Species Action Plan

SMALL BLUE
Cupido minimus

2000

Compiled by:

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This species action plan is an unpublished working document produced by Butterfly Conservation to focus and co-ordinate the conservation of the Small Blue in the UK over the next five to ten years. It has been prepared under the *Action for Butterflies* project which is funded by WWF-UK, English Nature, the Countryside Council for Wales and Scottish Natural Heritage. The Action Plan was prepared in consultation with the following organisations in the hope that they will participate in the actions outlined: Environment and Heritage Service (EHS), English Nature (EN), Countryside Council for Wales (CCW), Scottish Natural Heritage (SNH), The National Trust, The National Trust for Scotland, MAFF/FRCA, SERAD, The Wildlife Trusts Partnership, WWF-UK, CEH.

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Butterfly Conservation (the British Butterfly Conservation Society) has an overriding objective to ensure a future for butterflies, moths and their habitats. In order to achieve this objective its aims are to:

- raise public awareness of the plight of our butterflies and moths and encourage public involvement in conservation.
- halt the decline of butterflies and moths and maintain or improve the present status of threatened species.
- improve the extent and suitability of key lepidoptera habitats and the environmental quality of the countryside as a whole for all lepidoptera species.
- work with and advise other conservation groups, local bodies and agencies on techniques of land management which favour butterflies and moths and related wildlife.
- acquire and manage habitats for butterflies and moths.
- encourage the research (both at amateur and professional levels) on butterflies and moths.
- support and encourage butterfly and moth conservation world-wide.

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CONTENTS

Summary

• The Small Blue is a relatively widespread species in the UK but has declined severely in many areas since 1950. This decline has been most marked in areas where the species was more isolated in the landscape such as the north of England and southern Scotland, where the species is now almost absent. It is also becoming more restricted in its remaining southern strongholds. It is now restricted to a single site in Northern Ireland. In Britain the Small Blue is listed under Schedule 5 of the Wildlife and Countryside Act (1981) for sale only. It is fully protected under the Wildlife (Northern Ireland) Order (1985) which makes it a criminal offence to kill, injure or take the species as well as own or sell it.

• The current rate of loss of colonies in central southern England core was estimated at 7% per decade (during the 1980s), although the species is still relatively widespread in this area. Elsewhere its decline appears to be far greater. Provisional data from the Millennium Atlas indicates that despite increased recorder effort in the 1995 to 1999 recording period, the species was not found in 30% of 10km squares where it was recorded during 1970 and 1982.

• Most colonies are very small and populations seem to fluctuate greatly, possibly linked to variable flower production of Kidney Vetch on which it breeds. Identification of core areas in each of its habitat types is urgently required to ensure appropriate conservation action for the species. A **medium** priority is afforded to the conservation action in this plan to protect and increase the number of Small Blue colonies in the UK.

• The Small Blue breeds in a range of dry sheltered grasslands where Kidney Vetch grows, including: chalk and limestone grassland; coastal grassland and dunes; and man-made habitats such as quarries, road embankments and disused railway-tracks. Sites are usually sheltered and contain sparse or eroding vegetation where Kidney Vetch seedlings can become established and where flowering plants are abundant. The best habitats typically contain a mosaic of short and tall vegetation, and patches of light scrub.

• The main threats to the Small Blue are further loss of unimproved grassland, overgrazing particularly in summer and the increasing fragmentation and isolation of sites. The intrinsic low dispersal ability of the Small Blue will restrict recovery, especially in highly fragmented habitats that remain outside the core areas of southern England.

• The immediate major objectives of the plan are to halt the decline of this butterfly in the UK; to maintain viable networks of populations throughout its current range; and to conduct research on the distribution and ecology of the species to enable its effective conservation. A long term objective of the plan is to restore its 1950 range.

• The objectives of the plan will be achieved by determining current core areas of distribution of the Small Blue; improving information on and dissemination of the habitat requirements of the species; and ensuring sites are managed with the long term maintenance of populations of the Small Blue as a key objective.

• The Action Plan covers the next ten years: will be monitored annually and reviewed as the situation demands.

