Monitoring Deer Populations and Assessing Deer Damage

To effectively mitigate the impacts of deer, control and management solutions need to be implemented strategically. However, to be strategic we need data to increase our knowledge of the deer in the local area as well as their environmental impacts.

Why we need to monitor

Monitoring deer provides information on

- where deer are located in the environment
- how many deer are in an area
- whether populations are increasing or decreasing
- ratios of males and females
- the level of deer impact on vegetation
- the effectiveness of deer control programs

This information can be used to strategically target areas which are subject to the greatest impacts, where there are higher deer numbers as well as to prevent incursions of deer into new areas.

What to monitor

Sightings of deer, scats, tracks and hair is direct evidence of deer, whilst browse signs on plants and damage to soil, water and fences is indirect evidence.

Whilst using a standardised monitoring protocol will provide great data,

it can be quite time-consuming. There is also benefit in collecting the ad hoc records that you find around your property. Noting seasonal and annual fluctuations in the sizes and freshness of scat piles, the number of tree rubs, or the signs of plant damage will give you an idea of whether deer numbers are increasing or decreasing.

Signs that you have deer

Wallows, particularly at the head of dams, with prints around the edges indicating the number of deer visiting.

Hair caught in fences where they push their way through.

Scats indicate deer presence, how recently they have been in an area, and how many are in the area.

Antler rubbing, with shredded bark on trees – although this can be confused with rubbings from kangaroos.

Game trails – used by many animals, but are often more pronounced due to the greater impacts from the hard hooves of deer.

Plant browse signs by deer include excessive hedging of plants, or obvious browse lines at a height not possible by other animals (around 1.5-2m high).

Deer only have teeth on the front bottom of their jaw, so they tend to crush branches rather than have clean cuts.

Survey Techniques

Camera Trapping

Cameras placed across a landscape will show what deer are in the area, and can provide an estimate of changes to deer abundance over time.

Camera set ups used for native marsupials (often using a log for animals to travel along) are quite different to what is needed for deer.

Cameras can be set up quite high and angled downwards for deer, or set up low (30-40cm from the ground) with a wide field of view. Set up the camera in a location where it will not be triggered by plant movement, and the animal is likely to be around 3-5m from the camera so that focus will be optimal.

Set it up to take 3 photos, 3 seconds apart when triggered, then wait for at least 1 minute before taking further images. This will help in getting an image of the whole animal within the photo, but not taking hundreds of images of the same animal.

Consider using a camera that has a long battery life, or use a solar panel for power. Using a trail camera that can upload images to a webpage, or email you with the image as it is taken can be easier than saving images to an SD card which then needs to be accessed to download the images, however these require an internet connection. e.g. Spypoint Link Micro LTE. $200-300 per camera is typical.

Leave the camera in place for as long as possible, so the deer become accustomed to having the equipment there.

If using the camera just for monitoring, checking the data every 2 weeks is probably recommended, to avoid having 1,000 of images to process. If using the camera for deer control, then having access to images immediately is best.

Monitoring Vegetation changes

Vegetation surveys monitor the level of damage caused by herbivores (not only deer) to plants.

The height and appearance of browse damage can sometimes help to distinguish deer damage from wallabies or kangaroos.

Assessments of the damage to plants and the amount of ground cover present is undertaken annually, across multiple fenced plots which exclude deer, along with reference (non-fenced) sites. Changes to the results over time will reflect the number of deer in the area.

Remote Surveys – Drones & Helicopters

Use of drones to gather thermal imagery is great for individual property owners, or for groups of neighbours

working together (where getting approval to fly over each other's houses is easy). Drone surveys provide a snapshot in time, with professional analysis providing a deer density result.

Drones are a good option for small areas, but may not be very effective in thick vegetation (as cameras can't always see through tree cover easily). You might need landholder approval to use drones to fly over houses.

Scat Counts – Faecal Pellet Index (FPI)

Record the number of pellets along a transect (See Monitoring Datasheet) every 1-2 years, to determine changes in deer density using statistical calculations.

Other Monitoring Methods

Analysis of eDNA (hair, skill cells etc) found in water to identify deer species and faecal DNA sampling to identify individual deer.

Collaring and GPS tracking of deer to determine movement patterns

Animals sighted and culled during control efforts indicates whether control programs are successful.

