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STUDIES ON THE SEASONAL FLUCTUATION OF GRYLLID POPULATION IN BIRBHUM DISTRICT OF WEST BENGAL

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INTRODUCTION

The gryllid represents the most classical type of cricket characterized by the large globular head, the tarsi compressed, the posterior tibiae armed with spines. Numerous workers like Cade (1984, 1991), Cade and Wyatt (1984), Cade and Cade (1992), French and Cade (1987), Ciceran, Murray and Rowell (1994), Doherty and Storz (1992) studies on the calling behaviur of the gryllids. Some workers like Jang and Gerhardt (2005, 2006) studies on the divergence in the calling songs between sympatric and allopatric population. Works on theh population fluctuation of the gryllid fauna is very rare. Only few workers like Veasey, Kay, Walker and Whitcomb (1976), Murray, and Cade (1995) works on the gryllid population. So an attempt was made to study the seasonal fluctuation of the gryllid population in the Birbhum district of West Bengal.

MATERIAL AND METHOD

This work was undertaken during April, 2003 to March, 2005. The area selected for the present study at Ballavpur Forest, Illambazar Forest, Santiniketan, Sriniketan, Amarkutir, Kankalitala and Nanoor. As the gryllids are nocturnal in habit the collections were made in the evening from 630 P.M. to 9 P.M. in Summer and Monsoon and from 6 P.M. to 8 P.M. in the Winter using light source to attract the insects. To study the population of the gryllids 10 m^2 plots were selected in forests, grassland and harvested paddy fields. A lighted petromax was used as light source to collect the gryllids. The lighted petromax was put in the middle point of the selected 10m^2 plot and the gryllids attracted by the light source collected by sweeping the insect net and by hand picking. To know the actual population of the area five such plots were selected and in each 10m^2 plot the petromax was kept for half an hour. And the average number of the five plots in each habitat have been taken in to account to estimate the population of the gryllid fauna present per squire metre.

RESULTS AND DISCUSSION

In the present study the collections were made in different seasons in different habitats. It is found that the total population of gryllids were always higher in Pre-monsoon than that of monsoon and post monsoon in all the habitats. It is also found that the total population of gryllids were always higher in the forest than that of the grassland and harvested paddy field. The average number of gryllid present in three habitats in different seasons are ranges from 0.17/m^2 to 0.39/m^2 in grassland, from 0.31/m^2 to 1.57/m^2 in forest and from 0.11/m^2 to 0.32/m^2 in harvested paddy field (Table-1).

The rise and fall in the numbers of different species appear independent of each other. Seven species were identified and their occurrence are different in different seasons (Fig. 1). Among the seven species *Plebeiogryllus guttiventris* (Walker) shows the dominance in all seasons and occupying about 26.94%, 28.48% and 28.08% of the total population in pre-monsoon, monsoon and post monsoon respectively. As regards the abundance of the other species *Modicogryllus confirmatus* (Walker) occupies the second position in pre-monsoon havingn 16.88% of the total population when *Pteronemobius concolor* (Walker) and *Gryllodes sigillatus* (Walker) occupying second position having 17.08% and 17.80% of the total

Table-1 : Gryllid Population per m^2 in different seasons in Grassland, Forests, and Harvested paddyfield.

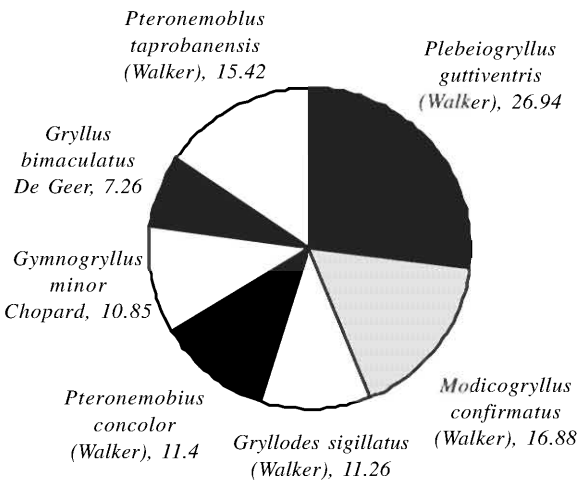
Vegetation	Seasons	Average Gryllid population per m^2
Grassland	Pre-monsoon	0.39
Grassland	Monsoon	0.30
Grassland	Post monsoon	0.17
Forest	Pre-monsoon	1.57
Forest	Monsoon	0.75
Forest	Post monsoon	0.31
Harvested paddy field	Pre-monsoon	0.32
Harvested paddy field	Monsoon	0.25
Harvested paddy field	Post monsoon	0.11

