



**Species Action Plan**

**BLACK HAIRSTREAK**  
*Satyrrium pruni*

1998

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**THIS PROJECT IS SUPPORTED BY**



This species action plan is an unpublished working document produced by Butterfly Conservation to focus and co-ordinate the conservation of the Black Hairstreak in the UK over the next five to ten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: English Nature, The National Trust, MAFF/FRCA, WWF-UK, ITE, RSPB, the Forestry Authority, Forest Enterprise, the Woodland Trust and the Wildlife Trusts.

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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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## Summary

- The Black Hairstreak is a highly restricted species in the UK, occurring in approximately 35 colonies in the woodlands of the east Midlands of England. The Black Hairstreak is listed under Schedule 5 of the Wildlife and Countryside Act for sale only and is listed as a species of conservation concern in Biodiversity: The UK Steering Group Report (DOE, 1995).
- The rate of loss of colonies in the Midlands is estimated at 25% in the period between 1940/1969 and 1970/1982 but the species now appears to be holding its own. Although the distribution of the Black Hairstreak is well known, identification of core areas is required urgently to target conservation measures. A **medium** priority is afforded to the conservation action in this plan to protect and increase the number Black Hairstreak colonies in the UK.
- The Black Hairstreak requires mature Blackthorn, *Prunus spinosa* growing in unshaded situations. Larger populations of Black Hairstreaks are usually found on the edges of wide rides and glades, on sheltered woodland edges, and occasionally in scrub developing after woodland clearance. Small colonies occur where the Blackthorn canopy is partially shaded (up to 75% shade). Black Hairstreaks occasionally breed in exposed Blackthorn areas and dense, tall hedgerows but only if there are large colonies nearby.
- The Black Hairstreak declined following extensive clearance and/or coniferisation of woodland in the east Midlands in the 1950s and 1960s. Remaining colonies are nearly all under some form of conservation management. A major threat to some colonies are the large deer populations, (Fallow and Muntjac) which prevent coppice and woodland regeneration. However novel techniques have recently been developed to overcome this problem on Black Hairstreak sites.
- The main objectives of the plan are to maintain the current distribution of the Black Hairstreak 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 Black Hairstreak; improving and disseminating information on the habitat requirements of the species and implementing suitable management in areas of its historical distribution.
- The Action Plan covers the next five to ten years, will be monitored annually and reviewed as the situation demands. The priority and nature of any conservation action should be reviewed in the light of these results.

## **Part 1 Overview**

### **1.1 PRIORITY STATEMENT**

The Black Hairstreak has always had a restricted distribution in the woodlands of the east Midlands of England. It has declined in many of its traditional areas since 1950 but appears to have been stable since the 1970's. It is listed as a species of conservation concern in Biodiversity: The UK Steering Group Report (DOE, 1995) because of its rarity and vulnerability of populations. Based on our current knowledge, **medium** priority should be afforded to conservation action to protect and increase the number of Black Hairstreak colonies in the UK.

### **1.2 BROAD OBJECTIVES**

1. Maintain the present distribution of the Black Hairstreak in the UK.
2. Maintain viable networks of populations throughout its current range and increase populations in core areas.
3. Long term objective to restore its 1950 range.

### **1.3 LEGAL STATUS**

The Black Hairstreak is listed on Schedule 5 of the 1981 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.

<b>Population</b>	<b>-size</b>	<b>Total number of colonies in 1970s was estimated to be 30-35, but no up to date figures are available.</b>
	<b>-trend, numbers</b>	<b>Not well known.</b>
	<b>-trend, range</b>	<b>Always highly restricted, 25% decline in colonies between 1940/1969 and 1970/1982, but now believed to be stable. Introduction into Surrey during 1950s is now believed extinct.</b>
<b>Knowledge of</b>	<b>-status</b>	<b>No up-to-date national data are available for this species. Surveys are needed to determine the location of large and medium colonies.</b>
	<b>-trends</b>	<b>Poor, due to difficulties of monitoring this canopy-dwelling species. A few sites are covered by the Butterfly Monitoring Scheme but counts are usually very low. Some 'timed counts' are made each year in Forest Enterprise and other woods, but numbers recorded are low and difficult to interpret.</b>
	<b>-conservation requirements</b>	<b>Good ecological knowledge of its requirements in woodlands, but more information is needed on practical management of Blackthorn stands in the long term.</b>

## Part 2 Biological Assessment

### 2.1 INTRODUCTION

The Black Hairstreak *Satyrrium pruni* (*Strymonidia pruni*) is restricted to woodland in the east Midlands of England, where it occurs in dense stands of Blackthorn, *Prunus spinosa*, growing on heavy clay soils in a belt between Oxford and Peterborough.

