

**Attachment 8
Draft scope of the
Carnaby's Black
Cockatoo research
program**

Department of Environment and Conservation
Draft Research Proposal to Support the Conservation of Carnaby's Cockatoo
(*Calyptorhynchus latirostris*) on the Swan Coastal Plain

(adapted from DEC advice, December 2007)

Carnaby's Black Cockatoo is a WA endemic species largely breeding in the wheatbelt and moving west and south to coastal or near coastal areas during the non-breeding season. A significant number of birds visit the Swan Coastal Plain (SCP) during the non-breeding season, but the number of birds utilising food resources on the Plain is unknown although counts as high as 7,000 have been made during the past few years. A smaller number of birds, predominantly juvenile and non-breeding adults over-winter on the SCP. The species is listed as threatened (Schedule 1) under WA *Wildlife Conservation Act 1950* and as Endangered under the Commonwealth *EPBC Act 1999*.

The SCP extends from the town of Gingin in the north to the regional centre of Bunbury in the south (ca. 225km x 30km); to the east it is bounded by the Darling Range. The Perth Metropolitan Area is largely confined to the SCP, with some peri-urban suburbs extending into the adjacent Darling Range.

Threatening processes of greatest concern for the SCP population of the cockatoo include continued clearing of feeding habitat for urban and peri-urban development, and the proposed clearing of the Gngangara Pine Plantation in Gngangara State Forest. Both native *Banksia* woodland and the pine plantations provide food sources for this population, but the significance of these resources for the long-term survival of the Cockatoo is unknown. The identification of critical habitat requirements on the SCP is a necessary requirement of continued recovery actions for the species. Similar threats are also impacting on the availability of nesting sites and night-time roosting sites on the SCP.

The following research focus will provide important information that will better allow for conservation planning for the species in this rapidly developing region. The identification of critical habitat requirements will allow for sensitive urban development and appropriate planning for areas such as the Gngangara Park, thus ensuring the long-term survival of the species in the region. It will also support the Commonwealth's decision-making process when development proposals are referred to the DEWHA for determination as to whether those developments constitute significant actions.

Central to any decision on which of the above-mentioned offsets might be acceptable is a capacity to accurately identify significant habitat for Carnaby's Black Cockatoo on the SCP, and place in some context how important individual sites are to the continued survival of the birds. Current knowledge gaps exist on the relative value of specific sites to the birds and whether their location on the SCP and relative connectivity between sites is important. Two lines of research are proposed to address these knowledge gaps.

There are two central themes to the proposed research;

1. Food Resources

Determining the food resource base on the SCP and determining as best as possible whether those resources can support the existing cockatoo population (taking into account other competing fauna) and how expected changes to the availability of food resources will impact on sustainability.

Previous research by Cooper *et al.* (2002) has calculated basal metabolic energy requirements for Carnaby's Black Cockatoo and estimated field metabolic rate. Analyses have also been made of a limited range of known foods to determine their energy yield and basic calculations made to determine the quantities of each food type that would need to be consumed each day per bird.

A number of government data sets exist that show the distribution of remnant vegetation on the SCP, and a number of key remnants have already been surveyed in detail providing sound data on vegetation communities present at those sites (WAPC 2000). More detailed survey of a representative sample of such sites will provide a measure of the standing food resources across the SCP. When these data are combined with information developed by Lamont *et al.* (see References) it should be possible to estimate the total food resource for native vegetation at a basic level. Similar field research will allow the total contribution that pine plantations (commercial and non-commercial) make to the food supply.

By combining these data in linear models it should be possible to define the total resource base and to account for factors such as variation in seed production due to changes in rainfall, impact of fire and diseases such as *Phytophthora cinnamomi* on remnants and the projected rate of clearing for urban development.

2. Habitat Use

Determining how Carnaby's Black Cockatoo uses non-food resources (nests, day and night roosts and watering points) and whether movements around the SCP are influenced by the degree of connectivity between sites supporting remnant vegetation will be crucial to making informed decisions about where development would be acceptable and where habitat retention or restoration efforts should be focused.

Research conducted by Birds Australia WA (Shah 2006) indicated that feeding flocks forage over limited areas (10-15km) during a day, and return to select night roosts where they meet other similar sized flocks. Identifying where such night roosts are, whether they are used seasonally and from year to year will provide important information. The relationship between roost sites and foraging sites is as yet unknown, both in terms of whether they need to be connected by green belts or whether the cockatoos will fly (a maximum distance) over open/developed landscapes.

It will also be important to determine habitat use by those birds that over-winter on the SCP as they are likely to represent the bulk of birds recruiting into the northern wheatbelt breeding population. This aspect of research will require direct observation of birds at roost sites and foraging sites (through focal follows) a task that will not be easy in the developed landscape of the SCP. The use of technology such as radio or satellite telemetry could be investigated as part of the project design phase, but may not be applicable because of constraints of signal transmission range (radio transmitters), cost (satellite transmitters) or animal welfare (safe transmitter attachment methods).

It may also be possible to identify nesting sites on the SCP, and augment those data already held by the WA Museum. Breeding locations are known from two areas on the SCP at present and a third and possibly larger one is suspected in the southern metropolitan area.

These two lines of research are best managed by projects carried out by salaried DEC staff as they provide for focused research at a relatively low cost and will ensure

that results are available in a published form (reports made available on the DEC website, thesis and/or peer-reviewed papers in scientific journals).

Costs of Supporting the Proposed Research

2 DEC staff (based on L4.1-4.3 and including planned salary increase 1/3/2008)

Salary*	Vehicle lease and mileage	Total
Yr 1 \$132,738	\$40,000	\$172,738
Yr 2 \$136,458	\$40,000	\$176,458
Yr 3 \$140,790	\$40,000	\$180,790
Total		\$529,986

*Note: Salary component includes standard public service on-costs.

References and Further Reading

Cooper, C. E., Withers, P. C. , Mawson, P. R. , Bradshaw, S. D. , Prince, J. and Roberston, H. 2002. Metabolic ecology of cockatoos in the south-west of Western Australia. *Aust. J. Zool.* 50;67-76.

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Enright, N.J. and Lamont, B.B. 1989. Seed banks, fire season, safe sites and seedling recruitment in five co-occurring Banksia species. *Journal of Ecology* 77; 1111-1122.

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Lamont, B.B. and Markey, A. 1995. Biogeography of fire-killed and resprouting Banksia species in southwestern Australia. *Australian Journal of Botany* 48; 283-303.

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(<http://www.hotgecko.com/carnabys/assets/Shah,%202006,%20Carnaby's%20SCP%20Project%20Report.pdf>).