

**RESULTS OF THE TWO YEAR “BACK FROM
THE BRINK” SURVEY IN MOCCAS PARK
NATIONAL NATURE RESERVE FOR THE
BEETLE
(2018- 2019)**

Hypebaeus flavipes (Fabricius, 1787)
(Coleoptera: Melyridae; Malachiinae).

WORK UNDERTAKEN AND REPORT WRITTEN BY J.COOPER.



Saving the small things that run the planet

INTRODUCTION:

The malachid beetle *Hypebaeus flavipes* (F.) was found in Britain for the first time on 26th June, 1934 by J.R.le.B.Tomlin who swept 3 female specimens from under what is now tagged tree 00151 in Moccas Deer Park, Herefordshire (see Donisthorpe & Tomlin, 1934). These specimens were identified by K.G.Blair as *Ebaeus abietinus* (Abeille de Perrin, 1869) and were found by sweeping under the tree on a drizzly day. Many of the small malachids are difficult to identify and exhibit marked sexual dimorphism, the species in question being no exception. It was only later when G.H.Ashe collected male specimens, certainly from the same tree, but by beating foliage, that the true identity, as *Hypebaeus flavipes*, was established (see Blair & Donisthorpe, 1943).



Hypebaeus flavipes (F.) female on left, male on right. Length ca 2.2mm
© Roger Key.



Hypebaeus flavipes (F.) the male, on left, has the apical third of the elytra yellow and a pateliform process at the elytra apex. The female, on right, has uniformly dark elytra except for a small yellow are at the sutural angle. As the name states, this species has yellow legs. Length 2.0 – 2.5mm. © Udo Schmidt. Specimens from Oxford University Museum of Natural History collection.

In the UK, *Hypebaeus flavipes* is known only from Moccas Park National Nature Reserve. It is legally protected under Schedule 5 of the Wildlife & Countryside Act, 1981 and subsequent amendments. Its IUNC Status is Vulnerable D2 in a restricted area of occupancy or number of locations with a plausible future threat.

Moccas Deer Park was notified as a Site of Special Scientific Interest in September 1963 and later that years was recognised as being of National Nature Reserve status. Steps to achieve this end were taken but it was not until July 1977 that the owner was prepared to negotiate a formal agreement. On October 20th 1977 Noel King (NCC's West Midlands Region ARO), Alan Stubbs (Entomologist, NCC Chief Scientist's Team), Paul Harding (Institute of Terrestrial Ecology) and J.Cooter (Glasgow Museum) met to establish the scientific requirements of the proposed Nature

Reserve agreement. This Agreement was formally signed on 11th May, 1979. It was Britain's first parkland National Nature Reserve. (see Harding & Wall, 2000: 219-226.)

SUMMARY:

As the result of the present survey, *Hypebaeus flavipes* is now recorded from 16 veteran oaks in Moccas Park National Nature Reserve. This total includes at least one tree where its occurrence was probably fortuitous and one on which it has not been found for approximately 10 years. (It should be born in mind that British coleopterists are not generally known as "twitchers" and an access permit needs to be obtained prior to visiting Moccas Park; it is likely the licences required to either disturb or to capture and kill *Hypebaeus* would not be issued to a general entomologist. It is likely very few entomologists visit Moccas Park.) Add to this the fact that in the 1990's English Nature no longer wanted J.Cooter to regularly monitor the *Hypebaeus* population as he had been doing at NCC/NC request since the late 1970's, its absence from previously "known" trees might be apparent rather than actual).

METHODOLOGY:

J.Cooter is covered by NE's Organisational licence 2016 - present (as NNR volunteer, this includes the licence appropriate for "disturbing" *Hypebaeus* under provisions of the Wildlife & Countryside Act, 1985. In addition J.Cooter applies for and has been issued with the necessary National Nature Reserve entry permit). An SSSI consent licence has been obtained by *Buglife*.

Equipment used: Signal pattern beating tray and stick; surveyors tape measure and peg; pooter, telescopic ladder; record forms.

