NSW GOVERNMENT
Department of Primary Industries
primefact

Vertebrate pests in macadamia: birds

September 2020, Primefact 1771, First edition
Jeremy Bright, Development Officer – Macadamia

Habitat and damage

Bird species that disrupt macadamia production directly by removing nuts or damaging plants (chewing) and infrastructure such as irrigation lines, include but are not limited to, sulphur-crested cockatoos (*Cacatua galerita,* Figure 1), galahs (*Elophus cacatua*) little corellas (*Cacatua sanguinea*), black cockatoos (*Calyptorhynchus banksia* , Figure 2) and ravens (*Corvus coronoides*). The mistletoe bird (*Dicaeum hirundinaceum*) disrupts macadamia growth by introducing mistletoe, which is a deadly parasite to the plant. Each bird species has its own movement and distribution patterns, breeding seasons and feeding strategies.

Birds mostly knock down more nuts than they consume. They also chew young wood, which affects plant growth. Birds also cause considerable damage in other nut crops including almonds and hazelnuts.

Orchards that have limited alternative food sources and good perching sites surrounding them are more likely to suffer bird damage. Once the birds have a taste for the produce, they tend to keep returning.

Figure 1. A flock of cockatoos approaching a macadamia orchard.

Monitoring

Monitoring will involve continual assessments of trees and infrastructure. It might also involve replacing damaged trees and irrigation lines. Using historical information will assist in preparing for the coming season i.e. if the crop has been damaged previously, it is likely to be damaged again. Comparing the damage to other areas in the region can also help with predicting where damage might occur.

Control

In macadamia orchards with larger trees, it is impractical to expect exclusion netting to prevent bird damage. Control will mostly depend on strategic targeted approaches, usually involving bird-scaring devices with some shooting.

Bird scaring

Birds quickly habituate to scaring devices, i.e. they fly off the first few times the device is used, but they soon learn that the device is harmless.

Figure 2. A black cockatoo.

Visual bird scaring devices rely on motion or reflection, however, most of the target species rapidly become familiar with the devices and they then become ineffective. The most effective method is to use different scaring devices, setting them up as soon as the birds show an interest in the crop and before the birds become accustomed to the food source.

Acoustics

Sound scaring devices include gas cannons, ultrasonic devices, crackers and other electronic equipment. Again, birds will become accustomed to these, especially if they are repetitive. Using shooting in conjunction with bird scarers can be a good option as birds will associate the scarer with real danger e.g. shooting. However, growers need to be aware that most bird species that damage macadamia orchards are protected and a permit from a state fauna authority will be required (link provided below). Both the shooter and the device should move around the orchard to prevent the birds from becoming too familiar with them.

Shooting

This is best used in conjunction with scaring devices as an association tool of noise and danger. It would be unusual to eliminate the problem through shooting alone.

Drones

Drones have provided some success in scaring away birds and best results are achieved if the drones are used with other deterrents.

Other techniques include:

- Agri-laser systems
- Baits
- Feeders
- GPS navigation (for autonomous drone flying)
- Industrial and commercial acoustics systems
- Networked gas cannons
- Night vision systems
- Radio activated cannons
- Strobe lighting systems
- Thermal imagining equipment
- Trail cameras
- Trapping products
- Ultrasonic bird deterrents
- Visual deterrents, for example Scary Eyes Scare Balloons and Irri-Tape®.

Further information is provided in the references section, however, due to the number of commercial drone products available, we have purposely not mentioned any one in particular.

Case study

Chris Searle, Bundaberg and Brice Kaddatz, Gympie

The biggest frustration with cockatoos is the damage they do to irrigation infrastructure. One strategy might be to place grease on the irrigation line either side of sprinklers or drippers. For example, a very sticky moly grease might work but it is neither cheap nor quick to distribute throughout an orchard. However, given that up to 75% of sprinklers/drippers in a block can be destroyed in a few days, it might be more costly not to do so.

We found that with a serious focus, starting at the first bird sighting and using a range of scaring tactics, the birds did leave after about 10 days.

The most effective method for mobile scaring is the non-lethal 12 gauge cracker cartridges. These have a range of approximately 80 m and they explode over or near the birds. These have also been effective with other species in non-orchard environments i.e. wild ducks from dams.

Further reading

NSW Game Hunting Guide. 2017. https://www.dpi.nsw.gov.au/hunting/rules-and-regulations/nsw-game-hunting-guide

Office of Environment and Heritage destruction licence for native species: www.environment.nsw.gov.au/wildlifelicences/OccupierLicences.htm

Tracey J, Bomford M, Hart Q, Saunders G and Sinclair R. 2007. Managing bird damage to fruit and other horticultural crops: www.dpi.nsw.gov.au/agriculture/horticulture/pests-diseases-hort/information-for-multiple-crops/managing-bird-damage

Electronic bird repellers

Bird Beam (Laser): www.birdbeam.com.au

Bird Gard Australia: www.birdgard.com.au

Birds Off™: www.birdsoff.com.au

Reference number: PUB20/780.