SHORT COMMUNICATION

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

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ABSRACT

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 (Szepligeti), Avga sp., Tropobracon lateus 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.

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.

MATERIALS AND METHODS

The short field survey in rice paddy was conducted from 1\textsuperscript{st} through 2\textsuperscript{nd} 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

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

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 *Xanthopimpla 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**


van Achterberg C., 1993. Revision of the genus *Tropobracon* Cameron