### 2.2 ECOLOGY

#### Life Cycle

The Black Hairstreak is univoltine, adults flying for a comparatively short period, normally between mid June and mid July. The butterflies are difficult to see, flying only occasionally high above the tree canopy. Flight consists of short, rapid looping in and out of the tree tops, typically in warm, still weather with a peak of activity between 12.00 hrs and 14.00 hrs. Adults spend most of their time basking and feeding and are rarely seen at ground level.

The Black Hairstreak lays its eggs only on *Prunus* spp., with Blackthorn being by far the commonest species used by all known colonies. Rarely Wild Plum, *Prunus domestica* is used and the larvae can be reared on most *Prunus* species. The eggs are laid singly and hatch the following spring, usually in late March and early April. Most eggs are laid above 1.5m on mature Blackthorn over 7-10 years old. On many sites small numbers of eggs can be seen laid low down on young suckers. The eggs are laid on bark, mostly on one-to three year old growth. Egg mortality is approximately 35%, primarily due to the Hymenopteran parasitoid *Trichogramma evanescens* (Thomas, 1974). There are four larval instars of approximately 15 days duration each, followed by pupation in late May and adult emergence three weeks later. The larvae hatch just before Blackthorn leaf-break and when young feed on the breaking flower buds. Older larvae feed solely on the leaves which they mimic closely from bud to expanded leaf. Larvae feed throughout the day and remain close to the original egg site. Larval mortality during each instar is approximately 30 to 60% (mean of 45%) and is due to invertebrate predation in the early instars and bird predation in the latter (Thomas, 1974).

The mature larvae can move up to two metres before pupating on the top of Blackthorn leaves or twigs, often in exposed positions. They are conspicuously marked and resemble bird droppings. Despite this mimicry pupal mortality is high (c. 80%), mainly from bird predation, although a small percentage is due to parasitism. All of the parasitoid species bred from the Black Hairstreak are generalists.

#### Habitat

The Black Hairstreak breeds predominately in dense mature stands of Blackthorn growing in sheltered, sunny situations, often on the edges of glades and rides or along sheltered wood edges. The largest colonies are found where massive banks of Blackthorn grow in exceptionally sheltered but sunny situations, for example south facing edges of glades, or mixed aged scrub on the sunny side of a wood. Less suitable habitats, supporting only small colonies, occur in more exposed or shaded situations, such as in bays along woodland edges;

in areas of scrub and hedgerows; in the gaps beneath the canopy in a mature, open woodland; or in exposed wood edges adjacent to main colonies.

### **Management**

The conservation of the Black Hairstreak in the long term requires the periodic creation of new habitat which can be colonised before old Blackthorn becomes unsuitable. In the east Midland woods, Blackthorn regenerates or suckers readily but, because the butterfly is highly sedentary, the creation of new areas should be targeted where Blackthorn already occurs in close proximity to existing colonies.

It is possible to ensure the survival of most colonies for about 20-50 years simply by protecting their breeding areas from destruction (Thomas, 1975). Thus, if the discrete breeding areas are identified and preserved, colonies are able to tolerate drastic woodland management including extensive clear felling on nearby areas of the wood. During the 1950s suitable areas of Bernwood Forest (Oxfordshire) were identified and excluded from the otherwise intensive management by the Forestry Commission. This has successfully maintained the Black Hairstreak in the forest (while many other butterfly species have died out), even though there have been occasional felling of breeding areas in error. However, it is desirable to preserve some tree cover and shelter around breeding areas if felling nearby areas of the wood.

Some felling of Blackthorn can be tolerated on sites with large breeding areas and this may be beneficial in encouraging new habitat for the future provided the area is allowed to regenerate naturally. It is recommended that only 25% of suitable areas are cleared at any one time, especially if colonies are small and that subsequent cutting is done on a long rotation of 40-50 years (Thomas, 1975).

