# SEASONAL ACTIVITY OF THE TEAK DEFOLIATOR HYBLAEA PUERA CRAMER (LEPIDOPTERA: HYBLACIDAE) AT ICRISAT, PATANCHERU, ANDHRA PRADESH

#### C. S. PAWAR and V. S. BHATNAGAR\*

International Crops Research Institute for the Semi-Arid Tropics, Patancheru 502 324, India.

\*Present address: Pest Management Consultant, C-30, Raghu-Rashmi, Bhagwandas Road, Jaipur 302 001, India.

HYBLAEA PUERA Cramer (Lepidoptera: Hyblacidae), which is known to have 14 generations a year<sup>1</sup>, is a serious pest to teak plantations in India<sup>2</sup>. Very little is known about its field population fluctuations. In a light trap study at Jabalpur, Madhya Pradesh, Vaishampayan and Bahadur<sup>3</sup> recorded a large number of moths of H. puera in July-August and found that the moths were absent for six months from January to June. They suggested that the moths were either migratory or emerged from pupae which were possibly diapausing. Nair and Sudheendrakumar<sup>4</sup> reported seasonal activity of Hyblaea in teak plantations at Nilambur, Kerala, and showed that during most years defoliation occurred only for a short period from late April to September when one or two population peaks occurred. Insect survival during the rest of the period, October to March, was suspected, through low larval populations and short-range moth migration. Till date, these were the only evidences for continuity of active generations of H. puera throughout the year. Our study presented here is now the factual evidence.

In the light traps (Robinson's modified type) at this Centre, we recorded *H. puera* moths during 1978-79 (table 1). The moths were obtained

Table 1 Average monthly light-trap catches\* of Hyblaea purea at ICRISAT Centre during 1978-79

June	No record
July	21 ± 17
August	$47 \pm 16$
September	22±6
October	23 ± 5
November	6±1
December	3 ± 1
January	4±1
February	2 ± 2
March	$3\pm 2$
April	4±2
May	3 ± 1
	بالمستخبخ والمساوي والمساوية والمتعارب والمتعارب والمساوية والمتعاربة

<sup>\*</sup>Averages from 3 traps.

throughout the year. This supports the observation made by Nair and Sudheendrakumar<sup>4</sup> on the continuity of the pest. The peak activity period (August-September) of the moths recorded by us corresponds well with that recorded at Jabalpur, Madhya Pradesh, by Vaishampayan and Bahadur<sup>3</sup> but not with the one recorded at Nilambur, Kerala, where peak numbers were noticed in May-June. There is some evidence of south to north progression of the defoliation coinciding with the flushing of teak and arrival of the monsoon (K. S. S. Nair, personal communication). The origin of the moths caught in the light traps at ICRISAT Centre is not known. Although a few teak trees occur in a 30 km area, the nearest forest area with a substantial number of teak trees is about 30 km north-east at Narsapur, Medak district, and 80 km south-west at Vikarabad, Rangareddy district. It appears that the moths caught might have come from one of these areas. Vaishampayan and Bahadur<sup>3</sup> also reported that the nearest teak forests were at least 20-30 km away from the place where they trapped H. puera moths in large numbers.

The authors are grateful to Dr K. S. S. Nair, Kerala Forest Research Institute, Peechi, for encouragement and suggestions.

#### 22 July 1988; Revised 23 September 1988

- 1. Benson, C. F. C., The ecology and control of forest insects of India and the neighbouring countries, Govt. of India, New Delhi, 1961.
- 2. Nair, K. S. S., Sudheendrakumar, V. V., Varma, R. V. and Chacko, K. C., Entomology, 1985, 30, 77.
- 3. Vaishampayan, S. M. and Bahadur, A., In: Insect interrelations in forest und agroecosystems, (eds), P. K. Sen-Sharma, S. K. Kulshrestha and S. K. Sangal, Jugal Kishore & Co., Dehra Dun, India, 1983.
- 4. Nair, K. S. S. and Sudheendrakumar, V. V., Proc. Indian Acad. Sci. (Anim. Sci.), 1986, 95, 7.

## ROLE OF INORGANIC PHOSPHATE IN PHYTOPLANKTON CYCLE IN BEEL ECOSYSTEM

### V. KOLEKAR\*, Y. S. YADAVA, R. K. SINGH and M. CHOUDHURY

Brahamaputra Survey Unit, Central Inland Fisheries Research Institute, Guwahati 781 003, India.

\*Present address: Central Fisheries, 6-Indraprastha Housing Society, Pune 411 028, India.

