



Butterfly
Conservation
Scotland



Small Blue

Cupido minimus

Conservation status

Included on the Scottish Biodiversity List as considered to be of principal importance for biodiversity conservation in Scotland and in most urgent need of conservation action.

Wingspan 18-27mm



Small Blue is the U.K.'s smallest butterfly and is easily overlooked due to its size and dusky colouration and because it is confined to small patches of grassland where Kidney Vetch, its sole larval foodplant, grows. In Scotland it is primarily a coastal species with isolated colonies along the east coast from Caithness in the far north, around the Moray Firth, Angus, and Berwickshire in the south. It also occurs inland in Badenoch and Strathspey, and at a single location on the west coast near Ayr following a recent successful reintroduction.

Identification

Male Small Blues tend to be dark grey black with a hint of blue, whereas females are browner. Due to this general demure appearance and lack of strong blue colouration, the Small Blue is very unlikely to be confused with Scotland's most widespread blue butterfly the Common Blue, or even the Holly Blue that is steadily colonising gardens up to the Central Belt. But, confusion often arises with the day-flying Chimney Sweeper moth. However, the moth is larger and completely black except for feint white fringes at the tips of its forewings.

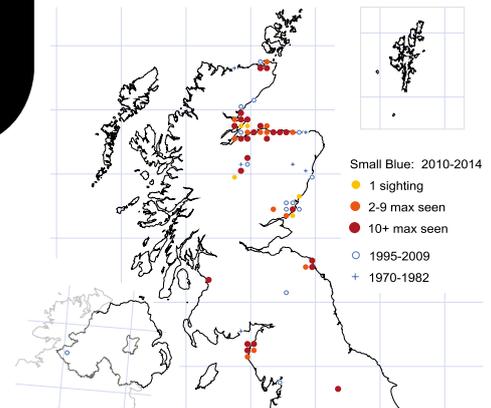
Life cycle

Small Blue is single brooded in Scotland with adults usually flying from late May to early July. Eggs are laid singly, tucked into partially open flower heads of Kidney Vetch, isolated plants or those on the edge of a patch are often selected. Larvae feed on the developing flowers, burrowing into the floret and are occasionally tended by ants. Females do not normally lay in flowers where an egg is already present as only one larva can mature on a single flower head. From mid-July the larvae can be seen on the flower heads, where they bite holes in the base of the flowers to eat the seeds. When fully grown they descend to the ground and pass the winter in soil crevices or under moss, pupating in the spring.

Population structure

The butterfly typically forms small, discrete colonies (<30 individuals at peak in most years). Numbers can fluctuate greatly from year to year and in some year's the colony's presence may only be confirmed by the presence of eggs. It is normally highly sedentary, with adults rarely moving more than 40m, males being more sedentary than females. However, the butterfly has been known to colonise newly created or restored sites several kilometres from existing colonies. These natural colonisations are more likely if the source population is large and there is good connectivity between colonies.

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



Foodplants

The sole foodplant is Kidney Vetch *Anthyllis vulneraria*. The larvae live only in the flower heads where they feed on developing anthers and seed.

Habitat

The Small Blue relies on grassland habitats that provide shelter for the adults and early successional conditions where Kidney Vetch can flourish. In Scotland most colonies are found on steep coastal grasslands and sand dunes but some colonies occur on man-made habitats including quarries, disused railway lines and tracksides. Some of the inland colonies in the Cairngorms are found on river shingles.

Below Coastal Kidney Vetch rich grassland



Habitat management for Small Blue

Aim to maintain a mosaic of short and tall vegetation with a high density of flowering Kidney Vetch.

As Kidney Vetch is a short-lived poor competitor, regular provision of sparsely vegetated swards is required to enable seedlings to establish. At a landscape-scale, annual restoration or creation of new breeding habitat should be undertaken on rotation. Management is aimed at maximising the abundance of flowering Kidney Vetch and therefore some grassland management practices are generally incompatible (e.g. summer grazing and mowing). Tall grasses and/or topographical shelter (e.g. banks, ditches) are essential to provide male territories and roosting sites.

Natural disturbance and instability

Many Scottish Small Blue sites survive without the need for regular management due to their inherent instability, e.g. steep coastal grasslands, river shingles, tracksides and quarry faces, as succession is kept in check by disturbance with Kidney Vetch colonising the naturally created bare ground. However, even in these more dynamic habitats some intervention may be required if Kidney Vetch becomes scarce.

Grazing

Most Small Blue sites in Scotland do not have a history of grazing. On brownfield sites, sand dunes and steep coastal grasslands grazing is often impractical, unless the site is well vegetated. However, where appropriate, grassland habitat can be maintained by livestock to create open swards with bare ground. Light autumn and early winter grazing is ideal, though year round extensive cattle grazing may suit large sites and their hoof prints can provide germination sites for the foodplant.

Pony and sheep grazing can result in a tight, closed sward making germination less likely, whilst overgrazing can destroy roosting sites. Summer sheep grazing is not recommended as this can remove the flower heads where larvae are feeding and reduce seed. Rabbits also preferentially graze the palatable flowers and may even uproot plants.

Ground Disturbance

Periodic and/or patchy disturbance, especially on slopes, can help maintain suitable breeding habitat. This can be achieved by using handtools although on a larger scale machinery (tractors and bulldozers) may be required. Regular disturbance on some sites is essential to maintain the supply of seedlings and continuity of flowering Kidney Vetch. Undertake ground disturbance on rotation at a relatively small-scale and on only a proportion of a site, avoiding known roosting areas and ensuring that species-rich swards are not damaged.

Top Right Almost fully grown Small Blue larva

Bottom Right Hatched Small Blue Egg

Left Small Blue landscape

Habitat Creation

Breeding conditions for the Small Blue can be created by establishing butterfly banks or digging scrapes. These only provide suitable habitat for a few years and so should be created on a regular rotation. Ensure there are no archaeological features present and choose south-facing locations with nutrient poor soils or substrates, inverting any nutrient rich soil present in a butterfly bank.

Use earth-moving machinery for large-scale operations but even small (1m x 1m) scrapes dug with hand tools can be beneficial. Sites can be allowed to colonise naturally, or seeded in autumn or winter with Kidney Vetch of local provenance collected in late summer. Sowing at the top of a bank will encourage further seeding down slope. Plug-planting Kidney Vetch is less successful as plants may be dug up by rabbits and badgers, and dry out.

For more information on habitat creation techniques download the following Management Factsheets from Butterfly Conservation's website: Creating a Butterfly Bank; Creating a Scrape; Seeding and Plug-planting for Butterflies.



Connectivity

Small Blue is under threat from the increasing isolation of populations as a result of habitat loss due to its reliance on early successional stages. Restoring connections between colonies is, therefore, vital for the long-term conservation of this species. Even small habitat creation schemes can provide important stepping stones in the landscape.

How to survey/monitor

The best method is to search for adults. Eggs, either intact or hatched, can be found by diligent searches of flower heads during, or shortly after, the egg laying period, whilst fully grown larvae can be found within the flower heads from mid-July. Surveys to locate Kidney Vetch can be helpful to identify potential new sites. Monitoring is best undertaken by adult timed counts or single species transects, whilst habitat condition surveys can detect the need for habitat management by identifying a lack of seedlings in a closed turf.



Saving butterflies, moths and our environment

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