Spray treatment of bracken *Pteridium aquilinum* using Asulox herbicide at Blackhill, Dorset, England

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SUMMARY

An area of silver birch *Betula pendula* (40% cover) was cleared during the winter of 1995-1996. Two summers later, the cleared area and an adjacent area of open heath were sprayed with Asulox herbicide to control invasive bracken *Pteridium aquilinum* growth. Seven years after the last spray treatment,bracken was dominant throughout the area (median cover in sample plots 80%; cover estimate range 40%-90%). Whilst achieving short-term success, longer term evidence suggests that bracken management needs to be ongoing at this site.

BACKGROUND

Bracken *Pteridium aquilinum*, forms dense stands on many heathland sites in lowland Britain. These stands can dominate the heath, shading out less vigorous plants. The litter created by dead bracken may also form a dense, thick carpet further inhibiting other plant growth. There are a number of different techniques available to land managers who wish to control bracken, for example bruising, rolling, cutting, spraying or using livestock, such as pigs. A herbicide treatment of bracken undertaken by the Royal Society for the Protection of Birds' (RSPB) Heathland Project at Blackhill Site of Special Scientific Interest (SSSI) southern England, is described here.

ACTION

Birch clearance: An area of birch *Betula* (40% cover) was cleared from Blackhill SSSI (National Grid ref: SY 836942) in Dorset, over the winter of 1995 – 1996, by members of the RSPB Heathland Project team. Brash arising from the clearance was burnt on site.

Herbicide treatment: Two summers later (1997) the area that had been cleared and adjacent areas of open heath were sprayed with Asulox (a herbicide commonly used to control bracken) to control the scattered bracken growth that had appeared following the earlier birch clearance. The spraying was conducted in late July/early August, during dry conditions when the bracken was in full frond. A tractor-mounted sprayer with a 6 m boom was used, spraying with Asulox at a dose rate of 11 l/ha. The following summer (1998) remaining bracken was sprayed using a knapsack sprayer. Asulox was again used, at a dose rate of 500 ml/10 litre knapsack. Approximately 3 L of Asulox and 50 ml of Agral (adjuvant) were used in total.

CONSEQUENCES

Vegetation after herbicide treatment: The area was revisited in July 2005, seven years after the last spray treatment of the bracken. Five, 10 x 10 m plots were selected at random and the percentage cover of vegetation estimated (Table 1). Bracken was dominant throughout the area (median % cover from the plots = 80%, cover estimate range 40 – 90%). The bracken was not particularly tall reaching less than 1 m (it commonly reaches over 1.5 m) and there was a range of other plant species present beneath the bracken canopy (Photo 1). A few small patches of bare ground were present (these had been used as fire sites during the original birch clearance) and there was also some patches of purple moor grass *Molinia caerulea* (Photo 2). There was evidence of considerable birch regeneration beneath the bracken. Little heather *Calluna vulgaris* (an important component species characteristic of heathland) was present. The vegetation present beneath the birch canopy prior to management is not known.

Table 1. Estimates of percentage cover in five randomly selected 10 x 10 m plots at Blackhill SSSI in 2005. (Note: percentages may add up to over 100% as estimates made for bracken canopy and plants growing underneath).

Species	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
Bracken *Pteridium aquilinum*	80	50	90	90	40
Foxglove *Digitalis purpurea*	10		10	5	
Silver birch *Betula pendula*	30	10	20	20	<5
Sheep's sorrel *Rumex acetosella*	10		5		
Bramble *Rubus fruticosus*				10	
Ivy *Hedera helix*					<5
Bilberry *Vaccinium myrtillus*	10	10			
Bare ground		30			50+

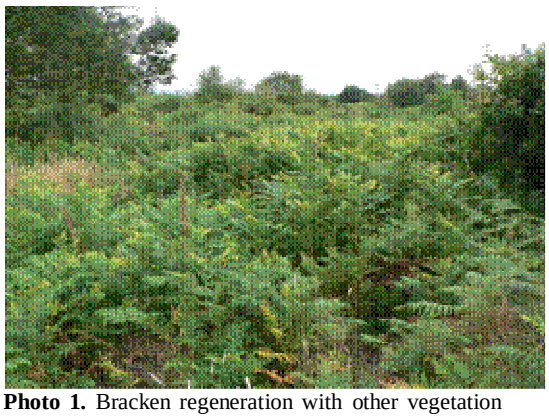

Photo 1. Bracken regeneration with other vegetation persisting beneath, Blackhill SSSI, 2005.

Photo 2. Bracken regeneration (green) with patches of purple moor-grass, Blackhill SSSI, 2005.

Conclusions: Whilst achieving short term success, it would appear that bracken has recolonised and the overall long term benefits of bracken control using Asulox are not clear. The evidence suggests that bracken management would need to be ongoing. After the initial bracken herbicide treatment, other plant species were recorded, possibly having been able to colonise bare areas created post management and initially kept open by the short-term success of the bracken treatment. There was however, little heather (a desirable component plant species characteristic of lowland heaths) present. It is unknown whether this is due to the soil quality, a lack of seed source or other factors.