

Species Action Plan for Sussex

Duke of Burgundy butterfly *Hamearis lucina*

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I. Introduction/Current Status

I.1 Distribution

The Duke of Burgundy has a western Palaearctic distribution occurring in southern and northern Europe eastwards to the Balkans. It has its southernmost limit in northern and western Spain and is absent from Ireland and the Mediterranean islands. The butterfly is declining throughout Europe, is extinct in Lithuania and European Turkey and considered endangered in Latvia, Luxembourg and south east Russia. Major declines (greater than 50%) have occurred in Albania, Belgium, Luxembourg and Latvia, with declines of 25 – 50% in Denmark, Poland, Sweden and the UK (Swaay et al. 1997).

The Duke of Burgundy has a primarily central southern distribution in England, with isolated populations on the limestone of south Cumbria/north Lancashire and the north Yorkshire moors. The Duke of Burgundy was once widespread throughout much of lowland England and there are a few historical (pre 1940) records from Wales. The butterfly is found on most areas of the chalk grassland of lowland England, with centres of distribution in Wiltshire, Hampshire and West Sussex.

The Duke of Burgundy occurs in two main habitat types:

- Calcicolous grassland that is ungrazed or lightly grazed, with scrub or some topographical shelter present
- Coppice woodland and woods with wide rides and areas of grassland,

In Sussex, the last woodland colony apparently became extinct in 1992 and a survey in 1996 found only 8 downland sites compared to 18 sites in the early 1990s. While this may have missed some colonies in what was a very poor year for the species, it appears that its decline is continuing. There may now only be three or four very small sites left in Sussex where the species exists. This butterfly does not occur on the Downs of East Sussex.

1.2 Population

The Duke of Burgundy occurs typically in small colonies of up to a few hundred individuals. A few larger colonies (>1000 individuals) are known in the UK.

In the UK this butterfly has declined in many areas since 1950. This decline has been most marked in woodlands in central and eastern counties of England. Evidence suggests that it is becoming more restricted in its remaining southern strongholds on calcicolous grassland. There are believed to be fewer than 20 woodland sites and 100 – 200 scrub/grassland sites (Oates, 1985).

The current rate of loss of colonies in southern England is estimated at 24% per decade, during the 1980s (Warren 1993a). M. Oates estimates a 98% decline in woodland sites between 1950 and 1990. The number of colonies in the UK is estimated at between 100 and 200 most of which are small. The national distribution map is now out of date but most core areas are known from local surveys and can be used to target conservation action.

Many woodland habitats of the Duke of Burgundy have been lost through the lack of suitable management (details in section 2). However, calcicolous grassland colonies have apparently become more numerous with many colonies associated with scrub edge habitats. The butterfly has benefited, at least in the short to medium term, from the decline of grazing on Downland and southern limestone grasslands through myxomatosis and the abandonment of pockets of marginal land.

1.3 Protected Status

The Duke of Burgundy is listed under schedule 5 of the Wildlife and Countryside Act, for sale only.

(It is a criminal offence to sell, offer or expose for sale, or possess or transport for the purposes of sale, whether alive or dead, any wild specimen and parts or derivatives of them; or for anyone to publish or cause to be published any advertisement indicating or suggesting that they buy or sell such things.)

1.4 Ecology and Habitat Management

Matthew Oates and others have studied the ecological requirements of the Duke of Burgundy over several years. As with other butterflies, their research revealed that the requirements of the adults, despite the territorial nature of the males, are fairly broad and unlikely to be limiting. However, the requirements of the larval and egg stages are highly specific. In both

the woodland and grassland habitats these requirements are structurally quite similar and dependent on regular management.

A wide range of yellow or white spring flowers are utilised as nectar sources, although the butterfly is not observed feeding on nectar often. The commonest larval food plant in woodland is Primrose *Primula vulgaris* and on chalk and limestone Cowslip *Primula veris*. Some colonies utilise both species and there is some evidence that even in woodland Cowslip is the preferred food plant. (Oates 1986).

Woodland Habitats

Sparks et al. (1994) found that the eggs were laid in young conifer plantations and east west rides in deciduous woods where *P.vulgaris* is abundant and the leaves were medium sized and slightly shaded. This requirement for partly shaded plants of *P.vulgaris* which produce large flowering clumps means that the ideal conditions are short lived and that some form of regular cutting (ideally coppicing) is essential to maintain the Duke of Burgundy in woodland.

