

# Action statement No.258

Flora and Fauna Guarantee Act 1988

Dwarf Galaxias *Galaxiella pusilla*



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### Dwarf Galaxias *Galaxiella pusilla*

#### Description

The Dwarf Galaxias *Galaxiella pusilla* (Mack) is a small (< 50 mm total length), slender, scaleless, freshwater fish (McDowall 1978; McDowall & Frankenberg 1981, Koster 2003). Body depth is greatest mid-abdomen, the head is short and blunt, eyes large, mouth terminal and oblique, jaws roughly equal in length (McDowall & Frankenberg 1981). A single dorsal fin is positioned well back on the body the origin of which is behind the anal origin (McDowall & Frankenberg 1981). The caudal fin is long and rounded with fleshy flanges extending forward almost to the base of the dorsal and anal fins (McDowall & Frankenberg 1981). A fleshy abdominal keel extends posteriorly from the base of the pelvic fin to the vent (McDowall 1978). Body colour is olive–amber on the dorsal surface and sides, belly is silvery-white, and fins are transparent (McDowall & Frankenberg 1981). The species is sexually dimorphic; males are smaller and more slender than females and have three longitudinal black stripes along each side of the trunk and a distinct orange stripe running between the mid and lowest black stripe (Massola 1938; Backhouse & Vanner 1978; McDowall 1978). Black stripes are less distinct or absent in females, and there is a lateral band of silvery iridescence comparable in position to the orange stripe in the male (McDowall 1978; McDowall & Frankenberg 1981).

#### Distribution

The Dwarf Galaxias is endemic to south-eastern Australia. On the mainland, it occurs from the Mitchell River Basin in Central Gippsland, Victoria, to the Cortina Lakes, near the Coorong in South Australia (Wager & Jackson 1993). The species also occurs in Tasmania, where it is restricted to

lowland areas in the far north-west and far north-east of the State, as well as Flinders Island (Wager & Jackson 1993). Due to the nature of the lowland, shallow, swampy habitat preferred by Dwarf Galaxias, population distribution is disjunct and patchy (Cadwallader & Backhouse 1983, Chilcott & Humphries 1996).

In the last few decades, extinction of a number of populations is thought to have occurred: Blind, Bruthen, Corhanwarrabul and Langwarren Creek populations. High densities can still be found in some locations, particularly within the Glenelg, Bunyip and Latrobe River basins in Victoria (Saddler *et al.* 2010).

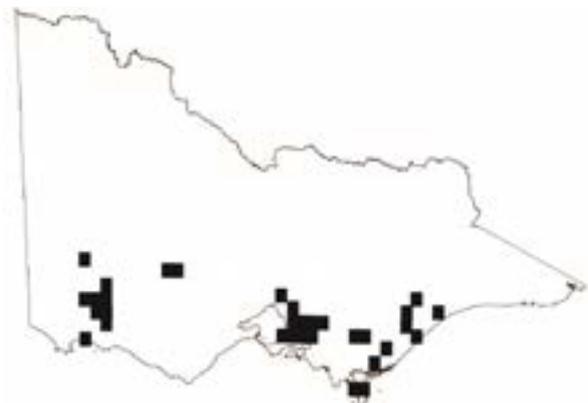
Substantial genetic differentiation exists between populations from western (South Australia and Victoria west of, and including, the Otway Ranges) and eastern (Victoria east of the Otway Ranges and Tasmania) geographic regions (Kuiter 2005; Coleman *et al.* 2010; Unmack 2012; Coleman *et al.* 2013). Importantly, the eastern and western populations may represent different species. A morphometric and meristic study is presently being undertaken to better determine if this is the case (Coleman pers. comm. 2013). For the purpose of this action statement, eastern and western populations are considered one.

