



RECOVERY TEAM ANNUAL REPORT THREATENED SPECIES AND/OR COMMUNITIES RECOVERY TEAM		
PROGRAM INFORMATION		
Recovery Team	Carnaby's Cockatoo Recovery Team	
Reporting Period Submission date 31 March	DATE FROM: 1 January 2014	DATE TO: 31 December 2014
Current membership		
	Member	Representing
Chair	David Mitchell	DPAW, Swan Region
Exec Officer	Geoff Barrett	DPAW, Swan Region
members	Alison Doley	Community/landowner, Koobabbie, Coorow
	Rick Dawson	DPAW, Nature Protection Branch
	Ron Johnstone	WA Museum
	Brett Beecham	DPAW, Wheatbelt Region
	Manda Page / Christine Groom	DPAW Species and Communities Branch
	John Ingram	CSIRO
	Cheryl Gole / Matt Fossey	BirdLife Australia
	Stephen Davies	Murdoch University & Curtin University
	Brad Barton	DPAW, Warren Region
	Tracey Scroop	Department of Planning
	Kath Howard	World Wide Fund for Nature
	Kim Williams	DPAW, South West Region
	Anthony Desmond	DPAW, Mid-west Region
	Sarah Comer	DPAW, South Coast Region



<p><b>Dates meetings were held</b></p>	<p>26 February 2014 and 13 August 2014</p>
<p><b>Highlights of achievements</b> for the previous 12 months suitable for publication in <i>WATSNU</i> and contribution to DPAW annual report. Provide 1-2 paragraphs summarising total number of new populations located, surveys completed, list major management actions etc</p>	<p><b>Great Cocky Count:</b></p> <ul style="list-style-type: none"> <li>The fifth Great Cocky Count was held in April 2014, and continues to be a most successful 'Citizen Science' program with this year almost 600 volunteers surveyed 290 sites across the southwest.</li> <li>Volunteers surveyed 186 sites in the Perth-Peel Coastal Plain and counted 6,671 Carnaby's Cockatoos. Together with roost counts in the Perth Hills area this provides a minimum population count for Carnaby's Cockatoos in the Greater Perth-Peel Region of 7,154 birds.</li> <li>Volunteers surveyed 60 sites in regional locations outside of the Greater Perth-Peel Region and recorded 4,227 white-tailed black-cockatoos. In regional areas, volunteers surveyed roosts ranging from Chapman Valley in the north, inland to Narrogin, east to Esperance, and along the south and west coasts.</li> <li>The trend towards declining numbers since 2010 continues, the combined effect of fewer occupied roosts and fewer birds in each roosting flock provides an estimated rate of decline in the total number of Carnaby's Cockatoos using the Perth-Peel Coastal Plain of 14% per year.</li> </ul> <p><b>Monitoring movements:</b></p> <ul style="list-style-type: none"> <li>Christine Groom (PhD UWA) completed her thesis Murdoch University studying the large-scale movement of Carnaby's cockatoos using solar powered, satellite transmitters and other methods. The results of this study will inform decision making and provides useful techniques that can be applied to future science.</li> </ul> <p><b>Land acquisition:</b></p> <ul style="list-style-type: none"> <li>Through the development offset process, six land purchases have occurred, of approximately 2,600 hectares of Carnaby's Cockatoo habitat into the conservation estate.</li> </ul> <p><b>Restoration and improvement of habitat:</b></p> <ul style="list-style-type: none"> <li>Several projects targeted at the improvement of quality of Carnaby's cockatoo habitat continued in 2014. Notably the Parks and Wildlife Jandakot Banksia Woodland Restoration project, which is a large offset project that has restored 22 ha of banksia woodland through topsoil transfer and planted a further six hectares of Carnaby's feeding habitat (banksia woodland). Over the next three years, the project will create approximately 40 hectares of Carnaby's habitat, control weeds over approximately 800ha and fence approximately 1000ha of carnaby's feeding habitat. Through a grant scheme this project has also provided \$300,000 support to community groups and local governments to restore banksia woodland at 20 locations.</li> </ul>



### Monitoring and breeding success – Coomallo

- Long term monitoring of the breeding population at Coomallo in the wheatbelt continues providing important findings on the ecology of the species.
- In addition the monitoring of artificial nest hollows has demonstrated their effectiveness. There are 171 available nest hollows (50 artificial) at Coomallo, and during the 2014 breeding season there was 98 breeding attempts of which 55 (53.9%) were successful. Sixty three of the 98 attempts were in natural hollows and 35 of these were successful (55.6%).

