



Journal of
Entomology

ISSN 1812-5670



Academic
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External and Genital Morphology of *Eurrhynx hortulata* (Linnaeus, 1758) (Crambidae)

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Abstract: In this study, we redescribed the external and genital morphology of the male *Eurrhynx hortulata* (Linnaeus, 1758) in detail and also diagnostical morphological features for the male of the species by comparison of different parameters with each other.

Key words: *Eurrhynx hortulata*, crambidae, pyraustinae, pyraustini, redescription

INTRODUCTION

The Genus *Eurrhynx* Hübner, 1825 which has one species in the world is well known in the subfamily Pyraustinae. *Eurrhynx hortulata* (Linnaeus, 1758) is one of the most familiar of the Crambidae and is known as a Magpi Moth (Hanneman, 1964; Hargreaves and Chinery, 1981; Goater, 1986; Karsholt and Razowski, 1996; Medvedev, 1997; Palm, 1986; Watson and Whalley, 1983). *E. hortulata* was described by Linnaeus, 1758 type species as a *Geometra hortulata* (Hanneman, 1964; Leraut, 1997). Many authors have studied on *E. hortulata*; however still there is no detailed work on this species. According to those authors who have studied on *E. hortulata*; the following male characteristics are mentioned as diagnostic: *E. hortulata* has conspicuous appearance, with its pattern of blackish-brown spots and bands on a white background. Forewings upper surfaces have many blackish-brown markings in the basal area, in the median area a blotch of blackish-brown, postmedian line and outer margin marked a series blackish-brown spots. The hindwings upper surfaces have white, postmedian line and outer margin similar to those of the forewings, discal spot with a small blotch. The fringe of the forewing is blackish-brown, that of the hindwing white. Head, thorax and patagium with bright orange yellow, abdomen black, narrowly banded yellow. Wingspan 28-35 mm. Antennae long, ciliate. Frons smooth, labial palps protruding. Maxillary palps with brush of scales (Hanneman, 1964; Hargreaves and Chinery, 1981; Goater, 1986; Medvedev, 1997; Novak and Severa, 1983; Palm, 1986). In this study, we described again the external and genital morphology of the male *E. hortulata* in detail. We also mentioned diagnostical morphological features for the male of the species by comparison of different parameters with each other.

MATERIALS AND METHODS

This study was conducted in the fields and laboratory in Trabzon province, northern Turkey, in June 2005. The samples were that *E. hortulata* collected with insect net, mercury vapour light trap and white screen in different localities, at different elevations, in different climatic condition in Trabzon. Specimens were dissected in the laboratory, male genitalia and fore-hind wings slides were prepared and photographed with a digital camera. For the preparation of genital slides. The abdomen was

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detached from the thorax by applying some upward pressure on the end of the abdomen then the abdomen was put in a glass tube with about 5 mL of a solution of 10% potassium hydroxide (KOH) the tube was heated in a water-bath which was near boiling point for 5-10 min the abdomen was put in a petri dish with water for dissection and cleaning; male genitalia was removed from abdomen using dissecting pins and the last scales and hair or any other material under the dissecting microscope were removed. Then the genitalia was put in a petri dish with 70% ethyl alcohol (C₂H₅COOH) for dissection and cleaning, later put it in a petri dish with 95% C₂H₅COOH for fixation of the staining and dehydration. For permanent slide, the genitalia was placed on a microscope slide with canada balsam. The slide was kept on a smooth surface and allowed several days at room temperature. The important taxonomic characters belong to *E. hortulata* were redescribed in detail by comparison of different parameters with each other. Each one of the external and genital taxonomic characters were measured with digital caliper and stereo microscope. The samples belong to *E. hortulata* are deposited in the Biology Department of Mustafa Kemal University. In this study, wings and genitalia slides were prepared according to Atay (2006).

RESULTS AND DISCUSSION

Genus *Eurhyphara* Hübner, 1825

Synonym *Perinephela* Hübner, 1825 (Hanneman, 1964).