Part 1 Overview

1.1 PRIORITY STATEMENT

The Small Blue is widely distributed but rare in calcicolous and coastal habitats throughout England, Scotland, Wales and at a single site in Northern Ireland. It has declined severely in many areas since 1950, most noticeably in central and eastern counties of England, north Wales and southern Scotland where the species is now almost absent. It is listed as a species of conservation concern in Biodiversity: The UK Steering Group Report (DOE, 1995). Based on our current knowledge, **medium** priority should be afforded to conservation action to protect and increase the number of Small Blue colonies in the UK.

1.2 BROAD OBJECTIVES

1. Halt decline.

2. Maintain viable networks of populations throughout its current range.

3. Conduct research on the ecology and distribution of the species to enable its effective conservation.

4. Long term objective to restore its 1950 range.

1.3 LEGAL STATUS

In Britain the Small Blue is listed on Schedule 5 of the 1981 Wildlife and Countryside Act (for sale only)*. It is fully protected under the Wildlife (Northern Ireland) Order (1985)**.

*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, without a license.

** It is a criminal offence to kill, injure or take the species from the wild; possess any live or dead wild specimen, or any part of, or anything derived from them; 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, without a license.

1.4 Status and Level of Biological Knowledge

Population	**-size**	**Populations of Small Blue are highly colonial and are rarely larger than 30 adults at peak.**
	-trend, numbers	**Nationally total number of colonies is unknown.**
	-trend, range	**Formerly widespread, major decline in the north. Current strongholds in southern England, and coastal areas of Wales and Scotland.**
Knowledge of	**-status**	**No up-to-date national data are available for this species. Location of large and medium colonies need to be identified.**
	-trends	**Recent reviews of important sites in central -southern Britain found the rate of extinction to be 7% during the decade 1980-1990. Provisional data from the Butterflies for the New Millennium Project indicates that the species has been under recorded previously but that in 30% of 10km squares where the species was recorded between 1970 and 1982 the species was not recorded between 1995 to 1999, despite increased recorder effort.**
	-conservation requirements	**Good ecological knowledge of its requirements on southern grasslands including practical management.**

Part 2 Biological Assessment

2.1 INTRODUCTION

The Small Blue breeds in a range of dry sheltered grasslands where the sole foodplant, Kidney Vetch (*Anthyllis vulneraria*) grows. These grasslands include chalk and limestone grassland; coastal grassland and dunes; and man-made habitats such as quarries, road embankments, and disused railway-tracks. The butterfly tends to live in small colonies and is declining in most areas.

2.2 ECOLOGY

Life Cycle

The Small Blue is Britain's smallest resident butterfly and can easily be overlooked, partly because of its size and dusky colouring, but partly because it is often confined to small patches of sheltered grassland where Kidney Vetch is found.

It is single brooded with adults usually flying from mid May to late June, with a partial second brood on southerly sites in late July or August. However, there is considerable variation between sites and emergence is usually 2 weeks later in the north of Scotland compared to southern England.

Males set up territories in sheltered positions, perching on tall grass or scrub. Once mated, the females disperse to lay eggs but both sexes may be found from late afternoon onwards in communal roosts, facing head down in long grass.

Eggs are laid singly, tucked into the young flower-heads of prominent Kidney Vetch plants and the larvae feed on the developing flowers, burrowing deep into the florets. The larvae are cannibalistic and eat any younger larvae they encounter. Females seldom lay on plants where an egg is already present. As the larvae grow, they sit more openly on the flower-heads, biting holes in the base of the flowers to eat the seed. When fully grown, they descend to the ground and pass the winter in soil crevices or under moss. They pupate the following spring in late April or early May, also at ground level.

Both larvae and pupae have structures that attract ants and in continental Europe are usually tended by ants throughout their development. However, detailed observations in Britain have rarely found ants in attendance (Coultard, 1982; Morton, 1985), possibly because few native ant species forage high up in the flower-heads. There have been very few observations of the overwintering larvae and pupae but these are possibly attended by ants.

Habitat

The Small Blue breeds in a range of dry sheltered grasslands where Kidney Vetch grows, including: chalk and limestone grassland; coastal grassland and dunes; and man-made habitats such as quarries, gravel pits on eskers, road embankments, and disused railway-tracks. Sites are usually sheltered and contain sparse or eroding vegetation where Kidney Vetch seedlings can become established and where flowering plants are abundant. The best habitats typically contain a mosaic of short and tall vegetation, and patches of light scrub.

