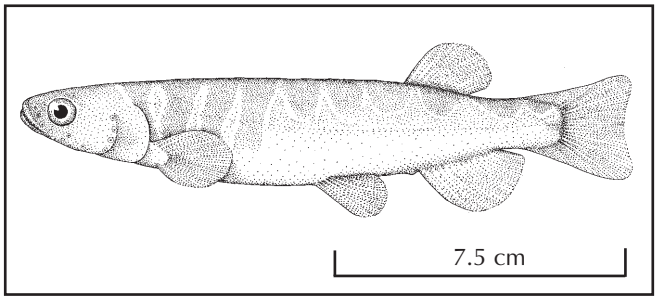
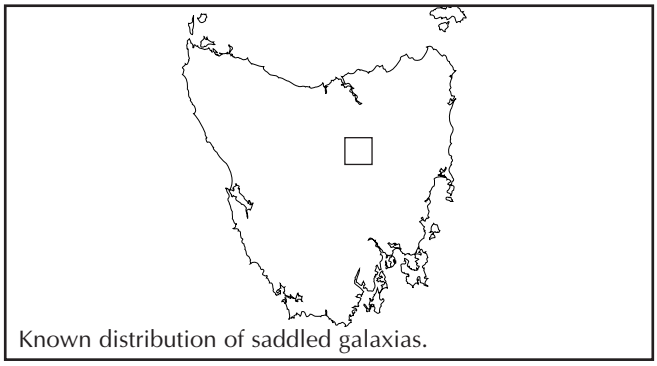
THREATENED SPECIES LISTING STATEMENT

Saddled Galaxias, *Galaxias tanycephalus* Fulton 1978




Known distribution of saddled galaxias.

Status

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

Description

The saddled galaxias (*Galaxias tanycephalus*) is a native freshwater fish that reaches a maximum length of about 150mm. Its markings appear as a series of saddles that cover the back and sides. This pattern often disperses to become large oval spots along the back. Smaller fish are dark olive on the back, yellow-green around the markings and have a silver belly. Larger specimens may appear black on the back and sides with a purple sheen and a greyish belly. The fins may have black edges but this is not usual (Fulton 1990).

Adult saddled galaxias are generally bottom-dwelling and feed mainly on crustaceans and aquatic insects (Fulton 1990). Larvae and juveniles feed on planktonic insects. Saddled galaxias generally spawn at one year of age and there appears to be both autumn and spring spawning periods. Small fish are present in Woods Lake all year round with a peak in summer (Sanger and Fulton 1991).

Distribution and Habitat

The saddled galaxias is found only in Arthurs Lake, Woods Lake and in nearby sections of the Lake River in Tasmania's Central Highlands. The species was described by Fulton (1978) from specimens collected from Arthurs Lake in 1976. Both lakes in which the saddled galaxias occurs are natural lakes that were raised by dams constructed by the Hydro Electric Corporation (HEC).

Habitat
The saddled galaxias is almost exclusively lake dwelling with adults occupying rocky lake margins. The relatively small numbers of saddled galaxias found in parts of the Lake River are thought to be vagrants swept out of the normal lake habitat through outflow releases.

Important locations

Both of the lakes that support populations of saddled galaxias are essential to the long-term survival of the species and require protection.

Woods Lake - Central Tasmania
All waters and lands contained within the full supply level of the lake and all lands and waters within 100m of the full supply level.

Arthurs Lake
All waters contained within the full supply level of the lake and all lands and waters within 100m of the full supply level.

Threats, Limiting Factors and Management Issues

Brown trout (*Salmo trutta*) were introduced into Arthurs Lake and Woods Lake at around the turn of the century. Saddled galaxias have almost certainly been preyed upon heavily by trout in both lakes since then. Despite this predation, the species has maintained a small population in Arthurs Lake and an abundant population at Woods Lake. Whilst the current levels of trout predation appear sustainable, at least in Woods Lake, the possibility of future introductions of undesirable species poses an on-going threat to the saddled galaxias. Although not currently present in the Arthurs Lake and Woods Lake catchments, European carp (*Cyprinus carpio*) are present in Lake Sorell and Lake Crescent only 8km to the east of Woods Lake and redfin perch (*Perca fluviatilis*) are present in the Lagoon of Islands only 2km to the south-west.

In addition to the impacts of introduced fish, deteriorating quality of habitat is a potential threat to the saddled galaxias. Water quality has been a concern at Woods Lake for a number of years and is regularly monitored by the HEC and the Inland Fisheries Commission (IFC). The Ripple Creek diversion canal directs nutrient-rich water into the lake for much of the year and it is likely that these nutrients contribute to the severity of periodic algal blooms. Removal of water from Woods Lake for irrigation has also caused water quality deteriorations and the de-watering of saddled galaxias habitat.

