

CLEARWING (LEPIDOPTERA: SESIIDAE) RECORDING WITH PHEROMONES DURING THE CORONA VIRUS PANDEMIC OF 2020

IAN SIMS¹, JACK JONES² & JON COLE²

¹ *2 The Delph, Lower Earley, Reading, Berkshire RG6 2AN. ian.sims@syngenta.com*

² *c/o BENHS, The Pelham-Clinton Building, Dinton Pastures Country Park, Davis St, Hurst, Wokingham RG10 0TH*

ABSTRACT

The results of a season's surveying with pheromones for clearwing moths in eastern Berkshire (VC 22), southern Oxfordshire (VC 23) and southern Buckinghamshire (VC 24) are described. Nine species were recorded from seven sites in VC 22 and one site in each of VCs 23 and 24. Three new sites for the sawfly clearwing *Synanthedon flaviventris* (Staudinger) were discovered in VC 22. Only one example of the white-barred clearwing *Synanthedon spehceiformis* (D.&S.) was seen. We failed to find the large red-belted clearwing *Synanthedon culiciformis* (L.), probably because the survey commenced towards the end of its flight period and favourable habitats could not be accessed due to restrictions on the movement of people in force at that time. Similarly, the lunar hornet clearwing *Sesia bembeciformis* (Hübner) was not seen.

INTRODUCTION

In April 2020 a "full set" of clearwing (Lepidoptera: Sesiidae) pheromones was purchased from Anglian Lepidopterist Supplies (ALS). These arrived by post on 23 April and were transferred to deep-freeze storage until required. In addition, in May the sawfly clearwing lure was purchased as 2020 was a "sawfly clearwing year" (adults fly in even years), and during July the newly developed lunar hornet clearwing *Sesia bembeciformis* lure was also obtained. It later transpired that these were indeed fortuitous purchases as little did we know at the time, but they were to prove very useful during the following few months. For it soon became apparent that a deadly pandemic, Corona virus Covid 19, was upon us and nothing would be the same for many months (perhaps years) to come. On 23 March 2020 a nation-wide lock-down was ordered by the Government to prevent spread of the virus. This meant that you were unable to leave home for all but a very few unavoidable reasons, and were unable to travel. It also meant that all the Society's indoor and field meetings for 2020 had to be cancelled. Grim times indeed! By mid-April daily statistics of infection and mortality rates indicated that we were beginning to get on top, and on 15 May movement restrictions were eased allowing two people from different households to meet out-doors, provided a "social distance" of two metres was maintained. On the first of June these rules were eased again, enabling groups of up to six socially-distanced people from different households to meet out-doors, though indoor meetings and travel were still restricted. On 15 June travel restrictions were eased further, so local excursions of small groups to the field became feasible, provided social distancing was maintained. It was with all this that the clearwing pheromones proved so useful for field recording, but at no time during this surveying were any of the Covid 19 restrictions broken.

METHODS

The Sesiidae are a family of moths that are notoriously difficult to record as the adults are difficult to observe on the wing (Baker, 1985; Newland, Still & Swash, 2013). Consequently, the usual strategy of lepidopterists is to attempt rearing them from their larval mines, but personal experience has shown this to be unreliable. Several attempts at rearing them in the past failed due to parasitism, desiccation, premature or late collection of the larvae/pupae, or to the provision of unsuitable environmental conditions. Several years ago a first attempt was made at using pheromone lures to attract clearwing adults, but adverse weather and other commitments at the time resulted in limited recording effort, so only a single currant clearwing *Synanthedon tipuliformis* (Clerck) and hornet clearwing *Sesia apiformis* (Clerck) were recorded, both at Jealott's Hill. Not a great result for a not-insignificant outlay. With the advent of the Corona pandemic time was less of an issue, and the silver lining was the fantastically sunny, hot and calm spring and early summer weather experienced in central southern England during 2020. These factors meant that pheromones could be taken out into the field several times a week from mid-May until the end of the clearwing season (late August). Usually, pheromones were deployed in "bucket and funnel" traps (Fig. 1). The use of several of these enabled different lures to be used at different locations simultaneously, maximising recording effort. To increase recording effort still further, occasionally additional lures were deployed by pinning them to other structures.

During the late spring and summer several local sites in the Wokingham/Bracknell area of Berkshire were surveyed. These included Dinton Pastures and the near-by Lavell's Lake, a site at Sandford, Jealott's Hill and Lower Earley. The Sandford site, near Woodley, was a small meadow on the opposite side of the river Loddon to Lavell's Lake. This site was surrounded by various clearwing food-plants such as goat willow and apple trees. At this site trapping occurred mostly towards the start of the clearwing season. As travel restrictions eased, travel farther afield was possible and Medmenham, Buckinghamshire was visited on 8 June. The introduction of a two-metre social distancing rule enabled the meeting of limited numbers of people, so Beale Park, Berkshire and Hartslock National Nature Reserve, Oxfordshire were visited, accompanied by representatives of these sites, Rob Isenor and Chris Raper respectively. In addition, a small socially distanced group surveyed Lavell's Lake near Sandford Lane in late July.

