Hippoboscidae & Nycteribiidae Recording Scheme - Flat flies (Louse flies), keds and Bat flies

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The Hippoboscidae & Nycteribiidae Recording Scheme was started in November 2020 to monitor this group of neglected ectoparasites. The family Hippoboscidae includes the flat or louse flies which parasitise birds, and the keds which parasitise mammals. The Nycteribiidae or bat flies have recently been included in the family Hippoboscidae.

Apart from deer keds these species are rarely encountered away from their hosts, so are not often seen by entomologists unless they are working with bird ringers, bat workers, wildlife rehabilitators or farmers. This makes them a challenging group to record as the people most likely to see them are normally far more interested in the host than its parasites.

The recording scheme is run via the iRecord website where it has received 420 accepted records of flat flies and one of a bat fly. A further 122 records have been accepted via the iNaturalist website. However, a large number of records (over 5,000) will be added from the Mapping the UK's Flat Fly Project (Wawman, 2025) which started in 2020, and the Mapping the UK's Keds Project which started in 2025. These projects targeted expert citizen scientists: bird ringers to collect flat flies, and sheep farmers, horse owners and deer managers to collect keds. There are also about 150 records of bat flies and some historical records of all groups.

With climate change, distributions of parasites are predicted to change, with new species colonising areas, and these changes can lead parasites to attack new hosts. In the UK we have already seen new flat flies colonising the region (Wawman, 2024), major range shifts (Wawman, 2025) and host-switching (Wawman, Smith and Sheldon, 2025). In continental Europe there are several species of deer ked which are spreading rapidly and may arrive in the UK or already be here. It is important to continue to monitor these parasites because of their potential to transmit diseases, especially as most have been reported to bite humans.

As blood-sucking parasites, hippoboscids have the potential to transmit a wide range of pathogens, although they are only proven to act as vectors for a few of these. The Deer Ked *Lipoptena cervi* (L.) is known to transmit *Bartonella* sp. which cause deer ked dermatitis in humans and which has recently been found in UK *L. cervi* (Jones, Wawman and Johnson, 2025). Several bird pathogens are transmitted by UK flat flies including *Haemoproteus* sp., trypanosomes and, we are almost certain, *Avipoxvirus* (Baker, 1967; Wawman, Jones, *et al*., 2025).