Among the chemical factors, and in particular the major nutrients, the importance of phosphorus in lakes is well documented<sup>1, 2</sup>. It is often considered to be the most critical single factor in the maintenance of biogeochemical cycles. This importance stems from the fact that phosphorus is essential for the energy transfer system of the cell and that it normally occurs in very small amounts<sup>3</sup>. The total phosphorus in natural waters varies from less than 1 mg/ml to a very high value as in few saline lakes<sup>4</sup>. In aquasystem the dissolved inorganic phosphorus is the form available for algal growth<sup>5</sup>. The present communication deals with the relation of phosphate with total plankton in general and with phytoplankton in particular, in a beel ecosystem. Altogether, 72 samples for plankton and water were collected from Dighali, an ox-bow beel near Guwahati, fortnightly, from three randomly chosen stations. Phosphate was analysed following standard methods<sup>6</sup>, and plankton was analysed through direct census method<sup>7</sup>. Figure 1 presents the pooled data on monthly basis.

In the present study phosphates ranged between 0.013 and 0.613 ppm. A gradual increase in the phosphate contents of the beel water was observed during monsoon months and then a sharp fall noticeable from September onwards. An increasing trend was again observed after November, reaching its peak during February. The seasonal variations in the phosphate contents of the beel are largely dependent on the allochthonous sources such as rain from catchment area. Seshappa<sup>8</sup> also observed increase in the inorganic nitrogen and phosphate in pond water during July-August, the causative factors were evidently rain washings.

The phytoplankton and total plankton ranged between 77 and 1740 units/I respectively. In the present investigation the low values of phosphates in certain months were inversely related with the peak periods of phytoplankton, as observed by some workers<sup>9,10</sup>. The lowering phosphate levels with

