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THE OCCURRENCE OF *AGRIPHILA TRISTELLA* ([DENIS & SCHIFFERMüLLER], 1775) IN KARACHI, PAKISTAN

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ABSTRACT

Agriphila tristella ([Danis and Schiffermüller], 1775), a stick moth (Family Crambidae: Lepidoptera), was collected accidentally from Karachi in the night of July 16, 2012. It is brown in colour. Eyes are large. Antennae are with alternating brown and white bands. Labial palpi porected. Wing span of this insect is c 20 mm. Fore wing is nearly 1.5 times larger than the main body of the moth. Forewing elongated. Termen is not perpendicular to costa. Hind wing is broad. Papilla anales large, broad rectangular in shape beset with setae. Corpus bursae balloon like without cornuti. It appears to be a new record for the moth species of Pakistan.

Key Words: *Agriphila tristella* (Denis and Schiffermüller, 1775), Stick Moth, Lepidoptera, Pakistan Insect Fauna

INTRODUCTION

The Order Lepidoptera (Gr. lepis = scales and pteron = wings) includes about 1,80,000 known species with an enormous number still to be found and be described (Kamaluddin *et al.,* 2007). Chaudhry *et al.* (1966 and 1970) presented the results of their survey of insect fauna of forests of Pakistan and Haque (1970) published a handbook on agricultural pests in Pakistan. Hashmi and Tashfeen (1992) published the Lepidoptera of Pakistan. Besides several checklists published for insect fauna of British India (Butler, 1875; Cotes and Swinhoe, 1986, 1889; Hampson, 1892-1898; Lefroy, 1909; Savatopolo, 1940, 1942 & 1947), Mathew's checklist of moths of India published in 2006 and that of Kamaluddin *et al.* (2007) of moths of Pakistan are the latest. Kamaluddin *et al.* (2007) presented a list of 240 moth species in their checklist with 33 pyralids inclusive the members of subfamily Crambinae which has been raised to a level of Family Crambidae under the group of superfamily Pyreloidea. No record of genus *Agriphila*, *Tinea* and *Crambus* is available in this check list.

In this paper, we report the presence of *Agriphila tristella* (Denis and Schiffermüller, 1775) from Karachi.

CLASSIFICATION

Kingdom: Animalia
Phylum: Arthropoda
S. Phylum: Hexapoda
Class: Insecta
Order: Lepidoptera
Superfamily: Pyreloidea
Family: Crambidae Latreille, 1810
Sub-Family: Crambinae Latreille, 1810
Genus: *Agriphila* Hübner, 1825
Species: *Agriphila tristella* ([Danis and Schiffermüller], 1775)
(*Tinea tristella* Denis and Schiffermüller, 1775; Ankündung eines systematischen works vonden Schmetterlingen de wienergegend: 134. TL Austria, Wien Sur)

Mathew (2006) dealt *A. tristella in* Crambinae, as a subfamily of Family Pyralidae whereas several authors include this species in Family Crambidae. The subfamily Crambinae Latreille 1810 is represented by almost 2000 species in 174 genera and is distributed throughout the World. Of these species, 370 species (49 genera) have been reported from palaeartic region (Błleszyński, S. 1965). *Agriphila* is a genus of small moths. Despite the fact that the genus *Agriphila* was proposed quite early, it was not recognized until the mid of the 20th century. Consequently the most species were placed in genus *Crambus* (Sevela, 2005). Bleszyński, H. split genus *Crambus* in 1963.

