



Butterfly Conservation



factsheet

High Brown Fritillary

Argynnis adippe

Conservation status

Priority Species in UK Biodiversity Action Plan.

Fully protected under Section 9 of the Wildlife and Countryside Act (1981).

This large, powerful butterfly is usually seen flying swiftly over Bracken or low vegetation in woodland clearings. In flight, the males are very difficult to separate from those of the Dark Green Fritillary, which often share the same habitats. The females are easier to separate as the Dark Green has far thicker and darker markings in the wing margins. However, both species frequently visit flowers such as thistles and Bramble where it is possible to see their distinctive underside wing markings. The High Brown Fritillary was once widespread in England and Wales but since the 1950s has undergone a dramatic decline. Now reduced to around 50 sites where work is taking place to save it from extinction.

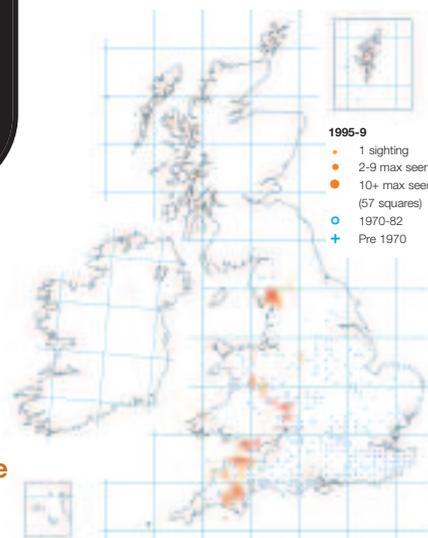
Life cycle

There is one generation per year, with adults flying from mid-June until early August in most localities and slightly later in north-west England, from late June to late August. High Brown Fritillaries overwinter as eggs, which are laid singly on leaf litter (often dead Bracken), or amongst moss growing on limestone outcrops. The larvae hatch in early spring and spend long periods basking on dead Bracken where there is little grass cover or in short, sparse vegetation. The temperatures in these microhabitats can be 15-20°C higher than in surrounding grassy vegetation, allowing the larvae to develop quickly in otherwise cool spring weather. For this reason, south facing slopes are usually favoured for breeding. The larvae are cryptically coloured and have feathered brown spines that give them the appearance of dead Bracken fronds. They pupate close to the ground under dead Bracken or leaves.

Colony structure

The butterfly forms discrete colonies that rarely contain more than a few hundred adults. However, the adults are highly mobile and often seen feeding on flowers 1-2 km away from main breeding areas. They seem to travel freely between such areas and the flight area of many colonies is over 50-100 ha. In favourable years the butterfly may establish temporary colonies in smaller or marginally suitable habitats.

	J	F	M	A	M	J	J	A	S	O	N	D
Egg	■	■	■	■	■	■	■	■	■	■	■	■
Caterpillar	■	■	■	■	■	■	■	■	■	■	■	■
Pupa	■	■	■	■	■	■	■	■	■	■	■	■
Adult	■	■	■	■	■	■	■	■	■	■	■	■



Foodplants

Common Dog-violet *Viola riviniana* is used in all habitats, but Hairy Violet *V. hirta* is also used in limestone areas. It may occasionally use Heath Dog-violet *V. canina* and Pale Dog-violet *V. lactea*.

Habitat

Two main habitats are used:

- 1 Bracken-dominated habitats or grass/Bracken mosaics on south facing slopes or level ground below 300 m (used throughout its range);
- 2 Limestone rock outcrops, usually where scrub or woodland has recently been cleared or coppiced (only used in south Cumbria/north Lancashire region). Formerly the butterfly occurred widely in woodland clearings, probably where Bracken was also present.

Habitat management for the High Brown Fritillary

Bracken-dominated habitats

Aim to maintain mosaics of moderate/dense Bracken interspersed with grassy patches and canopy gaps, with abundant violets growing through broken Bracken litter where there is limited grass cover. Suitable conditions are most easily identified in spring when violets are most conspicuous before the Bracken canopy closes. Note that most Bracken stands on uplands and moorlands are unsuitable because they are too acidic and do not contain violets.

Grazing

Extensive grazing by cattle and ponies is ideal. The trampling action of the animals through Bracken stands, in particular during winter and early spring (usually February to April), is most important to help break up the dense standing trash. This creates a network of paths running through the Bracken, which provides germination sites for violets and opens up the Bracken canopy to allow sunlight in. Some sites may be maintained in suitable condition by sheep grazing, though these animals are not as effective at trampling Bracken and maintaining good densities of violets. Grazing by sheep between April and June should only be light and extensive as these animals can remove nectar sources used by the related Pearl-bordered Fritillary.

