



Section 70(2)  
Environmental Protection Act 1986

## VEGETATION CONSERVATION NOTICE

CPS 6512/1

**Person to whom this vegetation conservation notice is given ("the Owner"):**  
(being the owner of the land described below)

RODNEY WILLIAM CAPORN  
RMB 556  
KOJONUP WA 6395

**Land to which this vegetation conservation notice relates ("the land"):**

Lot 5277 on Deposited Plan 135545 as comprised on Certificate of Title Volume 1016 Folio 65

**Reasons for which this vegetation conservation notice is served:**

This vegetation conservation notice is given for the following reasons:

- (a) Site inspections by Department of Environment Regulation Inspectors on 17 February 2015 observed that clearing of native vegetation had taken place.
- (b) Examination of aerial photography has shown the land contained native vegetation.
- (a) I suspect on reasonable grounds that the clearing was not authorised by a clearing permit or by exemption under the *Environmental Protection Act 1986* or the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.
- (b) I suspect on reasonable grounds that unlawful clearing of native vegetation, constituting a contravention of section 51C of the *Environmental Protection Act 1986*, has taken place.

**Requirements of this vegetation conservation notice:**

The person(s) to whom this vegetation conservation notice is given, and each subsequent owner and occupier of the land who is bound by this vegetation conservation notice, are required to undertake the following specified measures, for a period of twenty years from the date this notice is given, to re-establish and maintain native vegetation within the *specified area* to a *vegetation condition* similar to the pre clearing species composition, structure and density of the native vegetation and to repair damage caused by the clearing.

**1. No unlawful clearing**

Ensure that no unlawful clearing, or further unlawful clearing, takes place on the land.

**2. Revegetation**

Undertake *revegetation* of native vegetation in the *specified areas* by:

- (a) Deliberately planting and/or seeding *Eucalyptus wandoo* (Wandoo), *Eucalyptus*

*marginata* (Jarrah) and *Corymbia calophylla* (Marri) trees to a density of 10 stems per hectare;

- (b) To construct a barrier around each plant sufficient to prevent damage to that plant by *livestock*, vermin or native animals;
- (c) Complete the initial *revegetation* by 30 September 2016; and
- (d) Where, for any reason, this measure does not result in the re-establishment of a cover of native vegetation in the *specified areas* to a density of 10 stems per hectare, implement the requirements of measure 2(a) each and every year for a period of twenty (20) years after the giving of this notice or until, *revegetation* has occurred, whichever is the lesser period.

### 3. Installation of Artificial Nesting Hollows

To install artificial nesting hollows by:

- (a) Constructing or obtaining 3 artificial nesting hollows to the design specifications detailed in Annexure 1 of this Notice: *How to design and place artificial hollows for Carnaby's black cockatoo* (DPaW, 2015).
- (b) Installing 3 artificial nesting hollows evenly on the property ensuring that mountings and placement are in accordance with Annexure 1 of this Notice.
- (c) Mounting artificial nesting hollows that cannot be viewed from a gazetted road so that the base is a minimum of four metres from the ground.
- (d) Mounting artificial nesting hollows that can be viewed from a gazetted road so that the base is a minimum of seven metres from the ground.
- (e) Completing the installation of all artificial nesting hollows by the 30 June 2016.

### 4. Records must be kept

The following records shall be maintained for activities done pursuant to this vegetation conservation notice:

- (a) in relation to *revegetation* pursuant to measure 2:
  - (i) the date/s of *revegetation* activities carried out ;
  - (ii) a description of *revegetation* activities undertaken;
  - (iii) the density of planting per hectare and the total size of the area *revegetated*; and
  - (iv) the list of all species of seed and propagation material used.
- (b) in relation to the installation of Artificial Nesting Hollows pursuant to measure 3:
  - (i) the date/s that artificial nesting hollows are installed;
  - (ii) the *coordinates* of the location/s that artificial nesting hollows have been installed;
  - (iii) the height that each artificial nesting hollow has been mounted measuring from the ground to the base of the artificial nesting hollow;
  - (iv) three digital images of each installed artificial nesting hollow depicting in the case of a tree mount the entire tree, in the case of a pole mount the entire pole and an internal and external close-up of the constructed artificial hollow.