Synonymy

Tinea ferruginella Thunberg, 1788; Mus. Nat. Acad. Upsal. 6:78.
Tinea paleella Hübner, 1796; Samml. Eur. Schmett.[8] 24: 8, f.51, TL: Germany, Ausberg.
T. aquiella Hübner, 1796; Samml. Eur. Schmett.[8] 24: 8, f.52, TL: Germany, Ausberg.
T. fuscinella Schrank, 1802; Fauna Boica 2(2): 100, TL: Germany, Bayem.
Crambus moerens Fabricius 1798; Ent. Syst. (Suppl.): 473, TL: Austria.
C. fuscenellus Stephans, 1834; III. Br. Ent. (Haustellata) 4 (2)" 329, TL: England.
C. nigristriellus Stephens, 1834; III. Br. Ent. (Haustellata) 4 (2): 330, TL: England
C. discistrigatus Hampson, 1919; Ann. Mag. Nat. Hist. (9) 3 (15: 282, TL: Punjab, Hundes.
C. hertwigae Rasmussen, 1964; Ent. Medd. 32: 3912, f 1-3, TL: Denmark.
Agriphila tristella pseudotristella Zerny, 1943; Z. Wine. Ent. Ges. 28: 138, pl. 9, f. 2-4, TL: Sicily, Mistrella.

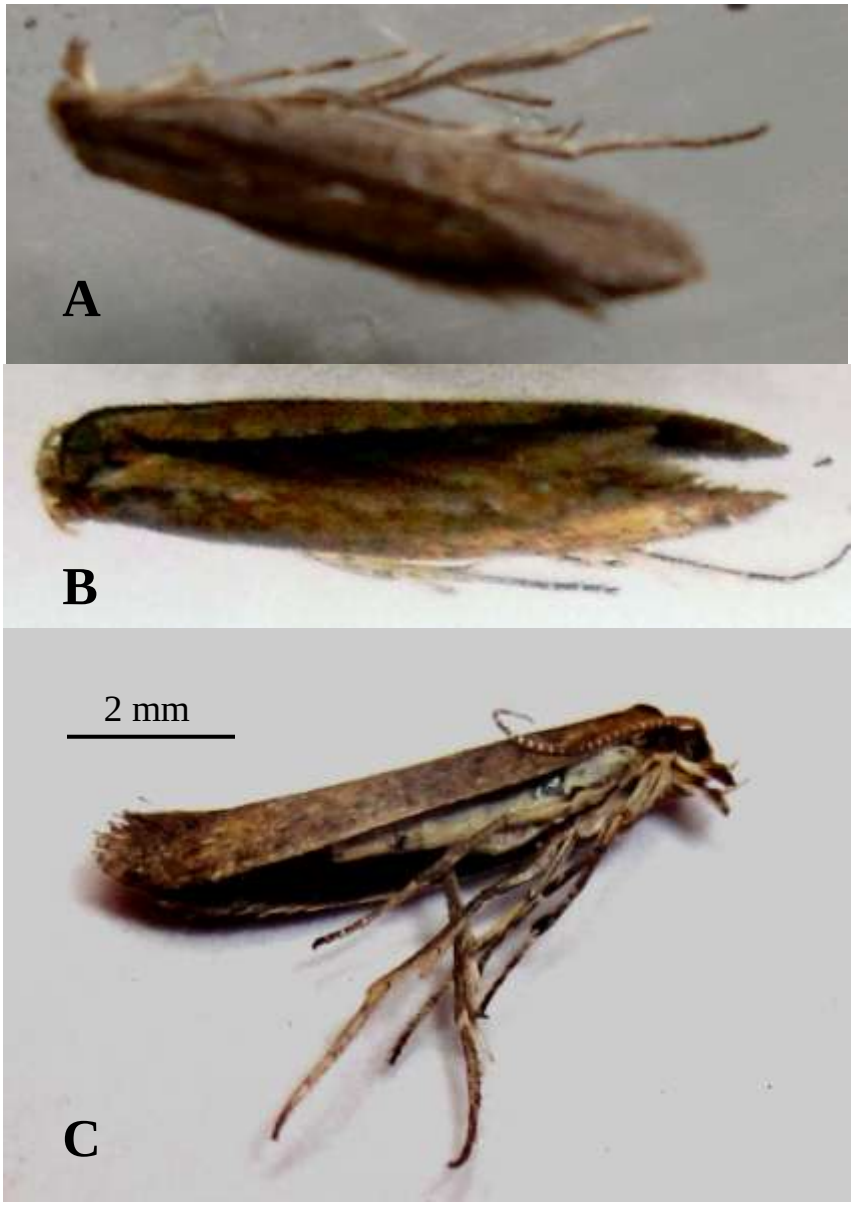

Figure 1. *Agriphila tristella* **A.** Lateral view to show the vein marking; B, Dorsal View; **C**, Latero-ventral view.

