



D'Estrees ENTOMOLOGY Science Services

Glatz, R.V., Leijts, R. & Hogendoorn, K. (2015). Biology, distribution and conservation of Green carpenter bee (*Xylocopa aeratus*: Apidae) on Kangaroo Island, South Australia. Report to the Foundation for National Parks and Wildlife, Sydney, Australia. 32pp.

Executive Summary

This report presents the results of a survey of the remnant population of the endangered native green carpenter bee, *Xylocopa aeratus*, on Kangaroo Island. This large, iconic species is now extinct in Victoria and mainland South Australia. An earlier survey on KI (2003) found that the species had contracted westward on the island.

The species depends for its survival on two types of nesting substrate: large (> 15 year old), dead *Banksia* trunks that have been softened by white rot, and dead flowering stalks of grass trees that provide patchy nesting substrate for 2-6 years after fire.

The present survey signals that the contraction of the population, noted in 2003, has continued. Viable populations are now only known from the southern part of Flinders Chase NP and in Kelly Hill CP. While some nests have been found in suitable fragmented habitat along the North coast, it needs to be verified whether these, now isolated remnants are of sufficient size to support viable populations. The contraction of the species is intricately linked to the fire history and land clearing, both of which influence the availability of nesting substrate.

The data from the surveys indicate that carpenter bees can become extinct locally through:

- **complete burns of isolated patches**, which, due to their isolation, cannot be recolonised;
- **frequent burns**, which do not allow time (at least 20 years) for regrowth and death of *Banksia*;
- **burns of large areas of continuous vegetation**, which not only removes *Banksia* but also synchronises the availability of both grass tree flower stalks and *Banksia* on different time scales

The highest densities of dead, suitable *Banksia* trunks were found in areas that had been left unburnt for long periods of time (> 60 years). The fire that burnt most of Flinders Chase NP in 2007, did not only remove substantial amounts of *Banksia* nesting substrate, it also synchronised flowering of many grass trees over a large area. Now, 7 years after the fire, this otherwise patchy material is becoming rare, while *Banksia* trunks are largely unavailable in the burnt regions.

As a result, this report identifies priority areas for the green carpenter bee and provides numerous recommendations to fire and land managers, including:

- refraining from prescribed burns in areas that currently support the green carpenter bee;
- no, or very infrequent (>20 years), localised burning in priority areas with suitable *Banksia* but no carpenter bees;
- winter relocation of active nests from areas that are targeted for prescribed burning despite the presence of carpenter bees;
- obtaining funding to further explore how best to protect and enhance the current population, including assessment of genetic isolation of the KI population