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Short Paper

First record of *Haritalodes derogata* (Fabricius) (Lepidoptera: Crambidae: Spilomelinae) from Iran

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Abstract: The cotton leaf roller moth, *Haritalodes derogata* (Fabricius, 1775) (Lepidoptera: Crambidae) was collected on two kinds of flowering shrubs, *Hibiscus syriacus* L. and *Hibiscus mutabilis* L., in Rasht, Guilan Province, during August 2013. This species represents a generic new record for the fauna of Iran. A brief description of the species is provided to facilitate the identification.

Keywords: Crambidae, Spilomelinae, Cotton leaf roller, Iran, new record

Introduction

Pyraloid larvae are concealed feeders which bore inside stems or fruits, or live in webs or leaf rolls. Larvae of the family Crambidae essentially all feed on living plants, with diverse specializations among the subfamilies (Munroe and Solis, 1999). This family contains 9655 species classified into 1020 genera (van Nieukerken *et al*., 2011) and consists of thirteen subfamilies which all except three, viz. Linostinae, Midilinae and Mustomiinae can be found in the Palaearctic Region as well (Nuss *et al*., 2003-2014). The Spilomelinae with about 3500 species worldwide is the most specious group among crambids. The genus *Haritalodes* Warren, 1890, one of the 322 known genera of this subfamily, with eleven identified species is distributed in Oriental, Palaearctic, Australian and Afro-Tropical regions (Nuss *et al*., 2003-2014).

In August 2013, the shrubs of the two *Hibiscus* species, *H. syriacus* and *H. mutabilis* (Family Malvaceae) in Rasht region were found to be infested by larvae of a *Haritalodes* species feeding on the leaves in high numbers. The collected specimens were identified as *Haritalodes derogata* (Fabricius, 1775) (Lepidoptera: Crambidae: Spilomelinae).

Materials and Methods

The sampling of larvae was conducted at the end of summer 2013 on Rose of Sharon, *Hibiscus syriacus* and Confederate Rose, *H. mutabilis*. Larvae were collected in transparent plastic packets and transferred to the laboratory. As much as 30 larvae were collected and reared until pupation in laboratory conditions at 25 ± 1 ºC; 65 ± 5% RH; and 16:8 (L: D) h. After emerging, the adults were killed and prepared to spread.

Genitalia dissections followed Robinson (1976). Photographs were taken using a digital Still camera DSC-F717 and a Dino-Eye Microscope Eye-piece camera. Some images are the result of combining multiple images using the software Combine ZP. The terminology of genitalia follows that of Kristensen (2003).

The collected specimens have been deposited in the Hayk Mirzayans Insect Museum, Iranian Research Institute of Plant Protection, Tehran, Iran.

Results

The adult specimens were examined and identified as follows:

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***Haritalodes derogata* (Fabricius, 1775)**
Material examined- 7 ♂♂ 8 ♀♀, Rasht (Guilan Province), 24.ix.2013, leg. B. Hosseini Tabesh.
Diagnosis- Wingspan 21.0-26.5 mm (n = 14) (Fig. 1). Labial palpus whitish, except for brownish scales at the end of first and second segments; third segment very short. Length of the labial palpus to the horizontal diameter of compound eye 1.45-1.71 (n = 15). Vertex covered with whitish scales and tinged with light brown scales at the medio-basal area.

Figure 1 *Haritalodes derogata* (Fabricius), adult female (Guilan Province: Rasht).

In the male genitalia (Fig. 2), uncus long, tapering apically, and as we detected in the examined males (Figs 2a, b, c), both rounded smooth and clearly indented apex of uncus were observed. Valva with rounded apex and a clear swelling in the apico-costal side; clasper with needle-shaped sclerotized area and sacculus with irregular dorsal edge and apical process (Fig. 2d). Transtilla as a slightly sclerotized band narrowed medially. Juxta as an elongated slightly sclerotized band. Phallus elongated with a long medially widened and apically pointed cornutus in vesica (Figs 2a, e). Length of cornutus 0.40-0.43 × length of the phallus (n = 2).

