

THE PURPLE EMPEROR IN THE UPPER THAMES REGION

2004–2013¹

DENNIS DELL

PART I: OBSERVATIONS

Introduction

This iconic species, *Apatura iris* has held lepidopterists in its thrall for over 100 hundred years. In 1857, the following poem, entitled 'How to catch an Emperor', appeared in the Journal of Entomology:

*High on his leafy throne,
Seated in purple state,
The Emperor rules alone,
Superior to fate.
Longing collector, go—
Thy net is all too short:
Kings are not taken so:
Put up with humbler sport.
Solomon in his glory,
Admired of Sheba's Queen,
As runs the sacred story,
In virtue sat serene;
But sinful sweets subdued him,
And filthy lust o'ercame,
Try muddy pools and sugar,
And thou shalt find the same.*

These days, of course, with our powerful binoculars, digital cameras and zoom lenses, we have no need to tempt His Majesty down from his lofty perch!

Even earlier (1810), the poet Crabbe wrote:

*There is my friend the weaver; strong desires
Reign in his breast, 'tis beauty he admires:
See! to the shady grove he wings his way,
And feels in hope the raptures of the day—
Eager he looks; and soon, to glad his eyes,
From the sweet bower, by nature formed, arise
Bright troops of virgin moths and fresh-born butterflies;
Who broke that morning from their half year's sleep,
To fly o'er flowers where they were wont to creep.
Above the sovereign Oak, a sovereign skims,
The Purple Emp'ror, strong in wings and limbs
He fears no bailiff's wrath, no baron's blame,
His is untaxed and undisputed game.
No less the place of curious plant he knows,
He both his Fauna and his Flora shows.*

Late in 2002, when we returned after 22 years 'exile' in Switzerland, Ched George graciously allowed me to take over his (purple) PE champion mantle. I was delighted: my obsession with

¹ First published as two articles in Butterfly Conservation Upper Thames Branch Newsletters

this species had taken hold from the day I first saw one in Waterperry Wood in 1978, and continued in Switzerland, where I contracted the 'breeding bug' quite severely. Jim Asher sent me all the *iris* Levana records, which I studied closely in order to know which were the best habitats. Clearly, Bernwood Forest had remained the epicentre of the population.

I realised that, in spite of the fact that there are large tracts of woodland in Berkshire particularly, that there were large 'holes' in the distribution of the PE in Upper Thames, particularly in Oxfordshire and North Bucks. I must admit, I discounted the Chilterns, thinking (wrongly as it turned out) that the predominantly beech woods in this region were unlikely to harbour the PE. Additionally, not that much Sallow is to be found there either.

At about the same, Matthew Oates of the National Trust, who has the most experience with the PE, invited people to take part in a project designed to provide a better understanding of the ecology of this species. The territorial behaviour of the male was high on the agenda. I invited members to send me details of their PE sightings, and I was delighted with your enthusiasm. Not only for your own sightings, but also for the 'third party' sightings which came to me via Jim Asher, the Branch website² and other members.

You don't need me to tell you that this is not an easy species to keep track of, and to get meaningful data you need a lot of people sending in their records.

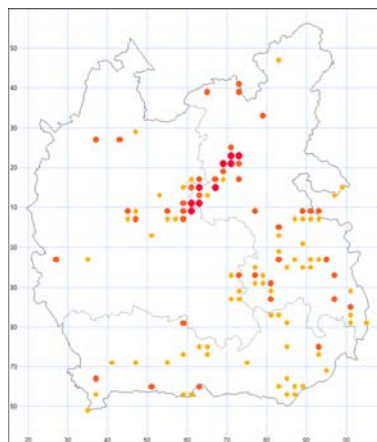
During my first summer back home, 2003, which was very hot, I reacquainted myself with some old happy hunting grounds from the seventies. Back then, the only place I saw the PE was in Bernwood Forest. I spent a lot of time in private mid-Bucks woods then, but never spotted a PE. In 2003, however, in these same woods I got lucky. Did this mean that the PE had increased in numbers during the intervening 25 years? This was indeed an exciting prospect !