This contract between the charity *Buglife* and J.Cooter is set out in the paperwork issued by Sarah Henshall (*Buglife*, 10th May, 2018). It was later agreed that Sarah

Henshall would arrange access to any further sites that would be worthy of investigation for *Hypebaeus flavipes* in the general vicinity of Moccas Deer Park and elsewhere. J.Cooter suggested investigation of the land between Park Lodge and Moccas Court and Parham Park, West Sussex. No instruction to expand the survey outside the Deer Park was received and it is not known if a plan to extend the survey work for 2019 was ever put to the Moccas Estate or Natural England.

Thus the two years of the survey contract were confined to the Lower Park area of Moccas Park National Nature Reserve and was carried out entirely by J.Cooter, except for one day when Paul Rutter joined him. It was hoped Paul Rutter would be allowed to join the 2019 survey work, but this did not materialise.

The survey work was based upon Natural England's 2018 "Moccas Park NNR Lower Park Veteran Trees" map. As well as showing the majority of veteran trees in the Lower Park and their tag numbers, this area was deemed to represent the area to be covered in the "Back from the Brink" survey. Not all veteran trees are indicated (for example where trees are so closely spaced that it is not possible to number each on the map) and not all veterans are oak. All trees on the map except -373 were identified, required data recorded and "beaten" to see if *Hypebaeus* was present. If it was present, the numbers found were noted along with field identifications of the other species of beetle also beaten from that tree.

All data required was recorded in the field at the time of investigation on the forms provided by Sarah Henshall at the outset. These data were transferred to an Excel spreadsheet. Separate spreadsheets recorded the trees and those trees on which *Hypebaeus* was found (or had been found in the past).

It might be worth mentioning at this point that J.Cooter first visited Moccas Park in 1975 and found *Hypebaeus* for the first time in summer 1976 on tree 00151. For many years he would monitor the beetles and report to the Nature Conservancy Council's Assistant Regional Officer (and later the same under the guise of the Nature Conservancy and English Nature). This work was evidently valued as in 1991 he was selected to be one of the first "volunteers" (ie an unpaid, specialist not

employed by NCC/NC/EN, there was not official EN volunteer scheme at this time) selected for English Nature's new National "Voluntary Warden's Award" the citation on the certificate, signed by no less than Lord Cranbrook (!), ". . . *in recognition of the valuable contribution that has been made to the management of Moccas Park [and] The Flitts National Nature Reserve [sic].*"

This award resulted in J.Cooter being asked to visit the Park regularly during the "*Hypebaeus* season" to informally monitor the population. This work had been in hand since Cooter moved to Hereford in 1979, but now visits were increased, sometimes as often as 4 afternoons/evenings per week plus weekends during June/July. The "Voluntary Warden Scheme" seems to have been killed off through some sort of administrative confusion with the subsequent "NE volunteer scheme" and retirement of ex NCC staff. For example after the Lower Park trees were tagged, J.Cooter asked the NE office if they would like him to visit, at his own expense and record the tag numbers of the trees on which he had found *Hypebaeus* over 25 year period; an offer that was declined, but it was pointed out that entry to the Park is by Permit only (!).

With over 40 year's experience of finding *Hypebaeus* in Moccas Park, the 2018 leg of the survey included all "known" trees. The 2019 leg those trees not visited during 2018. Moccas Park NNR access permit and the necessary licence to "disturb" *Hypebaeus* were kindly arranged by Jo Hackman (Natural England).

SITE DESCRIPTION:

Moccas Deer Park, its history, development, flora and fauna are all described in detail in Harding & Wall, 2000.

SPECIES LISTS:

Other beetle species found on “*Hypebaeus*” trees are listed on the “*Hypebaeus*” spread sheet. All of these other species have been found on the majority of “non-*Hypebaeus*” veteran oaks in the Park.

After taking up duties at Hereford Museum in 1979, J.Cooter began compiling a list of Coleoptera recorded from Moccas Park. Included in the list are various files from NCC, Malvern office, the *Entomologist's Monthly Magazine*, *Entomologist's Record & Journal of Variation*, *The Entomologist*, *Entomologist's Gazette* and the *Transactions of the Woolhope Naturalists' Field Club*; J.Cooter's own field work and records sent to him by visiting entomologists. The late R.W.Lloyd's collection at Manchester Museum was also “trawled” for records.

