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First Record of the Drain Fly *Clogmia albipunctatus* (Williston, 1893) (Diptera: Psychodidae) from Indian Sundarbans

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

A species from family Psychodidae namely *Clogmia albipunctatus* [1] reported for the first time from Indian Sundarbans areas. This Myiasis causing species bears immense medical importance thereby this study also bears quite importance.

Keywords: New record; drain fly; Sundarban; Diptera.

1. INTRODUCTION

Dipteran insects are prevalent worldwide for their various role in ecosystems ranging from pollination to predation [2,3]. Some of the two-winged dipteran insects pose a potential health threat worldwide because of their possible role in the epidemiology of nosocomial infection [4-6]. Psychodidae family is prevalent among these groups. Psychodidae is a family of true flies

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commonly known as drain flies, sink flies, filter flies, sewer flies, sewer gnats, etc. Most of the adults fly from the family Psychodidae are found to be available in unhealthy areas like bathrooms, stinking ditches, and septic tanks because of their larvae mostly [7-9]. As larvae from this family prefer a moist environment for breeding. *Clogmia albipunctatus* [1] for being a cosmopolitan fly is widely distributed throughout the moist environment and is also a highly medically important insect especially in urban areas as they are potential agents of myiasis as per previous reports [10]. The present study includes the first report of this species from the rural areas of Sundarban. The importance of this study lies in the medical importance of the species as it is a potential agent of myiasis all over the world according to previous reports [11]. Further studies including its habitat, and area of infestation are required for proper prevention.

2. MATERIALS AND METHODS

2.1 Study Area

The species was collected from a rural residence of Gosaba, Sundarban, West Bengal during a survey on Gosaba. Weather of Gosaba was sunny in collection day with 32℃ and 23℃ maximum and minimum temperature respectively. The relative humidity was around 64%. Little rainfall happened before collection.

2.2 Sampling Methods

2.2.1 Collection method

Diptera structurally comprises the most highly specialized members of the class Insecta. Dipteran fauna was collected from the field during day time by using insect sweep nets, some of the dipteran flies have been collected using Malaise trap, Pan trap, UV Pan trap. For night collection, light trap has been used. The collected samples are narcotized by using ethyl acetate and stored for further study in insect envelopes in the field. The specimens were later carried back to the laboratory, mounted on insect pins and stored in insect cabinets for the process of identification. During collection in field, GPS data of collection sites has been recorded by using Gramin GIS Software version Oregon 550.

2.2.2 Identification method

Identification of the adults have been done by following the keys of McAlpine et al. [12], Lewis (1978), Nandi (2002), and Brunetti (1907) keeping in mind the recent nomenclatural changes (Pape and Evenhuis, N.L. 2010, Pape and Thompson, 2016). All of the identified specimens were deposited in the designated repository of National Zoological Collection, Diptera section, Zoological Survey of India, Kolkata.

2.2.3 Technical method

The graphical representations here were made by using Microsoft Excel 2013. The 2D and 3D maps generated by using ARC GIS software, version 10.1. Photograph of habitus and insect body and parts were taken by using Leica Microscope M205A, where 0.32x Acro lens was used for habitus photography and Planapo 1.0X lens was used for the photography of body parts and Nikon D7000 (Nikon normal and macro lens) was used for taking the field photographs.

3. RESULTS

(A) Systematic Account:

Order: Diptera
Suborder: Nematocera
Family: Psychodidae
Subfamily: Psychodinae

1 *Clogmia albipunctatus* [1]

=*Psychoda albipunctata* Williston, Entomological News 4: 113.

= *Pericoma meridionalis* Eaton, [13]

= *Psychoda albipunctata* Williston, [1] (potentially valid)

= *Psychoda erecta* Curran, 1926

= *Psychoda legnothisa* Speiser, [14]

= *Psychoda nigrithorax* Santos Abreu, [15]

= *Psychoda nocturna* Santos Abreu, [15]

= *Psychoda snowii* Haseman, 1907

= *Telmatoscopus haranti* Mirouse, 1958

Type locality: Cuba, Havana

Material examined: 3♀♀,Uttar Sonakhali, Sundarban,6mt,22.238812^{0}N,88.693437^{0}E, 12. ix.2021, coll: R.Chaterjee;6♂♂,9♀♀, Uttar

