

**UPDATING THE SUBFAMILY ALYSIINAE
BLANCHARD (HYMENOPTERA:
BRACONIDAE) FROM MALAYSIA**

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ABSTRACT

The subfamily Alysiinae (Hymenoptera: Braconidae) is widely distributed worldwide and has potentially be used as biological control agents of the cyclorrhaphous dipteran larvae. In this study, we sampled the Alysiinae from two localities namely the Bangi Reserve Forest, Selangor (HSB) and Lata Jarum Reserve Forest, Pahang (LJRF). A total of 20 Alysiinae species under eight genera were successfully identified. Interestingly, the 18 species that we found were a new record for Malaysia. More new species and new records of alysiine species from Malaysia would be found if the sampling period is prolong.

Key words: Updating, Hymenoptera, Alysiinae, parasitoid, Malaysia

ABSTRAK

Subfamili Alysiinae (Hymenoptera: Braconidae) bertaburan meluas di seluruh dunia dan mempunyai potensi untuk digunakan sebagai agen kawalan biologi ke atas larva siklorafus diptera. Dalam kajian ini, kami mensampel Alysiinae daripada dua tempat iaitu Hutan Simpan Bangi, Selnagor (HSB) dan Hutan Simpan Lata Jarum, Pahang (HSLJ). Sejumlah 20 spesies Alysiinae di bawah lapan genus telah Berjaya dikenalpasti. Menariknya, 18 spesies yang kami temui merupakan satu rekod baru untuk Malaysia. Lebih banyak spesies baru dan rekod baru Alysiinae daripada Malaysia akan dijumpai jika tempoh pensampelan dipanjangkan.

Kata kunci: Kemas kini, Hymenoptera, Alysiinae, parasitoid, Malaysia

INTRODUCTION

The knowledge on the Alysiinae subfamily (Hymenoptera: Braconidae) from Malaysia is lacking compared to the other subfamilies of the Braconidae. Although Alysiinae is important to be studied as it plays an important role as biological control agents (Wharton 1997), the number of published papers from Malaysia based on their taxonomy, phylogeny, and biology are lacking. This is because since the last two decades no one has put high enough interests to carry out the revision on that subfamily except for Yaakop et al. (2009, 2010, 2011). Additionally, both subfamilies are not popular subjects for investigation because of the unstable status of the Alysiinae due to the ongoing changes of their taxonomy on several selected genera. Moreover, nearly all the Alysiinae species are minute in size compared to the other braconid species which makes them difficult to handle.

Most of the Oriental Alysiinae genera have worldwide distribution. Early classification of the Alysiini was done by Fischer (1972, 1977, 1987); later he divided the Alysiinae into seven groups and identified two tribes namely Dacusini Foerster, 1862 and Alysiini Leach, 1815. The latest revision on the Oriental

Alysiinae has been restricted to China and was done by Wu and Chen (1994, 2005a, b) and Wu et al. (2005). This revision provides very useful and informative information, thus being the main reference for Alysiinae study. The revision by Wharton (2002) on the Australian Alysiini also revealed many valuable notes on the taxonomy. Most of the available keys of the Alysiinae published are the key of the genera from the New World (Wharton, 1997), from Australia and New Guinea (Wharton, 2002) and from Nearctic region (Wharton, 1980). Besides that, there are several papers that have dealt with Alysiinae from the Oriental region, namely from Vietnam (Tobias, 1990; Long et al., 2004), Myanmar (Gannota 1996), Pakistan (Kula 2009), India (Katiyar & Sharma, 1988; Papp 1967, 1969) and East Palearctic and Japan (Belokobylskij, 2002).