This list (Welch & Cooter, 2000) appears in Harding & Wall, (2000) and records 916 species of beetle; the Hereford museum files and card index were transferred to the Herefordshire Biological Records Centre approximately 1999. A revised list has not been published despite several additions to the Park's beetle fauna over the years (*Scaphidium balcanicum* added to the British List in 2006 and *Agrilus bipunctatus* come to mind) and at least one species (*Adistema watsoni*) appearing on the published list in error.

KEY FINDINGS:

All encounters with *Hypebaeus flavipes* in Moccas Park have been made with the entomologist standing at ground level, sweeping the sword and beating foliage within reach.

Field work by J.Cooter since 1975, combined with the current *Back From The Brink* survey work of 2018 and 2019 has established the presence of adult *Hypebaeus flavipes* on a total of 16 veteran oak trees in Moccas Park National Nature Reserve.

Although the first capture of this species, in 1934, was by sweeping under a veteran oak (tree tag 00151), since then it has always been found by beating.

Invariably the adult beetle is beaten from the foliage of thin branches and twigs growing near to or adjacent to rot-holes or cavities in the parent tree. It is generally on foliage in dappled sun, less frequently in direct sun and only seldom on foliage in shade.

Little or nothing is known about the immature stages and ecology of *Hypebaeus flavipes*, likewise the ecology of the adult has not been studied in detail, but the assumptions that have been made and are likely to have some accuracy. These are:

- the larva lives in galleries and abandoned insect workings in the red-rotten interior of the veteran oak trees.
- It is carnivorous.
- The adult beetles do not visit flowers or any nectar source (in the past J.Cooter has spent much time beating flowers oak hawthorn, field maple, crab, lime in the Park without ever finding *Hypebaeus*).
- The adults are carnivorous.
- The adults use the foliage to seek a mate and likely would eat any small invertebrate encountered.
- The adult beetle is at large for a period of approximately three to four weeks from approximately mid-June until approximately mid-July (times depend on the timing of summer and environmental conditions).
- As with many if not all insects, the male *Hypebaeus* appears a little earlier than the female; the female can be found a little later in the season than the male.

Whilst in Novosibirsk January 2018, J.Cooter spent some time discussing the biology and ecology of *Hypebaeus* and closely related beetles with the authority on the Malachiidae, Sergei Tchernychev. Alas, the conclusion reached was that “we know nothing about their ecology or biology”.

DISTRIBUTION:

In the United Kingdom, *Hypebaeus flavipes* is only known from Moccas Park National Nature Reserve. Mayor (2007:434) whilst listing the countries *flavipes* has been recorded from, inexplicably omits Great Britain: Europe – Austria, Belgium, Bosnia Herzegovina, Croatia, Czech Republic, France, Germany, Hungary, Italy, Latvia, Luxembourg, Poland, Russia*, Slovakia, Spain, Sweden, Switzerland. Asia: Russia (East Siberia), Russia (West Siberia) and Russia (Far East). It is thus the most widespread of the 123 or so described species of genus *Hypebaeus*. * In the Catalogue, European Russia is approximately the area west of the main ridge of the Ural mountains plus a small area of Kazakhstan west of the Ural river (see Löbl & Smetana, 2007: 11).

The information on ecology and biology of the Malachiidae given by Evers (1979:54) is too general and too concise to be of any use here; it includes no reference to *Hypebaeus* or its close relatives.

The only other source relevant here is Cooter (2000:168-9); I have been unable to add anything to this. The full text is:

“Hypebaeus flavipes in continental Europe.

Hypebaeus flavipes occurs in scattered populations in areas of old woodland in continental Europe, including Scandinavia. Its life-history and ecological requirements are unknown, but it is possible [almost certain – JC] that the larvae are predators on small invertebrates inhabiting burrows in red-rotten oak.