Woodland edge and hedgerow management should encourage the creation of dense banks of Blackthorn 3-4 metres high. Sheltered areas should be created by cutting irregular indentations into the Blackthorn (Thomas, 1975).

Ride edge management should consist of cutting in sections on a long rotation to allow the regrowth of mature Blackthorn. Cutting should include numerous small or large scale indentations which produce sheltered sunspots across the Prunus edge/canopy. In most commercial woods, ride edges are cut by machine and while this is potentially damaging to Black Hairstreak populations, it should not cause extinction provided it is on a suitably long rotation. While machine cutting can produce a smooth surface edge, if cut only irregularly this soon grows into a heterogeneous surface edge. Ideally, where Black Hairstreak is known to be present, marginal Blackthorn should be managed at a lower intensity. For example, at Salcey Forest, Forest Enterprise hand cut those wide rides where Black Hairstreak is present while machine cutting other areas (A. Patmore, pers. comm.).

Blackthorn and ride edge cutting is usually done in winter, which causes the destruction of all eggs on the cut plants. However colonies should be able to survive provided only a small part of a breeding area is cut in any one year. If, for some reason it is unavoidable to cut the whole of a small breeding area then this should be done when the butterfly is in its pupal stage, in the first three weeks of June and the material left in situ until mid-July.

The large increase in the populations of Deer in lowland woodlands (particularly Muntjac and Fallow) over the last 20 years is preventing natural regeneration due to their browsing pressure. This makes the restoration of coppice, or any regenerative strategy particularly difficult unless the deer are excluded by fencing or extensively culled. It is therefore recommended that deer management and/or fencing occurs in woods where natural regeneration is an integral part of the management of the wood.

Wardens at Castor Hanglands and Monks Wood NNR have developed a method to overcome the problem of large Deer populations, and prolong the life of Blackthorn by effectively laying the shrub as one would a hedge. The method has prevented deer browsing allowing the Blackthorn to regrow from the cut stem while maintaining the presence of the older growth. Moreover, any eggs present on the Blackthorn are undisturbed. Once the Blackthorn has grown up successfully, and is being utilised by the Black Hairstreak, the old cut and laid section can be removed if necessary. This management technique is experimental, but does appear to be maintaining suitable breeding areas for the Black Hairstreak (Gardiner, 1996).

At Glapthorne Cow Pasture (Wildlife Trust Reserve), an area of scrubbed over grassland is managed by cutting rides and small glades in the blackthorn. Regenerating Blackthorn is now fenced due to the increased browsing and grazing pressure from Deer (R. Parslow, pers. comm.).

## 2.3 DISTRIBUTION AND POPULATION

### Distribution

The Black Hairstreak has a palaeartic distribution occurring throughout Europe to Japan; it has its southernmost limit in northern and western Spain and is absent from Ireland and the Mediterranean islands. It is a very local species throughout its world wide range. Within Europe it is considered stable, although there has been large (>50%) declines in range over the last 25 years in Austria, Luxembourg and the Netherlands, although it is expanding in Finland (Swaay et al., 1997).

In Britain, the Black Hairstreak has always been restricted to woods on heavy clays in a belt between Oxford and Peterborough. There are historical records for elsewhere in the south of England but, with the exception of an introduction to Surrey (see below), these are now all considered to have been misidentifications of the White-letter Hairstreak, *Satyrion w-album* (Thomas, 1974). The butterfly is probably restricted to this area of the east Midlands due to the historic management of the Royal game forests which were managed on an unusually long coppice rotation of between 20-40 years. This coppice cycle provides the continuous areas of large, mature Blackthorn necessary for this species. The last complete survey of the 59 east Midlands woods with records for the Black Hairstreak was completed between 1970 and 1973 by Dr Jeremy Thomas (1974, 1975). He found an estimated 30-35 colonies and definite losses in 17 sites. While there has been no recent complete survey, the number of colonies is believed to have been stable since the 1970s. Local increases have also occurred in Salcey Forest as a result of conservation management.

