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RESEARCH ARTICLE

Redescription of *Exelastis atomosa* (Pterophoridae: Lepidoptera) from Uttar Pradesh, India

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ABSTRACT

Exelastis atomosa is serious pest of pigeon pea throughout India belongs to family Pterophoridae. In this manuscript, the taxonomic characters mouth parts, legs, wing venations, male and female genitalia has been redescribed from Uttar Pradesh India.

Key words: *Exelastis atomosa, Pterophoridae, Lepidoptera*

INTRODUCTION

Exelastis atomosa is a moth of the Pterophoridae family. It is known from Cape Verde, Ethiopia, Kenya, Madagascar, South Africa, Swaziland, Tanzania, India, Nepal and Iran. Adult are small with yellowish brown wings. The forewings are cut into two plumes and hind wings into three. The larvae are a serious pest of Pigeon pea. They damage seeds as well as cause flowers, buds and pods to drop. It also enters into the pod and feeds on developing grains. They are greenish-brown and fringed with short hairs and spines. In this manuscript, this species were collected from Uttar Pradesh, India and redescribed.

MATERIAL AND METHODS

The adults were collected in the field with aspirator, manually and aerial sweep net, and at night with the help of portable light traps of different light sources (mercury vapour light) (Kumar *et al*., 2010) during year 2013-14. The collected insects were killed by using tetrachloroethane. These were stretched, pinned, labeled, identified, preserved in the wooden collection boxes and deposited at Department of Zoology, DS College, Aligarh.

The insect pest was identified as *Exelastis atomosa.* The collected specimens were examined taxonomically and studied for diagnostic characters including genitalia. The standard technique given by Robinson (1976) and Zimmerman (1978) has been followed for wing venation and genitalia, respectively. To write the taxonomic descriptions on various morphological characters and external genitalia (Kumar *et al*., 2010) has been followed. For naming of various veins, Comstock-Needham system has been adopted. All illustrations were made by using a drawing tube attached to a stereoscopic zoom microscope and finalized in plate (prepared in 300 pixels/inch) through Adobe Photoshop 7.0. In the field and laboratory observation, specimens were photographed prior to studies, using a Nikon 14.0 mega pixel.