### 5. Annual reporting

Records required under measure 4 shall be submitted to the *CEO* by 30 June of each year reporting on activities done under this vegetation conservation notice between 1 January and 31 December of the preceding year.

#### Definitions:

*CEO* means the Chief Executive Officer of the Department of the Public Service of the State through which the *Environmental Protection Act 1986* is administered.

*coordinate* means a Map Grid of Australia (Geocentric Datum of Australia 1994) coordinate for zone 50.

*livestock* means any animal kept for domestic or commercial purposes and includes any horse, donkey, mule, cattle, sheep, swine, goat, buffalo, deer, camel or alpaca.

*revegetate, revegetated and revegetation* means the re-establishment of a cover of *Eucalyptus wandoo* (Wandoo), *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) trees to a pre-clearing maturity in an area, such that a density of 10 trees per hectare is achieved.

*specified area* means the area within Lot 5277 on Deposited Plan 135545 as comprised on Certificate of Title Volume 1016 Folio 65 (CHANGERUP 6394), bounded by a line joining the following *coordinates* consecutively:

Point	Easting	Northing
1	483791	6272330
2	484014	6271863
3	484159	6271859
4	484139	6272222
5	484045	6272361
6	483791	6272330

then directly to the point of commencement.

*vegetation condition* means the rating given to native vegetation using the *Keighery scale* and refers to the degree of change in the structure, density, and species present in the particular vegetation in comparison to undisturbed vegetation of the same type.



Stuart Cowie  
EXECUTIVE DIRECTOR  
COMPLIANCE AND ENFORCEMENT  
DEPARTMENT OF ENVIRONMENT REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

4 January 2016

**Important Information:**

A PERSON WHO IS BOUND BY THIS VEGETATION CONSERVATION NOTICE AND WHO DOES NOT COMPLY WITH THIS VEGETATION CONSERVATION NOTICE COMMITS AN OFFENCE UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986*.

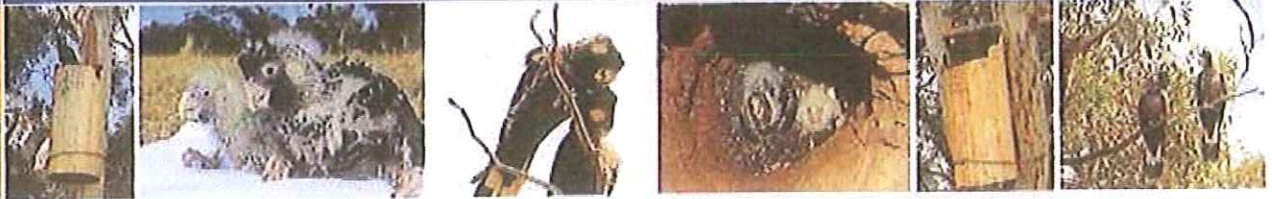
Under section 103 of the *Environmental Protection Act 1986*:

- a person who is aggrieved by a requirement contained in this vegetation conservation notice may within 21 days of being given this notice lodge with the Minister for Environment an appeal in writing setting out the grounds of that appeal; and
- any other person who disagrees with a requirement contained in this vegetation conservation notice may within 21 days of the making of that requirement lodge with the Minister for Environment an appeal in writing setting out the grounds of that appeal.

PENDING THE DETERMINATION OF AN APPEAL REFERRED TO ABOVE, THE RELEVANT REQUIREMENTS CONTAINED IN THIS VEGETATION CONSERVATION NOTICE CONTINUE TO HAVE EFFECT.



## Artificial hollows for Carnaby's cockatoo



## How to design and place artificial hollows for Carnaby's cockatoo

Artificial hollows can be used to help conserve the threatened Carnaby's cockatoo by enabling the cockatoos to breed in areas where natural hollows are limited.

A wide variety of artificial hollow designs have been used with mixed success. Evidence suggests that, while the hollow must meet some basic requirements, other factors such as proximity to existing breeding areas may be more important in determining the success of artificial hollows. Before using this information sheet to construct or install an artificial hollow, you should refer to the criteria listed in the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

This information sheet contains broad guidelines for the design and placement of artificial hollows for Carnaby's cockatoo.

Below are three examples of successful artificial hollows used by Carnaby's cockatoo for nesting. Artificial hollows made from a natural log with cut side entrance (left), white industrial pipe with top entrance (centre) and natural log with natural side entrance (right).