RESULTS

Nine species of clearwing were recorded, from 12 May to 5 August, at several sites in eastern Berkshire, one site in southern Buckinghamshire and one in southern Oxfordshire. The exact localities where recording took place, along with their six figure OS map references, survey dates, duration of recording effort, weather conditions, lures used, and the number of each species seen are included in Table 1. Negative results are included in Table 2. Some of these sites are shown below (Fig. 1).

New site records included all of the species of sesiid recorded at Sandford, Lower Earley and Beale Park, and all the species at Jealott's Hill bar the hornet clearwing *S. apiformis* and current clearwing *S. tipuliformis*, which were first recorded there in 2010. The sallow clearwing *S. flaviventris* and orange-tailed clearwing *Synanthedon andrenaeformis* (Laspeyres) were new records of adults for Dinton Pastures, as were both species of clearwing recorded at Hartslock and Lee Farm Lake. The records for *S. flaviventris* at Dinton Pastures, Beale Park and Sandford constitute new sites for this species in Berkshire (VC 22).

Table 1. Field data for clearwing recording in Berkshire and Oxfordshire during 2020.

Species	No. recorded	Location	Locality abbreviation	Time	Date	Lure type	Weather	
Red-tipped clearwing	1	Sandford	SAN	12.00–14.00	12/5/20	FOR	Sunny, calm & warm	
<i>Synanthedon formiciformis</i> (Espet)	3	Sandford	SAN	12.00–14.00	16/5/20	FOR	Sunny	
	2	Sandford	SAN	12.00–15.00	18/5/20	FOR	Sunny, calm & warm	
	17	Sandford	SAN	12.00–15.00	19/5/20	FOR	Sunny, calm & warm	
	9	Sandford	SAN	12.00–15.00	20/5/20	FOR	Sunny, calm & warm	
	2	Lavell's Lake	Tri	15.00–15.15	21/5/20	FOR	Sunny, calm & hot	
	5	Sandford	SAN	12.00–14.00	21/5/20	FOR	Sunny, calm & hot	
	6	Sandford	SAN	14.00–16.00	22/5/20	FOR, VES	Sunny, calm & hot	
	1	Lower Earley	LB	16.00	24/5/20	FOR	Sunny, calm & hot	
	4	Lavell's Lake	Tri	14.30–15.30	26/5/20	FOR	Sunny, calm & hot	
	1	Beale Park	BPM	14.30–15.30	1/6/20	FOR	Sunny, calm & hot	
	3	Lavell's Lake	Tri	15.00–15.30	12/7/20	FOR	Sunny, breezy & hot	
	(very worm)	1	Beale Park	BPM	15.00	13/7/20	FOR	Cloudy, breezy & warm*
	9	Dinton Pastures	DEP	12.00–14.30	20/7/20	FOR	Sunny, calm & hot	
	8	Lower Earley	LB	15.15–17.15	21/7/20	FOR	Sunny, calm & hot	
	(very worm)	1	Lee Farm Lake, Hurst	PEN	10.45–13.00	22/7/20	FOR	Sunny, calm & hot*
	1	Lavell's Lake	Tri	12.30–14.30	24/7/20	FOR	Cloudy, breezy & mild	
	9	Lower Earley	LB	12.00–16.00	3/8/20	FOR	Sunny spells, breezy & hot	
2	Lower Earley	LB	14.00–16.00	4/8/20	FOR	Sunny, calm & hot		
1	Jealott's Hill	DBP	13.30–14.45	5/8/20	FOR	Sunny, very windy & hot		
White-barred clearwing	1	Sandford	SAN	14.00–16.00	23/5/20	TIP	Sunny & windy	
<i>Synanthedon sphaeciformis</i> (D. & S.)	1	Sandford	SAN	14.00–16.00	24/5/20	TIP	Sunny & calm	
Currant clearwing	1	Sandford	SAN	14.00–16.00	24/5/20	TIP	Sunny & calm	
<i>Synanthedon tipuliformis</i> Clerke	1	Jealott's Hill	SA	11.00–12.00	24/5/20	TIP	Sunny, calm & hot	
Yellow-legged clearwing	5	Jealott's Hill	SA	13.15–13.45	9/6/20	TIP	Sunny, calm & hot	
<i>Synanthedon vespiformis</i> (L.)	1	Sandford	SAN	14.00–16.00	22/5/20	VES	Sunny, calm & hot	
	2	Sandford	SAN	14.00–16.00	24/5/20	VES	Sunny & calm	
	1	Lower Earley	LP	15.00	24/5/20	VES	Sunny & calm	
	1	Jealott's Hill	DBP	12.00–14.15	9/6/20	VES	Sunny, calm & hot	
	1	Dinton Pastures	DEP	13.00	5/7/20	VES	Sunny, windy & warm	