The Small Blue relies on grassland habitats that have a very specific combination of shelter to provide a warm micro-climate for the adults and early successional conditions that allow the larval foodplant, Kidney Vetch, to flourish. This naturally limits it to very small areas and to small populations, which are then vulnerable to local extinction. In the past, such habitats were far more extensive and many have been lost to agricultural intensification during the twentieth century. Remaining patches have often suffered from a lack of management, which has either eliminated the larval foodplant or reduced it to critically low densities. Several colonies have also been lost to built developments over recent decades, especially close to London. However, while these losses were occurring, some new habitats were being created, for example when railway lines and quarries became disused, and when new roads with steep cuttings were built. On some road verges, it has even been able to breed on large flowered continental varieties of Kidney Vetch that were used in some early habitat creation schemes.

Management

On most grassland sites, conservation measures for the Small Blue require the maintenance of suitable grazing regimes or ground disturbance that maintains high densities of flowering Kidney Vetch in a mosaic of short and tall sward. Care has to be taken not to graze too heavily during the summer, especially with sheep, which can remove the flower-heads where larvae are feeding. For this reason, the best sites are either grazed predominantly by cattle at low levels, or by sheep during the autumn or winter. Rotational grazing is another option provided substantial areas are left ungrazed each year. Rabbits can also eat flower-heads and with the recent recovery in numbers some Small Blue colonies have been lost.

On some sites, periodic ground disturbance may be essential to maintain a regular supply of seedlings and continuity of flowering Kidney Ketch. The monitoring of Kidney Vetch seedling establishment and bare ground is a useful way of determining habitat continuity, as a lack of seedlings in a closed turf is an early warning of future problems. More research is needed before exact prescriptions can be stated but periodic and or patchy disturbance with a bulldozer, tractor, flail or even hand tools may help maintain suitable breeding habitat. On other sites, natural processes of erosion are sufficient to maintain the foodplant together with minimal amounts of scrub removal. However, the small size and remoteness of some sites means that even such simple measures may be difficult to implement without special conservation effort.

Perhaps the most serious long-term threat to the species is from the small size and increasing isolation of its populations. Given the butterfly's need for early successional vegetation, local extinction is probably commonplace but in the past this was balanced by colonization. In many regions this balance has been altered and re-colonization is far less likely. Some losses could be replaced by deliberate re-introductions but these will not provide a long-term solution. A long-term conservation strategy should aim to improve management and increase available habitats so that natural processes can maintain populations. Fortunately, breeding conditions for the Small Blue appear quite easy to create and there are many opportunities to restore connections between colonies, for example along disused railway lines, on derelict sites and quarries and on new road verges.

2.3 DISTRIBUTION AND POPULATION

Distribution

The Small Blue has a palaearctic distribution, being found throughout Europe from north Spain to Scandinavia, and across Asia to Mongolia. The species distribution appears stable in many European countries but there have been serious declines in north-west Europe, for example in Belgium and Finland (>50 % in 25 years) and in Luxembourg and the UK (25-50 % in 25 years) (Swaay and Warren, 1999).

The Small Blue occurs very locally throughout Britain and Ireland, typically in small populations (see appendix 1). The main centres of distribution are the chalk and limestone grasslands of southern England, especially the Cotswolds and the extensive tracts of downland on Salisbury Plain (Asher et al., in press). Elsewhere, colonies are far more scattered, often in coastal areas such as the Moray and Angus coasts in north-east Scotland, the south-west coast of Wales, the north coast of Cumbria. In Northern Ireland, it is reduced to a single colony, but is still found in coastal areas of the Irish Republic.