Photos by Christine Groom (left and right) and Rick Dawson (centre)

## **Walls**

The walls of the artificial hollow need to be constructed from a material that is;

- Durable enough to withstand exposure to elements for an extended period of time (i.e. 20+ years).
- Able to simulate the thermal properties of a natural tree hollow.
- Not less than 380 mm in internal diameter.
- Preferably 1.2 m deep overall and 1m deep to top of substrate/nesting material.

Successful artificial hollows have been constructed from sections of salvaged natural hollow, black and white industrial pipe. When using non-natural materials care must be taken to ensure there are no toxic residues and that the materials are safe to ingest.

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## **Base**

The base of the artificial hollow must be;

- Able to support the adult and nestling(s).
- Durable enough to last the life of the nest.
- Free draining.
- At least 380 mm in diameter.
- Covered with 200 mm of sterile, dry, free draining material such as charcoal, hardwood woodchips or wood debris.

### **Do not use:**

- Saw dust or fibre products that will retain moisture.

Example materials that could be used for artificial hollow bases include heavy duty stainless steel, galvanised or treated metal (e.g. Zinalume ®), thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to size to fit internally with sharp or rough edges ground away or curled inwards and fixed securely to the walls.



Carnaby's cockatoo eggs in an artificial hollow.  
Photo by Rick Dawson

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## **Entrance**

The entrance of the artificial hollow must;

- Have a diameter of at least 270 mm).
- Preferably be top entry which will minimise use by non-target species.

Top entry hollows are unattractive to nest competitors such as feral bees, galahs and corellas. Side entry hollows have been successful in areas where feral bees are not a problem and where galahs and corellas are deterred.

### Ladder

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds to climb in and out of the hollow easily.

The ladder must be;

- Securely mounted to the inside of the hollow.
- Made from an open heavy wire mesh such as WeldMesh™ with mesh size of 30 - 50 mm, or heavy chain.

#### Do not use:

- A material that the birds can chew.
- Galvanized because the birds may grip or chew the ladder and ingest harmful compounds.

If using mesh for the ladder, the width will depend on the curvature of the nest walls. A minimum width of about 60 - 100 mm is recommended.

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### Sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide sacrificial chewing posts. The birds chew material to prepare a dry base on which to lay their egg(s).

The sacrificial chewing posts must:

- Be made of untreated hardwood such as jarrah, marri or wandoo
- Be thick enough to satisfy the birds' needs between maintenance visits.
- Extend beyond the top of the hollow as an aid to see whether the nest is being used.
- Be placed on the inside of the hollow.
- Be attached in such a way that they are easy to replace e.g. hook over the top of hollow or can slide in/out of a pair of U bolts fitted to the side of the hollow.

It is recommended that at least two posts are provided. Posts 70 x 50 mm have been used, but require replacing at least every second breeding season when the nest is active. Birds do vary in their chewing habits and therefore the frequency at which the chewing posts require replacement will also vary.



Bottom of an artificial hollow showing ladder that is fixed to the wall and a chewed sacrificial post which is 200 mm from the floor.

*Photo by Rick Dawson*

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### Mountings

The artificial hollows must be mounted such that:

- The fixings used will last the duration of the nest e.g. galvanized bracket or chain fixed with galvanized coach screws.
- It is secured by more than one anchor for security and stability.
- It is positioned vertically or near vertically.

## **Placement**

Sites should be chosen within current breeding areas and where they can be monitored, but preferably not conspicuous to the general public. It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance. For more detail refer to the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

The height at which artificial hollows should be placed is variable. The average height of natural hollows in dominant tree species in the area is a good guide. Natural hollows used by Carnaby's cockatoos have been recorded as low as 2 m above the ground. If located on private property the hollows can be placed lower to the ground so they are accessible by ladder or a rope and pulley system can be used. Where public access is possible artificial hollows should be placed at least 7 m high (i.e. higher than most ladders) and on the side of the tree away from public view to reduce the chance of interference or poaching.

Carnaby's cockatoo show no preference for aspect of natural hollows, however, it may still be beneficial to place artificial hollows facing away from prevailing weather and where they receive the most shade and protection.

