

**Phenology of *Pseudaletia (Cirphis) unipuncta* (Haw.) Noctuidae,
Lepidoptera in Israel
by**

Shoshana Yathom

A b s t r a c t

Pseudaletia unipuncta, Haw. , which was not known to occur in the East Mediterranean region, has been caught in light traps in Israel since 1959. The population of the moth varies according to region and season and from year to year. The peak of the population occurs in May-June, and the highest populations are trapped in the Huleh area, where suitable conditions for larval breeding are present.

I n t r o d u c t i o n

Pseudaletia unipuncta (Haw.) is a new insect in Israel and was apparently introduced only recently. According to the literature (1,2, 5, 7, 8, 11, 12) it can become a serious pest. In Israel it is of little economic importance at present, but it may become a more serious pest. News has already reached us of damage in a corn field, and in apple orchards.

Dr. J. Harpaz first noticed damage by the pest in 1959 in a corn field heavily attacked by the larvae, which had migrated there from an adjacent field of fox-tail millet (*Setaria italica* L.) Since then, the insect has been found in smaller numbers in various summer grains.

Pseudaletia unipuncta is known as the "true army worm", because of the large-group marching habit of its larvae in search of food. The adults are migratory moths, known to fly long distances; they are attracted to light (10, 14).

In view of this last fact, it was decided to study the phenology of this insect in Israel by taking advantage of its phototactic inclinations. A study was made of the periods of flights, and the density of populations at various seasons.

Methods

Light traps were established in various parts of the country, the source of light being a 125 Watt mercury-vapor bulb. The bulb was placed in a funnel

Contribution from the National and University Institute of Agriculture, Rehovot, Israel, 1964 Series, No.675-E.

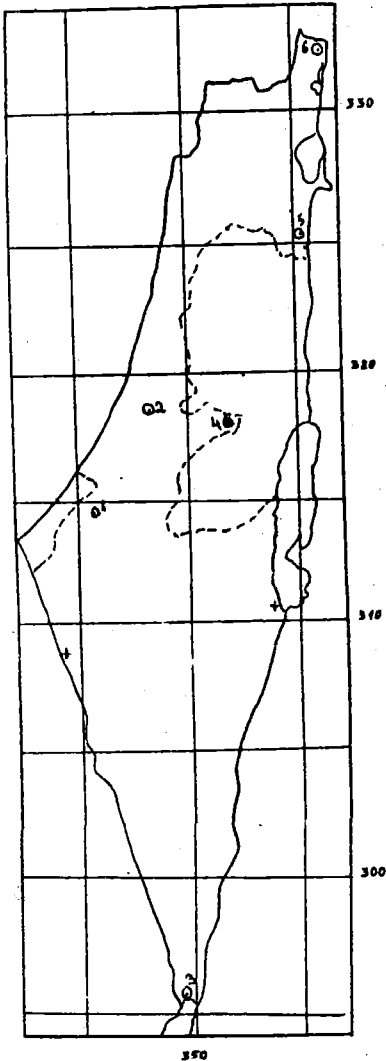


Fig. 1. Location of traps at various sites in Israel (see text).

to which four perpendicular wings were attached to prevent escape of the moths; below the funnel was placed a jar containing an insecticide and the moths were collected therein.

The traps were operated every night from sunset to sunrise, at which time the moths caught were removed, killed if necessary, and sent off to be sorted and identified. The traps were placed at the following sites listed from the Mediterranean coast eastwards, and from south to north.

- Along the coastal plain at: 1. Sa'ad;
 2. Rehovot. Inland: 3. Eilat, on the western shore of the Gulf of Aqaba.
 4. Jerusalem, in the Judean Hills.
 5. Beit Shean, northern Jordan Valley.
 6. Huleh Valley, near the Jordan tributaries

In addition, casual trappings were made at Nizana (along the western Egyptian border), and at Sdom, at the southern tip of the Dead Sea.

Results

The number of Pseudaletia unipuncta moths caught at various localities varied greatly.

The total number of moths caught each month at various localities during 1960 is presented in Fig. 2.

