

An inventory of Culicidae diversity in Haryana state

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A total number of 21 mosquito species referable to five genera *Anopheles* Meigen, *Aedes* Meigen, *Mansonia* Blanchard, *Armigeres* Theobald and *Culex* Linnaeus have been reported from Haryana state. A list of these species along with material examined has been included in this paper. Three species have been reported for the first time from this state.

During the last seven decades, unplanned growth in the form of urbanisation, excessive deforestation, insecticide and pesticide hazards, construction of dams, development of new agro-ecosystems, etc. have resulted in the insurgence and resurgence of various vectors and vector borne diseases. The development of resistance in various mosquito species warrants that this group of insects need an extraordinary and immediate attention. Surprisingly no mosquito survey was carried out in Haryana state, since the publication of monographs on Anophelinae¹ and Culicinae². Due to non-availability of data on vectors in last seven decades, the effective malaria control programme in this state was greatly hampered. In view of the above, collection surveys have been carried out to collect mosquito species during 1997–2000. As many as 580 specimens of mosquitoes belonging to 21 species referable to five genera have been collected, preserved and identified.

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The immature as well as mature mosquito specimens have been collected from the cattlesheds, human dwellings, water pools, ponds, rivulets, tree holes and domestic containers. The immature stages have been reared up to the emergence of adults. Adult specimens were killed with ethyl acetate vapours.

The freshly killed specimens were pinned, preserved in air tight insect cabinets and were identified with the help of keys given by Christophers¹, Barraud², Puri³, and Wattal and Kalra⁴.

Order DIPTERA Family CULICIDAE

1. *Anopheles (Anopheles) lindesayi* Giles : Material examined from Kalka, Berti—27 May 1999, 3♀♀, 2♂♂; Layuaghat (1350 m)—27 May 1999, 4♀♀.
2. *Anopheles (Anopheles) peditaeniatus* (Leicester) : Material examined from Kurukshetra, Pipli—2 September 1998, 10♀♀.
3. *Anopheles (Anopheles) nigerrimus* Giles : Material examined from Kurukshetra, Pipli—21 September 1998, 2♀♀.
4. *Anopheles (Cellia) stephensi* Liston : Material examined from Hissar—14 April 1998, 1♀; Kurukshetra, Indira Nagar—1 September 1998,

