Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Best practice guidelines for bird scaring in orchards

Version 3.0 – July 2023

Purpose

Birds can cause significant damage to fruit and nut orchards. In most cases the damage level is low, but it can vary depending on the property, region, year and orchard crop.

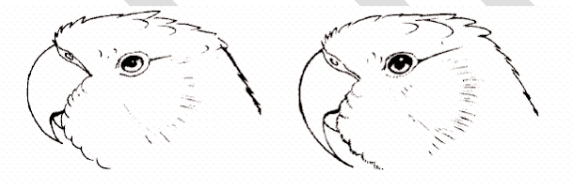
These guidelines are intended to help fruit and nut growers, residents and local government authorities manage fruit and nut damage by black cockatoos. They have been developed in accordance with a commitment to protect threatened bird species, the viability of the fruit growing industry and the welfare and amenity of residents.

These guidelines apply specifically to situations where the bird species causing damage is listed as threatened under the *Biodiversity Conservation Act 2016 (BC Act).*

Routine land management activities that temporarily modify a species behaviour by moving them on but not to the detriment will not require lawful authority via a section 40 Authorisation to disturb a threatened species under the BC Act. To ensure birds are not disturbed to their detriment, careful consideration must be given when using scaring or repelling techniques for birds. Things to consider include avoiding activities during breeding or nesting seasons, duration and frequency of audible means and possible impacts of the activity such as indirect, both onsite and offsite risks, that may cause the taking or disturbing of fauna.

Cockatoos

There are three species of black cockatoo native to south-west Australia, two species of white-tailed black cockatoo and one species of red-tailed black cockatoo. The white-tailed black cockatoo with the short bill is Carnaby's cockatoo (*Calyptorhynchus latirostris*) and the white-tailed black cockatoo with the long bill is Baudin's cockatoo (*Calyptorhynchus baudinii*). The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) is the only red-tailed species in the forests of the south-west of WA.



Comparison of the heads of a Carnaby's cockatoo (left) and a Baudin's cockatoo (right), showing the longer and finer upper bill in Baudin's cockatoo. (Image reproduced with permission from the Museum of Western Australia.)

Black cockatoos are threatened with extinction

All three black cockatoo species in the south-west are listed as threatened under the State *Biodiversity Conservation Act 2016* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* They cannot be shot or killed as a means of reducing damage to crops. Under the World Conservation Union (IUCN) categories, Carnaby's cockatoo and Baudin's cockatoo both meet the criteria for endangered and the forest red-tailed black cockatoo meets the criteria for vulnerable.

The cockatoos fit into these threatened categories because they have declined across a significant portion of their range during the past 50 years. The south-west landscape has changed since European settlement when the cockatoos fed on a wide range of native plant seeds (particularly marri, jarrah and banksia). As the landscape has changed, the distribution, abundance, movements, feeding and breeding behaviour of the

cockatoos has also changed. Factors that have contributed to the decline of the cockatoos over time include habitat loss (from clearing for agriculture, mining and commercial timber production), competition for nest hollows with feral honeybees and other birds, legal shooting (prior to 1989) and illegal shooting that has continued since then. As a result of these landscape changes, black cockatoos have been forced to seek alternative food sources with a number of commercial nut and orchard species highly prized by the cockatoos.

Killing, harming or capture of white-tailed black cockatoos (or any black cockatoo) from the wild without lawful authority is an offence under the *Biodiversity Conservation Act 2016*. DBCA Wildlife Officers investigate all reports of shooting black cockatoos in WA, and offenders face penalties of up to $400,000 per offence.

Which crops do white-tailed black cockatoos damage?

Carnaby's cockatoo has been recorded damaging nut (almond, pecan, pistachio and *macadamia*) and persimmon crops. Baudin's cockatoo may feed on apple, pear and some stone fruit crops. The forest red-tailed black cockatoo is not known to damage any commercial crops in the south-west but have been observed feeding on the fruits of some ornamental garden plants.

Peak damage is usually recorded during late summer and autumn but may occur at other times during the fruit growing season. Damage to crops typically occurs in the first few hours after sunrise and the last few hours before sunset but is not exclusively restricted to those periods.