Spraying

Bracken spraying (e.g. with Asulox) may be a useful way of restoring sites with high Bracken densities and deep litter build-up. However, extensive Bracken spraying can be damaging to existing High Brown Fritillary breeding habitat as it severely reduces Bracken density and leads to an increase in grass cover. Low dosage spraying of patches or strips may help improve conditions where Bracken has become too dense and violets rare. It could also be used to create grassy patches amongst dense stands to provide some keep for livestock and encourage traffic of grazing animals through denser areas. Spot treatments can be used to control Bracken encroachment problems and to reduce frond density.

Burning

Occasional, controlled burning may be helpful and can reduce Bracken litter and scrub and encourage violets, but only when subsequent management is planned as burning stimulates Bracken growth. Only burn on sites with a history of burning and burn in patches comprising less than one-fifth of the breeding habitat per year. Any burning undertaken must be in line with 'The Heather and Grass burning Code'.



above Breeding habitat in spring, showing mosaic of grass and dead bracken on Dartmoor

Cutting and bruising

Periodic cutting of Bracken may improve breeding conditions on ungrazed or lightly grazed sites though the effects are complex and poorly understood. Cutting should not be seen as a replacement for grazing, which appears to be the best way of maintaining good breeding habitat. If cutting is the only option, cut areas of Bracken (0.5 to 1ha) during late May or early June on a 3 to 10 year rotation, according to local site conditions but ensure no more than one-fifth of the breeding area is cut in any one year. Care must be taken in areas where ground-nesting birds occur. When cutting very dense stands a second cut in July/August may be necessary. Combine this with cutting of paths (0.5 to 1m widths) in June following different routes each year. Carry this out in June, immediately prior to the High Brown Fritillary adult flight period, thus enabling the females to easily locate suitable egg laying sites. A swipe cutter is preferable to cutting with a flail as the latter breaks up the Bracken stems too much and causes them to rot down too quickly. If bramble is a problem this should be controlled if it starts to encroach on the cut areas. Cutting on a regular basis (i.e. annually or every other year) should be avoided as this creates a very grassy sward with no standing trash or Bracken litter, which is unsuitable. Bracken-bruising machines may also reduce Bracken densities. Bruising should take place during June when the Bracken stems are sufficiently hard not to snap off, with follow-ups in July and August for maximum control. This technique is best used to create patches or strips of bruised Bracken and to vary structure across a site especially on rocky and uneven ground where cutting is difficult or dangerous. Small-scale raking and disturbance of dense Bracken litter during autumn and winter may help to maintain high densities of violets.

Scrub clearance

Patchy clearance of scrub may be needed to maintain areas of suitable open habitat.

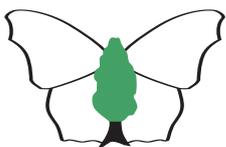
below Woodland habitat in Cumbria



Woodland/scrub clearings with limestone rock outcrops

Aim to maintain a regular supply of clearings in areas where there are rock outcrops or very thin soils.

In woodland, coppicing can provide regular openings in which suitable ground vegetation may develop. Ideally, coppice adjacent woodland plots of 0.5-2 ha in size in succession with open, sunny rides interlinking plots, to encourage the species to colonise new clearings. In scrubby habitats patchy clearance may be needed to maintain areas of suitable open habitat. Breeding may also occur in adjacent limestone grassland where soils are naturally very thin and where violets are abundant. Maintaining such habitats may also require some light grazing though precise regimes are not well understood.



Butterfly Conservation

Saving butterflies, moths and their habitats

Head Office Manor Yard East Lulworth Wareham Dorset BH20 5QP
Telephone: 0870 774 4309 Email: info@butterfly-conservation.org

www.butterfly-conservation.org

Compiled by Martin Warren and Tom Wigglesworth. Photographs by Paul Pugh and Martin Warren.

Butterfly Conservation is a registered charity and non-profit making company, limited by guarantee.

Registered Office: Manor Yard East Lulworth Wareham Dorset BH20 5QP.

Registered in England No. 2206468 - Registered Charity No. 254937

Designed and produced by cellcreative 01942 681648. Printed on 100% recycled stock including 75% post-consumer waste.



This leaflet has been sponsored by the Department for Environment, Food and Rural Affairs. Details of Defra's Environmental Stewardship Scheme can be found at www.defra.gov.uk/erdp/schemes/es/default.htm

The scheme includes Higher Level Stewardship, which supports management for targeted butterflies, moths and other biodiversity.