

Purple Emperor 'Master Tree' Project

Progress Report 2004

Matthew Oates, Liz Goodyear, Andrew Middleton and Ken Willmott

The 2004 Purple Emperor Season

This was the Purple Emperor season from hell. We should have enjoyed a massive emergence, given that the 2003 egg-lay was good and that weather conditions during May and June 2004 were highly beneficial for larval development, pupation and the pupal stage. A large and early emergence was on the cards. Sure enough, the first males were seen as early as 21st June (Surrey), 24th June (Hampshire), 28th June (Northants) and 29th June (Herts & Oxon).

Initial numbers were highly promising: Matthew saw a minimum of 13 males (and a max of 16) in Alice Holt Forest, Hampshire, on June 27th. That, though, was just about the highest count from anywhere during the whole season, due to persistent foul and abusive weather which more than decimated the adults (in the modern meaning of the term), especially the males.

The weather collapsed just before the flight season. On 23rd June, the third deepest June depression in the last 100 years came over. Another deluge arrived on the 26th. Early July was dominated by low pressure which brought heavy localised downpours, which were often thundery, and low temperatures. It was particularly wet in the south east. July 6th was a pleasant summer's day but the following two days saw a severe north-easterly gale that caused a lot of damage in the woods, bringing down branches and myriad sprays. Oak spays littered the woodland floor thereafter, and exposed willows were damaged. This gale did immense harm to arboreal butterflies, writing-off White-letter Hairstreak and knocking out Purple Hairstreak in many districts. White Admiral males were also severely depleted. It is clear from independent reports that Purple Emperor suffered enormously, particularly the males. The only good news is that the bulk of the female emergence occurred after 8th July.

Cold nights occurred after this two day gale. Then the gloom set in. The peak Purple Emperor season period was dominated by day after day of Stygian gloom, punctuated by a few random holes of blue sky. It was so cold and dull that even Meadow Brown and Ringlet were grounded for lengthy periods. These conditions lasted from 9th July to 23rd July, when the first anticyclone of the month began to edge across. Between 6th July and the 23rd there was just the odd reasonable part-day (e.g. 19th and 20th). By the time the weather improved on the 23rd the males were effectively over and most females were worn. There was, though, some reasonable weather for egg-laying females late in the season. The last record we have is of a tattered female terrifying shoppers at the Sainsbury's superstore at Tadley, north Hampshire, on 5th August.

In effect, we want our money back!

Progress during 2004

Given the above it is hardly surprising that the project did not make great inroads in terms of new locations. However, in general, we consolidated recently gained knowledge, refined our thinking and the language that expresses it and, especially, we spread the word considerably. Moreover, the 'Master Tree' Project has come together with the Hertfordshire Purple Emperor study run by Liz and Andy, who are using the 'Master Tree' technique to great effect in surveying Purple Emperor there. Also, survey and monitoring projects are springing up in new areas, notably the woods north of Oxford and the Northampton woods. The development of Butterfly Conservation branch Species Champions is certainly helping effort on this species.

We are on to something massive: we are close to being able to survey and monitor this species effectively. Determining its true status and distribution is now feasible.

Alice Holt Forest Study

Matthew spent several days here, trying to build on the knowledge gained in 2003. All the assembly points previously located held true, apart from two minor ones that were not visited in suitable weather. Three new assembly areas were located, but they need to hold true in 2005 before they can be fully accepted. Assuming they do hold true, it means that there are now ten known assembly areas in the forest. One of these is actually an area of several acres of taller oaks on level ground, wherein lone males establish individual territories and make sallies into each other's territories. Viewing is difficult due to the lack of sizeable glades. Good numbers were seen in the main (public) assembly area by Bucks Horn Oak. A report has been sent to the FE.

Bentley Wood, Wilts

A gang of nine searched thoroughly for 'Master Trees' in and around Bentley Wood on 9th July, the day after the gale. Very few were seen in cool cloudy conditions. We reaffirmed the assembly area over the large stand of oak due south of the main car park and found a small territory at the west end of the Switchback. None was seen in Blackmoor Copse but a territory was found in Frenchmoor Copse. In effect, just a little progress this year, but the Bentley Gang will reassemble next year.

Bernwood Forest Area

A landscape-scale project has started with the aim of locating male assembly areas and thereby determining the status of the Purple Emperor in the extensive woodland system north of Oxford, coordinated by Dr Dennis Dell of BC Upper Thames Branch. Matthew prospected most of these woods during the 2003-04 winter, using the 1:25000 O/S maps and the FE stock maps for Bernwood. Nearly 30 candidate male territories were identified and general fallow abundance assessed for each wood. Efforts to determine the viability of these were severely hampered by poor flight season weather, and less than half the candidate locations were visited. The highlights were the discovery of thriving colonies in three small woods (two near Bicester, one near Brill) through homing in on candidate territories. Dennis produced a useful report, though it was based on a mere 64 sightings that suggests that Purple Emperor populations in these woods are relatively weak. The first specimen was seen on June 29th and the last on 31st July. The best day was 6th July, when 22 specimens were sighted, mainly by Matthew. Hopefully much more progress will be made in 2005. Volunteers welcome, contact Dr Dennis Dell, 8 Viney Lane, Fairford Leys, Aylesbury Bucks HP19 7G R. E-mail dennis.dell3@btopenworld.com

