NSW GOVERNMENT
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primefact

Vertebrate pests in macadamia: deer

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Habitat and damage

Deer are usually found in fringe areas of bush, woodlands and riparian vegetation, preferring agricultural areas interspersed with forest vegetation. They can destroy young macadamia plants through defoliation and stripping bark from tree trunks when they rub their antlers on trunks and lower limbs. Younger trees that are not yet established usually suffer the most severe damage.

Breeding

Males are sexually mature from about 17 months but do not usually breed until they are about four years old due to competition from dominant stags. Females are usually sexually mature from 16 months and will usually breed once a year thereafter. The mating season is in autumn and this is when males will become territorial. The gestation period is eight months with a single fawn being produced. While they do not breed as prolifically as pigs, their population is still expanding.

Monitoring

Depending on the species of deer, they will either be in herds dominated by a single female or will be solitary. Single males tend to form bachelor groups. Deer will usually be active in the orchards between late afternoon and early morning. Signs of deer activity will include foot pads and bark damage to trees. As deer do not have incisor teeth, their browsing will leave a jagged surface on twigs and leaves. The height of the damage (up to 1.8 m) will eliminate other potential pests.

Knowing which deer species you are dealing with will dictate your control strategies. The NSW DPI Game Hunting Guide provides information on deer species and hunting: www.dpi.nsw.gov.au/hunting/rules-and-regulations/nsw-game-hunting-guide.

Control

Exclusion

Fencing is the best alternative but deer can jump well and the installation of permanent high tensile electric fencing will be required for adequate control. Fencing can be expensive so before deciding on this method of control, consider the:

- history of deer within the region: is it a one-off or are there substantial numbers?
- number of deer and the prevalence of incursion: are they dependent on grazing macadamia plants? If plants are being destroyed through rutting, fencing should be strongly considered
- market value: what effect are the deer having on potential crop production and plant growth?
- area to be fenced: is it worth fencing smaller farms? Perhaps the potential to fence out few small farms that are within the same area, thus sharing the costs of control
- tree guards to be used: usually plastic or poly mesh frames are placed around the bases of young trees. They can go to 1.2 m high and will prevent chewing by other vertebrate pests such as rabbits and wallabies.

Shooting

Check with state and regional authorities regarding the legislation that applies in relevant state jurisdictions and the protection status of deer within your region.

Remember, if you are going to have others on your property to carry out deer control, you must consider several points before allowing access to your property, including conditions of access, public liability insurance and references.

Also, remember that shooting must be carried out by trained personnel with appropriate firearms licences and the shooters must possess the necessary skill and judgment to kill deer with a single shot. Lactating females should not be shot, but if inadvertently shot, efforts must be made to find the young and humanely euthanase them.

The guidelines for hunting deer are outlined on the NSW DPI website (https://www.dpi.nsw.gov.au/hunting/game-and-pests/managing-feral-deer-in-nsw).

Repellents

Temporary control by using spray-on repellents has shown limited success in Australia.

Case study

Colin Kemp, Bowraville

There are several options available for deer control, but in our experience, not many of them are completely effective. The most prevalent deer species we see is the Chital deer (*Axis axis*), also known as axis deer or Indian spotted deer (Figure 1). They are highly adaptable feeders; they will graze and browse, making the most of any feed available. However, deer have higher protein requirements and therefore will prefer the highest quality feeds available.

The deer seem to like our place because of the lush green grass, plentiful water in our dams and lots of cover in the areas we have kept to encourage wildlife, birds and biodiversity. They do not appear to graze on the trees or eat the nuts, but the antlered-males rub on the trunks and remove large amounts of bark, break off branches or smash young trees to remove the velvet on the antlers and sharpen them for fighting other males. We see extensive puncture marks in the skins of males that have been shot.

Figure 1. An axis deer on the Bowraville property. Photo: Paul Trollis.

In a recent tree count, we found that about 250 trees have been lost due to the damage done by deer over the last few years. That is about 7% of our plantings, so a significant loss. Replanting while the deer are still so active does not seem feasible, although we have recently acquired a small number of trees and plan to replant in some blocks and try individual tree protection with stakes and covers.

The deer attack trees of all sizes; even 15-year-old trees sometimes receive a lot of damage in one night, mainly from trunk rubbing (Figure 2). The older trees usually survive, but they suffer from the damage. Many of the younger trees damaged in the last twelve months have recently died as the combination of the damage and the hot dry weather this summer was too much for them.

Exclusion fencing

Chital deer can jump fences as high as 1.5 m and will also dive under them. A well-maintained netting fence, approximately 2.1 m high with solid strainer posts at less than 9 m apart should be effective. Gates must be of similar construction. The cost to establish exclusion fencing around our orchard is estimated to be approximately $70,000.

Figure 2. The result of trunk rubbing by deer.

Trapping and yarding

Trapping and yarding was discussed at some local meetings, but deer are highly reactive animals and apparently get very agitated when trapped. This has raised animal welfare concerns, plus the cost of setting up a viable set of yards made this option not practical.

Sprays

We have tried sprays (human urine) but that seemed to have limited effect.

Radios

We put portable radios in strategic places and played various stations, including talkback programs, but that also seemed to have limited effect to the extent that a tree with a radio in it was severely damaged overnight.

Shooting

We have a long history of people wanting to shoot, but they generally do not have the patience to do it for long. Deer and wild dogs sense people very easily although can be approached while on a tractor; but carrying around a high-powered rifle while driving the tractor is not a good work practice.

We have been fortunate in finding a young fellow who visits the area here regularly on weekends. He now knows our place well and has worked out the trails the deer use and the times they are active. He has removed six stags over the last four months and the damage has reduced, although I think he will need to remove another 20 every year to have any real effect. Our strategy is to only remove the large-antlered males, but we have also discussed removing young deer as well to try to manage both ends of the family cycle.

Conclusions

Prevention would be the ideal solution, however, it is not always possible. A combination of suitable fencing and shooting by a responsible marksperson will help.

Given the number of deer in the area, I doubt if we will ever see them completely eradicated. Many small landholders see them as lovely adornments to the landscape and will not allow shooters, some will even actively try to disrupt them (one of my neighbours verbally abuses my shooter if they see him). As I said to the LLS board when I made a presentation to them over a year ago – it would not be viable to establish this orchard today with the deer presence. Our activity is now focused on limiting the ongoing damage and the number of animals in the area.

Further reading

Craven SR and Hygnstrom SE. 1994. The internet centre for wildlife damage management: http://icwdm.org/handbook/mammals/deer.asp

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

Pet Smart Connect: http://www.pestsmart.org.au/pest-animal-species/deer

Sharp T. 2012. Standard operating procedure DEE001: ground shooting of feral deer: http://www.pestsmart.org.au/wp-content/uploads/2013/03/DEE001_ground-shooting-deer.pdf

Reference number: PUB20/781.