In the female genitalia, anterior apophyses nearly 1.5 times as long as posterior apophyses. The ostium membranous and cup-shaped. Antrum slightly sclerotized, but more sclerotized antero-laterally (Figs 3a, b, c). Ductus bursae granulated throughout the length especially along the wrinkles (Fig. 3e). Corpus bursae globular partly with wrinkles on its posterior surface (Fig. 3d) with two small circular, denticulate signa (Figs 3a, d).
Distribution- Afrotropical (Africa, Sub-Saharan, Madagascar, Comoros, Seychelles, Reunion Island), Australian (Papua New Guinea, Australia, Samoa), Eastern Palaearctic (Japan, Philippines, Korea, Taiwan, China, Southeast Asia, Pakistan), Oriental (Nepal, Java, India, Burma, Bangladesh, Thailand, Malaysia, Indonesia, Guam, Singapore, Solomon Island, Andaman Island, Nicobar Island, Sri Lanka, Vietnam, Pakistan) (Leraut, 2005; Yamanaka, 2008; Robinson *et al*., 2010).
Remark- The genus *Haritalodes* and *H. derogata* are reported from Iran for the first time.
Discussion- The genus *Haritalodes* includes some closely allied species that sometimes makes it difficult to distinguish them from each other. *Haritalodes derogata* is very close to *H. basipunctalis* (Bremer, 1864) in external appearance and genital apparatus; although they can be easily differentiated on basis of their host plants (Honda *et al*., 1994). The main differences of these two species are in their size and a few characteristics of the male and female genitalia. In *H. basipunctalis* wingspan is 30-35 mm which is clearly larger than that of *H. derogata* (= 23-31 mm) (Leraut, 2005); the latter is in agreement with our measurement. As figured in Leraut (2005), in *H. derogata* the valva appears to be wider than in *H. basipunctalis*; but among the examined males both relatively wide and slightly narrow valvae were observed. According to Yamanaka (2008) and as we detected in the examined males (Figs 2a, b, c), both rounded smooth and clearly indented apex of uncus were observed; however Leraut (2005) believes that the uncus in *H. derogata* has rounded apex. According to Leraut (2005), *Haritalodes derogata* has no cornutus or has a reduced one, while based on Yamanaka (2008) the cornutus is elongated and plateless. The cornutus was distinctly obvious and elongated in all of our examined males. But, as seen in *H. basipunctalis* (Yamanaka, 2008), bunches of short thorns, even being very tiny, were visible in vesica of *H. derogata*. According to Leraut (2005) and as we detected (Figs 3b, e), the anterior half of

ductus bursae is ornamented with wrinkles in *H. derogata*; however, in our specimens (Fig. 3d) the signa are not so small as mentioned by Leraut (2005) and Yamanaka (2008) (Fig. 3d). Therefore, to the best of our knowledge, we believe that the relative width of the valvae, the relative size of the signa, the presence of bunches of tiny thorns in vesica are not reliable diagnostic characters to distinguish *H. derogata* from *H. basipunctalis*.

Several host plants of ten different families are known for *Haritalodes derogata* of which the most important ones belong to the family Malvaceae (*Abelmoschus esculentus*, *Abutilon* sp., *Alcea* sp., *Alcea rosea*, *Althaea* sp., *Althaea rosea*, *Gossypioides kirkii*, *Gossypium* sp., *G. barbadense*, *G. herbaceum*, *Hibiscus* sp., *H. cannabinus*, *H. mutabilis*, *H. parviformis*, *H. rosa-sinensis*, *H. sabdariffa*, *H. tiliaceus*, *Kydia calycina*, *Sida* sp., *S. cordifolia*, *S. orientalis*, *Thespesia danis*, *T. lampas*, *T. populnea*, *Urena* sp., *U. lobata*) (Robinson *et al*., 2010).

