International Journal of Food, Agriculture and Veterinary Sciences ISSN: 2277-209X (Online)
An Open Access, Online International Journal Available at http://www.cibtech.org/jfav.htm
2015 Vol. 5 (1) January-April, pp. 53-56/Singh and Sekhon
Research Article

STUDIES ON THE GENITALIA OF A MAJOR PEST SPECIES OF GENUS THYSANOPLUSIA ICHINOSE

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ABSTRACT
Species *orichalcea* (Fabricius) is economically important taxa belonging to genus *Thysanoplusia* Ichinose. Authentic identification of these moths play very important role in biological control of these economically important species. Keeping in view, external genitalic attributes of this species has been studied in detail.

Keywords: *Noctuidae, Thysanoplusia Ichinose, Genitalia*

INTRODUCTION
Noctuid moths are economically important, as the caterpillar of many species attack a variety of agricultural and forest plants. They may attack any part of the plant such as the foliage, shoot, roots, or fruits. Almost every kind of cultivated plant has one or more pests belonging to family Noctuidae. Caterpillars belonging to each subfamily of Noctuidae are specific in their choices of host plants. The adults of these moths have particularly well developed proboscis having a dentate tip, with which they pierce the rind and pulp of ripening fruits to suck the juice. The punctured region can easily become infected by fungi or bacteria that will cause the damaged fruit to drop prematurely.
Ichinose (1973) erected genus *Thysanoplusia*. It is a very vast genus. In the present work, only single species i.e., *Thysanoplusia orichalcea* (Fabricius) has been collected and studied in detail for its male and female genitalia for the first time. Genitalic characters provide species specific character for the identification of moths. *Thysanoplusia orichalcea* (Fabricius) is also known as soybean looper. It is a polyphagous pest of vegetable crops that originated in Indonesia, from where it spread to Europe, South Asia, India, Africa, Australia and New Zealand. It is a major pest of some of economically important crops as the larvae feed on various herbaceous plants, including crops such as sunflower, potato and soybean.

MATERIALS AND METHODS
The adult Noctuid moth species were collected from the florescent lights fitted at different localities in various states of India. The collected moths were killed and preserved in air tight wooden boxes. The identification of captured specimens was done with the help of relevant literature (Hampson, 1895). For the preparation of external male and female genitalia slides, abdomen of preserved specimens were detached and potashed in 10% solution (Robinson 1976), washed in 1% glacial acetic acid and dissected in 30% alcohol for taking out external male and female genitalia.

RESULTS AND DISCUSSION
Observation
***Thysanoplusia orichalcea* (Fabricius)**
Fabricius, *Sp. Ins*., **2**: 227.
Description: The fore wings are extensively covered with a metallic golden shimmering surface. Only the costal field and hem are brown in colour. The reniform and orbicular stigma are small and white bordered. The unpatterned hindwings are grey-brown, somewhat darker at the margin. The thorax is furry and with some hair tufts, the proboscis is well developed.

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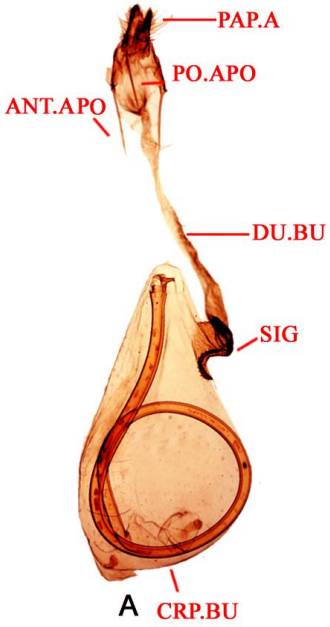
Male genitalia: Uncus long, strong, tuba analis membranous; tegumen slightly longer than uncus, weakly sclerotized, both the arms broad, inverted v-shaped; vinculum longer than tegumen, v-shaped, fork like, sclerotized; saccus long; valvae simple, leaf like, membranous, symmetrical, not differentiated into parts; paired clavus present; juxta membranous, cup shaped; transtilla membranous; aedeagus long, swollen proximally; vesica long, double the length of aedeagus, partially scobinate without any cornuti; ductus ejaculatorious entering laterally.

