

Support for pearl-bordered fritillary conservation under the Scottish Rural Development Programme (SRDP)

Introduction

This technical guidance note is aimed at landowners, managers and their advisors who are considering undertaking woodland management for pearl-bordered fritillary under [SRDP](#). It provides information on the most suitable management to benefit the species and how this management might be achieved and assessed under SRDP.

Background

The pearl-bordered fritillary is a UKBAP Priority species as well as being listed by Scottish Natural Heritage (SNH) as a [Species Action Framework](#) (SAF) species. It is also one of the key woodland species identified for action by Forestry Commission Scotland in the [Scottish Forestry Strategy 2006](#).

Pearl-bordered fritillary is one of the most rapidly declining butterflies in Britain and Ireland. Scottish populations are declining less severely than those south of the Border and are therefore becoming of increasing significance making up over a third of the British population. It is in need of urgent conservation action.

Forestry Commission Scotland has published a [Species Action Note](#) setting out conservation needs and priorities in more depth than is included in this note.

Species information

The [pearl-bordered fritillary](#) is widespread but local in Scotland with populations in the glens of the Highlands, Grampian, Argyll, Moray and Perthshire, and an isolated population in South West Scotland around Dumfries.

In Scotland the pearl-bordered fritillary is a butterfly of woodland edges or the open spaces within woodlands and it has a one-year life cycle. It requires sunny, sheltered sites, normally south-facing hillsides, as both the adult butterfly and its caterpillar require a very warm micro-climate. Sites also tend to have short vegetation and light bracken cover that are vital for providing additional warmth, particularly important for the developing caterpillars in the spring after hibernation. The butterfly also requires violets as these are the caterpillar's sole food plant.

The adult butterflies are on the wing in the spring, usually from the middle of May until the middle of June and are only active in warm or sunny weather. They are often found in sunny sheltered locations that abound in nectar; particularly bugle, but also dandelion, bluebell and bird's-foot trefoil. The adults are very similar to the more widespread small pearl-bordered fritillary, which regularly occurs on the same sites and can be on the wing at the same time.

Pearl-bordered fritillary populations are more sustainable if sites are linked, enabling an exchange of adults between neighbouring colonies. It is a fairly mobile butterfly but most individuals will rarely move more than 1km in their lifetime - though movements of up to 5km have been recorded between colonies.

Generic management for pearl-bordered fritillary

The main threat to the butterfly is inappropriate management with the consequent loss and isolation of existing colonies. Good forest design and operational practice will often benefit pearl-bordered fritillary through the creation or maintenance of suitable linked open ground and appropriate bracken management.

Pearl-bordered fritillary requires early successional stages prior to woodland establishment. This is an ephemeral habitat with conditions slowly deteriorating as woodland establishment advances. Management therefore has to be planned carefully to ensure that suitable habitat is always present at any given time and effective networks are maintained/created.

Grazing management

Many colonies are maintained by extensive grazing, particularly by cattle and horses. This keeps sites flower rich and prevents them becoming too rank. Their heavy trampling reduces accumulations of dense bracken litter and creates germination sites for violets. The best conditions are achieved either by all year light grazing or seasonal grazing with a reduced spring/summer stocking rate, or a 2-3 month grazing break sometime between April and July. Such a regime will also lessen the need for regular scrub clearance by keeping tree regeneration in-check.

At sites where grazing is not feasible, or are being grazed solely by sheep, or livestock are not penetrating the bracken stands then alternative bracken control measures may be required. In addition sheep grazing can also be very detrimental by depleting nectar sources. In such cases a 2-3 month spring to early summer grazing break is recommended.

Grants for woodland grazing are not currently available under SRDP but suitable grazing can be undertaken under SRDP under the following options; all of which require an agreed Grazing Plan;

[Management of ancient wood pasture](#)

Only sites (or candidate sites) listed in the "Inventory of Ancient Wood Pasture in Scotland" are eligible for this option. This is a five year commitment, paying £105/ha/year for in-bye land and £50/ha/year for rough grazings.

[Scrub and tall herb communities](#)

There is a requirement to maintain an appropriate balance and mosaic between scrub and open habitat. This is a five year commitment, paying £94/ha/year.

[Management of habitat mosaics](#)

This option is only eligible on in-bye ground. This is a five year commitment, paying £104/ha/year.

[Management of species-rich grassland](#)

This option is eligible only on in-bye ground. This is a five year commitment, paying £111/ha/year.

Bracken control

Before any bracken control is undertaken it is vital that an assessment is undertaken to ensure that currently suitable pearl-bordered fritillary habitat is not targeted. Sites are best assessed in the spring before the bracken fronds have unfurled. Suitable habitat is often characterised by violets growing in shallow bracken litter (<15cm depth) and low to medium bracken density (<c20 fronds m²), in sunny, sheltered locations. Steep south-facing sites are important. Bracken control should not be undertaken in areas of currently suitable habitat.