#### Habitat

The Dwarf Galaxias typically occurs in well vegetated slow flowing, still, shallow temporary or permanent freshwater habitats including swamps, drains and backwaters of streams and creeks (Backhouse & Vanner 1978; McDowall & Frankenberg 1981). In larger pools, the species is commonly found amongst marginal vegetation (Backhouse & Vanner



Dwarf Galaxias (Neil Armstrong)



Distribution in Victoria (DELWP 2015)

1978). Some wetlands may partially or completely dry during summer (Humphries 1986). For population replenishment, seasonal flooding and linkages to source sites where the species occurs with some permanency is often required.

Dwarf galaxias are often found in association with burrowing freshwater crayfish (*Geocharax* sp.), the burrows of which are suggested to provide refuge in dry conditions (Beck 1985; McDowall 1996). It appears likely the Dwarf Galaxias in addition is capable of a form of aestivation (McDowall & Frankenberg 1981; Humphries 1983; Beck 1985; McDowall 1996; Littlejohn 2001, Romanowski 2004). The natural degree of wetland connectivity to a more permanent waterbody (such as river, creek or deep wetland) is likely to be important to population persistence, particularly during extended dry conditions where such areas act as refuge.

## Life History and Ecology

The Dwarf Galaxias is a mid-water, free-swimming species (McDowall 1978). Diet consists primarily of aquatic invertebrates including chironomid larvae, copepods, cladocerans, ostracods as well as terrestrial insects that fall on the water surface (Humphries 1986). The species spawn in pairs, females laying 65 – 250 adhesive eggs, over a period of 7 – 14 days in late winter–spring (Massola 1938; Andrews 1976; Humphries 1986). Eggs (0.6–1.3 mm) are attached on the underside of leaves or stems of submerged and emergent aquatic vegetation (e.g. underside of *Persecaria* and *Crassula* spp. leaves, stems of *Myriophyllum* – Coleman pers comm. 2014) or on a hard surface such as rock or timber (Backhouse & Vanner 1978; Humphries 1986).

Larvae hatch after 2 - 3 weeks and are about 4.5 mm in length (Backhouse & Vanner 1978). The species is suggested to be predominantly annual, with adults dying soon after spawning (Humphries 1983; Humphries 1986).

## Conservation status

### National conservation status

The Dwarf Galaxias is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

### Victorian conservation status

The Dwarf Galaxias is listed as Threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act).

The eastern populations of Dwarf Galaxias are considered Endangered while the western populations are considered Vulnerable in the Department of Environment, Land, Water and Planning (DELWP)'s *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013* (DSE 2013).

## Threats

It is estimated that 26.8%, or 191,000 hectares of Victorian wetlands have been lost due to drainage and modification (DCE 1992, Spiers 1999). The loss of the habitat has resulted in substantial fragmentation, isolation and depletion of Dwarf Galaxias populations. Remnant populations are as a result vulnerable to local threatening processes, particularly as reduced flooding and loss of habitat has reduced the species ability to recolonise habitats. Major threats to Dwarf Galaxias are described in the following table.

Standard threat	Source of threat	Explanation
Habitat damage or loss	Water – level/ flow changes	Considerable areas of freshwater wetlands have/are being lost to agriculture, urban and industrial development through drainage and infilling.
	Animals – domestic stock	Damage from unrestricted stock access has a major impact on shallow wetlands through disturbance, infilling and siltation, increased turbidity, and removal and destruction of instream and riparian habitat.  Destruction of instream vegetation reduces bed and bank stability and decreases shading, resulting in poor water quality such as increased nutrient run-off, sedimentation, summer water temperatures.

