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

Approved Conservation Advice for *Eucalyptus crucis* subsp. *crucis* (Silver Mallee)

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

Description

Eucalyptus crucis subsp. *crucis*, Family Myrtaceae, also known as Silver Mallee and Southern Cross Mallee, is an effuse (spreads out loosely) mallee growing to 6 m tall with imperfectly decorticated, crisped 'Minni Ritchi' (flaky and dense) bark on stems to about 10 cm diameter. Young branchlets are smooth and white with a waxy coating. Seedling and juvenile leaves remaining opposite for many nodes, and are stalkless, circular or broader than long, and conspicuously mucronate (pointed). They grow to 5 by 4 cm, with tiny black oil dots, and are greyish-green in colour. Intermediate leaves are opposite or sub-opposite, sub-sessile or shortly (0.5 to 3.5 mm) and distinctly petiolate, oval shaped, to 6.5 by 5.5 cm, and grey-green (Brooker & Hopper, 1982). Flowering occurs from December to March (Brown et al., 1998).

Maiden (1923) described *Eucalyptus crucis* as distinguished by its capsular disc with the rim much incurved, mature leaves rather thick, very shortly petiolate, from lanceolate to nearly ovoid and ovoid-lanceolate. However, Brooker and Hopper (1982) examined specimens that were obviously related to, yet clearly distinct from, the typical *E. crucis*. They were large erect-stemmed mallees with the canopy consisting only of true lanceolate adult leaves that were distinctly petiolate. *Eucalyptus crucis* subsp. *crucis* retains the more or less stalkless oval to rounded juvenile leaves on the adult plant, whereas in Narrow-leaved Silver Mallee (*E. crucis* subsp. *lanceolata*), the juvenile leaves are lost and the mature plant has narrow, tapering leaves (Brown et al., 1998). In Paynes Find Mallee (*E. crucis* subsp. *praecipua*), the leaves, buds and fruits are larger than Narrow-leaved Silver Mallee (Brooker & Hopper, 1993).

Conservation Status

Silver Mallee is listed as **vulnerable**. This species is eligible for listing as vulnerable 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 vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). Silver Mallee is also listed as declared rare flora under the *Wildlife Conservation Act 1950* (Western Australia). Paynes Find Mallee is listed as endangered under the EPBC Act.

Distribution and Habitat

Silver Mallee occurs in the north-eastern wheatbelt between Moorine Rock, Burracoppin and Warralakin, Western Australia. It grows on shallow, granitic, sandy loam soil on granite rocks associated with sheoak (*Allocasuarina*), wattle (*Acacia*) and One-sided Bottlebrush (*Calothamnus*). Silver Mallee is known from seven populations, one of which occurs in a nature reserve, four on private property and two in water reserves. An eighth population, discovered in 1994, was found to be part of a past tree planting and so is not considered a naturally occurring population. The number of plants is approximately 350. Five of the seven populations have declined in number since surveys were undertaken during 1978 and 2001, with the other two populations remaining stable. The extent of occurrence is 1900 km^2;

however, an earlier collection from 1929 was made approximately 80 km west of Ora Banda, suggesting a much greater previous range. The area of occupancy is estimated to be 0.1 km^2. Area of occupancy was not recorded in earlier surveys, therefore it is not possible to determine trends in range size (DEC, 2008).

The other two subspecies of *Eucalyptus crucis* also occur on granite outcrops, with Narrow-leaved Silver Mallee occurring in the north-western Wheatbelt, and Paynes Find Mallee occurring further north-west in the rangelands (Brooker & Hopper, 1982; Mollemans et al., 1993; Brown et al., 1998; DEC, 2008). This subspecies distribution is fragmented as the known populations are scattered with considerable distances between them. Silver Mallee occurs within the Avon (Western Australia) Natural Resource Management Region.

The distribution of this subspecies is not known to overlap with any EPBC Act-listed threatened ecological community.

Threats

The main identified threats to Silver Mallee are recreational activities, pipeline maintenance, grazing and weeds. Recreational activities are a threat to two populations, and include illegal seed collection and the taking of limbs for didgeridoo creation. At one population, much of the annual seed production is illegally harvested for ornamental use. Another population is bisected by the main Goldfields pipeline, and is threatened by associated maintenance activities such as vegetation pruning and clearing of the access track. Grazing by sheep is a threat to two populations located on private property. As well as damaging the Silver Mallee, sheep also graze on the understorey which encourages weed invasion (DEC, 2008).

The main potential threats to Silver Mallee include inappropriate fire regimes. It is not known how Silver Mallee responds to fire. Frequent fire would deplete the soil seed bank if they recurred before regenerating or juvenile plants reach maturity and replenish the soil seed bank; however, occasional fires are likely to be required (DEC, 2008).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences/remnants; and investigate the Ora Banda record.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment.
- Develop a genetic tagging system to establish a means of identifying illegal collections from the wild, and providing evidence required for prosecution (see for example Palsboll et al., 2006).
- Identify appropriate intensity and interval of fire to promote seed germination and/or vegetation regeneration.

Regional and Local Priority Actions

The following regional and local priority recovery and threat abatement actions can be done to support the recovery of Silver Mallee.

Habitat Loss, Disturbance and Modification

- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

- Monitor known populations to identify key threats.
- Ensure pipeline maintenance activities (or other infrastructure or development activities) involving substrate or vegetation disturbance in areas where Silver Mallee occurs do not adversely impact on known populations.
- Control access routes to suitably constrain public access to known sites on public land.
- Minimise adverse impacts from land use at known sites, in particular recreational activities.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.

Invasive Weeds

- Identify and remove weeds in the local area, which could become a threat to Silver Mallee, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to Silver Mallee, using appropriate methods.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on Silver Mallee.

Fire

- Develop and implement a suitable fire management strategy for Silver Mallee.
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.

Trampling, Browsing or Grazing

- Ensure that livestock grazing, if it occurs in the area, uses an appropriate management regime and density that does not detrimentally affect this species.
- Where appropriate manage total grazing pressure at important/significant sites through exclusion fencing or other barriers.

Conservation Information

- Raise awareness of Silver Mallee within the local community. The importance of biodiversity conservation and the need for the long-term protection of Silver Mallee may be promoted to the community through poster displays and the local print and electronic media. Formal links with local naturalist groups and interested individuals is also encouraged. An information sheet including a description of the plant, its habitat, threats, recovery actions and photos should be developed to inform adjoining property owners and the public.

Enable Recovery of Additional Sites and/or Populations

- Undertake appropriate seed collection and storage.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

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

Existing Plans/Management Prescriptions that are Relevant to the Species

- Western Australian Wildlife Management Program No. 9: *Declared Rare Flora and other plants in need of special protection in the Merredin District (excluding the Wongan-Ballidu Shire)* (Mollemans et al., 1993).

This prescription was current at the time of publishing; please refer to the relevant agency's website for any updated versions.

Information Sources:

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Vallee, L, Hogbin, T, Monks, L, Makinson, B, Matthes, M & Rossetto, M 2004, *Guidelines for the Translocation of Threatened Plants in Australia* (2nd ed.), Australian Network for Plant Conservation, Canberra.