From 2004 onwards, I received records from about 30 members each summer, which allowed me to write summary reports for the Branch website, and to build a picture of the ecology of the PE in our region.

Results

The ten year distribution map, produced by Jim Asher from data in Levana, clearly shows that:

1. the stronghold is still Bernwood Forest and its remnant woods, straddling the Bucks/Oxon border
2. it is well distributed throughout the Chiltern Hills
3. it is well distributed throughout Berkshire
4. it is thinly distributed in north Bucks, and most of Oxfordshire



Distribution of *A. iris* in Berks/Bucks/Oxon, 2004-2013

² <http://www.upperthames-butterflies.org.uk/>

PART II: BEHAVIOUR

Prologue

Close encounters of a third kind. AB's report from Oakley Wood, 8 July 2005:

“A woman walked from her car to me (at junction Of CP path and main ride) with a PE on her hand. She said that it was feeding on her car roof. PE remained on her hand for six minutes, in which time I photographed it. Then she transferred the PE to my hand. PE stayed on my hand for ten more minutes (feeding on salts) before flying off and circling me once before flying to ride side Hazel (West side of ride) and perching for next five minutes (12ft up). At this point this individual was witnessed by BW. PE then flew off over the back of the hazel before reappearing and gliding low, along the ride and settling on the ride briefly (walking whilst probing ground for salts). The PE then flew to grass (about 10ft flight) and then onto my rucksack, climbing inside the top pocket. PE then flew around me before landing on my leg. PE finally flew off up into Oaks (between main ride and car park) on East side of ride.”

From AR, 25 July 2006, administering the last rites:

“On his last legs and raggedy. Sitting on the parched ride, he remained there as I sat down next to him. I poured a wee puddle of water from which he drank.”

Introduction

Part I dealt with our observations over this ten year period. Part II deals with the qualitative aspects of behaviour/ecology.

This part is divided into four sections:

1. Habitats
2. Territories and behaviour within habitats
3. Feeding
4. Activity

1. Habitats

This was considered in Part I. Some further details are added here.

1.1 Away from woods

That His Imperial Majesty (HIM) is essentially an insect of forests and woodlands is not in dispute. What is becoming increasingly clear, however, is that it is certainly not only confined to such habitats. Not only from Upper Thames, but from other regions too, evidence has been accumulating of this species appearing away from woodlands and in more open habitats. The question arises as to whether HIM is breeding in such areas and is capable of maintaining a long term presence there. It is worth listing the 32 non-woodland observations from the last ten years.

With a few exceptions, all of these sightings were not more than 1km from woodland.

The two highlighted in red are particularly interesting. The tree nursery is in north Oxfordshire, and the nearest wood where *iris* has been seen is 5km away. The supermarket is in Earley near Reading in a built up area. The nearest woods are 1.3km away, and *iris* would have had to cross the River Loddon and the M4 to get to this supermarket.

From other regions, notably Sussex, Matthew Oates and Neil Hulme report the presence of *iris* in several spots along the crest of the South Downs. Most interestingly, a very large area, consisting of former arable fields with scattered Oaks along old field margins and small copses supports the second largest population in the UK.

Iris sightings away from woods and forests

Habitat type	Number of observations	Distance from nearest wood	Comments
private garden	14	0.5 TO 1KM	
golf course	3	0 TO 0.5KM	
middle of village	3	1KM	
BBOWT reserve	3	0.3 TO 1.5KM	Two are bog / heathland reserves, one is rough grassland / scrub
farmyard	2	0.2 TO 0.5KM	
unimproved grassland	1	0.5KM	
parkland	1	0.5KM	National Trust
wall of public house	1	0.3KM	
tree nursery	1	5KM	
inside a conference building	1	1.0KM	
path through reservoir	1	1.3KM	
supermarket car park	1	1.3KM	

1.2 Points of observation

Clearly, we spend our time looking for *iris* from accessible areas, which are rides and woodland margins. Because of this, we have no idea of how *iris* is distributed throughout a wood. It may well be that this species is distributed fairly evenly. To research this, we would need to climb a cherry picker to points above the canopy, and repeat this throughout a wood: a daunting and expensive project. We have one record of *iris* in a dense part of Waterperry Wood. Part of a transect walk goes through a dense part; a male was observed at the base of an Ash here, crawling onto faeces.

