Managing for bespoke species/assemblages within Countryside Stewardship – guidance template

Species/assemblage name

High Brown Fritillary (*Argynnis adippe*)

Image David Dennis, Butterfly Conservation

Conservation status

Section 41

Cleared Coppice (Caroline Bulman, Butterfly Conservation)

Introduction

Significant declines due to habitat loss and fragmentation, scrub encroachment, the reduction in winter grazing on grassland/bracken mosaic and decline in woodland management.

High Brown Fritillary is one of our most threatened butterflies and has suffered a 79% decline in distribution since the 1970s and an 81% decrease in abundance over the last ten years alone. At monitored sites the species suffered its worst year on record during 2012 with a 61% decline compared to 2011. This once widespread species is now only found in Lancashire and Cumbria on the Morecambe Bay Limestones; the Alun Valley in south Wales; and on Exmoor and Dartmoor in the south-west of England.

The species uses Bracken-dominated grassland habitats and limestone rock outcrops where the host plant, Common Dog-violet, occurs. In limestone areas in the north-west Hairy Violet *Viola hirta* is also used. High Brown Fritillary overwinters in the egg stage, which is laid singly close to violet plants on dead bracken stems, leaf litter or amongst moss growing on limestone outcrops. In early spring the larvae hatch and spend much of the time basking on dead Bracken or sparse vegetation, moving onto nearby violets to feed for short periods. The microclimate is critical for larval success and these basking areas are 15–20°C higher than in the surrounding grassy vegetation, allowing larvae to develop quickly in the cool spring conditions. Favoured breeding sites are therefore in broken-down Bracken litter with abundant violets, interspersed with occasional grassy patches containing Bramble or thistle as a nectar source and connected to other suitable breeding areas along a valley system. This requirement for both extensive areas of habitat and highly specific breeding sites is the main reason why this butterfly has declined, as these conditions can only be maintained by extensive livestock grazing, with a combination of cattle, ponies and sheep together with ongoing scrub control and prevent shading of host plants. As the animals graze, particularly cattle, they help to break up the dead bracken litter and create the mosaic of grass and bracken that allows violets to flourish. If grazing ceases, the bracken litter builds up, reducing the abundance of violets and increasing cover of Bramble and scrub.

Why a bespoke species/assemblage?

The High Brown Fritillary requires tailored management for each habitat type that it occurs in. The species needs sunny and sheltered conditions with abundant foodplant and suitable warm microclimates created by dead plant material for larval development. Techniques such as coppicing, and scrub clearance in woodland habitats and bracken and scrub management and grazing in grass/bracken habitats should be used. These methods are not characteristic of routine management based on the 'mosaic' approach.

When and where to apply this guidance

At all sites where the species is present, on historical sites where restoration is undertaken to encourage recolonization or potential new sites. High Brown Fritillary is a strong flier and a site may be readily colonised up to 10km from the nearest occupied site.

Developing a Countryside Stewardship agreement

Relevant CS options

GS6	Management of species rich grassland
GS7	Restoration towards species rich grassland
GS13	Management of grassland for target features
WD2	Woodland improvement
WD7	Management of successional areas and scrub
WD8	Creation of successional areas of scrub
SP6	Cattle grazing supplement
SP8	Native Breeds at Risk supplement
SB4	Chemical bracken control
SB5	Mechanical bracken control
UP3	Management of moorland

In species rich grassland bracken areas

Bracken-dominated habitats
The aim is 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.

Prescription guidance for GS6/GS7

P42 - [Control/Manage] [scrub/ SPECIES] [in XXXX] [by method] so that [by year [NUMBER]] cover [of the [LOCATION] is no more than [NUMBER] %]. [Remove all cut material.]

P449 - Carry out a controlled burn [where bracken litter is more than 25% or where scrub needs to be removed by burning in parcels XXXX but comprising no more than one fifth of

the breeding habitat] during January or February in years [XXX] following The Heather and Grass Burning Best Practice Guides.

(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.)