The butterfly breeds in some of the remaining actively worked hazel coppices where adults are most abundant 3 – 4 years after coppicing, in the period shortly before the woodland canopy closes. No adults were found in 1 year old coppice, unlike other coppice butterflies which favour very open conditions, and adults were also absent in closed canopy coppice older than 5 years (Warren & Thomas 1992).

As a consequence of the short-lived nature of the habitat in coppiced woodland, it may be essential to have some areas of permanent grassland within woodlands, which can also act as breeding areas.

Woodland Management Summary:

- Aim to ensure a continuity of suitable areas of regenerating woodland and /or wide grassy rides or glades with abundant *Primulus* in open sunny conditions
- Ideal conditions - woodland regrowth a few years after clearance, either in clear-felled or coppiced broad-leaved woodland
- A regular cutting sequence in close proximity is essential to ensure rapid colonisation
- A network of permanent open rides and glades is beneficial and may be essential to link clearings
- East/west rides are thought to be most suitable for breeding, especially where soil is damp and vegetation lush
- Coppicing ride edges on a short rotation may be helpful where no substantial area can be managed as coppice

Grassland/Scrub Habitats

Suitable habitat consists of chalk Downland with extensive areas of scrub and taller, tussocky vegetation, where the food plant is in the correct growth form for egg laying. The vast majority of sites occur on north or west facing slopes, possibly because the humid conditions there encourage green, lush, more suitable growth of the food plant, *P.veris* (Warren 1993a).

In scrub-invaded grassland, the eggs tend to be laid on larger plants of *P.veris*. On some sites favoured plants are partly shaded by encroaching scrub or tall tussocks, yet not so swamped as to prevent the large vertical leaves from protruding above the sward and the plant from flowering.

Turf height measurements on one downland site supporting a large population showed that 60% of eggs were laid on vegetation that was 10 – 20 cm in height, with less than 10% in

vegetation below 10 cm in height (Oates 1985). These conditions are often found along scrub or rough grassland edges, for example on the edge of tracks. However, the Duke of Burgundy can tolerate moderately heavy cattle grazing provided this takes place in autumn and winter and not during early summer. Under such grazing regimes, eggs are laid on quite small (but still permanent) leaves (5 – 10 cm in length) where turf height can be as short as 6 cm (Warren, in prep.). The Duke of Burgundy prefers grassland that is grazed by cattle rather than sheep, possible because the latter produces a tighter, shorter sward with smaller *P.veris* plants (Warren 1993b) and because *Primulus* propagate well in areas of bare ground created by cattle poaching. Many of the best ‘cowslip’ downs have a history of cattle grazing (M. Oates).

Grassland/Scrub Management Summary:

- Aim for a high density of cowslip *Primula veris*
- Sward not too tightly grazed – ideal height of 6 – 20 cm in early summer
- Sward uneven with plenty of tussocks
- Graze with cattle in autumn and winter, but not early summer. Light, late summer grazing is acceptable.
- Graze with sheep during the autumn and early winter, on a rotation (so that the same area is not grazed two years running). Do not graze with sheep during late winter (after the end of January).
- Do not graze intensively or regularly with sheep, horses or ponies.
- Control rabbit populations.
- Control suppression and competition of *Primula* by scrub or other coarse vegetation such as Tor grass *Brachypodium pinnatum* or Wood False Brome *Brachypodium sylvaticum*
- Coppice and clear scrub locally

2. Current Factors causing loss or decline

The main threats to the Duke of Burgundy butterfly are:

- Inappropriate livestock grazing on scrub edge/grassland habitat
- An increase in rabbit numbers
- Overzealous, or lack of scrub clearance
- In woodland:
 - lack of active coppice management – there has been a decline in coppicing from the early decades of the 20th century
 - lack of continuity of fellings in broad-leaved woodland, that would result in suitable open areas.
 - lack of management to keep rides open
 - the reduction in the amount of grassy clearings within woodland, due to tree planting and neglect
- Loss of semi-natural grassland on the edge of woodland may also be a major constraint to recovery
- The spread of bracken, suppressing *Primula* growth
- The fragmentation of existing and potential habitats is a current and future factor in the butterfly’s decline, especially in the Downs and woodlands of southern England.
- A possible increase in frequency and intensity of summer droughts due to climate change, particularly as many sites are on relatively thin soils.

