

A statement for the purposes of approved conservation advice
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

Approved Conservation Advice for *Reedia spathacea* (Reedia)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved.

Description

Reedia spathacea, commonly known as Reedia, is a tufted sedge with a woody trunk (caudex) that forms large leafy clumps growing to approximately 1 m in height. Most of the living material of the plant is found above the ground and particularly at the top of the caudex, which contains the starch reserves, the active growth point and the root initiation zones. Reedia does not have an underground rhizome or tuber. Reedia leaves originate from the single active growth point at the top of the caudex and are about 1 m in length, bordered by prickles. Reedia roots also originate from the top of the caudex and grow down through the old leaf bases surrounding the caudex to the groundwater table (Tauss, 2000).

Over several years the single active growth point usually develops into a flower spike. Reedia specimens therefore flower rarely, in November. The flower spike reaches up to 3 m in height and is loosely enclosed by several pale yellow, papery leaves. The small simple brown flowers emit a strong fragrance and are pollinated by bees and small beetles. Seeds are set in December and have no obvious dispersal mechanisms. Recruitment from seed is rare, poorly understood, and appears to occur only after fires have thinned or destroyed adult Reedia specimens and other vegetation. The seeds have low viability (<5%) (Tauss, pers. comm., 2007).

Reedia is slow growing and reproduces mainly by clonal growth, initiating new shoots from the sides of old caudices (well above the ground). The new shoot eventually forms a new caudex with its own roots as the current shoot withers and dies after flowering. This leads to complicated growth forms and difficulties estimating individual plants. Preliminary estimates of the life span of individual Reedia shoots (from budding to flowering and withering) are about 3–10 years. However clonal colonies of Reedia may be the product of seedlings recruited many decades previously (Tauss, pers. comm., 2007).

Conservation Status

Reedia is listed as **critically endangered** under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Reedia is eligible for listing as critically endangered because it has undergone a substantial decline in numbers, and its geographic range is very restricted and precarious for its survival. It is currently listed as Declared Rare Flora under the *Western Australian Wildlife Act 1950*.

Distribution and Habitat

Reedia is found in perennial wetland habitats south-west Western Australia. These wetland habitats are rare and rely on specific geographical and hydrological features in the landscape for their formation and maintenance. Reedia has specialised in growing in the low nutrient, anoxic and highly acidic conditions found in these wetland habitats, usually over peat substrates. Reedia does not occur in an ecological community listed as threatened, but does occur in a nationally identified biodiversity hotspot with other threatened species such as the Orange-bellied Frog (*Geocrinia vittelina*) and the White-bellied frog (*Geocrinia alba*). Reedia occurs within the South West and South Coast Natural Resource Management Regions and

the Jarrah Forest and Warren Biogeographical Regions (Semeniuk & Semeniuk, 1995; Tauss, 2000, 2004a, 2004b).

Threats

The main identified threats to *Reedia* are:

Feral pigs

Grazing feral pigs (*Sus scrofa*) target the growth point and root initiation zones at the top of *Reedia* specimens, killing them in the process. Feral pigs pose the major threat to the species as they have been and are still being illegally introduced by recreational pig hunters into *Reedia* habitats, and their numbers and damaging impacts are increasing rapidly (Tauss, pers. comm., 2007).

Fire

Reedia is extremely vulnerable to fire. Most living material in *Reedia* specimens are exposed at the top of the caudex, in close proximity to large masses of flammable old leaves. Roots are completely exposed as they grow down the side of the caudex, and are easily severed by fire, killing the plant. Even cool fires cause great damage, killing most juveniles and many adults. Hot fires can kill entire *Reedia* populations and regeneration can fail if the soil seed bank is naturally low or has been exhausted by previous frequent fires (Tauss, pers. comm., 2007).

