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With my compliments,
P. H. Ward

SOME EPHEMEROPTERA, NEUROPTERA AND TRICHOPTERA COLLECTED BY MERCURY VAPOUR LIGHT TRAP IN A HERTFORDSHIRE GARDEN

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INTRODUCTION

For several years a light trap has been operated from the garden of my home at Whetstone, Hertfordshire. Periodically, collections have been made of insects belonging to these orders. Although details of meteorological conditions were available for one year, insufficient material was obtained during this period for a study to be made of their effect on the activity of these insects.

Records for the Ephemeroptera are for 1960; Neuroptera, 1957-1964 and Trichoptera, 1958-1963. Mr. D. E. Kimmins of the Natural History Museum kindly provided help with the determination of some of the more difficult species.

TYPE OF TRAP AND SITE

The trap used was of the Robinson type and employed a pearl bulb of 125 watts. The light was switched on at dusk and off between 5.30 and 6 a.m. Trapping was carried out mainly on nights offering suitable conditions except for the years 1960 and 1961 when operations were continued almost every night. Other light sources provided considerable competition and included sodium street lights and two very powerful security lights within a range of less than 100 yards.

The garden where the trap was sited is in a fairly heavily built-up area with comparatively little unworked land in the immediate vicinity. The majority of the flora in the neighbourhood is consequently of a cultivated nature and therefore unstable and for this reason no list is given.

Ephemeroptera & Neuroptera (Planipennia)

Table 1 shows that in one year in which attention was paid to them very few Ephemeroptera attended the trap. The 10 genera of Neuroptera that were recorded comprised 20 species. Over 20% of the 343 examples collected were *Chrysopa carnea* Steph., a common visitor to gardens.

Trichoptera

Altogether 26 species comprising 16 genera were taken (table 2), a comparatively high figure considering the site of the trap and the nature of the surrounding locality.

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TABLE 1

EPHEMEROPTERA

	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
<i>CAENIDAE</i>									
<i>Caenis horaria</i> (L.)				★		★			7
<i>BAETIDAE</i>									
<i>Proclöon pseudorufulum</i> Kim.			★			★			2
									—
									Total examples 9

NEUROPTERA
(PLANIPENNIA)

	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
<i>CONIOPTERYGIDAE</i>									
<i>Parasemidalis fuscipennis</i> Reut.				★		★			13
<i>Coniopteryx tineiformis</i> Curt.			★	★	★	★	★		38
<i>SISYRIDAE</i>									
<i>Sisyra fuscata</i> (Fabr.) ..					★				2
<i>HEMEROBIIDAE</i>									
<i>Hemerobius lutescens</i> Fabr.			★	★		★	★		14
<i>Hemerobius pini</i> Steph. ..						★			1
<i>Hemerobius humulinus</i> L. ..			★			★			3
<i>Hemerobius nitidulus</i> Fabr. ..				★	★	★	★		6
<i>Hemerobius humulinus</i> L. ..			★			★			3
<i>Symphorobius pygmaeus</i> (Ramb.)				★		★	★		13
<i>Kimminsia betulina</i> (Ström.)							★		1
<i>Kimminsia subnebulosa</i> (Steph.)			★	★	★	★	★		38
<i>Micromus variegatus</i> (Fabr.)				★	★	★	★		7
<i>Eumicromus paganus</i> (L.) ..				★					2
<i>Wesmaelius</i> <i>quadrifasciatus</i> (Reut.) ..					★				1
<i>CHRYSOPIDAE</i>									
<i>Chrysopa perla</i> (L.)			★	★					4
<i>Chrysopa phyllochroma</i> Wesm.				★					1
<i>Chrysopa flava</i> (Scop.) ..				★					9
<i>Chrysopa carnea</i> Steph. ..	★	★	★	★	★	★	★	★	90
<i>Chrysopa ventralis</i> Curt. ..				★		★			1
<i>Chrysopa septempunctata</i> Wesm.				★	★	★	★		51
<i>Chrysopa albolineata</i> Kill ..				★	★	★	★		48
									—
									Total examples 343