The Black Hairstreak was introduced to many woods within its present range by the entomologist Lord Rothschild who paid for 'large numbers' to be released in east Midland woods between 1900 and 1917 (Thomas, 1974). Unfortunately no records of these releases remain but they were probably responsible for a significant number (c.30%) of the known colonies of this otherwise highly sedentary butterfly (Oates and Warren, 1990). The longest known successful re-introduction of any butterfly is that of the Black Hairstreak at Monks Wood in Cambridgeshire. It was reintroduced here during the early 1920's, following the extinction of a large colony when the wood was clear felled during World War 1. This re-introduction on to the regenerating Blackthorn was immediately successful and the colony is still present in the wood.

There was also a well-known introduction to a Surrey woodland in 1952, near Cranleigh, outside the historical range of the species. This survived as a small colony before the wood was destroyed in 1960. However, the butterfly must have spread because fifteen years later in 1975 a colony was found in a wood 1½ km away from the original release site and soon spread into adjoining areas to become the largest known colony in the country. A detailed survey then found 5 colonies in the area but these have subsequently died out as the habitats have been lost through afforestation, the clearance of overgrown hedges and agricultural improvement (Thomas & Lewington, 1991; Collins, 1995). Until very recently, a colony survived on a nearby abandoned railway line but the butterfly has not been seen here for the last 2 years (G. Jeffcoate, pers. comm.). Other, unsuccessful introductions outside the east Midlands have been documented at Knebworth, Hertfordshire; Slimbridge, Gloucestershire; and the New Forest, Hampshire (Oates and Warren, 1990).

The national distribution map (see Appendix 1) is still relatively accurate but the status of individual populations is poorly known. Recent county atlases show that the butterfly is still vulnerable in some areas (e.g. only one or possibly two small colonies are known in Bedfordshire, Arnold et al., 1997).

### **Population**

The Black Hairstreak is a highly sedentary butterfly and adults are usually confined to small areas within a wood. Larger woods may have two or three discrete breeding areas but there is thought to be little interchange between them (Thomas, 1974). Adults have rarely been recorded away from woods, and then always within 50 metres along tall, sheltered hedgerows.

Despite its highly sedentary nature, the Black Hairstreak does have limited powers of colonisation. The introduced colony in Surrey is known to have spread 1.5 km over 15 years, a rate of 1 km per decade, over more or less continuous habitat (Thomas and Lewington, 1991; C. D. Thomas et al., 1992). The sedentary nature of the Black Hairstreak helps explain its limited distribution, locked into an area where the historical management of woodland provided mature Blackthorn. However, within its current range, habitats are highly fragmented and isolated and the butterfly is unlikely to be able to spread or re-colonise. Conservation effort must thus be focused on maintaining populations at existing sites and wherever possible increasing the areas of potential habitat close to such sites in the future.

Colonies are notoriously difficult to monitor, with all stages of the life cycle being difficult to find without extensive experience, and even then the numbers found are often very small. Transect counts are usually low and there is no agreed standard monitoring technique for this species. Timed adult counts are recommended for any future monitoring of this species, with counts being related to specific, mapped areas.

Black Hairstreaks tend to breed in the same discrete areas for many years although long term records for any site are rare. However, 20 breeding centres have been recorded in the same small place for over 20 years. The longest recorded is over 50 years in Monks Wood and probably represents a typical span for a colony on unmanaged Blackthorn following clearance (Thomas, 1975). Blackthorn on the edge of woods that is trimmed periodically may live far longer and colonies can probably breed indefinitely in this situation. In practice few areas of Blackthorn would not be managed, or partly cleared over this time period.

## **2.4 LIMITING FACTORS**

### **Historical**

The long (20-40 year) coppice cycles necessary to provide suitable habitat were restricted to the Royal game forests of the east Midlands.

Afforestation of ancient woodland and large scale clearance of Blackthorn stands.

Clearance of woodland for agriculture.

### **Current and Future Limiting Factors**

Extreme fragmentation and isolation of suitable Blackthorn stands in butterflies present range in east Midlands.

Practical difficulties in maintaining suitable Blackthorn stands in the long term, especially with current high deer populations (i.e. Blackthorn stands in woods not being specifically managed for Black Hairstreak tend to be cut/cleared at a faster rate than new stands are generated and colonised by the butterfly).

Lack of knowledge of how to manage Blackthorn stands to provide habitat continuity in the long term.