According to Andreas Herrmann [pers.comm.], *H. flavipes* is a rare species in Germany and has been found on blossoms or branches of trees standing near large oaks at three sites only in the north east of Niedersachsen (north Germany). He once reared four specimens from red-rotten wood mould removed from a hole in a dead standing oak near the village of Grippel, Niedersachsen; *Dorcatoma chrysomelina* Sturm and *Pentaphylus testaceus* (Hellwig) were also present in the mould.

During June 1949, 10 male *H. flavipes* were recorded from a large rotten beech stump riddled with the burrows of sphecid wasps and beetles of the genera *Tomoxia*, *Melasis*, *Sinodendron* and *Ptilinus* at a site near Hornsä, Småland, southern Sweden (Palm, 1959). Horion (1953: 84-85) states that *H. flavipes* prefers “Flußauen” (woodland and trees beside rivers).

Alfons Evers (pers. comm.) acknowledges authority on the Melyridae, finds *H. flavipes* in Germany by beating old hornbeam (*Carpinus betulus*) except in Nikolasee where it occurs on old oak in relict forest. His 29 examples of *H. flavipes*, of which only 10% are males, are from: Saxonia (Leipzig and dResden); Thuringia (Pössneck and Solkwitz); Hessen (Nassau, Hanan and Schwanheim); Bavaria (Passan); Rhenania (Loblentz); Bedenia (Stuhensee (C.Karlsruhe)); Sachsen-Anhalt (Dresden, Harz Mountains Thale and Ilsenburg)) and Berlin-Brandenburg (Nikloasee).“

The conclusion reached through general discussion with non-British coleopterists is that *Hypebaeus flavipes* is a scarce beetle, and it has a scattered and disjointed range. From above, it can be seen that it has a distribution throughout the northern Palaearctic, from Spain east to the Russian Far East.

[It is worth noting very often insects on the limit of their geographical distribution are not as catholic in their habitat tastes as they are in mainland areas. Thus it is probably 99.99% likely that *Hypebaeus* in UK is restricted to oak].

PRIORITY AREAS:

Common sense dictates the trees between tag number 00174 and 00293 be further investigated if the use of a “cherry picker” platform is made available. These trees form a roughly northwest – southeast axis and contain all but one known “*Hypebaeus* tree”. If time permits a number of selected “non-*Hypebaeus* trees” could also be investigated by this method. Tree selection can be undertaken during the winter/spring.

Again if time permits the area of parkland/farmland containing veteran oaks extending from Moccas Court to Park Lodge is worthy of inclusion in this project.

Further afield, Parham Park, West Sussex might be worth investigation; it is rich in saproxylic coleoptera and veteran oaks. Despite this being known since at least the 1930's, very little entomological field work has taken place there, and what has, has been spread over approximately 80 years.

MANAGEMENT REQUIREMENTS.

