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Short paper

New record of the genus and species *Temnostoma vespiforme* (Diptera: Syrphidae) from Iran

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Abstract: A survey was conducted on the fauna of the hover flies in Northern Iran in 2011. Among the collected and identified material, the genus *Temnostoma* Le Peletier & Serville, 1828 represented by a single species, *T. vespiforme* (Linnaeus, 1758) is newly detected in Iran. Diagnostic characters and geographical distribution of the newly recorded species is briefly discussed.

Keywords: hoverfly, first record, *Temnostoma*.

Introduction

Syrphidae (Diptera: Brachycera) is one of the largest and most diverse families of the order Diptera with more than 6,000 described species in the world (Thompson, 2006). Three subfamilies including Syrphinae, Eristalinae and Microdontinae, and 14 tribes are currently recognized in the family (Thompson and Rotheray, 1998; Thompson, 2006).

The genus *Temnostoma* Le Peletier & Serville, 1828 belongs to the subfamily Eristalinae and tribe Milesiini. This genus includes 24 described species in the world of which 15 species occur in the Palaearctic, eight species in Nearctic and one species in Oriental regions (Speight, 2011).

The larvae feed on decaying wood of deciduous trees (Krivosheina, 2004). Most species dwell in damp deciduous forests and bask on leaves and twigs and visit various flowers (Speight, 2011). They exhibit territorial behavior, chasing any large insects in the immediate vicinity (Stubbs and Falk, 1983). Species of this genus mimic the wasp. Flying *Temnostoma vespiforme* (Linnaeus, 1758) even mimic the erratic flight patterns of wasps, but are distinguished by some morphological characters like their short antenna and unfolded wings (Gilbert, 2005). This genus may be confused with the species of the genera *Sphecomyia* Latreille, 1829 and *Spilomyia* Meigen, 1803 but the genus *Sphecomyia* has longer antenna than the *Temnostoma* species. The genus *Spilomyia* has striped eyes and two yellow stripes on the thoracic dorsum before the scutellum that distinguishes it from *Temnostoma* genus (van Veen, 2004).

As a part of our ongoing research on syrphid fauna of Iran, the genus *Temnostoma* was detected in the Northern region of Iran. Here we present the new data about distribution and morphological characters of the representative species.

Materials and Methods

Materials for this study were collected from Northern Iran (Mazandaran Province) using Malaise traps in 2011. The specimens were extracted from the Malaise traps and then treated with 100% ethanol for five minutes followed by hexamethyldisilazane (HMDS) for 30 minutes and finally placed on the glass plate

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for drying. The dried specimens were then sorted and labeled. The external morphology was studied using Olympus™ AX70 stereomicroscope. Illustrations were prepared using Olympus™ SZX9 stereomicroscope equipped with a Sony CCD digital camera.

Terminology of the external morphology follows Stubbs and Falk (1983), Bei- Bienko (1988) and Van veen (2004). The collected specimens are deposited in the insect collection of the Department of Entomology, Tarbiat Modares University, Tehran.

Results

As a result of this study the genus *Temnostoma* Le Peletier & Serville, 1828 represented by a single species, *T. vespiforme* (Linnaeus, 1758) has been detected for the first time from Iran.

Genus: *Temnostoma* Le Peletier & Serville, 1828
Type species: *Milesia bombylans* Fabricius, 1805
Diagnostic characters: Eyes bare, gena and ventral half of face pilose; cross vein *r-m* usually oblique, beyond middle of discal cell, extend to outer third of discal cell, cell r_1 open, alula much broader than cell *bm*; katepisternum continuously pilose along posterior margin; metasternum strongly developed; body with bright yellow microtrichosity, abdomen oval, 2nd tergite not constricted basally.

