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GENITAL STUDIES OF SOUTH AFRICAN WHITE MONKEY MOTH *PHIALA INCANA* WALLENGREN (LEPIDOPTERA : EUPTEROTIDAE: EUPTEROTINAE) RECORDED FROM GALYAT

S. N. Viqar[1] and A. S. Siddiqui[2]

[1]*Department of Zoology, Government Degree College for Women, Block-M, North Nazimabad, Karachi, Pakistan*
[2]*Federal Urdu University of Arts, Sciences and Technology, Gulshan-e-Iqbal Campus, Karachi.Pakistan*

ABSTRACT

Phiala incana Wallengren., is recorded first time from Galyat, Pakistan. Described in detail with special reference to its head appendages, venation of fore and hind wings and female genitalia. The systematic position and its diversity in Pakistan is also briefly discussed.

Key words: *Phiala incana* Wallengren, genital studies, Eupterotinae, diversity, Galyat.

INTRODUCTION

Wallengren (1860) first time described the genus *Phiala* from South Africa and when this genus was established, did not place in a family till 1891. later Kirby (1892) redescribed *Phiala* and placed first time under the family Liparidae, presently Lymantriidae. In the beginning of 20th century Aurivillius (1901), rediscribed the genus *Phiala* and placed under the family Striphnopterygidae, now Eupterotidae.
Kalshoven *et. al* (1951) discussed the genus *Phiala* and stated that the larvae of the *Phiala* are often polyphagous and are occasionally minor pests. Forbes (1955) listed the genus *Phiala* under the family Eupterotidae and passed remarks that indisputable Eupterotinae included those taxa in which the valva has a straiate area on the succulus. The most recognized and world wide appreciated work on the genera of sub-order Hetrocera was done by Watson *et. al.*,(1980) and the listed genus *Phiala* under the family Eupterotidae, recorded from South Africa. Holloway (1987) discussed *Phiala* as largest genera of family Eupterotidae. Kishidae (1994) made good support of Holloway works regarding *Phiala.* Kristensen(1999) redescribed the genus *Phiala* under the sub-family Eupterotinae of the family Eupterotidae. Finally Picker *et al.* (2002) performed remarkable taxanomic works on genus *Phiala* and recorded *P. incana* from South Africa and placed under the family Eupterotidae.

MATERIALS AND METHODS

The adult specimens of *Phiala incana* Wallengren were collected with the help of light trap from Ghora Gali, Pakistan and were identified with standard literature. 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 detailed examination and later individual elements of the genitalia and the associated structures were removed as required and examined. Drawing were made using ocular grid under Leitz Weitzler dissection microscope and a graph paper, which later were transferred on drawing sheet and finalized with Indian black ink. The diagrams are to the given scale.

RESULT

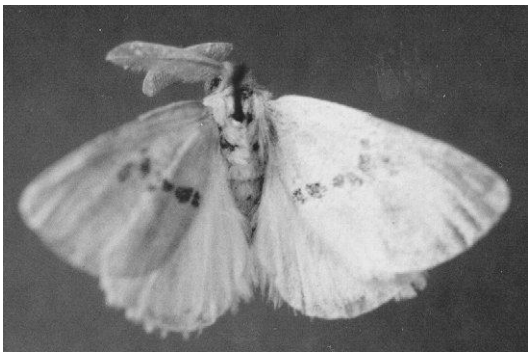
Genus: *Phiala* Wallengren

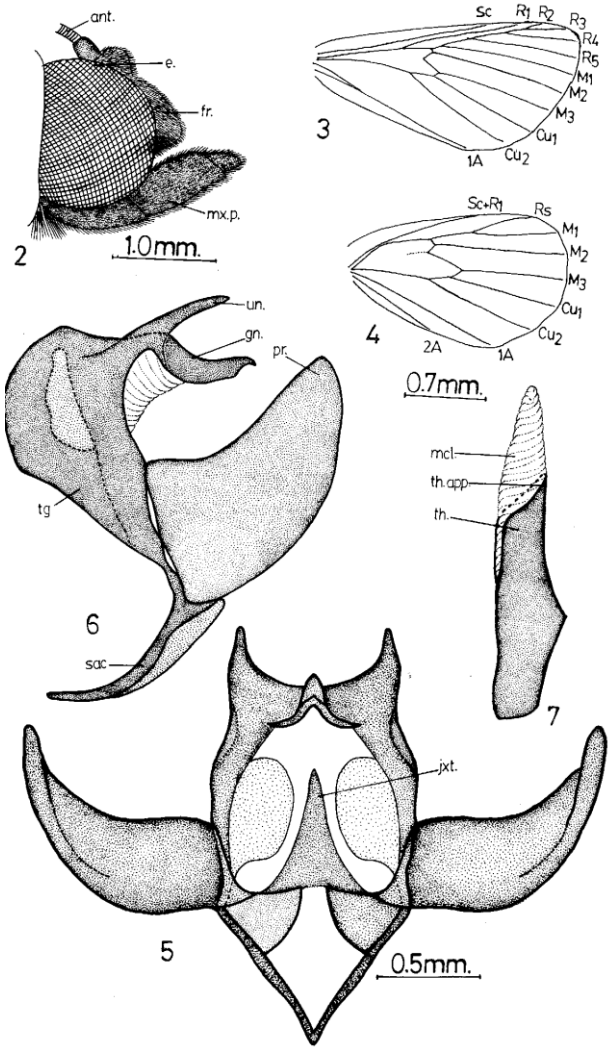
Phiala Wallengren, 1860, *Wien. Ent. Monatschr. 4*: 165; Kirby, 1892, *Synonymic Cat. Lepid. Hetrocera 1*: 446; Aurivillius, 1901, *Bihang K. svenska vetensk Akad Handl.* 27: 15; Natson, 1980, *Brit. Mus. (Nat. Hist.)* 2: 151.