P455 - Manage [one fifth of the area per year of dense Bracken stands / deep Bracken litter layers] rotationally in years [1 to X] [by cutting / bruising / spraying. Do not clear fell except as a restoration tool where the butterfly is not present]. Cut bracken by hand on [XXXX] historic and archaeological features.

P464 - Maintain the extent of [up to 15cm deep bracken litter layer over 40% of the area] of interest within the [grassland/scrub/successional area/mosaic /XXXX] as identified [XXXX].

P470 - [By year X], [at least 2 moderate/high value indicator species XXXX for Priority habitat feature XXXX must be frequent/in flower during May and June and 2 high value indicator species XXXX for Priority habitat feature XXXX occasional (as defined in XXXX (currently the FEP Handbook)]. [By year X], cover of [species XXXX must be less than 10% / between 50% and 90%/frequent].

P667 - [From [establishment] onwards], manage by [cattle and/or hardy pony grazing in the late winter/early spring and summer] [to maintain up to 15cm deep bracken litter layer over 40% of the area] [so that the bracken grass mosaic is maintained with plenty of edge habitat and livestock paths in the summer].

P706 - Keep a monthly record of stock numbers grazing on [Parcel(s) XXXX]. Make the record available on request.

IoS for GS6/GS7

[By year XX/ in all years], cover of wildflowers in the sward (excluding undesirable species but including rushes and sedges), should be between [20% and 40%]. At least [40%] of wild flowers should be flowering during [May-July].

[By year X/ in all years], species [Common dog violet and other *Viola* species should be (locally) frequent], and flowering during [May to July]

[By year X/ in all years], cover of [bracken litter should be less than 15cm deep and covering 40% to 60% of the area]

[By year X/ in all years] [High Brown Fritillary] [should be present and maintained] on the site

Prescription guidance for GS13

In non-priority grassland bracken areas

P42 - [Control/Manage] [scrub/ SPECIES] [in XXXX] [by method] so that [by year [NUMBER]] cover [of the [LOCATION] is no more than [NUMBER]%. [Remove all cut

material.]

P138 - Retain the full extent of well-established scrub [where cover is below 5%]. [Where the cover is 5% or greater, maintain scrub over at least 5% and a maximum of 10% of the parcel area.] It must be retained as discrete small patches, lines and occasional individual bushes scattered across the site. [Do not cut more than half of the scrub in any one year except on historic and archaeological features.]

P455 - Manage [one fifth of the area per year of dense Bracken stands / deep Bracken litter layers] rotationally in years [1 to X] [by cutting / bruising / spraying. Do not clear fell except as a restoration tool where the butterfly is not present]. Cut bracken by hand on [XXXX] historic and archaeological features.

P470 - [By year X], [at least 2 moderate/high value indicator species XXXX for Priority habitat feature XXXX must be frequent/in flower during May and June and 2 high value indicator species XXXX for Priority habitat feature XXXX occasional (as defined in XXXX (currently the FEP Handbook)]. [By year X], cover of [species XXXX must be less than 10% / between 50% and 90%/frequent].

P520 - Do not supplementary feed [except:

o [for the provision of mineral blocks (non-energy based)]

o [scattering of hay/haylage on areas XXXX identified in XXXX]

o [concentrates/XXXX on areas XXXX identified in XXXX]].

P667 - [From [year NUMBER /establishment] onwards], manage by [cattle and/or hardy pony grazing in the late winter/early spring and summer] [to maintain up to 15cm deep bracken litter layer over 40% of the area] [so that the bracken grass mosaic is maintained with plenty of edge habitat and livestock paths in the summer].

IoS for GS13

See GS6/GS7

Prescriptions SP6/SP8 to be used for 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 High Brown Fritillary.

Scrub and successional areas

Patchy clearance of scrub may be needed to maintain areas of suitable open habitat. Bracken/grassland/scrub mosaics also require grazing in summer and late winter/early spring to maintain suitable conditions.