TABLE 2

TRICHOPTERA

	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
<i>POLYCENTROPIDAE</i>								
<i>Polycentropus flavomaculatus</i> (Pict.)			★					1
<i>Cyrnus flavidus</i> McL.			★	★	★	★		27
<i>PSYCHOMYIDAE</i>								
<i>Tinodes waeneri</i> (L.)					★	★		3
<i>HYDROPSYCHIDAE</i>								
<i>Hydropsyche angustipennis</i> (Curt.)				★	★			4
<i>HYDROPTILIDAE</i>								
<i>Agraylea multipunctata</i> Curt.			★	★				3
<i>Agraylea sexmaculata</i> Curt.			★	★	★			35
<i>Hydroptila sparsa</i> Curt.		★	★	★	★			42
<i>Oxyethira flavicornis</i> Pict.				★	★			32
<i>PHRYGANEIDAE</i>								
<i>Phrygania striata</i> L.			★					1
<i>Phrygania varia</i> Fabr.				★	★			14
<i>LIMNEPHILIDAE</i>								
<i>Limnephilus rhombicus</i> (L.)					★			1
<i>Limnephilus flavicornis</i> (Fabr.)						★		4
<i>Limnephilus marmoratus</i> Curt.						★	★	2
<i>Limnephilus lunatus</i> Curt.						★	★	4
<i>Limnephilus luridus</i> Curt.				★	★			3
<i>Limnephilus affinis</i> Curt.	★	★		★	★	★	★	55
<i>Limnephilus sparsus</i> Curt.				★	★	★		13
<i>Limnephilus extricatus</i> McL.				★				1
<i>Grammotaulius atomarius</i> (Fabr.)						★		1
<i>Stenophylax permistus</i> McL.	★	★	★			★	★	13
<i>LEPTOCERIDAE</i>								
<i>Athripsodes cinereus</i> (Curt.)				★				2
<i>Mystacides longicornis</i> (L.)			★	★	★			42
<i>Oecitis ochracea</i> (Curt.)			★	★	★			10
<i>Oecitis lacustris</i> (Pict.)				★				2
<i>Leptocerus tineiformis</i> (Curt.)				★	★			5
<i>GOERIDAE</i>								
<i>Goera pilosa</i> (Fabr.)			★	★				4

Total examples 324

REMARKS ON PARTICULAR SPECIES

Procloëon pseudorufulum Kim. Taken twice, both in 1960. Kimmins (1954) says of this species (then *P. rufulum*, Eat.) that it is common in Ireland, less common in England and Wales. Occurs in slow-flowing rivers. The adult is crepuscular in habit.

Parasemidalis fuscipennis Reut. Taken in the trap on six occasions over a period of two years, twelve in the month of June, one in August. This is a rare insect and comparatively few records exist of its capture. Not much is known with regard to its distribution in England, but it is understood to have a close association with conifers. The first record for this country was when Withycombe (1922) took 15 examples at Oxshott in Surrey. The species was then referred to as *P. annae* End. Considerable doubt existed as to the validity of the name however and the 13 examples taken at Whetstone were used as a basis by myself for placing *P. annae* as a synonym of *P. fuscipennis* in 1961.

Hemerobius pini Steph. A single specimen was found in the trap on August 26th, 1959. Killington (1937) records that in the British Isles *H. pini* appears to be a rare and very local species and apart from one instance taken only in very small numbers. As indicated by the specific name this species is confined to conifers.

Sympherobius pygmaeus (Ramb.). An annual visitor to the trap, but never in any number. This is another local species recorded from a few of the more southern counties. It is solely associated with oak and Fraser (1959) adds the refinement, "especially those infested with blight".

Chrysopa phyllochroma Wesm. A solitary specimen was collected on June 5th, 1960. According to Killington (loc. cit.) *C. phyllochroma* is widespread over England but local in occurrence. The chief habitat of this insect appears to be open ground, among grasses and weeds.

Cyrnus flavidus McL. The records of 27 specimens were spread over two years, 1959 and 1960. Mosely (1939) says that this species is rather local and inhabits lakes.

