

Approved Conservation Advice for *Pherosphaera fitzgeraldii* (dwarf mountain pine)

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing and draft plans, records or management prescriptions for this species.

Description

Pherosphaera fitzgeraldii (dwarf mountain pine), family Podocarpaceae, also known as the Blue Mountains dwarf pine, is an ascending or erect dioecious (individual members are usually of a single sex) shrub with drooping branches to 1 m tall, or sometimes with straggling branches and to 2 m tall (OEH, 2012). The leaves are 2.5–3.5 mm long, narrow, whitish on the upper surface, and green and shining below (OEH, 2012). Male cones are approximately 6 mm long. Female cones are approximately 3 mm long with 4–8 scales (OEH, 2012). Cones can be present at any time of year (OEH, 2012).

This species was originally listed as *Microstrobos fitzgeraldii*, but following taxonomic revision, the current listed name is *Pherosphaera fitzgeraldii*.

Conservation Status

The dwarf mountain pine is listed as endangered under the name *Pherosphaera fitzgeraldii* Dwarf Mountain Pine, Blue Mountains Dwarf Pine. This species is eligible for listing as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as, prior to the commencement of the EPBC Act, it was listed as endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth).

The species is also listed as endangered under the *Threatened Species Conservation Act 1995* (New South Wales) and critically endangered under the IUCN Red List of Threatened Species Version 2013.1 (Thomas, 2013).

Distribution and Habitat

The dwarf mountain pine occurs in the upper Blue Mountains in New South Wales where ten populations are known (Jones, 1994; ALA, 2013) along 9 km of cliff line between Wentworth Falls and Katoomba (Thomas, 2013). The species extent of occurrence is less than 20 km² and its area of occupancy is 12 km² (Thomas, 2013). In 1994, six of the sites had a total of 445 plants (Jones, 1994)

Dwarf mountain pine populations have been recorded at Wentworth Falls, Katoomba Falls, Leura Falls, Bonnie Doon Falls, Little Gordon Falls, Nellies Glen (Jones, 1994) and Dog Face (OEH, 2012). Four of the known populations occur within Blue Mountains National Park (NSW NPWS, 2001).

The dwarf mountain pine occurs within the spray zone, drip lines or seepage areas of waterfalls on steep sandstone cliffs, ledges or below overhangs (OEH, 2012). Sites are at altitudes of 680–1000 m above sea level with south-easterly to south-westerly aspects, and have variable levels of shading (from no shading to significant shading from adjacent rainforest or overhangs) (OEH, 2012). The few young plants that have been observed in the wild may have propagated vegetatively (OEH, 2012).

This species occurs within the Sydney Basin IBRA Bioregion and the Hawkesbury-Nepean Natural Resource Management Region. The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community.

Threats

The main identified threats to dwarf mountain pine are changes to water quality, changes to ground and surface water flows, inappropriate fire regimes and weed invasion including English ivy (*Hedera helix*); blackberry (*Rubus* spp.); montbretia (*Crocsmia X crocosmiiflora*); and Japanese honeysuckle (*Lonicera japonica*) (OEH, 2012). The species limited range, small population size and low fecundity increase the risk of localised extinction from catastrophic events (OEH, 2012).

Intensely urbanised areas occur upstream of known populations (Turton & Melick, 2001) and land uses in these areas can impact water quality including land management changes, changes to rates of water flow and sediment load, illegal stormwater connections and pollution (fertiliser outflow, sewage and chemical spillage) (OEH, 2012). Some weed infestations in Blue Mountains National Park have been attributed to stormwater runoff (NSW NPWS, 2001). This species has not declined as a result of broad scale vegetation clearing.

Research Priorities

Research priorities that would inform future local priority actions include:

- Investigate modes of regeneration in the field, and test seed germination rates and vegetative reproductive capacity in the laboratory / glasshouse, and under field conditions.

Local Priority Actions

The following local priority recovery and threat abatement actions can be done to support the recovery of the dwarf mountain pine:

Habitat Loss, Disturbance and Modification

- Identify populations of high conservation priority.
- Ensure there is no disturbance in areas where the dwarf mountain pine occurs, excluding necessary actions to manage the conservation of the species.
- Manage any changes to hydrology that may result in changes to water table levels, sedimentation, pollution, rates of erosion or ground and surface water flows.
- Ensure that bores within the area do not deplete water supplies that are essential to the persistence of the species.
- Assess adequacy of existing up-stream sediment and sewage control measures.
- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land and other land tenure.
- Undertake survey work in suitable habitat and potential habitat, such as the southern escarpment, Radiata Plateau and Narrore Plateau, to locate any additional populations/occurrences/remnants.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate and/or secure inclusion in reserve tenure if possible.

Invasive Weeds

- Identify and remove weeds in the local area that could become a threat to the dwarf mountain pine, using appropriate methods.
- Manage site/s to prevent introduction of invasive weeds that could become a threat to the dwarf mountain pine, using appropriate methods.

Fire

- Implement the Blue Mountains National Park fire management strategy, which recommends low fire frequency and exclusion of fire from the species' habitat (NSW NPWS, 2004).
- Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan/s, risk register and/or operation maps.

Conservation Information

- Raise awareness of the dwarf mountain pine within the local community, possibly as a flagship species in a Total Catchment Management education program (OEH, 2012).
- Engage with private landholders and land managers responsible for the land on which populations occur and encourage these key stakeholders to contribute to the implementation of conservation management actions.

This list does not necessarily encompass all actions that may be of benefit to the dwarf mountain pine, but highlights those that are considered to be of highest priority at the time of preparing the Approved Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

- Blue Mountains National Park plan of management (NSW NPWS, 2001)
- Blue Mountains National Park fire management strategy (NSW NPWS, 2004).

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

References

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NSW National Parks and Wildlife Service (NSW NPWS) (2004). *Blue Mountains National Park Fire Management Strategy*.

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Office of Environment and Heritage (OEH) (2012). *Dwarf Mountain Pine – profile*.

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Turton M and Melick D (2001). The Problematic Protection of Dwarf Mountain Pine (*Microstrobos fitzgeraldii*) – Living in a World Heritage Area Exposed to Urban Influences. *Ecological Management & Restoration* 2(2):149–50.