Habitat fragmentation	Water – level/ flow changes	Flows that replenish wetlands are essential for the survival of Dwarf Galaxias. Wetland connectivity to more permanent waterbodies (such as rivers or creeks) is vital during extended drought when such habitat may be used for refuge. Connectivity may be compromised through clearing, establishing extensive tree plantations, water abstraction, and construction of dams, levees, channels and pipes.  Alternatively, increased baseflows may increase predator (or competitor) access to sites, while static water levels may reduce productivity of habitats.
Surface water – quantity/regime	Weather - climate change	Under climate change, south-eastern Australia rainfall is predicted to decline, and temperatures and evaporation to increase (Pook 2001; Pittock 2003). This scenario is expected to result in a further reduction in wetland habitat favoured by Dwarf Galaxias.
Groundwater - quantity	Groundwater – level changes	Changes in local water table level through water abstraction and establishment of tree plantations can alter the hydrology of waterways and wetlands, and lessen the availability and accessibility of critical refuge during dry periods.
Competition	Introduction of species to areas outside their range	The presence of the oriental weatherloach ( <i>Misgurnus anguillicaudatus</i> ) and eastern gambusia ( <i>Gambusia holbrooki</i> ) at the majority of sites is of concern. Gambusia are known to predate and be aggressive toward native species, to compete for food resources and habitat, and are implicated in the decline of more than 30 fish species worldwide, at least nine of which (including Dwarf Galaxias) are found in Australia (Macdonald and Tonkin 2008). Oriental weatherloach have a dietary overlap with at least one native galaxias ( <i>Galaxias olidus</i> ), and may also compete with native species for shelter and breeding sites, be a predator of the eggs of native species (particularly galaxiids), and act as a vector for parasites and diseases (Linterman 2007). Carp ( <i>Cyprinus carpio</i> ) can cause substantial damage to aquatic vegetation and therefore, may be an important threat to Dwarf Galaxias habitat in some wetlands.
Carnivory	Introduction of species to areas outside their range	Predation by redfin perch ( <i>Perca fluviatilis</i> ) has been implicated as contributing to the decline of Dwarf Galaxias (Wager and Jackson 1993).
Surface water - quality	Agricultural chemicals/ effluent	Agricultural run-off can directly affect water quality via increased input of sediment and contaminants such as pesticides and herbicides. It may also increase the risk of algal blooms through increased water nutrient levels and sedimentation.
	Urban and Industrial chemicals/ effluent	Illegal discharge, dumping or accidental spills of chemicals directly into stormwater drainage or waterways (e.g. heavy metals, hydrocarbons, pesticides, surfactants) may directly or indirectly, threaten populations.

Population depletion	Illegal taking (trapping, poisoning, collecting)	Anecdotal information suggests that unauthorised collection of Dwarf Galaxias is occurring at sites in the Bunyip River system and areas in the west of the state (Saddler <i>et al.</i> 2010). This unregulated collection and trading by enthusiasts has the capacity to undermine the genetic integrity of natural populations.
Limited biological knowledge	Lack of knowledge	Inadequate knowledge of the distribution of Dwarf Galaxias is a major limiting factor for conservation management. Dwarf galaxias are typically found in marginal habitats such as floodplain wetlands, swamps and billabongs, therefore standard fish survey programs that tend to focus on rivers and creeks, often miss them.

## Important populations

Genetic investigation suggests existing records are likely to represent two species (Coleman *et al.* 2010; Coleman *et al.* 2013). If, as appears likely, morphometric investigations further confirm genetic results, Dwarf Galaxias will be separated into eastern and western species, altering the importance of individual populations and their respective conservation status. Between 2007-2013, surveys were conducted at most known sites across Victoria, South Australia and Tasmania (see Coleman *et al.* 2010, 2013; Stoessel *et al.* 2007; Stoessel 2008, 2009, 2010, 2011, 2012). These surveys suggest that the species may not persist at all sites at which it was historically recorded. A priority should therefore be to resurvey sites where the species may now be absent to determine if a population persists at the site. A list of all known populations is presented below. Where records exist of the capture of the species in geographically and hydrologically associated water-bodies, an attempt has been made to group them as meta-populations due to likely interaction and exchange of individuals between sites.