Diagnostic feature

Body medium sized, broad, eyes large, antennae bipectinate, frons conically produced, maxillary palpi large, anteriorly produced, fore wings slightly longer than hind wings, fore wings with veins R2, R3, R4, R5 and M1 stalked, hind wings with veins Rs and M1 stalked, two anal veins are present, tegumen large, broad, saccus large,

uncus and gnathos highly developed, paramere large, plate-like, aedeagus tubular, membranous conjunctival lobe large.





Figs.1-7. *Phiala incana* Wallengren, 1. entire, dorsal view; 2. head, lateral view; 3. fore wing, dorsal view; 4. hind wing, dorsal view; 5. tegumen, ventral view, 6.same, lateral view, 7.aedeagus, lateral view.

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. (anal vein 1), Cu1 & Cu2 (cubital vein 1 and 2), M1-M3 (median vein 1 to 3), R1-R5 (radius vein 1 to 5), Rs. (radio-suctorial vein), Sc. (sub-costal vein), Sc + R1 (sub-costal and radius vein 1).

Comparative note

This genus is most closely related to *Phyllalia* in having body size, antenna bipectinate, maxillary palpai large, forewings slightly larger than hind wings, but can easily be seprated from it is having frons conically produced, forewings with veins R2, R3, R4, R5 and M1 stalked, hind wings with veins Rs and M1 stalked, two anal veins are present, tegumen large, broad, saccus large, uncus and gnathos highly developed, paramere large, flate-like, aedeagus tubular, membranous conjunctival lobe large.

***Phiala incana* Wallengren**

(Figs. 1-7)

Phiala incana Wallengran, 1860, *Wien. Ent. Monaschr. 4* : 165.

Colouration:

Body generally pale with brownish tinge, fore wings with brownish patches on vertical median portion.

Head:

Eyes large, antennae bipactinated, frons conically produced anteriored, maxillary palpi with basal and 2nd segments sub-equal, apical segment short, less than one third of 2nd segment, proboscies reduced (Fig. **2**).

Fore wing:

Fore wing (Fig. **3**) anterior angle sub-rounded, veins R2and R3 stalked, later largely stalked with R4, further largely stalked with R5, all these shortly stalked with M1 and originate from above anterior angle of cell, M2 originates from upper angle of cell, M3 originates from lower angle of cell, Cu1 and Cu2 parallel to each other only one anal vein 1A is present.

Hind wings:

Hind wings (Fig. **4**) oval shaped, outer margin sinuated, veins Rs and M1 largely stalked and originate from above upper angle of cell, M2 originates from upper angle of cell, M3 originates from lower angle of cell, two anal veins 1A and 2A are present.

Male genitalia:

Tegumen (Fig. **5 & 6**) rectangular shaped, uncus large broadly bifurcated, horn-shaped, gnather bifurcated sickle shaped, membranous at base, juxta conical, saccus narrow V-shaped, paramere large flipper like, aedeagus (Fig. 7) broad, tubular membranous conjuncival lobe large, apically narrowed without cornuti.

Material examined

Two male; Ghora Gali, Pakistan, on light, 05-06-2004, leg. Syed Viqar Ali, lodged at Ali Museum of Insecta, Karachi.

Diversity

This species is recorded from Ghora Gali, Pakistan, in between the range of 2167m above sea level. The population is very high during July and August and very less recorded in December and January. The temperature varies during summer 20°C and in winter 1.6°C, while average annual temperature is 12.8°C. Amount of precipitation is between 1250-1300 mm or sometime to about 1500 mm. Average relative humidity (mean) at 1200 UTC 58%.

Body size:

Body sizes 44-46 mm with wingspan.

DISCUSSION

` The genus *Phiala* Wallengren is distributed in Ethiopean and Oriental regions. Most of the species are found at high and medium altitude. Among these *P. incana* Wallengren is recorded and recognized for the first time from Galyat (Ghora gali) in Pakistan. This species is very common in South African areas.

Among the species of gemy *Phiala* Wallengren, the species *P. incana* Wallengren is closely allied to *P. fuscodorsata* in having general body shape and size, but this species is isolated from others by its apomorphies like forewings veins R3 further largely stalked with R4 and R5, hind wings with veins Rs and M1 largely stalked, uncus

broadly bifurcated, juxta conical, paramere large flipper like, aedeagus broad, tubular membranous conjunctival lobe large, apically narrowed without cornuti.

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