

Summary of Dwarf Galaxid Surveys in NW Tasmania

16-19 September 2014



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**Report to the Forest Practices Authority, Department of Primary Industries,
Parks, Water and Environment and the Inland Fisheries Service**

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Cover photograph of dwarf galaxid sourced from <http://www.australianmuseum.net.au>. All subsequent photos by Dydee Mann (FPA).

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Background

The Dwarf Galaxias (*Galaxiella pusilla*) is a tiny freshwater fish endemic to south-eastern Australia, where it occurs in Tasmania, South Australia and Victoria. The species is listed as Vulnerable under the Federal *Environment Protection and Biodiversity Conservation Act 1999*, and under the Tasmanian *Threatened Species Protection Act 1995* and is considered a 'priority species requiring consideration' under the Tasmanian Regional Forest Agreement (1997).

The species spawns in late winter–spring, when females lay from 65–250 eggs, later fertilised by the male, and which take 2-3 weeks to hatch. Only one year-class has been observed, suggesting that the dwarf galaxias is an annual species. The dwarf galaxias is widely distributed, but populations are fragmented and patchy across the landscape. Major threats to the dwarf galaxias include wetland drainage, climate change, habitat damage through grazing and lack of regeneration, and feral fish competitors and predators (Saddler *et al*, 2010).

The dwarf galaxias core range in the northwest of Tasmania encompasses large areas of State Forest. Some of these areas contain blackwood and teatree swamp forest that meet the current description of potential habitat for dwarf galaxias agreed with DPIPW and delivered through FPA's Biodiversity Values Database. The potential habitat description is as follows;

'Potential habitat for the dwarf galaxiid is slow-flowing waters such as swamps, lagoons, drains or backwaters of streams, often with aquatic vegetation. It may also be found in temporary waters that dry up in summer for as long as 6-7 months, especially if burrowing crayfish burrows are present (although these will usually be connected to permanent water). Habitat may include forested swampy areas. Juveniles congregate in groups at the water surface in pools free of vegetation.'

Forestry Tasmania have a number of blackwood coupes planned for harvest in the current three year plan. Some of these have standing water for at least half of the year, and many have crayfish chimneys. Blackwood swamp forest has generally not been considered in forestry operations as potential habitat for dwarf galaxias in the past, and the habitat type has never been well surveyed for the species. The current recommendation for coupes in such situations is to contact FPA for management advice. FPA Ecologist Dydee Mann and consultant Jean Jackson conducted surveys for the species across a range of blackwood swamps and known sites, to inform the development of management actions for the conservation of the dwarf galaxias in these areas.

Methods, results & discussion

Coupes were selected for surveys if they

- a) were scheduled for harvest in the current three year plan (or had recently been harvested),
- b) were within or very close to the core range of the dwarf galaxias, and
- c) were known to contain potential habitat, or LIDAR hillshade imagery indicated the potential for swampy areas within or adjacent to the coupe.

Known sites were also surveyed where possible to provide a comparison. A total of 16 sites were surveyed over three days, including four sites where dwarf galaxias had been found at least once in previous surveys (Table 1).

At sites where water was present, searches for fish were made by rapid sweeping with an FBA net (1mm mesh), monorail net (3mm mesh), and/or electrofishing. Only a single fish was found, a southern pygmy perch *Nannoperca australis*, in a tributary drain of the Welcome River on SR113A (Table 1). Numerous crayfish burrows were present at all sites, and *Geocharax* crayfish were caught in the water at almost all sites (Figure 1). In three locations there was not enough standing water to conduct surveys at all.

Surface water occurred in defined streams or drains on coupes SR113A, SR125A, SR124A, SR035C and SR068B. In the NE area of SR068B the stream became dispersed in a shallow undefined channel but was still flowing. No fish were found in any of the streams and it is considered unlikely that dwarf galaxias would be present. None of the flat swampy areas in the forest contained free surface water at the time of survey, despite plenty of surface water present in areas of known sites further north (Harcus River Rd –Jims Plains area). These areas were not considered suitable dwarf galaxias habitat, as it appeared they would not hold surface water for very long.



Figure 1. SR068B blackwood swamp coupe showing shallow standing water. Inset: *Geocharax* crayfish.