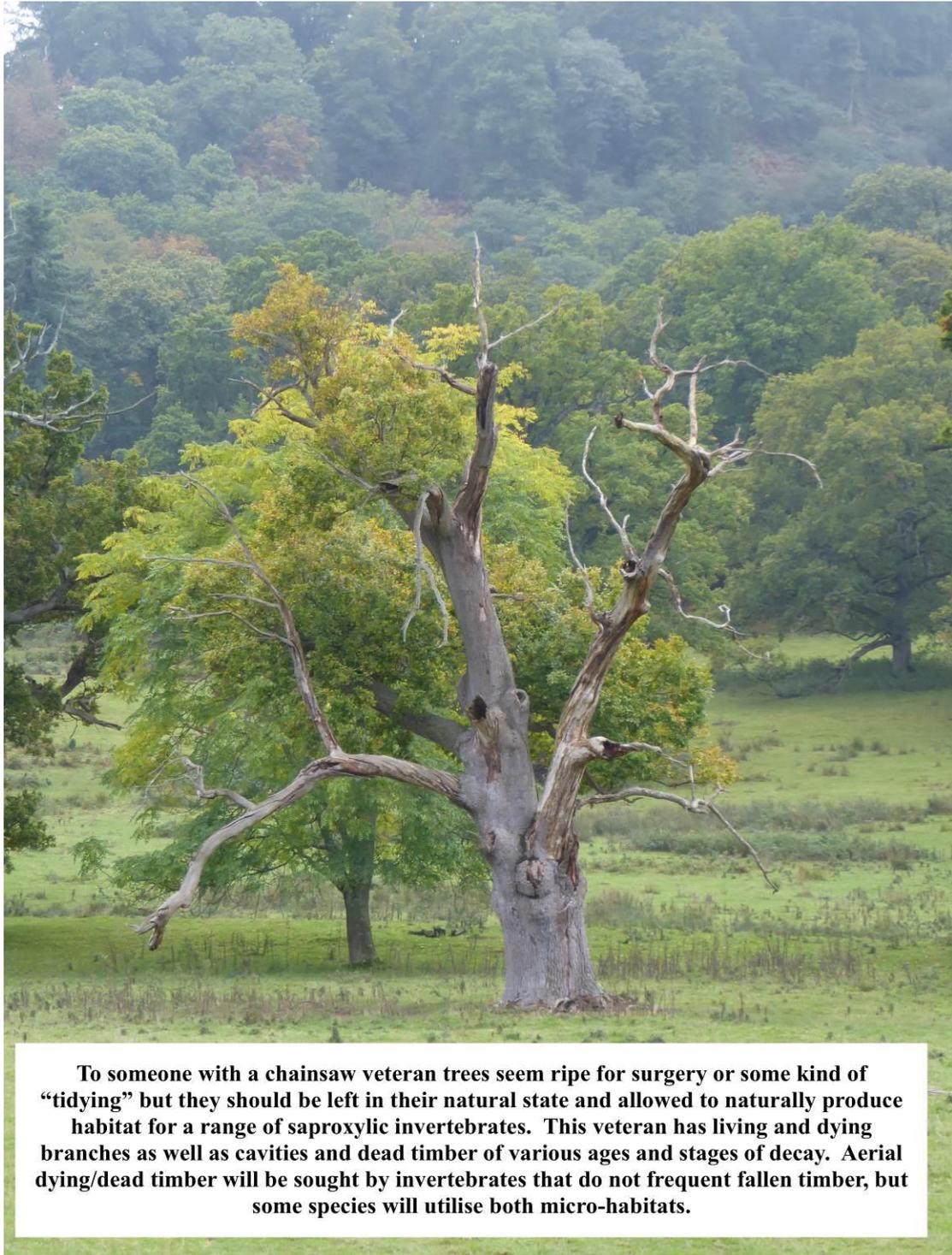
There seems to be a policy of “pruning” selected veteran oaks in Moccas Park. I have been unable to find any evidence that modifying the canopy microhabitat has any benefit to either the tree or its associated saproxylic fauna and flora. To compound matters, usually the cut branches are left in full sun where they will quickly become heat-sterilised and the bark desiccated.

Veteran oak 00150 immediately to the east of tag 00151 (the original *Hypebaeus* tree) is a case in point. Despite these two trees growing in equilibrium for centuries 00150 has had its crown opened up to the elements by removal of some branches with a chain saw. The severed branches have been moved into an area of full sun. During a visit on September 19th J.Cooter noted the southern most branches of tree 00151, now exposed to the sun for a longer period each day (and no longer so sheltered by its neighbour from easterly weather) showed autumnal tints whereas the branches further back and still sheltered by its neighbour were still green.

Oak trees will “self regulate” and after attaining maturity in simple terms the trunk will become a structurally stronger hollow cylinder and crown branches will be shed over a considerable period eventually forming an aerofoil-shaped crown. Although now reduced in height, its shape offers much less resistance to wind.

Chainsaw cut branches and the cut left on the tree are not attractive to saproxylic invertebrates. The flat sawn, often sappy, end offers no access into what is invariably healthy heartwood. The flat cut on the tree will not develop into a cavity or rot-hole.

