

VIII/199



The Entomologist's Record

AND JOURNAL OF VARIATION

EDITED BY
J. M. CHALMERS-HUNT, F.R.E.S.

1983, v. 95, n-12

58

Vol. 95
1983

Ent
1899

ИНСТИТУТ
Зоологии
АН СССР

Зоологический Ин-т
Отделение
Б. И. СССР
АН СССР

199

95, 1/2

ZUH

THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

Edited by J. M. CHALMERS-HUNT, F.R.E.S.

with the assistance of

A. A. ALLEN, B.SC., A.R.C.S.

P. J. CHANDLER, B.SC., F.R.E.S.

NEVILLE BIRKETT, M.A., M.B.

C. A. COLLINGWOOD, B.SC., F.R.E.S.

S. N. A. JACOBS, F.R.E.S.

J. HEATH, F.R.E.S., F.L.S.

J. D. BRADLEY, PH.D., F.R.E.S.

E. S. BRADFORD

Lieut. Col. A. M. EMMET, M.B.E., T.D., F.R.E.S.

P. A. SOKOLOFF, M.SC., M.I.BIOL., F.R.E.S. (Registrar)

C. J. LUCKENS, M.B., CH.B., D.R.C.O.G.

42716

ANNUAL SUBSCRIPTION FOR THIS VOLUME No. 95

£11.50 for overseas subscribers.

£10.00 for all U.K. subscribers.

Hon. Treasurer:

P. J. JOHNSON, B.A., F.R.E.S., 10 Crossfield Road, Hampstead, London,
NW3 4NS

PUBLISHED BI-MONTHLY

FLUCTUATIONS IN ABUNDANCE OF COCCINELLIDAE

By DENIS F. OWEN*

(Concluded from Vol. 94 page 228)

Coccinella 11-punctata L.

This aphid-feeder is claimed to be a salt marsh species (Pope, 1953) but in south-east England also occurs commonly inland (Benham and Muggleton, 1970). As shown in Table 1, only three were recorded in the trap in 1972-1974 and none was seen alive in these four years. The 108 individuals trapped in 1975 were all in the first two weeks of August, indicating a sudden movement into the garden. In 1976, six overwintered individuals were trapped in April-June, there was then an influx of 53 in July, with fewer in August-October. Twelve, distributed throughout the season, were trapped in 1977, two in 1978, and none in 1979-1981, although one was seen in 1980. There was no evidence of breeding, but overwintering individuals were found among vegetation in January 1977. Everything suggests irruptive movements similar to those of *C. 7-punctata* but on a smaller scale. *C. 11-punctata* is probably not a characteristic garden ladybird in central England.

Thea 22-punctata (L.)

Reputedly a mildew-feeder, this species was often seen in the garden, but never among clusters of aphids. It was trapped in five of the ten years (Table 1) and records were distributed throughout the season with no clear peaks of abundance except that in 1976, when 39 were caught, 15 were in June and 14 in July. There was no evidence of breeding or of successful overwintering.

Table 4. Monthly occurrence of *Propylea 14-punctata* in the Malaise trap, 1976-1981.

| | Apr | May | Jun | Jul | Aug | Sep | Oct |
|------|-----|-----|-----|-----|-----|-----|-----|
| 1976 | — | 2 | 25 | 127 | 170 | 16 | 6 |
| 1977 | — | 3 | 14 | 26 | 26 | 85 | 6 |
| 1978 | — | 6 | 20 | 3 | 2 | 6 | 1 |
| 1979 | — | 1 | 1 | 1 | 9 | 137 | — |
| 1980 | — | 8 | 9 | 4 | 7 | 1 | — |
| 1981 | — | 1 | 3 | — | 8 | 2 | — |

Propylea 14-punctata (L.)

Another aphid-feeder, this species, which is especially associated with deciduous woodland, occurred in the trap every year (Table 1),

*66 Scraftoft Lane, Leicester LE5 1HV.

but not until 1976 did numbers begin to fluctuate conspicuously. The monthly occurrences in 1976-1981 are given in Table 4. Overwintered individuals were trapped in May and June 1976 and then many invaded the garden in July and August. In 1977 there were no marked fluctuations in numbers until September when 50 of the 85 individuals trapped occurred in the third week of the month, providing strong evidence of a movement into the garden. These events were repeated in 1979 when after a poor year for the species 137 were trapped in September, 97 of them in the first week. The years 1978, 1980 and 1981 were unexceptional in terms of fluctuations in numbers.

