Action statement No.258

**Flora and Fauna Guarantee Act 1988**

Dwarf Galaxias *Galaxiella pusilla*

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# Action Statement No. 258

Dwarf Glaxias *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

Dwarf Galaxias (Neil Armstrong)

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 (Saddlier *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

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; Humphries1983; 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 (Bakehouse & 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.

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| **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. |

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| 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 (*Misgurnus anguillicaudatus*) and eastern gambusia (*Gambusia holbrooki*) 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 (*Galaxias olidus*), 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 (*Cyprinus carpio*) 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 (*Perca fluviatilis*) 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. |

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| 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 (Saddlier *et al.*  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.

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| **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 |

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| 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 |

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| PORT PHILLIP AND WESTERNPORT  WEST GIPPSLAND | 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 |
| Blind Joes Creek | DELWP | Gippsland Plain |
| Bruthen Creek | DELWP | Gippsland Plain |
| Darby River | DELWP | Wilsons Promontory |
| Deep Creek | DELWP | Gippsland Plain |
| Flooding Creek meta- population (Flooding Creek and Sale Common) | DELWP | Gippsland Plain |

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| 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

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| **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 | 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).  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. |
| Translocation | 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.  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. |
| Undertake captive breeding for reintroduction or reinforcement. | Dwarf galaxias are successfully established at Latrobe University Wetland and Hallam Valley wetland. |

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| 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 *et al.* 2008; Venosta *et al.* 2008; Stoessel 2009; Bloink 2010; Coleman *et al.* 2010; McGuckin 2010a; McGuckin 2010b; Stoessel 2010; GHD 2011; Stoessel 2011; Bloink 2012; Stoessel 2012; Coleman *et al.* 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 *et al.* 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), *Galaxiella pusilla* 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 (Saddlier  *et al.* 2010); Melbourne Water Hallam Valley wetland at Narre Warren; The Briars ‘Crake Pond’ at Mount Martha; Watson Creek wetland at Baxt[er (w](http://www/)w[w.](http://www/) environment.gov.au). |
| 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.

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| **Standard objective** | **Objective explanation** | |
| **Increase knowledge of biology, ecology or**  **management requirements** | 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 pop-ulation changes over time. | DELWP |
| Undertake detailed | A network of monitored populations is estab- | DELWP |
| population monitoring | lished and long-term monitoring of population |
| and collect demographic | trends undertaken to assess the impact of threats |
| information | and effectiveness of recovery actions. |
| It is suspected that a number of undiscovered |
| populations exist in the wild. Further targeted |
| surveys aimed at identifying these sites are |
| required. |
| 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. |
| 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 |

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| 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 re- covery 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 |

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| **Standard objective** | **Objective explanation** | |
| **To maintain or increase extent of habitat** | 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 |

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

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| 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 |

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| **Standard objective** | **Objective explanation** | |
| **To secure populations or habitat from potentially incompatible land use or catastrophic loss** | 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 |

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| Liaise with private landholders | Negotiate management agreements with private landholders under the *Victorian Conservation Trust Act 1972*, 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 |
| Salavage 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 |

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| **Standard objective** | **Objective explanation** | |
| **To maintain or increase community awareness and support** | 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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