

ENGLAND &
WALES **BEST
PRACTICE
GUIDES**

Night Census.

Records and Survey





Introduction

The aim of this guide is to outline how a night time census is carried out and how the results might be used. The Census Introduction guide should be regarded as companion reading, this guide also links to the Cull Planning guide.

Night census

Like any other “direct” method of census not all of the deer present will be counted at night. The most valuable figure obtained is the minimum number of deer that must have been present.

Night census methods have the advantage that they count deer that may not be visible during the day. Deer can be counted from a vantage point, on foot or from a vehicle or with the use of a specialist drone.

Vehicle based counts and drone surveys cover very large areas quite quickly which means that with care the double counting that could result from a census spanning a number of days is eliminated.

There are many ways of arriving at estimates of deer numbers apart from night counts. Wherever possible results from night counts should be considered with results from other methods, each hopefully adding confidence to the other.

The method described below describes using a vehicle and is relevant to the use of thermal imaging, night vision usage and spotlighting.



Organising a night count

The principle is very simple, the camera/light is carried in or on top of a vehicle, each time deer are seen the vehicle stops, the sighting is recorded and the vehicle moves on.

When organising such a count there are a number of things that have to be considered:

- Before the count It is sensible to arrange for alternate dates to account for weather, equipment failure etc.
- The camera/light user must be familiar with the equipment and practiced at recognising deer while using it.
- A coordinator should ensure that a risk assessment has been carried out and recorded.
- All participants are aware of the objectives of the count.
- Equipment is available/functioning.
- Results can be recorded and disseminated.

Equipment required

- Vehicle, usually a pick-up or UTV with a safety cage that will allow the camera/light to be operated safely while the vehicle is moving.
- Camera/light and operator.
- Mobile phone with GPS capability or similar GPS tracker.
- Recording equipment.

The driver(s) must know the area intimately both from a health and safety point of view and to follow a route that gives full coverage but avoids counting the same deer twice.

Map the route and preferably drive it during the day.

This should help to ensure that the planned track is safe and that the likelihood of driving deer ahead of the vehicle or double counting is avoided.

The area that can be covered in a 3-5 hour night is around 20 square kilometres (2,000 hectares or 5,000 acres) where access is good. Ideally it should be possible to repeat the route if future counts are required.

The best time to carry out night counts is when the natural vegetation and crops are low.

Because the distances covered may be large there are often a number of different landowners involved, so access to private land must be agreed with all relevant parties.

There may be an element of confidentiality to the results, all participants should be aware of this. Always inform any



relevant persons when a night time census is to take place, such as any tenants, gamekeepers and often the local police.

During the count, speed should be slow enough for area to be scanned thoroughly and not cause a risk of injury to the camera/light user, particularly on uneven terrain or rough tracks.

All involved must keep a watch for dangerous ground and any potentially dangerous obstacles.

Provided deer in the area have not become shy of vehicles at night, the vehicle headlights can be kept on. Where necessary either sidelights or no lights may be appropriate, but this will slow progress and extreme care must be taken to stick to safe routes.

At each sighting of deer, the vehicle stops, details of deer, name of location and GPS Location are recorded.

If driving in public places avoid pointing the camera/light at people, houses and vehicles.

After the count the coordinator should make sure that all data is retrieved and any double counts eliminated. It should be possible to give a brief account of results before everyone leaves, giving due regard to confidentiality.

The kind of results that might typically be issued later are:

- Brief description of count.
- Any mitigating factors such as weather, location/movement of domestic livestock, cropping patterns, other difficulties.
- Map (with key) of surveyed area showing track taken.
- Where deer seen and numbers (unless confidential).
- Minimum total numbers seen (corrected for double counts).
- Overall male:female ratio (if possible).
- Overall female:young ratio.
- Estimate for minimum annual increment (if possible).
- Graph illustrating comparison with previous counts.

Thermal imaging (TI) camera

A TI camera picks up heat signatures rather than light so it can see in true darkness.

There are no spotlights or illuminators of any kind and the range of the camera (between 1-5 kilometres depending on the equipment) is such that disturbance to the deer is minimised.

Animals show up as very bright figures. With experience it is possible to differentiate between species at distance and the sex of animals if they are closer, although, for the most part, results are given in terms of how many animals are seen in total.

The camera sees in “line of sight” so cannot see through solid objects, but it is possible to locate deer in wooded areas more easily than one could with binoculars in daylight or when using a spotlight or image intensifier.

The method is easiest to use on open ground. Under tree cover, progress is much slower, a lower proportion of the deer present will be seen, and statistical analysis may be required.

The clearest pictures are obtained in cooler conditions, but the camera is capable of good images on warmer nights and in rain. Fog or mist will severely hamper the range and performance of a TI camera, so counting in such conditions should be avoided.

If additional information on the position of deer seen is collected, TI count data can be input to a statistical analysis package called “Distance” which enables an analysis that can estimate the true total of deer present including those

not seen. This is most useful in woodlands. Unfortunately, collecting the additional information slows the survey down considerably, usually a simple minimum numbers count is adequate on open ground.

Thermal imagers are more expensive than night vision technology and spotlighting equipment, but are one of the most useful and effective tools used by deer managers.

