## Recovering the rainbird,

# Carnaby's black-cockatoo

**In many Perth suburbs, it is not uncommon to enjoy the spectacle of flocks of Carnaby's cockatoos flying overhead or noisily alighting in large trees before moving off again. In some parts of the Wheatbelt, farmers even recall seeing so many black-cockatoos that they blackened the sky as they flew overhead. But, the species is seriously threatened and, in those same places, the birds are now few and far between. What can be done to help the species recover?**

by Leonie McMahon and John Blyth

Black-cockatoos may not be as widely known as kangaroos or koalas, but they are as characteristic of the Australian landscape as these internationally-recognised icons. Only Australia, New Guinea and nearby parts of Indonesia host any naturally-occurring black-cockatoos. Australia has five species belonging to the subfamily Calyptorhynchinae: the glossy, the red-tailed, the yellow-tailed and two white-tailed species of black-cockatoo. Unfortunately, both species of white-tailed black-cockatoo, and subspecies or significant populations of the others, are now threatened due to the dramatic changes wrought to their habitats since European settlement.

## White-tailed cockatoos in WA

The two white-tailed species of black-cockatoo resemble each other so closely that they were originally considered to be the same species. Carnaby's cockatoo (*Calyptorhynchus latirostris*) and Baudin's cockatoo (*Calyptorhynchus baudinii*) are both endemic to Western Australia. They are distinguished by the size of their upper bill, known as a mandible. Carnaby's

cockatoo (previously known as the short-billed cockatoo) has a much shorter and stouter upper bill than Baudin's cockatoo (previously known as the long-billed cockatoo). The distribution, behaviour and preferred foods of the two species are also quite different.

Both species are now declared 'rare or likely to become extinct' under WA legislation and are listed as endangered, and the Department of Conservation and Land Management (CALM) has established recovery teams to oversee conservation management for them. Carnaby's cockatoo is also listed as endangered under Commonwealth legislation, and any actions likely to affect it must be referred to the Commonwealth Minister for Environment and Heritage.

## The ngoolark

The range of Carnaby's cockatoo stretches from the lower Murchison River north of Geraldton on the west coast, to just east of Esperance on the south coast. Inland, its range extends to Coorow (in the northern Wheatbelt), Kellerberrin (in the central Wheatbelt) and Lake Cronin, east of Hyden in the south.

Carnaby's cockatoo is a large, impressive bird, measuring between 53 and 58 centimetres long, with a wingspan of about 110 centimetres. The name given to it by the Nyoongar people—the onomatopoeic 'ngoolark'—came from its distinctive wailing cry. Since European settlement, the same cry earned the cockatoo the local name 'rainbird' (sometimes also used for other species), especially in the Wheatbelt where it arrives each winter with the rainy weather to breed. Its contemporary common name recognises the late Western Australian naturalist, Ivan Carnaby, whose work in the 1930s and 1940s helped to distinguish between the two white-tailed species.

*Previous page*
**Main** Salmon gum woodlands provide large hollows used as nesting sites for Carnaby's cockatoos.
*Photo – Marie Lochman*
**Inset** Carnaby's cockatoo.
*Photo – Babs and Bert Wells/CALM*

**Top** Baudin's cockatoo, also a threatened species, is the only other white-tailed black-cockatoo in the world.
*Photo – Jiri Lochman*

**Left** Carnaby's cockatoos often return to the same nesting hollow year after year.
*Photo – Sallyanne Cousans*

**Top left** Firewood banksia (*Banksia menziesii*) is one of the species Carnaby's cockatoos feed on.
*Photo – Jiri Lochman*

**Above left** Carnaby's cockatoos lay two eggs per clutch.
*Photo – Rick Dawson*

**Above** Three to four week old chick.
*Photo – John Lauri*

## Breeding

Carnaby's cockatoos breed mostly in areas with an average annual rainfall of between 300 and 750 millimetres—broadly referred to as the Wheatbelt. Breeding begins in the late winter months, and continues throughout spring and into early summer. The birds tend to mate for life and will return to the same nesting site, often the same hollow, each year. The cockatoos nest in large hollows of mature eucalypt species, in particular, those of salmon gum (*Eucalyptus salmonophloia*) and wandoo (*Eucalyptus wandoo*). It may take a minimum of 120 years for suitable hollows to form in salmon gum and 150 years for them to form in wandoo. While two eggs are laid, only one chick is usually raised.