The range of the Small Blue declined by over 50% during the twentieth century and it has become extinct through most of the northern half of England. In many regions, it is now reduced to a few small colonies that are vulnerable to extinction. There has also been a considerable decline within its main strongholds of southern England and it has disappeared from numerous sites, including several nature reserves. On the North Downs of Surrey it is reduced to about 15 colonies, most of them extremely small (<10 adults recorded at peak) (Jeffcoate, 1997). Nevertheless, many colonies still occur in Wiltshire (c. 185 colonies), Dorset (c. 100) and Gloucestershire (c.145) (Fuller 1995, Thomas et al. 1999, G. Meredith pers. comm.). In Scotland, colonies have been lost in the last few decades but many new ones have been discovered as recording levels have increased. Overall, recording between 1995 and 1999 as part of the Butterflies for the New Millennium recording scheme (BNM), has recorded the Small Blue in 117 additional 10 km squares in Britain since the 1970-82 survey, and 43 more in Ireland (Asher et al., in press). This indicates that it is probably still under-recorded in some regions. In a few areas the situation is complicated further by deliberate re-introductions. These include twelve experimental introductions that were conducted as part of a PhD study during the 1980s in Cornwall and Sussex, leading to the establishment of several colonies in the latter county (Moreton 1985). Two of the three known, isolated, colonies in Staffordshire are also the result of introductions. Despite these uncertainties, it seems that the species is undergoing a serious decline.

Population

The Small Blue is very sedentary, typically forming extremely small, discrete colonies (<30 individuals at peak in most years). Mark-recapture studies in both England and Scotland have shown that adults rarely move more than 40 m, and that males are more sedentary than females (Morton 1981, Coultard 1982, Roberts 1990). However, some longer movements have been recorded, including a few of over 1 km between neighbouring sites and vagrants have been recorded in Wiltshire as far as 17 km from known colonies (Fuller 1995). There is also evidence that mobility may be greater and dispersal more frequent in hotter years. Moreover, populations fluctuate greatly from year to year, possibly in relation to flowering

cycles in the foodplant. The butterfly has also been known to colonize newly created sites such as road cuttings where these are close to existing colonies.

2.4 LIMITING FACTORS

Historical
Loss of unimproved calcicolous and coastal grassland through agricultural intensification and afforestation.

Lack of grazing and abandonment of calcicolous and coastal grassland caused by a decline in stock grazing and reduction of rabbit populations following myxomatosis.

Current and Future Limiting Factors
Further loss of unimproved grassland through agricultural improvement and afforestation.

Population levels are strongly affected by grazing pressure and may be reduced rapidly if grazing levels are increased even slightly. Thus the recent increase in rabbit populations or an increase in general stock grazing can cause local extinctions.

Variations in flowering of Kidney Vetch.

Increasing fragmentation and isolation of sites.

Difficulties in maintaining networks of suitably managed habitats under different conservation ownership.

Climate change and the predicted increase in the frequency of droughts could change the distribution of suitable habitats and could lead to declines (unless the species is able to exploit other habitats, for example by moving onto neighbouring flatter ground, or deeper soiled sites, or less sheltered slopes that contain the foodplant).

Intrinsic low dispersal ability of Small Blue will restrict recovery, especially in highly fragmented habitats that remain outside core areas of southern England.

2.5 RESUME OF CONSERVATION TO DATE

Ecology, Conservation Requirements and Monitoring
The autecology of the Small Blue has been well studied (Moreton, 1985), but appropriate grazing regimes are less well known. The importance of correct habitat management has been identified as the main priority for the butterfly's conservation (BUTT, 1986). It is now clear that management needs to produce a mixture of long and short vegetation for this species and this is best achieved on grassland sites by winter stock grazing (see appendix 2 for summary).

The Small Blue is well represented on protected areas, with many of its downland sites being designated SSSI, and was represented on 16 NNRs in the early 1990s (McLean *et al*., 1995).

Colonies of this species are so small that monitoring by the standard butterfly transect method is less reliable than for other species, although a detailed assessment of alternative monitoring techniques has not been undertaken. In 1996, 15 transects with Small Blue colonies were covered by the Butterfly Monitoring Scheme (BMS) but only four have long term data (over 8 years) and seven sites have annual indexes calculated (Pollard and Greatorex-Davies, 1997). In Scotland, the Scottish Diurnal Lepidoptera Project (SDLP) set up baseline monitoring of five sites, by adult and egg count with an additional habitat assessment (Pearce *et al*., 1999). In addition to the BMS, Butterfly Conservation branch volunteers walk approximately 70 transects on chalk downland, of which several have Small Blue present (T. Brereton pers. comm.).