continued

Table 1. *continued*

Species	No. recorded	Location	Locality abbreviation	Time	Date	Lure type	Weather
	1	Lower Earley	LP	16.30	5/7/20	VES	Sunny, breezy & warm
	2	Lower Earley	LP	14.00–16.00	7/7/20	VES	Overcast, breezy & mild
	1	Dinton Pastures	DEP	15.00–16.30	14/7/20	VES	Cloudy, calm & mild*
	5	Lower Earley	LP	15.00–16.00	16/7/20	VES ⁺	Sunny, calm & hot
	3	Sandford	SAN	12.00–15.00	23/7/20	VES	Sunny, breezy & warm
Red-belted clearwing	5	Sandford	SAN	12.00–16.00	25/5/20	MYO	Sunny, breezy & mild
<i>Synanthedon myopaeformis</i> (Borkhausen)	2	Dinton Pastures	SAN	12.00–16.00	26/5/20	MYO	Sunny, calm & hot
	2	Dinton Pastures	Cal	12.30–13.00	29/5/20	MYO	Sunny, calm & hot
	6	Beale Park	BPM	12.45–16.00	1/6/20	CUL	Sunny, calm & hot
	2	Dinton Pastures	Mar	14.20–14.45	2/6/20	CUL	Sunny, calm & hot
	3	Dinton Pastures	JRR	16.20–16.30	23/6/20	CUL	Sunny, mild & breezy
	1	Hartslock	SE	16.00 16.30	25/6/20	MYO	Sunny, calm & very hot
	1	Dinton Pastures	F2	16.00	14/7/20	API	Cloudy, calm & mild*
Hornet clearwing	1	Sandford	SAN	12.00–16.00	25/5/20	HOR	Sunny, breezy & mild
<i>Sesia bembeciformis</i> (Hübner)	1	Sandford	SAN	12.00–16.00	26/5/20	HOR	Sunny, calm & hot
	1	Jealott's Hill	SA	13.00	28/5/20	HOR	Sunny, calm & hot
	1	Beale Park	CP	13.00	1/6/20	HOR	Sunny, calm & hot
	1	Jealott's Hill	SA	12.10	4/6/20	HOR	Dull, cold & windy
	2	Jealott's Hill	SA	12.20–13.00	9/6/20	HOR	Sunny, calm & hot
	1	Jealott's Hill	SA	13.30	15/6/20	HOR	Sunny, hot & calm
Six-belted clearwing	1	Dinton Pastures	F1	12.30	13/6/20	API	Sunny, hot & calm
<i>Bembecia ichneumoniformis</i> (D. & S.)	1	Dinton Pastures	F1	16.45	15/6/20	API	Sunny, mild & calm
	1	Beale Park	Ser	14.30	16/6/20	API	Sunny, hot & calm
Arrived within 1 min. of deployment	1	Dinton Pastures	F1	13.15–13.30	20/7/20	API	Sunny, hot & calm
(2 worm)	7	Lee Farm Lake, Hurst	PEN	10.45–13.00	22/7/20	API	Sunny, calm & hot*
	2	Jealott's Hill	FSF	11.00–12.30	23/7/20	API	Sunny, breezy & warm
	2	Dinton Pastures	F1	13.00–14.00	29/7/20	API	Cloudy, breezy & mild
	2	Jealott's Hill	FSF	13.30–13.45	30/7/20	API	Sunny, calm & hot
	2	Beale Park	Ser	12.00–12.15	31/7/20	API	Sunny, calm & hot
	7	Lower Earley	PF	13.00–13.15	3/8/20	API	Sunny spells, breezy & hot

continued

Table 1. *continued*

Species	No. recorded	Location	Locality abbreviation	Time	Date	Lure type	Weather
Orange-tailed clearwing	2	Jealott's Hill	DBP	12.30–16.00	15/6/20	VES	Sunny, hot & calm
<i>Synanthedon andreanaeformis</i> (Laspeyres)	4	Beale Park	Scr	14.00–15.00	16/6/20	VES	Sunny, hot & calm
(1 very worm)	2	Dinton Pastures	GCP	13.00–14.00	17/6/20	VES	Overcast, warm & calm
	5	Lavell's Lake	FPB	13.00–14.00	17/6/20	VES	Overcast, warm & calm
	2	Dinton Pastures	FPB	14.00–16.30	23/6/20	VES	Sunny, mild & breezy
	2	Hartslock	SE	16.00–17.00	25/6/20	VES	Sunny, calm & very hot
(very worm)	1	Lavell's Lake	FPB	15.50	12/7/20	VES	Sunny, breezy & hot
	1	Lower Earley	LP	15.30	16/7/20	VES ⁺	Sunny, calm & hot
Sallow clearwing	5	Beale Park	BPM	12.30–15.15	13/7/2	SAL	Cloudy, breezy & warm*
<i>Synanthedon flaviventris</i> (Staudinger)	1	Dinton Pastures	Mar	14.00–14.30	14/7/20	SAL	Cloudy, calm & mild*
	3	Sandford	SAN	12.00–15.00	20/7/20	SAL	Sunny, calm & hot
	5	Dinton Pastures	F1	13.15–14.30	20/7/20	SAL	Sunny, calm & hot
	2	Sandford	SAN	12.00–15.00	21/7/20	SAL	Sunny, calm & hot
	2	Sandford	SAN	12.00–15.00	23/7/20	SAL	Sunny, breezy & warm