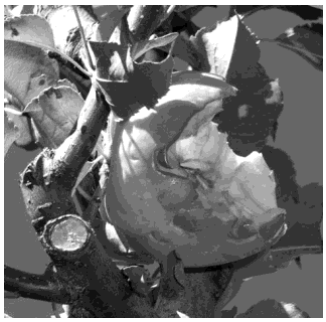
White-tailed black cockatoos are not the only birds that cause damage in orchards

Other damage-causing species in the orchards of south-west WA include the silvereye, Australian ringneck or twenty-eight parrot and rainbow lorikeet.

There is potential application for controlling birds that are listed as managed fauna under Schedule 4 of the *Biodiversity Conservation Regulations 2018* where lawful authority to shoot to kill is not required.

Managing impacts from black cockatoos

White-tailed black cockatoo species are known to have fed in orchards to some extent since the early 1900s and probably since the early days of European settlement. In current times, there may be a number of reasons why some orchards experience high losses, such as orchard location and variation in natural food supply in the surrounding forests. In a 2004/2005 survey of orchard growers, properties that received high levels of damage had typically not prepared a damage control program and the cockatoos had become habituated to the orchard. With ongoing changes to the cockatoos natural habitat, fruit damage by white-tailed black cockatoos is likely to continue so all growers should have a damage control program in place.



Management Methods

Black cockatoos are a natural part of our environment. All primary producers have to spend money to manage pests and diseases. The cost of protecting fruit from birds is no different and is an important factor that should be included in any orchard business plan.

Black cockatoos are very important to the people of WA, because they are iconic and occur nowhere else in the world. Managing black cockatoos in an ethical manner that does not result in the death of the birds, can also benefit the fruit and nut growing industry by maintaining its 'green' image and producing fruit sustainably for the benefit of all growers in the industry. Developing a clean, green product brand is likely to provide significant marketing benefits to fruit growers, especially in export markets.

Crop protection

Studies have shown that netting orchards is the best means of controlling the damage caused by black cockatoos. It is generally accepted by horticultural research experts that if growers are losing 30 per cent or more of their crop, they would benefit from netting in the long-term. In addition, netting has the advantage that it pays for itself (in increased harvest) in a few years, is tax deductable and the grower and their family do not have to be present in the orchard to protect the fruit. Netting also protects fruit from sunburn and hail damage, reduces water use and provides good quality fruit, but has a higher establishment cost (https://www.agric.wa.gov.au/water-management/netted-apple-demonstration-final-summary).

The use of nets should also be coordinated with neighbouring industry partners as the total exclusion of birds from one orchard can result in increased pressures on neighbouring orchards. Netting should thus be considered as part of an integrated regional control strategy.

Scaring and repelling techniques that can be applied include the use of audible, visible or physical means to discourage or frighten birds away from crops. The birds may be frightened by something new and unusual in their environment (e.g. flashing lights or strange sounds) or by something that simulates a threat.

Early action should be taken before the birds become familiar with the orchard as a food source, as once birds are habituated to feeding on crops it is more difficult to scare them away.

Studies indicate that scaring devices used in isolation tend not to work, but when a number of devices are used in rotation, damage may be reduced. When the strategies outlined below are followed, scaring is more likely to be effective against parrots, cockatoos and other species.

It is also important that the birds associate human activity with danger. Birds lose their fear of humans if not harassed with real or simulated danger. Shooting to scare using pyrotechnic cartridges, should be initiated before using other scaring devices to establish an association between noise and real danger.

Scaring is safer in built-up areas and is a non-lethal method for dealing with bird damage. However, scaring devices are usually expensive and gas cannons and cracker cartridges can be a minor fire risk in dry conditions. Some devices may breach noise regulations and/or cause conflict between neighbours, so, if in doubt, enquiries should be made with your local government and neighbours. Please see the accompanying document *Best Practice Guidelines for Bird Scaring in Orchards – Noise Considerations* for more detailed information on noise.

Every situation is different. Scaring combinations that work at one orchard may not work in another, and not all bird species react the same way to a particular control option.