RESULTS AND DISCUSSION

Family : Pterophoridae

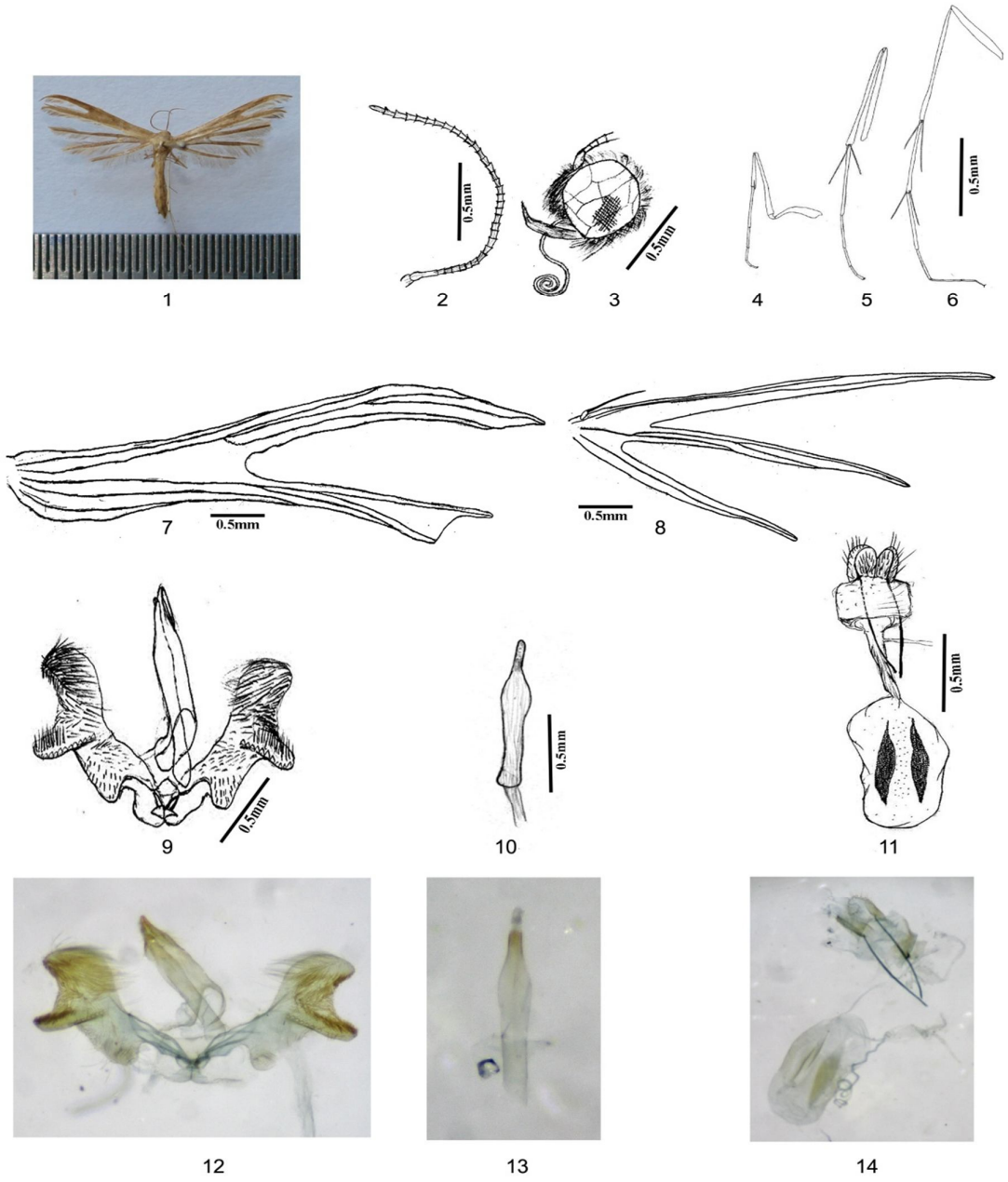
***Exelastis* Meyrick**

Exelastis Meyrick, 1907. *Journ. Bombay Nat. Hist. Soc*. Vol. 17, p. 730
Type sp. *M. atomosa* Walsingham

***Exelastis atomosa* Walsingham**

Marasmarcha atomosa Walsingham, 1885. *Proc. Zool. Soc. Lond*. p. 885
Exelastis (*Aciptilia*) *atomosa*, Walsingham, 1885. *P.Z.S.* p.885; Meyr., BJ., XVII, 730; Lefroy, *Ent. Mem. Dept. Agri., Ind.,* I, 210, ff. 67-68; *Ind. Ins. Life*, pp. 527-528, t. 53

Fig. 1-14: *Exelastis atomosa* (Walsingham). (1. Habitus photograph, 2. lateral view of mouth parts, 3. Antenna, 4. Fore leg, 5. mid leg, 6. hind leg, 7. fore wing, 8. hind wing, 9. Male genitalia line diagram, 10. Male aedeagus line diagram, 11. Female genitalia line diagram, 12. Male genitalia photo, 13. Male aedeagus photo, 14. Female genitalia photo)



REDESCRIPTION

Alar expanse: Male/Female: 13-16mm; **Male and Female**: Head with vertex and frons brownish white, the latter projecting forwards. Labial palpus rather slender, upturned pale brown mixed with pale brownish white. Thorax with metathorax brownish white, slightly tinged with pale yellowish brown, remaining part brownish white suffused rather distinctly with brown at posterior part of mesothorax. Forewing cleft from about 2/3; both lobes rather broad; termen of lobe 1 faintly sinuate inwardly; termen of lobe 2 round; ground color pale yellowish brown and suffused with brown and dark brown; costa and inner margin brown except for basal part of the latter; brownish scales gathering at about middle between

base of wing and base of cleft; Hindwing cleft from a little before middle and from near base; lobe 1 broadening towards a little before apex which is somewhat pointed; termen of lobe 2 slightly sinuate inwardly; lobe 3 slender; pale grayish brown; Foreleg with epiphysis, tibial spurs 0-2-4 (foreleg-midleg-hindleg); **Wing venation**: Forewing with Sc arising from discal cell; R_1, R_2 separate, R_{3+4+5} connate, M_1, M_2, M_3 present and M_3 connate with Cu_{1a}; Cu_{1a} and Cu_{1b} present, Cu_{1b} separate arising from the lower angle of discal cell; 1A+2A fused and 3A separate; Hindwing with $Sc+R_1$, Rs arising from the upper angle of discal cell reaching at apex of lobe 1, M_3, Cu_{1a} and Cu_{1b} present in lobe 2, 1A+2A fused present in lobe 3; ♂ **genitalia**: Tegumen incised at its posterior margin; uncus large, long and pointed, and with minute hairs; vinculum broad and membranous, not heavily sclerotized; valva simple sacculus not distinctly developed aedeagus long, gradually broadening towards base and with scobinous cornutii; ♀ **genitalia**: ostium bursae distinct, its antrum funnel shaped, caudo-ventral margin of abdominal segment 7 heavily waved, its caudo-lateral part somewhat projected and covered with minute hairs; a sclerotized plate, of which margin is toothed, situated dorsal of posterior margin of segment 7; corpus bursae with a somewhat sclerotized ring at departure of ductus bursae and with a small patch scobination.

Material examined

Uttar Pradesh: AMU Aligarh 12.iv.2014, Loni 10.iv.2013, Barot 11.iv.2013, Jawli 10.iv.2014, Ramnagar 16.iv.2014, Bhojipura 12.iv.2014,

Distribution: Throughout India

Host range: Beans, cowpea, garden pea, pigeon pea (Lefroy, 1909; Butani & Jotwani, 1984; Gupta, 1990)

Ecology / Biology:

Eggs: Spherical in shape, are laid singly on buds and pods; **Larva**: Full-grown larva is about 15mm long, green, and has a spindle-shaped body covered with short spines; **Pupa**: Pupation occurs in the foliage and the pupa is similar in looks to the larva, except that it is brown; **Seasonal occurrence**: Post rainy season than during the rainy season; **Nature and symptoms of damage**: Larvae feed on buds, flowers and pods, resulting in reduced yields

Remarks

Walsingham (1885) described *Exelastis atomosa,* but in the present study all characters described with illustrations.

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