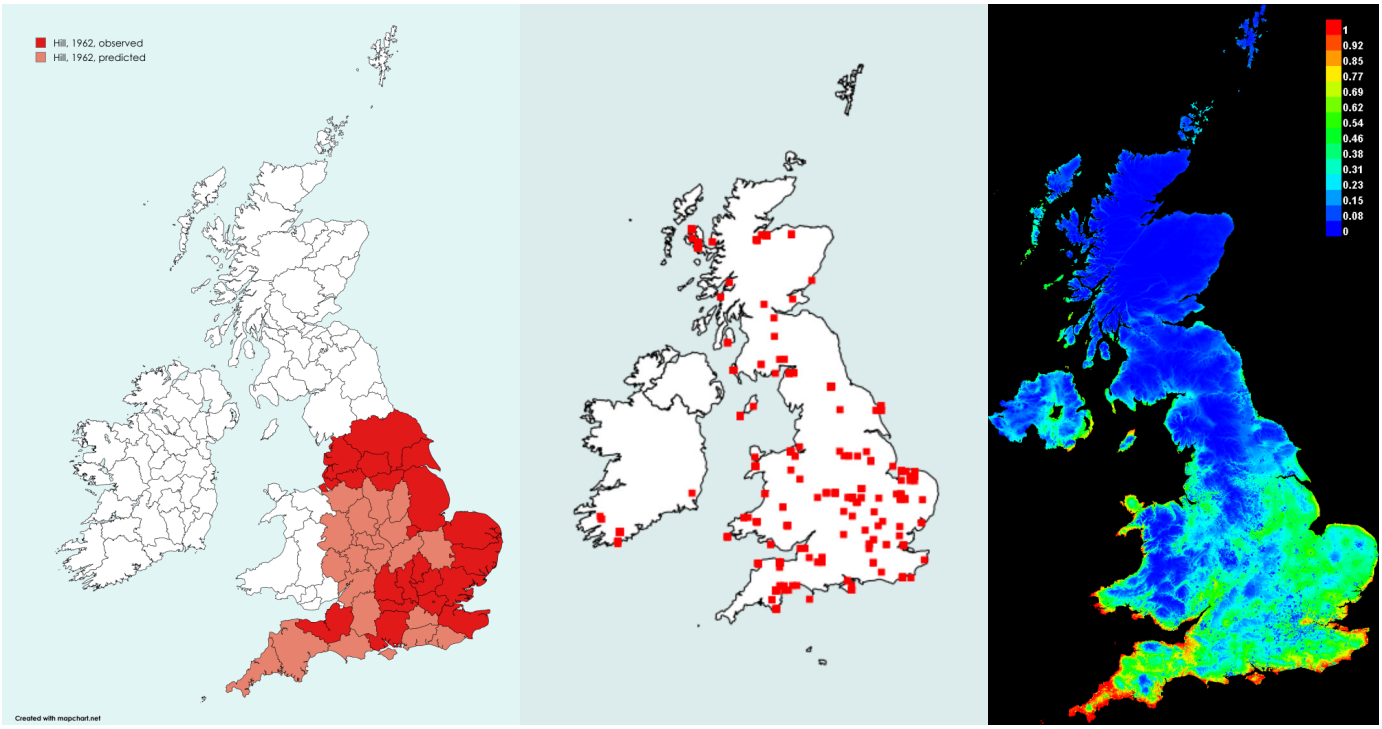


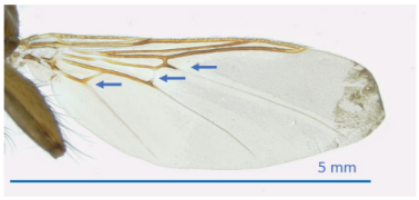
Figure: Distribution of *Ornithomya fringillina* (Curtis). Left: 1960's plotted at county level redrawn from original data, red present, pink predicted (Hill, 1962). Centre: sites at which *O. fringillina* was collected for the Mapping the UK's Flat Fly Project. Right: Maximum Entropy species distribution model showing the suitable environmental conditions for the new colonist *Ornithomya biloba*, which was not present in the UK in the early 1980s, and which reached North Ronaldsay in Orkney in 2025. It has been found across most of the predicted area (red, yellow and green). Maps originally published under a CC-BY-4.0 licence (Wawman, 2025).

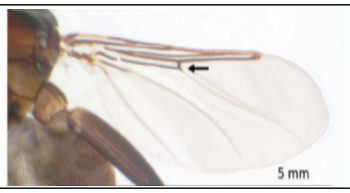
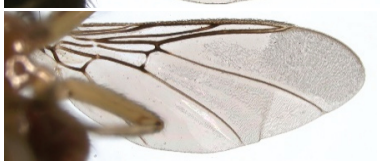
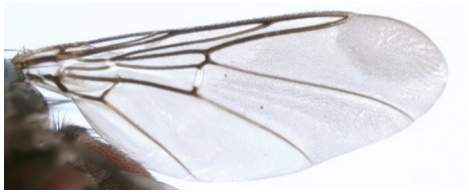
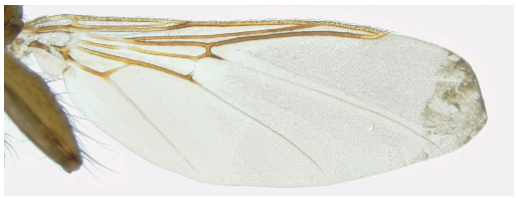
Flat fly identification

