PRELIMINARY STUDIES ON THE CARNIVOROUS HABITS OF CHROTOGONUS TRACHYPTERUS TRACHYPTERUS (BLANCH.), (PYRGOMORPHIDAE: ACRIDOIDEA ORTHOPTERA)

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Acridoids in general and pyrogomorphs in particular are known to be exclusively phytophagous. The genus *Chrotogonus*, which has an extensive distribution in the Ethiopian, Oriental and eastern Palaearctic regions, has been widely acclaimed as a plant feeding form. Time and again it has been reported to cause severe damage to seedlings of various field crops and forest trees. Notable workers who observed the feeding habits and food preferences of *Chrotogonus* are Ballard (1914), Zacher (1917), Maxwell-Darling (1934), Golding (1948), Kevan (1954), Williams (1954) and Singh (1961).

During the course of biological studies of *Chrotogonus* and *Pyrgomorpha* spp. the carnivorous activities of the former came to light. So far as known to the authors carnivorous habits of grasshoppers have not been reported before. This observation, therefore, is the first of its nature. One specimen each of *Chrotogonus* and *Pyrgomorpha* was confined together in five pairs of petri dishes (9.5 cm. dia.) in order to record their endurance to starvation. It was observed that the *Pyrgomorpha* died within 3-4 days whereas the *Chrotogonus* survived this period. We were surprised to see that by the fourth/fifth day the *Chrotogonus* had consumed parts of the prothorax and abdomen of *Pyrgomorpha* and by the seventh day these had eaten up almost all of it except bits of tegmina and the wings, distal halves of the femora and the genitalia. The *Chrotogonus*, however, did not survive long and died on the 12-13 day.

In order to confirm this anomalous behaviour of the *Chrotogonus*, a series of experiments were set under room temperature. *Chrotogonus* and *Pyrgomorpha* were laboratory-reared whereas nymphs of *Poekilocerus pictus*, caterpillars of *Danais plexippus*, adults of *Oxya velox*, *Oxycarenus loetus* and *Chilo zonellus* were collected from fields. Both the sexes of *Chrotogonus* were selected and ten specimens each of males and females were confined separately with each of the above insects.

It was again observed that adults of *Pyrgomorpha* died within 3-4 days and invariably always almost the whole of these were devoured in 2-3 days. The adults

and nymphs of *Chrotogonus* lived longer and died between 4-6 days. These were never touched except in one instance when the apices of the tegmina were eaten up. Similarly the adults of *Oxya velox* and nymphs of *Poekilocerus pictus* were never attacked but discarded entirely. The caterpillars of *Danais plexippus* died in varying number of days depending upon the instar but were completely eaten up in a single meal lasting for about 3-4 hours. The adults of *Oxycarenus loetus* died between 5-6 days. Usually 3-5 bugs were consumed in one meal. The adults of *Chilo zonellus* died within 2-3 days and were completely devoured the same day.

In another set of experiments the dead specimens of one *Pyrgomorpha bispinosa*, one *Chrotogonus trachypterus*, one *Oxya velox*, one *Chilo zonellus*, five *Oxycarenus loetus*, one caterpillar of *Danais plexippus* and one nymph of *Poekilocerus pictus* were placed together in large petri dishes (11 cm. dia.) and one *Chrotogonus* was released in each dish.

It has been observed that adults of *Oxya velox* and *Chrotogonus trachypterus* and nymph of *Poekilocerus pictus* were not touched at all. Caterpillars of *Danais plexippus* were more usually the first to be consumed by the living *Chrotogonus*. *Pyrgomorpha bispinosa*, *Chilo zonellus* and *Oxycarenus loetus* were then eaten up in given sequence.

It thus becomes apparent from the above account that *Chrotogonus trachypterus trachypterus*, which is predominantly phytophagous feeding upon varied plants and parts thereof, assumes flesh eating habits in the absence of regular diet. It is, however, not a cannibal since it does not attack members of its own lot. Besides, it does not attack its prey until it is dead.

Chrotogonus does not feed upon the leaves of *Calatropis porcera* although it has been reported by Singh (1961) that its flowers are readily eaten. Curiously enough on one hand the *Chrotogonus* relishes caterpillars of *Danais plexippus*, while on the other it entirely rejects the nymphs of *Poekilocerus pictus* both of which subsist on the leaves of the *Calatropis*. The nature of food, therefore, does not seem to be a limiting factor. The food of both being the same, the acceptance of the caterpillar and rejection of the nymph may be explained by the nature of the integument. It seems that the mandibles of *Chrotogonus* cannot operate upon the thicker integument and tougher body of the nymphs more effectively than the thinner integument and pulpy body of the caterpillars. The same reason can the advanced for the avoidance of *Oxya velos*. *Pyrogomorpha bispinosa* occupies a second position whereas *Chilo zonellus* and *Oxycarenus loetus* are preferred next.

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These results have been summarized in the following table:-

Insect used as food	Stage of insect	Family	Consumed readily	Consumed reluctantly	Avoided
1. *Danais plexippus*	Caterpillars	Nympha-lidae	+	—	—
2. *Pyrgomorpha hispinosa*	Adults	Pyrgomor-phidae.	+	—	—
3. *Chilo zonellus*	Adults	Crambidae	—	+	—
4. *Oxycarenus loetus*	Adults	Lygaeidae	—	+	—
5. *Poekilocerus pictus*	Nymphs	Pyrgomor-phidae	—	—	+
6. *Oxya velox*	Adults	Acrididae	—	—	+
7. *Chrotogonus trachypterus*	Adults & Nymphs	Pyrgomor-phidae	—	—	+

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