

First record of *Zaprionus indianus* (Gupta, 1970) (Diptera Drosophilidae) from Bangladesh

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ABSTRACT

Zaprionus indianus (Gupta, 1970) (Diptera Drosophilidae), also known as African fig fly, is considered as the primary pest only to fig fruits along with secondary pest to other fruits. Its occurrence has been reported from many countries but not previously reported from Bangladesh. With this note, we report here the first observation of *Z. indianus* from Bangladesh. Fly samples were collected by using yeast-banana traps. The species was identified by morphological characteristics and mitochondrial COI gene sequence.

KEY WORDS

African fig fly; Bangladesh; *Zaprionus indianus*.

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INTRODUCTION

Zaprionus indianus (Gupta, 1970) (Diptera Drosophilidae), commonly known as African fig fly, belongs to the genus *Zaprionus* Coquillett, 1902 which contains a total of 57 species (Yassin & David, 2010). This fly has brown body of approximately 2.5 to 3.0 mm in length along with red eyes. However, they have a pair of distinctive silvery-white stripes with black borders on the top of the head to the tip of the scutellum as well as laterally from the forefront of the thorax to the base of each wing. *Zaprionus indianus* was first described from India in 1970 (Gupta, 1970). Though this fly was thought to be originated from tropical Africa (Chassagnard & Kraaijeveld, 1996), at present it has spread in many parts of the world including from old to new world countries (Commar et al., 2012). At present, the geographical distribution of *Z. indianus* is considered as cosmopolitan (Tidon et al., 2003). Though this fly is being reported from different parts of the world including some Asian countries (Commar et al.,

2012), but there is no previous record from Bangladesh.

In this paper, we report the occurrence of *Z. indianus* from Bangladesh for the first time.

MATERIAL AND METHODS

Flies were collected during a field sampling from Natore (24°26'26.5"N; 89°00'36.7"E), a northern district of Rajshahi division of Bangladesh (Fig. 1). Yeast-banana traps were used to collect them. Flies were reared and maintained on food made with semolina yeast. Morphological identification was done by observing the 4 to 6 composite spines on the fore femur along with the prominent pair of silvery-white stripes (Gupta, 1970). For further confirmation, molecular identification was conducted by partially sequencing the mitochondrial COI gene. Universal primer pairs LCO1490 (forward) and HCO2198 (reverse) were used for PCR amplification after extracting the DNA (Folmer et al., 1994). Sequence file was submitted to

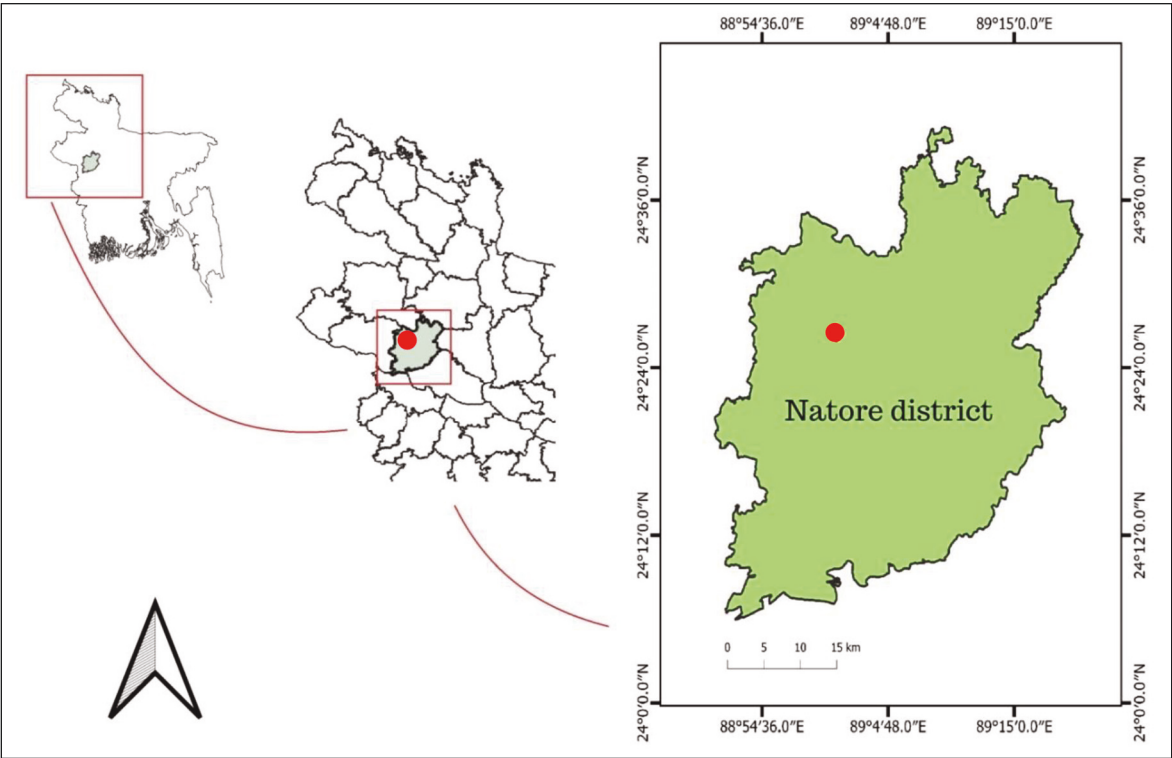


Figure 1. Distribution of *Zaprionus indianus* in Bangladesh. The red dot denotes the exact location from where the fly was collected.

NCBI GenBank (Accession no. MN863530.1). Specimens were preserved at the Genetics and Molecular Biology Laboratory, Department of Zoology, University of Dhaka.