### Strategic Assessment:

- Carnaby's cockatoo are a very significant factor in the joint State and Commonwealth project to prepare a Strategic Assessment under the EPBC Act of development in the Perth and Peel regions. The strategic assessment will assess the impacts of the proposed development of the Perth and Peel regions over the next 20-30 years as well as the removal of the pine plantations over the Gnangara mound on Carnaby's cockatoo and other biodiversity values.
- As part of the Strategic Assessment of the Perth-Peel region a large amount of information has been collated and produced. As part of this Parks and Wildlife have carried out a revision of the mapping of Carnaby's cockatoo feeding and roosting habitat, remnant vegetation using remote sensing techniques and have also completed a population viability analysis (PVA) for Carnaby's cockatoo to assist in the assessment of the impacts on the species.

### List of recovery actions coordinated by Recovery Team

Detail under the headings below the recovery actions undertaken during the reporting period. Provide separate detail for each species/community against each action. For species/community-specific recovery teams, the generic activity types below can be replaced by the specific recovery actions from the recovery plan where appropriate.

This annual report is structured along the six recovery action themes of the Carnaby's cockatoo Recovery Plan 2012 (WAWMP No. 52).

DEC (2012) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (Western Australian Wildlife Management Program No. 52), WA Department of Environment and Conservation, Kensington, WA.

#### 14.1. Protect and Manage Important Habitat

Identify, protect and manage habitat critical for survival (nesting, foraging and roosting) for Carnaby's cockatoos across their breeding and non-breeding range.

#### Restoration and improvement of habitat:

- The Parks and Wildlife Jandakot Banksia Woodland Restoration project is a large offset project that has restored 22 ha of banksia woodland through topsoil transfer and planted a further six hectares of Carnaby's cockatoo feeding habitat (banksia woodland). Over the life of the funding, the project will create approximately 40 hectares of Carnaby's cockatoo habitat, controlled weeds over approximately 800ha and fence approximately 1,000ha of Carnaby's cockatoo feeding habitat.
- During mid to late 2014, the Jandakot Banksia Woodland Restoration project analysed the first results of the rehabilitation program and is preparing papers on the trials to identify best