Current Studies

Little research is currently being undertaken on the Small Blue, although small scale studies have been done over the last few years in Buckinghamshire (Roberts, 1991), Northern Ireland (Nelson, 1995), south Wales (Smith and Nottage, 1999), Dorset (Portland) (P. Green, pers. comm.) and Warwickshire (R. Smith, pers. comm.).

Because the flowering of Kidney Vetch often varies considerably from year to year, populations of Small Blue are prone to large fluctuations and they also tend to be small. These factors are believed to be vital in the functioning of metapopulations at a landscape scale and studies of other butterflies may provide pertinent information (e.g. Marsh Fritillary, Silver-spotted Skipper etc.) In the longer term, availability of new habitats for the Small Blue may be a crucial factor, especially if populations in existing habitats deteriorate due to such factors such as climate change and increased frequency of drought as a consequence.

Part 3 Actions and Work Programme

This section has been divided into the standard headings Policy and Legislative; Site Safeguard and Acquisition; Land Management; Species Protection and Licensing; Advisory; International; Future Research and Monitoring; Communications and Publicity; Review. Actions are given a low, medium or high priority. The lead organisation(s) concerned for each action is/are named.

Definition of Colony Size: Large = >300 adults; medium = 30-299 adults; small = <30.
For key to abbreviations see page 16.

3.1 POLICY AND LEGISLATIVE

	Lead organisation(s) concerned
Action 1 PRIORITY: HIGH	
Include habitat requirements of the Small Blue when drawing up or revising management prescriptions in ESAs and other agri-environment schemes (e.g. Countryside Stewardship, Tir Gofal, Countryside Premium Scheme, Reserves Enhancement Scheme etc.) covering existing or potential habitats.	**MAFF/FRCA, EN, CCW, SERAD, SNH.**

3.2 SITE SAFEGUARD AND ACQUISITION

Action 2 PRIORITY: HIGH	
Protect all extant sites and large potential habitats in post 1940 range through management agreements; and reserve acquisition where management agreements fail.	**All**
Action 3 PRIORITY: HIGH	
Oppose any development proposals threatening Small Blue sites.	**EHS, EN, CCW, SNH, BC, WT's, LA's.**

3.3 LAND MANAGEMENT

Action 4 PRIORITY: HIGH

Promote beneficial grassland management in areas where the Small Blue exists, concentrating on strategic metapopulations which include some large populations or extensive networks of habitats.	**All**

Action 5 PRIORITY: HIGH

Restore suitable habitats within former range, by scrub removal and reinstatement of appropriate grazing regimes, concentrating on areas within 10-20 km of existing populations where natural re-colonisation is most likely to occur.	**All**

Action 6 PRIORITY: HIGH

Incorporate needs for the Small Blue in management plans/ site management statements on all SSSIs/ASSIs with colonies.	**CCW, EHS, EN, SNH**

Action 7 PRIORITY: HIGH

Integrate management of Small Blue sites with the needs of other calcicolous grassland species, especially warmth-loving fauna and flora characteristic of medium, short and sparse turf.	**CCW, EHS, EN, SNH, LA's, WT's, BC etc.**

3.4 SPECIES PROTECTION AND LICENSING

Action 8 PRIORITY: LOW

Assess feasibility of strategic re-introductions into extensive areas of restored habitats, confirming whether natural colonisation is improbable, and long-term viability is likely.	**BC, CCW, EHS, EN, SNH**

3.5 ADVISORY

Action 9 PRIORITY: HIGH

Advise conservation agencies, project officers of the relevant agri-environment schemes and site owner/managers on practical habitat management for the Small Blue and how to incorporate this with other management priorities and interests.	**CCW, EN, SNH, BC**

Action 10 PRIORITY: MEDIUM

Advise on habitat restoration techniques on potential and former sites.	**CEH, BC**

Action 11 PRIORITY: MEDIUM

Produce a brief, practical guide on habitat management for the Small Blue and other grassland species of butterfly.	**BC, CCW, EN, SNH**

Action 12 PRIORITY: HIGH

Advise conservation agencies and site owner/managers on the location of occupied and other suitable (but unoccupied) sites and on practical habitat management for the Small Blue and how to incorporate this with other management priorities and interests.	**BC, CCW, EN**