*humid; ⁺ lure lost**Berkshire (VC 22)**

Jealott's Hill	JRR = Junior Rangers Reserve, SU 783 718
DBP = Drown Boy Pond (very sheltered),	DEP = dead-end path, SU 780 718
SU 875 733	Golf = Abandoned municipal golf course, SU 786 723
FSF = flower-strip field, SU 876 737	Lower Earley
SA = Syngenta allotments, SU 876 737	LP = log pile, SU 767 711
LS = land share, SU 878 736	PF = playing field, SU 764 704
Dinton Pastures	LB = bridge over R. Loddon near Sindlesham Mill, SU 766 707
F1 = field 1, SU 780 718	WP = White poplars, SU 767 710
F2 = field 2, SU 783 717	Lavell's Lake
Tri = triangle, SU 782 729	FPB = foot-path bridge, SU 785 727
Mar = marsh, SU 781 718	Nat Res = Nature reserve SU 785 728
Caf = café, SU 714 718	Beale Park
BENHS = Pelham-Clinton Building, SU 784 718	BPM = Beale Park Marsh, SU 619 781
GCP = Golf car park, SU 786 726	

Ser = scrubby woodland, SU 612 786

CP = car park, SU 617 782

Lee Farm Lake

Pen = peninsular, SU 782 733

Sandford, Woodley

SAN = Grassy field, adjacent to fruit trees and willows, Sandford Lane, SU 780 730

Oxfordshire (VC 23)

Hartslock

SE = site entrance, SU 616 795

Buckinghamshire (VC 24)**Medmenham**

WRc = Grounds of old Water Research Centre, SU 804 840

HF = Hill fort, SU 808 846.



Fig. 1. Some Berkshire sites successfully surveyed for clearwings during 2020, using pheromone lures. a – Lombardy poplars, Beale Park (hornet clearwing *S. apiformis*). b – Sallows, Marsh at Dinton Pastures (sallow clearwing *S. flaviventris*). c – Sallows at Drownboy Pond, Jealott's Hill (red-tipped clearwing *S. formicaeformis*). d – Guelder rose at Beale Park (orange-tailed clearwing *S. andrenaeformis*) (continued).



Fig. 1 (continued). Some Berkshire sites successfully surveyed for clearwings during 2020, using pheromone lures.

e – Log pile at Lower Earley (yellow-legged clearwing *S. vespiformis*). f – Birds-foot trefoil at Lee Farm Lake, Hurst (six-belted clearwing *B. ichneumoniformis*). g – Black and red currants at allotments, Jealott's Hill (currant clearwing *S. tipuliformis*). h – Cultivated apple trees at Jealott's Hill (red-belted clearwing *S. myopaeformis*). i – Grassy field at Sandford (white-barred clearwing *S. spheciformis*) (Photo i: Jack Jones.)

DISCUSSION

The phenology of these species shows that the red-tipped clearwing *Synanthedon formicaeformis* (Esper) (Fig. 2) had the longest flight period of those recorded, being first encountered using the FOR lure on 12 May at Sandford. It continued to be recorded there, and elsewhere in VC22, throughout the summer and was the last clearwing to be recorded during 2020, at Drownboy Pond, Jealott's Hill on 5 August. It was also the commonest clearwing found, with a total of 86 individuals being recorded during this period. Could it possibly be double-brooded, or does it have a very protracted emergence period? Probably the latter.

The yellow-legged clearwing *Synanthedon vespiformis* (L.) also had a long flight period. It was quick to assemble to the lure, often turning up within two or three minutes of deployment, and was first recorded at Sandford on 22 May. It continued to be recorded throughout the early summer, with the last record being made at the same site on 23 July. It may have had a longer flight period than this but unfortunately the lure was lost, so further attempts at recording this species could not be made. Consequently, the flight data for this species is incomplete. A total of 17 were recorded before the lure was lost.

Unfortunately, data for the flight period of the orange-tailed clearwing *S. andrenaeformis* is also incomplete as this species is attracted to the same VES lure as the yellow-legged clearwing *S. vespiformis*. The first record for *S. andrenaeformis* was made at Drownboy Pond, Jealott's Hill on 15 June, with the last being made near the log pile at Lower Earley on 16 July, when the VES lure was lost. Subsequent use of a new lure at Lee Farm Lake on 22 July, for this and the yellow-legged clearwing *S. vespiformis*, was unsuccessful. As neither species had been recorded at this site before this is not indicative of the end of their flight periods as they may not have occurred at this site. A total of 19 were recorded, making *S. andrenaeformis* the third commonest species encountered. At several sites where *S. andrenaeformis* was found its confirmed larval food plants, guelder rose *Viburnum opulus* L. and wayfaring tree *V. lantana* L., were not apparent, but a possible alternative, dogwood *Cornus sanguinea* L., was abundant.

