

A new species of the genus *Herpetogramma* Lederer (Lepidoptera, Crambidae) from India

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ABSTRACT: *Herpetogramma viraktamathi* sp. nov. of the subfamily Spilomelinae is described and illustrated in detail. The host plant information and nature of damage caused by the new species is provided. © 2025 Association for Advancement of Entomology

KEY WORDS: Pest, *Eleusine coracana*, feeding damage, Karnataka, Kolar

INTRODUCTION

The genus *Herpetogramma* was established by Lederer in 1863, with the type species *Herpetogramma servalis* Lederer, 1863 from Brazil. There are 104 recorded species worldwide in Global Information System on Pyraloidea, with 37 species recorded from Neotropical, 19 species from Afrotropical, 37 species from Nearctic, 11 species from Australian and 25 species from the Oriental region (Nuss *et al.*, 2003-2024). In India, 15 species of *Herpetogramma* have been recorded so far (Singh *et al.*, 2022). Most adults exhibit varying shades of brown from light to dark, along with distinct wing patterns (Lu *et al.*, 2019). Their genitalia structures are highly conserved, showing only minor differences between species (Handfield and Handfield, 2021; Solis, 2010). In the present study, the description of a new species,

Herpetogramma feeding on finger millet in Karnataka, India along with its feeding damage is provided.

MATERIALS AND METHODS

Field survey was conducted during *kharif* 2017-18 (October) in and around Kolar district (911m, 13° 09' N; 78° 11' E), Karnataka, India to study the incidence of *Herpetogramma* species on finger millet, *Eleusine coracana* L. Field collected larvae were reared to adult stage in the laboratory on the same host. The methods described and terminologies used by Hampson (1896), Clark (1941), Shaffer and Munroe (2003) and Park *et al.* (2016) for studying genitalia and description were closely followed. Adults were photographed using Canon EOS 70D attached with 100 mm macro lens before dissection of genitalia. Adult characters such

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as forewing and hindwing, male and female genitalia and wing venation were photographed using Trinocular microscope with auto-montage (Leica M 205C). The wing slides were prepared by closely following procedures of Robinson (1976) and Thomas (2007).

A pair of male and female studied specimens was deposited in each of the following institutions:

IARI - National Pusa Collection, Indian Agricultural Research Institute, New Delhi, India

NBAIR - National Bureau of Agricultural Insect Resources, Bangalore, India

UASR - University of Agricultural Sciences, Raichur, India

UASB - University of Agricultural Sciences, Bangalore, India.

RESULTS AND DISCUSSION

Genus *Herpetogramma* Lederer, 1863

Type species: *Herpetogramma servalis* Lederer, 1863

Herpetogramma Lederer, 1863: 430. TS: *Herpetogramma servalis* Lederer

Pachyzancla Meyrick, 1884: 315. TS: *Botys mutualis* Zeller

(synonymised by Munroe, 1982 and 1995)

Acharana Moore, (1885): 285. TS: *Botys otreusalis* Walker

Stenomeles Warren, 1892: 437. TS: *Botys agavealis* Walker

Piloptyla Swinhoe, 1894: 142. TS: *Piloptyla nigricornalis* Swinhoe

Pantoeocome Warren, 1896: 173. TS: *Pantoeocome deformis* Warren

Macrobotys Munroe, 1950: 228. TS: *Botys aeglealis* Walker

Coremataria Amsel, 1956: 207. TS: *Botys infuscalis* Guenée

Diagnostic characters: Labial palpi porrect, second joint densely rough scaled and third joint

concealed by hairs. Maxillary palpi short and filiform. Hind legs with outer tibial spurs half as long as inner spurs. Forewing with veins Cu_1 , M_3 and M_2 arising from near lower angle of cell; vein R_2 approximated to R_{3+4} and the vein R_1 moderately long and oblique. Hind wing as broad as fore wing where, M_2 and M_3 approximated basally for a short distance. Vein R_s after its origin, anastomose with $Sc+R_1$ beyond one-thirds of its length, disco-cellular cell short.

The genus *Herpetogramma* differs from the genus *Pyrausta* in the hind wings having the discal cell somewhat shorter and veins M_3 and M_2 approximated for a short distance. The outer spurs half the length of the inner spurs.

Remarks: Hampson (1896) distinguished species of the genus *Pachyzancla* Meyrick (Now, *Herpetogramma*) under two sections based on the thickness of the mid femur and its hairiness. The first section characterised by the mid femora of male immensely dilated and clothed with large smooth scales on inner side and included, *H. licarsialis* and *H. phaeopteralis*. The mid femora of male neither dilated nor clothed with large smooth scales on inner side and included the remaining species characterized the other section. The new species described here belongs to the first section.

Key to closely related species of *Herpetogramma* Lederer from India

1. In female, ductus bursae long and sclerotized; signum present.....2

- In female, ductus bursae short and longitudinally folded; signum absent.....