3.6 INTERNATIONAL

No action proposed

3.7 FUTURE RESEARCH, SURVEY AND MONITORING

Action 13 PRIORITY: MEDIUM

Collate transect data annually from all monitored sites and calculate annual index to compare trends on individual sites.	**CEH, BC**

Action 14 Priority: MEDIUM

Assess the suitability of transect, egg count or other monitoring methods.	**CEH, BC**

Action 15 PRIORITY: HIGH (urgent)

Conduct further research on appropriate management regimes and species ecology on chalk and limestone downland.	**CCW, EN, SNH, BC, ITE.**

Action 16 PRIORITY: HIGH

Identify the location of all large and medium colonies and survey potentially suitable, unoccupied habitats within 10-20 km of existing populations in order to target conservation effort.	**All**

3.8 COMMUNICATIONS AND PUBLICITY

Action 17 PRIORITY: HIGH

Publicise this Action Plan, the status of the Small Blue and measures needed to conserve it.	**All**

Action 18 PRIORITY: HIGH

Ensure that the Lowland Calcareous Grasslands HAP Group is aware of this plan and any subsequent action to conserve the Small Blue.	**EN, BC**

Action 18 PRIORITY: HIGH

Ensure that all relevant Local Biodiversity Action Plans are aware of and refer to this national action plan where appropriate.	**All**

3.9 REVIEW

Action 19 PRIORITY: HIGH

Review this Action Plan annually and update when necessary.	**CCW, EN, SNH, BC**

Key to abbreviations

All	= All organisations listed
BC	= Butterfly Conservation
CCW	= Countryside Council for Wales
EN	= English Nature
EHS	= Environment and Heritage Service (N. Ireland)
FRCA	= Farming and Rural Conservation Agency
CEH	= Centre for Ecology and Hydrology (formerly Institute of Terrestrial Ecology)
JNCC	= Joint Nature Conservation Committee
LA's	= Local Authorities
MAFF	= Ministry of Agriculture, Food and Fisheries
NT	= National Trust
NTS	= National Trust for Scotland
SERAD	= Scottish Executive Rural Affairs Department
SNH	= Scottish Natural Heritage
WT's	= The Wildlife Trusts

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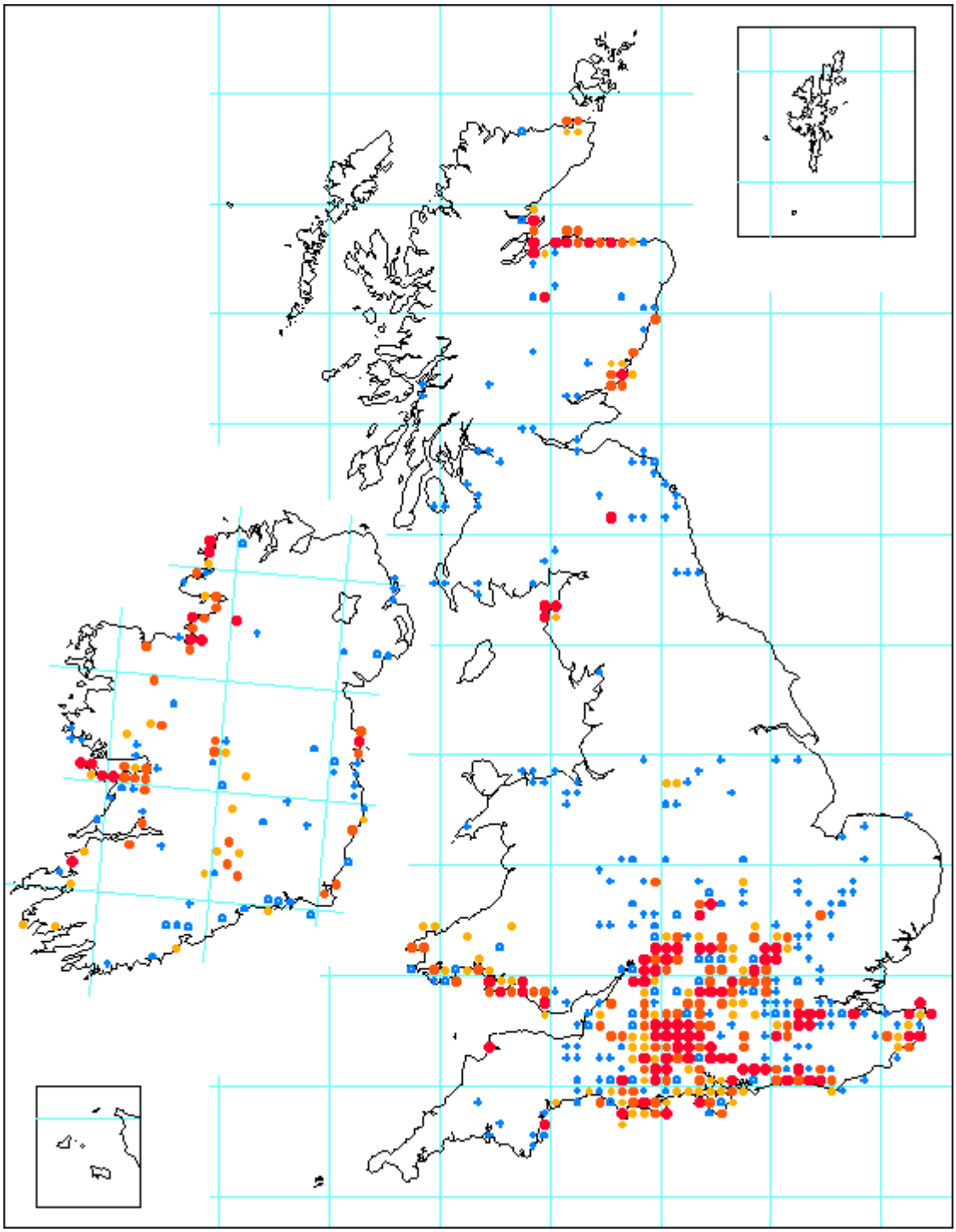
Appendix 1 The distribution of the Small Blue, 1995-1999.