## **2.5 RESUME OF CONSERVATION TO DATE**

### **Ecology and Conservation Requirements**

The Black Hairstreak was the subject of a PhD study by Dr Jeremy Thomas, while based at the Institute of Terrestrial Ecology (Monks Wood) in the early 1970s. A subsequent report (Thomas, 1975) summarised the status of the Black Hairstreak and the action necessary to conserve it. Since this time little ecological research or systematic survey has been carried

out but there have been many developments on practical management of Blackthorn breeding areas (see Appendix 2).

A large proportion of the remaining colonies are either Nature Reserves, designated SSSI, or under sympathetic ownership and/or management. Most are being managed following the guidelines of Thomas (1975). In 1973, colonies were present on 9 reserves, including two NNRs, two FC reserves and two County Wildlife Trust Reserves (Thomas, 1975).

### **Current Studies**

Forest Enterprise currently own or manage 15 or 16 woods with colonies of the Black Hairstreak. All these sites are monitored in June/July by counting adults for a half hour period. Surveys of the extensive Blackthorn in the east Midlands are now undertaken for Forest Enterprise by Butterfly Conservation members.

Anglian Water have recently sponsored attempts to improve monitoring in partnership with the Beds, Northants and Cambridgeshire Wildlife Trust.

Upper Thames Branch of Butterfly Conservation have managed and monitored a small population in Buckinghamshire since 1991 (Roberts, 1991). The branch have also produced a leaflet on management of Black Hairstreak colonies.

### **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 = >1,000 adults; medium = 100-1,000 adults; small <100. For key to abbreviations see page 17.

#### **3.1 POLICY AND LEGISLATIVE**

**Lead  
organisation(s)  
concerned**

##### **Action 1 PRIORITY: HIGH**

Improve financial incentives for the conservation management of broad-leaved woodland throughout range (especially measures that will encourage the maintenance of suitable Blackthorn stands).

**FA (+LAs)**

##### **Action 2 PRIORITY: HIGH**

Press for the introduction of financial incentives for the effective management of deer populations.

**MAFF, FA**

#### **3.2 SITE SAFEGUARD AND ACQUISITION**

##### **Action 3 PRIORITY: HIGH**

Encourage protection of all remaining sites through management agreements and/or reserve acquisition. (N.B. This is one of the few species which it is possible to conserve in a small proportion of a wood, with little or no economic cost, while devoting the rest to intensive silviculture).

**All**

### **3.3 LAND MANAGEMENT**

#### **Action 4 PRIORITY: HIGH**

Incorporate needs for the Black Hairstreak in management plans and site management statements on all SSSIs with colonies. **EN**

#### **Action 5 PRIORITY: HIGH**

Maintain suitable Blackthorn stands on all known sites and manage to ensure continuity of habitat in the long term. **All**

#### **Action 6 PRIORITY: HIGH**

Encourage management that will maintain some large populations or clusters of populations. **All**

#### **Action 7 PRIORITY: MEDIUM**

Encourage restoration of suitable breeding habitat within former range, where there is potential for re-establishing viable populations. **BC, EN**

### **3.4 SPECIES PROTECTION AND LICENSING**

#### **Action 8 PRIORITY: MEDIUM**

Conduct strategic re-introductions of Black Hairstreak concentrating on large areas of restored habitat patches within historical range. **EN, BC, FE, WTs.**

### **3.5 ADVISORY**

#### **Action 9 PRIORITY: HIGH**

Advise conservation agencies and site owner/managers on practical habitat management for the Black Hairstreak and how to incorporate this with other management priorities and interests. **BC, ITE, EN, FE**

#### **Action 10 PRIORITY: MEDIUM**

Advise on habitat restoration techniques on potential and former sites. **BC, ITE, EN, FE**

**Action 11 PRIORITY: MEDIUM**

Produce a brief, practical guide on habitat management for the Black Hairstreak, incorporating this with management for other wildlife.

**BC, EN**

**3.6 INTERNATIONAL**

No action proposed.

**3.7 FUTURE RESEARCH, SURVEY AND MONITORING**

**Action 12 PRIORITY: HIGH**

Collate all recent records, update national distribution map and determine core regions of distribution.

**BC, ITE,  
JNCC, etc.**

**Action 13 PRIORITY: HIGH**

Conduct new surveys in poorly recorded woods within the traditional range, identifying the location of all large/medium colonies.

