



## NEW RECORD OF MOSQUITO *COQUILLETTIDIA XANTHOGASTER* (EDWARDS) FROM INDIA

SANTHOSH GOUD\*, SUBASINI PATTNAIK, PRIYANKA DASH, IPSITA BISWAL, JAYA KISHOR SETH,  
RUPENANGSHU KUMAR HAZRA<sup>1</sup> AND BARSALINI PANDA<sup>1</sup>

Post Graduate Department of Zoology, Berhampur University, Brahmapur 760007, Odisha, India

<sup>1</sup>ICMR-Regional Medical Research Centre, Bhubaneswar 751023, Odisha, India

\*Email: [santhosh1090696@gmail.com](mailto:santhosh1090696@gmail.com) (corresponding author)

### ABSTRACT

This study reports *Coquillettidia xanthogaster* (Edwards, 1924) for the first time from India. It was collected from Berhampur University Campus, District Ganjam, Odisha. This species is considered to have medical importance, as it can carry pathogens like viruses and protozoans and can act as a potential vector. This new record adds to the understanding of its distribution and zoogeography.

**Key words:** *Coquillettidia xanthogaster*, Culicidae, new record, diversity, zoogeography, vector, medical importance, viruses, protozoans

Mosquitoes of the Culicidae family have long been a focus of entomological study due to their role as vectors of various severe viral and parasitic diseases that harm humans and animals. Malaria, Japanese encephalitis, chikungunya, dengue fever, West Nile fever, and lymphatic filariasis are among the diseases transmitted by mosquitoes. According to WHO estimates, 247 million people fell ill from mosquito-borne diseases in 2006, with around one million people dying (WHO 2008). Mosquitoes are a concern not just in the subtropics and humid tropics; they can also be a nuisance or spread illnesses to people in temperate climates, such as the Chikungunya fever outbreak in Italy or the West Nile virus outbreak in the US in 2007 (Depoortere et al., 2008). Mosquitoes are incredibly efficient organisms because of their capacity to adjust to a wide range of environmental conditions. Except in permanently frozen places, they can be found throughout the world. Adult mosquitoes have a wide range of bionomics, including biting, host-seeking, dispersal behaviour, and reproduction strategy. The global mosquito fauna consisted of 3597 species belonging to 113 genera, two subfamilies, and 11 tribes (Harbach, 2022). There are more than 404 mosquito species and subspecies in India, accounting for more than 12% of the global mosquito biodiversity (Tyagi et al., 2015).

*Coquillettidia xanthogaster* (Edwards) is widely distributed in different regions of Australia. The larvae of this species are usually found in freshwater marshes, creeks, and lagoons that are deeply covered

with dense aquatic plants (Belkin, 1962). They lay eggs in rafts on the surface of the water. The females of this species are vicious biters during morning and daytime close to the breeding sites. The adult ones rest predominantly on vegetation near their breeding sites (Perry, 1949). This mosquito is a significant pest in many places in the northern part of Australia (Russell 1996b). *Coquillettidia xanthogaster* is not known to be a significant vector of any parasites but is susceptible to the Ross River virus in laboratory conditions (Russell, 1996a). Even though it is not considered the main communal health concern, the study of this mosquito is crucial as it can carry pathogens, including viruses, protozoans, and can be a potential vector. The present finding of the mosquito from Berhampur University campus, Ganjam, Odisha, is the first material evidence of this mosquito from India, adding to details on its distribution and zoogeography.

### MATERIALS AND METHODS

Mosquitoes were collected from the campus area of Berhampur University, Odisha, India (19.2977358°N84.8781602°E). The collection was carried out from January 2018 to December 2019 using battery operated mechanical aspirator (Pooter) and torchlight. The collected mosquitoes were then transferred to a test tube, covered with a loose cotton plug, and examined in the laboratory for identification. Identification of these mosquitoes was made with a 10x fabric lens, and simultaneously the photographs were taken in a mobile camera mounted with a 10x macro

lens and LED. Identification of the mosquitoes was based on adult characters using standard taxonomic keys and catalogues- Christophers (1933), Barraud (1934), and online keys from NSW Arbovirus Surveillance and Vector Monitoring Program website: [https://medent.usyd.edu.au/arbovirus/mosquit/photos/mosquitphotos\\_coquillettidia\\_mansonia.htm#xanth](https://medent.usyd.edu.au/arbovirus/mosquit/photos/mosquitphotos_coquillettidia_mansonia.htm#xanth). The identity was confirmed with ICMR-RMRC, Bhubaneswar, and voucher specimens were deposited and registered in the National repository of EBRC-ZSI, Gopalpur-on-Sea, Odisha, India (Registration number: EBRC/ZSI/In-12261 A-P).

