



## SURVEY OF MYMARID PARASITOIDS (CHALCIDOIDEA: HYMENOPTERA) IN KOLLI HILLS, TAMIL NADU

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### Abstract

Diversity of mymarids from Hilly tract of Tamil Nadu was investigated at Kolli hills of Namakkal district during 2014-2015. An attempt was made to survey possible parasitic fauna of Kolli Hills with more emphasis on mymarid of parasitic Hymenoptera in various agro ecosystems. On the total of 6792 parasitic Hymenoptera were collected, out of which 2755 were Chalcidoidea super families. Out of chalcidoidea 1358 belonged to Mymaridae family, 391 to Encyrtidae, 374 to Eulophidae, 365 to Chalcididae, 179 to Trichogrammatidae, 59 to Aphelinidae, 23 to Euritomidae, four to Eupelmidae, one each to Torimidae and Agaonidae. Within the ecosystem only Mymarid could be recovered and it's represented by 20 genera. The status of Mymarid is compared with world and Indian fauna and their biocontrol potential discussed.

**Key words:** Parasitic hymenoptera, genera, ecosystem, Mymaridae.

### Introduction

Insect pest management using pesticides has been a usual way to control pest by farmers throughout the world in fast few decades resulted in negative environmental impacts. Parasitic Hymenoptera is one of the entomophagous insects utilized for pest management and within Parasitic Hymenoptera, members belonging to Chalcidoidea, play a major role in bringing down pest population in nature. Among the parasitic Chalcidoidea the family Mymaridae or fairy flies are important in the natural control of many insects and are internal, primary parasitoids on insect eggs especially Auchenorrhyncha. Huber (1986) published Host of mymarids. Kolli hills are a major mountain range and are outliner of the Eastern Ghats. Eighteen miles (28 kilometers) long (north south) twelve miles (19 kilometers) Forests here are extremely rich and diverse. Hence, the present study was undertaken to know about the availability of parasitic fauna especially the parasitic hymenoptera.

### Materials and Methods

Survey for collection of parasitoids was made between 2014 and 2015 in Tamil Nadu, in and around Kolli hills, Namakkal district, (containing pineapple orchard, pepper, coffee, tapioca, cardamam, honey, coriander and rice are the main agricultural activity and non-crop area in hills consisting of various weeds) using only yellow pan trap, malaise trap and Sweep net according to Noyes (1982) Parasitoids belonging to the family Mymaridae alone were diagnosed up to generic level and rest only up to family. The identification of specimens was done following keys provided by Lin *et*

*al.*, 2007; Goulet & Huber (1993). All the collected parasitoids were preserved in 70 % alcohol and kept for deep freezer. Deposited with Entomology Department, Annamalai University, Chidambaram, Tamil Nadu.

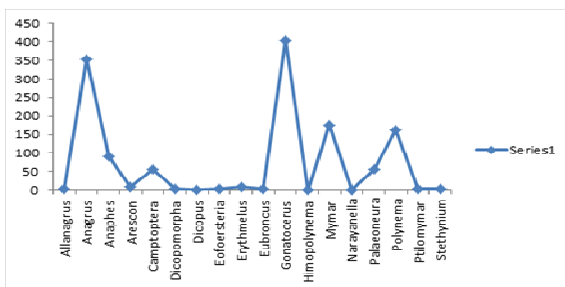
### Results and Discussion

Yellow pan provided the largest amount and variety of microhymenoptera in the short time. On the whole a total of 6792 parasitic Hymenoptera were collected, out of which 2755 were Chalcidoidea. Out of chalcidoidea, 1358 belonged to Mymaridae family. 20 genera were identified from the present collection and they are depicted in the figure 2 respectively. Among the collected Mymarid, genus *Gonatocerus* was found to be much higher in number (404) followed by *Anagrus* (352) and *Mymar* (175), respectively indicating the prevalence of *Gonatocerus* in Kolli hill ecosystems.

Even though the maximum number was reported in *Gonatocerus*, all together the collected parasitoids fall in 20 genera as mentioned above. This is in similar to the earlier findings of Palanivel (2013), who reported that out of 3,952 mymarids collected, 1,349 represented *Gonatocerus* followed by *Anagrus*.

The results indicated that there exists a slight variation in the mymarids population with respect to ecosystem. This was dominant with respect to plantation ecosystem. This indicated the availability of host insects like hoppers and favorable conditions for its survival. This is in compared with the earlier reports, which showed that the maximum egg parasitisation of 55 per cent for plant hoppers and 72 per cent for leaf hoppers was noted at IRRRI (Heinrichs, 1979) while average

parasitism was 19 per cent in BPH and 22 per cent in GLH. Watanabe *et al.* (1992) reported that 23 - 92 per cent of egg mortality in BPH, *Anagrus optabilis* was predominant in young rice plants. Parasitism by *Oligosita* spp. increased with growth of rice plants. Yasumatsu *et al.* (1975) also reported four mymarid parasites viz., *Anagrus optabilis* (Perkins), *Mymartaprobanicum* Ward, *Polynemaspand*, *Gonatocerus* sp., which contributed much in the reduction of plant hoppers in Thailand in rice ecosystem. Interesting to note here is that the entire mymarids population were collected by yellow pan trap collection system, which is very peculiar in all the ecosystems.



**Fig. 1 :** Comparison of Genera of Mymaridae

**Table 1:** List of Mymarid collected during 2014-2015.

S.No.	Genera	Total
1	<i>Acmopolynema</i>	3
2	<i>Alaptus</i>	29
3	<i>Allanagrus</i>	2
4	<i>Anagrus</i>	352
5	<i>Anaphes</i>	90
6	<i>Arescon</i>	9
7	<i>Camptoptera</i>	55
8	<i>Dicopomorpha</i>	2
9	<i>Dicopus</i>	1
10	<i>Efoersteria</i>	2
11	<i>Erythmelus</i>	8
12	<i>Eubroncus</i>	2
13	<i>Gonatocerus</i>	404
14	<i>Himopolynema</i>	1
15	<i>Mymar</i>	175
16	<i>Narayanella</i>	1
17	<i>Palaeoneura</i>	57
18	<i>Polynema</i>	161
19	<i>Ptilomymar</i>	2
20	<i>Stethynium</i>	2
Total		1358

## Conclusion

Since such a rich biodiversity of beneficial parasitic hymenoptera especially in mymarids available in nature, now it is upto the agricultural experts and farmers to suitably modify their plant protection schedule, so that their biocontrol potential fully exploited. They can live in advanced trophic level and this is an important factor in maintain a suitable and stronger homeostasis in the ecosystem.

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