3. National Species Action Plan

The information given in this species action plan is based directly on the national species action plan for the Duke of Burgundy butterfly, prepared by Bourn and Warren for Butterfly Conservation in 1998.

This is available on the BC website: www.butterfly-conservation.org/

4. Current Action

Nationally

The number of sites with some monitoring has steadily increased during the 1980s, to approx. 16 on Downland sites (Tubbs 1997). Two of the larger populations are covered by the National Butterfly Monitoring Scheme, which now monitors 15 sites primarily in woodland.

Quite good up-to-date national data are available for this species. The locations of large and medium sized colonies in each habitat type need to be identified in the south of its range.

Information on the location of colonies in West Sussex is available, for habitat management advisors and deliverers, from Butterfly Conservation.

There is some ecological knowledge of the butterfly's requirements in woodlands and of grazing regimes on grassland, including practical management. However, further research is required on appropriate management regimes in both habitats, particularly in scrub edge habitats.

The Duke of Burgundy is one of six species targeted in the Forestry Authority's Coppice for Butterflies Challenge grant scheme launched in 1996. This scheme aims to encourage coppice regeneration in eight target areas where this and other threatened woodland species still survive (Warren 1996; HMSO 1996). Outside these target areas a standard Woodland Improvement Grant is available to cover 50% of costs of coppice that will also benefit threatened butterflies.

Defra can tailor grassland management plans to the requirements of species where this is identified as an objective for a farm. This could include encouraging continuation of extensive grazing and the maintenance of a diverse sward structure for local biodiversity priorities such as the Duke of Burgundy.

There have been numerous reintroduction attempts in recent years but with little or no success (Oates & Warren 1990).

Sussex

The Sussex Branch of Butterfly Conservation (BC) is working with the Sussex Downs Conservation Board, West Sussex County Council and English Nature to try to ensure the conservation of the Sussex Duke of Burgundy populations. Most sites are monitored every year, by looking for adults, larval leaf damage and by egg counts. The majority of land owners and tenants are sympathetic towards butterfly conservation.

BC has made financial contributions from branch funds towards the improved management of three areas. However, this has so far been unsuccessful in preventing the decline of the Duke of Burgundy. The problems mainly relate to loss of habitat through over or under grazing and lack of active coppicing.

5. Objectives

Major objectives of the national species action plan

Immediate objectives:

- Halt the decline of the Duke of Burgundy in the UK
- Maintain viable networks of populations throughout its current range

Medium priority objective:

- Conservation action to protect and increase the number of butterfly colonies in the UK.

Long-term objective:

- Restore its 1950 range, particularly in its woodland habitat.

The objectives of the national plan will be achieved by:

- Conducting research on the distribution and ecology of the Duke of Burgundy butterfly to enable its effective conservation
- Confirming the presumed core areas of distribution of the species
- Improving information on and dissemination of the habitat requirements of the species
- Encouraging the maintenance or introduction of sympathetic grazing and scrub management regimes
- Encouraging the maintenance/restoration of coppicing and active broad-leaved woodland management throughout the current and former range of the butterfly
- Identifying potential reintroduction sites, restoring the habitat (and conducting reintroductions only if absolutely necessary).

6. Targets

This Species Action Plan is now archived

7. Potential

A possible way forward is to manage the land adjacent to known sites to enable the species to spread. This may involve re-coppicing or managing woodland that has become extremely overgrown, which will be dependant on funding and land owner cooperation.

It is now apparent that the size of site under appropriate management is the most critical factor – a large site can ensure that there is always suitable habitat for the butterfly to move into as the site goes through successional changes following management. The Sussex sites are too small to allow this movement and there is the need for the creation of suitable corridors.

8. Action Plan

This Species Action Plan is now archived

9. Monitoring/Review

The national species action plan covers the ten-year period from 1998 – 2008. It will be monitored annually and reviewed as the situation demands.

10. References

See reference list in Butterfly Conservation NSAP.