Surprisingly, the red-belted clearwing *Synanthedon myopaeformis* (Borkhausen) also had a fairly long flight period, while the literature indicates that its flight period is fairly short, i.e. late June to the end of July (Baker, 1985). The first record of this species was made using the MYO lure at Sandford where five were trapped on 25 May. The last record, a very brief visit to the API lure deployed for the six-belted clearwing *Bembecia ichneumoniformis* (D.&S.), was made in a field at Dinton Pastures on 14 July. The red-belted clearwing *S. myopaeformis* was recorded at various sites in VC22 throughout this period (Table 1), many of them nowhere near host trees for its larvae, i.e. apple. Could it have an alternative foodplant, hawthorn perhaps? A total of 22 were recorded.

The six-belted clearwing *B. ichneumoniformis* (Fig. 2) was first recorded at Dinton Pastures on 13 June, while the last record of this species was made at Lower Earley on 3 August. It was the fastest species to respond, often assembling within a minute or less of deploying the API lure, and with 30 being recorded was the second commonest species found.

The remaining species encountered had short or very short flight periods. The currant clearwing *S. tipuliformis* (n = 7) was only found from 24 May (as a singleton at Sandford) until 9 June (on allotments at Jealott's Hill). Baker (1994) stated that there were few recent records of it, with most of those occurring in the Reading area. Galls of this species were found during 1994 on blackcurrant bushes in gardens at

Table 2. Unproductive clearwing pheromone deployments in Berkshire, Oxfordshire and Buckinghamshire during 2020.

Location	Locality abbreviation	Time	Date	Lure type	Weather
Dinton Pastures	Mar	14.00–16.00	18/5/20	FOR, SAL	Sunny, calm & warm
Jealott's Hill	SA	11.00–12.00	24/5/20	VES	Sunny, calm & hot
Lower Earley	LP	13.30–15.00	25/5/20	FOR, VES	Sunny, breezy & mild
Dinton Pastures	Mar	13.00–16.00	26/5/20	MYO, TIP, VES	Sunny, calm & hot
Jealott's Hill	SA	12.00–14.30	28/5/20	TIP, MYO, FOR, HYL	Sunny, calm & hot
Lower Earley	LP	10.45–17.00	29/5/20	VES	Sunny, calm & hot
Lavell's Lake	Tri	15.10–16.10	29/5/20	SAL	Sunny, calm & hot
Lower Earley	LP	12.30–15.00	30/5/20	SAL, TIP, VES	Overcast, calm & mild
Jealott's Hill	SA	12.00–13.30	31/5/20	HOR, TIP, MYO	Overcast, calm & mild
Beale Park	BPM	13.30–16.00	1/6/20	API, VES, SAL, MYO	Sunny, calm & hot
Dinton Pastures	Mar	13.30–15.30	2/6/20	TIP, VES, SAL	Sunny, calm & hot
Dinton Pastures	BENHS	13.00–14.00	3/6/20	TIP, CUL	Cloudy, breezy & cool
Jealott's Hill	SA	12.00–12.45	4/6/20	TIP	Dull, cold & windy
Medmenham	WRc	14.00–17.00	8/6/20	TIP, VES, HOR	Cloudy, breezy & cool
Medmenham	HF	14.30–15.30	8/6/20	TIP	Cloudy, breezy & cool
Jealott's Hill	SA	12.00–14.15	9/6/20	MYO	Sunny, calm & hot
Beale Park	BPM	12.15–16.00	16/6/20	TIP, SAL	Sunny, calm & hot
Lavell's Lake	Tri	13.30–14.30	17/6/20	API	Overcast, warm & calm
Lee Farm Lake, Hurst	Pen	12.00–16.00	22/6/20	SAL, VES, API	Sunny, warm & breezy
Hartslock	SE	17.00–18.00	25/6/20	API	Sunny, calm & very hot
Dinton Pastures	F1	12.00–14.00	5/7/20	SAL, API	Sunny, windy & warm
Lower Earley	LP	12.30–13.30	10/7/20	VES	Cloudy, windy & cool
Jealott's Hill	DBP	12.00–13.30	11/7/20	TIP, MYO, SAL, VES	Sunny, breezy & mild
Jealott's Hill	LS	12.30–14.00	11/7/20	HYL	Sunny, breezy & mild
Lavell's Lake	FPB	12.00–16.00	12/7/20	TIP, MYO	Sunny, breezy & hot
Beale Park	BPM	12.30–15.30	13/7/20	MYO, TIP, API	Cloudy, breezy & warm*
Lower Earley	LP	13.00–14.30	15/7/20	SAL, TAB, MYO, VES	Cloudy, calm and warm*
Dinton Pastures	Mar	12.00–14.30	16/7/20	TAB, SAL, VES, HOR	Sunny, calm & hot
Lower Earley	LB	15.00–16.30	16/7/20	SAL, TAB	Sunny, calm & hot
Jealott's Hill	DBP	12.00–14.30	17/7/20	SAL	Sunny, calm & hot
Jealott's Hill	FSF	12.30–13.30	17/7/20	API	Sunny, calm & hot
Jealott's Hill	DBP	12.00–14.00	17/7/20	HYL	Sunny, calm & hot
Jealott's Hill	SA	13.30–14.30	17/7/20	TIP	Sunny, calm & hot
Jealott's Hill	LS	13.00–14.30	17/7/20	HYL	Sunny, calm & hot
Dinton Pastures	Golf	12.00–12.30	20/7/20	HOR	Sunny, calm & hot
Lower Earley	LP	15.15–17.15	21/7/20	VES (old), SAL, TAB	Sunny, calm & hot
Lee Farm Lake, Hurst	PEN	10.45–13.00	22/7/20	VES (old & new), SAL	Sunny, calm & hot*
Jealott's Hill	DBP	11.00–12.30	23/7/20	SAL, FOR	Sunny, breezy & warm
Jealott's Hill	LS	11.00–12.30	23/7/20	HYL	Sunny, breezy & warm
Lavell's Lake	Tri	12.30–14.30	24/7/20	SAL	Cloudy, breezy & mild
Lavell's Lake	Nat Res	12.30–14.30	24/7/20	API	Cloudy, breezy & mild
Jealott's Hill	DBP	12.00–13.00	28/7/20	SAL, LUN	Cloudy, windy & cool
Jealott's Hill	LS	12.00–13.00	28/7/20	HYL	Cloudy, windy & cool

