

SHORT COMMUNICATION

**A SURVEY ON PARASITOIDS OF RICE PEST INSECTS
IN SISOPHON, NORTHWEST CAMBODIA**

Khuat Dang Long^{1*}, Yorn Try²

¹ Institute of Ecology and Biological Resources, VAST, Vietnam

² Meanchey University, Northwest Cambodia

ABSTRACT

Of the total nine hymenopteran parasitic wasps revealed from rice paddy in Sisophon, Northwest Cambodia, there are six larval braconid parasitoids: *Apanteles cypris* Nixon, *Bracon onukii* Watanabe, *Dolochogenidea agilis* Ashmead, *Pentatermus striatus* (Szepliget), *Avga* sp., *Tropobracon luteus* Cameron (Braconidae); two pupal ichneumonid species: *Casinaria colacae* Sonan, *Xanthopimla flavolineata* Cameron (Ichneumonidae), and one egg scelionid parasitoid: *Telenomus rowani* Gahan (Scelionidae). Additionally, all the species were recorded for the first time for Cambodia's fauna.

Citation: Khuat Dang Long, Yorn Try, 2018. A survey on parasitoids of rice pest insects in Sisophon, Northwest Cambodia. *Academia Journal of Biology*, 40(4): 143–146. <https://doi.org/10.15625/2615-9023/v40n4.13562>.

*Corresponding author email: khuatdanglong@gmail.com

Received November 2018, accepted December 2018

INTRODUCTION

One of purposes of the project entitled “*Sustainable Intensification and Diversification in Lowland Rice System in North West Cambodia*” is to find out how is the diversity of hymenopteran parasitoids, that are considered as biological agents for control of pest insects infested on rice in Sisophon area.

Parasitic hymenopteran parasitoids play an important role in regulating the density of rice pest insects, the parasitoids can keep pests lower the damage threshold. However, in many cases, the incorrect application or overuse of chemical pesticides in rice field can cause unpredicted harmful effects. Adverse effects may cause complications of insect pest dynamics as kill many beneficial insects in the rice field, including hymenopteran parasitoids, the important natural enemies of rice pest insects. 00

MATERIALS AND METHODS

The short field survey in rice paddy was conducted from 1st through 2nd November 2018. Methods used for collecting parasitic wasps are sweeping nets and rearing rice pest insects. The collected wasp specimens were stored in 70% or 96% ethanol, prepared with the AXA method (van Achterberg et al., 2010) and glued on card points. The examined specimens are kept in the parasitoid collections of Department of Insect Ecology, the Institute of Ecology and Biological Resources (IEBR), Ha Noi, Vietnam. VAST stands for the Vietnam Academy of Science and Technology.

RESULTS AND DISCUSSION

Analyzing all the specimens of wasps collected from the rice paddy in Sisophon, Northwest Cambodia, a total of nine

hymenopteran species were revealed as parasitoids of different rice pest insects. The parasitoids belong to the families Braconidae, Ichneumonidae and Scelionidae being parasitoids of important rice pest insects, such as striped rice stem borer, *Chilo suppressalis* (Walker); rice leaffolder, *Cnaphalocrocis medinalis* Guenee; *Scirpophaga incertulas* Walker; straight swift *Parnara guttata* (Bremer & Grey); small branded swift, *Pelopidas mathias* (Fabricius); and the Asiatic pink stem borer, *Sesamia inferens* (Walker) (Table 1).

Table 1. List of parasitoid wasps from paddy rice field in Sisophon, Northwest Cambodia

Parasitoids	Parasitism	Host	Distribution
Braconidae			
<i>Apanteles cypris</i> Nixon	Larval	<i>Cnaphalocrocis medinalis</i>	Eastern Palaearctic & Oriental: Bangladesh, China, India; Indonesia, Japan, Malaysia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Vietnam
<i>Bracon onukii</i> Watanabe	Larval	<i>Cnaphalocrocis medinalis</i>	Eastern Palaearctic & Oriental: China, Japan, Korea, Vietnam
<i>Dolochogenidea agilis</i> Ashmead	Larval	<i>Pelopidas mathias</i>	Oriental: India, Indonesia, Philippines, Vietnam
<i>Pentatermus striatus</i> (Szepligeti)	Larval	<i>Parnara guttata</i>	Eastern Palaearctic, Ethiopian, Oriental: China, India; Indonesia, Japan, Malaysia, Niger, Nigeria, Oman, Somalia, South Africa, Vietnam
<i>Avga</i> sp.	Unknown	Unknown	
<i>Tropobracon luteus</i> Cameron	Larval	<i>Chilo suppressalis</i> ; <i>Scirpophaga incertulas</i> ; <i>Sesamia inferens</i>	Oriental: Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam
Ichneumonidae			
<i>Casinarina colacae</i> Sonan	Pupal	<i>Parnara guttata</i> ; <i>Pelopidas mathias</i>	Eastern Palaearctic & Oriental: China
<i>Xanthopimla flavolineata</i> Cameron	Pupal	<i>Chilo suppressalis</i> ; <i>Cnaphalocrocis medinalis</i> ; <i>Parnara guttata</i> ; <i>Sesamia inferens</i>	Australasian, Oceanic, Oriental: Australia, Bangladesh, Indonesia, Japan, Laos, Malaysia, Nepal, Pakistan, Papua New Guinea; Philippines, Sri Lanka, Vietnam
Scelionidae			
<i>Telenomus rowani</i> Gahan	Egg	<i>Scirpophaga incertulas</i>	Oriental: Bangladesh, China, Philippines, Thailand, Vietnam

All the parasitoids are widely distributed and mainly in rice countries of the Eastern Palaearctic and oriental regions (Table 1). Especially, some species of parasitoid assemblage, namely *Apanteles cypris*, *Telenomus rowani*, *Tropobracon luteus* and *Xanthopimla flavolineata*, are dominant and play the important role in regulating of two dangerous rice insect pests, such as rice yellow stem borer (*Scirpophaga incertulas*)

and rice leaffolder (*Cnaphalocrocis medinalis*).