Sonakhali, Sundarban, 6mt, 22.238812^{0}N, 88.693437^{0}E, 16. i.2022, coll: R.Chaterjee; 3♀♀, Uttar Sonakhali, Sundarban, 6mt, 22.238812^{0}N, 88.693437^{0}E, 21. v.2022, coll: R.Chaterjee; 2♂♂,5♀♀, Uttar Mokamberia, Sundarban,6mt, 22.261169^{0}N, 88.686425^{0}E, 12.ix.2021, coll: R.Chaterjee ;10♂♂,12♀♀, Uttar Mokamberia, Sundarban,6mt, 22.261169^{0}N, 88.686425^{0}E, 16. i.2022, coll: R.Chaterjee;1♀,Uttar Mokamberia, Sundarban,6mt, 22.261169^{0}N, 88.686425^{0}E, 21. v.2022, coll: R.Chaterjee; 2♂♂, 3♀♀, Pakhiralaya, Sundarban, 6mt, 22.133489^{0}N, 88.821736^{0}E, 12. ix.2021, coll: R.Chaterjee;8♂♂, 17♀♀, Pakhiralaya, Sundarban, 6mt, 22.133489^{0}N, 88.821736^{0}E, 16. i.2022, coll: R.Chaterjee;1♀, Pakhiralaya, Sundarban, 6mt, 22.133489^{0}N, 88.821736^{0}E, 21. v.2022, coll: R. Chaterjee; 4♀♀, Kumirmari, Sundarban, 6mt, 22.205120^{0}N, 88.936670^{0}E, 13. ix.2021, coll: R.Chaterjee; 5♂♂,17♀♀, Kumirmari, Sundarban, 6mt, 22.205120^{0}N, 88.936670^{0}E, 17. i.2022, coll: R.Chaterjee;2♀♀, Kumirmari, Sundarban,6mt, 22.205120^{0}N, 88.936670^{0}E, 22. v.2022, coll: R.Chaterjee; 2♂♂,3♀♀, Bakkhali, Sundarban, 4mt, 21.563101^{0}N, 88.259501^{0}E, 14.ix.2021, coll:R.Chaterjee.10♂♂,13♀♀, Bakkhali, Sundarban, 4mt, 21.563101259501^{0}N, 88.259501259501^{0}E, 18. i.2022, coll: R. Chaterjee; 2♀, Bakkhali, Sundarban, 4mt, 21.563101^{0}N 88.259501^{0}E, 23.v.2022, coll: R.Chaterjee; 2♂♂,2♀♀, Fraserganj, Sundarban, 4mt, 21.582550^{0}N, 88.258352^{0}E, 14.ix.2021, coll: R. Chaterjee; 6♂♂,9♀♀, Fraserganj, Sundarban, 4mt, 21.582550^{0}N, 88.258352^{0}E, 18. i.2022, coll: R.Chaterjee;1♂, Fraserganj, Sundarban,4mt, 21.582550^{0}N, 88.258352^{0}E, 6mt, 23. v.2022, coll: R.Chaterjee; 2♂♂,3♀♀, Achintyanagar, Sundarban, 4mt, 21.816722^{0}N, 88.438090^{0}E, 15.ix.2021, coll: R.Chaterjee; 11♂♂,9♀♀, Achintyanagar, Sundarban, 4mt, 21.816722^{0}N, 88.438090^{0}E, 19. i.2022, coll: R.Chaterjee;1♂,1♀, Achintyanagar, Sundarban, 4mt, 21.816722^{0}N, 88.438090^{0}E, 24. v.2022, coll: R.Chaterjee; 1♂,2♀♀, Rakhalpur, Sundarban, 4mt, 21.772220^{0}N, 88.454920^{0}E, 15. ix.2021, coll: R.Chaterjee ;10♂♂,8♀♀, Rakhalpur, Sundarban,4mt, 21.772220^{0}N, 88.454920^{0}E, 19. i.2022, coll: R.Chaterjee. 1♀,Rakhalpur, Sundarban,4mt, 21.772220^{0}N, 88.454920^{0}E, 24.v.2022, coll: R.Chaterjee;3♀♀, Baikunthapur, Sundarban, 7mt, 22.921622^{0}N, 88.543280^{0}E, 16.ix.2021, coll: R.Chaterjee;12♂♂,8♀♀, Baikunthapur, Sundarban, 7mt, 22.921622^{0}N, 88.543280^{0}E, 20. v.2022, coll: R. Chaterjee ;1♀, Baikunthapur, Sundarban, 7mt, 22.921622^{0}N, 88.543280^{0}E, 25. v.2022, coll: R. Chaterjee; 2♀♀, Nagenabad, Sundarban,7mt, 21.873910^{0}N, 88.420409^{0}E,16. ix.2021, coll: R.Chaterjee; 10♂♂,8♀♀, Nagenabad, Sundarban, 7mt, 21.873910^{0}N, 88.420409^{0}E, 20. i.2022, coll: R.Chaterjee ;1♀, Nagenabad, Sundarban,7mt, 21.873910^{0}N, 88.420409^{0}E, 25. v.2022, coll: R. Chaterjee.

Fig. 1. Dorsal view of Clogmia albipunctatus[1]

Fig. 2. Lateral view of Clogmia albipunctatus [1]

Diagnosis: Body size large with comparatively large sized wings ranging from 3-5 mm, presence of predominant setulae all over the body with grey or brownish hairs covering thorax and abdomen. Pair of darker spots present along the wing disk in female flies. Whole body appears furry. Antennae is usually longer in size than the whole body and usually covered with white hairs. Presence of white ring like structures on the tips of tibia and tarsi.

Distribution (India): Sundarban, West Bengal, India.

Distribution (Elsewhere): Neotropical, Palearctic, Afrotropical, Oriental and Australian Oceania region.

Fig. 3. Habitat of collection area

4. DISCUSSION

With a worldwide distribution, this particular species is prevalent in areas with low sanitation like washrooms. Despite having poor environmental conditions, this group of flies has always shown a high growth rate across the world [16]. Although the impact of this species is not known till now its high diversity can be attributed as a threat to the ecosystem. To study and understand its impact, the ecosystem and developmental taxonomy of this species should be studied in detail at periodic intervals. The present study area represents the first-ever distributional record of this drain fly from Sundarban Biosphere Reserve. There is a possibility of this species is a threat, especially to native synanthropic species. Some reported literature has also shown its importance as a myiasis-causing agent [17-22].

5. CONCLUSION

The present study is the first ever attempt to study the distribution and diversity status of this drain fly species along the ecosystem of Sundarban. Previously no data was available from this group. Further study at periodic interval at this study sites will be helpful to represent a complete scenario.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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