

Paradise Regained! The Knepp Wildland 2018 Purple Emperor Season

The Purple Emperor experienced one of its most remarkable seasons during the long hot summer of 2018. Hibernating larvae had survived the winter well, and were then able to feed up rapidly during a fine May, and pupate during benign weather in early June. Everything, then, depended on flight season weather. After an indifferent start the 2018 flight season was blessed by a long spell of hot, dry, though sometimes windy weather which commenced on June 22nd. The summer months of June, July and August were hotter in England than those of the long hot summer of 1976. No rain was recorded at Knepp between May 31st and July 28th. Heathrow Airport recorded 39 rainless days.

Nationally, the first Purple Emperor of the year was recorded on June 13th, at Castor Hanglands in the East Midlands (a male photographed as Oaken Wood in Surrey on June 3rd must surely have been a bred-and-released specimen). At Knepp Wildland, the first was seen in the afternoon of June 15th, by a member of the Burrell family - a fresh male down on the track by Hammer Pond. From June 17th the butterfly was seen at Knepp Wildland each day, until the last was seen, by Neil Hulme, on July 26th.

The First Week

The weather during the weekend of June 16th and June 17th was poor, but Neil managed to see two males sparring at the north end of Green Lane on Sunday the 17th. I arrived at Knepp on the following day, June 18th, and saw 14 freshly emerged wandering males before conditions became too windy at around 3pm. I went on to see some 2500 day-individuals at Knepp during a 28 consecutive day stint. That was some marathon.

The weather rather glimmered and glowered for three days. I saw 29 males and the year's first female on June 19th, including two males feeding together on a fresh fox scat in the north-west corner of Rainbow field. The following day, after a cloudy morning I managed to see 61 males, including a giant which must have equated to ab. *maxima* of Heslop. The Green Lane Purple Emperor transect count that day totalled an impressive 22.

Things wobbled on June 21st. The night had been cool and the day took a long while to warm up. I saw only 56 Purple Emperors, including one female, and worried that the previous day's tally might have been the main pulse of emergence of the year – in which case, the *annus mirabilis* I had predicted on the Purple Emperor Blog was not going to occur. Hope was provided by the vision of a male launching itself at a White Stork that spiralled over Honeypools Barn field.

I need not have worried, the emergence had just been stalled by a couple of cool nights. The following day, June 22nd, saw the start of a long hot spell which lasted until August 8th. In cloudless and calm conditions, with the temperature reaching 26C, I saw 121 Purple Emperor males that day. Most were busily searching the sallow areas for females, exploring, and establishing territories on the oaks during the afternoon. The day's only female was, rather predictably, being mated, at 4.50pm in the southern tip of Bull Field. This mating pair had been flushed out of the oak crown by amoral males trying to muscle in on the act.

Peak Season

Saturday June 23rd dawned and remained calm and bright. 178 Purple Emperors were seen, including a tussle of six squabbling males. This established a new all-time record day count for the Purple Emperor in Britain. It was soon eclipsed. The day's only two females were both being ardently courted, with one performing the classic 'tumbledown' rejection display of a mated female. An impressive 61 males were counted sallow searching in an hour in Rainbow field, from 11.20am to

12.20pm – the highest number counted in an hour, ever, anywhere; a tally almost beyond the wildest of Emperoring dreams. A count along the Green Lane transect route totalled 60. Purple Emperors were seen feeding on oak sap for the first time that season. By now I was suffering from heat stroke, blisters on two toes, the sharp pain of a torn para-spinal muscle, and from innumerable insect bites spawned by two wet days at May's end.

In such situations one does not merely carry on regardless, but ups one's effort considerably, as a point of principle. So, the following day, Midsummer Day, Neil and I broke the three-hundred barrier, for the first time in entomological history. In blistering weather, Neil managed to count 300 Emperors in a 12-hour day and I managed, I think, 311. The situation became farcical, with me trying to nudge Neil over the 300 mark at 7.15pm near Tory Copse, not realising that I was already there, having miscounted my own tally. Our marathon included counts of 27 in 27 minutes in 27 Acres field and 50 in 50 minutes in Rainbow field, all fallow-searching males. We saw only six females all day: one being pursued by three over-amorous males and another laying the first (observed) eggs of the year, in Rainbow field at 12.25pm. The paucity of females suggested a mighty hatch of them yet to come. Our Green Lane Purple Emperor transect totalled a record 66. Back in early July 1975 I had got plastered in the nearby *George & Dragon* after seeing 30 Purple Emperors in a day in the local woods. Now, a nought on, Neil and I were too exhausted to celebrate anything, meekly handing over my celebratory bottle of top-quality Prosecco to a young couple in the Knepp camp site. Perhaps we should have joined the Purple Emperors partying on fermenting oak sap at the southern end of Oak Field instead.