Artificial hollows to be placed in trees require:

- Accessibility of the tree for a vehicle, elevated work platform or cherry picker.
- A section of trunk 2-3 m long suitable for attaching the hollow

If necessary, artificial hollows may be placed on poles, but this may result in excessive exposure to sun during very hot weather. When erected on poles there should be"

- A hinge at the bottom of the pole that can be secured when the pole is in the upright position.
- Access for a vehicle to assist raising the pole.

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## **Safety**

Care needs to be taken when placing artificial hollows to ensure safety is considered at all times. Artificial hollows are heavy and require lifting and manoeuvring into position up to 7 m above the ground.

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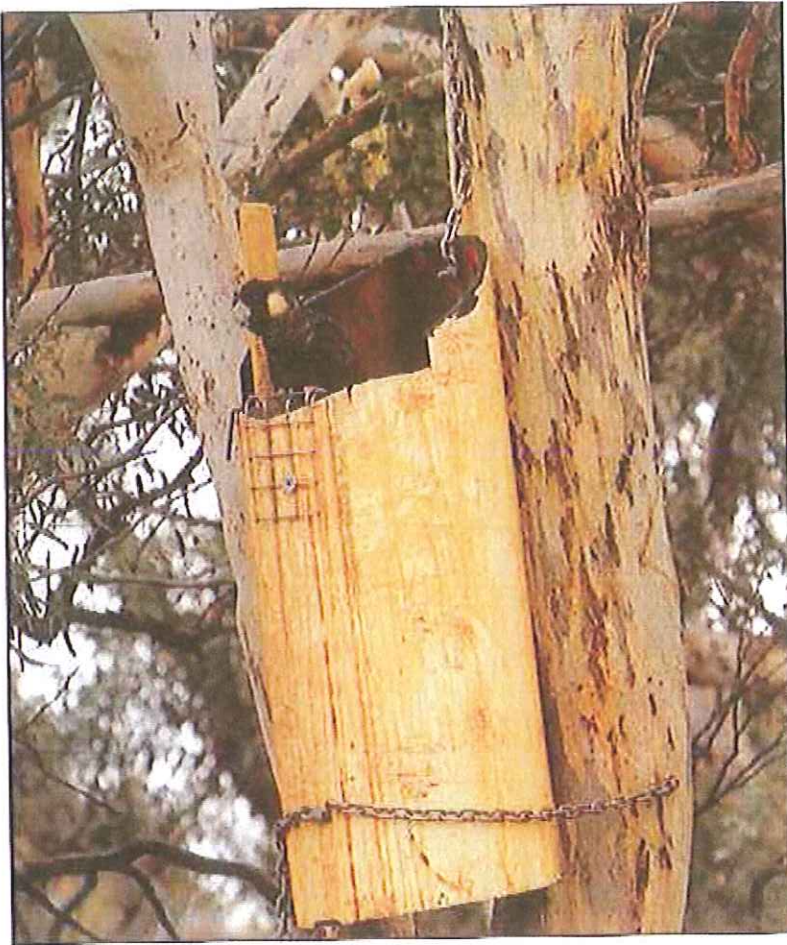
## **Maintenance and monitoring**

Once artificial hollows have been placed they require monitoring and maintenance to ensure they continue to be useful for nesting by Carnaby's cockatoo. It is important to monitor artificial hollows to determine use by Carnaby's cockatoo, other native species as well as pest species. By undertaking monitoring the success of the design and placement of artificial hollows can be determined and areas for improvement identified for future placement of artificial hollows.

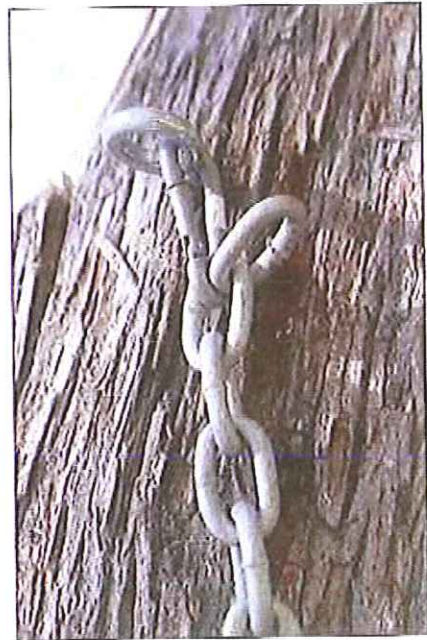
Monitoring can also assess whether any maintenance is required. Without regular maintenance artificial hollows are unlikely to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

For further advice on monitoring and maintenance of artificial hollows please refer to the separate information sheet; *How to monitor and maintain artificial hollows for Carnaby's cockatoo*.