	<p>practice for restoring (creating) banksia woodland. The work is being carried out in collaboration with Murdoch University.</p> <ul style="list-style-type: none"> <li>• BirdLife (with Perth NRM) undertaken restoration works in 95ha of banksia woodland close to suburban roosting sites.</li> <li>• BirdLife received a Perth Banksia Woodland Community Restoration Grant to revegetate the eastern gateway of Bold Park with the Botanic Gardens &amp; Parks Authority</li> <li>• Perth NRM has commenced funding the treatment of dieback in banksia woodland sites close to Perth roost locations.</li> <li>• Curtin University have developed and are beginning to implement a tree replacement strategy as part of the University's development plan for the campus over the next 30 years. The development plans will remove most of the pines from the NW corner of campus which is the main roosting area on campus.</li> <li>• BirdLife received a grant to engage 10-15 landholders in the wheatbelt to identify and/or protect hollows on their properties – In July regional BirdLife branches made contact with NRM and Landcare groups to arrange on ground work with interested landholders</li> <li>• Coomallo is a long-term Carnaby's cockatoo banding study from 1970 to present. During the year artificial hollows have been installed and repaired. The Coomallo study site currently has 97 natural hollows and 60 artificial nest hollows.</li> </ul> <p><b>Land acquisition:</b></p> <ul style="list-style-type: none"> <li>• Six properties acquired as offsets for Carnaby's cockatoo.</li> <li>• Three contiguous parcels were purchased north-east of Clackline in July, with a combined area of 177ha.</li> <li>• A parcel north of Gingin – east of Boonanarring Nature Reserve – was purchased also in July, and had an area of 1205ha.</li> <li>• Two parcels west of Serpentine (being portions of the "Lowlands" and "Riverlea" properties) were purchased in December, and had a combined area of 1,313ha.</li> <li>• The total cost of the six purchases was \$12,334,000. All these funds have been provided by "developers", as environmental offsets.</li> </ul>
<p><b>14.2. Conduct Research to Inform Management</b> Undertake research into the biology, ecology, and conservation management of Carnaby's cockatoo.</p>	<p><b>Update on research (DPaW, BirdLife, Perth Zoo, Universities)</b></p> <ul style="list-style-type: none"> <li>• During 2014, Christine Groom (PhD UWA) completed a large-scale movement study for Carnaby's cockatoo using satellite transmitters. Christine completed writing up the thesis in late 2014.</li> <li>• Candice Le Roux is commencing a Masters on the characteristics of Carnaby's Cockatoo nocturnal roost sites in the Perth Region. Supervised by Professor Will Stock, Dr Dave Blake, Rob and Dr Geoff Barrett (DPAW), this project will use citizen science data to define the characteristics of Carnaby's roost sites.</li> </ul>



Research into poison events – see text under 14.4:

**Publications of interest:**

- Groom, C.J., Mawson, P.R., Roberts, J.D. and Mitchell, N.J. (In Press) Meeting an expanding human population's needs whilst conserving a threatened parrot species in an urban environment. WIT Transactions on Ecology and the Environment, 191.
- Groom, C., Warren, K., Le Souef, A., and Dawson, R. (In Review) Attachment and performance of Argos tracking devices fitted to black cockatoos (*Calyptorhynchus* spp.). Wildlife Research.
- Le Souëf, A.T., Cooley, C.K., Vitali, S., Klandorf, H. & Warren, K. (in prep.) Age is only skin deep: pentosidine measurement in black cockatoos (*Calyptorhynchus* spp.) as a method for age estimation
- Nicole E. White, Michael Bunce, Peter R. Mawson, Rick Dawson, Denis A. Saunders, Morten E. Allentoft. (Accepted 2014). Identifying conservation units after large-scale landclearing: a spatio-temporal molecular survey of endangered white-tailed black-cockatoos (*Calyptorhynchus* spp.) . Diversity and Distribution
- Saunders, D.A., Mawson, P.R. & Dawson, R. (2014) Use of tree hollows by Carnaby's Black-Cockatoo and the fate of large hollow-bearing trees at Coomallo Creek, Western Australia 1969-2013. Biological Conservation.
- Saunders, D. A., Mawson, P. R. and Dawson, R. (2014). One fledgling or two in the endangered Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – a strategy for survival or legacy from a bygone era? Conservation Physiology 2: doi:10.1093/conphys/cou001.
- Saunders, D. A., Mawson, P. R. and Dawson, R. (submitted to Biological Conservation) Long-term tree hollow use by Carnaby's Cockatoo and the fate of their nesting trees at Coomallo Creek, Western Australia 1969-2013.
- Valentine, L.E., Fisher, R., Wilson, B.A., Sonneman, T., Stock, W.D., Fleming, P.A. and Hobbs, R.J. 2014 Time since fire influences food resources for an endangered species, Carnaby's cockatoo, in a fire-prone landscape. Biological Conservation 175: 1-9.
- WA Museum paper "Trials on the use and effectiveness of artificial nest hollows for Carnaby's Cockatoo at Cataby, Western Australia" has been accepted for publication in the next WA Naturalist, to be published in February 2015.
- White, N.E., Bunce, M., Mawson, P.R., Dawson, R., Saunders, D.A. & Allentoft, M.E. (2014) Identifying conservation units after large-scale land clearing: a spatio-temporal molecular survey of endangered white-tailed black cockatoos (*Calyptorhynchus* spp.). Diversity and Distributions, DOI: 10.1111/ddi.12202.
- Williams, M.R., Yates, C.J., Finn, H., Stock, W. & Barrett, G. (2015) Citizen science monitoring reveals a significant, ongoing