2. Territories and behaviour within habitats

1. Territories

A great deal has been written and discussed concerning the territorial behaviour of the male. If we define territorial behaviour as the congregation of males, year after year, around the crowns of groups of trees at the high point of woods, we have very few examples of this from our region. In fact, there are only two woods where we notice this regularly. In Piddington Wood, at a high point in one corner, we also see males every year around the dominant Oaks and Ashes along this high edge. In a private woodland near to Piddington Wood, which is on a steep slope, we always see activity at the top of this slope around the crown of a huge Ash and the neighbouring birch trees. We have observed *iris* at high points in other woods, but there has not been continuous occupation from year to year.

There are places in other woods where we can rely on seeing several males most years, but, interestingly, these are not woods with notable high spots. In these 'flat' woods, *iris* congregates around groups of the tallest trees, typically, pines and poplars. This is a strategy that probably allows them to spot females at a distance. In Waterperry Wood, there is a place along the main north-south ride where several males are seen most years over a few days. There is nothing that seems to make this spot more favourable than others along this ride: there are some big old Sallows and some tall poplars, but we can find this feature along the length of this ride. So what makes this spot so special? In neighbouring Oakley Wood, from the car park down along the main ride we see a lot of activity every year, but it is not, mainly, tree top activity. The area of the car park up to the road boundary is certainly the highest point

in the wood, but only once have we seen several males around the tops of the Oaks here. We thought that we had found a territory, but this behaviour has never been repeated in subsequent years.

Between 30 and 40 years ago, a reliable territory was a group of Oaks on the edge of a car park at Hell Coppice, at the southern end of Bernwood Forest. This is not a high spot. *Iris* deserted this territory a long time ago, and more were then seen in the Oakley Wood car park at the northern end. One possibility may lie in the attraction cars have for *iris*. The Hell Coppice car park was closed, and the Oakley Wood car park was opened, maybe causing a 'migration' of *iris* northwards through the wood.

2. Typical behaviour within woods

We note two major activities, arboreal, and low flights.

Arboreal. Apart from territorial behaviour, discussed above, *iris* spends a lot of time flying rapidly around the trees below the crown, from tree to tree along a ride. The term 'oak edging' has been coined for this activity, and it is thought that males are looking for females. Even more time is spent perching, in which the males alight on leaves, quite high up, facing outwards towards a ride. This is considered as an alternative to oak edging as a strategy to look for females. Several observers, having spotted *iris* 'on perch', note that he can stay there for hours at a time without taking to the wing. When he eventually does take flight, if he is alone, he indulges in short, elegant, gliding flights across canopies, which often last only a few seconds. If, however, there is another male on territory, then they will engage each other in fierce aerial battles in which they soar to great heights together, almost disappearing from view, before they eventually return to their perches. These aggressive males will even chase birds and dragonflies if they enter their territory. On one occasion, a male was seen chasing a red kite!

In old books, it is stated that Oak is the preferred perching and display tree. That may be the case generally, but, in our region, Ash seems to be just as popular. Perching has been observed, in fact, on most deciduous trees. What is particularly interesting, is that we have also observed activity around and on Corsican and Scotch pines.

Low flights. *Iris* engages in low skimming flights along a ride, often landing. This is not associated with any particular time of the day, although before midday is probably the best time to witness it. This may be observed along gravelled rides where there is no vegetation, e.g., in Bernwood Forest. In woods where the rides are grassy, low flights are not common. See section below on *Feeding*.

3. Other behaviour

Foreign objects. *Iris* has a penchant for man-made objects within a wood. Cars are particularly popular. Maybe it is the warmth on the metal surface which is the attraction; they often can be seen probing the metal surface with their proboscis. They have been found inside cars if a window is left open. Buildings within woods are also a good place to look. There are many instances of *iris* circling and landing on people, on their clothes and skin.