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Translocation is worth considering. It has worked well with two other galaxias and may help with the conservation of this species. There are other smaller lakes near Arthurs Lake which should be considered. These lakes contain brown trout but they could be removed.

Conservation Assessment

Current status
The distribution of the saddled galaxias is confined to Arthurs Lake, Woods Lake and nearby sections of the Lake River in the Central Highlands of Tasmania. The saddled galaxias is uncommon in Arthurs Lake and is abundant in Woods Lake. Possible reasons for the smaller population size at Arthurs Lake are the lake's very large trout population, high water clarity and relatively low planktonic productivity. Although Woods Lake also has a large trout population, its waters are more turbid. This turbidity reduces trout predation, and enables a greater success rate of hatchlings and juveniles joining the adult population (Sanger and Fulton 1991).

Reservation Status
Arthurs and Woods Lake are under the jurisdiction of the HEC and both are maintained at artificially high levels by impoundment.

Assessment Criteria

The saddled galaxias is listed as vulnerable (*Endangered Species Protection Act 1992*, Wager and Jackson 1993, Australian Society for Fish Biology 1995, and the *Threatened Species Protection Act 1995*) due to its acutely restricted distribution and low number of populations. The relatively low numbers of saddled galaxias in Arthurs Lake and its apparent absence from two small lakes connected to Arthurs Lake indicate the species' vulnerability to trout predation.

Recovery Program

A recovery plan was prepared for the saddled galaxias to provide a series of recovery criteria and actions for the species (Crook and Sanger 1997). This plan details 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 saddled galaxias recovery program is to improve the conservation status of the species so that it can be downlisted from vulnerable to a lower risk category. Within the five year span of the recovery plan, the aim is to secure the existing natural populations and to assess the potential for extending the range of the species through the establishment of translocated populations.

Recovery will be assessed against the following criteria:

1. An evaluation of all available options for translocation should be completed and its recommendations implemented.
2. No further population declines or reductions in range should occur due to interactions with introduced fish or water quality deteriorations in the next five years.
3. Detailed protocols for captive breeding of the saddled galaxias should be produced.

Actions Needed

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

Monitor natural populations
One of the actions aims at gaining knowledge of the structure and dynamics of the two saddled galaxias populations by regular monitoring. This knowledge will be particularly important if catastrophic declines similar to those of the Pedder galaxias were to occur amongst the saddled galaxias populations. In addition to the impact of trout, the presence of redfin perch and European carp in nearby lakes may present future threats to the saddled galaxias and increase the urgency for more detailed knowledge of the ecology of the species.

Assess feasibility of establishing translocated populations
An assessment of the feasibility of translocating saddled galaxias should be conducted as part of the recovery program. Sites identified as suitable for translocation must be similar to the natural habitats occupied by the species. The task of locating a suitable translocation site is more difficult for a species that naturally occurs in large lakes than for a species which occupies stream or swamp habitats. IFC surveys of the Lake River catchment have shown that there are no large lakes within or near the catchment that are free of introduced fish species. The feasibility of introducing saddled galaxias into two lakes linked to Arthurs Lake which contain trout populations should be examined and the potential of establishing populations within man-made dams should also be investigated.

Captive Breeding
A manual outlining detailed methods for hatching and rearing threatened galaxiids in captivity should be produced. These methods may be applied to the rearing and subsequent release of saddled galaxias in the future. The methods derived from a trial captive breeding program are also likely to be applicable to a number of other threatened fish species and will provide an opportunity to conduct research into the reproduction and behaviour of galaxiids in general.

Habitat Management
In Woods Lake, the saddled galaxias population remains relatively abundant and trout predation, whilst considerable, appears to have a limited impact. At Arthurs Lake, the saddled galaxias is uncommon due, at least partly, to high levels of trout predation (Sanger and Fulton 1991). Little can be done to reduce the impact of trout on saddled galaxias in either lake as both are large bodies of water that contain abundant and naturally sustainable trout populations.

Deteriorations in water quality also present potential threats to the two saddled galaxias populations. This is especially so at Woods Lake where high turbidity levels, algal volume and nutrient levels have been linked to lake management strategies (Sanger 1993, Crook 1995). The recovery program aims to reduce the chances of a decline in the saddled galaxias as

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a result of water quality deterioration. This will involve the continuation and formalisation of HEC management strategies which consider the requirements of the saddled galaxias.

Public information and education
The saddled 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

Crook, D.A. and Sanger, A.C. (1997). Recovery plan for the Pedder, Swan, Clarence, swamp and saddled galaxias. Inland Fisheries Commission, Hobart.

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Fulton, W. (1978). A description of a new species of Galaxias (Pisces: Galaxiidae) from Tasmania. *Australian Journal of Marine and Freshwater Research* **29**, 109-116.

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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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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.