

MANAGEMENT CULL PLANNING

ENGLAND & WALES
BEST PRACTICE GUIDES

the deer
initiative

Introduction

The reproductive biology and survival rates of deer mean that deer populations have a tendency to increase if unmanaged. Culling is a means of maintaining a deer population at an acceptable or agreed level, or reducing it to that level and holding it there. This must be done in a humane, responsible and sensitive manner.

The aim of this guide is to describe the principles of setting annual cull targets. The guides; Management Plans, Population Dynamics, Population Modelling and Record Keeping, should be considered essential companion reading.

Objectives

When culling wild deer populations it is important to have a clear understanding of objectives. In general these will be to:

- ◆ control deer numbers to prevent over population
- ◆ control deer impacts on human interests
- ◆ utilise the deer resource

Utilisation of the deer for venison or any form of licensed or let stalking should not be at the expense of unacceptable impacts caused by the deer.

Ideally an agreed deer management plan (see Management Plans guide) will set out the objectives, together with targets for achieving them. Often there are multiple objectives for an area. A landowner/manager may need to decide on priorities and/or accept that compromises may have to be made.



Culling

Keeping deer numbers at an agreed level can help to ensure that:

- ◆ deer numbers and population structure are predictable from year to year
- ◆ impacts to habitats and crops and other conflict with human activity, such as deer road traffic collisions, are tolerable

The most important function of culling is to keep deer numbers at agreed levels. Culling is also a means of:

- ◆ manipulating population structure
- ◆ maintaining quality through selection
- ◆ removing animals that are sick, injured or in poor condition
- ◆ providing a sustainable source of income through sales of venison or access to stalking.

If a population is too high, a “reduction” cull is required to bring deer numbers to a desirable level. Once at this level a “maintenance” cull is required to keep the population in line with management objectives.

Reduction culls

A reduction cull must focus on the females. During this phase there is little point in being too selective about which individuals are culled as long as welfare is assured.

Achieving the female cull target should be regarded as a priority. Opportunities should be taken to safely and humanely cull more females than expected unless it would put female numbers below the final planned minimum. The male and female seasons often overlap. While the females are in season the temptation to make up the cull total by shooting males instead of females should be avoided, a single male deer will remain just that throughout his life but a female deer would be responsible for producing (herself, together with her female offspring) many young over her lifetime.

Note that if a population is reduced substantially from a previously very high density, there is likely to be an improvement in the condition of the remaining animals. The consequences of this may be that survival rates improve and females may breed at a younger age. In addition, there may be a degree of “in fill” from surrounding areas. Together these are commonly referred to as population “bounce back”. This must be taken into account in planning subsequent culls and the number of deer culled as a proportion of the population may need to remain high to maintain the reduction in numbers. Reducing numbers from very high levels may take many years to achieve.

One off, heavy culls, followed by little or no culling, never achieve a sustained drop in numbers. Reduction culls need to be substantial and usually need to run over a number of years to be effective. They must then be consolidated by following with a realistic maintenance cull.

Maintenance culls

For a population being maintained at a particular level, the cull for each age/sex class will be similar from year to year. Again, achieving the female cull is a priority but during this phase it is possible to be more selective about which individual animals are culled, according to objectives.

Check progress!

Calculating the average number of deer required to be culled each day to meet the cull target by the end of the season provides a good incentive to keep up the culling effort. e.g. a remaining cull target of 56 with 30 days of the season remaining = approx 2 deer to be culled each day to achieve the target.

Census, cull and impact data should be monitored to be sure that an adjustment of culling level is not required. As a very approximate guide, and given that sex ratios are approximately equal, maintaining a static population will require a cull of at least 20% of the population for the larger species (red, fallow, sika), and a cull of around 30% of the population for roe, muntjac and Chinese water deer. At least half of the total cull should be females. If there are a preponderance of females in the population, the total cull rates, and the proportion of females in the cull, will have to be significantly higher. If population numbers cannot be estimated then other measures such as habitat impact levels may determine cull levels, see example in the next section.

Cull Targets

Cull targets are usually set for individual properties but may also take into account wider scale culls, perhaps agreed through a deer management group. It is not sufficient to simply set a cull total. Cull targets must recognise the importance of the different effect of culling males and females, see Table 1.

There are some situations where the cull target might be very simple, for example:

If unacceptable habitat impact is being caused by high deer numbers, the cull target would simply be the largest number that could realistically be humanely culled each year, with the emphasis on females. The driver for culling more or fewer deer would be to measure deer impacts, rather than perceived

deer numbers. Over time, if the cull was effective, a trend towards improving habitat condition would be seen. Once tolerable impacts were achieved the culling effort could reduce to a lower figure and then be maintained at that figure to prevent impacts worsening once again. Monitoring of impacts, deer numbers and other indicators of population level would continue throughout, both to gauge the effect of culling on the population and then to detect any changes during the maintenance phase.