	<p>decline of the endangered Carnaby's Black-Cockatoo. Oryx.</p>
<p><b>14.3. Undertake Regular Monitoring</b> Monitor population parameters, habitat, threats and status of the Carnaby's cockatoo.</p>	<p><b>Monitoring breeding populations:</b></p> <ul style="list-style-type: none"> <li>Monitoring of breeding success by Parks and Wildlife and BirdLife Australia of breeding sites has continued across five sites (including Koobabbie, Raffin's property, Campbell's and Kokanup)</li> <li>Over the past year WA Museum (Ron Johnstone) has continued their monitoring and survey work on Carnaby's at Cataby, Bindoon, some sites in Perth hills and in Whicher Range-Bunbury region and Great Western Woodlands.</li> </ul> <p><b>Breeding success – Coomallo</b></p> <ul style="list-style-type: none"> <li>Now have 171 (50 artificial) active nests, with 63 confirmed nesting attempts up 7 from this time last year and when we return on 11th November we expect that to rise well past last year.</li> <li>The 2014 breeding season had a total of 98 breeding attempts of which 55 (53.9%) we believe they will be successful. 63 were in natural hollows and 35 of these were probably successful (55.6%).</li> <li>Results from observed retuning birds to date indicate (at least) a 11% survival rate to three years old.</li> </ul> <p><b>Great Cocky Count:</b></p> <ul style="list-style-type: none"> <li>The Great Cocky Count, run in partnership with DEC, was held in April 2014, which was the fifth of the formal Cocky Counts (since 2010). The 2014 GCC report has been released (<a href="http://birdlife.org.au/documents/CBC-2014GCC-Report.pdf">link: http://birdlife.org.au/documents/CBC-2014GCC-Report.pdf</a>)</li> <li>The 2014 Great Cocky Count (GCC) results: <ul style="list-style-type: none"> <li>The Great Cocky Count is one of the largest citizen science surveys of its kind in Australia. Community interest was significant – this year almost 600 registered volunteers surveyed 290 sites across the southwest.</li> <li>Volunteers surveyed 186 sites in the Perth-Peel Coastal Plain and counted 6671 Carnaby's Cockatoos. The Perth-Peel Coastal Plain encompasses most of the Swan Coastal Plain between Lancelin and Waroona.</li> <li>Significant counts in the Perth-Peel Coastal Plain occurred in the Gnangara pine plantation (multiple sites) and at the Gingin townsite (n = 879 birds roosting at three sites), Curtin University/Collier Park/Technology Park in Como (n = 402), Dawesville (n = 281), Murdoch University (n = 234), Manning Lake in Spearwood (n = 168), Underwood Avenue in Floreat (n = 159), Hollywood Hospital in Nedlands (n = 114), and the City</li> </ul> </li> </ul>