Catchment	Location name	Land manager	Bioregion
CORANGAMITE	Barwon River East Branch	DELWP	Otway Ranges
	Gosling Creek	DELWP	Otway Ranges
EAST GIPPSLAND	Cobblers Creek	DELWP	Gippsland Plain
GLENELG HOPKINS	Boonawah Creek meta-population (Boonawah Creek and Lake Linlithgow)	DELWP	Victorian Volcanic Plain
	Bridgewater Lakes	DELWP	Bridgewater
	Crawford River meta-population (Crawford River and Kangaroo Creek)	DELWP	Glenelg Plain
	Dundas River	DELWP	Dundas Tablelands
	Eumerella River meta-population (Eumerella River and Big Swamp).	DELWP	Victorian Volcanic Plain

GLENELG HOPKINS	Fiery Creek	DELWP	Victorian Volcanic Plain
	Fitzroy River meta-population (Fitzroy River, Darlot Creek and Ellengowan Wetland)	DELWP	Victorian Volcanic Plain
	Glenelg River meta-population (Glenelg River and Moora Moora Reservoir and Castle, Scrubby, Green, Mount Rosea and Rose creeks and Sheet of Water Swamp)	DELWP	Greater Grampians
	Lake Mombeong	DELWP	Bridgewater
	Merri River meta-population (Merri River and Spring Creek)	DELWP	Victorian Volcanic Plain
	Mount Emu Creek	DELWP	Victorian Volcanic Plain
	Moyne River	DELWP	Victorian Volcanic Plain
	Red Rock Creek	DELWP	Dundas Tablelands
	Scott Creek meta-population (Scott Creek and Tea Tree Creek)	DELWP	Greater Grampians
	Surrey River	DELWP	Victorian Volcanic Plain
	Victoria Lagoon	DELWP	Dundas Tablelands
	Wannon River meta-population (Wannon River, Bryan Swamp, Dwyer Creek, Lambing Hut, Grange Burn)	DELWP	Victorian Volcanic Plain
PORT PHILLIP AND WESTERNPORT	Balcombe Creek meta-population (Balcombe Creek, Tuerong Creek and Watsons Creek)	DELWP	Gippsland Plain
	Blacks Camp Wetland	DELWP	Gippsland Plain
	Boggy Creek	DELWP	Gippsland Plain

PORT PHILLIP AND WESTERNPORT	Bunyip River metapopulation (Cannibal Creek, Dingo Creek, Diamond Creek, Koo Wee Rup Drain)	DELWP	Gippsland Plain
	Cardinia Creek meta-population (Cardinia and Grasmere Creek)	DELWP	Highlands – Southern Fall
	Dandenong Creek (Blind Creek, Police Paddocks drain)	DELWP	Gippsland Plain
	Devil-Bend Reservoir meta-population (Devil-Bend Reservoir and Creek, and Bittern Reservoir)	DELWP	Gippsland Plain
	Diamond Creek	DELWP	Highlands – Southern Fall
	Eastern Contour drain	DELWP	Gippsland Plain
	Hallam Valley meta-population (Hallam Main Drain and Narre Warren Creek, Berwick Town Drain)	DELWP	Gippsland Plain
	La Trobe University Wetland	DELWP	Gippsland Plain
	Lang Lang River	DELWP	Gippsland Plain
	Watson Creek	DELWP	Gippsland Plain
	Yallock Creek (Yallock Creek and King Parrot Creek)	DELWP	Gippsland Plain
WEST GIPPSLAND	Blind Joes Creek	DELWP	Gippsland Plain
	Bruthen Creek	DELWP	Gippsland Plain
	Darby River	DELWP	Wilson's Promontory
	Deep Creek	DELWP	Gippsland Plain
	Flooding Creek meta-population (Flooding Creek and Sale Common)	DELWP	Gippsland Plain