Agraylea multipunctata Curt. All three examples of this local insect were taken in 1959. It is known to breed in lakes, ponds and large rivers.

Agraylea sexmaculata Curt. Although 35 individuals were recorded during 1959 and 1960, they were mainly taken singly. Known to Mosely (loc. cit.) as *A. pallidula* McL. it was classed as very local species. There were scattered records of single examples

and one fair series taken by Mosely at Mottisfont, Hampshire. Subsequently a number were collected by W. E. China from Hawkshead in Lancashire. Crichton (1960) took several hundreds of both this species and *A. multipunctata* in a light trap near Reading, Berkshire.

Limnephilus affinis Curt. Crichton (loc. cit.) when analysing the results of four years light-trapping, placed this common species with the rest of the *Limnephilidae* he recorded, as a group having an Autumn emergence. The records for the Whetstone light trap, however, show 12 of the 55 examples captured as having occurred in April and May. At least with regard to *L. affinis* this would seem to support the findings of Novak and Sehnal (1963); who assert that all species of the genus *Limnephilus*, in nature in Central Europe, have but one generation a year. This emerges in Spring and early Summer and remains inactive until Autumn. There seems to be no reason to doubt that this could be equally true of most British members of the genus, as examples of the majority of the species have been collected throughout the Summer months. These are often found well removed from water and in thick vegetation. The lack of material in the *Limnephilidae* to visit Crichton's trap in the earlier part of the year could be accounted for by the imaginal diapause described by Novak and Sehnal (loc. cit.).

Limnephilus extricatus McL. This species visited the trap once on July 18th, 1959. While Mosely (loc. cit.) describes it as widely distributed the absence of any large numbers from collections might indicate a more local distribution.

DISCUSSION

Insufficient material was obtained of the Neuropterous (sens. Linn.) groups for an assessment to be made of the effect of variations in meteorological conditions upon their activity. Equally it may be said that the low numbers recorded offer little evidence in relation to the degree of possible migration in these groups. Not much is known of the extent to which these insects are attracted to the type of light source provided. Therefore without alternative methods of sampling it is difficult to know what percentage the trapped examples constitute of those active at the time.

However in the case of the Trichoptera it is reasonable to assume that journeys of up to 1—2 miles were made, this representing the least distance between the trap and what might be considered suitable habitats for some of the species involved.

Generally collections made from the light trap were more comprehensive, in genera and species, than those obtained by more standard

means such as sweeping, beating, etc. This is understandable as many of the insects belonging to these groups are nocturnal in habit and very retiring during the hours of daylight. Much more could be learned of their distribution and seasonal occurrence if records were made available from some of the many light traps that are run throughout the country. Much attention has been paid to the larger groups such as the Macrolepidoptera with a subsequent measure of neglect for the smaller Orders.

REFERENCES

- CRICHTON, M. I., 1960. A study of the captures of Trichoptera in a light trap near Reading, Berkshire. *Trans. R. ent. Soc. Lond.* **112**(12):319-344, 10 figs.
- FRASER, F. C., 1959. Handbooks for the identification of British insects: Mecoptera, Megaloptera, Neuroptera. **1**(12 & 13):26.
- KILLINGTON, F. J., 1937. A Monograph of the British Neuroptera. Vols. 1 & 2.
- KIMMINS, D. E., 1954. A revised key to the adults of the British species of Ephemeroptera. Freshwater Biological Association publication no. **15**:66.
- MOSELY, M. E., 1939. The British Caddis Flies (Trichoptera).
- NOVAK, K. & SEHNAL, F., 1963. The development cycle of some species of the genus *Limnephilus* (Trichoptera). *Cas. Cal. Spol. ent.* Tom. **60** (1-2):68.
- WARD, P., 1961. *Parasemidalis annae* (Enderlein, 1905) a synonym of *P. fuscipennis* (Reuter, 1894). *Ent. Gaz.* **12**:114.
- WITHYCOMBE, C. L., 1922. *Parasemidalis annae* Enderlein, A Coniopterygid new to Britain, with notes on some other British Coniopterygidae. *Entomologist* **55**:169.