Activity flurries. We have often noticed sudden bursts of activity, when several will be seen oak edging at the same time, or else skimming up and down a ride. This can last several minutes. This is best observed along the long ride which runs through Bernwood from Oakley car park to the Shabbington turning circle. Observers, walking in the opposite direction to oneself, mention such activity further down the ride, but when we reach the spot, about ten minutes later, often there is nothing to be seen. At peak season, there are often days of maximum activity, when people report larger than average numbers from different woods on the same day. One observer watched eight to ten individuals in 2010 flying at low level along a ride; after 30 minutes they suddenly dispersed and were not seen again at this spot on that day.

Female activity. Most of the comments above refer to males. The female generally emerges later than the male. The main female activity involves flights in and around Sallows, looking for suitable ovipositing sites. They are also seen flying low along woodland tracks, often drinking from muddy rides. They are easier to spot, because they tend not to fly high, and they

often bask low down on the Sallows and deciduous trees. Courtship flights involving one or more males flying behind females have been observed on several occasions; chains of four males following one female, and six males following one female have been observed. Actual mating is rarely observed: we have only noted a few instances in our region.

4. Feeding

It is extremely unusual for *iris* to take nectar from flowers. We had one extraordinary event last summer. A female appeared in a member's Chinnor garden and proceeded to feed on Buddleia for a long time: there is a photographic record. It reappeared on the following day and did the same. We also have a photo of a male nectaring on Self-Heal from Northants.

Although it spends a long time hidden in the tops of trees, we have only one record of feeding on aphid secretions (honeydew) on leaves. *Iris* will come to sap runs, and several members have observed this over the years. Perhaps the most remarkable example was in 2013, when over six days in early August, up to three females were seen at a large Oak knothole in woodland near Brill. Several observers saw this.

The main source of nutrition appears to be minerals from the ride surfaces and unknown sustenance from animal faeces. Dog faeces are very popular, and *iris* will remain for a considerable time imbibing from this source. When it lands on human skin, the proboscis probes the surface, presumably taking salts. There are two records of *iris* coming to dog urine: one on a low Hosta leaf in a garden, used as a favoured spot for urinating by a small dog; the second was on wood chips which had been urinated on. We also have several records of *iris* being attracted to rubbish bins and bags of rubbish. Muddy ride surfaces are also used.

There is an unproven theory that males imbibe minerals from rides to build up their strength prior to mating.

5. Activity related to time of day and weather conditions

Since the vast majority of our recorders are looking from about 11 am until about 4 pm, we have accumulated little evidence relating to early morning or late afternoon activity. Observers from other regions maintain, that, on hot sunny days, the best time to look is from about 10 am until early afternoon, when activity dies off until early evening. We have recorded a number of sightings in overcast conditions with temperatures as low as 16 degrees. Strong wind does not always deter *iris* from flying. On one occasion, above the Oaks in Oakley Wood car park, we saw three or four individuals active under very windy conditions. The latest flight records we have are up to 18:40.

6. Conclusion

There is a great deal about the behaviour of this enigmatic butterfly which we still don't understand. We will continue to accumulate observations in the hope of unlocking the secrets of His Imperial Majesty.

Acknowledgements

Wendy and Mick Campbell have been the most enthusiastic and active observers of *iris* in the Upper Thames region over these last ten years. This article includes their comments as a result of their experiences, and I am grateful to them for their efforts. Most winters, they explore new woods to assess their suitability, and this has allowed them to discover new *iris* habitats almost every year.

In Part I, I acknowledged the contributions of Matthew Oates, Neil Hume and Ken Willmott to the overall understanding of this species.

Elizabeth Goodyear and Andrew Middleton of Herts and Middlesex Branch have also made outstanding contributions. I commend their publication in the journal 'Dispar': Eastern Region report for 2014, at <http://www.dispar.org/reference.php?id=91> (Last accessed 12 March 2015).

The Upper Thames Branch of Butterfly Conservation would like to ask everyone searching for the Purple Emperor, or other rare butterflies to please consider all the wildlife – including flowers and other plants – at sites in our region.

Please stick to footpaths and do not enter areas that are marked as no access. That way, our beautiful, and sometimes threatened wildlife has the best chance of thriving, and giving us all pleasure in the years to come.

Thank you for your consideration and cooperation!