Record your deer sightings

DeerScan is a simple tool to record your deer sightings, signs, calls heard, damage and control.

www.feralscan.org.au/DeerScan

Recording Deer using DeerScan

Nillumbik Shire Council recommends recording deer sightings, damage and control successes through the FeralScan (DeerScan) website or phone app.

Deer reports will help Council identify areas in need of assistance, as well as track deer movements through the landscape. Increased data and knowledge of deer presence in the area will help define the extent of the issue.

How to get started

The first step is recording where deer are seen – or heard. It's easy. Simply download the FeralScan app or visit www.DeerScan.org.au, set up an account and record your deer sightings, damage and even control.

More records, more often, will build a clearer picture of deer activities in Nillumbik.

When to look for deer

The best time to see deer is around twilight and into the night. Autumn and winter are also when you are most likely to see deer - they love a misty damp evening!

Drizzly weather can see them wandering around in the daylight hours too, so be careful on the roads.

Deer come out to feed in the fringe areas, between bushland and cleared paddocks, where there is good food availability. They will run back to the shelter of the forest when alerted to dangers.

Deer identification

If you don't know the difference between Sambar, Red and Fallow Deer, don't stress. The actual species doesn't matter too much, so long as you know that it is a deer! All deer species in Nillumbik are introduced animals.

Red and Fallow Deer are herd animals, and so are often seen in groups, whereas Sambar are generally solitary animals. Of course, there are always exceptions, so how many deer you see together is not a good indication of species.

The FeralScan website has resources available to assist with identification.

Data Security

Data is closely protected through FeralScan, and users of the website and app cannot view deer locations at property level, thus protecting landholders from any illegal hunting.

Nillumbik Environment Officers have access to this dataset to assist with deer control within the municipality.

Fallow Deer Deer

Red Deer

Sambar Deer

ENVIRONMENT SERVICES

Nillumbik
The Green Wedge Shire

How to use the FeralScan App to record feral deer

e.g. Sighting of 4 male Sambar Deer
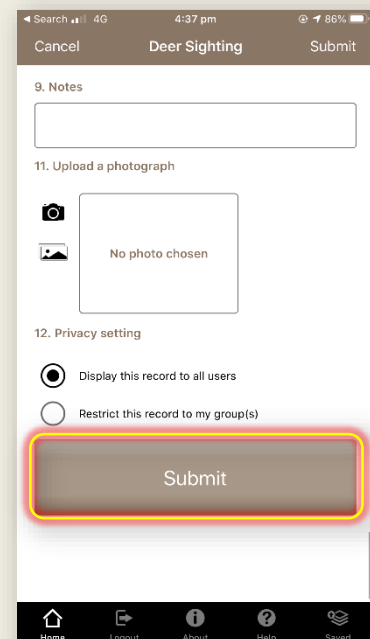
Download the free FeralScan Pest Mapping App to record deer sightings, damage and control, or visit the website to add or view your records – www.deerscan.org.au

For assistance, email feralscan@feralscan.org.au or ring the FeralScan Coordinator on 0407 622 191