P. 14-punctata has never been found breeding in the garden but has several times been found in winter among dense vegetation. It is a common woodland species and the trap records suggest that in three of the ten years many left the woods and entered gardens. The 1976 invasion may have been a response to drought, but the September invasions of 1977 and 1979 were not obviously correlated with weather.

Calvia 14-guttata (L.)

One was trapped on 18 July 1976 and two were seen among aphids feeding on birch in July 1979. This is a woodland species and in my experience is rare in suburban gardens.

Chilocorus renipustulatus Rossi

One was trapped on 7 September 1980, and another was seen on birch on 15 September 1981. According to Pope (1953) this species is especially associated with willow, a small shrub of which is present in the garden.

The garden as a habitat for ladybirds

Most ladybirds are trapped when they take off and fly upwards or fly into land at an angle of about 45°. Most flights occur in warm and sunny weather which means that the trap measures activity as well as abundance, but because of the day-to-day variation in weather I think that the annual totals given in Table 1 and the monthly summaries in Tables 2-4 are more a reflection of relative abundance than of activity. Because of its vegetational diversity the garden is not uniformly suitable for ladybirds. The trap was (and still is) sited in a place known to be good for insects in general but not for ladybirds in particular. Other sites might have yielded more or fewer ladybirds.

The garden is undoubtedly good for ladybirds. It supports a resident population of *A. 2-punctata* and receives large influxes of *C. 7-punctata*, *C. 11-punctata* and *P. 14-punctata* which feed on the plentiful supply of aphids which, in the case of *C. 7-punctata*, enable periodic breeding to occur. The garden is also a good habitat

for those species of hoverflies (Syrphidae) whose larvae feed on aphids. Two of them, *Metasyrphus corollae* (F.) and *Episyrphus balteatus* (Degeer), have invaded the garden in much the same way and often at the same time as *C. 7-punctata* (Owen, 1981). Indeed the ecology of *E. balteatus* is remarkably similar to that of *C. 7-punctata*. Both are characteristic of open country, especially arable fields, and both undertake mass irruptive movements, particularly in warm weather. The eggs of both species are laid among aphids on herbaceous plants but in the garden there is a clear ecological separation between the two species: larvae of *E. balteatus* are nearly always found among the aphid, *Brevicoryne brassicae* (L.) feeding on cabbage, while those of *C. 7-punctata* are found among a wide variety of species of aphids but never with *B. brassicae*.

If the Malaise trap had been operated for just the years 1972-1974 or 1978-1981 it would have been concluded that *C. 11-punctata* is no more than a vagrant to the garden. Only in 1975 and 1976, the two drought years, and to a lesser extent in 1977, was it a conspicuous part of the ladybird community. As already mentioned, this species is believed to be largely coastal where it seems especially common in salt marshes. This viewpoint is questioned by Benham and Muggleton (1970) who reproduce a distribution map showing that although *C. 11-punctata* is indeed coastal in much of Britain, in the south-east it is also widespread inland. I believe that both viewpoints are correct. *C. 11-punctata* is typically coastal but in some years, 1975 and 1976 are examples, it irrupts and moves inland.

For ten years the Malaise trap has constantly monitored the ladybird community in the garden. The community was disrupted by movements into the garden in 1975 and 1976. In both years the movements were apparently initiated by drought, and it was not until 1980 that the community returned to "normal". In a sense this paper is a progress report and there is no reason why the trap should not be operated for a further ten years.

References

- Benham, B. R. and Muggleton, J., 1970. Studies on the ecology of *Coccinella undecimpunctata* Linn. (Col. Coccinellidae). *Entomologist*, **103**: 153-170.
- Owen, D., 1976a. The year of the ladybirds. *The Listener*, 7 October 1976.
- Owen, D., 1976b. Ladybird, ladybird, fly away home. *New Scientist*, **71**: 686-687.
- Owen, D., 1978. *Towns and gardens*. Hodder and Stoughton, London.
- Owen, J. 1981. Trophic variety and abundance of hoverflies (Diptera, Syrphidae) in and English suburban garden. *Holarctic Ecol.*, **4**: 221-228.
- Pope, E. D., 1953. Coleoptera: Coccinellidae and Sphindidae. *Handb. Ident. Brit. Insects*, **5** (7): 1-12.
- Williams, C. B., 1958. *Insect migration*. Collins, London.