ALTERNATIVES TO STEEL AND LEAD

Open space should be proportional to forest size

Mark Malins MICFor and **Peter Oliver MICFor**

look at how deer and trees might co-exist more comfortably

Non-metallic deer management

Protecting trees from deer by fence or gun has become a cultural dimension of modern forestry: central tenets of our policy for mitigating the impact that deer have on our work. While steel and lead are essential allies, there is also a silvicultural dimension to deer management that forest managers could usefully consider. The design and development of woodland structure has a significant influence on deer numbers, and a thoughtful assimilation of such 'non-metallic' variables may generate an environment less demanding in the costly use of fencing and shooting.

The ecology of deer

Our native roe and red deer are 'keystone' species and complementary niche feeders within native woodlands. Without roe and red deer their respective ecological communities will become ecologically dysfunctional, lacking a controller of otherwise over-dominant woody species and ultimately undermining biodiversity. In turn, a keystone predator is required above the deer in the food chain. It is this lack of predation, rather than deer presence per se, which renders deer a problem to the forester and demands our intervention to manage their numbers. There is a balance in roe and red populations that is fundamental to the function of our woodland ecosystems. The forester needs to seek this balance, rather than remove native deer altogether. Successful deer management requires an understanding of where this balance lies in a particular woodland and deploying sympathetic metallic and non-metallic strategies to achieve it.

Deer presence or impact?

A key aspect of deer management is the distinction between 'presence' and 'impact'. If we accept that native deer are a keystone of our woodland, there will always be evidence of their presence – even at low densities – as part of the ecological footprint. This 'presence' only becomes 'impact' when the population starts to undermine our core forestry objectives, and this is the threshold which we need to fully understand and influence.

For example, the roe deer is a frequent browser that selectively feeds on a wide range of plants, seeking those with the highest digestibility and associated fermentable energy and nitrogen. Their preferences will be influenced by the dominant plant communities at different times of the year. The balance of population will vary and their impact will be higher or lower according to the local environment and the influence of our management choices.

Most obviously, we can reduce deer impacts with larger stand sizes and by planting less palatable tree species. The latter may not be possible where a particularly palatable species, such as western red cedar, is important in our objectives. Vigilant metallic protection may then be necessary but, bearing in mind that deer seek to maximise their nutrition with the least expenditure of energy, we may also be able to deploy a planting strategy that offers deer the opportunity to feed on more palatable associated nurse species and supplementary shrubs. Birch can play an important ecological role in providing inexpensive establishment with high levels of regeneration that can be used to protect future timber trees from deer, particularly (but not exclusively) on acid soils by deflecting deer browse away from target trees. The deer then serve to reduce the regenerating competitiveness of birch against our targets.

Plant biomass – the key to non-metallic deer management

Light encourages herb layer biomass for deer

Birch can protect future timber trees

The larger deer species are more grazers by nature as their digestive tract forms a proportionally larger element of body mass which can cope with other plant material. These factors mean that combining a well-managed open space with a mix of plants and in proportion to the size of woodland, with varied tree species, can help to draw their feeding behaviour away from crop trees.

Deer also only feed in an environment where they feel safe; in settings that allow them to feed freely while remaining near to vegetative cover to which they can run if threatened. Research suggests that in roe deer this urge is genetic; continuing even where predators have been extinguished and no longer pose a direct threat (as is the case in the UK). Therefore, scale and, currently, distribution of protective cover is another factor in the balance between presence and impact of deer which the forester can influence. Design of stand layout (size and shape, the form of rides) and silvicultural systems in particular, including shrubs, are choices that the forester should make with an understanding of their effect on deer and how they will alter the ability of a stalker to manage deer populations directly.

Scottish red deer

Such choices may be more strongly influenced by other considerations, but certain silvicultural strategies will be more helpful to deer than others in the cover they provide. Where the other considerations are indispensable to achieving forestry objectives, the reliance on and cost of metallic deer management will be greater.

There are other factors that can exacerbate the perceived problems of deer. Failure in natural regeneration, for example, is often blamed on deer but it could be that we haven't created the conditions for successful regeneration: managing light levels and competitive species around our targets. What about excessive browsing by rabbits and hares? Also, we know that deer will browse trees when food is in short supply, but is our forest management providing them with sufficient biomass to reduce the pressure on our target species? This is linked to a site's soil type and National Vegetation Classification which underpin the vegetative biomass and the diversity of plant species across the woodland ecosystem. Such systemic fundamentals are determined by the environment, but the ecological outcome remains under the influence of the forester who manages it.

Summary

Forests and woodlands are diverse in size, nature and form. However, to develop wooded environments where biodiversity gains can be made and where trees can live more comfortably with deer, understanding the relation between the scale of the forest or woodland and the needs of the deer is essential. It does not mean the disbanding of the metallic alliance but, by embracing a form of ecological forest management, we may be able to identify more conciliatory and less costly ways to live with deer.

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