



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

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The gryllid represents the most classical type of cricket characterized by the large globular head, the tarsi compressed and 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 *et al* (1994), Doherty and Storz (1992) studied on the calling behaviour of the gryllids. Some workers like Jang and Gerhardt (2005, 2006) studied on the divergence in the calling songs between sympatric and allopatric population. Works on the population fluctuation of the gryllid fauna is very rare. Only few workers like Biswas and De (2010), Veasey *et al.* (1976), Murray and Cade (1995), studied the gryllid population. So here an attempt was made to study the seasonal fluctuation of the gryllid population in the Barddhaman district of West Bengal.

### MATERIAL AND METHOD

This work was undertaken between Nov. 2009 and Nov. 2011. The localities selected for the present study were at Golapbag (adjoining) forest, Aushgram forest, Katwa, Sriniketan, Ketugram, Raina and Durgapur. As the gryllids are nocturnal in habit the collections were made in evening from 6.30 pm to 9 pm in Pre-monsoon and from 6 pm to 8 pm in the Post monsoon using light source to attract the insects. To study the population of the gryllids 10m<sup>2</sup> 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<sup>2</sup> plots and the gryllids attracted by the light source collected by sweeping the insect net and by hand picking. To know the actual

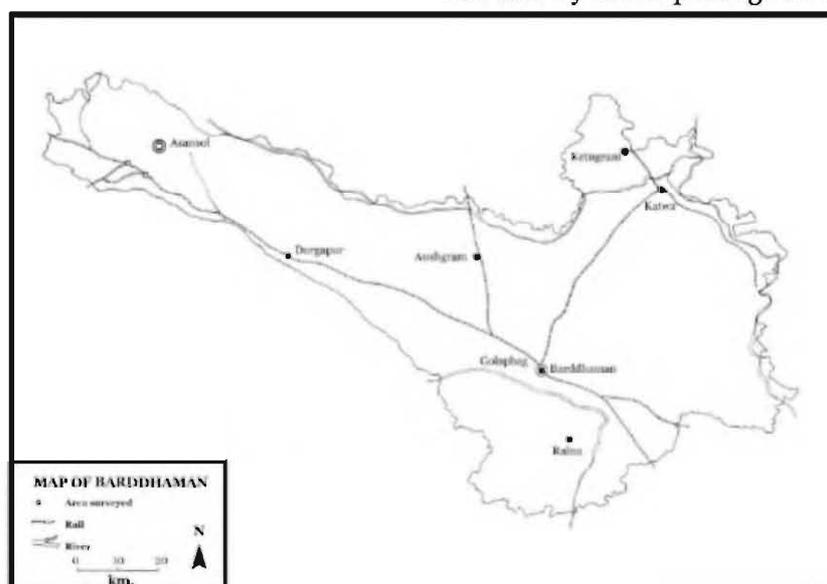


Fig. 1. : Map of Barddhaman District

population of the area seven such plots were selected and in each 10m<sup>2</sup> plot the petromax was kept for half an hour. The average number of five plots in each habitat has been taken in to account to estimate the population of the gryllid fauna present per square metre.

**RESULTS AND DISCUSSION**

In the present study the collections were made in different seasons in different habitats. It was found that the total population of gryllids was always higher in post monsoon than that of pre-monsoon in all the habitats. It is also found that the total population of gryllids was always

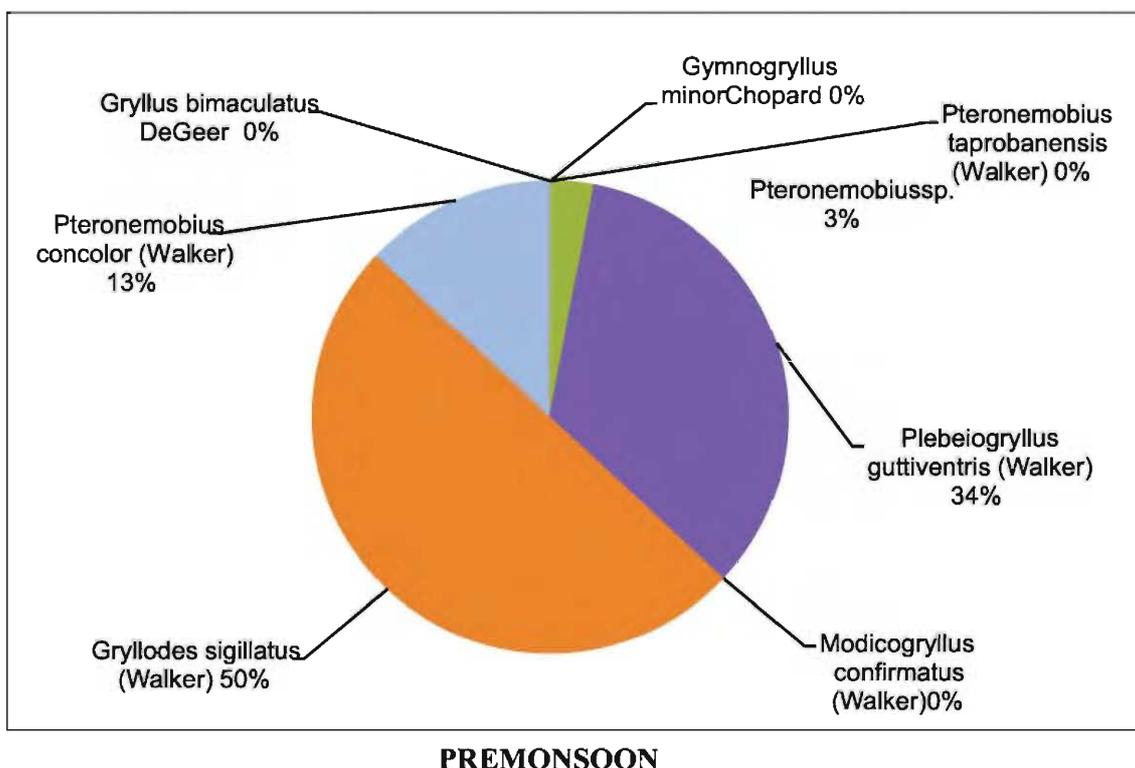
higher in the harvested paddy fields than that of the grassland and forest. The average number of gryllid present in three habitats in different seasons ranges from 0.05/m<sup>2</sup> to 0.16/m<sup>2</sup> in grassland, from 0.10/m<sup>2</sup> to 0.28/m<sup>2</sup> in forest and from 0.10/m<sup>2</sup> to 0.56/m<sup>2</sup> in harvested paddy fields (Table-2)