DISCUSSION AND COMMENTS

All the hymenopteran parasitoids are recorded for the first time for Cambodia, additionally all the parasitoids revealed are as potential agents for biological control of important rice insect pests.

The short two-day survey in rice field showed the diversity of hymenopteran parasitoids on rice paddy in Sisophon, that is the evidence that agrobiocenoses in Northwest Cambodia are still not so heavily affected by chemical pesticides.

One species no#9, *Avga* sp. (Braconidae: Exothecinae), is expected to be a new species for science, however in order to describe new taxa, more specimens need to be collected.

Acknowledgements: We would like to thank the coordinators and leaders of the project entitled “Sustainable Intensification and Diversification in Lowland Rice System in Northwest Cambodia” for inviting the first author to visit Meanchey University (Northwest Cambodia) and have a short survey on rice paddy in Sisophon in November 2018.

REFERENCES

- Ashmead W. H., 1905. Additions to the recorded hymenopterous fauna of the Philippine Islands, with descriptions of new species. *Proceedings of the United States National Museum*, 28(1413): 957–3971.
- Cameron P., 1905. On the phytophagous and parasitic Hymenoptera collected by Mr. E. Green in Ceylon. *Spolia Zeylanica*, 3: 67–143.
- Cameron P., 1907. Hymenoptera of the Dutch expedition to New Guinea in 1904 and 1905. Part II: Parasitic Hymenoptera. *Tijdschrift voor Entomologie*, 50: 27–57.
- Chu J. T., He J. H., Wang J., Chen J., 1978. Braconidae. In: Atlas of Natural Enemies of Economic Insects. Beijing, 300: 49–65.
- Khuat Dang Long, Belokobylskij S. A., 2003. A preliminary list of the Braconidae (Hymenoptera) of Vietnam. *Russian Entomological Journal*, 12: 385–398.
- Khuat Dang Long, van Achterberg C., 2014. An additional list with new records of braconid wasps of the family Braconidae (Hymenoptera) from Vietnam. *Tap chi Sinh hoc*, 36: 397–415.
- <https://doi.org/10.15625/0866-7160/v36n4.5979>
- Maetô K., Thornton I. W. B., 1993. A preliminary appraisal of the braconid (Hymenoptera) fauna of the Krakatau Islands, Indonesia, in 1984–1986, with comments on the colonizing abilities of the parasitoid modes. *Japanese Journal of Entomology*, 61: 787–801.
- Nixon G. E. J., 1965. A reclassification of the tribe Microgasterini (Hymenoptera: Braconidae). *Bulletin of the British Museum (Natural History)*, Entomology series. Supplement, 2: 1–284.
- Pham N. T., Broad G. R., Matsumoto R., Wägele W. J., 2011. Revision of the genus *Xanthopimpla* Saussure (Hymenoptera: Ichneumonidae: Pimplinae) in Vietnam, with descriptions of fourteen new species. *Zootaxa*, 3056: 1–67.
- Sonan J., 1939. Descriptions of three new species of Ichneumonidae from Formosa (Hymenoptera). *Dobutsugaku Zasshi [Zoological Magazine]*, 51: 428–431.
- Sithanatham S., Chandish R. Ballal, Jalali S. K., Bakthavatsalam N., 2013. Biological Control of Insect Pests Using Egg Parasitoids. Springer Science & Business Media, 424 pp.
- Szépligeti G., 1908. E. Jacobons'sche Hymenopteren aus Semarang (Java). Evaniden, Braconiden und Ichneumoniden. *Notes from the Leiden Museum* 29: 209–260.
- Townes H. K., Chiu S. C., 1970. The Indo-Australian species of *Xanthopimpla* (Ichneumonidae). *Memoirs of the American Entomological Institute*, 14: 372pp.
- van Achterberg C., 1993. Revision of the genus *Tropobracon* Cameron

- (Hymenoptera: Braconidae). *Zoologische Mededelingen*, 67: 49–62.
- van Achterberg C., Grootaert P., Shaw M. R., 2010. Chapter 17–Flight interception traps for arthropods: 423–462. In: Eymann J, Degreef J, Häuser C, Monje JC, Samyn Y, VandenSpiegel D (eds). Manual on field recording techniques and protocols for All Taxa Biodiversity Inventories and Monitoring. *Abc Taxa*, 1–2: 1–652.
- Vu Quang Con, 1993. Morphological and ecological peculiarities of some species of Ichneumonidae and Chalcididae (Hymenoptera)-the internal parasites of rice lepidopterous pupae. *Tap chi Sinh hoc*, 15: 11–16.
- Watanabe C., 1932. A revision of Braconid-species parasitic in the injurious insects of rice-plant and sugar-cane in Japan and Formosa. *Transactions of the Sapporo Natural History Society*, 12: 63–71.
- Watanabe C., 1967. Notes on Braconidae caught in a sweep-net at paddy fields, Part I. *Mushi*, 40: 189–198.
- Yu D. S. K., Achterberg C. van, Horstmann K., 2013. Taxapad 2012, Ichneumonoidea 2011. Ottawa, Ontario, Canada. Database on flash-drive. www.taxapad.com.