	<p>of Stirling Nursery in Karrinyup (n = 92).</p> <ul style="list-style-type: none"> <li>○ The population of Carnaby's Cockatoos inhabiting the Perth-Peel Coastal Plain is significant at a species-scale, with four of the five largest roosts and six of the ten largest roosts for the 2014 Great Cocky Count occurring within the Perth-Peel Coastal Plain.</li> <li>○ Trend analysis of roost counts over the last five GCCs found a combined rate of decline of roost occupancy and roost size between 2010 and 2014 was 14% per year.</li> <li>○ Volunteers surveyed 60 sites in regional locations outside of the Greater Perth-Peel Region and recorded 4227 white-tailed black-cockatoos. Counts of white-tailed black-cockatoos in forested areas may include Baudin's Cockatoos and Carnaby's Cockatoos.</li> <li>○ In regional areas, volunteers surveyed roosts ranging from Chapman Valley in the north, inland to Narrogin, east to Esperance, and along the south and west coasts.</li> <li>○ Significant counts occurred at Myrup (n = 791 birds roosting), Chapman Valley (n = 451 at two sites), Dandaragan (n = 460), the Capes region (n = 395 at five sites), Nilgen (n = 376), Hill River and Jurien Bay (n = 333 at three sites), Goode Beach in Albany (n = 182 at two sites), Esperance (n = 202), Wagerup (n = 186), Hopetoun (n = 180 at two sites), Kalgan (n = 141), and Gwindinup (n = 119).</li> <li>● Parks and Wildlife and Birdlife have carried out a comprehensive review of the earlier GCC which have been accepted for publication in the journal Oryx in 2015. (Williams, M.R., Yates, C.J., Finn, H., Stock, W. &amp; Barrett, G. (2015) Citizen science monitoring reveals a significant, ongoing decline of the endangered Carnaby's Black-Cockatoo. Oryx.)</li> </ul>
<p><b>14.4. Manage Other Impacts</b> Monitor the impacts and implement strategies to reduce other factors detrimentally affecting Carnaby's cockatoos, and support rehabilitation programs.</p>	<p><b>Road deaths:</b></p> <ul style="list-style-type: none"> <li>● Significant numbers of road deaths have been reported over past years. There are some specific areas that appear to have high rates because birds are feeding on road sides where grain is being spilt.</li> <li>● Parks and Wildlife staff have been liaising with Main Roads to seek to have warning signs erected. This has occurred in some metropolitan and regional locations. Further liaison between Parks and Wildlife Regions and Districts and Local Government and Main Roads WA is required.</li> <li>● During 2014, Parks and Wildlife staff have significant liaison with CBH (Cooperative Bulk Handling) regarding Canola grain spillage on South Coast Roads. Following this several mitigation actions were undertaken:</li> <li>● A CBH fact sheet and information on Carnaby's cockatoos has been provided via various forums to staff, contractors and growers (article in the CBH Weekly Bulletin, staff 'Insight' magazine, 'Down the Line' magazine with a distribution of over 2,500 grain growers in WA,</li> </ul>



	<ul style="list-style-type: none"> <li>• Intention to develop a more formal communications strategy to reiterate to contractors and staff hygiene protocols that are in place as well as the strict no-overfilling protocols with regards to grain spill and the attraction of the Carnaby's cockatoos to it.</li> </ul> <p><b>Bird deaths:</b></p> <ul style="list-style-type: none"> <li>• Over the past few years several unexplained groups of Carnaby's cockatoo deaths were reported, which may be poisoning incidents.</li> <li>• Murdoch University and Perth Zoo have been investigating some of these deaths. Investigations are ongoing, however, current theory is it is related to organophosphate poisoning but likely a deferred paralysis (i.e. exposure much earlier, maybe in breeding sites). That some animals respond to treatment also supports this theory.</li> <li>• DPAW staff have continued to liaise and advise wildlife carers managing injured birds, with an aim to release suitable birds to the wild when fit.</li> </ul>
<p><b>14.5. Undertake Information and Communication Activities</b> Develop and distribute awareness raising and guidance materials for decision makers, establish joint management agreements and provide for improved sharing of information between agencies.</p>	<p><b>Statutory land use planning:</b></p> <ul style="list-style-type: none"> <li>• The impacts on Carnaby's cockatoo habitat are increasingly being considered under the EPBC Act assessment of development. Mapping of potential feeding, roosting and breeding habitat are currently being used by land use planners in decision making and to mitigation.</li> </ul> <p><b>Strategic Assessment:</b></p> <ul style="list-style-type: none"> <li>• Black cockatoos are a very significant factor in the joint State and Commonwealth project to prepare a Strategic Assessment under the EPBC Act of development in the Perth and Peel regions. The strategic assessment will assess the impacts of the proposed development of the Perth and Peel regions over the next 20-30 years as well as the removal of the Gngangara, Pinjar and Yanchep pine plantations on Carnaby's cockatoo and other biodiversity values.</li> <li>• How to manage Carnaby's cockatoos remain a major issue for the assessment. This includes assessment and land use planning, site mitigation measures and pine plantation management.</li> <li>• As part of the Strategic Assessment of the Perth-Peel region a large amount of information has been collated and produced. As part of this Parks and Wildlife have carried out a revision of the mapping of Carnaby's cockatoo feeding and roosting habitat, and remnant vegetation using remote sensing techniques.</li> <li>• Parks and Wildlife have also completed a population viability analysis (PVA) for Carnaby's cockatoo to assist in the assessment of the impacts on the species.</li> </ul>