COLLECTION

Two specimens – Both female – One collected from Islamabad in 2003 by S.V. Ali with light trap and one collected from Karachi by D. Khan accidentally from wash room in the night of July 16, 2012. The consultation of literature and its morphological studies led to the identification of this organism as *Agriphila tristella* (Denis and Schiffermüller, 1775), a "stick micromoth", known as common Grass-Veneer in UK. The larvae feed in the base of stems of grass (Kimber, 2012). The publications of Kuchlein (1978), Goater (1986), Baker (1994), Berkshire Moth Group (2008; www.berkshiremothgroup.co.uk) and British Lepidopera (2012; britshlepidoptera.weebly.com) were the important references for comparison and identification.

DISTRIBUTION

Agriphila tristella is reported from Europe and Western and Southern part of Asia. It flies from June to September depending upon the geographic location. It was collected from Cuskinny Marsh Nature Reserve by Bond (1994). Jansen (2005) has reported *A. tristella* from brackish salt marshes of Belgium associated with Graminae. Székely (2011) reported it from Romania (Bucharest and its surroundings). Earlier, Popeseu-Gorj (1964) reported it from Bucharest. It is known to occur in Turkey (*www.Wikipedia*). Pastoralis (2010) reported it from Slovakia. It is reported from Estonia (www.enotes.com/topic/list_of_moths_of_Estonia). It is reported from Croatia (*wikivisually.com/wiki/List_of_moths_of_Croatia*) Karsholt and van Nieukerken (2001, Ed.) reported that it occurs all over Europe. It is a phytophagous insect and its larvae feed on various grasses. There is close association of *Agriphila* with Graminae (Emmet, 1979; Owen, 1991). *Deschampsia cespitosa* and *D. alpina* are the main plants attacked by this micromoth in British Isles (www.ecoflora.co.uk/search_phytophagy2.php?). Its host (s) in Pakistan is not known. A great deal of work is needed to be undertaken in this part of the World to elucidate its biology. This moth was also recorded from bath room (18-8-87); in garden (19-8-87) and in Warren (20-8-87) as reported by Morgan, 1987) in his report – The Invertebrate Fauna of Gregynog, Montgomery. It has been reported from India (Methew, 2006). Recently, Roohigohar *et al.* (2016) have described Iranian species of the subfamily Crambinae. Based on a collection on a period of 70 years from various areas of Iran and preserved in Haykmirzayans Insect Museum Tehran, 64 species have been described, of which 9 species are described under the genus *Agriphila* Hübner (1825) including *Agriphila tristella* ([Devis & Schiffermüller], 1775) collected in the end of August to the early October between 50-1500m. In brief, this insect is known to be distributed in Asia Minor, C. Asia, Europe (including Austria- the type locality, Transcaucasia, W. Siberian plains, Iran, NW India (Błleszyński, 1965; Methew., 2006; Slamka, 2008); Roohigohar *et al*., 2016) and now Pakistan.

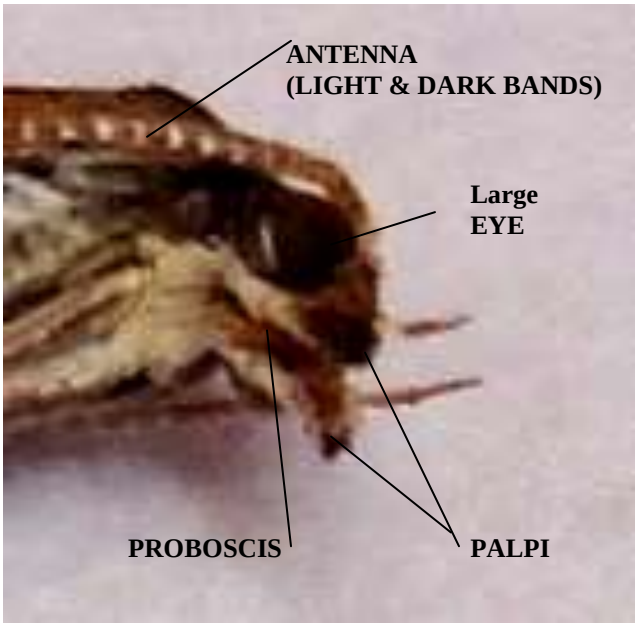

Fig. 2. Head region of *A. tristella*. A, captured specimen.