The first sizeable hatch of females took place the following day, Monday June 25th. It was cloudless, calm and what is ungratefully referred to as 'stinking hot' in the English language. Dennis Dell, the elder statesman of the *People of Purple Persuasion*, was visiting. Being an octogenarian Dennis is only able to venture out for three hours at a time. That afternoon, in three precise hours, we managed to see 90 Purple Emperors. Males were active over most oak trees. Many of them were seeking the shade along north-facing oak edges, and older males were quiescent in the afternoon heat, becoming active again as the temperature cooled from 5.30pm, putting on an impressive evening flight. At 3.45pm, the distinctive flight of a virgin female was spotted along the oak edge at the southern edge of Oak Field. In a journey of 130m she attracted no less than nine males, who pursued her with an intent which made Dennis and I hang our male heads in shame.

The butterfly was now at peak season, with females becoming relatively prominent, and weather conditions perfect. Males were active by 8am, and were flying for at least twelve hours. Some nocturnal activity was also observed, primarily on the hot moonlit night of Tuesday 26th, but my efforts were thwarted by the moonlit arrival of a large herd of long-horn cattle.

In a short working day on June 27th I counted 156 Purple Emperors, including ten definite females. The males were so numerous that they were over-spilling, setting up territories along outgrown hedgerows offering shade from the glare of the sun. One 140m section of hedge was occupied by nine territorial males, squabbling with male Commas and Red Admirals. However, I was unable to conduct any thorough counts as I had a stream of friends visiting. Had I been able to do so, I would probably have exceeded the 400-mark. Two of those friends were John Clark and Dr Pete Merrett, who had worked the 1976 Purple Emperor season with me. 2018 eclipsed that year.

Safari Time

The Knepp Wildland Purple Emperor Safari season opened on June 28th. That group saw 29 Purple Emperors, including three females, but the weather had entered a windy phase, which limited activity. Indeed, on several days a north-east wind sprung up, reaching Moderate strength at lunchtime and becoming Fresh by teatime. Purple Emperors, of both sexes, were drifting downwind and gathering

along sheltered west-facing edges, leeward. I attempted a mass count on June 29th but was disappointed to see only 218, including ten females. The wind prevented more. The following day was less windy and Paul Fosterjohn managed to record 320 Purple Emperors, before retiring, hurt, around 4.30pm – vowing never to look for another Purple Emperor in his life. He will, of course, be back. That Saturday, the 30th, a daylong Purple Emperor Safari group was treated to 87 Purple Emperors, including a rejection drop tumbledown which took place amongst the delighted group. It was the end of June and some males were already looking worn and torn. For a week it had been difficult to go more than five minutes without seeing a Purple Emperor anywhere at Knepp Wildland – that is unparalleled in entomological history.

July arrived in searing heat. I began by searching the under-surveyed south-western quarter of the 458ha Wildland, where I saw 35 Purple Emperors, including males searching Crack Willow for emerging females – which suggests that the butterfly breeds on that tree at Knepp. The Purple Emperor Safari group that afternoon, Sunday July 1st, were treated to 54 Purple Emperors, including seven females, four of which were accosted by males and forced to perform tumbledown rejection flights. Safari-goers were treated to male Emperors shimmering around them, seeking the favours of uncooperative females.

The following day I had to return home, briefly, though I managed to see a few Purple Emperors in wind-tossed Savernake Forest on my way back to Knepp in late afternoon. I had missed out, badly: the wind had been Light at Knepp and Neil had recorded a staggering 388 Purple Emperors in a ten-hour marathon, including a knot of 13 males pursuing one unfortunate female. It was enough to convert him to feminism.

The north-east wind returned the following day, but that afternoon's Purple Emperor Safari group managed to see 34 Purple Emperors, mainly along the sheltered edge of Bentons Gorse, where females were being unduly pestered by males.

Only July 4th the wind veered around to the south, and became light. But the Emperors were quietening down. The males were ceasing to search the sallow stands for freshly emerged females, as the female emergence was nearly complete. Also, the males were beginning to age (or they were hungover following England's world cup victory the previous evening). I counted only 147 in a full day count in ideal weather conditions. Moreover, the Green Lane transect count was down to 56.

Another hugely successful Purple Emperor Safari took place the following afternoon, when 60 Purple Emperors were seen including ten females, a posse of six males in flight together, and three tumbledown rejection flights around the Safari group. Beat that, wildlife tourism in Britain – if you can!

