and relocation

With evidence that the population is still in decline, a program for increasing the numbers is required. Translocation will require that full surveys of the water destined for introduction take place and some assurance that other threatened or endemic species are not put at risk. Any captive bred specimens due for release should be screened for health so that they do not jeopardise the natural population in any way.

Conservation Assessment**Current status**

As brown trout were introduced into the Clarence and Nive River catchments prior to the discovery of the Clarence galaxias, the original distribution of the species is unknown. However, the collection of specimens from

the lower Clarence River catchment in the 1930's shows that the Clarence galaxias was more widely distributed in the past than it is at present.

Reservation Status

Populations of Clarence galaxias found at location 2 occur on land owned by Northern Forest Investments (land parcel number 0876). The natural barrier protecting location 6 from trout immigration also occurs on land owned by Northern Forest Investments (land parcel number 0880).

Populations found at locations 1 and 6 occur within the Central Plateau Protected Area.

Populations found at locations 3, 4 and 5 occur on State Forest which is a Wildlife Priority Area subject to management prescription.

Assessment Criteria

The Clarence galaxias is listed as endangered on the Tasmanian *Threatened Species Protection Act 1995* because of its:

- Restricted area of occurrence
- Limited area of occupancy
- Continuing decline in populations and fragmentation of populations

Recovery Program**Recovery Plan**

A recovery plan was prepared for the Clarence galaxias to provide a series of recovery criteria and actions for the species (Crook and Sanger 1997). This plan details funding contributions from sources including the IFC, the Endangered Species Program of Environment Australia, the Tasmanian Parks and Wildlife Service, volunteers and sponsors.

The long term objective of the Clarence galaxias recovery program is to improve the conservation status of the species so that it can be downlisted from endangered to vulnerable. Within the five year span of the recovery plan, the aim is to secure the existing natural populations and to extend the range of the species by establishing translocated populations.

Recovery will be assessed against the following criteria:

1. At least ten self-maintaining populations of the species should exist within five years. The minimum size of these populations should exceed a total of 500 adult fish.
2. No further population declines or reductions in range should occur due to interactions with introduced fish in the next five years.
3. Detailed protocols for captive breeding of the Clarence galaxias should be produced.



Actions Needed

The following actions are outlined in the recovery plan for the Clarence galaxias (Crook and Sanger 1997).

Monitor natural populations

Natural populations should be regularly monitored to ensure they remain viable and isolated from introduced fish species.

Establish and monitor translocated populations

The apparent success of the Pedder and Swan galaxias translocation programs highlights the importance of translocation as a recovery action for Tasmania's endemic galaxiids. A small number of translocations should be attempted in locations within or near the Clarence River catchment. Before translocation, each potential site should be assessed for its suitability regarding water permanency, accessibility, presence of other fish species and other threatened fauna. Translocated populations should be monitored routinely to ensure their ongoing viability and isolation from brown trout.

Captive Breeding

A captive breeding program should be conducted with the aim of producing a manual outlining detailed methods for hatching and rearing threatened galaxiids in captivity. These methods may be applied to the rearing and subsequent release of Clarence galaxias in the future. The methods are also likely to be directly applicable to a number of other threatened fish species and will provide an opportunity to conduct research into the reproduction and behaviour of galaxiid fishes in general.

Habitat Management

Clarence Lagoon has been stocked with brook trout since 1963 and the Clarence galaxias has remained relatively abundant in the lagoon since that time. A series of recommendations regarding trout stocking policy at Clarence Lagoon was produced by the IFC in 1991 (Sanger and Fulton 1991). These recommendations affirmed the importance of continued stocking of Clarence Lagoon with brook trout to provide a relatively benign alternative to brown trout for the anglers who fish this water. It was suggested that while a healthy and numerous brook trout population exists at Clarence Lagoon, the risk of illegal brown trout introductions by anglers is minimal. It was also recommended that the trout-free status of the Wentworth Hills lagoon be maintained and that brown trout be removed should they be illegally introduced to this water. For the Dyes Marsh and Dyes Rivulet populations, it was recommended that these waters be maintained free of brown trout.

The area surrounding the unnamed lagoon at Wentworth Hills has been proclaimed a Wildlife Priority Area by Forestry Tasmania with the recommendation that development of road access to the lagoon be prevented. This recommendation aims to discourage the illegal introduction of brown trout into the lagoon.

As part of the recovery program, any locations suitable for the installation of barriers to brown trout should be identified and barriers constructed. If brown trout invade habitats containing populations of Clarence galaxias, an

assessment of the feasibility of trout removal should be conducted. Any decision to attempt eradication of trout in such a situation must take scientific, logistic and social issues into account.

Public information and education

The Clarence galaxias should be included in a public information and education campaign to increase awareness of Tasmania's unique galaxiids within the community.

Source Material

References

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Specialist Advice

Stuart Chilcott, Inland Fisheries Commission

Review and Further Information

Statement prepared: September 1998

Prepared by: David Crook and David Andrews

Review Date: Expiry of current recovery plan or as new information is received.

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Further information

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Permit It is an offence to collect, possess, or disturb this species unless under permit from the Director, Parks and Wildlife Service and the Commissioner, Inland Fisheries Commission.