H. phaeopteralis Guenée

2. Forewing without fringe of hairs on underside of costa; fore legs without rough hair clothing near femoro-tibial joint; aedeagus with two cornuti, one rod-shaped with bundle of spinula at basal part, the other bush-shaped and arranged in circular ring at apex

H. viraktamathi sp. nov. (Fig. 1. C, D, E, H)

- Forewing of male with fringe of long thick black hairs on underside of costa in basal half; fore legs

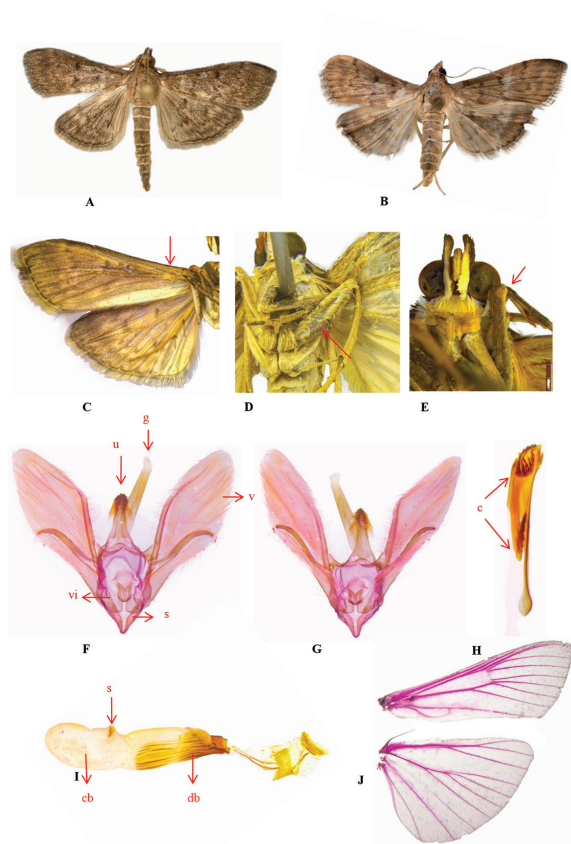


Fig. 1 Morphological and genital characters of adult, *Herpetogramma viraktamathi* sp. nov.

A. male; B. female; C. fore wing of male without fringe of black hairs on ventral side of costa; D. mid femora of the male immensely dilated and clothed with large smooth scales on inner side; E. fore legs normal, lacking rough hairs near the femoro-tibial joint; Male genitalia - F. dorsal view; G. ventral view; H. aedeagus; I. female genitalia; J. wing venation

clothed with rough hairs near the femoro-tibial joint; aedeagus with two discrete well separated patches of lanceolate spines at apex, one with numerous slender spine.....

***H. licarsisalis* Walker (Fig. 2B, C, D, G)**

***Herpetogramma viraktamathi* sp. nov.**
Shankaramurthy & Nagaraj (Fig. 1A-J)

LSIDurn:lsid:zoobank.org:act:33131465-3001-435D-A5FE-27008E4EC7F5

Adults: Measuring 21-25mm in wingspan. Head ochreous, frons dark yellowish brown dorsally and vertex with brownish erect scales. Antenna

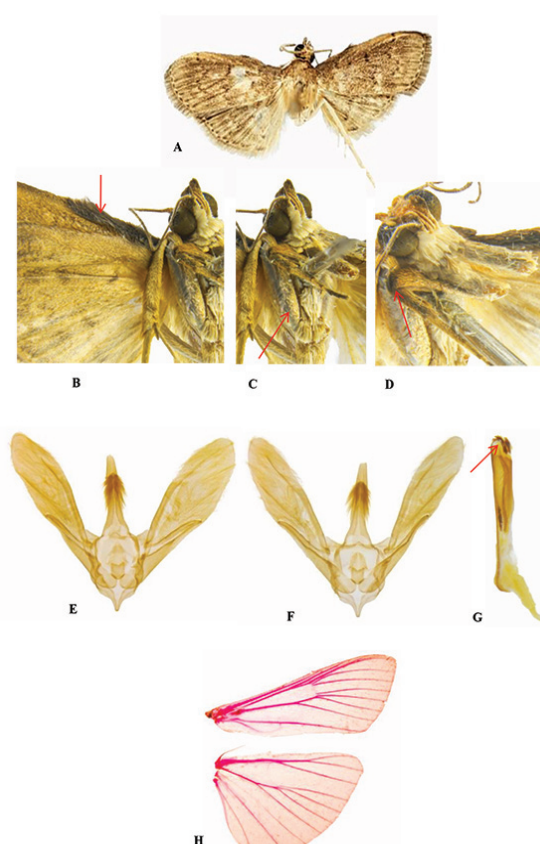


Fig. 2 Morphological and genital characters of adult, *Herpetogramma licarsisalis* Hampson

