REDESCRIPTION AND DIVERSITY OF LARGE TABBY MOTH *AGLOSSA PINGUINALIS* (LINNAEUS) (LEPIDOPTERA: PYRALIDAE: PYRALINI) FROM NATHIA GALI, PAKISTAN

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Abstract

Aglossa pinguinalis (L.) is recorded from Nathia Gali, Pakistan and redescribed in detail with special reference to its head appendages, venation of fore and hind wings, sex genitalia and diversity.

Introduction

Hampson (1896) redescribed genus *Aglossa* with its two species along with *Aglossa pinguinalis* with reference its vein venation and head appendages and placed this species under the family of Pyralidae and recorded it from Syria, Afghanistan and North West Himalayas. Carter (1984) identified *Aglossa pinguinalis* and listed this species under the family Pyralidae, during the work on pest Lepidoptera of Europe, with special reference to the British Isles. Soils and Shaffer (1999) recognized *Aglossa pinguinalis* of family Pyralidae and gave a historical review on this species. Prins and Chris (2009) identified and listed *Aglossa pinguinalis* as a member of subfamily Pyralini of family Pyralidae recorded from Belgium. Solis (2009) has worked on Pyraloidea and their known hosts of Plummers Island of Maryland and identified *Aglossa pinguinalis* and kept this species under the subfamily Pyralini of the family Pyralidae.

Materials and Methods

The adult specimens of *Aglossa pinguinalis* (Linnaeus) were collected with the help of light trap from Nathia Gali and were identified with the help of available literature as mentioned in references. For the study of sex genital complex the abdomen was excised at the base and boiled in 10% KOH solution for about 5-minutes and then washed with tap water. The genitalia were removed from the abdomen for detail examination and later individual elements of the genitalia and the associated structures were removed as required and examined. For dissection using ocular grid leitz weitzler dissection microscope and makes drawings on a graph paper, which later were transferred on drawing sheet and finalized with pelican ink. All the diagrams are to the given scale.

Results

Genus : *Aglossa* Latreille 1796
Aglossa, Latr, 1796, *Precis caract. Gen. Ins.* P.145

Diagnostic features: Maxillary palpi large, light brown in colour, upturned well in front of frons, the first segment is short but double in length of 3rd segment, the 2nd segment about four time longer than 1st segment, the 3rd segment is very short and upward fore wings R_1 originate separately from upper angle of cell, R_2 and R_3 stalked and anatomizing with R_4 from the upper angle of cell, hind wings Cu_1 originate separately from slightly lower angle of cell, Cu_2 originate separately from lower part of the cell, saccus large, V-shaped, ductus bursae broad, anterior scent apparatus large, median portion doom-shaped, lateral process flipper like, median scent apparatus consists of two bunches of elongated hairs.

Distribution: Universally distributed.
Type species: ***Aglossa pinguinalis,* Linn.**
***Aglossa pinguinalis* Linn.**
(Figs.1-10)

Aglossa pinguinalis, Linn.*Faun.Succ. p.351;id.Syst.Nat.i.p.882;C & S. no*.4503.
Aglossa pinguinalis, var.asiatica, *Ersch. Hor.Soc.Ent.Ross. viii,* p. 317.

Coloration: The moth has a wingspan that averages about an inch and a half, and exhibits an overall dark, greyish-brown color. While the forewings are brownish-grey with pale yellowish markings (much like those of a tabby cat, hence the lesser-used common name), the top of the head and neck are simply pale yellowish.
Head: Eyes (fig.2) moderate sized, creamy yellow-white, vertex creamy yellow-white, maxillary palpi large, light brown in colour, upturned well in front of frons, the first segment is short but double in length of 3rd segment, the 2nd segment about four time longer than 1st segment, the 3rd segment is very short and upward.

Fore wings: Fore wings (fig.3) elongated, apex sub roundly produced, veins Sc originate separately from above the cell, R_1 originate separately from upper angle of cell, R_2 and R_3 stalked and anatomizing with R_4 from the upper angle of cell, R_5 originate separately from upper angle of cell, M_1 and M_2 and M_3 originate separately from lower angle of cell, Cu_1 originate separately from lower part of cell, one anal vein (1A) is present.

Hind wings: Hind wings (fig.4) broad, veins Sc+R_1 originate separately from upper part of the cell, Rs and M_1 originate separately from upper angle of cell, M_2 and M_3 originate separately from lower angle of cell, Cu_1 originate separately from slightly lower angle of cell, Cu_2 originate separately from lower part of the cell, two anal veins (1A and 2A) are present.

Male genitalia: Tegumen (fig.5 & 6) long, outer margin with a fused strip, saccus large, V-shaped, paramere F-shaped, apex truncated, median inner lobe large with sub-acute apex, aedeagus (fig.7) tubular with outer well developed thecal appendage, membranous conjunctiva bilobed with two bunch of cornuted and a basal sex-conub.