Forming the cull plan

Creating a cull plan to meet agreed objectives should follow these steps:

1. Use all available sources of information to guide the cull plan :
 - management plan (outlines objectives, targets and constraints)
 - impact records (measure of level of impacts against targets)
 - past cull records (measures past culling effort and provides recruitment data)
 - census records (indicates trends in population and population structure)

Note that some or all of this information may not be available at the outset but keeping good records will help to add confidence to future planning decisions, see the Records and Survey and Management guides

2. Model the population (if appropriate) in order to help predict the cull required (see Population modelling guide).
3. Set the minimum/ maximum culls required for breeding females and for the other sex and age classes. For reduction culls the proportion of breeding females culled will be much higher than for a maintenance cull. Any juveniles

culled must not be counted as part of the breeding female cull but recorded separately. In all species of deer it is the female cull that ultimately enables control of population numbers since they are the source of young. Achieving the planned female cull must be regarded as a priority in both reduction and maintenance culls.

If a certain number of males is required as one of the management objectives, it is best to produce them from the minimum number of females so as to prevent overpopulation.

A maximum cull limit is often set for mature males to avoid them being overshot, the bulk of the male cull coming from the juvenile age classes.

Provided that minimum female cull figures are achieved, the numbers and ages of males culled can be flexible to suit objectives. If the production of high quality antlered males is an important part of the management plan, overall population numbers must not be allowed to rise too high since optimum quality and survival rates for male deer are usually achieved at population levels where competition for resources is least. Both quality and survival in males will decline if overall population numbers reach high levels in relation to habitat carrying capacity; see the Population Dynamics guide.

4. Make every effort to carry out the cull to the plan. For landscape scale culling across boundaries, ensure that an adjustment made on one holding is compensated for elsewhere if necessary.
5. Gather census, cull, and impact data to inform the cull for the following year and to give an indication of the effect of this season's cull.
6. Renew the cull plan annually using the latest information available.

Table 1. The importance of the female cull. The figures given are for illustration purposes only, but are based on real population parameters, the same cull was applied in every year. The figures will vary between deer species and different locations but the general principles apply in all situations. A model of this type is described in the Population Modelling guide.

Example 1	Aug Yr 1	Cull	Remainder	Mortality	Remainder	Aug Yr 2	Aug Yr 3	Aug Yr 4	Aug Yr 5	Aug Yr 6
Females	26	4	22	1	21	30	32	35	39	44
Y Females	12	3	9	0	9	11	13	14	15	18
F Young	15	3	12	1	11	17	19	20	23	26
Males	20	6	14	1	13	17	10	5	3	4
Y Males	12	7	5	1	4	7	8	10	11	14
M young	15	7	8	1	7	17	19	20	23	26
TOTAL	100	30	70	5	65	99	101	104	114	132

In this Example 1 30% of the initial population is culled but more males than females (only 19% of females are culled). If the same cull is applied each year the population increases. To compound matters the male: female ratio changes in favour of the females, increasing recruitment proportionately each year.

Example 2	Aug Yr 1	Cull	Remainder	Mortality	Remainder	Aug Yr 2	Aug Yr 3	Aug Yr 4	Aug Yr 5	Aug Yr 6
Females	26	6	20	1	19	24	17	10	4	0
Y Females	12	7	5	0	5	7	7	4	0	0
F Young	15	7	8	1	7	15	12	7	3	0
Males	20	4	16	1	15	23	23	23	21	16
Y Males	12	3	9	1	8	10	10	8	3	0
M young	15	3	12	2	10	15	12	7	3	0
TOTAL	100	30	70	6	64	94	81	59	34	16

Example 2. For the same culling effort but with the emphasis on females (in this case 38% of females culled), the population decreases. Culling at this sort of level may be required for a reduction cull.

Example 3	Aug Yr 1	Cull	Remainder	Mortality	Remainder	Aug Yr 2	Aug Yr 3	Aug Yr 4	Aug Yr 5	Aug Yr 6
Females	26	5	21	1	20	28	27	27	28	28
Y Females	12	4	8	0	8	9	10	11	10	10
F Young	15	5	10	1	9	16	17	16	16	17
Males	20	4	16	1	15	21	19	18	17	16
Y Males	12	5	7	1	6	8	9	10	9	9
M young	15	5	10	2	8	16	17	16	16	17
TOTAL	100	28	72	6	66	98	99	98	96	97

Example 3. By adjusting the total cull and the proportion of females in the cull it is possible to maintain the population at the desired number. In this case the objective was to keep the population stable (a maintenance cull).