Hampshire

Ashley Whitlock, Purple Emperor Species Co-ordinator for BC Hampshire branch, has put in a lot of effort on surveying for this species. A useful data base is developing. A number of candidate male assembly areas have been identified, though poor weather prevented all but a few being checked this year. Ashley and Matthew both failed, independently, to find the butterfly in a part of the New Forest that seems highly suitable, perhaps because searches took place too late in the flight season.

Hertfordshire

This was the fifth year of Liz and Andy's systematic survey of the status and distribution of Purple Emperor in the county. Searching for male assembly areas is their main survey method. Despite the weather the butterfly was seen in all the assembly areas previously identified, and a new assembly locality was found, by looking for territorial activity around the highest point. This is a particularly important location as it links the Broxbourne and Wormley woodland complexes, the main stronghold in the county (the other stronghold is woodland in private ownership around Potters Bar). The Hertfordshire duo have identified 10 definite male assembly areas in the county, of which one is a classic 'Master Tree' that towers above the surrounding woodland and is prominent in the landscape. It is not sheltered. Ken and Matthew are perplexed, having prospected numerous similar trees over many years without any success. Seven of the 10 assembly areas are in wood edge situations. A report on the Herts Purple Emperors during 2004 is *in prep*, as is a Species Action Plan on the Purple Emperor for the Herts county BAP.

Northamptonshire

Lead by Doug Goddard, the Beds and Northants Branch of Butterfly Conservation has launched a project to determine the status and distribution of Purple Emperor in the Fermyn Woods complex. The branch received an Awards for All grant of £2000 from the HLF for the publication and distribution of leaflets and survey forms. The survey has been well publicised, and has featured in local newspapers and on Radio Northampton.

The butterfly was seen between 28th June to 31st July, with most sightings during the period 3rd to 13th July. A major male assembly area is known at the north end of Lady Wood, consisting of a long line of tall poplars on the east side of a main ride that runs north-west to south-east main, sheltered to the west by tall conifers. A good breeding area has been identified on the upper edge of Fermyn Woods Country Park. The Fermyn Wood complex may well support the strongest known Purple Emperor population in England, which is not surprising as it holds an exceptionally high density of suitable-looking fallows. A detailed report is *in prep*.

West Sussex

Males were again present in the two known assembly points near Southwater. A minimum of 4 were seen by Matthew in the main territory there on 19th July. One of these was followed as it left the 'Master Tree' (a sheltered high point clump of oaks in a small hill top wood) at 5.40pm, flew ¼ mile down an oak-lined bridleway, turned left and flew downslope along a long oak-lined hedge between fields before crossing a road and disappearing into another wood. In effect, this butterfly moved between woods on a total journey of nearly ½ mile, using mature hedge oaks, a reverse of the journey it presumably made that morning. No other developments reported from W Sussex but the potential for survey and study in this county is enormous.

Outputs

With regard to spreading the word, the project has been very active. A hugely successful training day was staged at Alice Holt Forest on April 24th, kindly hosted by the Forestry Commission and arranged by Butterfly Conservation. Over 40 people attended and Matthew, Liz, Andy and Ken gave talks. The weather was perfect, better than on any day of the 2004 Purple Emperor season. In late November, Liz, Andy and Matthew gave a 30 minute presentation on surveying and monitoring Purple Emperor populations to the national BC Members Day, in which the Hertfordshire work and national picture were presented. This seemed to go down well. Matthew has also given talks on the 'Master Tree' Project to three Butterfly Conservation branches (Beds & Northants, Hampshire and Sussex).

We have written an article for the BC magazine, *Butterfly*, Issue number 28, which we hope will inspire and assist people looking for this butterfly. Matthew has also written an article on the project for the annual BC Hants butterfly & moth report, written a biographical account of IRP Heslop, who masterminded *Notes and Views of the Purple Emperor* (Feb 2005 edition of British Wildlife), and produced a report for the FC on the Purple Emperor in Alice Holt Forest. In Herts, Liz and Andy are producing another annual report, depicting good progress on determining the butterfly's status and distribution in the county. They have met with the FC to discuss management concerns in a wood in private ownership, with positive results.

One of the 'Master Tree' Project's main objectives is to make this butterfly more accessible to people from as many walks of life as possible. In this respect, we are pleased to report that over 100 people visited the main Alice Holt Forest 'Master Tree' site at Bucks Horn Oak, following publication of the locality. Everyone who visited saw the butterfly, and most people saw several individuals. Likewise, Liz and Andy have helped many people to see the butterfly in Herts, partly through fields meetings arranged by the Herts & Middx Branch. Also, the Northants project is orientated towards helping people to see this wonderful butterfly. The butterfly has been strongly promoted there. The litmus test for success in this area may be a drop in visitor numbers at Bentley Wood, Wilts, which has been the best known Purple Emperor site in recent years and has received perhaps more visitors than its population might merit.