Female genitalia: Papillae anales (fig.8) bean-shaped, apophysis posteriors longer than apophysis anteriors, both with pointed apex, ductus bursae broad, corpus bursae large spherical with an oval accessory gland.

Scent apparatus: Anterior scent (fig.9) apparatus large, median portion doom-shaped, lateral process flipper like, median scent (fig.10) apparatus consists of two bunches of elongated hairs.

Wings expansion: Body size of male is 22-24mm, while body size of female is 34-41mm with wing expansion (fig.1).

Material examined: Five female and two male, Nathia gali, Pakistan, on light 20-7-2007, leg. Syed Viqar Ali lodged at author collection.

Life cycle: *Aglossa pinguinalis* lays an average of 60-300 eggs during a single reproductive cycle. The eggs are commonly laid on overhanging supports. The time it takes for the eggs to hatch is temperature dependent and take between 2-14 days to hatch. Once the eggs have hatched, the larvae will remain in the larval stage for approximately 2-41 weeks before pupating. The larval stage prefers to live in dark secluded environments, and creates flexible tubular galleries where they spend the majority of their larval stage. The galleries are supported by silken fibers produced by the larvae. Prior to pupation, the larvae leave their galleries and disperse to a suitable location. They entangle themselves with a loose, tough silken cover that they interweave with nearby material. The nearby materials provide structure to the silken covering and camouflage the moth while it undergoes metamorphosis. The duration spent in each stage of development is temperature dependent. The life cycle of *A. pinguinalis* has been recorded to range from approximately 12 months to over 2 years depending on weather and temperature conditions. The imago, adult insect, stage emerges in early.

Discussions

The species *Aglossa pinguinalis* is closely related to *Aglossa dimidiate* but can be separated from the same in having head tinged with fulvous, fore wings apex sub roundly produced, veins Sc originate separately from above the cell, R_1 originate separately from upper angle of cell, R_2 and R_3 stalked and anatomizing with R_4 from the upper angle of cell, hind wings broad, veins Sc+R_1 originate separately from upper part of the cell, Rs and M_1 originate separately from upper angle of cell, in male Tegumen long, outer margin with a fused strip, saccus large, V-shaped, paramere F-shaped, in female corpus bursae large spherical with an oval accessory gland, anterior scent apparatus large, median portion doom-shaped, lateral process flipper like, median scent apparatus consists of two bunches of elongated hairs. Present authors recorded this species *Aglossa pinguinalis* Linn, from Nathia Gali, which is a mountain resort town or hill station in Hazara, NWFP, Pakistan. It is a part of the Galiaath which are termed such due to several hill-stations in that area ending with the word "gali", most of which are connected to one other. Nathiagali is known for its scenic beauty, hiking tracks and pleasant weather, which is much cooler than the rest of the Galiaath due to its greater altitude.