Prescription guidance for WD7/WD8

P30 - Do not plough, cultivate or re-seed. – *Both Tiers*

P42 - [Control/Manage] [scrub/ SPECIES] [in XXXX] [by method] so that [by year [NUMBER]] cover [of the [LOCATION] is no more than [NUMBER]%. [Remove all cut material.] - *Higher Tier*

P455 - Manage [dense Bracken stands / deep Bracken litter layers] rotationally in years [1 to X] [by cutting / bruising / spraying /]. Cut bracken by hand on [XXXX] historic and archaeological features. – *Higher Tier*P578

P579 - Graze in years [1 to 5] to maintain areas of [up to 15cm deep bracken litter layer over 40% of the area so that the bracken grass mosaic is maintained with plenty of edge habitat and livestock paths in the summer]. – *Higher Tier*

IoS for WD7/WD8

[By year X] shallow (<15cm deep) bracken litter extends over at least [10%] of the total area.

[By year X] Violets growing in areas of shallow (<15cm deep) bracken litter are [at least occasional] during [late winter/ early spring].

[In each year] fresh gaps/ pathways through bracken stands (that result in the exposure of bracken litter to direct sunlight) are at least [occasional] in June and July.

[By year 2] one or more of species [bugle, daisy, XXXX] are in flower during May and June, and at least [occasional] across the target area.

[By year XX], the following desirable species [plant or animal] are [present / frequent / at least occasional.]

[By year XX], the area of bare ground is between [5% and 10%].

[By year 2], the following undesirable species [ragwort / creeping thistle / XXXX] are no more than occasional.

Woodland/scrub clearings with limestone rock outcrops

Prescription guidance for WD2

A woodland management plan (PA3) would be required for the site following the ideal management described below:
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.

Where bracken is an issue, WD7 or SB4/SB5 could be used to rotationally manage bracken.

Prescription guidance for UP3

P42 – [Control/Manage] [scrub/SPECIES] [in XXXX] [by method] so that [by year [NUMBER]] cover [of the [LOCATION] is no more than [NUMBER]%. [Remove all cut material.]

P520 – Do not supplementary feed [except:

o [for the provision of mineral blocks (non-energy based)]

o [scattering of hay/haylage on areas XXXX identified in XXXX]

o [concentrates/XXXX on areas XXXX identified in XXXX]].

P573 – In years 1 to 5] M/manage [SPECIES] scrub by rotational cutting [every 5 years] [as shown on REF] to achieve cover of [at least 5%/between 1% and 5%]. [Do not cut more than x% of the scrub in any one year.][Never completely eradicate scrub from the site.]

P593 – Only graze [Parcel(s) XXXX] in accordance with the stocking calendar which includes minimum and maximum stocking rates by grazing animal type by month.

P705 – Keep a monthly record of stock numbers grazing on [Parcel(s) XXXX]. The record must include the number of animals by species [cattle/sheep/ponies] and the number of grazing days by each species. Make the record available on request and submit a copy with your annual claim.

P697 – Carry out the management for [priority s41 species] [so that by year [X] [VEGETATION CONDITIONS]][as set out in XXXX/Implementation Plan/Feasibility Study produced by [name, organisation] dated [date]].

IoS for UP3

By year [X] cover of typical emergent pavement flora and cliff-top vegetation should be at least [25% of total vegetation cover, i.e. excluding bare rock]."

By year [X] the cover of all undesirable species ([false oat-grass, crested dog's-tail, brambles, creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common (stinging) nettle and other pernicious perennial species]) should be less than [5% of vegetation cover].

By year [X] the cover of undesirable woody species ([sycamore, beech, blackthorn and cotoneasters]) should be less than [10% of the woody cover].

There should be no evidence of [new] damage to the pavement surface.

Monitoring:
Timed count

Further information

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.

Supplementary feeding

Sometimes it can be useful to place mineral blocks or hay in strategic places to encourage cattle to trample through a heavy bracken stand. This has been carried out successfully to encourage cattle down/across slopes.

A Factsheet (with ideal habitat management photographs) is available from Butterfly Conservation's website which can be given to landowners.

http://butterfly-conservation.org/files/high_brown_fritillary-psf.pdf

Authorship/version control

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