The weather heated up further. The males were becoming inactive during the morning, though increasingly territorial during the afternoon. I saw 69 on the afternoon on July 6th. Some more night flying was then observed, around Bentons Gorse, only this time I was accosted by the free-ranging Tamworth pigs.

The Switch

Quality was starting to make up for a decline in quantity. The afternoon safari group on Saturday July 7th only managed to see 34 Purple Emperors, though that included three females seen egg laying simultaneously in the north-west corner of Keanes Field. The Switch had been flicked: the female emergence was complete and the males were now taking the mornings off, like ageing rock stars. The older males were becoming heat-suppressed, and were quiescent between 3pm to 5pm. The full-day

Purple Emperor Safari on July 8th totalled only 37 Purple Emperors, including an aged male seen feeding low down on an oak trunk before flying off low and falteringly, into the blistering sun, to die.

The surviving Emperors were becoming afternoon butterflies, increasingly dependent on oak sap. Purple Emperors were no longer everywhere, they were aggregating around feeder trees out of the wind. On July 9th I managed to count only 24 on the Green Lane transect route.

As mid-July approached it was still possible to see 30 or 40 Purple Emperors in a day, or rather, in an afternoon and an evening. There was even a little dead time, produced by periods of dense cloud. The males were becoming restricted to the Green Lane oaks and the oaks along the edge of Bentons Gorse.

The final Purple Emperor Safari group, on the 12th, managed to see 27 Purple Emperor, including a freshly emerged female – the last of the great emergence of 2018. In all, Neil and I had shown Purple Emperors to some 250 visitors to the Wildlands. All had returned home having experienced something deeply memorable, though keeping them hydrated and focused had been challenging. One flagging group had been revived by an enforced chant of ‘Up Yours January!’

Until the sun breaks down...

A thunderstorm started to brew on the evening of July 13th, but it issued only a single crack of thunder at Knepp, and not a drop of rain. Instead, Horsham got a welcome soaking. That afternoon, Neil and I saw our final Emperors of the year together: a male flushed a female out of a willow bush in 27 Acres, and then triggered another pair into action – so our final experience together was of back-to-back tumbledowns. Rumour has it that we walked out together with our trousers on our heads: Neil was going off to save the Grayling butterfly from becoming extinct on the South Downs, I was going to visit somewhere called Home, before returning to Knepp for the grand finale of the 2018 Purple Emperor season. Between the two of us we managed to cover the ending of the 2018 Knepp Wildland season.

By now drought was affecting many of the young willow thickets, where the trees are less than 20 years old. The old willows in the lags and around the lakes and streams were untroubled, but many of the younger willow stands in the ex-arable fields were steadily dropping the sub-canopy leaves on which Purple Emperor females lay most of their eggs, especially the narrow-leaved varieties. There was some local variance: stands of young willows in the south-west corner of Woggs field and at the west end of Brookhouse 8 field remained relatively healthy, but those in Crabtree, 27 Acres and Rainbow fields were dropping leaves steadily, with a russet carpet of fallen leaves lying on the ground. The broad-leaved willows, which the Purple Emperor favours, were more resilient, though some of them had been dropping the all-important sub-canopy leaves on which young larvae feed – the larger, thicker and coarser outer canopy leaves were fine, but those are unsuitable for young Purple Emperor larvae.

Rain was desperately needed. It was supposed to rain at Knepp on Saturday July 21st, but none fell. It went elsewhere instead. By July 20th second-instar Purple Emperor larvae were evident, suggesting that the insect was fighting back against developing drought conditions by rampaging through its growth phases.

I managed to see 20 Purple Emperors on July 21st, including 15 along the Green Lane Purple Emperor transect route. That took the 2018 Green Lane transect tally to 201. The following day I struggled to see 13 Purple Emperors, all OAPs, including five females. The first did not appear until 1.44pm. Late in the day three females were seen feeding on oak sap bleeds at the southern end of Oak Field. They were exhausted, and had probably run out of eggs to lay. I saw my last Emperors of the Great

2018 Purple Emperor Season the following afternoon, signing off with a couple of octogenarian males battling away over the favoured Green Lane territory near Lower Barn.

Neil returned to see a worn and ragged male and a lone female along Green Lane on July 26th. Purple Emperors had flown at Knepp Wildland for 37 stupendous days. Two days later the long-awaited rains arrived, in the form of thunderstorms which hit much of south-east and eastern England, blotting out a full lunar eclipse.

This is the account of my 49th Purple Emperor season. It had surpassed all its predecessors. Some of the insect bites are present still on the palms of my hands, as stigmata.

Matthew Oates
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