Asian Journal of Conservation Biology, December 2020. Vol. 9 No. 2, pp. 359-361 AJCB: SC0052
ISSN 2278-7666 ©TCRP Foundation 2020

Short Communication

First record of the species *Asota paliura* (Swinhoe, 1893) (Lepidoptera: Erebidae: Aganinae) from India

Ramya Rajan[1*], R.S.M. Shamsudeen[1,2]

[1]*Department of Zoology, Mananthavady Campus, Kannur University, Wayanad, Kerala- 670645, India*
[2] *Forest Entomology and GIS Research Laboratory, Department of Zoology, Sir Syed College, Taliparamba, Kannur, Kerala-670142, India*

(Received: May 15, 2020; Revised: August 10, 2020; Accepted: September 13, 2020)

ABSTRACT

Asota paliura (Swinhoe, 1893) is reported as new record for Indian moth fauna from Kerala. This study was carried out to study the diversity of moth fauna of Malabar region of kerala. During this study we have identified the species *A. Paliura*, which is reporting first time from India. The taxonomical analysis of *A. Paliura* was done based on both morphological and genetic cytochrome oxidase I (COI) data. Male and Female genitalia of the species are illustrated. Geographic distributions of this species in Kerala are also provided.

Key words: *Asota paliura*, new record, Kerala, genitalia, barcoding

INTRODUCTION

The genus Asota belongs to the subfamily Aganinae of the Family Erebidae.The genus comprises of 51 species in worldwide (Zwier, 2008; Bayarsaikhan *et al*., 2016). Eight *Asota* species have been reported so far from India. Genus Asota are large in size and colourful in nature. Forewing yellow, brown and dark brown, with spot, wedge and elongated patch; hindwing yellow, orange, and white, with spot and bands. The species belonging to this genus possess distinguishable characters like - small oval orange yellow patch of scent scales anterior to the center of the hindwing sub costal on the upper side and the antennae fasciculate in males but antennae is ciliated in females (Holloway, 1982). The vein 5 of forewing emerges from the lower angle of cell or marginally above from it. The 6thveins unfold from the top angle or lower than it. Hind wing occupy vein 5 from just above lower angle of cells. Vein 6 and 7 emanate from the upper angle.

The species *Asota paliura* was reported from China and Thailand by Gunther *et al.,* in 1893.There is no report that points the presence of this species in India till date. This discovery thus represents a new record from India.

MATERIALS AND METHODS

This study was done from some of the selective places of Malabar region of Kerala. Sampling was carried out from the collection sites using battery operated light traps specially fitted with switching device to facilitate automatic operation at specified hours (Mathew and Rahamathulla, 1995; Mathew *et al*, 2018). The timer was set such that the UV tube in the traps will be switched on at 6.30 pm and off at 10.30 pm, ensuring that the trap will be operated for a constant period of 4 hours thereby facilitating uniform sampling, each time the trap will be operated. For this, a sheet measuring 70cm ×55cm was fixed in such a way that the bottom anchored with stones. An 18-watt CFL (Compact Fluorescent Lamp) powered by a 12 watt car battery was used as the light source. The moths which rest over the white sheet was collected and freezed in a chiller for about 12 to 14 hours. (Shamsudeen *et al.*, *2005)*. The dead specimens were set; wings were spread and kept in the oven (set at 45°c) for drying. They were processed as per standard techniques. The dried specimen was labeled and stored in collection boxes. Permanent slides of wings were prepared for studying the wing venation. The method given by Lindquist (1956), Common (1970), Zimmerman (1978), and Landry and Landry (1994) were followed for the preparation of permanent slides of fore and hind wings. The methodology given by Robinson (1976) has been followed for the study of external male and female genitalia. The genital photographs were taken with the help of OLYMPUS SZ61Stereomicroscope attached with Magnus MIPS 10MP camera.

The sequencing of the mitochondrial gene, Cytochrome C Oxidase subunit 1 (COI), was carried out. DNA was isolated from the legs. Electrophoresed the DNA in 1% Agarose and visualized under UV light.COI region was PCR amplified with specific primers and amplicon was checked for appropriate size by agarose gel visualization. Amplicon was gel purified using commercial column based purification kit (Invitrogen, USA) and Sequencing was performed with forward and reverse primers in ABI 3730 XL cycle Sequencer. Forward and reverse sequences were assembled and contig was generated after trimming the low quality bases. Sequence analysis was performed using online tool BLAST of National Center for Biotechnology Information database and based on maximum identity score E value top most sequences was utilized for multiple sequence alignment (Clustal W2) and dendrogram was constructed. Further analysis was done using MEGA 7.The sequences were submitted to National Center for Biotechnology for Genbank Accessions.

