

Dartmoor Delivery Plan for Pearl Bordered and High Brown Fritillaries

Description and Importance of the Species

The two species have been combined in this Action Plan because they share very similar habitat requirements on Dartmoor. The high brown fritillary is the more rare species, and all sites with a population of high brown fritillary also have pearl-bordered fritillaries. Like all fritillary butterflies, the two species are deep orange in colour with black markings. The pearl-bordered fritillary is distinguished from the similar small pearl-bordered fritillary by having two large silver 'pearls' and a row of seven small pearls bordered by orange chevrons on the underside of the hind wing. It is one of the earliest butterflies to appear, emerging as a butterfly in late April on south-facing bracken slopes on Dartmoor. The flight period is generally until late May. The high brown fritillary is a larger butterfly, and has pale green hind wings with mottled white, black and orange markings. The row of brown marks with central white pupils on the underside of the hind wing distinguishes the butterfly from the similar dark green fritillary. The adults start to emerge in mid-June and can be seen until early August. Both species lay their eggs on violet leaves, the larval food plant, or on bracken or leaf litter close to violet plants. When fully grown, the pearl-bordered caterpillars are 2.5cm long jet-black with black, yellow or orange spikes; they emerge about two weeks after egg-laying, they then hibernate in the bracken litter until early spring and spend much time basking in bracken litter, before pupating and emerging as butterflies a few weeks later. High brown caterpillars are brown with dark pink spiky hairs, and are very well camouflaged in dead bracken litter. They overwinter in the egg stage, and hatch in March when warm conditions are needed for the larvae to develop rapidly. Both species are semi-colonial, though they can disperse widely between colonies and their distribution pattern is more akin to a metapopulation. Isolated or fragmented populations are very vulnerable.



Pearl-bordered fritillary, copyright DNPA



High brown fritillary, copyright DNPA

Whilst both fritillary species are still widespread across most of Europe, they have suffered dramatic declines in England and Wales in the last 50 years, with losses being more widespread and critical for high brown fritillaries. The pearl-bordered fritillary is now locally extinct in most of Wales and central and eastern England. The high brown fritillary can now only be found in parts of Devon, Wales, Cumbria and Lancashire. They are listed on Schedule 5 of the *Wildlife and Countryside Act* and are considered to be 'Nationally Scarce' in Britain.

Current Status on Dartmoor

The population of pearl-bordered fritillaries on Dartmoor is considered to be relatively stable: the average over the last four years shows that the population consists of around 60 sites around the National Park, which is more or less unchanged since the 1990s. This represents about 20% of the UK total population. The average count of high brown fritillaries over the last five years has remained stable at an average of 13 sites, which is a decline of about 50% since the 1990s on Dartmoor. They are most abundant in the extreme west and east of Dartmoor, in the Dart and the Walkham Valleys, where there is the highest prevalence of suitable habitat. This consists of extensively grazed, south-facing, bracken slopes with an understorey of violets. It is important that there is a good layer of broken-down bracken litter, which creates the warm conditions in the spring for speedy larval development (the temperature in the bracken litter layer can be 15-20 degrees centigrade warmer than adjacent grassland). These sites can be on common land or on in-by (enclosed farmland).



Pearl-bordered and high brown fritillary habitat Pearl-bordered fritillary caterpillar, copyright DNPA

Issues affecting the Species on Dartmoor

1. Lack of grazing leading to succession of suitable bracken slopes first to dense bracken, bramble thickets and finally to scrub. However, patchy bracken and scrub control to improve grazing occurs on some sites
2. Conversely, overgrazing and poaching can also lead to the deterioration of suitable habitat into a more grassy sward
3. Extensive burning of bracken litter occurs at some sites and can destroy overwintering eggs and larvae. However, burning patches on rotation can be effective at removing dense bracken litter build-up and often subsequently results in good violet densities.
4. A recent succession of mild wet winters favours the growth of grasses and bluebells, leading to cooler ground conditions that are unsuitable for the caterpillars of these species

Current Initiatives on Dartmoor

1. Both species are monitored annually as part of the Two Moors Threatened Butterfly Project (TMTBP), which uses local Butterfly Conservation (BC) members to undertake counts on around 80 sites.
2. Through the TMTBP, sites that have pearl-bordered or high brown fritillaries are brought into suitable management through agri-environment schemes (around 60 sites).
3. Twenty-two sites are owned or managed by conservation organisations: four sites (Holne, Ramshorn, Pepperdon and Blackingstone) are in DNPA management agreements or ownership; six sites are under Devon Wildlife

Trust (DWT) management, nine sites are under National Trust (NT) management and three sites are on land in Natural England (NE) ownership; furthermore, the Woodland Trust (WT) have acquired a new site with pearl-bordered fritillaries known to be present; annual survey and management takes place at these sites.



Creating rides in bracken suitable for pearl-bordered fritillaries, copyright DNPA

Targets

1. Maintain current populations on Dartmoor with presence recorded from at least 13 high brown and 60 pearl-bordered fritillary sites a year, when measured as an average over the past five years.
2. Number of sites recorded in suitable condition to increase by 20%, from a current 80 sites to 96 sites in 2020.



Cattle grazing bracken slopes, copyright DNPA

Delivery and Monitoring

Continue annual monitoring of occupied sites, liaised through Butterfly Conservation Local Group and TMTBP

Primarily through the TMTBP, continue to bring and maintain sites in suitable management via agri-environment schemes

Continue monitoring and management on sites under responsibility of conservation organisations such as NT, DWT, NE, DNPA and WT

Target sites in close proximity to known colonies with potentially suitable habitat to manage in a way making it more suitable for colonisation

	Lead	2014	2015	2016	2017	2018
Monitoring of occupied sites	BC	x	x	x	x	x
Suitable habitat management through agri-environment schemes or individual agreements under the Two Moors Threatened Butterfly Project umbrella	TMTBP/NE	x	x	x	x	x
Suitable habitat management on sites managed by conservation organisations	DNPA, NT, DWT, WT, NE	x	x	x	x	x
Target sites in close proximity to known colonies with potentially suitable habitat to manage in a way making it more suitable for colonisation	TMTBP/NE	x	x	x	x	x