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<b>Autor:</b>	Büttiker, W.
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## Observations on the Migration of Adult *Lobocraspis griseifusa* HMPS. (Noctuidae, Lepid.) in Cambodia

by

W. BÜTTIKER

c/o J. R. Geigy S.A., Basle

### SUMMARY

*Lobocraspis griseifusa*, an eye-frequenting noctuid of waterbuffaloes, cattle and sambar (*Cervus unicolor*) and possibly other mammals was discovered in 1958 migrating in a South Easterly/North Westerly direction near Snoul<sup>1</sup>, Cambodia, during the period end of May/beginning June. The noctuid exhibited this behaviour on a large scale during the nights at the beginning of an exceptionally late monsoon season. The importance of the migratory habits is discussed in the light of the possible transmission of contagious bovine virus or rickettsial eye diseases.

On the occasion of an entomological assignment to Cambodia in 1958 night catches of insects were carried out that offered an opportunity to collect a number of specimens of noctuids feeding on lachrymal secretions or, to a lesser degree, blood at the eyes of domesticated waterbuffaloes and cattle (BÜTTIKER 1959). The moths showing these particular feeding habits belong mainly to the species *Lobocraspis griseifusa* HMPS., 1895, and *Arcyophora sylvatica* BÜTT., 1962. The former species was collected from two different regions of that country whereas the latter species was discovered in the Western region some 24 miles North East of Kampot along the Phnom Penh Road. Both districts are covered with the open type forest classified as "forêt claire" or "savane pauvre" with an abundant growth of *Combretum*, *Dipterocarpus* and *Terminalia* trees. The main purpose of the night inspections was the collecting of mosquitos using waterbuffaloes and cattle as bait animals. Snoul and Kampot were our headquarters, and during the period May and beginning June the villages were visited in order to carry out some observations on eye-frequenting lepidoptera.

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<sup>1</sup> Snoul (106° 37' E ; 12° 06'N, altitude approximately 200 m above sea level.).

For this purpose we went to Kbal Trach, a village 7 km North East of Snoul, and collected from about 19 to 20 hours until 4.30 in the morning. We, therefore, had the opportunity to follow up the flight-pattern during the entire nights. On the 27th and 28th of May 1958 which was at the beginning of our observation period, we noticed a typical migration flight of this noctuid species in the beams of torch lamps. The adults of *Lobocraspis griseifusa* arrived from the South East and went on in a North Westerly direction after some of them had made a stop at the eyes of waterbuffaloes and cattle for 5 to 10 minutes or more. The moths arrived from the dark jungle and were not very much disturbed by our torches, which were switched off at intervals. After feeding, the moths disappeared into dark jungle surrounding the small village in the same North Westerly direction. This migratory behaviour was repeatedly observed during two subsequent nights as shown in Table No. 1.

TABLE No. 1  
*Summary of the Observations made on Migratory Behaviour  
of Lobocraspis griseifusa in Cambodia, 1958*

Date	Village	Displacement Movement observed	Weather Conditions	Remarks
27./28. May	Kbal Trach (nr. Snoul)	Very pronounced. At least several thousands of speci- mens involved	Cloudy, very hu- mid ; warm and dark night (ap- prox. 35° C.)	Exceptionally late start of the monsoon rains, wind blew in the easterly direction, <i>L. griseifusa</i> (both sexes) flew in N.W. direction
28./29. May	Kbal Trach	Very pronounced. Again several thousands of speci- mens migrating	Cloudy, slightly rainy	No specimens collected
29./30. May	Kbal Trach	Very pronounced migration	Cloudy, slightly rainy	Moths observed and caught approx. 450 m East of village
6./8. June	Beangtuik (7 km W. of Kampot)	No evidence of migratory flight	Cloudy, slight rains	
7./8. June	Champneul (6 km N. of Kampot)	Ditto	Cloudy	
misc. visits up to 18. June	Kampot District	Ditto	Very variable weather from rainy to bright starry nights	

On the basis of the observations made at the onset of the exceptionally late monsoon season it was evident that a great many of these noctuids were migrating in a North Westerly direction. There was no indication that other lepidopterous species were involved in this displacement movement. The migration activity of *Lobocraspis griseifusa* was very pronounced indeed during the nights of 27./28. and 28./29. May 1958, and the height of the flight was between 1  $\frac{1}{2}$ –5 m above ground level. The specimens collected from the eyes all looked very fresh, and the sexes were represented by a ratio of approximately 1♂ : 3♀. Weather conditions were calm (no wind) and rather cloudy during the humid, warm and dark nights. The air temperature remained at approximately 35°C during the nights and occasional light showers fell. No evidence of a migration in the reverse direction was noted during the observation period. Whilst conducting the entomological survey near Campot (W. Cambodia) between the 6. and 18. June no such migratory flights were observed.

