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First Record of European Drone Fly, *Eristalis arbustorum* Linnaeus, 1758 (Diptera: Syrphidae) from Uttar Pradesh, India

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Abstract: The hover fly *Eristalis arbustorum* (Diptera: Syrphidae: Eristalini) is recorded for the first time from Uttar Pradesh, India. Presently, the species is known from Jammu and Kashmir, West Bengal, Himachal Pradesh and some North Eastern states of India. The measurements, distribution, host plants and the diagnostic characters of *Eristalis arbustorum* are provided in this paper.

Keywords: Diptera, Syrphidae, *Eristalis arbustorum*, Hover fly, European drone fly

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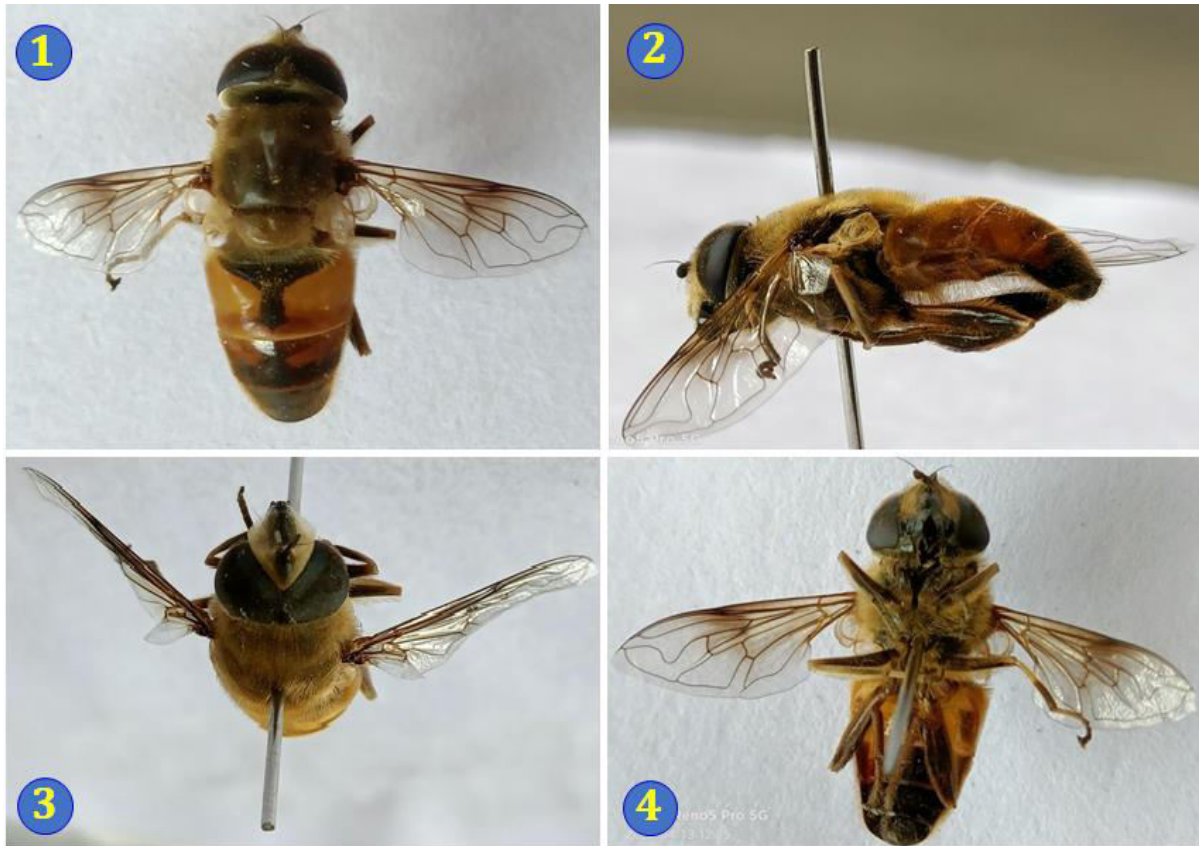
Introduction

The adult hover flies or flower flies (Diptera: Syrphidae) are nectar and pollen feeder while maggots (larvae) are either zoophagous (mostly entomophagous), phytophagous, coprophagous and saprophagous. These insects are beneficial as pollinators of crops and are known to visit at least 72% of global food crops next to bees, wasps and ants (Rader *et al.*, 2020) and as entomophages feed mostly on aphids, thrips and other plant-sucking insects suppressing their population in field crops (Dunn *et al.*, 2020). About 6000 species of syrphid flies belonging to 14 tribes and three subfamilies are globally distributed (Thompson and Rothery, 1998). Uttar Pradesh is fourth-largest state of India in terms of land area and shows great diversity of fauna and flora and Syrphidae is one of them. The present article deals

with the first record of this species of hover fly from this state.

Materials and Methods

The state Uttar Pradesh covers an area of 243,286 km² and is considered as most populous state of India. It shows great diversity in flora as well as fauna. The city of Gorakhpur lies between latitude 26°46' N and longitude 83°2'E. The district covers an area of 3483.8 km² and lies in the eastern region of Uttar Pradesh. It is situated on the bank of the river Rapti. The field study and collection of syrphids was performed in month of March, 2021 at St. Andrews' College campus located in the heart of the city of Gorakhpur, India. Sweep net was used to collect the specimens and were transferred into killing bottle containing



Figs. 1-4: *Eristalis arbustorum* (1) dorsal view showing the abdomen orangish yellow with black pattern, (2) lateral view showing thorax and scutellum covered with brownish yellow pubescence, (3) male in frontal view showing face entirely pale and pollinose, (4) ventral view showing half tibia black.

chloroform as killing agent. Stretching was done by using lab stretching boards and material was pinned by fine entomological pins for further study. Specimens were observed under light microscope and were photographed using Nikon Digital Camera. Terminology used in the diagnostic characters follows Thompson (1999) and the species was identified by keys provided by Hippa *et al.* (2001). The specimens were deposited at insect laboratory of the college.

Results and Discussion

Eristalis arbustorum Linnaeus, 1758 was observed hovering over flowers of marigold and candytuft in grassy field. The aquatic larvae were observed in shallow, nutrient-rich standing water and in cow-dung, silage pits and compost heaps. It measures as -- body length: 14 mm, head width: 4 mm, thorax width: 5 mm and wingspan: 10-12 mm. Following are its diagnostic characters:

medium black and yellowish (Fig. 1); antennae black with brown arista; thorax and scutellum covered with brownish yellow pubescence (Fig. 2); abdomen yellow with black pattern; face totally white (Fig. 3) (other *Eristalis* spp. have a black bare stripe from antennae to mouth), abdominal terga with white borders; arista plumose (at least basal half); hind femora pale at the tip only. It is similar to *Eristalis abusive* Collin, 1931, but may be differentiated its plumose arista, less projecting mouth-edge and overall pubescence is shorter (Fig. 4). Top one-fourth of tibiae are black (Van Veen, 2004).

In India, 355 species described under 69 genera of Syrphidae have been reported by Sengupta *et al.* (2016). Samuel and Dass (2014) recorded 9 species from Gorakhpur, Uttar Pradesh, India while studying the seasonal occurrence of syrphids. The European drone fly,

Eristalis arbustorum Linnaeus, 1758 (Diptera: Syrphidae: Eristalinae: Eristalini) has earlier been reported from Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Meghalaya, Sikkim and West Bengal (Sengupta *et al.*, 2016). Apart from India, *Eristalis arbustorum* is also distributed in Europe, Pakistan, North Africa and North America.

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