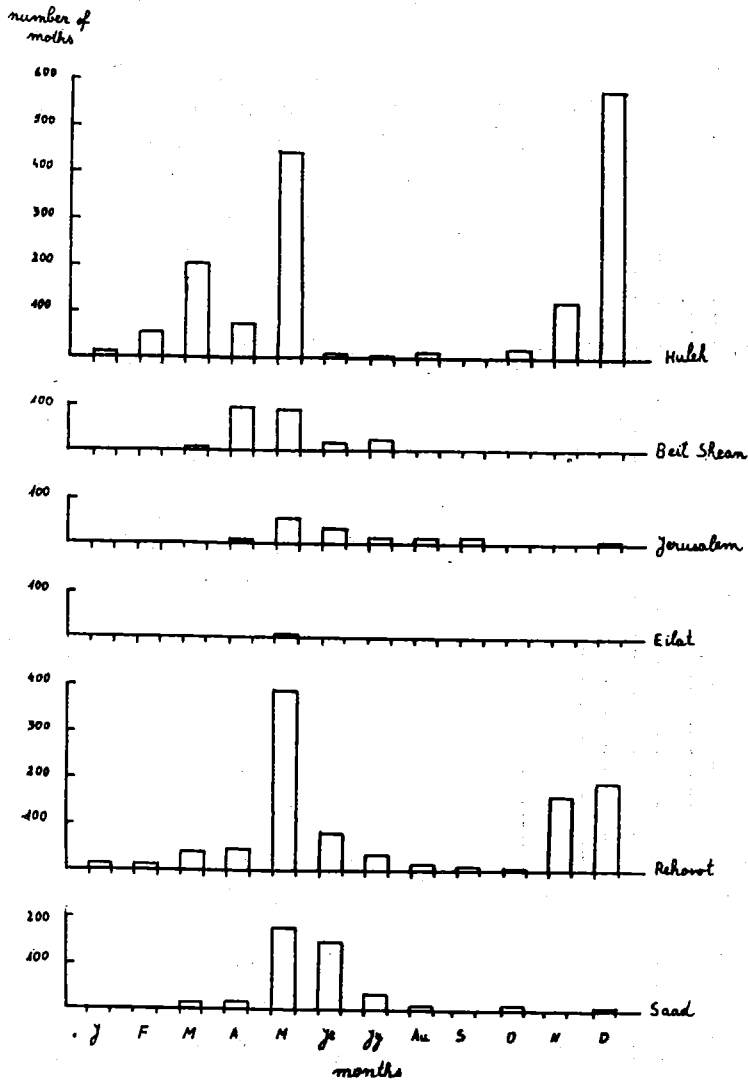


Fig. 2. Monthly totals of P.unipuncta moths caught at various sites in 1960.

The highest number of moths was caught in the Huleh area and in the central coastal plain (Rehovot), whereas in the southern coastal plain (Sa'ad), in Jerusalem, and in Beit Shean the populations were much smaller.

Hardly any moths were caught in Eilat, viz. 3 in 1960, 1 in 1961 and one in 1962, always in May; one moth was caught in May 1961 in Nizana, and a few at Sdom, in December 1961. The population varied not only from one locality to another, but also from year to year at the same locality. The course of these fluctuations in Rehovot is presented in Fig. 3. Figs. 2 and 3 show a distinct population peak in May or June; the rise

in population in December is the beginning of the peak of the following year, as observed in the winter of 1960-1961. The number of moths caught in

1959 was quite low, but increased constantly until 1961; a decrease in population occurred.

The population varied not only from one locality to another, but also from year to year at the same locality. The course of these fluctuations in Rehovot is presented in Fig. 3. Figs. 2 and 3 show a distinct population peak