**BC, EN, WTs  
etc.**

**Action 14 PRIORITY: HIGH**

Conduct further research on practical methods of maintaining habitat.

**ITE, BC, EN  
etc.**

**Action 15 PRIORITY: MEDIUM**

Conduct further research on habitat requirements and ecology, including an assessment of the success of all conservation measures taken (ranging from protection of *Prunus* stands, management, habitat creation) since last review in 1975.

**ITE, BC, EN  
etc.**

**Action 16 PRIORITY: HIGH**

Develop a standard monitoring technique for this species and establish overall monitoring programme for the species.

**FE, WTs,  
ITE, BC, EN**

**Action 17 PRIORITY: MEDIUM**

Identify potentially suitable, unoccupied habitats within 10-20 km of existing populations.

**BC, WTs**

**Action 18 PRIORITY: MEDIUM**

Investigate the effect of habitat loss and isolation of colonies on population viability.

**BC, EN, ITE.**

**Action 19 PRIORITY: LOW**

Conduct research on parasitoids and species associated with Black Hairstreak habitats.

**BC, ITE etc.**

**3.8 COMMUNICATIONS AND PUBLICITY**

**Action 20 PRIORITY: HIGH**

Publicise this Action Plan, the restricted distribution of the Black Hairstreak and the measures needed to conserve it.

**All**

**Action 21 PRIORITY: HIGH**

Following survey and research (Action 13 and 15) produce revision of the 1975 booklet on the conservation of the Black Hairstreak.

**ITE, BC, EN**

**Action 22 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 23 PRIORITY: HIGH**

Review this action plan annually and update when necessary.

**BC, EN**

## **Key to abbreviations**

All = All organisations listed

BC = Butterfly Conservation

EN = English Nature

FA = Forestry Authority

FE = Forestry Enterprise

ITE= Institute of Terrestrial Ecology

JNCC = Joint Nature Conservation Committee

LAs = Local Authorities

NT = National Trust

WT = Woodland Trust

WTs = Wildlife Trusts

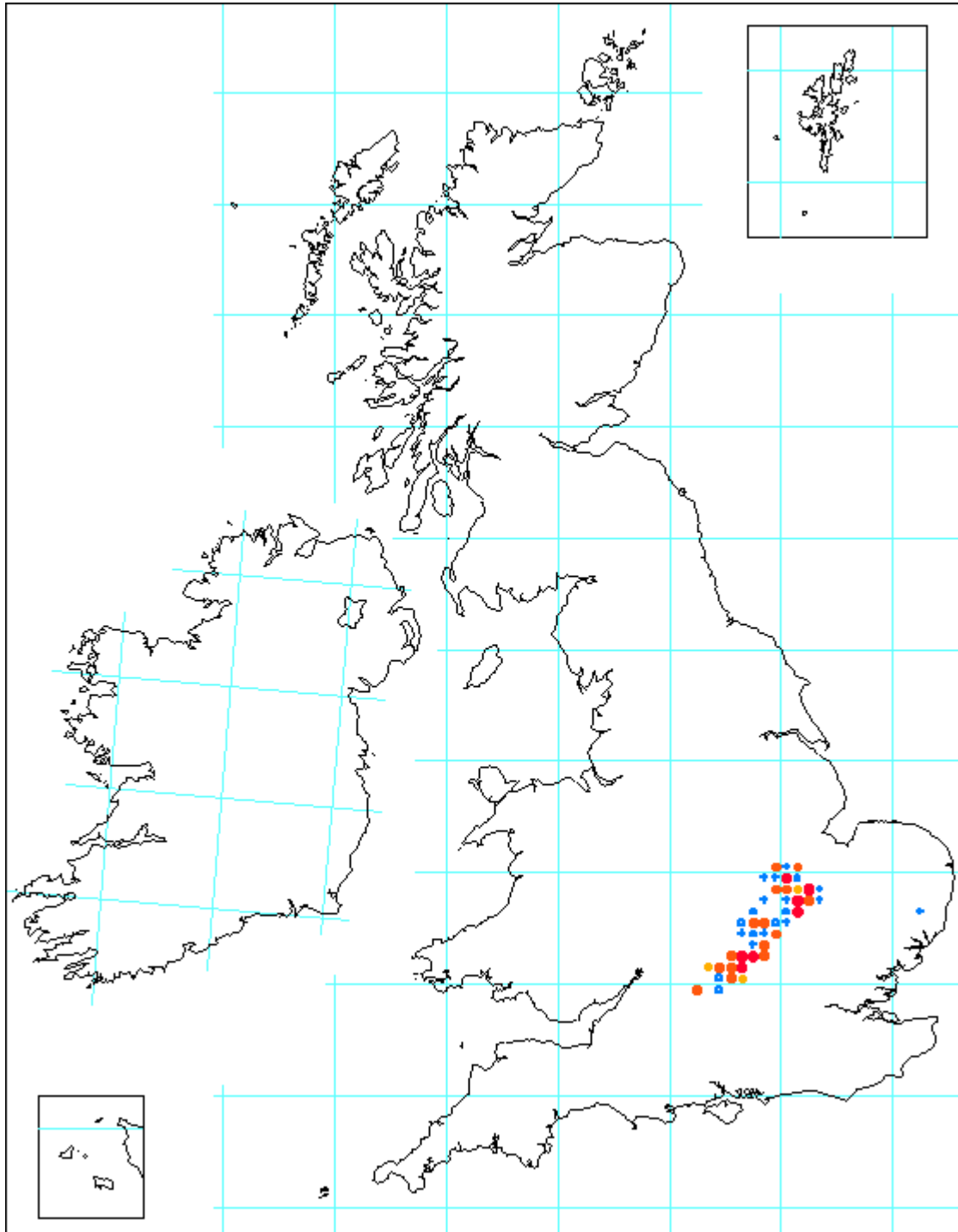
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## Appendix 1 The distribution of the Black Hairstreak