*Corresponding Author's E-mail: rajanramyarajan@gmail.com

RESULTS

***Asota paliura* (Swinhoe, 1893)** (Figure 1)

Hypsa paliura (Swinhoe, 1893)2(6):214, type locality: China: Nanchuan, type specimen: Syntypes, BMNH, London.

Material examined*:* India: Kerala. 1 female (Coll. Ramya Rajan); Banasura Shola forest, Wayanad *(11.4025*° N, 70.5537°E*)*. 2male, 1 female(Coll.Ramya Rajan &RSM Shamsudeen); Sir Syed College campus, Taliparamba, 12.0383°N,75.3675°E.1 male(Coll.Ramya Rajan &RSM Shamsudeen) Muyyam, (12.0263°N, 75.3866°E). 1 Female (Coll.Ramya Rajan &RSM Shamsudeen) kozhummal, (12.1790°N, 75.2173°E).

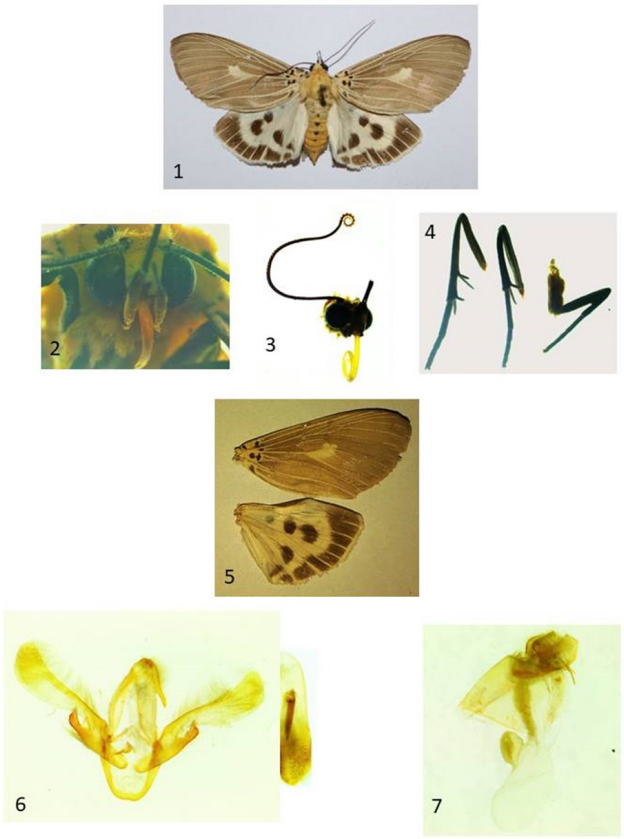

Figure 1. Photos showing 1-Adult, 2-Palpi, 3-Antenna, 4-Legs, 5-WingVenation, 6-Male genitalia and 7-Female genitalia of *Asota paliura*

***Systematic Diagnosis*:** Fore wing is dark greyish brown in colour; six-eight black spots at the base, a boardmedial white colouration from the basal ochreous patch, expanding outwards, with dentations along veins 2, 3, and 4, the dentation in vein 2 nearly reaching the outer margin; sometimes a white spot at the lower margin of the areole, vein 1 white, and in the females all the upper veins white. Hind wings are creamy whitish, with three large and two small black spots in a triangle shape, one at end of cell, the ether two in the disk; marginal border black, divided by white veins and with a white gap at end of vein 2, the band net reaching the anal angle., the hindwing has broken form of the black marginal band. Abdomen is orange yellow in colour, segmental black spots down the center of the abdomen, Antennaeblack, long and slender with 1.3-1.6cm length.♂ ♀Palpi, head, body, and base of fore wings ochreous; palpi with a black spot at base, a black tip to second joint, and last joint entirely black with some white marks towards its base;a black spot on each side of the collar, a black spot on each side of the thorax in front, two down the centre. The Male genitalia, valva simple, elongate; aedeagus usually short, broad,vesica large, with small group of cornuti or single cornutus. Female genitalia ductus bursae not sclerotized basally, appendix bursae very strongly sclerotized, corpus bursae withCircular signa or absent.