Areas on north facing slopes or in very shady situations will not be suitable for pearl-bordered fritillary as there will be insufficient spring sunshine and thus the microclimate will be too cool.

Where control is considered necessary the aim should be to reduce both the density of bracken and the depth of the litter, rather than to eradicate it. Control should be carried out carefully and targeted at dense stands where violets are no longer able to persist. There are two main ways of controlling bracken; physical control more effectively depletes the rhizome, whilst chemical control more effectively suppresses frond production.

Chemical control of bracken

Bracken spraying may be a useful way of restoring sites with high bracken densities and deep litter build-up. 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 dense stands.

Timing of spraying is important for effective results. To ensure maximum chemical absorption and translocation to the rhizome, bracken should be sprayed when the fronds are fully expanded and bright green, and before any die-back occurs. This is usually mid-July to late August, depending on the altitude and season.

Physical control of bracken

Repeated annual cutting or bruising progressively reduces the productivity of bracken and its capacity to regenerate from the rhizome. The machinery used for physical control also tends to break up any existing litter, (an advantage over chemical methods) and it is also less dependant on weather conditions.

Bracken cutting should be targeted at more mature fronds which should be cut twice a year, about mid June and again six weeks later. This will need to be done for at least three successive years.

Crushing with a roller is less effective than cutting, but is useful on difficult terrain and as a follow-up treatment on sprayed areas. Crushing is best carried out during early frond growth while the stems are still brittle. Crushing should be done twice a year for three years, or once a year for five years.

Over time the bracken will slowly re-invade the controlled areas thus creating more suitable pearl-bordered fritillary habitat.

Bracken control can be funded under SRDP under the following option

[Bracken management programme for habitat enhancement](#)

This is available where the management of bracken will enhance an existing habitat of conservation value, i.e. pearl-bordered fritillary habitat. You must prepare and implement a systematic programme of treatment and follow-up actions, as specified within a Bracken Management Plan. This is a five year commitment that attracts a payment rate of £28ha/year. In addition the cost of primary treatment of bracken is covered (see below).

Scrub control

The maintenance and creation of open space is very important to maintain colonies and preserve/create links between them. In the absence of grazing and browsing from either deer or livestock this is best achieved through carefully planned and targeted scrub control. Ideally scrub should be cleared once 50% of glades or open space is covered with scrub over 1.5m high. Scrub clearance should be cyclical, occurring on a rotation of 3-10 years dependant on site conditions. At large sites the clearance of scrub should be staggered to produce open space at different stages of succession.

Ideally rides and paths should run east-west as such rides have a greater proportion of warmer south-facing edges. Around 25-30m wide is the perfect width for them still to be sunny, yet sheltered. The inclusion of scalloped bays (c. 25m across) at intervals along the south-facing edge will provide additional sheltered sunny habitat.

Wayleaves through woodland often support pearl-bordered fritillary colonies by providing suitable sheltered, open habitat, and their linear nature means that they can act as corridors to link neighbouring colonies. The management recommendations previously outlined for paths and rides are also relevant to wayleaves.

Glades should be at least 30m wide in sunny sheltered locations but not too big that they are too open and hence provide little shelter.

Scrub control can be funded under SRDP under the following options;

Woodland Improvement Grant

Aim is to improve existing woodlands, especially habitats and species that are a priority in the UKBAP and for environmental improvements through restructuring. This can be achieved under one or more of five outcomes.

[Long-term forest planning](#) – This requires a framework for specific woodland management actions that will enhance the environmental value of the woodland through the production of a 20 year strategic plan. This receives a payment rate of £20/ha for the first 200ha and £5/ha thereafter with a minimum payment of £400 and a maximum payment of £15,000. [Further guidance](#) is on the Forestry Commission Scotland website.

[Reducing deer impact in woodlands](#) – This provides support for reducing and maintaining deer numbers at levels that prevent damage to trees and important woodland habitats. This may be important for keeping open space within woodlands open. This receives a payment of £30/ha/year and requires the production of a Deer Management Plan.

[Improving woodland habitats and species](#) - particularly UKBAP species. This provides means to respace regeneration, pre commercial, non-commercial and small scale thinning. This attracts payment rates of between £150 - £500/ha and requires the production of a Management Plan to show how BAP species and habitats will benefit.

[Improving even-aged woodland for biodiversity](#) – This provides an opportunity to design the restocking of felled areas to benefit biodiversity. This receives a payment of £134 - £385/hectare and ideally proposals should be outlined in the Forest Plan.

[Improving non-woodland habitats](#). This allows 20% of the area to be non-woodland (but must be integral to the woodland). This outcome allows a number of options that would benefit pearl-bordered fritillary including removal of seedling trees, chipping/mulching of tree debris and removal of thicket-stage tree crops between 3-6m high to enhance biodiversity. A management plan must set out your aims and the rationale for the proposed operations.