There are sufficient veteran oaks in the Park to produce a continuous supply of naturally fallen boughs and branches. These will be in varying stages of decay and scattered throughout the Park. The shattered ends of branches/boughs offer shelter and access into the dead wood for the first wave of saproxylic invertebrates. The scar left on the trunk is likely to develop into a cavity or rot hole and it too will have shattered surface offering shelter and access to invertebrates.



To someone with a chainsaw veteran trees seem ripe for surgery or some kind of “tidying” but they should be left in their natural state and allowed to naturally produce habitat for a range of saproxylic invertebrates. This veteran has living and dying branches as well as cavities and dead timber of various ages and stages of decay. Aerial dying/dead timber will be sought by invertebrates that do not frequent fallen timber, but some species will utilise both micro-habitats.

Veteran trees by definition have longevity and efforts to maintain their natural status should be paramount. The picture below is of the famous “Jack of Kent’s Oak” in Kentchurch Park, Herefordshire. A 13th century map held by the Estate shows this tree, it is marked as “ancient tree”. Regarded as “ancient” in the 13th century and

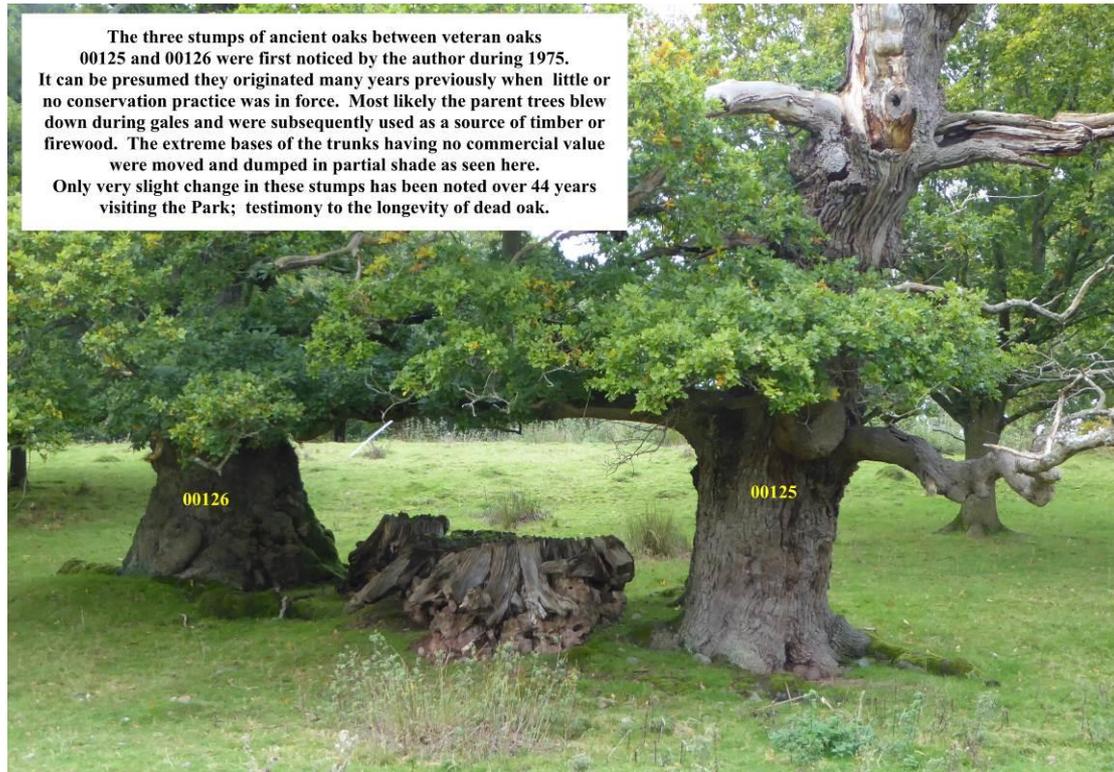
still very much alive in the 21st despite any apparent pruning or other human intervention.



Jack of Kent's Oak, Kentchurch Park, Herefordshire.