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 Black Hairstreak**

### **Habitat**

The Black Hairstreak lays its eggs only on *Prunus* spp., with Blackthorn *Prunus spinosa* being by far the main species used by all known colonies. Rarely Wild Plum *Prunus domestica* is used and the larvae can be reared on most *Prunus* species. It is widely believed that eggs are laid only on old Blackthorn, but on many sites small numbers of eggs have been recorded low down on young suckers. Where available, mature (over seven to ten year old) plants are preferred and few eggs are laid below 1.5m. Above this height, eggs are distributed evenly, at least up to 4.5m. The eggs are laid on bark, mostly on one-to three year old growth.

The specific requirements of the egg site are such that the largest colonies are found where massive banks of Blackthorn grow in exceptionally sheltered but sunny situations for example south facing edges of glades, or mixed aged scrub on the sunny side of a wood. Less suitable habitats, supporting smaller colonies, occur in more exposed or shaded situations, such as in bays along woodland edges or in the gaps beneath the canopy in a mature, open woodland.

### **Management**

The long term conservation of the Black Hairstreak requires the periodic creation of new habitat which can be colonised before old Blackthorn becomes unsuitable. In the east Midland woods, Blackthorn regenerates or suckers readily but, because the butterfly is highly sedentary, the creation of new areas should be targeted where Blackthorn already occurs in close proximity to existing colonies.

Ride edge management should consist of cutting in sections on a long rotation to allow the regrowth of mature Blackthorn. In most areas ride edges are machine cut and while this is potentially damaging to Black Hairstreak populations, it should not cause the extinction of colonies, provided it is on a suitably long rotation.

The large increase in the populations of Deer in lowland woodlands (particularly Muntjac and Fallow) over the last 20 years is preventing natural regeneration due to their browsing pressure. This makes the restoration of coppice, or any regenerative strategy particularly difficult unless the deer are excluded by fencing or extensively culled. It is therefore recommended that Deer control or exclusion occurs in woods where regeneration is an integral part of the management of the wood.

Wardens at Castor Hanglands and Monks Wood NNR have developed a method to overcome the problem of large Deer populations, and prolong the life of Blackthorn by effectively laying the shrub as one would a hedge. The method has prevented deer browsing allowing the Blackthorn to regrow from the cut stem while maintaining the presence of the older growth. Moreover, any eggs present on the Blackthorn are undisturbed. Once the Blackthorn has grown up successfully, and is being utilised by the Black Hairstreak, the old cut and laid section can be removed if necessary. This management technique is experimental, but does appear to be maintaining suitable breeding areas for the Black Hairstreak.