WEST GIPPSLAND	Flynns Creek	DELWP	Gippsland Plain
	Loy Yang Creek	DELWP	Gippsland Plain
	Merriman Creek meta-population (Merriman and Monkey Creek)	DELWP	Gippsland Plain
	Moe Contour Drain	DELWP	Gippsland Plain
	Morwell River Wetlands	DELWP	Gippsland Plain
	Perry River	DELWP	Gippsland Plain
	Wades Creek meta-population (Wades, Boyds, Plough and Waterhole Creek)	DELWP	Gippsland Plain

## Past management actions

Action	Result explanation
Conservation reserve	16 of 110 known Dwarf Galaxias locations are under conservation reserve. The species in addition is included in the Tasmanian Forest Practices Board threatened fauna management system, whereby all relevant catchments have management prescriptions to minimise forest operation impacts (Jackson 2004)
Mitigation	<p>During the Hazelwood Mine West Field Project (which affected Morwell River, Eel Hole Creek and Wilderness Creek), the establishment of suitable wetlands was recommended (Earth Tech Engineering 2004).</p> <p>Melbourne Water has created refuge pools in Hallam Valley, Balcombe Creek and Tuerong Creek. Water levels in addition to the Dwarf Galaxias populations at these sites are regularly monitored, and watering of sites undertaken if necessary. An open span bridge in addition, was recently constructed as part of the Pakenham Bypass (across the Cardinia Creek floodplain) to protect Dwarf Galaxias populations.</p>
Translocation	<p>Melbourne Water released Dwarf Galaxias into Braeside Park Lake and Elsternwick Park in 2002. A subsequent decline in surface water level at Braeside Park Lake resulted in the lake drying and the loss of the translocated population, subsequent surveys have failed to detect Dwarf Galaxias at the Elsternwick Park site.</p> <p>A further population was recently established in Briars Park in the Balcombe Creek system in Mt Martha and Langwarrin Reserve wetland as part of Peninsula Link activities.</p>
Undertake captive breeding for reintroduction or reinforcement.	Dwarf galaxias are successfully established at Latrobe University Wetland and Hallam Valley wetland.

Habitat creation	Wetland habitat has been created along the Peninsula Link freeway, at La Trobe University, and Hallam Valley and Watsons Creek.
Community involvement	The Australian New Guinea Fishes Association (ANGFA) received \$18,000 through the Threatened Species Network Community Grants in 2005-06 for short-term protection of a threatened population in the Eumemmerring and Dandenong Creek catchment until a long-term management plan was enacted.
Regional River health strategies	Port Phillip, Westernport and Glenelg Hopkins Catchment Management Authorities prepared regional river health strategies, the objectives of which included the protection of Dwarf Galaxias populations and habitat.
Population survey	In recent years, surveys have been conducted at the majority of known sites (see McGuckin 2004; McGuckin 2006; Stoessel 2008; Stoessel <i>et al.</i> 2008; Venosta <i>et al.</i> 2008; Stoessel 2009; Bloink 2010; Coleman <i>et al.</i> 2010; McGuckin 2010a; McGuckin 2010b; Stoessel 2010; GHD 2011; Stoessel 2011; Bloink 2012; Stoessel 2012; Coleman <i>et al.</i> 2013). The non-capture of the species at a number of historical sites requires further investigation to determine if the species is now absent from these sites. In addition, as it is suspected that a number of unknown populations likely exist in the wild, identification of sites containing appropriate habitats, and subsequent surveys of these sites is required.
Investigation into the levels of genetic structure and diversity between populations and regions	Substantial genetic differentiation exists between populations from western (South Australia and Victoria west of, and including, the Otway Ranges) and eastern (Victoria east of the Otway Ranges and Tasmania) geographic regions (Coleman <i>et al.</i> 2010; Coleman 2013). This may suggest the eastern and western populations represent different species. If a new species description is warranted (based on a morphometrics and meristics study currently underway), <i>Galaxiella pusilla</i> will remain applicable to the eastern populations and the new species applicable to the western populations.
Captive maintenance	Captive populations have, or are, maintained at: Dragon Aquatics (Romanowski 1993); La Trobe University Wildlife Reserve ponds (Saddler <i>et al.</i> 2010); Melbourne Water Hallam Valley wetland at Narre Warren; The Briars 'Crake Pond' at Mount Martha; Watson Creek wetland at Baxter ( <a href="http://www.environment.gov.au">www.environment.gov.au</a> ).
Develop, publish and distribute educational, technical or publicity material and/or displays	Promote the status of native fish protected under the FFG Act in the Victorian Recreational Fishing Guide provided to recreational fishers.
Develop Protocol for the Translocation of Fish in Victorian Inland Public Waters	All aquatic organisms that are stocked in Victorian inland waters must comply with the Protocol for the Translocation of Fish in Victorian Inland Public Waters. The Protocol specifically considers potential impacts to native species when stocking of non-native species is being considered. Waters (or a section of a waterway if barriers exist to prevent movement of fish) will not be stocked where there is reasonable evidence the release of a fish species may constitute an unacceptable risk to a threatened species or community (e.g. listed under FFG Act, EPBC Act).