Spotlighting

Spotlighting is carried out in essentially the same way as thermal imaging but does not require expensive, specialist equipment.

A lamp and binoculars are required. The lamp is shone and spotting deer is usually done via the reflection from the reflective layer at the back of a deer’s eye providing a bright “eye-shine”.

White light is easiest for the human eye but coloured, filtered lamps may be less visible to deer.

Spotlighting is far more obvious and noticeable than thermal imaging and increased consideration should be given to public concern, disturbance to game shoots and disturbance of livestock.

Where deer are regularly disturbed by lamps at night they may become “lamp shy” and may flee at the first sight of a lamp, before they are able to be spotted and counted.

Night vision

Night vision relies on ambient light (e.g. moon or starlight) or an infra-red (IR) illuminator. Infra-red light is all but undetectable by deer and invisible to the human eye, making this a less noticeable method than spotlighting.

Night vision equipment tends to be far more affordable than TI equipment, yet still more expensive than spotlighting.

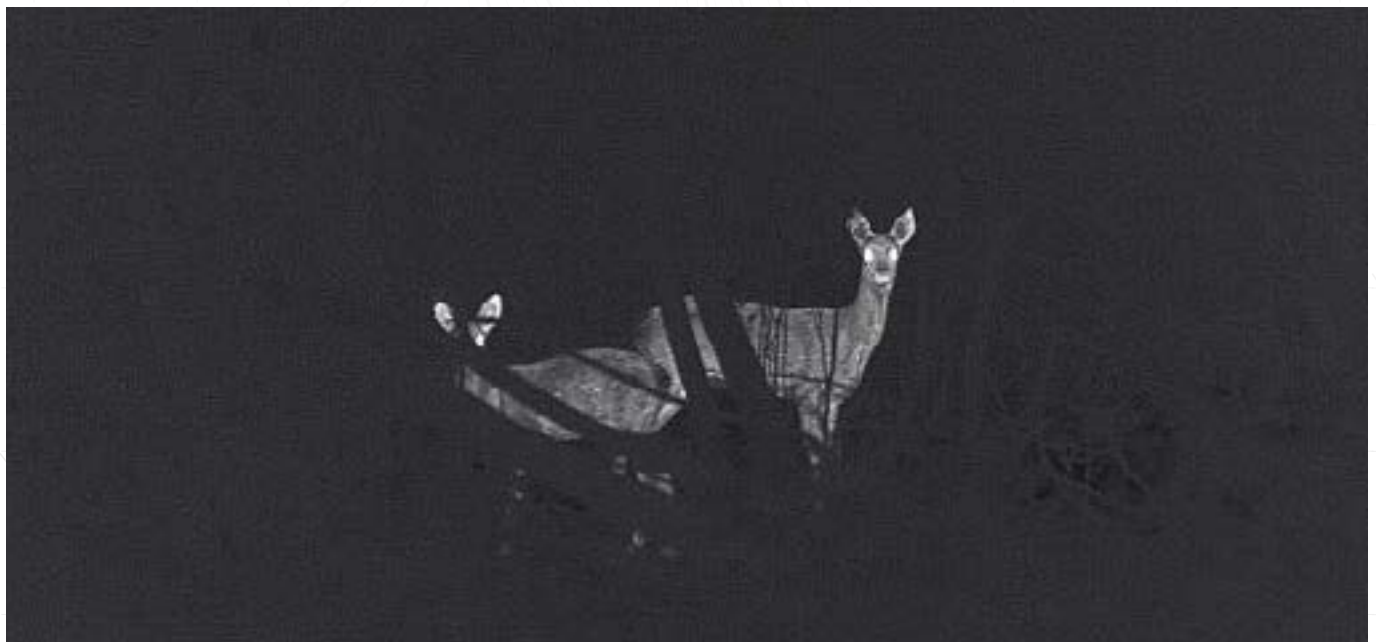
Modern night vision units, when paired with a powerful IR illuminator, are capable of producing a very clear image, making species and sex identification easier than with TI technology. The IR illuminator will also cause a bright “eye-shine” when viewed through a night vision device, allowing for the deer to be spotted.

However, deer will not be as immediately obvious to spot through a night vision device when compared with a TI spotter so more care is needed when scanning to avoid missing any deer.

Reducing potential errors

There are a number of ways of avoiding sources of potential error:

- Equipment user must be trained.
- Any animals not positively identified as deer must be discounted e.g. it may be necessary to ground truth in daylight any “deer” seen at long distance, they may turn out to be domestic livestock.
- The crew should develop a sound method of recording that eliminates misunderstanding.
- As far as possible hold the count in conditions when deer are likely to be seen.
- Eliminate all possible double counts (local knowledge is essential).
- Where possible, repeat counts for greater accuracy. use same method on repeat counts or allow for changes e.g. to area surveyed.
- As far as possible include as much of the deer range as possible in the count area, especially important with herding species.



Further Information

- Mayle, B.A., Peace, A.J. & Gill, R.M.A. (1999). How many deer? A field guide to estimating deer populations. Forestry Commission Fieldbook 18.- <https://cdn.forestresearch.gov.uk/1999/03/fcb018.pdf>