

# The Blackheaded Caterpillar of Coconut (*Nephantis serinopa*)

*Biological Control through utilisation of its  
Natural Enemies — Eulophids*

(A Special Device for Rearing in Summer)

By

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**The natural enemies of the blackheaded caterpillar of coconut:** The black-headed caterpillar of coconut, *Nephantis serinopa* is attacked by a number of parasites in nature at different stages of its life-cycle.

Young larva : Apanteles	Caterpillars are attacked by a predator Callida (Carabid beetle) but its effect in controlling the pest is insignificant.
Growing larva : Microbracon	
Full-grown larva : Bethylid	
Pupating larva : Elasmid	

**Pupa :** Chalcid Ichneumonid, Tachinid fly and Eulophid. It is possible by utilising these parasites to control this pest of coconut trees by introducing the parasites in areas where they are not found now and by breeding and multiplying some of the parasites in the laboratory and liberating them against the pest for strengthening the ranks of its enemies in nature. For the latter purpose, it is only those that are suitable for laboratory rearing that can be taken up. Amongst the natural enemies of *Nephantis serinopa* that can be bred and multiplied in the laboratory, Eulophid (*Trichospilus pupivora*) is important on account of (1) its suitability to laboratory rearing (2) its adaptability to alternate hosts like *Plubia*, *Sylepta*, *Prodenia*, etc., when *Nephantis serinopa* pupae become scarce in the area and cannot be easily collected; the short duration of the life-cycle enables a large number of generations to be reared in the year; (4) its high fecundity; (5) its capacity to spread to considerable distances when released in nature on account of its active habits; (6) absence of any natural enemies of its own; (7) very high rate of as much as 50% parasitisation of the pest pupae.

**Difficulty in rearing the Eulophid parasite in summer in the Godavari Districts:** In view of these advantages, this parasite was reared at Coimbatore and introduced in the districts of East and West Godavari for the biological control of the *Nephantis* pest and two regional substations

were opened at Razole and Narasapur for multiplying the parasites and releasing them in the two districts. It was observed that the parasite population got very much diminished during the hot summer months of April, May and June so that it was very difficult to rear the parasites in the laboratories at Razole and Narasapur during these months. On the other hand, these parasites were found to thrive in nature in the West Coast districts of Malabar and South Kanara, and this fact suggested the possibility of evolving a suitable method of rearing the parasites in the districts of East and West Godavari by adjusting the temperature and humidity in the rearing cages. At Coimbatore the parasite thrives best at a range of 78° to 82° F and 92-94 relative humidity (Cherian and Ananthanarayanan 1939)

**A DEVICE FOR REARING OF  
EULOPHID PARASITES  
IN HOT WEATHER**

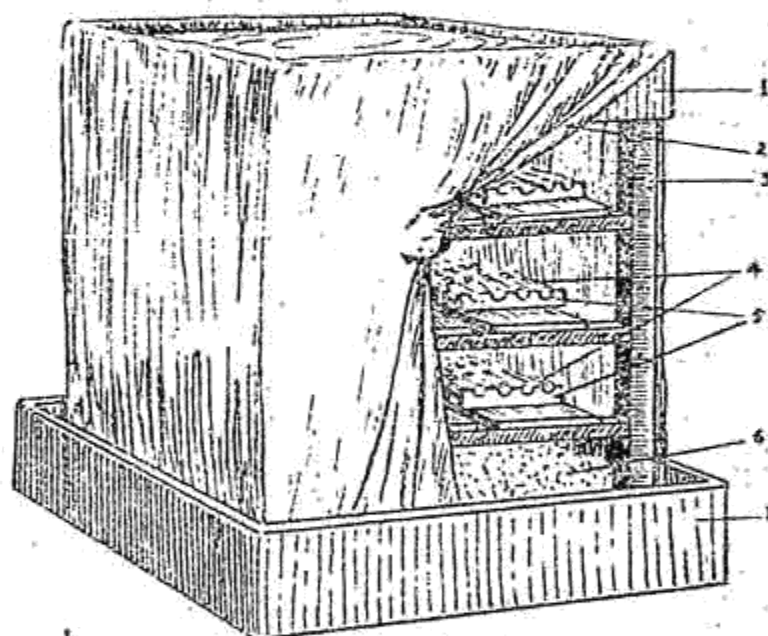


FIG. 2

FIG. 1

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| FIG. 1 | 1. WATER TRAY<br>2. WET CLOTH<br>3. RACK.<br>4. REARING TUBES<br>5. STAND FOR TUBES.<br>6. SAND<br>7. SAND TRAY. |
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| FIG. 2. | 1. REARING TUBES.<br>2. STAND FOR TUBES. |
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Accordingly a moist chamber was devised for rearing the parasites in the Godavari tract during the summer months. It consists essentially of a small rack for holding the stands for the rearing tubes, three in a row crosswise (vide-Fig 1) These stands can be kept at different heights in the rack, 9 inches apart, so that there may be sufficient ventilation in the rack between successive layers. The number of rows that can be kept in

the rack can be varied according to convenience, by adjusting the height of the racks. At the top of the racks, a tray of water is kept and the whole stand is made to stand in a larger tray, filled with sand. Curtains made of *Khaddar* cloth are draped on the four sides and top of the rack, taking care to see that they are made to dip into the water kept in the tray at the top and also touch the sand in the bottom tray.

When only a limited quantity of water is to be absorbed by the curtains, the top ends are kept a little away from the water level in the tray and connected with the water by means of *Khaddar* strips, whose width is adjusted to the quantity of water to be absorbed by the curtains. The rack is kept opposite a window with a southern aspect, resting on a stool or table of the required height. The window is also provided with a *Khus-Khus* thatty. By means of this arrangement, it was found possible to maintain a temperature of 80-83°F inside the chamber irrespective of the temperature prevailing outside. Even on days when the temperature went up to 109°F, the moist chamber recorded only 82°F with a relative humidity of 90. The problem of ensuring favourable conditions of humidity and temperature, for the successful rearing of Eulophid parasites is thus solved to a great extent, in the Godavari districts during the summer months. The data given below serve to illustrate this fact.

**Number of Eulophid parasites reared during: 1947 to 1950.**

	1947 open rearing	1948 open rearing	1949 open rearing	1950 open rearing	With moist Chamber.
April	Nil	Nil	Nil	Nil	22,000
May	Nil	Nil	Nil	Nil	60,000

To test whether the broods reared under artificial conditions are of sufficient vitality,, consignments of Eulophids so reared were sent to Coimbatore from Narasapur in June 1950 and were found to give rise to parasites of quite normal activity.