## Conservation objectives

### Long term objective

To ensure that the Dwarf Galaxias can survive, flourish and retain its potential for evolutionary development in the wild.

### Objectives of this Action Statement

- To increase knowledge of biology, ecology or management requirements
- To maintain or increase extent of habitat
- To increase number of populations or individuals
- To secure populations or habitat from potentially incompatible land use or catastrophic loss
- To maintain or increase community awareness and support

### Intended management actions

The intended management actions listed below are further elaborated in DELWP's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

Standard objective	Objective explanation	
<b>Increase knowledge of biology, ecology or management requirements</b>	To increase knowledge of biology, ecology and management requirements to better achieve conservation goals	
Standard action	Details	Responsible agents
Develop detailed population monitoring protocols	Replicable survey techniques are developed and documented to allow reliable assessments of Dwarf Galaxias presence/absence and population changes over time.	DELWP
Undertake detailed population monitoring and collect demographic information	<p>A network of monitored populations is established and long-term monitoring of population trends undertaken to assess the impact of threats and effectiveness of recovery actions.</p> <p>It is suspected that a number of undiscovered populations exist in the wild. Further targeted surveys aimed at identifying these sites are required.</p> <p>Ensure demographic and habitat data is recorded in appropriate information systems (i.e. Victorian Biodiversity Atlas) to ensure that it can be used by the Fish Translocation expert panel in its consideration of stocking applications.</p>	DELWP
Conduct survey to confirm existing records	The status of a number of historic populations remains unknown. Surveys are therefore required to determine the status of these populations.	DELWP

Conduct priority research projects as specified	Investigate implied negative interactions of eastern gambusia on Dwarf Galaxias (see Westbury 1995; Koster 1997).  Investigate implied negative interactions of oriental weatherloach on Dwarf Galaxias.  Further investigate the ability of Dwarf Galaxias to aestivate (see Coleman in prep).	DELWP
Clarify/review taxonomy	An understanding of taxonomy of eastern and western populations is gained and information incorporated into captive and field-based recovery management.	DELWP
Assess threats	Gain increased understanding of threats and the effectiveness of threat abatement; knowledge used to inform management actions to achieve increases in the size and area of occupancy by target populations.  Engage with key fishing stakeholders, such as Fisheries Victoria, where fishing related impacts are identified.	DELWP
Undertake threat monitoring	Monitor sites for possible threats to inform management.	DELWP

Standard objective	Objective explanation	
<b>To maintain or increase extent of habitat</b>	Identify, increase and guide restoration of habitat	
Action	Details	Responsible agents
Restore habitat	Prioritise the protection and restoration of habitat at sites supporting Dwarf Galaxias populations .  Develop guidelines for restoration and wetland design.	DELWP, Melbourne Water
Erect/maintain fence to exclude domestic stock	Fence waterways which contain Dwarf Galaxias populations to allow either natural regeneration of riparian zone.	DELWP, CMAs, Melbourne Water