Carnaby's cockatoo female prospecting an artificial hollow.  
Photo by Rick Dawson



Example fixing for artificial hollow  
Photo by Christine Groom

### Acknowledgements

This information sheet is a joint initiative of Birdlife Australia, the Western Australian Museum and the Department of Parks and Wildlife. Many individuals have contributed to its preparation. Special acknowledgement is made for the contributions of Ron Johnstone from the WA Museum, Alan Elliott from the Serpentine-Jarrahdale Land care Centre and Denis Saunders. This updated version was compiled by Rick Dawson (Department of Parks and Wildlife).

### Other information sheets in the series: Artificial hollows for Carnaby's cockatoo

- How to design and place artificial hollows for Carnaby's cockatoo
- How to monitor and maintain artificial hollows for Carnaby's cockatoo

Information sheets available on the Saving Carnaby's cockatoo webpage:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>

### Further information

Last updated 28/04/2015

Contact [fauna@dpaw.wa.gov.au](mailto:fauna@dpaw.wa.gov.au) or your local office of the Department of Parks and Wildlife  
See the department's website for the latest information: [www.dpaw.wa.gov.au](http://www.dpaw.wa.gov.au)

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## Artificial hollows for Carnaby's cockatoo



## When to use artificial hollows for Carnaby's cockatoo

Artificial hollows can be used to help conserve the threatened Carnaby's cockatoo. They can enable the cockatoos to breed in areas where natural hollows are limited. For example, artificial hollows may be useful at sites where existing hollows are degrading and not being replaced quickly enough due to lack of tree regeneration. However, the cockatoos don't always use artificial hollows when provided. There are ways to select sites for artificial hollows that will increase the chance that they will be used by the cockatoos.

This information sheet provides advice on selecting sites together with suggested conservation actions for sites where artificial hollows are not suitable. The alternative conservation actions suggested are important to the conservation of the cockatoos and can also be used to complement the placement of artificial hollows.

It is important to remember that the retention of both old and dead trees that have suitable hollows for Carnaby's cockatoo is critical to breeding and hence the long-term survival of the species. The installation of artificial hollows should not be used to justify the removal of natural hollow-bearing trees.



Carnaby's cockatoo nestlings in an artificial hollow  
Photo by Rick Dawson

### **Where do Carnaby's cockatoos nest?**

Carnaby's cockatoos nest in the hollows of mature trees in uncleared or remnant areas of eucalypt woodland or forest, particularly wandoo in the wheatbelt, marri in forested areas and in tuart along the Swan Coastal Plain. Trees may take more than 120 years to develop hollows that are a suitable size. The cockatoos use hollows in both living and dead trees.

### **Is my site suitable for artificial hollows?**

It is recommended that artificial hollows be used in known nesting areas where there has been a decrease in the availability of natural nesting hollows. Trials have shown that Carnaby's cockatoos will nest in artificial hollows if installed in suitable areas and are of a satisfactory design. However, putting up artificial hollows may not be the best way to help Carnaby's cockatoos in your area. To decide if your site is suitable for artificial hollows you need to consider the essential criteria. Alternative conservation actions are suggested for each criterion that is not met. All of the criteria must be met for a site to be suitable for placement of artificial hollows.

### Essential criteria

Following are the five essential criteria that must be met for a site to be suitable for placement of artificial hollows. Alternative conservation actions are suggested for each criterion that is not met. All of the criteria must be met for a site to be suitable for placement of artificial hollows:

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**1. The site is a eucalypt woodland or forest within the known breeding range of the species.**

**Alternative conservation actions**

If the site is not within the known breeding range of Carnaby's cockatoo then it is unlikely that they can be encouraged to use artificial nest hollows in these areas. However, Carnaby's cockatoo is a highly mobile species that also requires habitat for feeding and roosting which means that it is important to protect and manage habitat visited by the cockatoos by fencing and carry out other management, such as rabbit control, to retain existing habitat and to encourage regeneration of native vegetation. It is also important to revegetate areas within the breeding and non-breeding areas with preferred food species and to create linkages of vegetation to assist their movement through the landscape.

