



### 34.1 Introduction

The Purple Emperor *Apatura iris* is the jewel of woodland butterflies. One of the United Kingdom's largest butterflies, the smaller male displays a purple iridescent sheen. The female is a larger butterfly and has a plainer brown background colour. Individuals are fast flying and are known to be able to travel over a wide area. They usually emerge from the first week of July, followed by a period of intense male activity mid-month. Activity then subsides and occasional sightings of males and egg laying females will be made until the end of July and occasionally into the first weeks of August. The butterfly feeds mainly on aphid honey-dew and tree sap of broad-leaved trees, especially oak. However, the male needs to take salts as part of the reproduction process and will come down to the ground usually in the early part of the day. In Hertfordshire, the female has also been observed taking moisture from the ground.

Eggs are laid on members of the willow *Salix* family. Goat Willow *Salix caprea* is the most widely used food plant although Grey Willow *S. cinerea* is also used. Crack Willow *S. fragilis* is a recorded food plant but this has not been confirmed in Hertfordshire. The female is believed to lay c100 eggs over about 10 days usually between 12 and 2 o'clock. She can use both young and old willows, along rides or in the canopy. The larva feeds on willow leaves until hibernation and then continues feeding in the spring until around the middle of June, depending on weather conditions, when pupation occurs. The larvae are open to predation, and

parasitic, bacterial and viral attack for the relatively long time of 10 months or more, so numbers of emerging adults are generally low over wide areas of woodland.

The butterfly requires woodland with a diverse age structure, combining mature woodland and younger plantations that are encouraged to be willow-rich. Ride-side, woodland edge, riverside and road-verge willows can also provide important habitats. Age diversity within a woodland complex or a group of woods is essential for this butterfly to survive and thrive over the long-term.

### 34.2 Current status

In Europe the Purple Emperor occurs from north Spain to central Russia, is absent from Italy and the Mediterranean islands, is declining in several western and central European countries, including north France, and is spreading at the northern edge of its range in Scandinavia and Russia.

Once found as far north as Lincolnshire and in parts of Wales, the strongholds of the butterfly are still concentrated on the heavily wooded areas of Surrey, Sussex and Hampshire. At present, the most northerly sites that are known are in Northamptonshire. There are historic records from Cambridgeshire, Essex, Huntingdonshire, Norfolk and Suffolk. In East Anglia, there have also been a few sightings in recent years, which we believe relate to discrete naturally occurring colonies. There have been at least two recent releases in the region.

In Hertfordshire, near the end of the 19th century, reports of sightings were documented in the Hitch Wood area, as well as Knebworth Woods, woods near Walkern (later suggested as St. John's Wood), Oxbury Wood near Meesden and the woods adjacent to the Welwyn Railway tunnels. At this time a pinned specimen was required for a sighting to be accepted; unfortunately many reports were only considered as hearsay. Then followed several decades with no recorded reports, the species was considered extinct and any sightings were dismissed. In the 1980s, the butterfly was again seen in woods between St. Paul's Walden and Preston, and historical anecdotes of

sightings from the Broxbourne Woods Complex were documented. Since the 1990s there have been more reports from this area and this is where many of the colonies have now been found.

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### **34.3 Current factors causing loss or decline**

#### **34.3.1 Woodland management systems**

Whilst woodland fragmentation over the last 100 years has been given as a major historical factor in the national decline of the species, the 2002 Forestry Commission audit of woodland for both Hertfordshire and East of England shows a long-term increase in woodland cover, and recent decades have also seen a reversal in the long-term reduction of linear habitats linking woodlands. However, there have been dramatic changes in woodland management practices over this time, with a continued reduction in active management, such as coppicing and panel felling, resulting in loss of age diversity. In addition, many woods and heathlands (Breckland) in the Eastern Region were planted with conifers. In recent decades woodland cover has continued to increase, and there has been a significant move from conifer back to broadleaved woodland.

Sallows are light demanding shrubs and trees, and thrive in younger unweeded plantations or where traditional coppicing or clearance has occurred and amongst the immature growth of conifer plantations. As growth matures beyond 20 or 30 years, sallows can no longer compete and begin to die off. In addition, for many years, sallows had been treated as a 'weed' and systematically removed during thinning operations and from ride-sides. Presently, there is a trend towards managing woodland as uniform high or continuous canopy ('continuous cover') where light conditions tend to be inadequate for willow regeneration, or for woods to be left as un-managed high forest. In the short term, retaining sallows when thinning woods will be of benefit, but in the long term willow numbers will decline as surrounding growth matures.

A general assessment of the situation in Hertfordshire is that willow-rich woodland is now in decline. Lack of continuity of suitable habitat, by not maintaining good numbers of sallows within each woodland complex, will

be the main cause of decline or loss of colonies in the future.

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### **34.4 Current action**

#### **34.4.1 Legal status**

The butterfly is listed on Schedule 5 of the Wildlife and Countryside Act (1981, as amended) but only to prevent trade.

#### **34.4.2 Mechanisms targeting the species**

##### *34.4.2.1 Action Plans*

Butterfly Conservation has produced its own National & Regional (Upper Thames) species action plans for Purple Emperor to focus and co-ordinate the species' conservation over the next five to ten years.