A. male; B. fore wing of male with fringe of black hairs on ventral side of costa; C. mid femora of the male not dilated and clothed with large smooth scales on inner side; D. fore legs normal, with rough hairs near the femoro-tibial joint; Male genitalia - E. dorsal view; F. ventral view; G. aedeagus; H. wing venation

reaching about 1/2 length of forewing, ciliate, scape and pedicel dark brown; ocelli well developed. Labial palpi with basal region of segment I whitish gray, segments II, III large with fuscous scales and segment III concealed by scales (Fig. 1A, B, 3A). Maxillary palps filiform with dark yellowish-brown scales on outer side and yellowish white on inner side. Proboscis with light yellowish scales at base. Thorax whitish ochreous. Legs long and yellowish white. Fore and hind legs normal, mid femora of male immensely dilated and clothed with large smooth scales on inner side (Fig. 1D, E). Forewing ground colour fuscous yellow, with terminal area dark, markings indistinct and dark brown postmedial



Fig. 3 Infestation of *Eleusine coracana* L. by larvae of *Herpetogramma viraktmathi* sp. nov. (A. adults; B. close up view of larva; C. larva webbing the leaves; D. larva with fresh web; E. larva inside the old web; F. damaged leaves)

line dentate. Forewing of male without fringe of black hairs on ventral side of costa (Fig. 1C).

Wing venation: Forewing: vein Sc straight, unbranched; R_1 and R_2 free; R_{3+4} stalked; R_1 moderately long and oblique; R_2 approximated to R_{3+4} ; R_5 and M_1 free arising below the upper angle of cell; M_2 , M_3 and Cu_1 arise from near lower angle of cell; M_2 , M_3 close to Cu_{1a} ; Cu_{1b} present; 1A distinct, straight, 2A fused at its base with vein 1A; 3A merged with 1A approximately at its midpoint; Hind wing: vein Sc dilated at base anastomosing

with Rs after originating from upper angle of the cell for some distance; M_1 arises from the lower angle of cell; M_{2+3} stalked arises from lower angle of cell; M_2 and M_3 approximated basally for a short distance; Cu_{1a} and Cu_{1b} present; vein CuP present; 1A+2A fused, 3A distinct (Fig. 1J).

Male genitalia: Uncus (u) acuminate, heavily setose. Gnathos (g) membranous and longer than uncus. Valvae (v) elongate, elliptical with lightly sclerotized membranes covered with fine hair-like setae all over the surface, except for the dorsal

margin with a narrow, rod like sclerotized brace angled approximately at $1/3^{\text{rd}}$ of the distance from the base. Gnathos (g) membranous and elongated. Tegumen moderately arched, lateral margins well sclerotized. Juxta (j) prominent, shield-like and well-sclerotized, located centrally between the valvae. (Fig. 1F, G). Vinculum (vi) narrow and saccus (s) moderately developed. Aedeagus rod-shaped, long and slender with two cornuti (c), one rod shaped bundle of spinula at base and other bush shaped arranged in circular ring with several spines at apex (Fig. 1H).

Female genitalia: Papillae anales narrow and setose. Anterior apophyses longer than posterior apophyses. Ostium bursae moderate and membranous. Ductus bursae (db) long, sclerotized anteriorly, slightly membranous posteriorly, twice the length of corpus bursae with longitudinal striations. Corpus bursae (cb) membranous, smooth and balloon-shaped. Signum (s) star-like, sclerotized and arranged horizontally at the centre of corpus bursae (Fig. 1I).

Larva: Grown up larvae is pale cream-colored with brown spots on each segment and a dark, yellowish-brown head (Fig. 3B).

Material examined: *HOLOTYPE* male (1 ♂), INDIA: Karnataka: Kolar, Rajakallahalli, 911m; ASL, 13°09'N; 78°11'E, 04.x.2017, reared on finger millet, coll. Shankaramurthy (UASR).

Paratypes: 8 ♀, 6 ♂, same data as *HOLOTYPE* except for date 02-27.x.2017. Further, the specimens 5 ♀, 2 ♂ coll. Mahesh (UASB) in the same locality and on the same host from 04-18.x.2017 are also considered as a paratypes.

Etymology: The species epithet, *viraktamathi* named to honour Dr. C.A. Viraktamath, a renowned insect taxonomist globally.

Remarks: The genus *Herpetogramma* formerly comprised 15 recorded species in India (Singh *et al.*, 2022), now increased to 16 with *Herpetogramma viraktamathi*. Externally, it resembles *H. phaeopteralis* Guenee, but differs in the structure of the cornuti in aedeagus and in

the female, a signum is present in the corpus bursae (in *H. phaeopteralis* signum is absent). The new species also resembles *H. licarsisalis* Walker in having similar male genitalia but differing in the detailed structure of cornuti in the aedeagus and the shape of the valva and vinculum, and the new species is without fringe of hair on underside of costa and fore legs are normal, lacking the rough hairs near the femoro-tibial joint.

Host plants and feeding damage: The incidence of this pest was noticed in early stages of finger millet crop (*E. coracana*) and its incidence was preceded by the attacks by a noctuid caterpillar, *Chrysodeixis chalcites* (Lepidoptera, Noctuidae, Plusiinae). The larvae webbed the leaves and fed on leaves staying within the web. Feeding by the larvae was always associated with abundance of webbing strewn with green faecal pellets (Fig. 3C, D, E, F).

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