***Global Distribution*:** China: (Chong, Ginfu Shan, Hainan, Wuzhi Shan mts, Dao He ling mts, Hubei, Changyang, Wusharglin, Hupeh, Wuhan, Shaannxi, Daba Shan, Shou Shan, Sichuan, Daxue Shan mts., Gongga Shan, Kwei-chou, Maupin, Moxi, Szetschwan, Ta tsien-lu, Yunnan, Yunxian, Daxing, Dali, Lincang, Xishangbanna, Dai Puwen, Simao, Tibet, Menia); Thailand:(Chang Mai, Changwat Nan, Bo Luang,Vietnam, Mt Fan-si-pan, Cha-pa, Yen Bai, Anchy) (JHH Zwier, 2018);India-Kerala-Malabar region: Banasura shola forest,Wayanad(11.4025°N,70.5537°E) Taliparamba, (12.0383°N,75.3675°E) Muyyam, (12.0263°N, 75.3866°E), Kozhummal, (12.1790°N, 75.2173°E) .

Barcoding

The access number to Genbank is MH992751.The mitochondrial DNA sequence (COI) of one of the paratypes is as follows:

Contig:

TCTTTAAGATTATTAATTCGAGCTGAATTAGGTAACCCTG-
GATCTTTAATTGGAGATGACCAAATTTACAATACTATTGT
TACAGCCCATGCTTTTATTATAATTTTTTTTATAGTTATAC
CTATTATAATTGGAGGATTTGGTAATTGATTAGTACCTCT
TATATTAGGAGCCCCCGATATAGCTTTCCCCCGAATAAAT
AATATAAGTTTTTGACTTCTCCCCCCCTCATTAACTCTTCT
AATTTCAAGAAGAATTGTTGAAAATGGAGCAGGTACCGG
ATGAACAGTTTACCCCCCACTTTCATCTAATATTGCTCAT
GGGGGAAGATCAGTTGATTTAGCTATTTTTTCACTGCATT
TAGCTGGAATTTCTTCAATTTTAGGAGCTATTAACTTTATT
ACTACAATTATTAATATACGATTAAATAATTTATCATTTG
ATCAAATACCTTTATTTGTATGAGCTGTAGGAATTACAGC
ATTTTTATTACTTTTATCTTTACCAGTATTAGCTGGAGCTA
TTACTATACTTCTCACTGATCGAAATTTAAATACATCTTTT
TTTGACCC

ACKNOWLEDGMENT

The authors are grateful to, the principal of Sir Syed College, Taliparamba and the management for their great support and encouragement in this study and thankful to Ian J. Kitching of the Natural History Museum, London, and U.K for his valuable suggestions in this study. Thankful to JHH Zwier, Hengeloseweg, Netherlands for his great suggestions in this study. Gratefulto the Ministry of Environment, Forests and climatic changes (MoEF) for the great support and also to The Kerala Forest Department.

REFERENCES

Bayarsaikhan U., Na S.M., Bae Y.S. 2016. Review of the subfamily (Lepidoptera, Erebidae) from Cambodia. J Asia-Pac Biodiver 9:219–229.

Gunther A C.L.G, William C, William F. 1893.The Annal and Magazine of Natural History.Taylor an Francis ,Vo.XII-Sixth series.

Holloway, J.D. 1982. Taxonomic Appendix, In Barlow, H.S. An Introduction to the Moths of South-East Asia. *Malay. Nat. J,* 176-271.

Landry J. F. and Landry, B. 1994. A technique for setting and mounting microlepidoptera. Journal of Lepidopterists Society, 48(3): 205-227.

Lindquist, O.H. 1956. A technique for pinning and spreading small microlepidoptera. *The Canadian entomologist*,138(1): 24-25.

Mathew, G. and Rahamathulla, V.K. 1995. Biodiversity in the Western Ghats – A study with reference to moths (Lepidoptera: Heterocera) in the Silent Valley National Park, India.

Mathew P., Sivasankaran K., Anand S. and Ignacimuthu S. 2018. The moths (Lepidoptera: Heterocera) of vagamon hills (Western Ghats), Idukki district, Kerala, IndiaInternational Journal of Entomology Research 3(2): 114-120.

Robinson, G.S. 1976. The preparation of slides of Lepidoptera genitalia with special reference to Microlepidoptera. *Entomol. Gaz*, **27**(2): 127-132.

Shamsudeen R.S.M., Chandran R.and Mathew G. 2005. Collection of Microheterocera: A Newer Method. Bug' R' All, 8(1): 3.

Zimmerman, E.C. 1978. Microlepidoptera. Insects of Hawaii, vol 9. University Press of Hawai, Honolulu. Xviii+1903 pp.

Zwier J. 2008. Aganainae (snouted Tigers)http://www.aganidae.nl/