What to Look For

The following is an expanded version of the relevant part of our article in *Butterfly*.

Favoured assembly areas are occupied each afternoon throughout the flight season, though the number of males present and the degree of activity are reduced in extremes of temperature (very cool conditions or hot, >25°C), cloud (dull conditions) and wind (depending on degree of shelter). The presence of clashing, battling or chasing pairs of males is almost diagnostic. Look for high speed, high level chases. However, on windy days this activity is often localised, being concentrated around sheltered bowls close to the tree foliage.

These assembly areas are rarely single large trees but are normally groups of two to 10 trees. Occasionally, in woods of fairly even canopy height on level ground, males establish individual territories on large stands of up to a hectare or so in size, and make sorties to invade each other's territories. Many types of broad-leaved trees are used for perching, but as yet there are no instances of conifers being utilised. Most assembly areas are on high ground, but on level topography prominent tall trees may be used, at least in sheltered conditions. The butterfly can migrate, or even commute daily, out of level canopy woodland on flat ground to wooded higher ground. Shelter from prevailing winds is essential, and is provided by high ground or tall trees to the south and west. Conifer blocks are particularly good at providing this shelter. Many assembly areas are along north and east-facing wood edges. These are usually best found by working outside of the wood. Glades or open rides are not necessarily adjacent, which suggests that some / many assembly areas are hidden from our view. Many assembly areas are in rather unprepossessing spots, where few other butterflies occur. In effect, to find the Emperor you must forsake all other butterflies, though it is surprising what else turns up in Purple Emperor territories.

The proximity of sallows is irrelevant, for many assembly areas are some distance from breeding grounds. In effect, this appears to be quite a mobile insect, prone to daily local migrations, for males have been tracked going up to assembly areas in the morning and dropping back down in the evening.

Likely places can be determined through studying contours on the 1:25000 maps, FE stock maps and aerial photos on the internet, and prospecting the woods before the season commences. Sallows are most prominent in March and early April, when they are in flower. At that time of year good Purple Emperor woods on sloping ground can be spotted from some distance away. In season, the ability to use good quality binoculars to focus instantly on a small, fast-moving distant object is a great advantage, as is the ability to tolerate severe neck ache. This is a butterfly for birders!

Incredibly, we have little idea as to why they visit these places, for females seem to avoid these spots, and in late morning males search frenetically for females skulking amongst willow stands, where courtship and mating can take place. It may be that first matings tend to occur in and around the willow stands but second matings, if these occur at all, take place around assembly areas.

We will need to revise the language describing assembly area characteristics further.

Monitoring

Two methods for monitoring Purple Emperor numbers in a male assembly area are being trialed. The site is a spinney in the grounds of a private house on the edge of Alice Holt Forest, Hants (called Alice Holt 1). Observation is good. The site is visited regularly throughout the flight season for periods of 1-2 hours. It is likely that a two hour visit every five afternoons throughout the season would suffice well.

Method A simply records the maximum number of adults seen in a vista during the whole season (a perched individual present in the vista whilst others were seen flying would count). A four year run of data suggests relative stable occupancy.

Method B aims to record the number of apparent individuals (males) deemed to be present in the spinney on the peak afternoon. This requires the ability to separate out individuals, which is very tricky. It can be done, when males are perching quietly in warm

cloud and, especially, late in the season when males are distinctively pecked and worn. The data run suggests consideration fluctuation.

	2001	2002	2003	2004
Max number of individuals seen at once	4	3	4	3
Number of apparent males on peak afternoon	16	10	12	7

The Purple Emperor 'Master Tree' Project's objectives are to -

- Conduct, stimulate and facilitate searches for male assembly areas.
- Determine the characteristics of assembly areas and so develop techniques for surveying this species.
- Liaise with appropriate land owners and managers.
- Seek to develop methodology for monitoring adult numbers in assembly points.
- Increase conservation knowledge.
- Circulate annual reports and publish a final report (perhaps after 3-4 years).
- Make this butterfly more accessible to people at all levels.

Matthew Oates Dillycot, Culkerton, Tetbury, Glos GL8 8SS
matthew.oates@nationaltrust.org.uk
Flight season mobile 07771 971488

Liz Goodyear 7, Chestnut Avenue, Ware, Herts SG12 7JE
Elizabethgoodyear@talk21.com
01920 487066

Andrew Middleton 46, Bursland Road, Enfield, Middx EN3 7EX
Acmiddleton@blueyonder.co.uk
020 8245 0847

Ken Willmott 3, Yarm Court Road, Leatherhead, Surrey KT22 8NY
Kenwillmott@freeuk.com
01372 375773

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