

Soil disturbance and seedling transplanting as a method of reintroduction of perennial knawel *Scleranthus perennis prostratus* at Icklingham, Suffolk, England

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SUMMARY

The endemic subspecies of perennial knawel *Scleranthus perennis prostratus* is found only in the Breckland area of eastern England. Due to marked recent declines, an attempt was made to reintroduce it to a former site in the county of Suffolk. Eighty seedlings were planted in a ploughed plot and well-watered in. Some plants were initially scuffed out by rabbits *Oryctolagus cuniculus*, but steadily numbers increased over the subsequent two years to 240 plants. However, over the next three years numbers fell to only six individuals. It is thought that too much grazing and digging up of the plants by rabbits occurred in these latter years.

BACKGROUND

In the UK the endemic subspecies of perennial knawel *Scleranthus perennis* ssp. *prostratus* is found only in the Brecklands 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 which flowers 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 soils. 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 (but where recently reintroduced – Leonard 2006).

This case study describes a reintroduction attempt at a site in Suffolk.

ACTION

Study site: In spring 1999, an old plough-cleaning area at Icklingham in the Suffolk Brecklands, was selected as a reintroduction site for perennial knawel *Scleranthus perennis prostratus*. The soil was within the required 4.9-6.8 pH range known to be preferred by the species. There was 35-50% bare ground, giving potential for seedling establishment, due to rabbit *Oryctolagus cuniculus* grazing and associated soil disturbance.

Plot treatment and introduction of perennial knawel: The plot measuring 10 m x 10 m, was ploughed in May 1999, 80 individual seedlings were planted. Seedlings were well-watered in their pots (in which they had been locally cultivated) prior to translocation and planting. Management included lightly disturbing the soil and creating more open soil using a cultivator drawn by a tractor when bare ground cover was estimated to be less than the required 35-50%.

CONSEQUENCES

In August 1999 (3-4 months after planting), 84% of the planted seedlings (67 individuals out of 80) were still alive. Of those lost most had been scraped out by rabbits. In 2000, there were 203 individual plants and rabbit activity at the site appeared to be less than in 1999. In 2001, the number of plants had risen to 240 but the following year, in 2002, there were only 75 individuals. Therefore the decision was made to rotovate the area again in order to create more open ground and therefore increase the potential for perennial knawel seedling establishment. In 2004, an additional 25 plants were introduced in order to try and bolster the dwindling population but by the end of the year, only 11 plants remained. By 2005, there were only six individuals left.

Conclusions: To date, the reintroduction of perennial knawel at Icklingham has had mixed success. Ensuring that the ground is disturbed and suitably bare (35-50% bare ground) is essential for the success of this species. From

1999 to 2001, there was the required amount of disturbance caused by low-intensity rabbit grazing and digging, for successful seedling establishment, and no active management was considered required. However, from 2002 to 2005, the number of plants declined, despite additional ground disturbance using a rotovator in an attempt to create more suitable open ground. In 2004 and 2005 the rabbit population increased and the decline in perennial knawel in these latter years is believed to have come about be due to too much rabbits grazing and digging up of the plants themselves, thus disrupting the delicate balance of too much or not enough disturbance for successful propagation of the species.

REFERENCES

Leonard Y. (2006) Reintroduction of perennial knawel *Scleranthus perennis prostratus* to Thetford National Nature Reserve, Norfolk, England. *Conservation Evidence*, 3, 9-10.