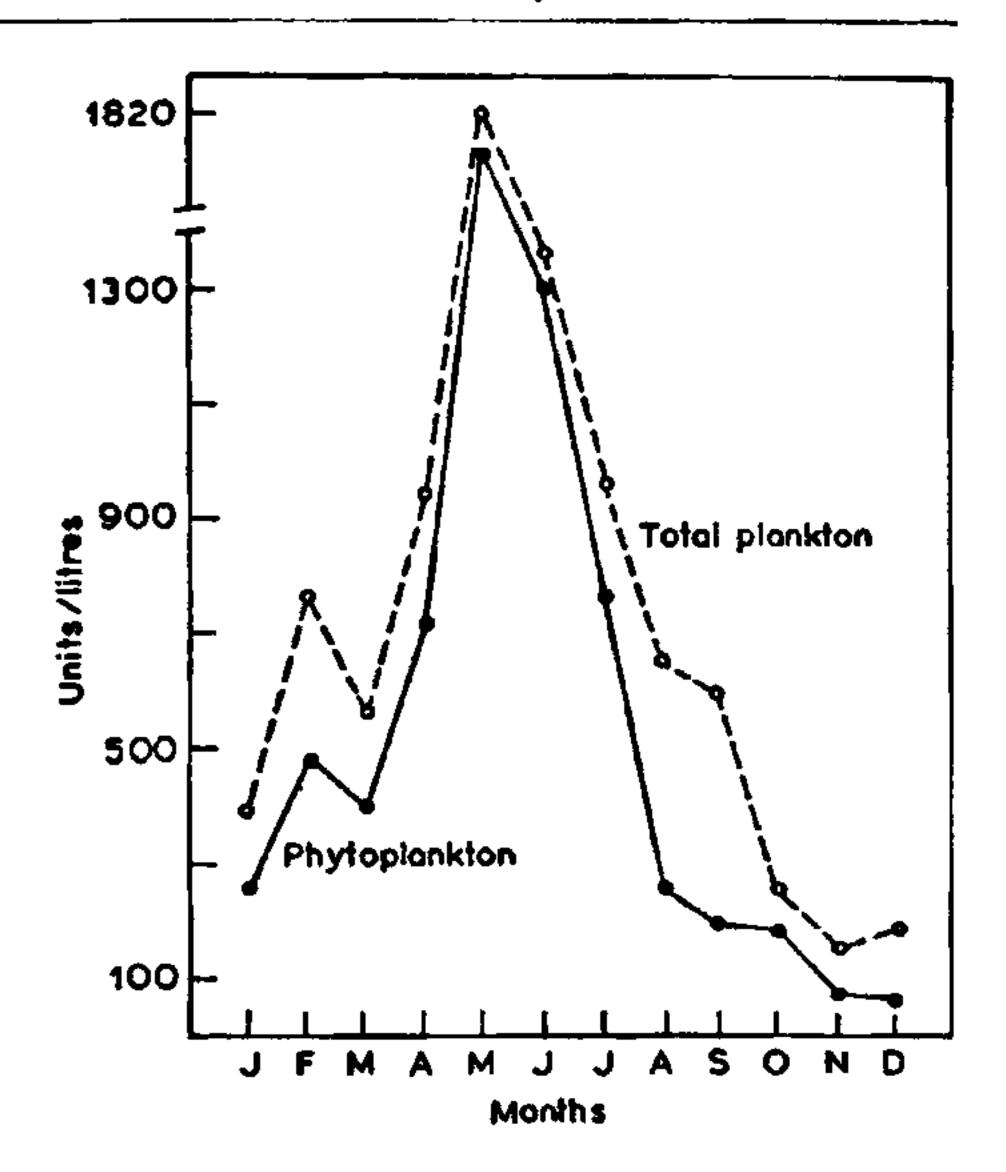


Figure 1. Monthly variations of phytoplankton and total plankton.

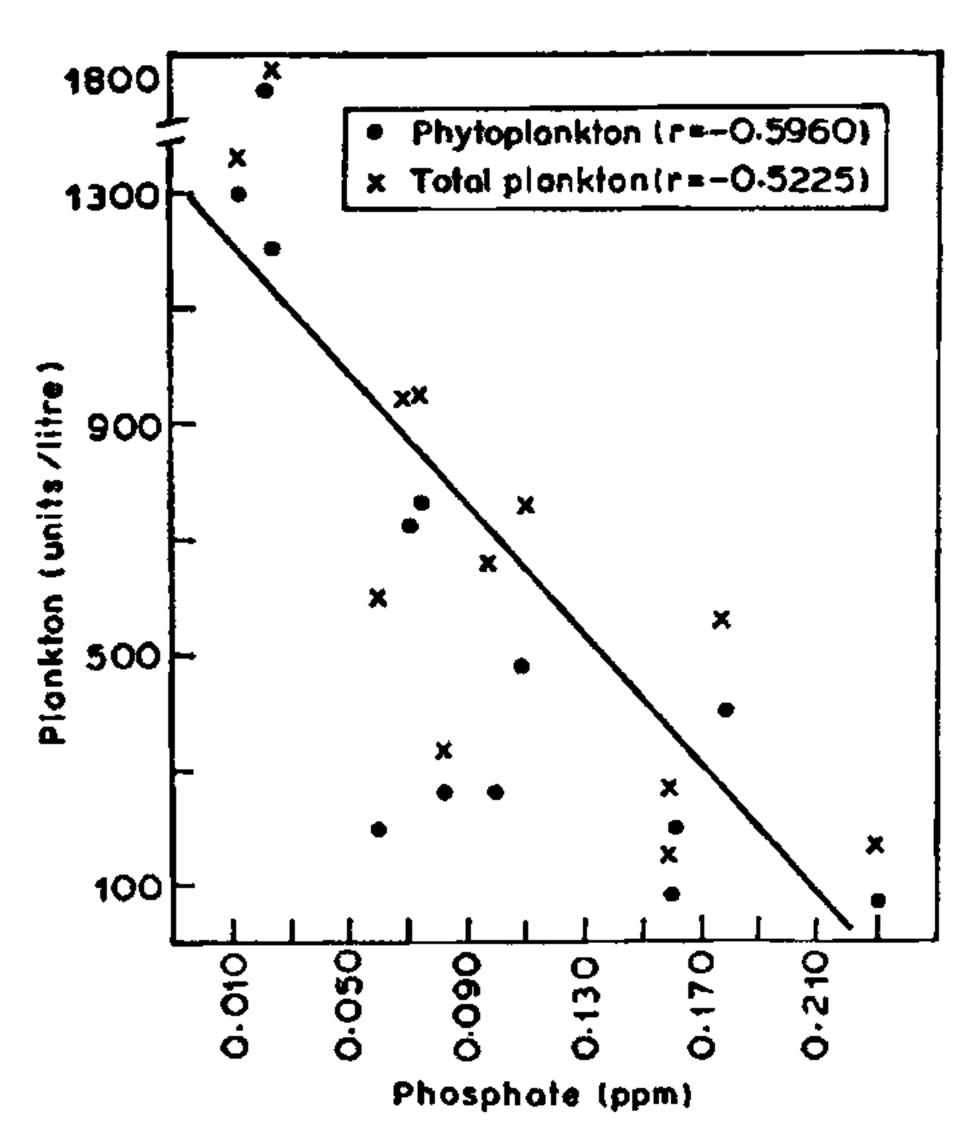


Figure 2. Correlation between phosphate with phytoplankton and total plankton.