Various abiotic parameters that influence the insect migration and the effects of these parameters under changing climate scenarios have been discussed by Sujaynand and Karuppaith (2016). Recent climatic and atmospheric trends are affecting species physiology, distribution and phenology of Lepidoptera (Hughes, 2015). It

has been asserted that phenology and distribution of large number of microlepidoptera (including *A. tristella* and other Agriphilas) are being influenced with the climate change in Netherlands (Ellis *et al.*, 1997a and b; Kuchlein and Ellis (1997) and in Britain and Germany (Burton and Sparks, 2003). We know nothing about the effects of changing climate on local insect fauna in general and macro- and microlepidoptera in particular. There is a need to understand flight, phenological and distributional patterns of our insect life.

MORPHOLOGICAL CHARACTERS

Body slightly less than 1 cm in length, stick like and brown in colour (Fig. 1). Wing span is around 20 mm. Wings completely cover the main body of the moth. The wing markings are faintly visible. According to Identification Guide of Berkshire Moth Group (2008, Editors - Asher *et al.*, 2008) the insect is, generally quite variable both in ground colour and strength of markings. Fore wings brown. Hind wings pale-grey brown. Wings are nearly 1.5 times larger than the body of the moth. Fore wings are elongated and rounded from the apex while hind wings are shorter than fore wings and broad. Antennae with alternating light and dark brown bands and antennal bases are purely olive-brown. The eyes are large. Porected labial palpi (Fig. 2). Termen not perpendicular to costa.