Deer Monitoring Datasheet

Observer Name _____

Date _____   **Time** _____:_____ **AM / PM**

Site Name _____ **Address** _____

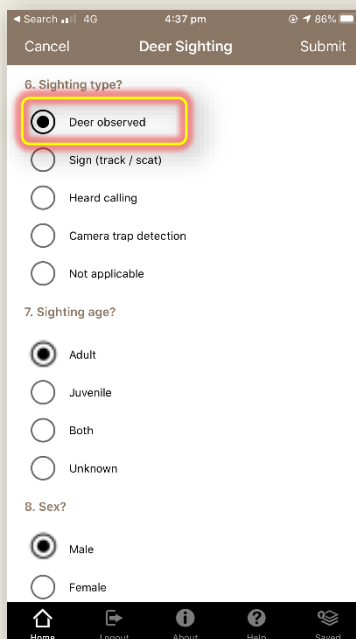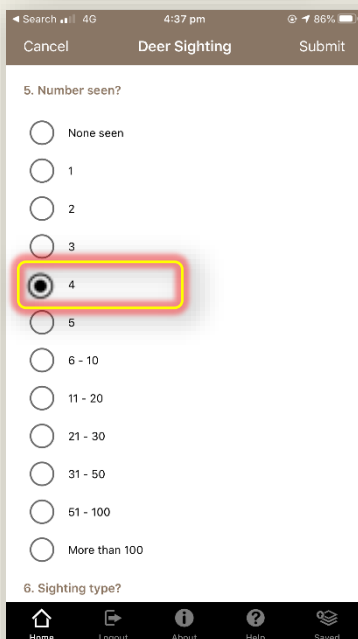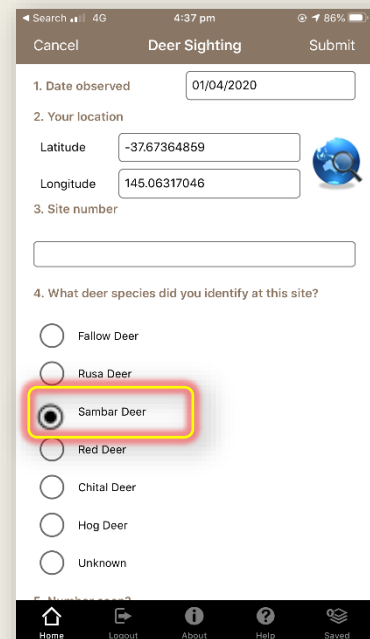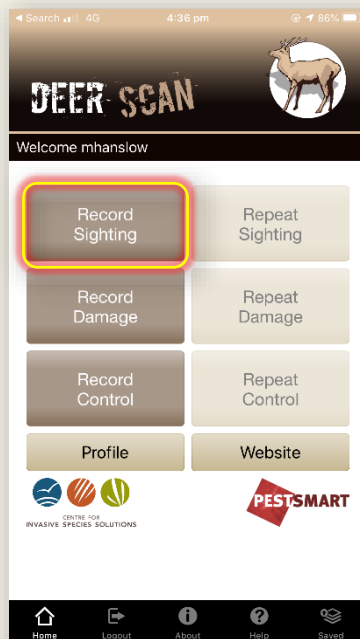Walk a 100 m transect along a creek or gully line and record any piles of **deer pellets or tree rubbings** that are present within 2m to the left and right of the transect.

Record a pellet pile (or individual pellets) or tree rubbing if at least 50% of the pile, or 50% of the base of the tree, intersects the quadrat.

Use this guide to assess whether pellets are old or fresh.

Repeat this process for multiple transects in your project area.

This methodology can be used to simply record whether there is an increase or decrease in the mean number of pellets counted over multiple transects between survey years.

Alternatively, more complex statistical analysis can be undertaken as per David Forsyth's 2005 report: *Protocol for estimating changes in the relative abundance of deer in New Zealand forests using the Faecal Pellet Index (FPI).*

Definition of intact pellets

An intact pellet is defined as having no recognisable loss of material, regardless of whether the pellet is cracked, partly broken or deformed (e.g., by trampling). The presence of moss or fungus does not affect whether a pellet is considered intact or not.

Intact pellets/pellet groups: TO BE RECORDED

- All pellets intact
- Although covered in fungus, all pellets are intact
- Although cracked, there no loss of material has occurred
- Although discoloured, no loss of material has occurred
- There are 3 intact pellets in this clump

Decayed pellets/pellet groups: NOT RECORDED

- All pellets show substantial loss of material
- All pellets show loss of material
- Cracked and loss of material has occurred
- All 4 pellets show loss of material
- In each of these 3 masses there are no defined pellets and there has been loss of material

Minor tree rub

Sapling rub

Recent rub

Shrub browsing

Transect Number _____   **Direction of transect** N / NE / E / SE / S / SW / W / NW

GPS location of transect start point (MGA Zone 55): E_____ N_____

Pellets and Rubbings

Easting	Northing	Distance from transect start	Number of intact pellets	Number of old pellets	Number of fresh rubbings	Number of old rubbings

Foliage browsing

For the first 10 shrubs along the transect, record which proportion of stems under 2m have been browsed

Number	Easting	Northing	Distance from transect start	Shrub Species	<25%	25-50%	50-75%	75-100%
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Adapted from: *Protocol for estimating changes in the relative abundance of deer in New Zealand forests using the Faecal Pellet Index (FPI),* David Forsyth 2005