continued

Table 2. *continued*

Location	Locality abbreviation	Time	Date	Lure type	Weather
Dinton Pastures	F1	13.00–14.00	29/7/20	SAL	Cloudy, breezy & mild
Dinton Pastures	Mar	13.00–14.00	29/7/20	LUN	Cloudy, breezy & mild
Dinton Pastures	Golf	12.00–12.30	29/7/20	HOR	Cloudy, breezy & mild
Jealott's Hill	DBP	11.30–13.00	30/7/20	LUN, SAL	Sunny, calm & hot
Jealott's Hill	LS	11.30–13.00	30/7/20	HYL	Sunny, calm & hot
Beale Park	BPM	11.15–13.15	31/7/20	FOR, LUN, SAL	Sunny, calm & hot
Dinton Pastures	Mar	12.00–13.30	1/8/20	LUN, SAL	Sunny spells, breezy & warm
Lower Earley	LB	13.45–15.30	1/8/20	LUN, SAL	Sunny spells, breezy & warm
Lower Earley	LP	14.00–14.30	1/8/20	API, HYL	Sunny spells, breezy & warm
Lower Earley	WP	12.00–16.00	1/8/20	TAB	Sunny spells, breezy & warm
Lower Earley	WP	12.00–16.00	3/8/20	HYL, LUN, TAB	Sunny spells, breezy & hot
Lower Earley	WP	14.00–16.00	4/8/20	TAB	Sunny, calm & hot
Jealott's Hill	FSF	13.30–14.45	5/8/20	SAL	Sunny, v. windy & hot
Jealott's Hill	LS	13.30–14.45	5/8/20	HYL	Sunny, v. windy & hot
Dinton Pastures	Mar	12.00–15.30	6/8/20	LUN, SAL	Sunny, calm & hot
Dinton Pastures	F2	14.45–15.00	6/8/20	API	Sunny, calm & hot
Jealott's Hill	DBP	12.30–14.30	10/8/20	LUN, SAL	Sunny, calm & v. hot*
Jealott's Hill	LS	12.30–14.30	10/8/20	HYL	Sunny, calm & v. hot*
Lower Earley	PF	14.00–15.00	18/8/20	API	Sunny, calm & warm.
Lower Earley	WP	14.00–15.00	18/8/20	TAB	Sunny, calm & warm.

* = humid

For locality abbreviations and OS map references, see footnote to Table 1.

Twyford, which is also close to Reading. It was also reared on several occasions from galls in black and red currant, and in gooseberry, growing on disused allotments in the grounds of the Water Research Centre at Medmenham, Buckinghamshire in 1990 and 1992.

The sawfly clearwing *S. flaviventris* (Fig. 2) (n = 18) had an even shorter flight period. It was found from 13 July on the marsh at Beale Park to 23 July on willows at Sandford, i.e. less than two weeks in total. Despite being looked for several times before and after these dates at these and other likely sites no further records were made. The species was also recorded, for the first time, at Sandford (three individuals) on 20 July. While trapping twice more for them at the same locality (21 and 23 July) four more individuals were recorded (two on each occasion), though these could have been repeat catches. In the UK the sawfly clearwing *S. flaviventris* is a relatively recent discovery, first being found in 1926 near Southampton (Fassnidge, 1926). Adults emerge only in even years, probably reflecting a single introduction of this species which requires two years to complete its lifecycle. It would be interesting to know if it follows this alternate yearly emergence pattern in the rest of its European range, or if there it occurs every year. As *S. flaviventris* was one of the smallest species found (wing-span 17–20 mm) it is odd that it needs two years to complete its lifecycle, when the similarly-sized and closely related currant clearwing



Red-tipped (*S. spheciformis*)



Sallow (*S. flaviventris*)



Six-belted (*B. ichneumoniformis*)



Hornet (*S. apiformis*)



White-barred (*S. spheciformis*)

Fig. 2. Some clearwings found in Berkshire while surveying with pheromones in 2020. (Photos by Jack Jones.)