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**2. Breeding by Carnaby's cockatoo is known or suspected at the site. There must also be evidence that a lack of available tree hollows is preventing breeding that would otherwise occur in the area.**

If the lack of available hollows is due to nest competitors such as galahs, western long-billed corellas or feral bees then any attempt to install artificial hollows must be accompanied by efforts to deter or control these competitors. Alternatively, successful control of competitors may mean that artificial hollows are not needed.

**Alternative conservation actions**

If sufficient natural hollows are available in an area then there is no need to install artificial hollows. This overcomes the need for ongoing maintenance of unnecessary artificial hollows.

If breeding is already occurring at the site and there are plenty of available hollows, efforts can be redirected towards caring for existing or future nesting hollows. This may involve repairing old or damaged nesting hollows by covering cracks, removing debris blocking access to hollows or replacing rotted wood in the hollow so that the depth of the nest floor is manageable for the birds. Future hollows can be protected by preventing compaction of ground around trees, fencing and/or rabbit control to encourage regeneration to produce future nesting trees, fire management and the strategic pruning of limbs to prevent limbs breaking and tearing open hollows. Efforts can also be aimed at enhancing the success of existing breeding by revegetating with preferred food and nesting species as well as creating linkages of suitable vegetation between nesting and feeding areas.

If breeding is not occurring at the site despite hollows being available then there may be a range of factors making the site unsuitable for breeding. These factors must be identified and addressed before breeding can resume in the area (if at all possible). Lack of sufficient food could be the cause and this can be addressed by revegetating with preferred food species and increasing connectivity in the landscape.

To compile a list of plant species suitable for revegetation at your site, visit the *Plants for Carnaby's Search Tool* available on the Parks and Wildlife website:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>

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3. **The artificial hollows can be located in close proximity to adequate feeding areas – within a 12 km radius.** Feeding areas commonly contain proteaceous species such as banksias (including dryandras) and hakeas. A list of food plants can be obtained by querying the *Plants for Carnaby's Search Tool*.

**Alternative conservation actions** If the site is not in close proximity to sufficient feeding areas then the Carnaby's cockatoos will not be able to successfully raise young. Cockatoos require sufficient food in close proximity to nesting areas in order to be able to forage during the day and return to feed nestlings. Existing feeding habitat close (within 12km) to breeding areas can be protected by fencing and/or undertaking rabbit control to encourage regeneration of native vegetation. The amount of feeding habitat in an area can be increased by planting or revegetating with preferred food species.

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4. **The hollows are placed in secure locations and the owner/manager of these areas is supportive and willing to provide the necessary long-term security and annual maintenance for the entire time that the artificial hollow will be in place.** For advice on the monitoring and maintenance requirements, please refer to the separate information sheet *How to monitor and maintain artificial hollows for Carnaby's cockatoo*.

**Alternative conservation actions** Artificial hollows are subject to nest robbing and vandalism. It is highly recommended that artificial hollows are not put in exposed or easily accessible areas such as road verges. If the site is considered at high risk of nest robbing or vandalism then alternative actions to assist the conservation of the species are recommended including: revegetation, fencing, repairing old or damaged natural nesting hollows and planting vegetation linkages to connect nesting and feeding areas.

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5. **A suitable artificial hollow design is used.** For greatest chance of success, please refer to the separate information sheet *How to design and place artificial hollows for Carnaby's cockatoo*.

**Alternative conservation actions** If an improved or alternative design is proposed, it is recommended that BirdLife Australia, WA Museum or Department of Parks and Wildlife are contacted to discuss plans.