Marked on a 13th century map as "ancient tree"

Many Moccas veterans have been illustrated by woodcuts or photographs in the mid-Victorian Transactions of the Woolhope Naturalists' Field Club, in its day one of Britain's premier natural history and antiquarian societies. Many of these are extant and when compared in the Park with the Victorian illustration show little if any significant change. One striking feature often noted in the historical images is the greater tree density in the 19th century, oak, but also including a large number of ash trees.



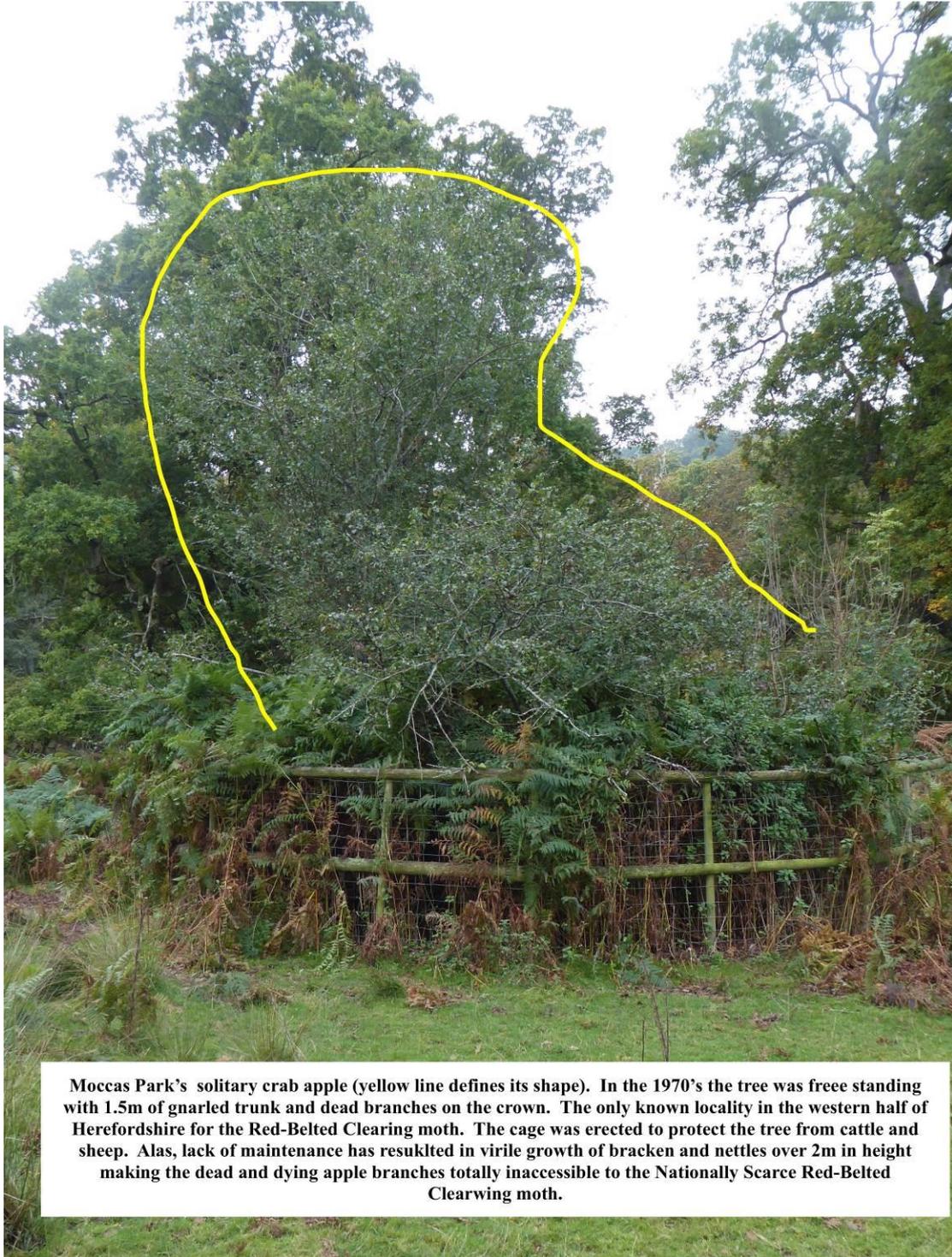
Some tree planting has taken place in the Park in recent years, but to ensure continuity of tree age structure, planting should be undertaken regularly, perhaps a number every 5 to 10 years.