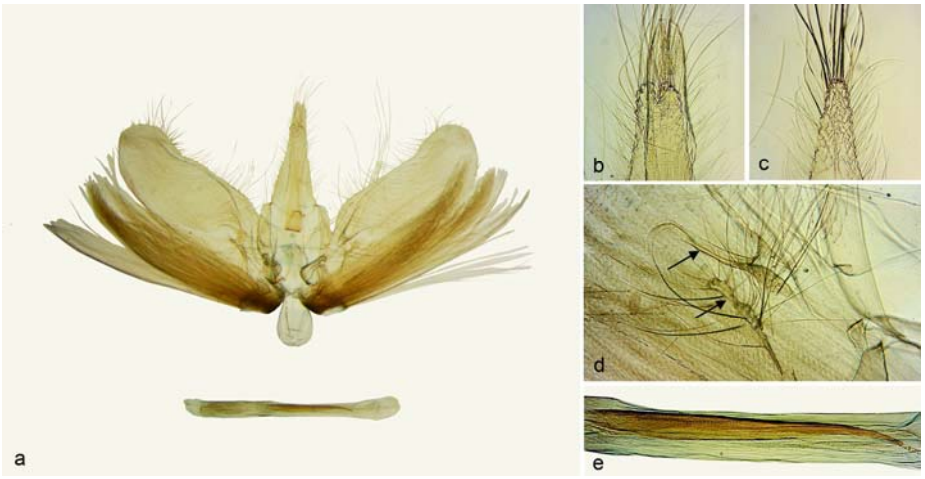

Figure 2 *Haritalodes derogata* (Fabricius), male genitalia; a) Male genitalia and phallus; b, c) Uncus; d) Ventro-basal part of valve, the upper and lower arrows indicate apical parts of clasper and sacculus, respectively; e) Cornutus.

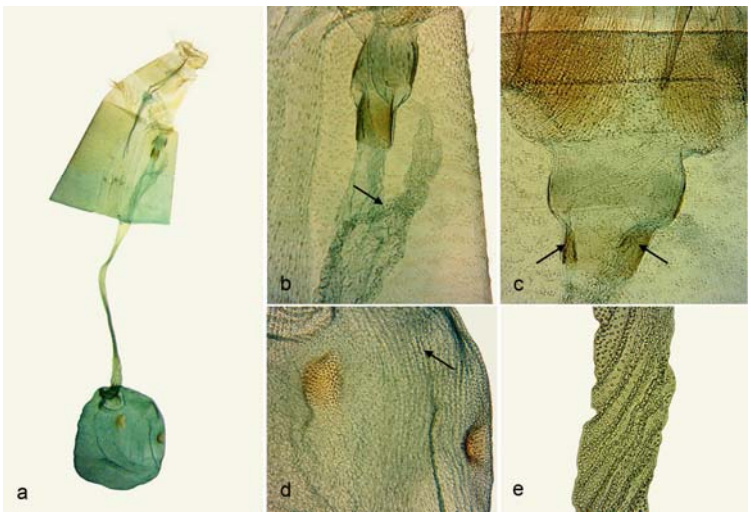

Figure 3 *Haritalodes derogata* (Fabricius), female genitalia; a) Whole female genitalia; b) Antrum and posterior part of ductus bursae, the arrow indicates the arising point of ductus seminalis; c) Ostium area and antrum, the paired arrows indicate the antero-lateral sclerotized area of antrum; d) Posterior-apical surface of bursa copulatrix, the arrow indicates the wrinkles of this area; e) Median part of ductus bursae.

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اولین گزارش *Haritalodes derogata* (Fabricius) (Lep., Crambidae, Spilomelinae) از ایران

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چکیده: شب‌پره *Haritalodes derogata* (Fabricius, 1775) (Lep., Crambidae) در مرداد ماه سال ۱۳۹۲ از روی دو نوع بوته‌ی گل‌دار به نام‌های *Hibiscus syriacus* L. و *H. mutualis* L. در استان گیلان، رشت، جمع‌آوری شد. جنس و گونه‌ی این شب‌پره برای اولین بار از ایران گزارش می‌شود. در این مقاله جهت سهولت در شناسایی گونه، توصیف مختصری از آن ارائه شده است.

واژگان کلیدی: Crambidae، Spilomelinae، Cotton leaf roller، ایران، گزارش جدید