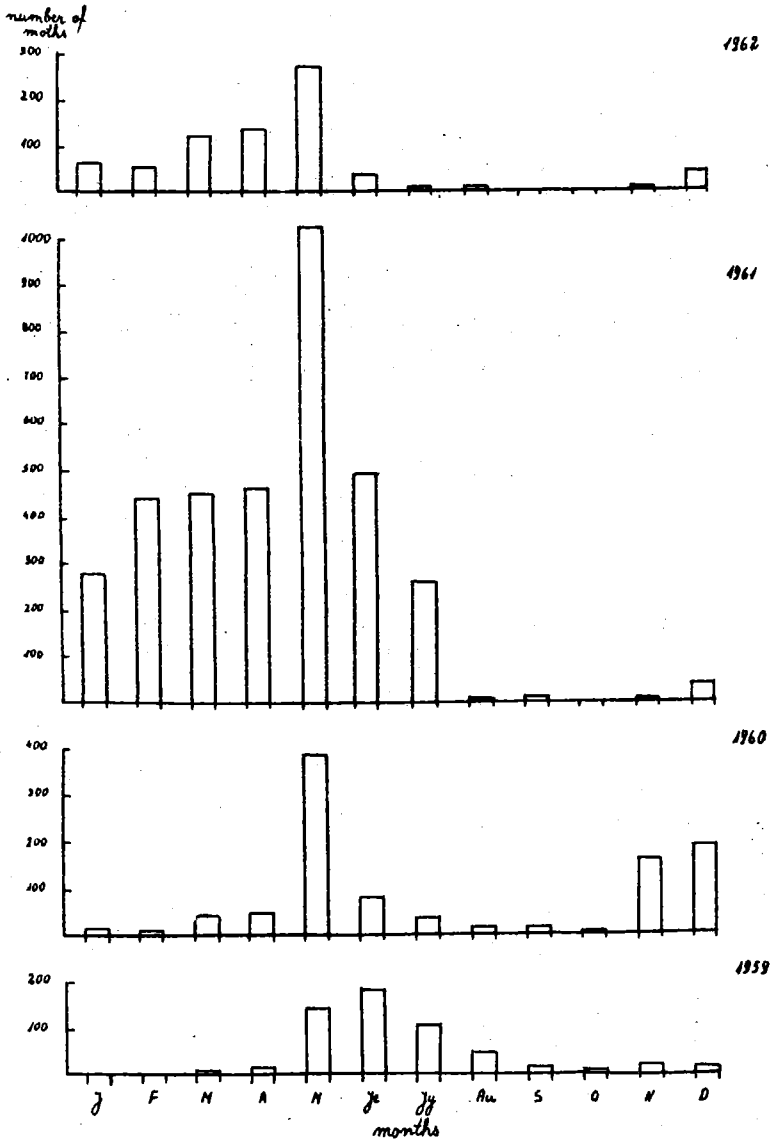


Fig. 3. Total numbers of P. unipuncta moths caught in Rehovot during 1959 - 1962.

in May or June; the rise in population in December is the beginning of the peak of the following year, as observed in the winter of 1960-1961. The number of moths caught in 1959 was quite low, but increased constantly until 1961; in 1962, a decrease in population occurred.

In 1963 a very large population was trapped in the Huleh Valley; a comparison between the numbers caught then with those caught in 1960 is given in Fig. 4. A low population was present throughout the winter, with a peak during the second half of February; it dropped in March and low populations prevailed until the second half of May, when a sudden increase occurred this continued to the end of June. In July, the population suddenly dropped.

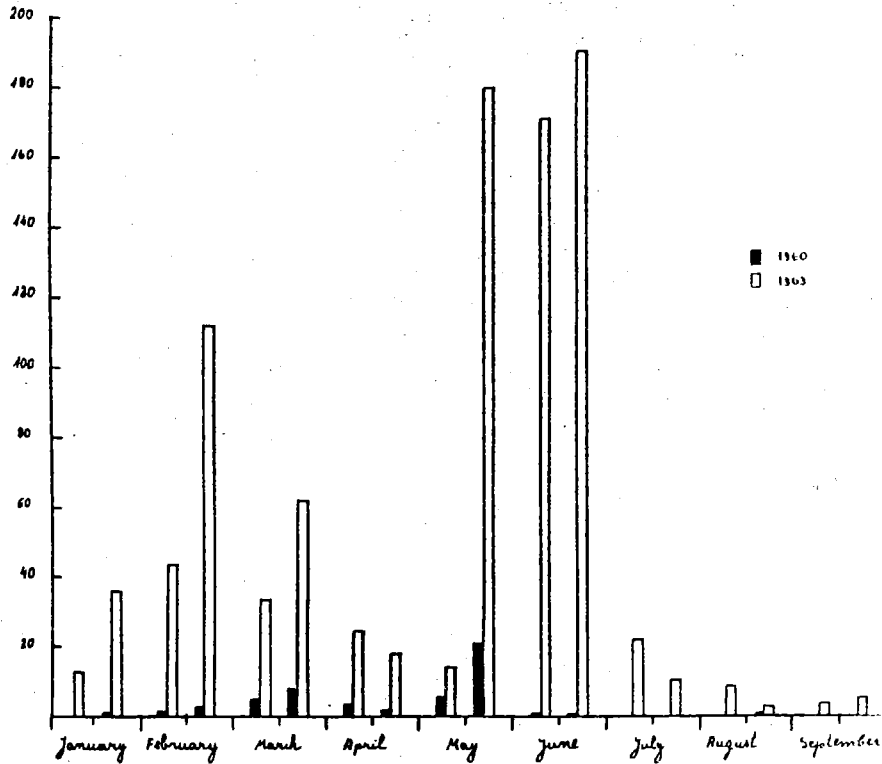


Fig. 4. Average numbers of *P. unipuncta* moths caught nightly in the Huleh Valley in 1960 and 1963 (fortnightly averages)

Discussion

Pseudaletia (Cirphis) unipuncta is new in Israel, and is far removed from its main endemic areas (2, 4, 6, 8, 9, 13). It was probably accidentally introduced, only recently, as it was introduced earlier to Australia (6) and the Far East (3).