To determine whether any dwarf galaxias were actually around and how big they were, several of the previously known sites were also surveyed (Jims Plain lot 6 paddock drain, Marcus River Rd roadside drain, Horsepiss Creek, Blue Bog). Time didn't allow for checking the two known sites in pools east of Jims Plains Rd (Murrell property). No fish were found and several known sites have been heavily impacted by improved pasture development, draining, nitrification and cattle trampling. The lack of dwarf galaxias at the sites surveyed may be because of the warm winter of 2014 resulted in early spawning and subsequent death of all adult fish and eggs have not yet hatched, or hatchlings are not yet large enough to be caught.

Outcomes

Taking into account the results of this survey and previous knowledge of the occurrence of this species it is highly unlikely that blackwood swamps support potential habitat for the dwarf galaxias. Therefore, the harvesting of blackwood swamp coupes within the core or potential range of dwarf galaxias is not considered to be a significant threat to this species.

The lack of capture of any dwarf galaxias individuals at the previous known sites is of concern. Further surveys should be conducted at the known sites later this year (if sufficient water exists) to rule out the possibility that this lack of capture resulted from an early spawning season. Ideally, surveys should also be conducted in the core range of dwarf galaxias in north eastern Tasmania.

References

Saddler, S., Jackson, J. and Hammer, M. 2010. National Recovery Plan for the Dwarf Galaxias *Galaxiella pusilla*. Department of Sustainability and Environment, Melbourne.

Table 1 Sites surveyed, method used and summary of the result

Site name	Site notes	Date	Northing	Easting	Methods	Survey results/notes
Swamp site 1 (SR117d)	intact coupe	Sep 17 2014	5461313	320356	No survey (not enough water)	waterlogged soil with plenty of burrows but no standing water.
Swamp site 2 (SR117d)	intact coupe	Sep 17 2014	5461255	320291	No survey (not enough water)	waterlogged soil with a few crayfish burrows but no standing water
SR125a site	recently logged but not burnt	Sep 17 2014	5460085	314838	Electrofishing, Dip net	plenty of crayfish, no fish
Roadside stream	class2 stream alongside road on way to SR124a	Sep 17 2014	5458797	317106	Electrofishing, Dip net	some crayfish, some tadpoles, no fish
SR124a site	misidentified stream in certified FPP, unharvested	Sep 17 2014	5458729	317745	Dip net	Nothing
Other end of SR124a stream	misidentified stream in certified FPP, unharvested	Sep 17 2014	5458710	317594	Dip net	Nothing
SR122a site	logging in progress	Sep 17 2014	5460380	318625	No survey, (not enough water)	no standing water
SR035c site	stream beside massive failed log culvert	Sep 18 2014	5457068	315409	Electrofishing, Dip net	many crayfish, no fish
standing water (SR068B)	shallow trench - possibly an old track?	Sep 18 2014	5457513	315919	Dip net	tadpoles and crayfish
net fishing (SR068B)	standing water over mature blackwood swamp - wide spread of water	Sep 18 2014	5457829	315995	Dip net	tadpoles only
Man made drain (SR113a)	Deep muddy drain from nearby pasture into Welcome. Adjacent to coupe	Sep 16 2014	5464221	314602	Dip net	drain in blackwood Swamp beside pasture. One pygmy perch only (<i>Nannoperca australis</i>)
Jims Plains Lot 6 Paddock drain	Shallow drains in cow paddock beside road	Sep 16 2014	5478375	314947	Dip net	much algae, nutrient rich, many tadpoles & crayfish

(known site)						
Harcus River Rd Roadside drain (known site)	plenty of water both side of road	Sep 16 2014	5478154	314470	Dip net	Many many crayfish
Horsepiss Creek (known site)	Creek running under road. Improved pasture on both sides beyond small patches of intact teatree swamp forest	Sep 18 2014	5482179	319969	Electrofish	crayfish only
Blue Bog (known site)	Lake in the middle of forest, 200m from road	Fri Sep 19 2014	5470304	307962	Electrofish	Nothing
Jims Plains (near known site)	artificial drain in cleared heathlands approx. 800m from known sites (Murrell property)	Fri Sep 19 2014	5475945	319371	Dip net	Poor water quality, no life observed. 5 minute dip netting only