

Reintroduction of perennial knawel *Scleranthus perennis prostratus* to Thetford National Nature Reserve, Norfolk, England

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SUMMARY

The endemic subspecies of perennial knawel *Scleranthus perennis* ssp. *prostratus* is found only in the Breckland area of eastern England. Here it was restricted to north Suffolk, having been extirpated from all known Norfolk sites. In the mid 1990s an attempt was made to reintroduce it to one of its old Norfolk sites. Through a combination of transplanting locally cultivated plants, seed sowing, grazing, and occasional soil disturbance management. By 2005 perennial knawel had become well established and the introduction appears to have been very successful.

BACKGROUND

In the UK the endemic subspecies of perennial knawel *Scleranthus perennis* ssp. *prostratus* is found only in the Breckland area of East Anglia, eastern England. The Brecklands, one of the driest regions of Britain, cover 940 sq. km within the counties of Norfolk and Suffolk.

Perennial knawel is classified as 'endangered' and is given special protection under the Wildlife and Countryside Act 1981. It is a small woody herb flowering between June and September. It is a biennial or short-lived perennial of very short grassy heaths, compacted tracks and abandoned arable land, and is generally found on well-drained acidic (pH 4.9-6.8) sandy soil. It is a poor competitor and requires open soil for seedling establishment.

Perennial knawel has never been a widespread and within its restricted range it has suffered a marked decline over the last 50 years for several reasons including: the increased use of herbicides and fertilisers; the destruction of field-margin refuges; the abandonment of marginal arable land and heathland; afforestation of former sites and potential sites for colonisation; deterioration of former and potential sites due to inappropriate grazing; and loss of sites to building developments. It is now restricted to the southern part of Breckland in north Suffolk, having been extirpated from Norfolk (except for one site where reintroduced).

This case study describes an introduction attempt to reinstate the species in a nature reserve in Norfolk.

ACTION

Study site: In 1996, a site within the Thetford National Nature Reserve was identified as suitable for the introduction of perennial knawel *Scleranthus perennis prostratus*. Work was first begun on perennial knawel at this site in 1961 by Dr A.S. Watt who conducted seed sowing trials. Then in 1980, a transect 28 m x 1.8 m was set up on the site. Seeds were planted and the plot was monitored for the presence of perennial knawel, a small population became established. However by 1998, encroachment of heather *Calluna vulgaris* meant that the transect required intensive management, primarily using a hand rotovator to control heather encroachment. Unfortunately, there were not enough volunteers available to manage the plot effectively and the perennial knawel died out.

Perennial knawel introduction: However, two years earlier, in spring 1996, a second transect/plot, measuring 50 m x 2 m, was established in the reserve close to and partly on a firebreak. The soil was tested and was within the required 4.9-6.8 pH range known to be preferred by the species. There was also 35-50% bare ground, giving potential for seedling establishment. In the spring of 1996, 50 to 100 individuals were planted as both seedlings and seeds. Seedlings were well-watered in their

pots (in which they had been locally cultivated) prior to transplanting.

Management of this second site has continued and includes hand-rotovating areas of the firebreaks when deemed necessary. This management occurs when there is less than 35-50% bare ground, and the necessity for rotovating varies from year to year. Furthermore, the site has been extended twice over the past ten years and now measures 150 m x 2 m. Seeds and mature plants have been planted when they have become available (from cultivated plants) in the spring and early summer. This has not been every year as it depends on availability.

CONSEQUENCES

By 2005, the second site was well established,

with 'carpets' of perennial knawel in some areas, comprising hundreds of individuals.

Very little active management has been necessary since 1996 due to regular sheep and rabbit *Oryctolagus cuniculus* grazing at the site. The number of sheep varies from year to year, depending on their availability, and grazing has ranged from low to medium intensity.

Conclusions: To date the reintroduction of perennial knawel to Thetford National Nature Reserve appears to have been successful with the establishment of a persisting population. Ensuring that the ground is suitably disturbed and bare in places is essential for successful germination of seeds and growth of seedlings. The combination of hand rotovation alongside sheep and rabbit grazing has been a successful management technique at this site.