Basically, data on taxonomy, phylogeny and biology of the alysiine parasitoids from Malaysia are very crucial because some of the species may have commercial values such as those parasitizing the fruit-infesting Dipteran larvae, the world destructive pest of fruit worldwide. Besides the classical taxonomic study, molecular data are highly needed to help in resolving the relationship among the species, defining and clarifying the species status (Dowton et al. 1998, 2002, Shi et al. 2005 and Wharton et al. 2006). The earlier molecular preliminary data of the Alysiinae has been provided by Gimeno et al. (1997). However, the information obtained is still insufficient for confirming the status of the species. Therefore, collecting as many as possible the Alysiinae specimens for the taxonomical study are vitally important. Hence, the objective of this study was to update all the Alysiinae species collected from Malaysia.

MATERIAL AND METHODS

The samplings were conducted during two scientific expeditions, from March to April 2012. The two localities are Bangi Reserve Forest (HSB) and Lata Jarum Reserve Forest (LJRF). Braconids were collected by using malaise trap set up randomly in both forests. All the braconid specimens were sorted and identified up to following (Achterberg 1993, Achterberg 2009 unpublished and Yaakop 2010) using stereomicroscope Stemi D4 (Zeiss, Germany).

RESULTS AND DISCUSSION

Up to date, only 13 valid species of Alysiinae have been recorded from Malaysia (Yu et al., 2005). As such much sampling and study have been done as for now, we believe number of Alysiinae is actually far higher than 13, as Malaysia is one of the Mega Biodiversity country in the world. With the data from molecular study plus detail taxonomic work and revision, the number of Alysiinae from Malaysia will actively be recorded.

We also found that all the genera occurring in Malaysia are recognised as common species, which are also found in other countries in the Oriental and other regions. As far as we can see, no endemic genus has yet to be found in Malaysia, probably due to the limited taxonomical data available. We strongly believe that there will be upcoming discovery of many endemic, rare or endangered braconid species inhabiting Malaysia if a complete taxonomical study is well covered.

However, to obtain this, complete data on taxonomy must be established by increasing insect sampling. The representation of 33 out of the 104 genera of the Alysiinae seems to be very small, which is only about 31% from the Oriental region. From that value, we know there is a lot of work that needs to be done to cover the high number of Alysiinae species. Up to the present time, only 13 Malaysian Alysiinae species have been recorded and we have found an additional 22 species recorded as new from Malaysia. Certainly the number of genus as well as species will increase from time to time when the taxonomical work is completed.

CONCLUSION

Generally, the recorded species of Alysiinae that are available in other countries within this Oriental region also exist in Malaysia. Therefore, the taxonomic study is highly necessary in order to obtain precise data on the status of each species. This is an effort for the taxonomists and conservation managers to manage and conserve all the genetic resources of the braconids from Malaysia. In addition, nearly all the species listed in this paper are a new

record from Malaysia and some of these numbers have been recorded earlier from the Oriental region.

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Appendix 1. List of Alysiinae species collected from the two localities in Malaysia.

1. *Alysia shangrila* Wharton, 1986
2. *Asobara bactocera* (Gahan, 1925)
3. *Asobara orientalis* Viereck, 1915
4. *Asobara pleuralis* (Ashmead, 1905)
5. *Asobara tabida* Nees, 1934
6. *Aspilota vaga* Belokobylskij, 2007
7. *Aspilota nasica* Belokobylskij, 2007
8. *Cratospila alboapicalis* Tobias, 1990
9. *Cratospila bhutanensis* Bhat, 1980
10. *Cratospila circe* (Haliday, 1838)
11. *Cratospila longicornis* Szepligeti, 1905
12. *Cratospila malayensis* (Ashmead, 1905)
13. *Dinotrema distractum* (Nees, 1834)
14. *Dinotrema matharena* Fischer, 1993
15. *Heratemis malaysensis* Yaakop & van Achterberg, 2009
16. *Heratemis pahangensis* Yaakop & van Achterberg, 2009
17. *Neurolarthra procera* Fischer, 2006
18. *Phaenocarpa lissogastra* Tobias, 1986
19. *Phaenocarpa tridentata* Sharma, 1979
20. *Phaenocarpa vicina* Papp, 1967