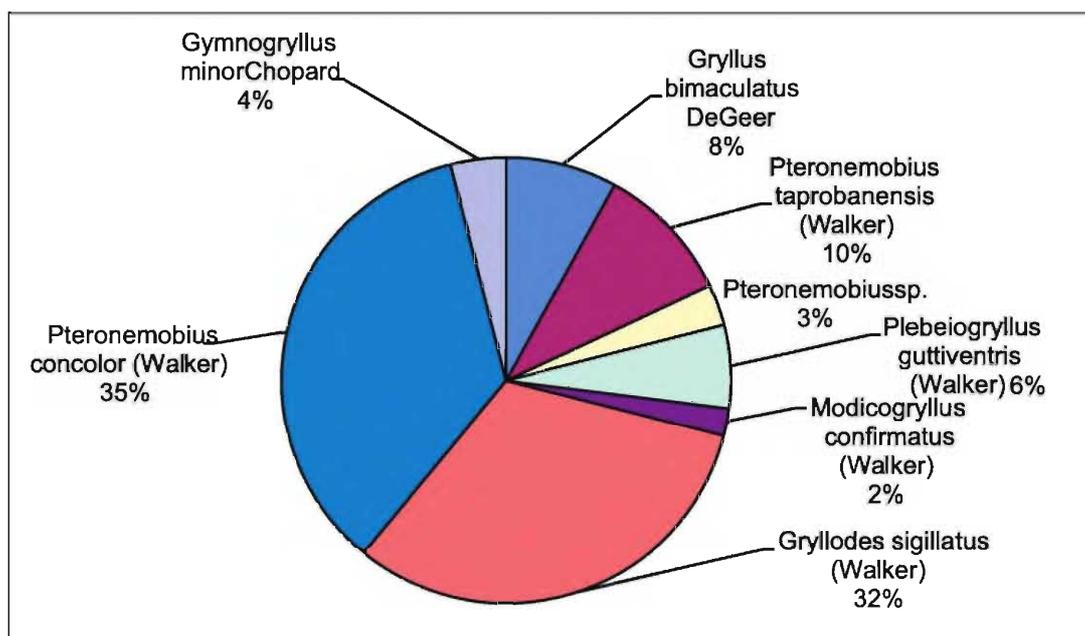
The rise and fall in the numbers of different species appear independent of each other. Eight species identified and their occurrences were different in different season (Fig. 1). Among the eight species *Grylodes sigillatus* (Walker) shows the dominance in all seasons and occupying about

**Table 1. :** Gryllid Population per m<sup>2</sup> in different seasons in Grassland, Forests and Harvested paddy field.

Vegetation	Seasons	Average Gryllid population per m2
Grassland	Pre-monsoon	0.05
Grassland	Post-monsoon	0.16
Forest	Pre-monsoon	0.10
Forest	Post-monsoon	0.28
Harvested paddy field	Pre-monsoon	0.10
Harvested paddy field	Post-monsoon	0.56

**Fig. 2. :** Relative Abundance of eight species of Gryllid population in Premonsoon and Postmonsoon season.





### POSTMONSOON

50% and 31.74% of the total population in premonsoon and postmonsoon respectively. As regards the abundance of the other species *Plebeiogryllus guttiventris* (Walker) occupies the second position in premonsoon having 33.33% of the population. However four species namely *Modicogryllus confirmatus* (Walker), *Gymnogryllus minor* Chopard, *Gryllus bimaculatus* De Geer and *Pteronemobius taprobanensis* (Walker) were altogether absent during premonsoon period. All eight species were recorded during postmonsoon period with *Pteronemobius concolor* (Walker) and *Gryllodes sigillatus* (Walker) showing dominance with 34.92% and 31.74% respectively of the collection during the season. The genera *Pteronemobius* and *Gryllodes* were most frequent in occurrence in all the collections of all the seasons.

As regards the adult nymph ration it was found that in the premonsoon collection the nymphs were very scanty but they were very frequent in post monsoon collection. While the premonsoon collection occupies 3.22% of the total population during postmonsoon the nymphs occupy 91.09% of the total population. The presence of large number of nymphs in the postmonsoon period suggests that the monsoon is the breeding season of this group of insects.

The comparative higher number of gryllids in forest habitat than in the grassland and harvested paddy fields may be due to the availability of the required food for their living comparatively lesser 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 Bardhaman district during Nov. 2009 to Nov. 2011. The population of the gryllid fauna in the harvested paddy field was always higher than that of the grassland and forest area. Eight species of gryllids were identified of which genera *Pteronemobius* and *Gryllodes* were most frequent in occurrence in all the collections of all the seasons. The availability of the nymphs is much higher in postmonsoon period than in premonsoon.

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