S. tipuliformis (wing-span also 17–20 mm) has an annual lifecycle. Currently, the fallow clearwing in Berkshire is very locally distributed in the east of the county, with previous VC 22 records from Wytham Woods sometime before 1928, and more recently from Owlsmoor by Brian Baker who found galls in 1981 and reared adults in 1982 (Baker, 1994).

Another species that had a fairly short flight period was the hornet clearwing *S. apiformis* (Fig. 2). This was first seen, using the HOR lure, at Sandford on 25 May. The last record was made from Jealott's Hill on 15 June. A total of eight examples were recorded during this survey. All sightings occurred before 13.30h, and after that time any moths still in the traps were very reluctant to move. This behaviour probably reflects observations of this species made at Medmenham, Buckinghamshire, during the summer of 2000 when freshly emerged females with the grey dusting still present on their wings were found on black/grey poplar trunks by 08.30h. Clearly, any male moths searching for virgin females would find a morning flight most advantageous. A case of "the early bird catches the worm" perhaps? It is also interesting to note that all hornet clearwing *S. apiformis* records, bar those made at Sandford, were made under Lombardy poplars *P. nigra* L. var. *italica*. At Sandford the closest poplars were black/grey poplars. However, attempts to record it elsewhere under black/grey or white poplars (*P. alba* L.) and aspens (*P. tremula* L.) where emergence holes were apparent, at Dinton Pastures for example, were unsuccessful. The literature indicates that it rarely, if ever, utilises Lombardy poplars (Waters, 1929, in Baker, 1994) but obvious round emergence holes present in exposed roots and in the trunks of the Lombardies at or just above ground level (Fig. 3) where these records were made suggest otherwise. It should be noted that the recording effort for this species at Dinton Pastures on 20 July and subsequently was somewhat late compared to its flight period of mid-June to late July (Skinner, 2009).

Two species that were expected to be found, the white-barred clearwing *S. spheciformis* and the large red-belted clearwing *S. culiciformis*, were searched for using the TIP and CUL lures respectively, but with limited success. One *S. spheciformis* was recorded on the 23rd May at Sandford during windy conditions. On the following day another was trapped at this locality, but based on some patches of lost scales it was likely that this was the same individual that had been trapped the previous day. Despite deploying the TIP lure at Dinton Pastures on 26 May and 2 June, at Jealott's Hill on six occasions between 28 May and 17 July, at Medmenham on 8 June, at Beale Park on 16 June and 13 July and at Lavell's Lake on 12 July, no further records of this species were made. This was probably due to the timing of much of this fieldwork being too late in the season.

The large red-belted clearwing *S. culiciformis* a denizen of marshy areas with birch and alder, was surveyed for on the marsh at Beale Park and on an extensive boggy area with some birch and alder at Dinton Pastures. It was not found, but this was probably due to the search dates being too late in the season. It is our earliest flying sesiid, adults emerging during the first two weeks of May and flying until the end of that month (Baker, 1985). It is likely that its flight period was over before our earnest attempts at recording it could begin. The first visit to a likely site, the marshy area at Dinton Pastures, was on 18 May while the most likely habitat, the marsh at Beale Park, could not be visited until 1 June. It was planned to make a visit to large areas of marsh at Wildmoor Heath and at California Country Park, both near Finchampsted, Berkshire in mid-May to look for this and the white-barred clearwing *S. spheciformis*. Historically, David Wedd recorded both species at these sites and Ian Masters may have found larval workings of either *S. spheciformis* or *S. culiciformis* in birch stumps at Wildmoor Heath. However, the covid lock-down



Fig. 3. Characteristic rounded emergence hole of hornet clearwing (*S. apiformis*) in lombardy poplar, Jealott's Hill, 2015. Hole diameter 1.2 cm.

and travel restrictions in place at the time prevented these trips taking place. By the time these restrictions had eased it was too late for the large red-belted clearwing *S. culiciformis*. The lure for the large red-belted clearwing *S. culiciformis* is CUL, but this also attracts the very similar looking red-belted clearwing *S. myopaeformis* (attractant MYO). Close anatomical observations are required to separate these species, but the most reliable character is the colour of their palps. In *S. myopaeformis* these are white on their undersides, while in *S. culiciformis* they are orange/brown. This characteristic was easy to observe through the transparent/opaque wall of the traps used for this work.

