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# Faunistic Survey of Chalcidoids (Chalcidoidea: Hymenoptera) in Tamil Nadu

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**ABSTRACT: Diversity of Chalcidoids 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 Chalcidoidea 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 chalcidoids 1358 belonged to Mymaridaefamily, 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

Pest management using pesticides has been a usual way to control pest by farmers all around the world in several years. Parasitic Hymenoptera is one of the entomophagus 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 fairyflies 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 and taxonomic literature provided by Lin *et al*., 2007,Goulet & Huber (1993), Kumar & Khan (2010) and Kumar *et al.* 2011. 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 Table 1 and Fig. 1 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, a*ll together the collected parasitoids fall in 20 genera as mentioned above. This is in similar to the earlier findings of Kanagarajan (2015) and Palanivel (2013), who reported that out of 3,952 mymarids collected, 1,349 represented *Gonatocerus* followed by *Anagrus.*

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

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

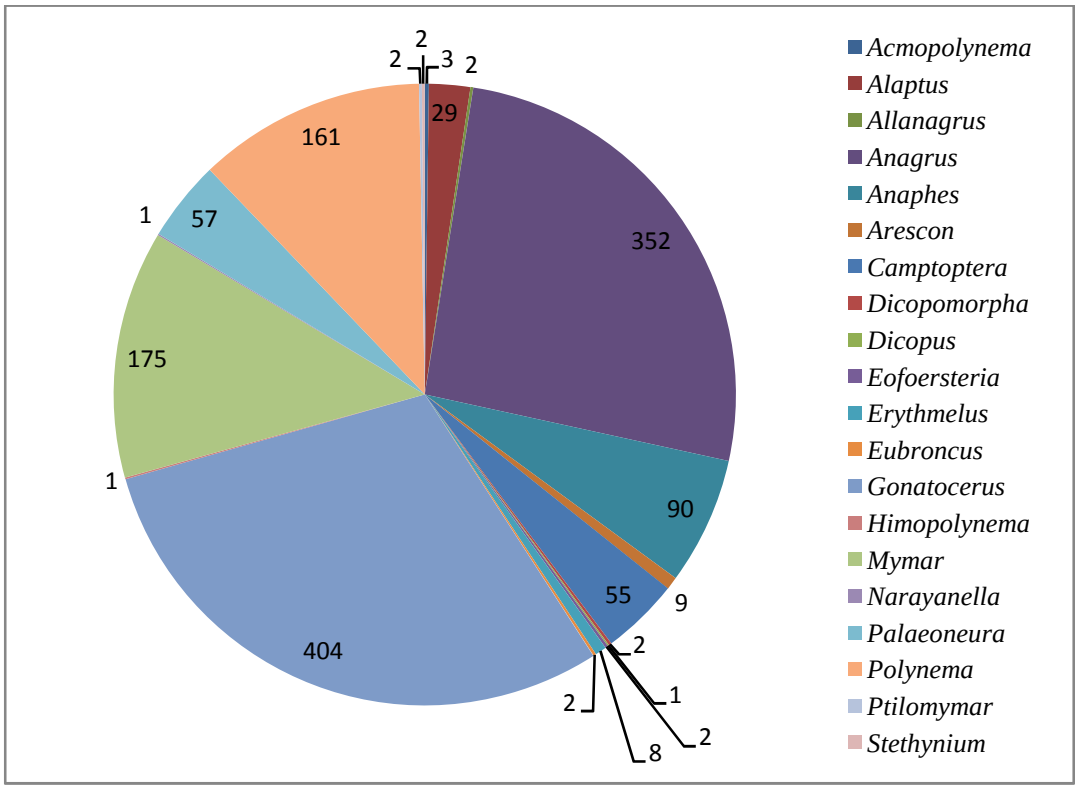


**Fig. 2.** Comparison of Genera of Mymaridae.

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 IRRI (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), *Mymar taprobanicum* Ward, *Polynema spand*, *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.

## CONCLUSION

Since such a rich biodiversity of beneficial parasitc 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 ia an important factor in maintain a suitable and stronger homeostasis in the ecosystem.

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## REFERENCES

Goulet, H. and J. Huber (1993). *Hymenoptera of the World: an identification guide to families* :vii+668pp Research Branch, Agriculture Canada, Ottawa, Canada (ISBN 0-660-14933-8).

Heinrichs, E.A. (1979). Control of leaf hopper and plant hopper vectors of rice varities, In: *Leaf Hopper Vectors and Plant Disease Agents,* eds. Marmorosch, K. and Harris, K.F. Academic Press, New York, USA, pp.529-560.

Huber, J. T. (1986). Systematics, biology, and hosts of the Mymaridae and Mymarommatidae (Insecta: Hymenoptera). *Entomography*, **4**: 185-243.

Kanagarajan, R. (2015). Studies on Parasitic Fauna (Parasitica : Hymenoptera) of Kalvarayan Hills. *International Journal of Theoretical & Applied sciences.* **7(2)**: 48-50

Kumar, S. and Khan M.A. (2010). Taxonomic description of a new species of the genus *Mestocharella* (Hymenoptera: Eulophidae) from the Kumaon hills of the Uttarakhand (India). *Biological Forum*, **2**(2): 34-35.

Kumar, S. Thangjam, B. and Khan M.A. (2011). A new species of *Neotrichoporoides* (Hymenoptera: Eulophidae) from Uttarakhand (India). *Biological Forum*, **3**(1): 27-28.

Lin, N.Q., J.T. Huber and J . LaSalle (2007). The Australian genera of Mymaridae (Hymenoptera: Chalcidoidea). Zootaxa, **1596**: 1-111.

Noyes. J. S. (1982). Collecting and preserving chalcid wasps. *J. Nat. Hist.*, **16**: 315-334.

Palanivel, S. (2013). Studies on taxonomy of selected genera of mymarid (Hymenoptera: Chalcidoidea) egg parasitoid. *M. Sc. (Ag.) Thesis, Faculty of Agriculture*, Annamalai University, Annamalainagar, Tamil Nadu, India, p.32.

Watanabe, T., Wada, T., Nik, M. and Noor. N.S. (1992). Parasitic activities of egg parasitoids or the rice plant hoppers, *Nilaparvata lugens* (Stal) and *Sogatella furcifera* (Horvath) (Homoptera: Delphacidae) in the Muda area, peninsular, Malaysia. *App. Entom. Zool.*, **27**(2): 205-211.

Yasumatsu, K., T. Wongsiri, S. Navavichit and Tirawat, C. (1975). Approaches towards an integrated control of rice pests. *Plant Prot. Service Technical. Bull.*, **24**: 68.