POPULATION ASSESSMENT: OPEN RANGE COUNTING(1)

Introduction

The aim of this guide is to provide information and guidance on assessing deer populations living on the 'open range'. 'Open range' generally means open areas of habitat used mainly by red deer (for example, heather moorland).

From the outset it is important to be clear that although the terms 'count' or 'census' are used, open range counting enables a population estimate to be made, but with associated error margins. Research has shown[1] that, normally, estimates will vary by between 5 and 16%. In other words if you count 415 deer then the population estimate is at best between 348 and 481 (or at very best between 394 and 435).

Open range population counts (and their resulting estimates) are therefore most likely to be useful for setting broad targets or giving an index of deer numbers as opposed to very precise population models. They are also useful for indicating trends in a series of counts.

Why count?

As with dung counting, the population estimate provided by open range counting can be used for:

♦ Setting cull targets* to help deliver target deer densities;

♦ Sex / age classification of the population (e.g. estimating the % of stags or calves);[2]

♦ Monitoring population change (e.g. in relation to a cull target).

Reducing potential sources of error / variability

Key to the success and usefulness of an open range count is reducing potential sources of error or variation. It is essential to use a consistent method from count to count.

source of error/ variability	reduced by
insecure external boundary to the count area	*choosing a clearly defined deer population or deer management unit*
steep or rolling ground	*choice of method — ground or helicopter*
insecure internal fences around concealing habitats	*driving deer out of any woodlands or concealing habitat to where they can be counted*
observer differences in ability to spot, classify, count or record deer	*experience, training, use of same counters on repeat counts*
different weather conditions (snow cover, wind direction)	*attempting repeat counts in same conditions*
following different routes	*counters/helicopters following same routes on repeat counts*
using different methods (ground/helicopter)	*using same method on repeat counts*

When to count?

The time of year will depend on the reason for the count. Usually it is desirable to count the calves that have survived winter and to count stags before they cast. For most counts the best conditions will be 'white ground' (snow-lie) where the contrast between deer and their background will be maximised, enabling deer to be more easily spotted. Snow cover may concentrate deer on lower ground making for a more efficient search and may also reduce deer movement, so reducing the risk of double counting. The best months are therefore likely to be February, March or April. It is usually desirable to count at least annually at the same time of year. More frequent counts may be required, particularly if looking at deer movements.

3 Be aware that optimum conditions of snow cover may lead to practical difficulties of access in snow.

How to count?

The two most widely used, practical and cost effective methods are ground counting and helicopter counting. In choosing between these methods, as well as reducing the sources of error or variability, account will also need to be taken of resources (man-power and financial) available. For example, for count areas which are large enough to require several days of counting, then helicopters covering big areas will probably reduce errors associated with deer movement between counting days. Advance planning and team communication are essential. Communication during the count is equally so.

Ground counting

The use of GPS tracking and recording can be used to record the count path taken.

3 When ground counting take into account wind direction and the need to move deer in broken or rolling ground. Ideally carry out a ground count with a tail wind which first disturbs the deer and gets them moving which makes them more visible. The deer should then move predictably into the wind and through the line of counters. Be aware however, that a tail wind may clear the ground or chase groups of deer together, making counting more difficult.

3 Use sufficient counters to walk routes. Design routes to allow visual contact between counters while taking into account terrain and likely deer movements.

3 Record deer passing behind counters only after radio confirmation with adjacent counters has confirmed that the deer have only been recorded by one counter.

3 Consider using vantage point counts if large settled groups of deer have been detected. Observers should count the deer from fixed points simultaneously.

3 If neighbouring ground is being counted at the same time, then counters should co-ordinate their efforts to ensure the same deer are not counted on different properties twice.

Helicopter counting

Pilot experience and navigator local knowledge are essential. Digital cameras can be used to photograph large groups of deer. GPS can be used to record the flight path taken and to record where photographs of deer are taken.

3 Ideally use a minimum of three passengers: a navigator or spotter beside the pilot, a recorder and a spotter at the rear of the aircraft.

3 A 'reserve' passenger may also be useful to avoid fatigue and provide cover for anyone suffering from the effects of motion sickness.

3 Plan flight routes to cover the ground effectively, taking into account terrain and likely deer movements.

3 Take into account wind direction and use it to move deer predictably to ensure counted deer move onto ground which has already been counted rather than forward onto uncounted ground.

3 Where deer are known to be present in small woodland blocks, they should be driven from woodland to a location where they are visible.

* See BPG Setting Cull Targets

[1] *Daniels, M.J. (2006). Estimating red deer (Cervus elaphus) populations in the open range of Scotland: an analysis of the variation and cost effectiveness of different counting methods. Mammal Review 36(3): 235−247.* [2] *It is worth noting that a full classification is unlikely from any count method. Instead, if classification is required, an attempt should be made to classify 'sample' groups randomly encountered during the count.*