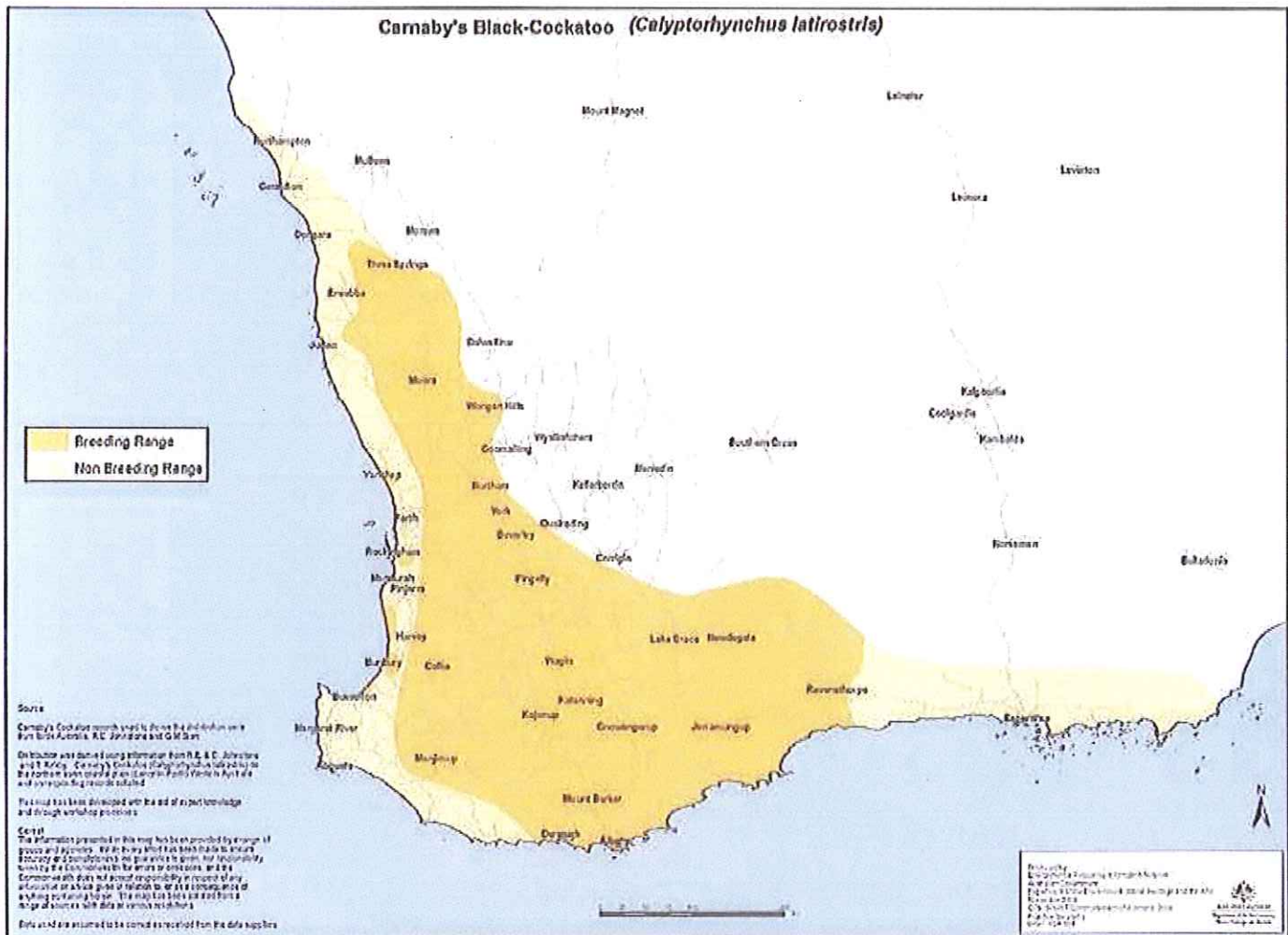
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### ***In summary***

If your site does not match all the criteria required for the installation of artificial hollows to be effective then you may wish to consider alternative conservation actions including:

- Protecting habitat by fencing and/or rabbit control to encourage regeneration of native vegetation
- Controlling competitive species such as galahs, corellas and feral bees that may occupy hollows
- Repairing old and damaged natural nesting hollows
- Revegetating with preferred food species and nesting trees
- Creating linkages of vegetation between nesting and feeding areas

Breeding range of Carnaby's cockatoo (as at November 2009)



**Acknowledgements**

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**Further information** Last updated 28/04/2015

Contact [fauna@dpaw.wa.gov.au](mailto:fauna@dpaw.wa.gov.au) or your local office of the Department of Parks and Wildlife

See the department's website for the latest information: [www.dpaw.wa.gov.au](http://www.dpaw.wa.gov.au)

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