Scaring devices

There is a range of acoustic and visual bird scaring devices commercially available, electronic noisemakers, recorded bird distress and predator calls, gas fuelled exploders (gas cannons), firearms and motorcycles. The sound produced by stationary scaring devices can be maximised by pointing them downwind, raising them off the ground and camouflaging them so the birds do not associate the sound with the device. Gas cannons and pyrotechnic cartridges can be an effective means of dispersing birds from crops and orchards.

Gas (propane) cannons are powered by LP gas cylinders and are available in a range of configurations from mechanically controlled single-shot units to others that produce random series of single, double, and triple- shot clusters, adjustable from every 30 seconds to every 20 minutes. The gas cannon can be mounted so that it rotates to improve effectiveness. The use of a pre-set timer allows selection of activation times. Gas-cannons are safe, and cost- and time-effective, as they do not require the presence of an operator.

Pyrotechnic cartridges are used to reinforce the effect of gas cannons and are usually fired from shotguns. They either make a siren-like sound as they fly or travel 30 to 50 metres before exploding with a loud bang. Cartridges can be costly, there is some fire risk associated with their use, and they require an operator.

Electronic noisemakers broadcast synthetic electronic sounds that are claimed to be unsettling for birds and can either be distress calls or mimic the sound of birds of prey. As some devices produce sounds like real birds they may be considered less irritating to neighbours than propane cannons. Other devices produce artificial sounds.

Any human activity in orchards, such as operating vehicles or trail bikes, has been shown to be effective in displacing birds from orchards. Hand-held lasers, visible in low light conditions, may be useful in deterring some bird species from orchards.

It is important to demonstrate a good neighbour policy by informing neighbours of scaring devices that are planned to be used on properties. An example of this is provided in Appendix 1 and 2 of the supplementary document on *Noise Considerations* referred to above.

Important things to remember when using bird scaring devices

- Persistence is required. Scaring devices should be used throughout the damage period, but only during the periods of the day when the birds are likely to be feeding in the area.
- When birds causing the problem are nomadic, crops should be regularly checked for signs of damage. Early action can then be taken before the birds become reliant on the crop for food or develop a habit of coming to that crop.
- When birds are resident, scaring devices or shooting to scare should be used occasionally throughout the year to maintain a degree of wariness in birds and to indicate that the area is not safe for feeding.
- Dropped fruit should be removed promptly, and birds should not be allowed to eat fallen fruit or reside on the orchard in the non-fruiting season, as the orchard will become recognised as a food source and birds will adapt to feeding on fruit left on the ground.
- To maximise the effectiveness of bird scaring, noises should be irregular or random, change direction and location often and be integrated with other types of noises and bird scaring tactics.
- Once birds start to ignore a particular device, it should be removed immediately, otherwise the birds may begin to associate the device with a good food source.
- Combining a number of devices and using them in rotation maintains variety and improves effectiveness. This reduces the likelihood of birds becoming used to the devices.
- Collaboration with neighbouring growers can ensure that methods complement each other.
- Many scaring programs fail because damage usually occurs at a busy time of year and producers do not feel they can afford the time for intensive control efforts. Consideration should be given to employing someone just to run the crop protection program – a full-time person may not be required and consider sharing the cost with neighbours.

Use of firearms

The Department of Biodiversity Conservation and Attractions (DBCA) recognises that a number of native bird species are pests in commercial fruit crops. In accordance with the *Biodiversity Conservation Regulations 2018* (BC Regulations), provision has been made for landowners, occupiers or authorised agents to shoot some pest birds in some parts of the State when they are causing damage or likely to cause damage to scare the rest of the flock. Species for which this applies are listed as Managed Fauna under Schedule 4 of the BC Regulations. Shooting can only be carried out if the bird is causing, or is reasonably expected to cause, economic damage and the taking is by means of a firearm. It is illegal to shoot to kill any of the three black cockatoo species.

Only licensed firearms can be used to shoot or scare pest birds causing damage to crops. Only persons holding a licence or permit issued under the *Firearms Act 197*3 may use a firearm for this purpose. The safety of the public is essential and firearms should only be used where it is safe to do so.

For more information

Visit the DBCA website at dbca.wa.gov.au.

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Acknowledgments

Previous versions of this document were prepared by the Black Cockatoo/Fruit Protection Technical Advisory Committee, comprised of representatives from state and local government and the fruit and nut grower industries.