RESULTS

Systematics

Phylum ARTHROPODA von Siebold, 1848
Classis INSECTA Linnaeus, 1758
Ordo DIPTERA Linnaeus, 1758
Familia DROSOPHILIDAE Rondani, 1856
Genus *Zaprionus* Coquillett, 1902

Zaprionus indianus (Gupta, 1970) Figs. 2-4

Collected flies were first identified as *Z. indianus* by observing the longitudinal silvery-white stripes (Fig. 2) along with the spines on the fore femur (Fig. 3) (Gupta, 1970). This was further confirmed

by the result of partial sequencing of the mitochondrial COI gene. Amplified sequence was approximately 630 bp in length. Basic Local Alignment Search Tool (BLAST) of National Center for Biotechnology Information (NCBI) was used to check similarity between our sequence and GenBank database of sequences. BLAST result revealed that our observed sequence showed 99.52% similarity with the sequence of *Z. indianus* in GenBank from Israel and India (Accession no. KC994626.1 and EF632366.1 respectively) along with 99.37% similarity with the sequences of the same species in GenBank from India, Saudi Arabia and Egypt (Accession no. EF632367.1, EF632365.1 and EF632362.1 respectively). This confirmed that our collected species is *Zaprionus indianus*.

DISCUSSION AND CONCLUSION

Zaprionus indianus is reported as primary pest only to fig fruits along with secondary and a serious aggressive pest to more than 80 different fruits

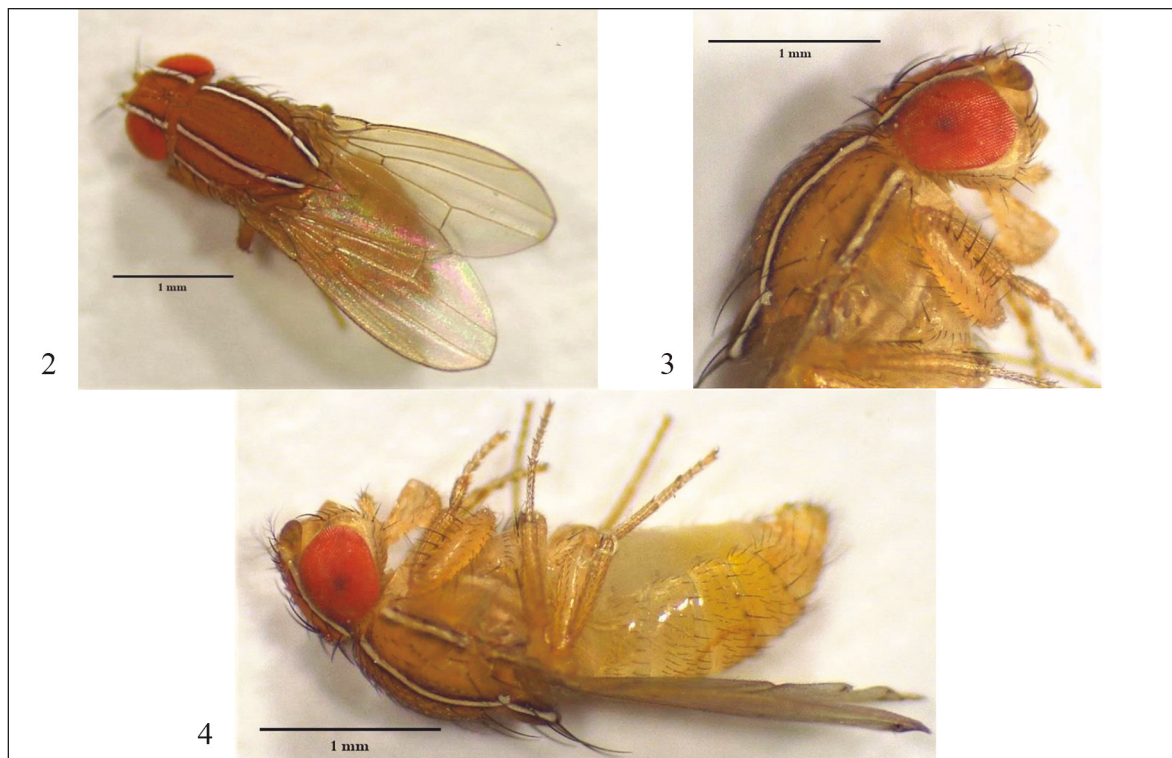


Figure 2. *Zaprionus indianus* (Gupta, 1970) collected from Natore, Bangladesh, dorsal view.

Figure 3. Idem, composite spines on the fore femur. Figure 4. Idem, lateral view.

(Yassin & David 2010; Van der Linde et al., 2006). Being considered as cosmopolitan species, this fly is widely distributed throughout many different countries of the world (Karan et al., 2000). It was thought that the genus *Zaprionus* appeared first in the Oriental region during the Late Miocene. Immediately after that, it spread to the West Africa during the Quaternary through the Indian Ocean (Yassin et al., 2008). Most of the morphological and ecological modifications took place there due to different climatic conditions. Global trade of fruits can be a major reason of why they are so widely distributed. As one of the most widespread species of the genus *Zaprionus*, this species occurs over a broad range in Asia along with Africa and the Americas (Commar et al., 2012). Though its occurrence has been reported from neighboring India and Pakistan (Gupta, 1970; Shakoory & Butt 1979; Commar et al., 2012), its presence in Bangladesh has not been reported previously. The survey area (Natore under Rajshahi Division) is located at the northern part of Bangladesh near Indian border. Thus it has a great chance that this fly might invade from India either

by fruit trading or by other ways. Our present study shows the presence of *Z. indianus* from Bangladesh for the first time. As they have potential role in damaging different fruits, further study will be useful.

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