



# Hornet Robberfly

*Asilus crabroniformis*

## Species Action Plan

### 1. Introduction

This species is classed as Nationally Notable in the UK Red Data Book, having less than 100 10km squares with records and is on the JNCC Species of Conservation Concern List. It was listed as a UK BAP priority species and subsequently included in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

### 2. Current Status

#### 2.1 Ecology and habitat requirements

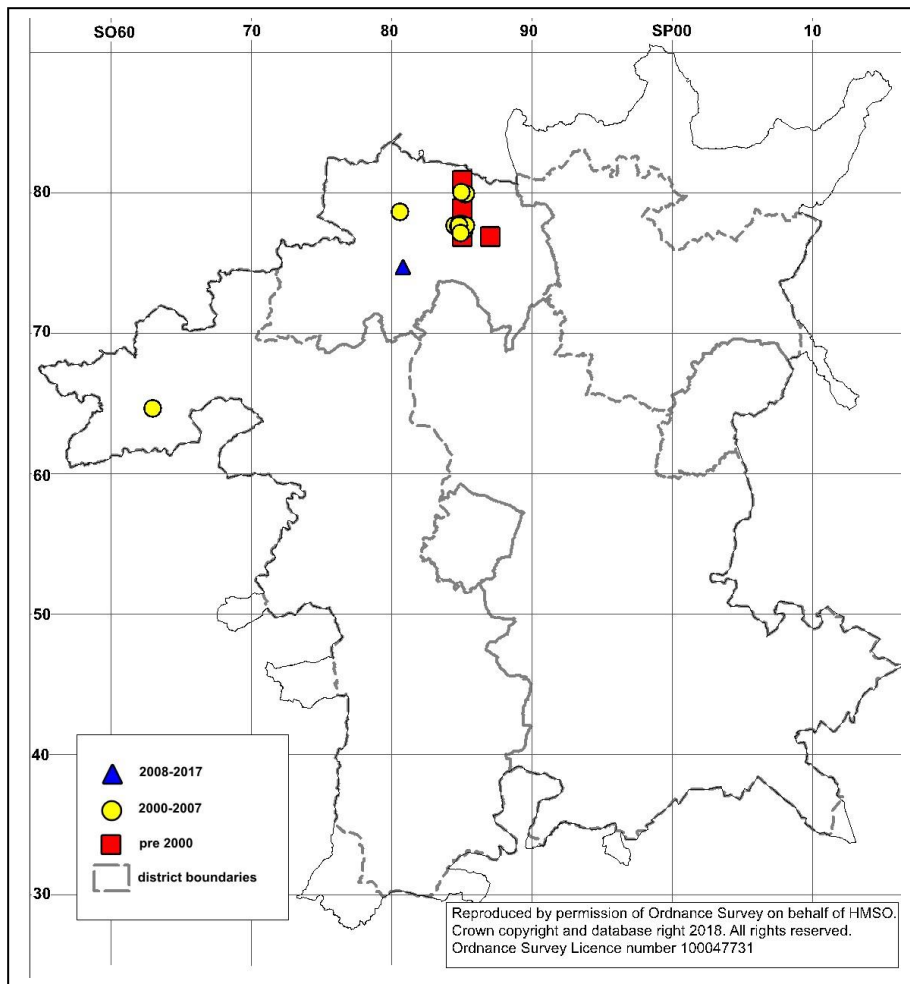
The hornet robberfly is one of the country's largest and most spectacular true flies: up to 28mm in length with much of the abdomen bright yellow. It has been recorded on unimproved or semi-improved pasture, heathland and chalk downland. Although the ecology of the species is still not fully understood, we know that it is intimately associated with grazing livestock, specifically the dung produced by herbivorous mammals. Evidence from hornet robberfly sites in Worcestershire suggest that when fields cease to be grazed then the insect disappears. Paddock management can also affect the success of the insect, for instance it is often the practice to collect or scatter horse dung whereas the robberfly is most often seen on drying undisturbed mounds.