In Israel it is most abundant in the central coastal area (Rehovot) and in the Huleh Valley, while in the southern part of the coastal area (Sa'ad), in Jerusalem and in Beit Shean the populations were much lower. This may be explained by this insect's mode of life. Oviposition takes place in swampy or flooded areas (4, 9, 13). The larvae develop on the succulent graminaceous plants prevalent in these areas; after having finished this food supply the larvae migrate to adjacent fields. In Israel such areas occur in the Huleh Valley, which is criss-crossed with many canals and rivulets containing flora suitable for larval development, and to some extent in the central coastal plain, where some rivers are found.

Unfortunately the trap in the Huleh Valley did not function regularly during 1961-1962; thus, it is not clear if the increase in population there was gradual or occurred suddenly in 1963.

Suitable habitats for the insect exist neither in the southern part of the coastal plain nor in the Judean Hills near Jerusalem. The Beit Shean Valley is an exception; there, despite the many springs and canals, maintaining an abundance of food plants for the larvae, the population was not as dense as in the Huleh or the central coastal area; it is possible that the high temperatures prevailing in this area act as a limiting factor.

References

1. Anonymous (1939). Summary for 1938. Insect Pest Sur. Bull. 18 no. 10:657-685. U.S. Dept. Agric. Bur. Ent., Wash., D. C.
2. Baker, A.W. (1939). Notes on the army worm, Leucania unipuncta Haw., outbreak in Ontario in 1938. Rep. ent. Soc. Ont. 69:96-99.
3. Engelhardt, W.M. (1927). Cirphis unipuncta Haw., a new pest of the eastern region. (in Russian). Defense de Plantes IV (2). 250-255,

4. Engelhardt, W.M. (1929). The army worm, Cirphis unipuncta Haw. , in the Russian Far East. (In Russian). Plant Protection 6 (1-2): 75-78.
5. Filmer, R.S. and Ginsburg, J.M. (1951). Effectiveness of airplane applications of insecticides and poison baits for control of army worm, and insecticide residue recovered at harvest. J. econ. Ent. 44: 542-546.
6. Froggat, W.W. (1923). Insect pests of the cultivated cotton plant, IV. Cutworms and leaf-eating beetles, Agric. Gaz. N.S.W. 34 (5) : 343-348.
7. Hibbs, E. T. and Weaver, C. R. (1951). A field test of some organic insecticides for control of the army worm. J. econ. Ent. 44: 122.
8. Knight, H. H. (1916). The army worm in New York in 1914, Leucania unipuncta Haworth. Bull. Cornell Univ. Agric. Exp. Sta. No. 376: 751-765.
9. Maheux, G. and Lagloire, P. (1939). The 1939 (i. e. 1938) outbreak of the army worm in Quebec. Rep. ent. Soc. Ont. 69: 99-101.
10. Marin, C.H. and Honse, J.S. (1941). Numbers of Heliothis armigera (Hb) and two other moths captured at light traps. J. econ. Ent. 34: 555-559.
11. Noran, E.J. and Lyle, C. (1940). Observations on Cirphis unipuncta Haworth in Mississippi. J. econ. Ent. 33: 768-769.
12. Pickett, A. D. (1938). The army worm outbreak in Nova Scotia in 1937. Canad. Ent. 70 (4): 86-87.
13. Puttarudriah, M. and Usman, S. (1958). Flood causes army worm outbreak. Mysore Agric. J. 32: 124-131.
14. Walkden, H. H. and Whelan, D. B. (1942). Owllet Moths (Phalaenidae) taken at Light Traps in Kansas and Nebraska. Circ. U.S. Dept. Agric. No. 643.

**DISHON
CORPORATION LTD.**

24 Nahlat Benjamin St.

P.O.B. 2917 Tel-Aviv Tel. 59548



Wish to congratulate the Israeli Entomological Society on the
Occasion of the Issue of the first Volume of their Journal.

**CHEMICALS & TECHNICAL
SUPPLIES LTD.**

17, Mikve Israel St., Tel Aviv

Distributors of

CHLOROBENZILATE and DIAZINON

products of J. R. GEIGY S.A., Basle

CONGRATULATE

THE ENTOMOLOGICAL SOCIETY IN ISRAEL

on the occasion of publication of the first issue
of their Journal.