

## Managing land for the Pearl-bordered Fritillary

The long-term survival of the Pearl-bordered Fritillary is more likely if sites are linked, enabling an exchange of adults between neighbouring colonies. The fragmentation of suitable habitat is damaging, making the surviving populations more isolated. At most Scottish sites the different requirements of adults and caterpillars often occur together in a mosaic. Precise habitat requirements are not fully understood, although the following general principles apply:

The caterpillars require pockets of violets beneath a light bracken cover, ideally in sunny, south-facing, sheltered locations. The majority of bracken stands are unsuitable being too dense, excluding violets. Controlling bracken by spraying can produce excellent conditions, but is detrimental if it leads to eradication. Spraying small patches or strips (c1ha) is recommended to reduce bracken density and allow reinvasion. Low dosage applications may also be beneficial.

Bracken whipping or bruising can reduce bracken density but has to be repeated over several years. Trampling by cattle or deer can also break up dense bracken stands, with violets often colonising the edges of animal paths and hoof-prints. Steep slopes and thin soils tend to prevent an excessive build up of bracken litter requiring less management.

Pearl-bordered Fritillary populations have declined where deer and livestock have been excluded under woodland regeneration schemes resulting in a loss of open space and nectar plants. Light deer browsing or stock grazing is important, however, higher levels of grazing, particularly sheep in the spring, can be damaging.

Many colonies now only survive under power-lines, the butterflies benefiting from the 7-10 year cyclical scrub clearance beneath the wayleaves. Similar management should be deployed at under-grazed and ungrazed sites to retain or create open space along paths and rides (25-30m wide) and maintain glades (at least 30m across). At larger sites this clearance should be staggered to produce open spaces at different stages of succession. Ideally rides and paths should run east-west to create a warmer south-facing edge. The inclusion of scalloped bays (c25m across) at intervals along this edge will provide additional sheltered habitat.



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# Learn about the Pearl-bordered Fritillary

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Saving butterflies, moths and their habitats



Balallan House Allan Park Stirling FK8 2QG

Telephone: 0870 770 6151 Email: scotland@butterfly-conservation.org

### Head Office

Manor Yard East Lulworth Wareham Dorset BH20 5QP Telephone: 0870 774 4309

[www.butterfly-conservation.org](http://www.butterfly-conservation.org) Email: info@butterfly-conservation.org

Photographs by Tom Brereton, Ern Emmet, Tom Prescott, Martin Warren and David Whitaker

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The Pearl-bordered Fritillary, so-called because of the line of white "pearls" bordering the edge of the underwing, is a very attractive medium-sized butterfly. Between 1982 and 1997 its UK range contracted by over 50%, making it one of the most rapidly declining butterflies in Britain.

It is predominantly associated with the edges, or open spaces within, south-facing woodlands with a mosaic of light bracken and violets. Bugle is the adult's principle nectar plant but other blue or yellow flowers are used. Violets are the caterpillar's sole foodplant.

The UK government has listed the Pearl-bordered Fritillary as a UK Biodiversity Action Plan Priority species, in need of urgent conservation action.



In early spring the caterpillar basks on dead leaves or bracken litter



Many Pearl-bordered Fritillary colonies are now confined to wayleaves



Breeding habitat; light bracken and violet mosaic

# misidentified and under-recorded

In 1997/8 a national Pearl-bordered Fritillary *Boloria euphrosyne* survey identified 150 colonies at 120 sites in Scotland. However, its true status is unclear due to under-recording and its close similarity to the more widespread Small Pearl-bordered Fritillary. In Scotland colonies can be found in the glens of Perthshire, Grampian, Highland, Argyll and Moray. There are also small and isolated colonies near Dumfries.

### Early stages

The eggs are normally laid singly on dead bracken or leaf litter near to, and occasionally on, the foodplant. Breeding sites are usually dry, sunny, sheltered and south-facing with short vegetation which provides a warm micro-climate essential for the development of the caterpillars in the spring. The eggs hatch within a fortnight.

The caterpillars feed on common dog-violet and occasionally marsh violet. They grow slowly, feeding in spells of warm weather before hibernating, usually beneath bracken litter, with the onset of cooler weather in September.

The black, spiny caterpillars emerge on the first sunny days in March to bask before crawling up to 10m away to feed. The additional warmth provided by the bracken litter, bare ground or rock is crucial for their development. Pupation takes place on the ground and lasts 2-3 weeks.

### Adult

The adults can be seen from late April/early May until mid-June often congregating in sunny, sheltered sites with patches of nectar plants. Both sexes are very similar, the females being slightly larger. Males flit and glide low over the ground, patrolling for females.

Colonies vary in size from a few 10s to 1000s of butterflies. Individuals rarely move more than 1km in their lifetime, but movements of up to 4.5km have been recorded between colonies.

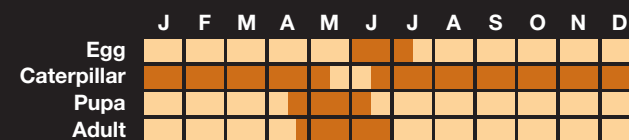
### Identification master class

Small and Pearl-bordered Fritillaries are best differentiated by their underwing pattern. A net or binoculars are recommended. Identifications based on habitat, upperwing pattern or size are unreliable; female Small Pearls are on average larger than male Pearls! Flight periods vary each year but can be a guide, however, there is a large overlap in June.

**Size bars: actual size**  
**Adult male (wing span)**  
 38-46mm (c1<sup>1</sup>/<sub>2</sub>-1<sup>7</sup>/<sub>8</sub>in)

**Adult female (wing span)**  
 43-47mm (c1<sup>3</sup>/<sub>4</sub>-1<sup>7</sup>/<sub>8</sub>in)

**Caterpillar (fully grown)**  
 22-25mm (c7/<sub>8</sub>-1in)



Life-cycle of the Pearl-bordered Fritillary

### Small Pearl-bordered Fritillary



< distinguishing features >

large **black dot** small

more than 2 **inner white cells** only 2

black **chevrons near edge of wing** brown

< main flight period >

### Pearl-bordered Fritillary



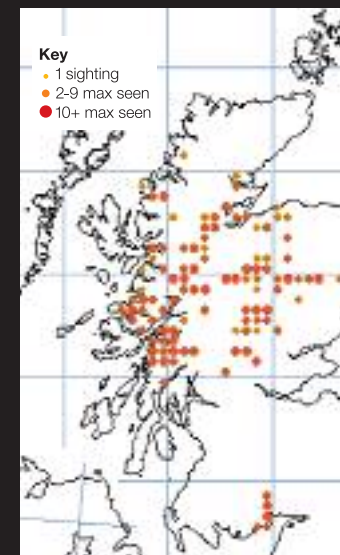
## Do you have the Pearl-bordered Fritillary on your land?

If you have the right habitats for Pearl-bordered Fritillary on your land, we are happy to provide advice on suitable management.

## Do you want to get involved?

We need your help to undertake survey and monitoring work to determine the distribution and changes in the Pearl-bordered Fritillary population. If you want to help or have seen Pearl-bordered Fritillary we would like to know.

If you can help us with either of the above please contact us, details on the back page



Distribution of the Pearl-bordered Fritillary (1995-1999)