Standard objective	Objective explanation	
<b>Increase number of populations or individuals</b>	Increase number of Dwarf Galaxias populations	
Action	Details	Responsible agents
Identify potential sites for reintroduction/translocation	Translocation sites are identified.	DELWP

Prepare a plan for reintroduction/reinforcement/translocation	Protocol/plan to guide reintroduction/translocation is developed.	DELWP
Undertake captive breeding for reintroduction or reinforcement	A Dwarf Galaxias captive breeding program is successfully established at one or more locations. Breeding is achieved and young are translocated to a suitable location(s) in the wild.	DELWP
Establish and maintain a reintroduced/translocated population	At least one new demographically robust population is established in secure habitat.	DELWP

Standard objective		Objective explanation
<b>To secure populations or habitat from potentially incompatible land use or catastrophic loss</b>		Secure populations or habitat from potentially incompatible land use or catastrophic loss to improve conservation outcomes
Action	Details	Responsible agents
Erect/maintain fence to exclude domestic stock	Damage from unrestricted stock access on public land has a major impact on shallow wetlands through disturbance, infilling and siltation, increased turbidity, and removal and destruction of instream and riparian habitat. A number of sites therefore require fencing to be erected.	DELWP, CMAs
Develop guidelines, systems procedures or design manuals	Desilting of waterways and channels may result in the loss of considerable stretches of Dwarf Galaxias habitat. Guidelines are required to ensure such works are undertaken sustainably.  Develop guidelines for urban developers, which aims to minimise sediment and other pollutant control during construction, and links into guidelines for wetland construction and habitat buffers.	DELWP, CMAs
Negotiate a formal management agreement with a public authority	Key Dwarf Galaxias populations on public lands and waters are identified and protected	DELWP, CMAs
Develop management prescriptions and/or consider in zoning decisions for State forest	Develop prescriptions to ensure key Dwarf Galaxias populations in State forest are identified and protected.	DELWP
Liaise with government agencies	Liaise with statutory bodies responsible for the management of water to ensure species requirements are considered during planning and management activities. Key Dwarf Galaxias populations are protected across all bioregions.	DELWP, CMAs

Liaise with private landholders	Negotiate management agreements with private landholders under the <i>Victorian Conservation Trust Act 1972</i> , Land for Wildlife and other government investment programs targeting private land.  Management of key Dwarf Galaxias populations is not compromised by inappropriate management of adjoining private land.	DELWP, CMAs, Local Government
Liaise with stakeholder groups	Increase stakeholder understanding and support for Dwarf Galaxias conservation.  Provide information to stakeholders about threats to, and recovery management of, Dwarf Galaxias.	DELWP, CMAs
Prepare, implement and review site management plans for all priority sites.	Prepare and implement a threat management plan for all priority sites.  Prioritise protection and restoration of habitat at sites supporting the species.  Improve understanding of threatening processes and threat abatement to inform management actions and increase the numbers of animals and area of occupancy of target populations.	DELWP, CMAs
Salvage populations/ individuals	Where a population is under immediate threat of extinction, translocate a suitable number of individuals to either a suitable site in the wild, or to a captive breeding facility  Re-establish the population once conditions improve.	DELWP

Standard objective	Objective explanation	
<b>To maintain or increase community awareness and support</b>	Increase community awareness and support of Dwarf Galaxias conservation	
Action	Details	Responsible agents
Involve community groups and volunteers in recovery activities	Identify opportunities for community involvement in the conservation of Dwarf Galaxias. Community and stakeholder understanding of and support for Dwarf Galaxias conservation are increased.  Advocate the species as an icon for communities.	DELWP, CMAs, Local Government

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