In the 1970's and 80's there was concern over heavy application of artificial fertiliser on the sward in the Lower Park. On occasion, J.Cooter, noted thick white patches of fertiliser on the grassland and splattering on the trunks of some trees. At times stock levels were deemed too high and it was usual to see bare soil under larger trees where stock had sought shelter; a strong ammonia smell from animal urine was invariably present. Although stock levels are now reduced, it is possible the years of heavy fertiliser application and over stocking have a lasting effect.

It was noted during the *Back from the Brink* survey work that the solitary crab apple tree growing at the edge of the Lower Park had been provided with protective "tree guard" structure. Alas, undergrowth has now almost obliterated the crab apple tree the box was supposed to protect. During the 1970's this tree supported a population of *Synanthedon myopaeformis* the Red-belted Clearwing moth.

According to the Butterfly Conservation website, this species has the conservation status Nationally Scarce B. The NBN website has three records of this species and only for western Herefordshire by J.Cooter 1976, the moths I observed at and around the Moccas crab apple tree. Larvae of this species feed under the bark of the branches.

The day-flying moths are very elusive and best sought with use of pheromone traps on sunny days. It is likely *S.myopaeformis* is under recorded in Herefordshire, but efforts to encourage it and at least make its sole site in Moccas Park (and the western half of Herefordshire) viable once more should be encouraged.



CONCLUSIONS:

Hypebaeus flavipes (F.) is known in the United Kingdom from 16 veteran oak trees in Moccas Park National Nature Reserve, Herefordshire.

A policy of maintaining veteran oak trees in their natural state should be adopted and pruning of crown trees stopped. Efforts to ensure healthy growing conditions are being introduced and should be pursued.

Pollarding of a small number of mature maiden trees rather than the younger trees currently subjected to pollarding should be investigated and undertaken.

Natural England should cease issuing NNR entry permits during the brief period when *Hypebaeus flavipes* adults are at large. Suggested embargo period to be from end of first week in June to end of second week in July. Applications for access large groups intent on biological recording (eg Bio Blitz) should be vetted. This should include as a very basic requirement the reason why such work on a NNR with relatively well documented species lists for many taxa is necessary and the recording/collecting methods/equipment and the competency of the recorders and verification procedures stated. Beating of veteran oak, a standard invertebrate recording/collecting method, undoubtedly disturb *Hypebaeus* adults and to do so requires Natural England to issue the recorder with the appropriate licence. Collecting *Hypebaeus* requires a more stringent licence and should only ever be issued in extreme circumstances. [A week or two before commencing the 2019 *Hypebaeus* survey, the author was in Dorset. The nesting colony of Little Terns on the Chesil Beach were, as usual, receiving stringent protection. A cynic's view would be "of course they are, they're birds. Insects are not so important". This view is not as extreme as it might appear. The Dorset Wildlife Trust has a visitor centre and café in the Chesil Beach car park. A bridge has been built over the narrow, shallow tidal ditch to give access to the beach and sea beyond. It thus allows public to walk all over the only known UK site for the 8 – 10mm long beetle *Omophlus pubescens* (L.) (family Alleculidae), a location roughly 0.3km from the Little Tern colony. It is a very large car park, why not build the visitor centre/café/bridge at its far end rather at the closest point possible to the only known patch of turf/thrift that has supported *Omophlus* since first noted during early Victorian times. Its presence cannot be regarded as "over looked" "not known about", nor is it a "new arrival". This, and Natural England issuing a large Bio Blitz group (25 cars and mini-buses were parked

behind Park Lodge) access to the NNR when Schedule 5 species *Hypebaeus flavipes* was at large are difficult to put into a conservation context].

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