

Short Communication

Observation on the foraging behavior of a potter wasp, *Delta esuriens* (Fabricius) (Hymenoptera: Vespidae) on sesban (*Sesbania sesban* (L.) Merr)

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(Article history: Received: June 08, 2015; Revised: December 02, 2015)

Abstract

The foraging behavior of *Delta esuriens* is observed on a female wasp. To paralyze the prey, a total of two stings in its abdomen segments are used by *D. esuriens*. The first sting aims at the sixth segment and the second at the seventh segment. The total time of catching the prey is about four minutes. A green worm, one of mainly insect pests on sesban, is one of the preferred prey of *D. esuriens*.

Key words: Foraging behavior, *Delta esuriens*, prey, sesban, Vietnam

To cite this article: PHAM, P.H., 2015. Observation on foraging behavior of a potter wasp, *Delta esuriens* (Fabricius) (Hymenoptera: Vespidae) on sesban (*Sesbania sesban* (L.) Merr). *Punjab Univ. J. Zool.*, **30**(2): 85-86.

INTRODUCTION

Most species of the subfamily Eumeninae are xylicolous solitary wasps, and are also known as potter wasps. They are major predators of some phytophagous insects including leaf rollers and leaf beetles (Richter, 2000). Their efficiency as hunters is enhanced by their ability to walk on plants covered by wax bloom to extract sheltered insects (Jones *et al.*, 2002). Studies on the hunting mechanisms and ecosystem impacts of predation by solitary wasps may provide insight into the evolutionary mechanisms (Evans, 1963). Whereas adults of potter wasps visit flowers to obtain nectar and pollen for their own nourishment, while larvae need caterpillars as a food source. Therefore, the adult female finds caterpillars on plants, paralyzes them and brings them back to the nest for its larvae.

Widely distributed in the Oriental region, *Delta esuriens* is known as both predator and pollinator. Two subspecies have been recorded: *D. esuriens esuriens* (Fabricius) and *D. esuriens okinawae* Giordani Soika. To *D. esuriens okinawae*, Yamane (1990) briefly recorded on the biology on its nesting site and prey (Lepidopterous larvae). For *D. esuriens esuriens*, Krombein (1991) and Bodlah *et al.* (2012) provided information on the nest site,

10-PUJZ-15-1-08062015/15/0085-0086

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immature stages, and the prey spectrum (various larval instars of American bollworm and cabbage butterfly). The observations described below add new details on the foraging behavior and the preferred prey of this species.

MATERIALS AND METHODS

Collection of specimens took place on 20 to 22 June 2013 at Tien Hai District and on 23 to 25 June 2013 at Hung Ha District. The foraging behavior of *D. esuriens* in present paper was observed based on a female wasp at Hong Minh Commune, Hung Ha District, Thai Binh Province. The density of a green worm on the sesban was simply figured out by enumeration. The species name was defined based on the literature of Fabricius (1787) and Giordani Soika (1992). Specimens collected are deposited in the Institute of Ecology and Biological Resources (IEBR), Vietnam Academy of Science and Technology (VAST), Hanoi, Vietnam. Pictures were taken by a digital camera Canon SD3500 IS.

RESULTS AND DISCUSSION

On June 20 - 22, 2013 at Tien Hai District (a coordinate of 20°39'N, 106°58'E and

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an altitude of 0 m), all eight specimens were collected on sesbans (*Sesbania sesban*). During June 23 - 25, 2013 at Hung Ha District (a coordinate of 20°35'N, 106°08'E and an altitude of 3 m), 17 specimens were collected on sesban and a hunting female was observed. When she detected a caterpillar, she immediately plunged to it and clumped its thorax with both her fore legs and mouth to bear upon head of the prey and stung it in an abdomen segment. After the stinging, this caterpillar frantically struggled to get away from *D. esuriens*. The wasp, however, used all parts of her body to tightly clamp the prey (Fig. 1).



Figure 1: *D. esuriens* is tightly clamping the prey



Figure 2: *D. esuriens* is stinging to paralyze the prey

When the prey was almost paralyzed, she stung it in its abdomen segment once again (Fig. 2) before flying with it away. Thus, the total of stings that *D. esuriens* used on the prey were two. The first sting aimed at the sixth segment and the second at the seventh segment. The total time of catching the prey was about four minutes and in the whole process *D. esuriens* was holding the prey even that the camera was only 5 cm away. This caterpillar (a green worm yet unidentified) seemingly was a single insect pest on sesban and its density was an average of 16 individuals per tree (with a total of 20 trees surveyed). Various crop plants were also

surveyed near these sesbans such as soybean, green peas, Chinese pea, corn, etc., but no any specimen of *D. esuriens* was caught there, despite the presence of many different caterpillars. This shows that *D. esuriens* wasps come to the sesban not only for taking pollen or nectar but also for hunting caterpillars, and that the green worm is one of the preferred prey of *D. esuriens*.

Acknowledgements

The author is grateful to Mr. Khuc Van Linh for his kind help on survey and collection of vespidae specimens. The author thanks the anonymous reviewers for critical comments.

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