Currently, the best guide to identifying Hippoboscidae and Nycteribiidae in the UK is still Tony Hutson's (Hutson, 1984), but some of the new species aren't covered in detail. There is a partial illustrated key covering some of the new flat fly colonists available in a recent paper (Wawman, 2024) and a key to the European bat flies (Mlynárová *et al*., 2023). There is also a key to all European species of louse flies (Oboňa *et al*., 2022), but the advice on separating *Ornithomya chloropus* (Bergroth) and *O. fringillina* using the number of longitudinal stripes of microtrichia on the hind wing and the number of scutellar bristles doesn't work some for UK specimens (Wawman, Bailey, *et al*., 2025). Furthermore, body length is unreliable as it varies considerably, increasing markedly after feeding and in gravid females.

Here I aim to give a few tips on identifying the more common breeding species of flat flies as they seem to pose the most difficulty. I have included rarer genera in brackets for completeness.

This more a cheat sheet than a full key or ID guide, and you still need to check other features for each species carefully. Also be aware that other rare species, which share features with the commoner species that I have included, may have arrived in the UK, as they have in other parts of Europe.

1.		Capable of flight, wings full and rounded	**3.**
-		Not capable of flight, wings pointed	**2.**
2.		Wing 1.3 to 1.5 x length of hind femur	***Crataerina pallida***
-		Wing >2 x hind femur 6-7 x as wide as long	***Stenepteryx hirundinis* = *Crataerina hirundinis***
3.		3 cross-veins	**5. * (*Ornithoica, Ornithophila*)**

-		1 cross-vein	**4.**
-		2 cross veins	(***Olfersia, Icosta***)
4.		Scutellum 4x as wide as long Wing straight posterior edge	***Pseudolynchia canariensis***
-		Scutellum 3x as wide as long Wing very gently curved posterior edge	***Pseudolynchia garzettae***
5.		Clearly defined dark markings on the ventral surface on the mesobasisternum and gena. Ignore faint markings on the gena. Markings may fade with age or storage in ethanol, and may be absent on some flies from the continent. **	***Ornithomya chloropus***
–		No clear dark markings	**6.**
6.		Wing microtrichia absent from area of cell 3r adjacent to where the most distal vein (R4+5) reaches the costa.	**7.**
-		Wing microtrichia present area of cell 3r adjacent to where the most distal vein (R4+5) reaches the costa, (Note some microtrichia maybe lost from this area in older specimens)	**8.**
7.		Large clear area in cell 3r. 3 widely spaced tracts of microtrichia in cell 1m	***Ornithomya avicularia***
-	 	Several morphotypes. Can have either 2 or 3 tracts of microtrichia in cell 1m (often 2 distally which split into 3 about halfway along cell 1m). Clear areas are smaller than in O. avicularia, which is much larger and has 7+ scutellar bristles.	***Ornithomya fringillina***
8.		3 tracts of microtrichia in cell 1m.	***Ornithomya chloropus***
-		No clear tract of microtrichia in cell 1m. Note that the appearance of clear strips adjacent to vein M1+2 is caused by fewer microtrichia in that area, not a complete absence. Other species in the *O. biloba* group may occur in the UK soon, so check for vibrissal spines which are “almost missing” in *O. biloba.*	***Ornithomya biloba***

*Scutellar bristles are widely used to separate these species, and can be helpful but are variable, and it can be difficult to know whether to include weaker bristles. *Ornithomya fringillina* has 4 (range 3-6), *O. chloropus* 6 (4-7), *O. avicularia* (L.) 8 (6-10) and *O. biloba* (Dufour) about 20. *O. chloropus* can often have extra bristles on the scutellum. Size can also be helpful. Small wing <5 mm usually *O. fringillina*, wing >6.5 mm usually *O. avicularia*, mid-range *O. chloropus* and *O. biloba* with some overlap with the other two species.

**Don't just look for these dark markings without checking the wings and scutellum as most *Hippobosca equina* L. also have these markings, and be aware that dried specimens can appear darker in this area.

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Hippobosca equina. Photo Steven Falk

Ornithomyia avicularia. Photo Steven Falk