To our knowledge these data of migrating *Lobocraspis griseifusa* are the first records of insect displacements from Indochina, i.e. Cambodia, Vietnam and Laos.

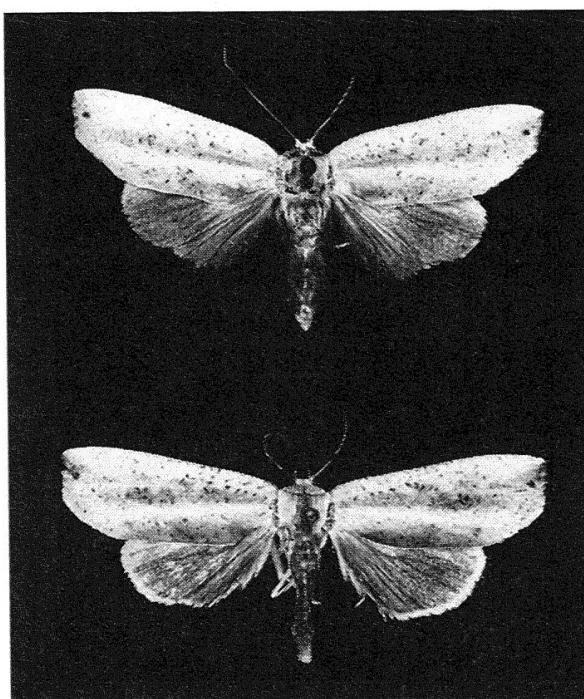


Fig. 1. — Male (above) and female (below) of *Lobocraspis griseifusa* Hmps., one of the eye-frequenting moths of S.E. Asia (enlarged).

#### Discussion

Evidence on the short and long-range active displacement of insects has been summarized by a number of competent authors (WILLIAMS 1930, 1958). Most of the records refer to arthropods with special emphasis on agricultural pests.

Migration among insects is of by far the greatest economic importance among the locusts. However, among the lepidoptera there are many migrants of economic significance (e.g. *Agrotis ypsilon* from Egypt to Europe, *Alabama argillacea* from S. or Central America to North America, *Laphygma exempta* from S. to Central Africa, *Plusia gamma* from S. to Central Europe, etc.).



Fig. 2. — *Lobocraspis griseifusa* Hmps. on eye of domestic waterbuffalo as observed in Cambodia and Thailand.

WILLIAMS (1930) gives a table with all the records he was able to trace for Burma, Thailand and Malaya in addition to some other areas of S.E. Asia. No data are given on noctuids from Siam as most of the observations refer to *Catopsilia* and *Appias* spp. SMITHERS (1961) summarizes observations made in Australia, and PIEPERS (1891, p. 208) reports from Java that the migration was always observed, especially in severe dry seasons. Similar observations have been made in Kenya by ROGERS (1912) after a period of very prolonged and severe drought.

Within the tropics there is also evidence of a relation to the seasons, and in India and Ceylon, under the influence of the monsoon winds and rains, the correlation is particularly striking (WILLIAMS 1930, p. 363). There are a number of other factors, such as barometric pressure, electric conditions of the atmosphere etc. having been considered of importance in the displacement phenomena of insects.

The importance of the migration of insects which are vectors of human and animal diseases is obvious and outbreaks of malaria and other epidemics have been invariably connected with short or long-range displacements.

GARRETT-JONES (1962) surmised that the outbreak of malaria in Israel and at Gaza in 1959 was almost certainly attributed to the *active migration* of *Anopheles pharaoensis* from the Nile delta. Recently the papers by HOOGSTRAAL et al. (1961, 1963) presented the records of a survey made in 1959-1961 in Egypt on the ticks attached to birds migrating from Africa to Europe and vice versa. It explains that even this *passive* displacement of vectors of several diseases (e.g. *Rickettsia burnetti*, *R. pavlovskyi*, *R. conori*, *Pasteurella tularensis*, *Bacillus melitensis*, *Babesia ovis*) may disseminate these germs hundreds and thousands of miles from their nearest previously known focus (SOMOV and SOLDATOV 1964).

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