Groundwater abstraction and modification

Groundwater abstraction poses a major threat to the species. Groundwater in the region is increasingly being drawn for use for agriculture, viticulture and urban supplies. Any significant tapping of local groundwater systems will lower water tables and presumably dry out the waterlogged environments *Reedia* require. Development activities that change the recharge zones and properties of groundwater systems are also a threat (Tauss, 2000, 2004a, 2004b, pers. comm., 2007.)

Weeds

Many *Reedia* populations are now threatened by invasions of aggressive introduced wetland weed species such as Budding Club-rush (*Isolepis prolifera*) (Tauss, pers. comm., 2007).

Nutrient enrichment

Nutrient enrichment from leaking septic tanks and agricultural practices pose a threat to the species which is adapted to an extremely low nutrient environment. Nutrient enrichment will potentially assist competing species and alter the composition of the wetland plant communities in which *Reedia* grows (Tauss, pers. comm., 2007).

Research Priorities

- Further investigation into the fire ecology and reproductive behaviour of *Reedia*.
- Investigation into propagation strategies for *Reedia*.

Regional Priority Actions

The following regional actions can be done to stop the decline or support the recovery of *Reedia*.

Feral Pig (*Sus scrofa*) Grazing

- Develop and implement an aggressive, continuous control program for feral pigs to prevent destruction of *Reedia* populations from feral pig grazing. Feral pigs are now well established in the region and ongoing control of pig population is important.
- Investigate large scale pig-exclusion fencing of important *Reedia* populations.

Habitat Loss, Disturbance and Modification

- Monitor known *Reedia* populations to identify key threats or the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify *Reedia* populations of high conservation priority.
- Avoid alterations to the hydrology of *Reedia* wetlands from development including disturbance/alteration of recharge zones.
- Avoid nutrient enrichment of *Reedia* habitats
- Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure for *Reedia* populations on private property.

Invasive Weeds

- Develop and implement a management plan for weeds in *Reedia* habitats.

Fire

- Develop and implement a suitable fire management strategy for *Reedia*. The key features of such a strategy should be the avoidance of burning of *Reedia* populations and habitats.
- Provide maps of known occurrences of *Reedia* to local and state rural fire services and seek inclusion of mitigative measures in bush fire risk management plan(s), risk register/s and/or operation maps.

Conservation Information

- Raise awareness of *Reedia* within government agencies and the local community, particularly the species' extreme vulnerability to fire, feral pigs and altered hydrology.

Relevant Management Plans

A draft 'South Coast Threatened Species and Communities Regional Recovery Plan', which will cover part of *Reedia*'s range, is being prepared by the West Australian Department of Environment and Conservation. Two other draft management plans relevant to *Reedia* are:

Restiad peat paluslopes inhabited by *Reedia spathacea* in the Warren Biogeographical Region, Western Australia. Draft Interim Recovery Plan 2004–2009. Department of Conservation and Land Management.

Reedia spathacea species-rich sedgeland and scrub on tributaries of the Blackwood River maintained by the Yarragadee/Leederville aquifers. Draft Interim Recovery Plan 2004–2009. Department of Conservation and Land Management.

This list does not necessarily encompass all actions that may be of benefit to *Reedia*, but highlights those that are considered to be of highest priority at the time of preparing the conservation advice.

Information Sources:

Semeniuk, C. A., and Semeniuk, V. (1995). A geomorphic approach to global classification for inland wetlands. *Vegetatio* **118**: 103–124.

Tauss, C. (2000). *Preliminary studies of the biology and ecology of Reedia spathacea F.Muell. (Cyperaceae)*. Unpublished Postgraduate Diploma of Science thesis. Department of Botany, University of Western Australia.

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Tauss, C. (2004b). *Reedia spathacea species-rich sedgeland and scrub on tributaries of the Blackwood River maintained by the Yarragadee/Leederville aquifers*. DRAFT Interim Recovery Plan 2004–2009. Prepared for the Threatened Ecological Communities and Species Unit, West Australian Department of Conservation and Land Management.

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Western Australian Herbarium (1998–2007). FloraBase — The Western Australian Flora. West Australian Department of Environment and Conservation.
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