***Temnostoma vespiforme* (Linnaeus, 1758) (Figure 1)**
Synonyms: *Milesia excentrica* Harris, 1835; *Milesia wagae* Gorski, 1852; *Spilomyia sibiricum* Portschinsky, 1886**;** *Spilomyia sericomyiaeforme* Portschinsky, 1886 *Syrphus frequens* Matsumura, 1931; *Temnostoma strigosum* Sack, 1941.
Material examined: IRAN, MAZANDARAN PROVINCE, Noor, Tangevaz, 36˚21'55.2" N, 52˚06' 10.74" E, 692m, (2♀♀), 29.iv.2011; leg. M. Khayrandish.
Distribution: Widespread in Europe (Lenndertse, 2011; Speight and Sarthou, 1997; Veenstra**,** 1982); Asia (Peck, 1988); China (He and Chu 1995); Japan (Shiraki, 1930).
Flower visited: various species of flowers like White Water Lily (*Nymphaea alba* Linnaeus, 1753) (Lippok and Renner, 1997) and various umbellifers, such as; *Clematis*, *Cornus, Crataegus, Lonicera xylosteum, Papaver nudicaule, Ranunculus, Rubus idaeus, Sambucus, Senecio* and *Sorbus* (Speight, 2011).
Diagnosis: Head: frons with short erect pale hairs and black strip that reach to lunule; antennal tubercle pale brown with short dense recumbent silvery hairs over entire lateral surface, pale brown (Figure 1D); face with a median longitudinal black strip reaching to base of antennae, gena yellow, mouth margin black (Figure 1B).
Thorax: Scutum with dense erect black and golden hairs, postpronotum yellow, scutum with yellow semicircular spot above scutellum, postalar calli with yellow triangular spots; supra-alar area with two yellow spots narrowed apically and widened basally, scutum with two pale indistinctive stripes in middle, scutellum black with golden hairs, proepimeron yellow, yellow spot extended from anepisternum to katepisternum; wing hyaline, stigma and cell *br* yellowish-brown (Figure 1C); fore leg entirely black, middle and hind legs yellow except base of femora (Figure 1B);
Abdomen: Oval, with rather dense yellowish erect hairs, 1st tergite black, tergites 2-5 with yellow entire transverse stripes (Figure 1A).

Discussion

Distribution of *Temnostoma vespiforme* (L.) in the Holarctic Region was re-reviewed by Krivosheina (2012). Morphological differences between the North American and European specimens of *T. vespiforme* and closely related species, *Temnostoma sibiricum* Portschinsky, 1887 and *Temnostoma aequale* Loew, 1864, were discussed in the mentioned study and the results show that replacement of *T. vespiforme* by *Temnostoma sibiricum* may occur in the eastern part of the Palaearctic Region. Here our specimens fit well with the description of female of *T. vespiforme* prepared by Krivosheina (2012). Recording of this species from adjacent countries to Iran such as Turkey (Kockak and Kemal, 2013) shows this species probably occurs widely in the Western Palaearctic region.