Butterflies for the New Millennium project (2001).
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 Conservation requirements of the Small Blue

Management

On most grassland sites, conservation measures for the Small Blue require the maintenance of suitable grazing regimes or ground disturbance that maintains high densities of flowering Kidney Vetch in a mosaic of short and tall sward. Care has to be taken not to graze too heavily during the summer, especially with sheep, which can remove the flower-heads where larvae are feeding. For this reason, the best sites are either grazed predominantly by cattle at low levels, or by sheep during the autumn or winter. Rotational grazing is another option provided substantial areas are left ungrazed each year. Rabbits can also eat flower-heads and with the recent recovery in numbers some Small Blue colonies have been lost.

On some sites, periodic ground disturbance may be essential to maintain a regular supply of seedlings and continuity of flowering Kidney Ketch. The monitoring of Kidney Vetch seedling establishment and bare ground is a useful way of determining habitat continuity, as a lack of seedlings in a closed turf is an early warning of future problems. More research is needed before exact prescriptions can be stated but periodic and or patchy disturbance with a bulldozer, tractor, flail or even hand tools may help maintain suitable breeding habitat. On other sites, natural processes of erosion are sufficient to maintain the foodplant together with minimal amounts of scrub removal. However, the small size and remoteness of some sites means that even such simple measures may be difficult to implement without special conservation effort.

Population dynamics

Perhaps the biggest long-term threat to the species is from the small size and increasing isolation of its populations. Given the butterfly's need for early successional vegetation, local extinction is probably commonplace but in the past this was balanced by colonization. In many regions this balance has been altered and re-colonization is far less likely. Some losses could be replaced by deliberate re-introductions but these will not provide a long-term solution. A long-term conservation strategy should aim to improve management and increase available habitats around remaining populations so that natural processes can maintain metapopulations.

Habitat creation/restoration

Fortunately, breeding conditions for the Small Blue appear quite easy to create and there are many opportunities to restore connections between colonies, for example along disused railway lines, on derelict sites and quarries and on new road verges. Kidney vetch often regenerates freely in disturbed ground and can be established easily in grassland restoration or creation schemes on suitable soils. For example the scarification of chalk spoil at a Wildlife Trust fenland reserve in the 1990s appeared to encourage the Kidney Vetch and maintain populations of the Small Blue (Roberts 1990).