## RESULTS AND DISCUSSION

### *Coquillettidia xanthogaster* (Edwards, 1924) (Fig. 1)

#### Redescription

Female with a distinct yellowish to orange colour, body length 0.7 to 0.8 cm; palps 1/5th the length of the proboscis with dark scales. Setae are present on pedicels without scales. Head integument yellowish to orange colour, with horizontal golden scales that are numerous laterally. Scutum's integument is evenly yellowish, with occasional darkening along the midline. The scutellum is normally yellowish in colour, with no distinct scales (Fig. 1 A). Pleurites scales are uniformly yellowish and silvery. Postspiracular setae are absent, and one lower mesepimeral seta is present (Fig. 1 C). Legs are with

dark scales, with light golden scales on the basal 1/3 of the anterior side of the hind femur (Fig. 1 B). Dark narrow scales cover the wing veins uniformly, while the haltere knob is covered in light brown scales. Light golden scales along with some dark scales are present on the abdominal terga (Fig. 1 D), golden scales cover the sterna.

**Material examined:** 16 females, Berhampur University, Odisha, Coll., Santhosh Goud. (Registration No. EBRC/ZSI/In-12261 A-P).

**Distribution:** Australia, New Caledonia, New Hebrides, India (new record).

**Remarks:** *Coquillettidia xanthogaster* was first described by Edwards in 1924, and bionomics, distribution, and larval forms were documented by Perry in 1949 and Belkin in 1962. Its collection from Odisha now is a new record from the Indian subcontinent.

## ACKNOWLEDGEMENTS

The authors thank the Post Graduate Department of Zoology, Berhampur University, Ganjam, Odisha, for providing laboratory facilities, ICMR-Regional Medical Research Centre, BBSR, and ICMR-Vector Control Research Centre, Puducherry, all are acknowledged for the identification of species.



Fig. 1. *Coquillettidia xanthogaster*: A. Habitus, B. Lateral view, C. Lateral view of thorax, D. Dorsal view of the abdomen

#### AUTHOR'S CONTRIBUTIONS

S Goud conducted the survey, collected the specimen, and taken the photograph. Identified by S Goud and J K Seth, I Biswal, P Dash, B B Panda, S Pattnaik, and R K Hazra prepared the manuscript. All authors read and approved the manuscript.

#### REFERENCES

- Barraud P J. 1934. The Fauna of British India, Including Ceylon and Burma. Diptera. Vol. V. Family Culicidae. Tribes Megarhinini and Culicini. Taylor and Francis, London.
- Belkin J N. 1962a. The Mosquitoes of the South Pacific I. University of California Press. 608 pp.
- Christophers S R. 1933. Fauna of British India. Diptera, Family Culicidae. Tribe Anophelini. Vol. 4. Taylor and Francis, London.
- Depoortere E, Salmaso S, Pompa M, Guglielmetti P, Coulombier D. 2008. Chikungunya in Europe. The Lancet 371: 723-723.
- Harbach R. 2022. Culicidae Classification: Mosquito taxonomic inventory; mosquito-taxonomic-inventory.myspecies.info.https://mosquito-taxonomic-inventory.myspecies.info/simpletaxonomy/term/6045. Retrieved January 8, 2022,
- Perry W J. 1949. Studies on *Mansonia xanthogaster* and its relation to filariasis in the South Pacific. Journal of Parasitology 35: 379-382.
- Russell R C. 1996a. *Mosquito Photographs Coquillettidia Mansonia*. NSW Arbovirus Surveillance & Vector Monitoring Program; medent.usyd.edu.au. Retrieved April 14, 2020, from:https://medent.usyd.edu.au/arbovirus/mosquit/photos/mosquitphotos\_coquillettidia\_mansonia.htm#xanth
- Russell R C. 1996b. A Colour photo atlas of mosquitoes of Southeastern Australia. Department of Medical Entomology, Westmead Hospital, and the University of Sydney. 194 pp.
- Tyagi B K, Munirathinam A, Venkatesh A. 2015. A catalog of Indian mosquitoes. International Journal of Mosquito Research 2(2): 50-97.
- World Health Organisation. 2008. World Malaria Report 2008. WHO/HTM/GMP/2008

(Manuscript Received: April, 2022; Revised: July, 2022;  
Accepted: April, 2022; Online Published: July, 2022)  
Online First in www.entosocindia.org and indianentomology.org Ref. No. e22420