For breeding to be successful, it is important to have feeding habitat in close proximity to nest sites. Carnaby's cockatoos feed on a large variety of plants from the family Proteaceae, primarily from many species of banksia, grevillea, hakea and dryandra, in habitat referred to as kwongan heath. The seeds of marri (*Corymbia calophylla*) are also eaten, and Carnaby's cockatoos have adapted to feeding on introduced species including pine (*Pinus* spp.), wild geranium (*Erodium* spp.) and wild radish (*Raphanus raphanistrum*). There have also been reports of birds feeding on canola from the period just prior to swathing through to harvest.

## Adapt or perish

The Carnaby's cockatoo was the subject of a long-running CSIRO research study headed by Denis Saunders in the 1970s and 1980s, the results of which provided the basis for the recovery program. This work has allowed researchers to estimate that the total population of the Carnaby's cockatoo has declined by at least 50 per cent in the past three generations (45 years) and this decline is continuing. It no longer breeds in about a third of its former breeding range in the Wheatbelt and its distribution is fragmented in other parts of its breeding range. Research by the WA Museum has shown that since the 1950s, its distribution has shifted further westwards and southwards, and some breeding now occurs on the Swan Coastal Plain.

If Carnaby's cockatoos are synonymous with winter and spring rains in the Wheatbelt, they are associated with autumn and winter (and the noise of falling pine cones as they are foraged by Carnaby's cockatoos) on the coastal plain. From such places as Eneabba, Ocean Farms, Yanchep, Cottesloe and Rockingham, and from Albany through to Bremer Bay, Hopetoun and Esperance, the higher rainfall areas of the south-western coastal plains are the cockatoo's annual feeding grounds in the non-breeding season.

Carnaby's cockatoo has adapted somewhat to its rapidly changing environment but the main fear is that,

like many other species, it may not be able to adapt enough to prevent long-term extinction. Continuing changes to its habitat will further reduce its chances. The large flocks that can still be seen on the coastal plain may belie the endangered status of the cockatoo: in parts of the Wheatbelt eyewitness accounts of what has gone before provide a glimpse into a bleak future. Farmers commonly recall a scene within their lifetime of so many cockatoos that they blackened the sky as they flew over, but in those same locations today there are few or no black-cockatoos.

## Threats

Several factors, primarily related to large-scale clearing for agriculture, have contributed to this decline. Much of the cockatoo's breeding habitat in WA's Wheatbelt region has been cleared or fragmented, and the clearing of heathland around breeding sites has reduced the availability of food (seeds and insect larvae of native vegetation) for breeding birds and young. In many woodland remnants, a lack of eucalypt regeneration and the deterioration of hollows has further reduced the availability of suitable nest sites.

On the Swan Coastal Plain, original food sources used by Carnaby's cockatoos have been largely replaced by housing developments and introduced pine plantations. The pine plantations now constitute an important food resource, but many of them have been reduced significantly. Carnaby's cockatoo is also a highly-prized cage bird that is targeted by poachers, despite substantial penalties for removing them from the wild.

**Top left** Flocks of Carnaby's cockatoos were commonly seen in the Wheatbelt.
*Photo – Babs and Bert Wells/CALM*

**Above left** Land clearing for urbanisation continues to reduce habitat of the Carnaby's cockatoo.
*Photo – Marie Lochman*

**Left** Carnaby's cockatoos mate for life.
*Photo – Sallyanne Cousans*

**Right** CALM wildlife officer Adam Meyer extracts DNA from a chick for research purposes, assisted by landholder and recovery team member Alison Doley. *Photo – Leonie McMahon*

**Below right** One of more than 165 tree hollows that have been repaired. *Photo – John Lauri*

**Below far right** Volunteer Tom Kemp repairs a tree hollow in the Wheatbelt. *Photo – John Lauri*

There are other broadscale factors that are increasingly likely to affect the Carnaby's cockatoo. These include the potentially devastating impact of crown decline exhibited in populations of wandoo in some parts of the Wheatbelt (see 'Wondering about wandoo', *LANDSCOPE*, Autumn 2005); the introduced pathogen (*Phytophthora cinnamomi*) that causes dieback, to which many proteaceous species are highly susceptible; encroaching salinity and waterlogging due to rising water tables; and continuing clearing to accommodate urbanisation on the coastal plain.

## Recovery work in the Wheatbelt

Since August 2001, Birds Australia (WA) has been conducting a recovery program at key breeding sites in the Wheatbelt on behalf of the Carnaby's Black Cockatoo Recovery Team. So far, most activity has been focused in the northern Wheatbelt, in the Moore River catchment, with some work being done in the southern part of the Blackwood Basin in the southern Wheatbelt.