The adult fly will hunt at a small distance from breeding sites and take a wide range of insect prey – grasshoppers, beetles, moths, butterflies, bees, wasps and flies – these being found amongst a wide range of floral habitats, and even other hornet robberflies on occasion (Pinchen *et al*, 1997). They also frequently take dung beetles of the genus *Aphodius* and flesh flies (*Sarcophaga* spp). Dry dung piles are frequently used as vantage points when hunting and for sunning (Clements and Skidmore, 1998, Pinchen *et al*, 1998).

Hornet robberfly larva is associated with dry dung, typically that of horse, cow or mounds of rabbit droppings. Adult emergence peaks in late July and August. Ongoing research has failed to determine the larval diet beyond reasonable doubt, although it is thought they are predatory on the dung beetle larvae also associated with herbivorous mammal dung. The larva is thought to live for 2-3 years, but recent confirmed records in the UK do not appear to exist.

#### 2.2 Population and distribution

In the UK the hornet robberfly is distributed throughout Wales and in the southern half of England. There are currently 40 breeding sites known nationally, but the fly is scarce throughout its range. It has declined since 1970 from being in 111 10km squares to only 48 10km squares by the early 1990s (incorporating a 21% loss of range). Areas of loss are mostly from eastern England and the previous strongholds of Devon, Dorset and Hampshire. Elsewhere there is a sharp contraction of distribution (Clements and Skidmore, 1998). In Worcestershire sightings appear to be concentrated around northern and eastern Kidderminster. Figure 1 shows current records of hornet robberfly in Worcestershire.



**Figure 1. Records of hornet robberfly in Worcestershire. Data supplied and map prepared by Worcestershire Biological Records Centre.**

### 2.3 Legislation

The hornet robberfly is listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

### 2.4 Summary of important sites

An adult hornet robberfly was first found in Worcestershire in 1995 on Hurcott Pasture, a pony grazed acid grassland Site of Special Scientific Interest (SSSI) on the eastern edge of Kidderminster. The pasture lies on sloping ground overlying the Bunter Sandstones of the Triassic Period, which give rise to nutrient-poor free-draining soils. The special interest lies in the size of the site and in the particular character and diversity of the semi-natural grassland sward which has been maintained by grazing, and is of a type which is nationally scarce and declining due to agricultural improvement, development and neglect.

In 1999 an additional cluster of fields around Hurcott Pasture was also found to have varying numbers of adult flies and a subsequent search found other sites between Hurcott and Cookley. Searches of pony paddocks in the surrounding localities of Hartlebury, Wilden and Churchill found no signs of the insect and so it appears to be concentrated around Hurcott. Observations there make a strong connection between the insect and horse dung with cow dung attracting fewer flies. Every year since then has confirmed hornet robberfly using the paddocks around Hurcott. However, in 2018 one of those fields was ploughed and cultivated for the first time in memory, rendering the habitat completely unsuitable

for the insect. No individuals have been recorded at Hurcott Pasture itself since 2007 although the habitat is still suitable and annual surveys are continuing.

Hornet robberfly was recorded on the Devils Spittleful for the first time in September 2017 by John Bingham. The fly was seen ovipositing on cow dung.

There was a single male hornet robberfly seen in the area of Hurcott village in September 2018, the first for some years in that location.

### 3. Current factors affecting the species

- Loss of suitable hunting sites including areas of flora-rich pasture and a range of dung sites where adult prey items can be found.
- Treatment of livestock with anti-parasitic drugs leading to reduction or loss of dung fauna. The use of Avermectin-based products is a particular issue as a large amount of the drug passes through livestock unmetabolised and it does not readily decompose once excreted. Avermectins are popular amongst farmers for their wide-spectrum nature and ease of use.
- Land use change leading to reduction or abandonment of livestock and consequent loss of dung habitat.
- The impact of climatic changes is thought to certainly have an effect, as adult activity appears to be temperature-regulated and dependent on high ambient air temperatures.
- Paddock management often involves the harrowing or removal of dung. Hornet robberflies appear to favour low key pony or cattle grazing with dung left in the field and minimum worm treatment of livestock.
- As the species has no specific protection its existence relies on having meadows with suitably managed grazing.
- The Hurcott area has been identified in the Wyre Forest Local Development Plan Review (2016-34) for housing.