Eurhyphara hortulata (Linnaeus, 1758)

Type Species *Geometra hortulata* Linnaeus, 1758

Synonym: *E. urticata* Linnaeus, 1761; *E. urticalis* Denis and Schiffermüller, 1775; *E. flavicauda* Retzius, 1783; *E. hortulana*, 1785 (Hanneman, 1964; Leraut, 1997).

Material Examined

Trabzon-Maçka (40 45 21 N; 39 37 13 E, 427 m) 28.06.2005, 3♂♂; Trabzon-Maçka (40 42 15 N; 39 29 48 E, 1004 m) 29.06.2005, 2♂♂; Trabzon-Çamlıdüz (40 45 17 N; 39 28 35 E, 1561 m) 30.06.2005, 4♂♂.

Measurements

Length ♂: 12.8-14.1 (13.56) mm. Wingspan 26.0- 30.8 (28.68) mm.

Description

Male (Fig. 1): On the head frons, vertex and haustellum bright orange yellow; labial palpus, maxillary palpus and eyes dark brown; however under the labial palpus is bright yellow. On the vertex and frons are densely covered with smooth scales. Head 1.05 times wider than its length. Antennae length 9.3 mm, filiform and long, densely covered with short cillia, its length 0.65 times longer than forewing length. Labial palpus well developed, long and narrow, with long and wide scales. Its length 1.63 times as long as ocular diameter. The first labial segment is long, thin and more or less oblique upwards, its length 5.14 times its diameter; the second segment is oblique upwards, its length 2.5 times its diameter; the third segment short, oval shaped, its length 2.5 times its diameter. Maxillary palpus with small 4 segments, rather short, thin and densely covered with scales; its length 0.36 times as long as ocular diameter. Haustellum very long, its length as long as antennae length. Eyes are round and large. Ocelli present; chaetosemata absent. Two ocelli distance 0.45 times head width. On the thorax patagium bright orange yellow, tegula light yellow. Forewings long, broad and triangle shaped, its length 2.51 times longer than its width. Upper surface of the forewings white; have many dark brown markings in the basal area; antemedial spot and discocellular spot dark brown; postmedial fascia and