Most of the breeding sites are on private property, one is in a rural town in which extensive breeding takes place, and two others are in reserves used by local communities for a number of activities.

## Community helpers

Monitoring—by Birds Australia volunteers, by farmers on whose properties the cockatoos breed, by local residents and, in some locations, by CALM staff—of key sites has been undertaken each year since 2002. This has involved identifying active hollows, estimating the number of cockatoos using the site each year and identifying corresponding feeding sites where possible. When CALM staff are present, nest searches are also conducted. Monitoring of breeding activities provides farmers with an understanding of how the cockatoos use their properties and what their specific needs are.

Landholders at key sites are provided with information about how to assist the cockatoos. Specific recovery actions include protecting known breeding and feeding sites, usually by fencing or excluding stock, controlling weeds, protecting woodland against firewood collection and changing burning regimes. It is also helpful to undertake revegetation with appropriate species around known feeding and nesting sites. Old and damaged nesting hollows, including dead stags, may be repaired so they can be used by cockatoos.

Another method used to assist the recovery of Carnaby's cockatoos is to control (with the necessary approval) species such as galahs, western long-billed corellas and feral bees that compete for the same breeding hollows. Creating corridors of suitable vegetation between areas frequented by Carnaby's cockatoos is another useful strategy.

Many landholders are actively involved in black-cockatoo recovery programs, and some pay for fencing and revegetation work themselves. Fundraising options include the World Wide Fund for Nature's Threatened Species Network Community Conservation Grants and the Commonwealth Department of

**Above** Volunteers and CALM staff.
*Photo – Eleanor Adams*

**Above right** The Carnaby's cockatoo has an impressive wingspan of about 110 centimetres.
*Photo – John Lauri*

Environment's Natural Heritage Trust Envirofund.

The landcare movement has given rise to revegetation programs throughout the Wheatbelt, and some native plant species used by Carnaby's cockatoos—particularly wandoo and salmon gums required for nesting hollows—are readily available to farmers and regularly grown as a result. However, apart from some hakea and banksia species, most of the proteaceous and other hard-fruited species used by Carnaby's cockatoos for food are not typically included. The higher cost of producing seedlings of dryandra and grevillea species, in particular, makes them a prohibitive choice for many farmers. Ways of reducing the cost—and therefore encouraging the inclusion of more proteaceous species in farm plantings—are currently being investigated.

In 2004 and 2005, Birds Australia received funding from the WA Minister for the Environment's Community Conservation grants to repair hollows at key Wheatbelt breeding sites. More than 165 hollows have so far been repaired or maintained by Birds Australia (WA) volunteers through this program. Monitoring of the first 90 of the repaired hollows in 2004 revealed that uptake rates were highest in hollows with a history of previous use, followed by hollows located amidst other active hollows. The lowest uptake rates were observed at locations where activity had been noted sporadically but not investigated intensively. The results have been very encouraging and indicate this program is a time-, resource- and cost-effective way to increase the breeding potential of Carnaby's cockatoos.

## Cross-regional approach

Carnaby's cockatoos occur across five of the six Natural Resource Management regions formed in the State in the past few years. These regions are represented by the Northern Agricultural Catchment Council (NACC), South West Catchment Council (SWCC), Swan Catchment Council (Swan), Avon Catchment Council (Avon) and South Coast Regional Initiative Planning Team (SCRIPT). To date, recovery work by this project has focused on sites in the first two regions.

In 2004, the project received Commonwealth funding from the Cross Regional Funding Program for a three-year project across a larger area. This was done through NACC, as the lead region for the proposal, and with the support of SWCC and SCRIPT. It is hoped that both Avon and Swan will be involved in recovery work for the species in their regions in the future.

The long-term viability of the Carnaby's cockatoo is intricately linked to the survival of the two different types of habitat on which it relies: eucalypt woodland and kwongan heath, and both habitats are subject to pressures of their own. This highly mobile cockatoo also crosses regional, shire, rural and city boundaries during its annual life cycle. Creating and implementing conservation strategies that cross these boundaries, and involve many rural and urban communities, will continue to be challenging. However, public interest and support is high, and, despite the difficulties, we are confident that this WA icon can continue to give pleasure to future generations.

Leonie McMahon was project officer for the Carnaby's Black Cockatoo Recovery Project until August 2005. Details about the project can be obtained through Birds Australia (WA) on 9383 7749 or by email (birdswa@iinet.net.au).

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