### 4. Current Action

#### 4.1 Local protection

Hurcott Pasture is a SSSI and several meadows adjacent to this site are now listed as Local Wildlife Sites (LWS) and managed by Wyre Forest District Council on behalf of the owner.

The Devil's Spittleful is a SSSI and managed as a nature reserve by Worcestershire Wildlife Trust.

#### 4.2 Site management and programmes of action

- The two meadows managed by Wyre Forest District Council at the rear of Hurcott Pool are grazed with Avermectin-free stock for 2-3 months each year, with grazing spread throughout the year to ensure that dry dung is consistently available.

- Cattle supplied via Wyre Forest District Council's Grazing Animals Project graze the Devil's Spittleful for much of the year.
- There are a few other sites in private ownership which are currently suitable but are not managed specifically for hornet robberfly.

#### 4.3 Survey, research and monitoring

- Several articles have appeared in the Worcestershire Record (the journal of the Worcestershire Recorders) about local hornet robberfly distribution and populations and these can be accessed in full on [www.wbrc.org.uk](http://www.wbrc.org.uk).
- A survey by David Green on behalf of Worcestershire Wildlife Trust was carried out in 2000 on 32 sites in the Kidderminster area in an attempt to define the characteristics of sites used by the fly. Some sites surveyed were those where the presence of hornet robberfly had previously been recorded, other sites were fields adjacent or nearby that appeared to be similar in habitat type and management regime and therefore possibly suitable. In particular, the survey looked to assess the height and condition of grass sward, the presence or absence of dung and the extent and type of grazing.
- Ad-hoc monitoring by local experts of all sites with recent records continues.
- On behalf of Countryside Council for Wales (CCW), Clements and Skidmore (2002) carried out a three-year research project between 1997 and 1999 into the autecology of hornet robberfly at two sites in South Wales. The research used mark-recapture techniques to investigate population dynamics, adult longevity and dispersal, and to try and locate and record the feeding behaviour of larvae. Other CCW (now Natural Resources Wales) commissioned research has looked at the dispersal abilities and population structure of hornet robberfly (Lloyd, 2001) and assessed the habitat suitability at a landscape scale for populations of the fly around known occupied sites (Boardman, 2006).
- English Nature has published several Research Reports on hornet robberfly. One of these (Smith, 2000) contains an excellent section on livestock grazing regimes and anti-parasitic drug use and the conservation management of grazed pasture with regards to this issue. Another report summarises survey work at three sites in Dorset, Hampshire and Surrey (Pinchen *et al*, 1997) that used mark-recapture to study territory size, breeding behaviour, in particular the oviposition behaviour of females, prey items taken and other autecological factors.
- Hornet robberfly population numbers have been monitored for over 20 years at Figsbury Ring SSSI, a National Trust property near Salisbury, Wiltshire. Figsbury Ring is an iron-age hill fort and the steep slopes support a botanically diverse chalk grassland flora. Hornet robberfly has been regularly recorded, sometimes in significant numbers of up to 50 individuals, alongside other invertebrate species of interest such as the adonis blue butterfly (*Lysandra bellargus*). Cattle currently graze the site

keeping the average sward height to around 4.4cm and ensuring a continuous supply of dung habitat.

## 5. Associated Plans

Grassland, Lowland Heathland.

## 6. Conservation Aim

The extent of habitat under suitable management for the species in its core population centres has been maintained

## 7. Conservation Objectives

- Engage with land owners to maintain suitable habitat extent on key known sites / populations centres and where possible to influence land management in-between
- Confirm our understanding of the distribution and larval stage ecology of the species and its ecology more broadly
- Raise awareness of the species and its habitat requirements amongst conservation staff and land managers

## References and further information

Buglife Hornet Robberfly factsheets:

- <https://www.buglife.org.uk/bugs-and-habitats/hornet-robberfly>
- <https://www.buglife.org.uk/sites/default/files/Hornet%20robberfly%20species%20management%20sheet.pdf>

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