Fig. 1

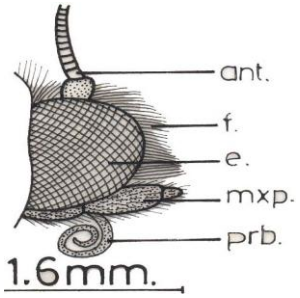

Fig. 2

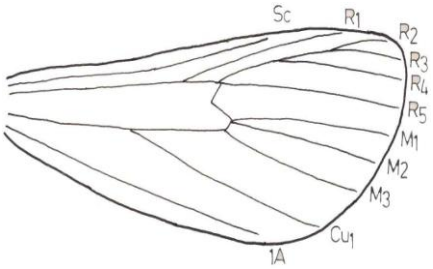

Fig. 3

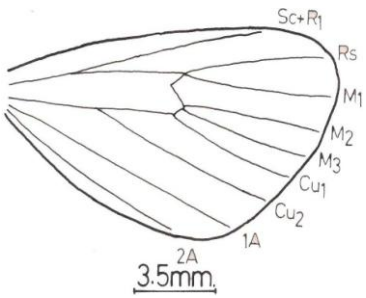

Fig. 4

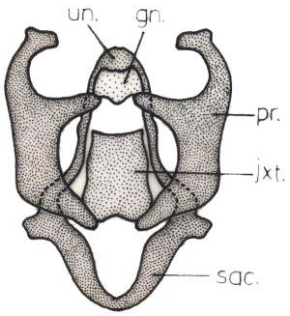

Fig. 5

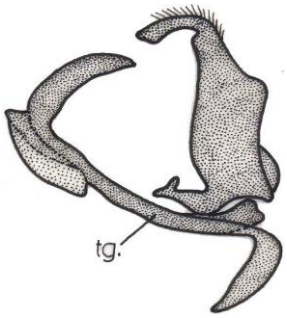

Fig. 6

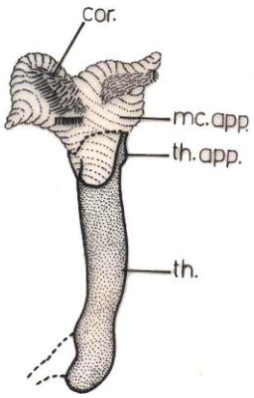

Fig. 7

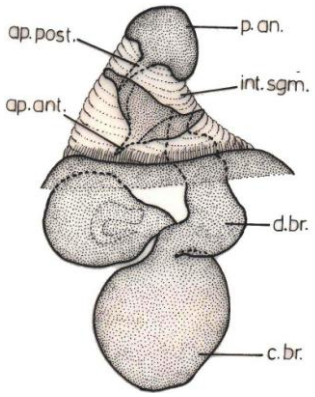

Fig. 8

Fig. 9

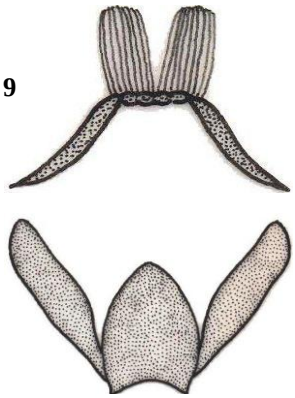

Fig. 10

Figs. 1-10. *Aglossa pinguinalis* (L.)., 1. Adult, entire dorsal view; 2. head, lateral view; 3. fore wing, dorsal view; 4. hind wing, dorsal view; 5. Tegumen (ventral view); 6. Tegumen (lateral view), 7. Aedeagus, 8. Female genitalis. 9. Anterior scent, 10. Median scent.

Key to the laterings: ant. (antenna), e. (eye), fr. (frons), gn. (gnathos), jxt. (juxta), mcl.(membranous conjuctival appendage), mx.p. (maxillary palpi), pr.(paramere), sac.(saccus), tg. (tegumen), th. (theca), th.app. (thecal appendage), un.(uncus), 1A - 3A. (anal vein 1, 2 and 3), Cu_1 & Cu_2 (cubital vein 1 and 2), M_1-M_3 (median vein 1 to 3), R_1-R_5 (radius vein 1 to 5), Rs.(radio-suctorial vein), Sc.(sub-costal vein), Sc+R_1(sub-costal and radius vein 1).

The unusual scavenger species *Aglossa pinguinalis*, is most commonly known as the Grease Moth or the Large Tabby Moth. It belongs to the largest lepidopteran family, Pyralidae (the snout moths). The grease moth is closely related to the genus *Pyralis*, and as a result, is usually associated with the meal moth, *Pyralis farinalis*. Being a member of the order Lepidoptera, *A. pinguinalis* is characterized by a holometabolous life cycle and two pairs of overlapping, membranous, scaled-covered wings. It also possesses siphoning mouthparts and filiform antennae. For the past 150 years, *Aglossa pinguinalis* has been best known for ingesting the grease

produced by the bacteria that feeds on decaying matter, an activity that earned it the common name of grease moth. However, this activity has never been substantiated via any sufficient observation. At the egg stage, *A. pinguinalis* is of a rounded oval shape, and gives off a white color. During the larval stage, *A. pinguinalis* has a brownish head and greyish body. The *A. pinguinalis* larvae also have black mandibles and a black peritreme. The pupae are reddish-brown with six curved, hooked setae. *A. pinguinalis* has been found in places worldwide including Europe, Asia, Australia, North America, and South America. The moth stage is generally found in early summer between the months of May and August. They tend to inhabit areas around or in human habitation and buildings. When found in homes, they are generally found in the kitchen and more specifically in the pantry where their choice food source is stored. They are also commonly found in areas where dried grain products are stored, for example, warehouses and areas of grain elevators that remain undisturbed. *A. pinguinalis* is often involved in stored product entomology. Stored product entomologists often advise producers on ways to reduce the chances of insect infestation and thus remain under food defect action levels. *A. pinguinalis* is a common aspect of stored product entomology due to its caterpillars feeding habits. Grease moth larvae infest dried grain products and as it feeds it produces a silken substance that intertwines with the surrounding product. With substantial infestations, the larvae will spread throughout the product and with them spread their silk rendering the product unsellable. Most infestations occur in products that are stored for long period of time. In addition to stored product entomology, recently evidence suggests that *A. pinguinalis* may soon play a role in Medicocriminal entomology. *A. pinguinalis* was recently found feeding on the greasy remains of a deceased individual. The use of *A. cuprina* as an insect of significant forensic importance is still being researched.

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