It is likely that other species that were surveyed for at appropriate times and in likely habitats, such as the dusky clearwing *Paranthrene tabaniformis* (Rottenberg) and raspberry clearwing *Pennisetia hylaeiformis* (Laspeyres), were not present at the localities worked. *Pennisetia hylaeiformis* is a recent arrival in the UK, being first found as larvae in a Cambridgeshire garden during October 2007 (Reid, 2008). It has a relatively late flight period, being on the wing from late July to late August (Skinner, 2009). The Community Landshare at Jealott's Hill has an extensive planting of raspberries and this was surveyed on several occasions from July to late August using the HYL lure. Some near-by allotments, also with plantings of raspberry, were similarly surveyed, but no moths were seen at either site. It is likely that this moth has not reached Jealott's Hill yet from its East Anglian stronghold, though it has spread considerably of late, being found now in Cambridgeshire, Hertfordshire, Bedfordshire, Sussex, Suffolk, Kent and Essex (Clifton, undated).

Paranthrene tabaniformis has been recorded once in Berkshire, at Tubney Wood in the north of the county, during June 1924 by R. Swift. This specimen is in the BM(NH) (Baker, 1994). Its larvae mine in poplars and sallows, and recently it has been found in mainland Europe mining sea buckthorn *Hippophae rhamnoides* L. The Lower Earley locality surveyed for this species has extensive amounts of white poplar, black/grey poplar, aspens and sallows growing near-by (Fig. 4), while about a mile up the road, at the roundabout for Junction 11 of the M4 (OS map ref. SU 781687), sea buckthorn was planted a decade or more ago and is still extant. Unfortunately, the moth was not found. On the first deployment of the TAB lure, on 1 August, the presence of a wasp (*Vespula* sp.) in the trap after half an hour caused some initial excitement, followed by great disappointment! This happened again on the second deployment of this lure at this site, on 3 August. These were the only occasions when wasps were attracted to any of the pheromone lures. It is interesting that these wasps were apparently attracted to the pheromone that is released by an emerging female dusky clearwing *P. tabaniformis*. Could they have encountered this before, and/or could this be a reason for this moths' scarcity/possible extinction in the UK? As this clearwing has a two-year life cycle it is possible that, like the willow clearwing *S. flaviventris*, it flies in alternate years so may not have been on the wing in 2020.

The lunar hornet clearwing *S. bembeciformis* was another disappointment as, despite working several promising areas with the newly developed LUN lure, it was not recorded. It was reared from willow stumps at Lower Earley in 2000, mines were apparent in felled willows at Drownboy Pond, Jealott's Hill in 2015, and oval emergence holes (Fig. 5) were present in the lower trunks of willows on the marshes at Dinton Pastures and at Beale Park this year, so it was historically and recently present at the sites surveyed. The lure for this species (LUN) had only become available at the time of its purchase (July), so it is likely that the moth's flight period had finished by the time surveying for it got underway on 28 July. Baker (1985) states that adults emerge from the first to the third week of July, while Skinner (2009) gives July to early August, so 28 July would appear to be a bit on the late side to start looking for it. Another possible explanation for its absence is that, having a two-year life cycle, it may behave like the willow clearwing *S. flaviventris*, i.e. the local populations in east Berkshire may be synchronised, all emerging in a specific year

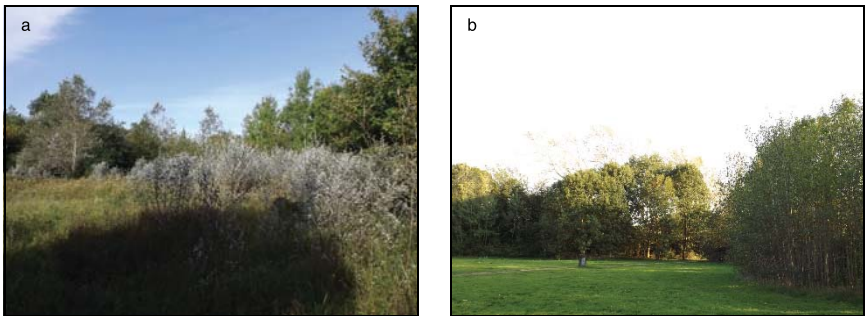


Figure 4. Site at Lower Earley that was unsuccessfully surveyed for dusky clearwing (*P. tabaniformis*). (a) Trapping site with white poplars and sallows. (b) The near-by site with black/grey poplars (background) and aspens (foreground).



Fig. 5. Oval emergence hole of lunar hornet clearwing *S. bembeciformis* in an unidentified species of sallow, Dinton Pastures, 2020. Hole height 1.8 cm, width 1.1 cm. (Photo by Jon Cole.)

(but not this one). However, a more likely explanation for its absence would be bad luck, as it is known to occur where it was surveyed for.

As advised, once surveying was complete the lures were placed in a deep freezer for storage over winter. It is planned to use them again locally next year, targeting the large red-belted *S. culiciformis*, white-barred *S. spheciformis* raspberry *P. hylaeiformis* and lunar hornet clearwings *S. bembeciformis*.

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