#### 14.6. Engage with the Broader Community

Engage with and involve people across the community in the conservation of Carnaby's cockatoo.

- Carnaby's cockatoo is a charismatic visitor to the Perth metropolitan area and promotes significant public interest.
- The recovery team members deal with many queries about Carnaby's Cockatoo and Nature Protection Branch staff and wildlife carers also deal with injured birds. Also, the presence of Carnaby's cockatoo in areas proposed for development is of increasing interest to the community.
- WWF & the Peel-Harvey Catchment Council organised two community information session on the Strategic Assessment for Perth and Peel (Perth city, Mandurah), with presentations from Dept of the Premier & Cabinet; DPaW (David Mitchell) and Commonwealth Department of the Environment. Feedback from these sessions indicated that there is significant concern and little understanding of the Strategic Assessment process, the likely results and impacts of the SAPPF amongst the community of environmentally-aware and engaged citizens.
- In March 2014, as part of the Peel-Harvey Catchment Council and BirdLife Australia, Rivers to Ramsar project agreement - BirdLife WA conducted 12 training workshops in the Perth-Peel region in which trained over 350 community members. Almost 100 people attended the three workshops in the Peel Region. Two further workshops were held in Mandurah and Narrogin in May and June 2014, respectively. The training workshops serve two primary functions: (1) disseminating black cockatoo conservation information and (2) to encourage attendees to become involved in the 2014 Great Cocky Count
- BirdLife has submitted a draft article describing BirdLife's Black Cockatoo Recovery Program to the autumn issue of the World Parrot Trust's quarterly magazine – PsittaScene (<http://www.parrots.org/index.php/ourpublication/psittascene/>).
- Christine Groom gave a presentation on her PhD project at the Combined Biological Sciences Meeting at UWA and the Sustainable City 2014 conference in Siena.

#### BirdLife Australia projects:

- "Cockatoos in Crisis" project - Birdlife WA secured over \$250,000 from Lottery West grant.
- This project aims to engage at least 1,000 community members including school children. As in the previous Carnaby's Cockatoo project, this will be achieved via a community education program, surveys, and monitoring of nests and foraging habitat. In addition the project will assist and monitor existing netting trials to protect fruit crops from Baudin's cockatoo damage. This will provide benefits to rural community health, the water use and economic viability of orchards.
- The Great Cocky Count, run in partnership with DEC, was held in April 2014. See detail under 14.3 above. The GCC provides an ideal opportunity for informing and engaging the community in recovery work and this year almost 600 registered volunteers surveyed 290 sites across the southwest.
- Parks and Wildlife have maintained and updated an information and resources web page for Carnaby's Cockatoos:



	<p><a href="http://www.dpaw.wa.gov.au/plants-and-animals/animals/208-saving-carnaby-s-cockatoo">http://www.dpaw.wa.gov.au/plants-and-animals/animals/208-saving-carnaby-s-cockatoo</a></p>
<p><b>Recovery plans</b> e.g. recovery plans/ IRPs drafted, approved, reviewed or updated</p>	<p><b>Recovery Plan:</b></p> <ul style="list-style-type: none"><li>• The recovery plan for Carnaby's cockatoo (2012) was prepared by the State in 2012 and endorsed by the Commonwealth in 2013.</li><li>• This recovery plan covers the ten year period from 2012 and provides some background information on Carnaby's cockatoo, threatening processes that affect this species, and identifies the recovery objective, success criteria and the actions required over the next ten years to progress towards the longer term recovery of this species.</li></ul>