Approved Conservation Advice for *Gastrolobium papilio* (Butterfly-leaved Gastrolobium)

(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 plans, records or management prescriptions for this species.

Description

Gastrolobium papilio, Family Fabaceae, also known as the Butterfly-leaved Gastrolobium, is a shrub with wiry stems forming tangled clumps ascending to 1.5 m, often climbing through other shrubs (Crisp, 1995; Chandler et al., 2002). This species has distinctive leaves that are shaped like butterfly wings. Flowers are pale red to cream in colour (Williams et al., 2001; Chandler et al., 2002).

Conservation Status

Butterfly-leaved Gastrolobium is listed as **endangered**. 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 under it's previous name, *Brachysema papilio Crisp ms*., as endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). The Butterfly-leaved Gastrolobium is also listed as declared rare flora that is rare or likely to become extinct under the *Wildlife Conservation Act 1950* (Western Australia), and managed as critically endangered by the Western Australian Government.

Distribution and Habitat

Butterfly-leaved Gastrolobium is endemic to southwestern Western Australia and known from one site east-south-east of Busselton, 200 km south of Perth on the northern edge of the Whicher Range (Crisp, 1995; Chandler et al. 2002). Two sites of translocated individuals are within the same locality. The Interim Recovery Plan for this species (Phillimore et al., 2001) identified the need to translocate plants and a translocation of this species into two locations managed by DEC was undertaken in June 2001.

The single natural population of Butterfly-leaved Gastrolobium contains approximately 40 mature plants. The exact number of individuals is difficult to determine due to the grouping nature of the species, therefore the actual number of individuals may be higher.

As it is only known from a single natural population, the extent of occurrence is estimated to be the same as the area of occupancy, which is approximately 0.015 km². Including the two translocated subpopulations, the extent of occurrence is approximately 6 km².

The population recently suffered a decline in 2005, it was noted that 70% of the plants from this population were dead or in poor condition, from possible drought-related stress. However monitoring in 2006 reported that the population was slowly recovering due to the installation of a watering system, and seedling recruitment was noted. The watering system was only used for a short period of time during the drought and it is still operational if required (DEC, 2007).

Butterfly-leaved Gastrolobium grows in shallow, peaty grey-brown sandy clay (Crisp, 1995; Chandler et al., 2002) or very shallow red sandy-clay soil over ironstone in winter-wet flats (Brown et al., 1998). Vegetation is a low open mixed heath (Crisp, 1995; Chandler et al.,

2002) with *Hakea* aff. *varia*, sedges (*Mesomelaena spp.*), *Melaleuca spp.* and *Stirlingia spp.* (Crisp, 1995).

This species occurs within the Swan Coastal Plain Bioregion and the South West Natural Resource Management Region.

The distribution of this species is associated with the "Busselton Ironstone Community or Shrublands on southern Swan Coastal Plain Ironstones" EPBC Act-listed threatened ecological community.

Threats

The main identified threats to Butterfly-leaved Gastrolobium are impacts by *Phytopthera cinnamomi*, fire, hydrological changes, weed invasion and grazing by rabbits (*Oryctolagus cuniculus*) (Phillimore et al., 2001; DEC, 2007).

The main potential threats to Butterfly-leaved Gastrolobium include clearing for agriculture, inappropriate fire regimes and hydrological changes (Tille and Lantzke, 1990; Phillimore et al., 2001; DEC, 2007).

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.
- Undertake seed germination and vegetative propagation trials to determine the requirements for successful establishment.

Regional Priority Actions

The following regional priority recovery and threat abatement actions can be done to support the recovery of Butterfly-leaved Gastrolobium.

<u>Habitat Loss, Disturbance and Modification</u>

- Monitor known populations to identify key threats.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Ensure there is no disturbance in areas where Butterfly-leaved Gastrolobium occurs, excluding necessary actions to manage the conservation of the species/ecological community.
- Manage any changes to hydrology that may result in changes to water table levels and/or increased salinity of run-off.
- Manage any disruptions to water flows.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.
- Manage any other known, potential or emerging threats.

<u>Invasive Weeds</u>

- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on Butterfly-leaved Gastrolobium.

Trampling, Browsing or Grazing

- Implement a management plan for the control and eradication of rabbits in the region.

Fire

- Develop and implement a suitable fire management strategy for the habitat of Butterfly-leaved Gastrolobium.
- Identify appropriate intensity and interval of fire to promote seed germination.
- 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.

Diseases, Fungi and Parasites

- Implement a management plan for the control of *Phytopthera cinnamomi* in the region.
- Implement suitable hygiene protocols to protect known sites from further outbreaks of dieback caused by *Phytophthora cinnamomi*.

Conservation Information

- Continue to raise awareness of Butterfly-leaved Gastrolobium within the local community.
- Frequently engage with land managers responsible for the land on which populations occur and encourage these key stakeholders to contribute to the implementation of conservation management actions.

Enable Recovery of Additional Sites and/or Populations

- 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.

Local Priority Actions

The following local priority recovery and threat abatement actions can be done to support the recovery of Butterfly-leaved Gastrolobium.

Habitat Loss, Disturbance and Modification

- 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.
- Minimise adverse impacts from land use at known sites.
- Manage any disruptions to water flows.
- Protect populations of the listed species through the development of conservation agreements and/or covenants.

Invasive Weeds

- Identify and remove weeds in the local area, which could become a threat to Butterfly-leaved Gastrolobium using appropriate methods.
- Manage sites to prevent further introduction of invasive weeds, which could become a threat to Butterfly-leaved Gastrolobium using appropriate methods.

Trampling, Browsing or Grazing

- If livestock grazing occurs in the area, ensure land owners/managers use 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.

Fire

- Implement an appropriate fire management regime for local populations.

Diseases, Fungi and Parasites

- Implement suitable hygiene protocols to protect the habitat of known populations from further outbreaks of dieback caused by *Phytophthora cinnamomi.*
- Develop and implement suitable hygiene protocols to protect known sites from further outbreaks of *Phytophthora cinnamomi.*
- If necessary, implement appropriate management actions to minimise the adverse impacts of existing *Phytophthora cinnamomi* infestations.

This list does not necessarily encompass all actions that may be of benefit to Butterfly-leaved Gastrolobium 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. 33: Declared rare and poorly known flora in the Central Forest Region (Williams et al., 2001).
- Shrubland Association on Southern Swan Coastal Plain Ironstone (Busselton Area) (Southern Ironstone Association) 1999-2002 Interim Recover Plan.
- Environment Australia (EA) (2001). Threat Abatement Plan for Dieback Caused by the Root-rot Fungus *Phytophthora cinnamomi.*
- Department of Conservation and Land Management. Butterfly-Leafed *Brachysema (Brachysema papilio)* Interim Recovery Plan No. 85. Western Australia.

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

Information Sources:

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Tille, P. J., and N. C. Lantzke (1990). Busselton - Margaret River - Augusta land capability study; methodology and results Volume 2 Appendices. Technical Report 109. Division of Resource Management, Western Australian Department of Agriculture,. Perth.

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