Trichoplusia orichalea Fabricius



C

B

A. Female genitalia, B. Corpus bursae with signum (Enlarged), C. Papilla analis with Apophyses (Enlarged)

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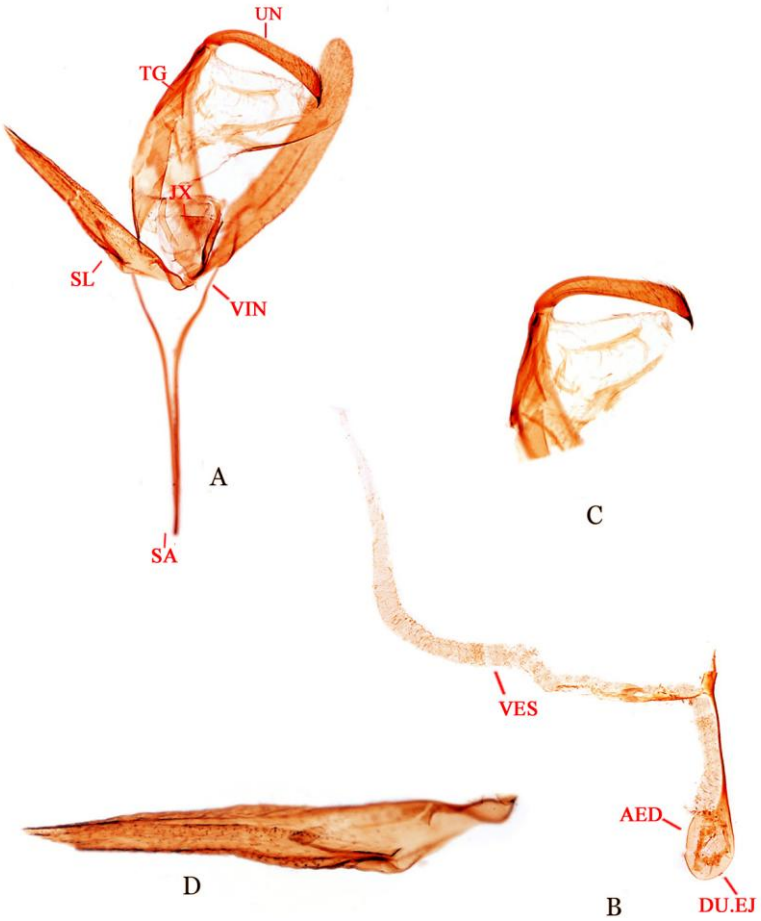

A. Male genitalia, B. Aedeagus, C. Uncus with Tegumen (Lateral view), D. Valva (left)

Female genitalia: Corpus bursae oblong, oval, balloon like, membranous, sclerotized at junction of ductus bursae; signum present , S-shaped, sclerotized with small spine like projections; ductus bursae long narrow tubular, membranous, sclerotized, almost of equal length as anterior apophyses, apically spatulate; anterior apophyses sclerotized; papilla analis long, triangular, sclerotized with macro and micro setae.

Wing Span: 36–44 mm.

Old Distribution: Azores, Madeira; Canaries; St. Helena; Ascension; South Africa; Mauritius; Arabia; Japan; China; Formosa; throughout India and Sri Lanka.

Material Examined:

Kerala: Agali: 27.x.07, 1 ♀ 2♂♂.
Himachal Pradesh: Koti: 12.viii.10, 2♀♀.
Karnataka: Medikeri: 13.xi.5, 1♀.

Abbreviations: AED: Aedeagus; JX : Juxta; TG : Tegumen; UN : Uncus; VES: Vesica; VN :Vinculum; VLV : Valva; PAP.A: Papilla analis; CRP. BU: Corpus bursae; SIG: Signum; DU.BU: Ductus bursae.

ACKNOWLEDGEMENT

The author is grateful to Ian Kitching at the Natural History Museum, London, Wolfgang Speidel for literature and also to Dr. Jagbir Singh, Head, Department of Zoology and Environmental Science, Punjabi University, Patiala, who helped in the comparison of the these species with the identified collection lying there.

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REFERENCES

Ajay S (1992). Genitalic structure studies of two species of genus *Hulodes* Guenée (Lepidoptera : Noctuidae). Ophiderinae. *Journal of Insect Science* **5** 66-67.

Fibiger M and Lafontaine JD (2005). A review of the higher classification of the Noctuoidea (Lepidoptera)– with special reference to the Holarctic fauna. *Esperiana* **11** 7-92.

Goater B, Ronkay L and Fibiger M (2003). *Catocalinae and Plusiinae*. *Noctuidae Europeae* (Entomological Press) Soro **10** 425.

Hampson GF (1895). *Fauna of British India, Moths including Ceylon and Burma* (Taylor and Francis Ltd.) London **2** 1-609.

Hampson GF (1905). The Moths of India, Series III, Pt. III. *Journal of the Bombay Natural History Society*, Bombay **16** 434-461, 700-719.

Hill Dennis S (1975). *Agricultural Insect Pests of the Tropics and their Control* (Cambridge University Press) Cambridge 516.

Holloway JD (2005). The Moths of Borneo, Parts 15&16 (Noctuidae: Catocalinae), subfamilies Eutelinae, Stictopterinae, Plusinae, Pantheinae, Southdene Sendirian.

Kitching IJ and Rawlins JE (1998). *The Noctuoidea*. In: edited by Kristensen NP 355–401.

Kunckel J (1875). Les Lepidopteres a trompe perfornte, destructeurs des oranges. *Comptes Rendus Mathematique* **81** 397-400.

Lafontaine JD and Fibiger M (2006). Revised higher classification of the Noctuoidea (Lepidoptera). *The Canadian Entomologist* **138** 610-635.

Lall BS (1964). Vegetable pests. In: *Entomology in India*, edited by Pant NC, the Entomological Society of India, New Delhi 187-211.

Mitchell A, Mitter C and Regier JC (2006). Systematics and evolution of the cutworm moths (Lepidoptera:Noctuidae): evidence from two protein-coding nuclear genes. *Systematic.*

Robinson GS (1976). The preparation of slides of Lepidoptera genitalia with special reference to Micro Lepidoptera, University of Florida, Gainesville. *Entomol. Gaz.* **27**(2) 127-132.

Zaspel JM, Kononenko VS and Goldstein PZ (2007). Another blood feeder? Experimental feeding by a fruit-piercing moth on human blood in the primary region of Far Eastern Russia. *Journal of Insect Behavior* **20** 437-451.

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