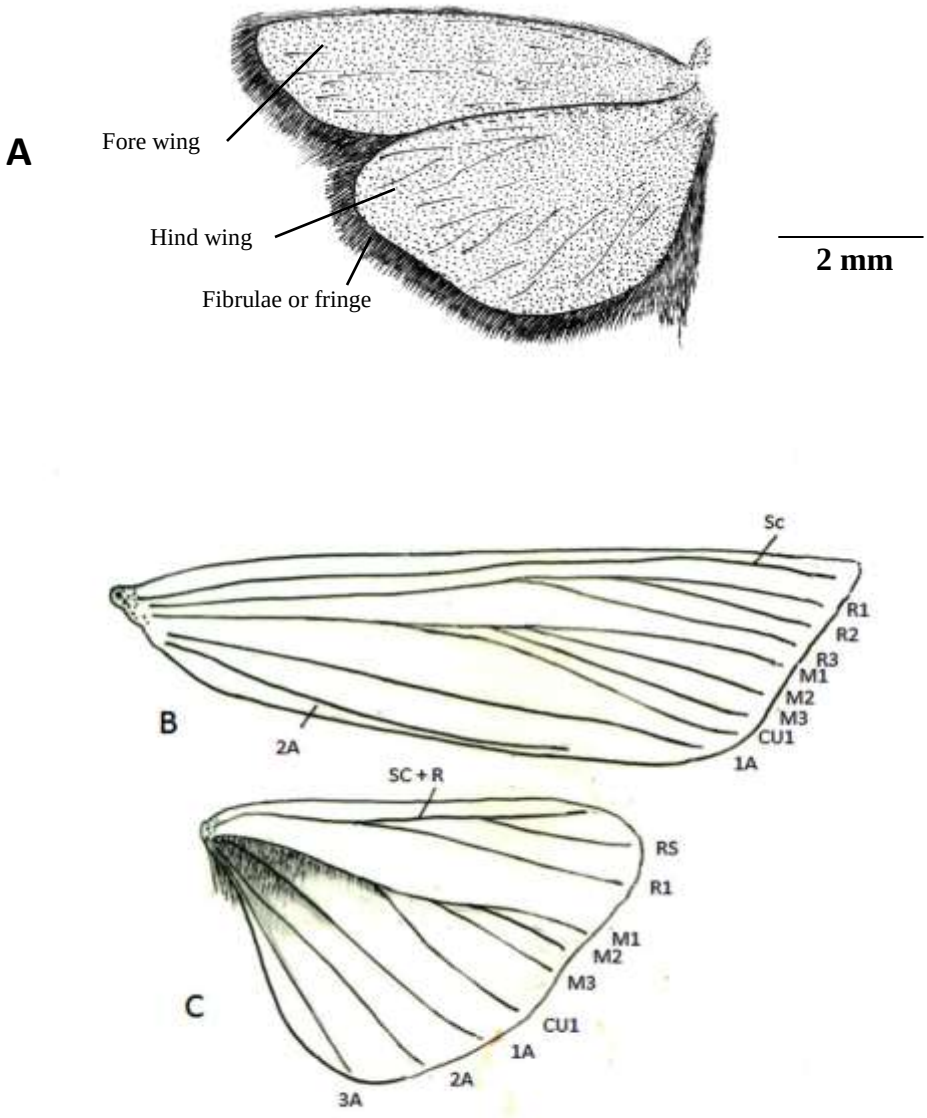

Fig. 3. Wings of *Agriphila tristella*. **A**, Fore and hind wings showing fibrulae; **B**, Fore wing neuration and C, Hind wing neuration.

Fore Wing Venation

Forewing elongated, Vein SC present originating separately, R1 and R2 anastomizing then again anastomizing with R3 originating with upper portion of the wing. M1 and M2 anastomize and then again anstomize with M3. CU1 anastomizes with median. Two anal veins are present (1A and 2A) originating separately from basal part of the wing. Distal cell is absent (Fig.3).

Hind Wing Venation

Hind wing broad, but smaller than fore wing. SC + R originate from upper apical portion of the wing and anastomizing with RS, then anastomizes with R1. Three median veins are present – M1 and M2 anastomizing and then quickly anastomizing with M3. One Cubitus (CU1) is present. Three anal veins (1A, 2A, and 3A) are present. No distal cell is present (Fig. 3)

Female Genitalia

Papilla anales large, broad rectangular in shape beset with setae, apophysis posterior proximally twisted and broad, distally bifurcated about two time the length of apophysis anterior, later distally truncated, globus vaginallis short, triangular in shape, ductus bursae broad tubular divided into two parts bi-oblique demarcation, Corpus bursae balloon like without cornuti (Fig.4B).

Comparative Note

Differentiated by fore wing narrow and elongated and Porected labial palpi and typical structure of female genitalia. *Agriphila tristella* may easily be confused with *Agriphila selasella*, which is known to have a long white streak nearly all along the wing very obvious when seen laterally. The antennae are not banded in *A. selasella*.

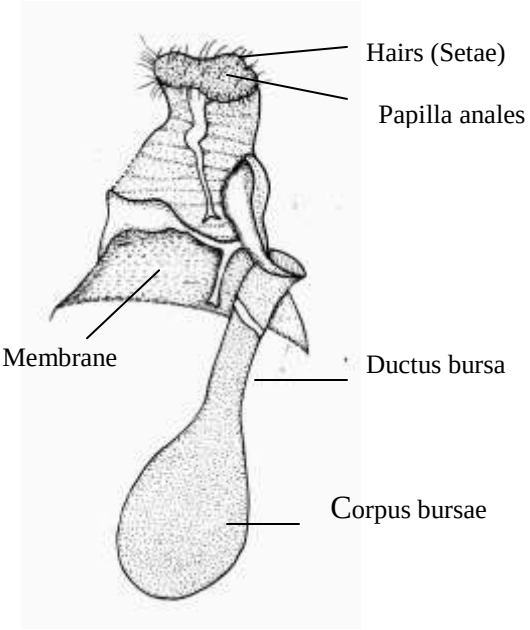

Fig.4. *A. tristella* : Female genitalia: as seen under magnification - 12X 10 X.

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