population in monsoon and post monsoon respectively. The genus *Pteronemobius* is very frequent in occurrence in all the collections of all the seasons.

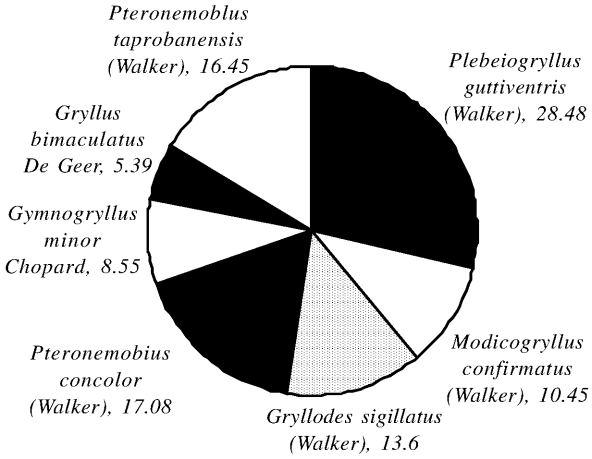
As regards the adult nymph ratio it is found that in the pre-monsoon collection the nymphs are very scanty but the nymphs are very frequent in monsoon and post monsoon collection. In the pre-monsoon collection the nymphs occupying 3.22% of the total population but in the monsoon and post monsoon the nymphs occupying about 89.24% and 91.09% of the total population respectively. The presence of large number of nymphs in the monsoon and post monsoon period suggests that the monsoon is the breeding season of this group of insects.

The presence of maximum number of gryllids in forest than that in the grassland and harvested paddy

Pre-monsoon



Monsoon



Post-monsoon

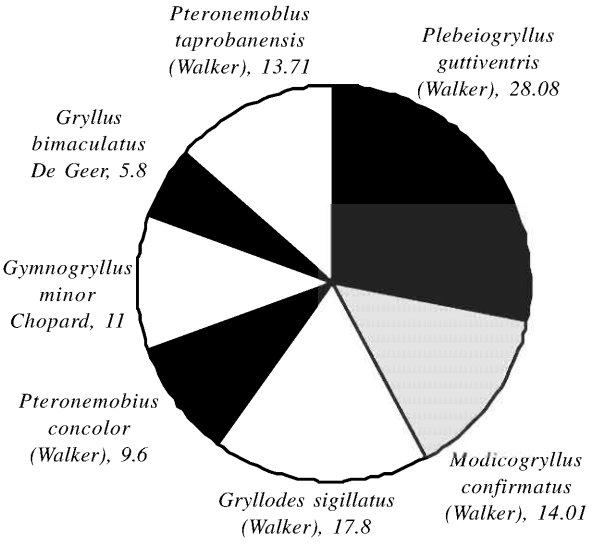


Fig. 1 : Relative Abundance of Seven species of Gryllid population in Pre-monsoon, Monsoon and Post Monsoon.

fields may be due to the availability of the required quantity of food for their living and less human interference. Fluctuations of different species in different seasons may be due to the favourable seasonal conditions and breeding period.

SUMMARY

Gryllid population was studied in forest, grassland and harvested paddy field in the Birbhum district during April 2003 to March 2005. The population of the gryllid fauna in the forest area was always higher than that of the grassland and harvested paddy field area. Seven species of gryllids were identified of which *Plebeiogryllus guttiventris* (Walker) shows the dominance in all the seasons. The availability of the nymphs are much higher in monsoon and post monsoon period than in pre-monsoon.

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