Other woodland management

The SRDP also supports other measures that under the right circumstances will benefit pearl-bordered fritillary.

[Sustainable management of forests](#)

Aims to support sustainable management of forests and woodlands of high environmental value to protect and enhance biodiversity. This option supports net costs over a period of 10 years, subject to a review after 5 years. Payment rates are dependant upon the management undertaken.

[Woodland creation](#)

Aims to create new woods that can deliver a wide range of objectives including developing woodland habitat networks to improve biodiversity. This option supports a single payment per hectare for initial tree planting and an annual payment for 5 years. Rates of payment are dependant upon the type of woodland being established.

[Control of invasive non-native species](#)

Under this option *Rhododendron ponticum* can be controlled where this will help protect designated sites, Biodiversity Action Plan priority species and habitats. Payment rates are variable.

Capital works

There are a number of [capital works](#) that may assist pearl-bordered fritillary that are available under SRDP. Many of these costs are available in addition to the management costs outlined above. Costs for these claims must be fully justified.

Bracken control

- [Primary Treatment of Bracken](#) - £200/ha of infested land

Rhododendron eradication

- [Manual Eradication of Rhododendron](#) - £3500/ha of infested land
- [Mechanised Eradication of Rhododendron](#) - £850/ha of infested land
- [Chemical Eradication of Rhododendron](#) - £850/ha of infested land

Scrub control

- [Eradication of scrubby/woody vegetation](#) – Light cover £600/ha, intermediate cover £850/ha and heavy cover £1250/ha
- [Removal from site of the cut scrub/woody vegetation](#) – Light cover £500/ha, intermediate cover £1050/ha and heavy cover £1450/ha

[Measures to aid stock management](#)

- This includes a range of measures including assistance for fencing, restoring dykes and providing drinking water for livestock.

[Small scale tree planting](#)

- Small scale tree planting (on a site <0.25ha) - £2 per tree or shrub

[Assessment of applications](#)

SRDP applications are assessed against a number of categories, under three group headings. To have a chance of funding, the application must be able to score 'high' for as many categories as possible. The following list shows how it might be possible to score 'high' for each category, but each case will be judged on its merits by the appropriate Case Officer.

Group 1: Scale of Contribution to Regional Priorities and National Targets

- [Quality](#) – Scored high in Highland, Grampian, Tayside, Argyll and Dumfries and Galloway RPAC areas where pearl-bordered fritillary is a regional priority.
- [Quantity](#) – Scored high if you can demonstrate that your application intends '*to commit as much of your available resources as is feasible or reasonable and have not simply chosen to do the minimum*'. In the case of pearl-bordered fritillary it is therefore important to show how you will be managing for the butterfly across the entire site. This may not only mean creating/maintaining suitable breeding habitat, but also making the site more porous to pearl-bordered fritillary to encourage links with neighbouring colonies.
- [Collaboration](#) – Scored high if you can work in partnership with other applicants thus making a greater contribution. This is vital for pearl-bordered fritillary where conservation effort is required on a landscape scale.
- [Integration](#) – Scored high if you can demonstrate an integrated programme of biodiversity enhancement through two or more options e.g. by creating a joined up network of suitable habitat for pearl-bordered fritillary.
- [Multiple Outcomes](#) – Scored high if you can demonstrate that your proposals meets more than one regional priority e.g. biodiversity, landscape, climate change etc.
- [Contribution to National Targets](#) – Scored high if work is undertaken to bring (or maintain) a designated site into favourable condition, or includes proposals for woodland expansion to mitigate the effects of climate change. The latter may be useful in creating more sheltered links between neighbouring colonies in exposed sites.

Group 2: Value for Money

- [Additionality](#) – Scored high if you can demonstrate a greater contribution to the regional priority by improving upon the minimum standards. This could be achieved by liaison with Butterfly Conservation Scotland (BCS) and the implementation of site-specific advice.
- [Added Value](#) – Scored high if you can demonstrate your proposals enhance any existing activity e.g. application is a continuation of a previous woodland scheme such as WGS or SFGS.
- [Long-term Benefit](#) – Scored high for any activities whose benefits will last beyond the term of the current scheme. This could include any measures for suitable woodland establishment or creation of open ground that will persist to benefit pearl-bordered fritillary beyond the life of the application.

Group 3: Management of Risk

- [Meeting Demand](#) – Scored high for woodland management to favour pearl-bordered fritillary as the butterfly is a SAF and UKBAP species.
- [Minimising Impacts](#) – Scored high if you can demonstrate you have taken on board the advice offered by your Case Officer, other specialist advisors (such as BCS) or comments made through any consultation process your proposal was subject to. Need to identify negative impacts and mitigate against them to score a high.
- [Demonstrating Feasibility](#) – Scored high if you can provide evidence that the proposal can be successfully completed within the specified timescales, to the agreed standards. Proposals for pearl-bordered fritillary have therefore to be demonstrably deliverable.

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