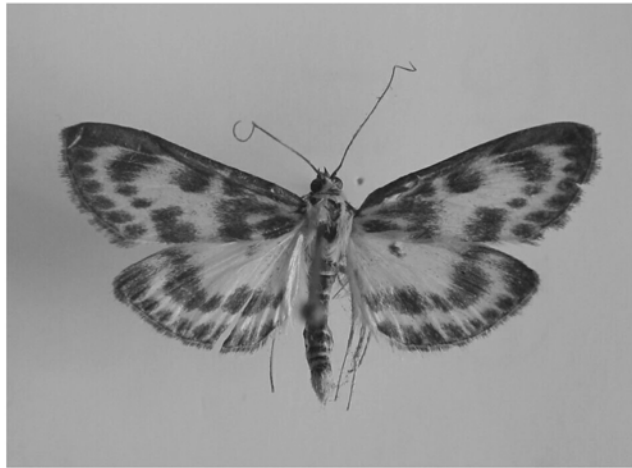


Fig. 1: Male of *Euryhypara hortulata*

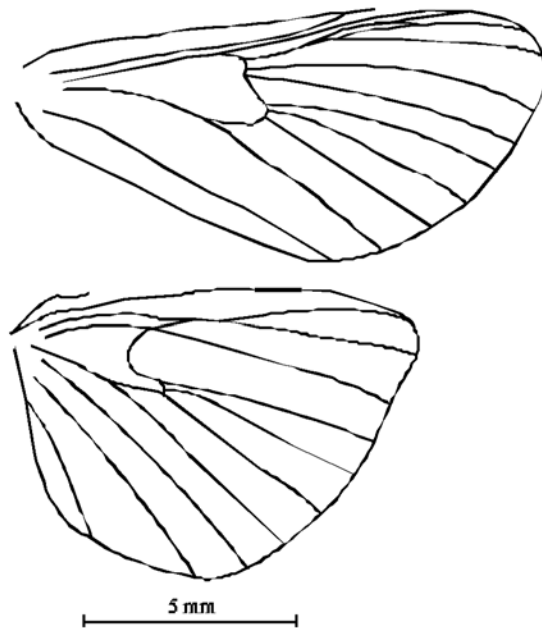


Fig. 2: The veins of the forewing and hindwing

subterminal fascia a series dark brown spots. There is a dark brown streak running the length of the costa. Under surface of the forewings show more dull colored compared to upper surface. The fringe of the forewing is dark brown. Hindwings long and broad, its length 1.53 times longer than width. Upper surface of the hindwings white; postmedial fascia, outer margin and discocellular spot similar to those of the forewings. Its fringe is white. Under surface of the hindwings show more dull colored compared to upper surface. On the forewing R_3 - R_4 on common stalk; on the hindwings M_2 and M_3 approximate at base (Fig. 2). Abdomen is thin-long and black colored; γ ts segments clear with yellow banded. The praecinctorium of the tympanal organ is more or less broaded with thin and long scales (Fig. 3).

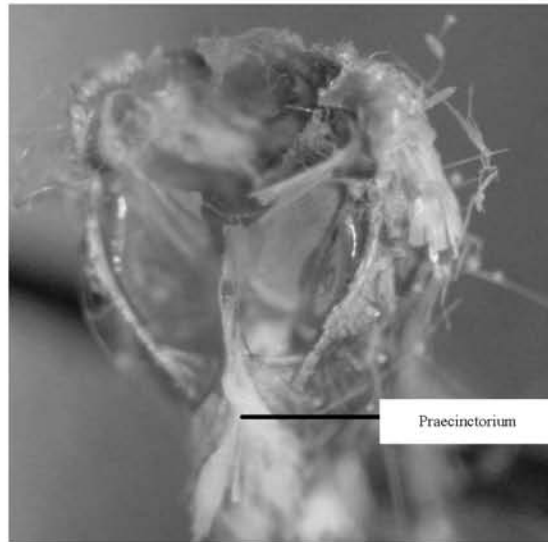
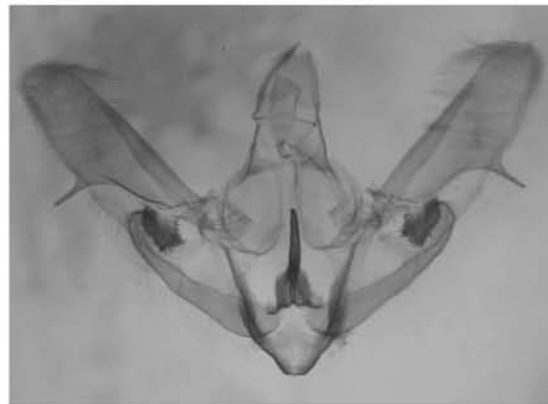


Fig. 3: Tympanal organ and praecinctorium



A



B

Fig. 4: A) Uncus and valva, B) Aedeagus of male genitalia

Male Genitalia

Uncus basally broad, apically narrow with weak and thin short hairs; its length is 1.15 times longer than its width. Gnathos absent. Valva long and broad; its length is 4.15 times longer than its width; ovaly shaped, rounded at the tip. Surface of the valva with weakly more or less short setose; its costal margin is thick, without costal process. Ventral margin of the valva is thin and with bulged cucullus. The cucullus length is 0.10 times as long as valva length. On the valva harpes is broad, very clear and with modified scales. Sacculus is clear and broad, sclerous structure. Annelus is thin-long, a strongly chitinous structure, spin shaped; basally short and broad, apically narrow and thin. Its length is 0.26 times as long as valva length (Fig. 4).

Aedeagus is thin-long, shorter than valva; apically broadened to strongly sclerotized lobes. Its length is 7.13 times longer than its width. In vesica is numerous spines.

DISCUSSION

In this study, we described again the external and genital morphology of the male *E. hortulata*. The important taxonomic characters belong to *E. hortulata* were redescribed in detail by comparison of different parameters with each other. Each one of the external and genital taxonomic characters were measured with digital caliper and stereo microscope.

ACKNOWLEDGMENT

I would like to thank Dr. Michael Shaffer (The Natural History Museum, London) for valuable helps.

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