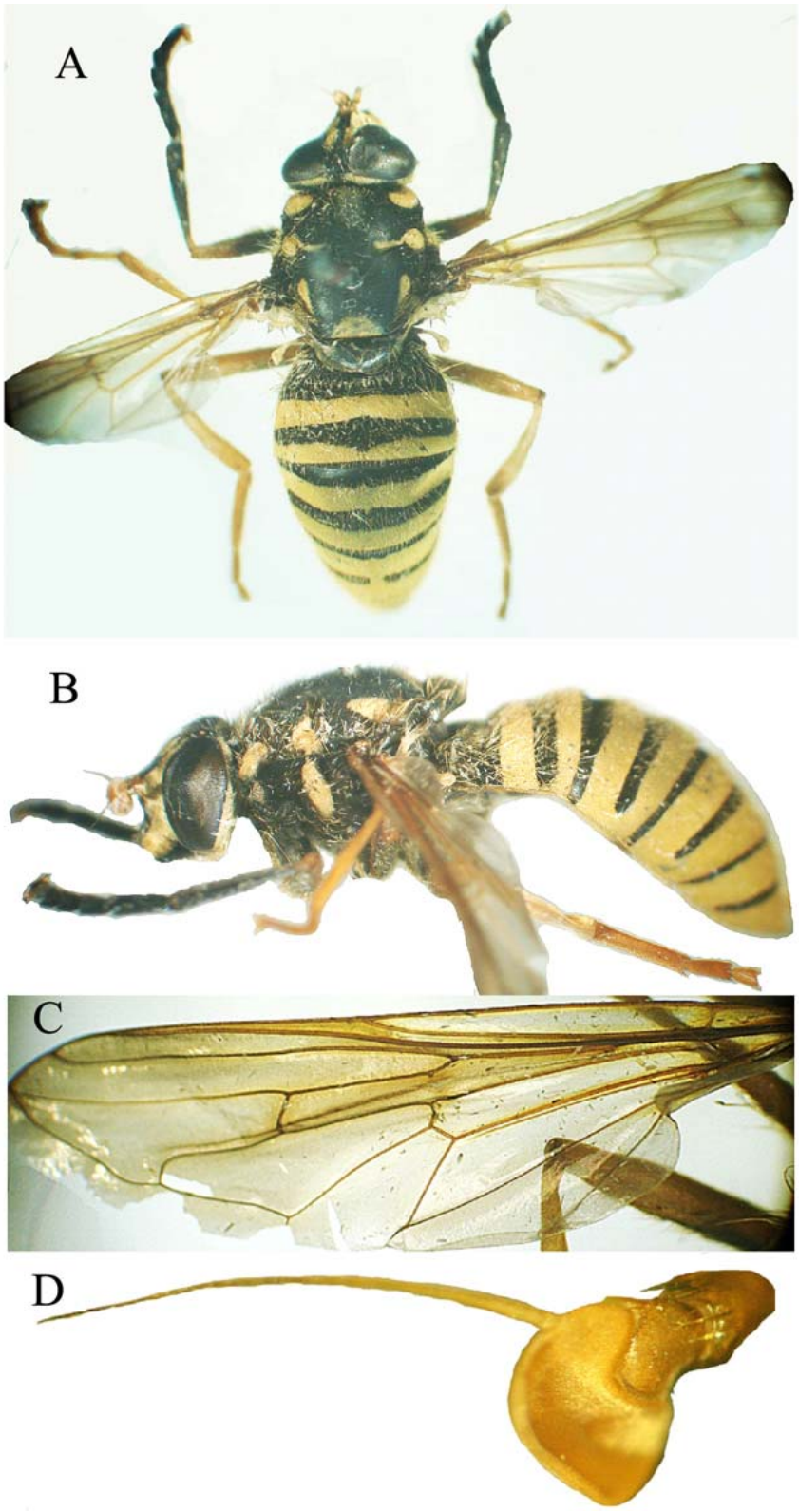

Figure 1 *Temnostoma vespiforme*, female; A) dorsal view; B) Lateral view; C) Wing; D) Antenna.

Fifteen species of the genus *Temnostoma* are listed for Palaearctic region (Speight, 2011), indicating the need for further investigations to figure out a true understanding about occurrence of other *Temnostoma* species in Iran.

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اولین گزارش جنس و گونه *Temnostoma vespifome* (Diptera: Syrphidae) از ایران

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چکیده: مطالعه فون مگس‌های خانواده Syrphidae در شمال ایران، طی سال ۱۳۹۰ انجام شد. به‌عنوان بخشی از نتایج این تحقیق گونه *Temnestoma vespifome* (Linnaeus, 1758) برای اولین بار از ایران گزارش می‌شود. مشخصات افتراقی و پراکنش جغرافیایی گونه گزارش شده جدید، به‌طور مختصر ارائه شده است.

واژگان کلیدی: Syrphidae، اولین گزارش، *Temnostoma*.