This is available on the BC website: www.butterfly-conservation.org/

11. Consultation

This Species Action Plan was prepared in consultation with the following organisations and individuals:

Butterfly Conservation (Nigel Bourn, Emily Funnell, Joyce & Peter Gay)

DEFRA

English Nature

East Sussex County Council

Forestry Authority

Sussex Biodiversity Record Centre

Sussex Wildlife Trust

Sussex Downs Conservation Board

West Sussex County Council

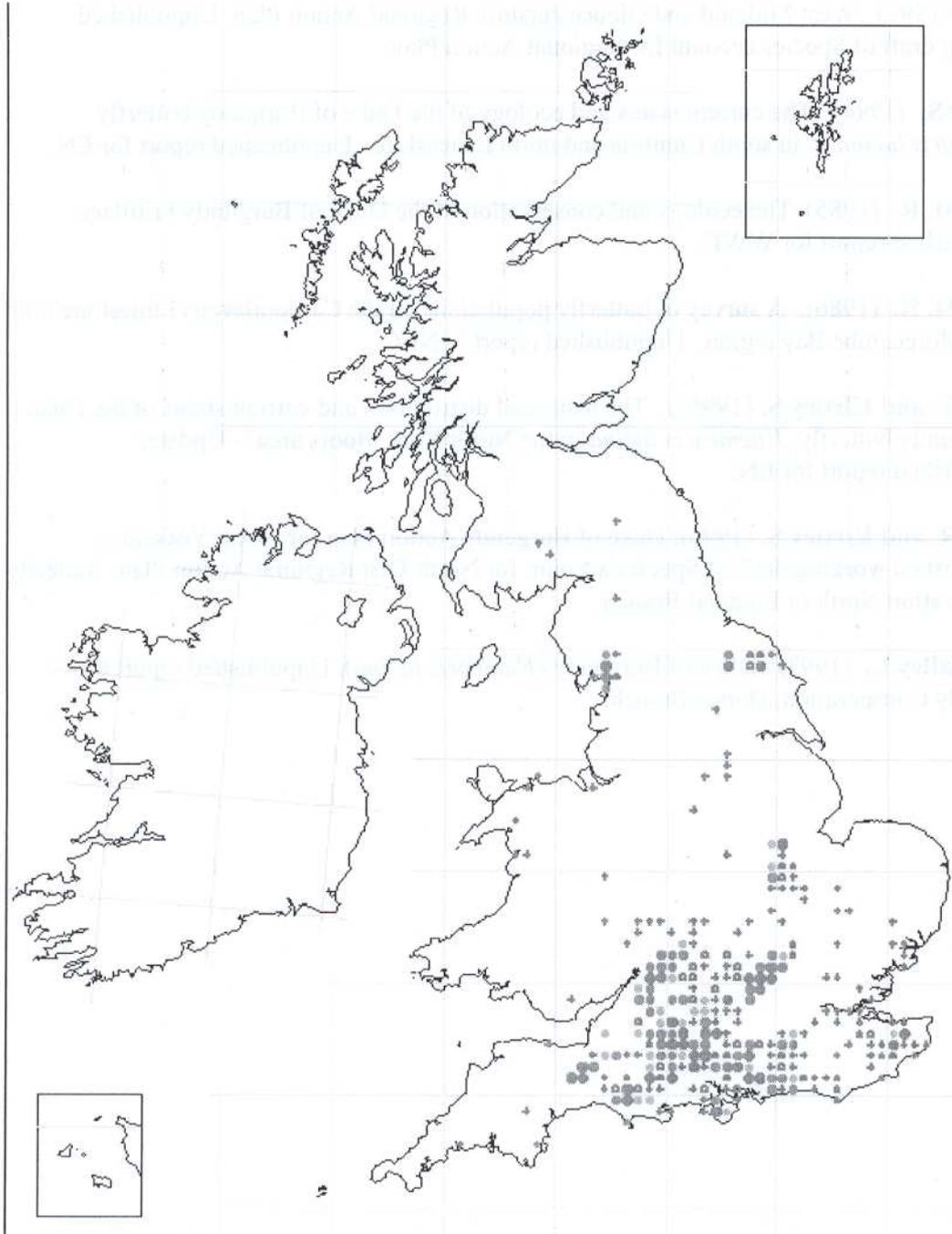
Woodland Trust

12. Appendices

Appendix I

Duke of Burgundy Distribution Map (from Butterfly Conservation NSAP)

Copyright of Butterfly Conservation/Biological Records Centre.
(Dark full spot all records from 1995-1999; open circles all records between 1970-1982; cross all pre 1970 records).



Appendix 2

Sussex Duke of Burgundy Distribution Map (Includes records from 1975 - 2002. SxBRC)