##### *34.4.2.2 Survey and research*

The species lead contacts (Purple Emperor species co-ordinators for Butterfly Conservation Hertfordshire & Middlesex Branch) have conducted an in-depth study of the butterfly in Hertfordshire. Numerous woods have been surveyed for willow content and likely territorial areas out of season, and during the July flight period, almost daily surveying has been undertaken from 2000-2005, with additional contributions from other interested observers at publicly accessible sites.

##### *34.4.2.3 Awareness-raising*

The Hertfordshire Purple Emperor Report was published in June 2003, followed by the Purple Emperor Project Progress Report for 2003 and both have since been sent to all key partners involved with woodland management within the county. The species lead contacts have visited landowners and managers to discuss the needs of the species. Several articles have also been written for newsletters and magazines, including Butterfly, the national magazine of Butterfly Conservation. During the flight period, the Butterfly Conservation, Hertfordshire and Middlesex Branch, website gives full details of all sightings at publicly accessible sites, which has helped heighten public awareness of the species. Field trips are arranged

annually during the flight period, and visits are encouraged from other BC branches and Natural History Groups.

Butterfly Conservation Hertfordshire and Middlesex Branch, supported by a Heritage Lottery Awards for All grant, has recently produced a Woodlands for Butterflies and Moths leaflet (October 2005), which encourages favourable woodland management for Purple Emperor, White Admiral, Silver-washed Fritillary and other woodland butterflies and moths. The branch hopes to distribute this as widely as possible to those involved with woodland management in the area.



### 34.5 Purple Emperor Action Plan

#### *Objectives, actions and targets*

**Objective 1:** To gain a greater understanding of the Purple Emperor distribution and population dynamics in the County

**Target:** Conduct a species and habitat-monitoring programme in medium priority areas by 2007 and low priority by 2010  
In high priority\* areas the programme is ongoing and up-to-date

(\* High priority areas are identified as a woodland complex or a site known to hold a population of Purple Emperor)

Action code	Action	Target start date	Target end date	Lead partner	Other partners
PE/A/1.1	Monitor present colonies during the flight period and estimate current sallow density and woodland conditions (high priority areas)	2000	Ongoing	BC	BC volunteers
PE/A/1.2	Survey for new sites in areas near where colonies are known to be present and in historic areas (medium priority areas)	2000	2007	BC	BC volunteers
PE/A/1.3	Survey for new sites in areas where there is no knowledge of the butterfly ever being present, using sallow density as an indicator of suitable habitat (low priority areas)	2000	2010	BC	BC volunteers

**Objective 2:** To raise awareness of the needs of the Purple Emperor amongst woodland owners, managers and authorities and to endeavour to safeguard its presence in each woodland complex known to have a population of Purple Emperor

**Target:** To contact all owners in high priority areas by 2005 (ongoing and up-to-date), medium priority areas by 2008 and low priority by 2011 and produce written reports for each landowner/manager in high priority areas on a regular basis. To encourage positive management of at least one part of all larger complexes, so that there is a continuing abundance of sallows

Action code	Action	Target start date	Target end date	Lead partner	Other partners
PE/A/2.1	Write and produce a simple woodland management guide for woodland owners/managers and other bodies involved with influencing woodland management in the county	2004	Completed	BC	

PE/A/2.2	Encourage all owners/managers of sites known to hold a population of Purple Emperor, to consider the species in their woodland plans; provide them with a flight season species report and woodland leaflet (high priority areas)	Ongoing	Ongoing Up-to-date	BC	CMS, EN, FC, HBRC, HMWT, LA's, WT, landowners
PE/A/2.3	Complete a detailed habitat survey of at least one wood within each woodland complex, to be followed by pro-active positive management or: To encourage and achieve favourable management throughout a complex	2000	2010	BC	CMS, EN, FC, HBRC, HMWT, LA's, WT, landowners
PE/A/2.4	Identify important areas of woodland and contact those involved with their management, giving advice on good practice by distributing the woodland leaflet (Medium and low priority areas)	2005	2007	BC	CLA, CMS, EN, FC, HBRC, HMWT, LA's, RFS, WT, landowners
PE/A/2.5	Monitor the development of the woodland grant system by the Forestry Commission with regard to financial incentives for appropriate woodland management	2004	Uncertain Ongoing	BC	FC

### Relevant Action Plans:

#### *Hertfordshire Plans*

Woodland

#### *Butterfly Conservation Plans*

Species Action Plan, Purple Emperor *Apatura iris* (2000)

Regional Action Plan, Thames Region (2000)

#### *National Plans*

Broadleaved, mixed and yew woodland Habitat Description

### Key References

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Sawford, B., 1987, *The Butterflies of Hertfordshire*, Castlemead Publications.

### **Abbreviations (Partners)**

**BC** – Butterfly Conservation, Hertfordshire & Middlesex Branch

**CLA** – Country Landowners and Business Association

**CMS** – Countryside Management Service

**EN** – English Nature

**FC** – Forestry Commission

**HBRC** – Hertfordshire Biological Records Centre

**HMWT** – Herts & Middlesex Wildlife Trust

**HWF** – Herts Woodland Forum

**LA's** – Local Authorities

**RFS** – Royal Forestry Society

**WT** – Woodland Trust

### **Contact:**

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