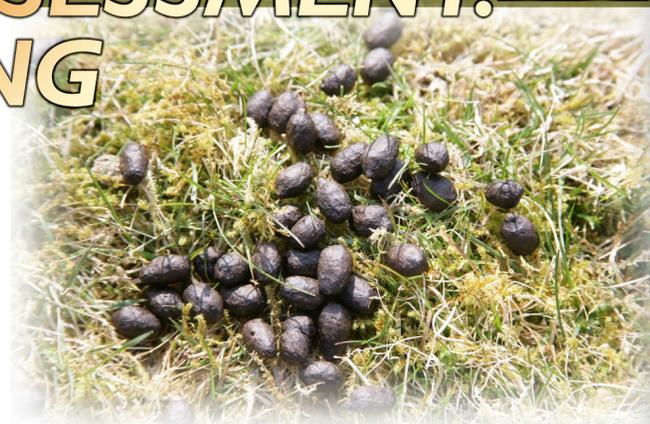




POPULATION ASSESSMENT: DUNG COUNTING



Aim

The aim of this guide is to provide advice and information on estimating deer populations in woodland.¹

Introduction

Accurately estimating the number of deer utilising areas of woodland is difficult. It is important that deer and woodland managers recognise and accept this especially when setting deer cull targets.

It is possible to broadly evaluate deer densities into low, medium and high categories by collectively looking at indicators of the presence of deer such as the quantity and distribution of dung and tracking, whilst at the same time evaluating deer impacts.

Woodland deer density indicators

Evidence	Low Density (0-6 deer per km ²)	Medium Density (6-12 deer per km ²)	High Density (12+ deer per km ²)
Tracks	Difficult to find deer slot marks or defined paths.	Defined paths; slot marks easy to find in areas of soft ground.	Many well defined tracks and paths often black with constant use.
Dung	Difficult to find with just the odd isolated pellet group.	Pellet groups relatively easy to find, particularly on woodland edges and good feeding areas.	Pellet groups very easy to find. Highly concentrated on favoured feed areas.
Browsing of Vegetation	Natural regeneration of broad-leaved trees taking place with no or little damage to current year's incremental growth.	Broad-leaved saplings present but showing significant damage.	No seedlings growing above dominant vegetation height. Often well defined browse lines on established shrubs and plants.

Dung counting

Dung counts are useful for estimating:

- ◆ The use that deer make of an area of ground;
- ◆ The total number of deer in an area.

In a population with little or no movement, this method works on the basis that the number of pellet groups will reflect the number of animals. The main advantages of this method are:

- ◆ It estimates average numbers and use (direct counts only provide a snapshot);
- ◆ It provides a means of estimating deer numbers in woodlands;
- ◆ It is the most cost-effective means for measuring density in large areas of woodland;
- ◆ It can be used as a tool to monitor change and the impact of management actions.

It is worth noting, however, that movement of deer in and out of an area is likely to occur and, if significant, can produce highly misleading results.

Pre-survey planning

The following points need to be taken into consideration before any survey is undertaken:

- 3 Establish what the information is to be used for (i.e. to estimate deer usage and trends or to estimate population numbers?) and work back to define the method to be used.
- 3 Identify the size of the area to be surveyed, taking into account possible movement of deer.
- 3 Assess priority for management: High priority – high value or vulnerable crop or habitat. Medium priority – mature, pre-felling or re-stocking sites. Low priority – semi-mature, low risk sites.

- 3 Break down the area into different habitats either by age or vegetation type to allow samples to be stratified.
- 3 Prior to fieldwork, become familiar with the different species present using known pellet groups.

Examples of habitat stratification

Woodland habitat

- Conifer establishment 0-5 years old.
- Conifer pre-thicket 5-10 years old.
- Conifer pole stage or pre-felling.
- Mature forest.
- Broadleaved establishment.

Open habitat

- Bare ground.
- Grass rides or glades.
- Moor or heath.
- Fields.

Method

- 3 Mark out permanent plots and search carefully for dung, which is either removed or marked.
- 3 Revisit the plots, usually 10-12 weeks later (before the dung has time to decay), and count the numbers of pellet groups accumulated on each plot. Note: decay rates vary between habitat types and season.
- 3 Count only clusters of 6 or more pellets as a pellet group.

Number of plots

- 3 Allocate survey areas in each habitat type with a minimum of 6 plots in each.

Size of plots

- 3 Determine the size of the plot by the density of vegetation.

From a practical point of view, moderately sized plots (50-200 m²) are preferable for obtaining reasonable numbers of pellet groups per plot, as they maximise the time spent searching, and minimise travel time between plots. For each habitat, size of plot should

be consistent and will be dependent on vegetation type and ease of search e.g. heath 50m², conifer pole stage 200m². Plots can be linear (transects) as well as rectangular in layout.

When to sample

- 3 Carry out sampling during winter and early spring when pellet groups are not concealed by vegetation.

Daily defecation rates

Defecation rates for individual species are necessary for calculating population densities. These are estimated as red (25 pellet groups per day), sika (25 pellet groups per day), fallow (20 pellet groups per day) and roe (20 pellet groups per day).

Calculating deer density

Example

Clearance counts were carried out in an area of pole stage conifer with sparse understory to estimate the density of roe deer. Pre-survey investigation of decay rate indicated a decay period of 6 months.

Plots totalling 1200m² were cleared in November. A total of 6 pellet groups were counted in the plots 60 days later. Assuming a defecation rate of 20 pellet groups per day (and no decay between visits), the population density is estimated as:

$$\text{No. of deer per km}^2 = \frac{\text{no. of pellet groups per km}^2}{\text{no. of days between visits}} \times \text{defecation rate}$$

$$\frac{0.005 \text{ pellet groups per m}^2 \times 1,000,000}{60 \times 20} = 4.17 \text{ per km}^2$$

A period of around three months between visits is recommended; however, in practice the time will depend on knowledge of the decay length relative to the habitat and season.

- 3 Be aware of the potential error margins surrounding population calculations and therefore limitations in the value of the information generated as a basis for management decision making.

'More information on Dung Counting as a method of population assessment can be found in B. Mayle, A. Peace and R. Gill (1999) How Many Deer? A guide to estimating deer population size. Forestry Commission field book 18 (see BP Contacts).'