- 4♀♀; Raogarh—2 September 1998, 2♀♀; Bhiwani, Amar Nagar—15 September 1999, 3♀♀; Rohtak, Gaddi—16 April 1999, 2♀♀; Kalka, Bitan—26 May 1999, 1♀.
5. *Anopheles (Cellia) pulcherrimus* Theobald: Material examined from Kurukshetra, Raogarh—1 September 1998, 1♀; Regional Engineerin College—1 September 1998, 1♀; Rohtak, Asthal Bohr—16 April 1999, 3♀♀; Chandī—16 April 1999, 3♀♀; Bhiwani, Amar Nagar—18 April 1999, 2♂♂.
 6. *Anopheles (Cellia) annularis* Van der Wulp : Material examined from Kurukshetra, Pipli—1 September 1998, 1♀; Rohtak, Asthal Bohr—16 April 1999, 4♀♀.
 7. *Anopheles (Cellia) subpictus* Grassi : Material examined from Kurukshetra, Indira Nagar—1 September 1998, 10♀♀; Regional Engineering College—1 September 1998, 14♀♀, 1♂; Raogarh—2 September 1998, 13♀♀, 2♂♂; Jyotisar—2 September 1998, 6♀♀.
 8. *Anopheles (Cellia) vagus* Döenitz : Material examined from Kurukshetra—1 September 1998, 3♀♀.
 9. *Mansonia (Mansonioides) uniformis* (Theobald): Material examined from Hissar—15 May 1998, 2♀♀; Kurukshetra—31 August 1998, 1♀; Jyotisar—2 September 1998, 6♀♀, 1♂.
 10. *Mansonia (Mansonioides) longipalpis* Van der Wulp : Material examined from Kurukshetra, Jyotisar—2 April 1998, 1♀.
 11. *Armigeres (Armigeres) obturbans* (Walker) : Material examined from Kalka—24 August 1997, 7♀♀, 28♂♂; Pinjore—20 May 1998, 1♀; Bitan—26 May 1999, 8♀♀, 11♂♂; Koti—27 May 1999, 4♀♀, 1♂; Berti—27 May 1999, 1♀.
 12. *Aedes (Stegomyia) albopictus* (Skuse) : Material examined from Kalka, Nada Sahib—3 August 1997, 1♀, 24 August 1997, 1♂; Hissar—14 June 1998, 7♀♀; Kurukshetra—31 August 1998, 4♀♀, Pipli—2 September 1998, 4♀♀, 1♂.
 13. *Aedes (Aedes) indicus* (Theobald) : Material examined from Hissar—14 May 1998, 6♀♀, 13 April 1999, 4♀♀; Kurukshetra—31 August 1998, 4♀♀.
 14. *Aedes (Finlaya) albotaeniatus* (Leicester) : Material examined from Kurukshetra, Pipli—2 September 1998, 3♀♀.
 15. *Aedes (Neomelaniconion) lineatopennis* (Ludlow) : Material examined from Hissar—15 May 1998, 22♀♀, 2♂♂; Kurukshetra, Jyotisar—2 September 1998, 1♀.
 16. *Aedes (Aedimorphus) jamesi* (Edwards) : Material examined from Kurukshetra—31 August 1998, 1♀.
 17. *Culex (Culex) tritaeniorhynchus* Giles : Material examined from Hissar—15 May 1998, 4♀♀, 1♂; Kurukshetra—1 August 1998, 2♀♀, 1♂; Pehowa—2 August 1998, 1♂; Rohtak, Gaddi—15 April 1999, 1♀; Asthal Bohr—16 April 1999, 1♀.
 18. *Culex (Culex) pseudovishnui* Colless : Material examined from Hissar—13 May 1998, 1♀, 1♂, 14 May 1998, 3♀♀, 14 April 1999, 2♀♀; Kurukshetra—31 August 1998, 6♀♀, 5♂♂; Jyotisar—2 September 1998, 1♀; Pipli—2 September 1998, 1♀.
 19. *Culex (Culex) vishnui* Theobald : Material examined from Hissar—15 May 1998, 4♀♀, 1♂; Kurukshetra—1 August 1998, 2♀♀, 1♂; Pehowa—2 August 1998, 1♂; Rohtak, Gaddi—15 April 1999, 1♀; Asthal Bohr—16 April 1999, 1♀.
 20. *Culex (Culex) quinquefasciatus* Say : Material examined from Hissar—14 May 1998, 70♀♀, 13♂♂; 12 April 1999, 25♀♀, 25♂♂; Kurukshetra, Kurukshetra University—31 August 1998, 2♀♀, 5♂♂; Pipli—2 September

1998, 1♀, 1♂; Raogarh—2 September 1998, 1♀; Rohtak, Tilyarlake—15 April 1999, 2♂♂; Gaddi—15 April 1999, 26♀♀, 18♂♂; Asthal Bohr—16 April 1999, 14♀♀, 2♂♂; Sundarpur—17 April 1999, 4♀♀, 1♂; Chandī—17 April 1999, 2♀♀; Bhiwani—18 April 1999, 9♀♀, 9♂♂; Ghikara—19 April 1999, 26♀♀, 5♂♂; Charkhi Dadri—19 April 1999, 7♀♀, 1♂; Sahubas—19 April 1999, 3♀♀, 1♂; Kalka, Bitan—26 May 1999, 18♀♀, 6♂♂; Layua-ghat—26 May 1999, 1♀; Koti—27 May 1999, 4♀♀, 2♂♂.

21. *Culex (Culex) bitaeniorhynchus* Giles : Material examined from Kurukshetra—1 September 1998, 1♀, 1♂; Pipli—2 September 1998, 2♀♀, 1♂; Kalka, Bitan—26 May 1999, 1♀.

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References

1. Christophers SR. *The fauna of British India, including Ceylon and Burma*, v IV. London : Taylor and Francis 1933; p. 1–360.
2. Barraud PJ. *The fauna of British India, including Ceylon and Burma* v V. London : Taylor and Francis 1934; p. 1–463.
3. Puri IM. Synoptic table for the identification of the anopheline mosquitoes of India. *Hlth Bull*, 1954; 10 : 1–57.
4. Wattal BL, Kalra NL. Regionwise pictorial keys to the female Indian *Anopheles*. *Bull Natl Soc Ind Mal Mosq Dis*, 1961; 9 : 85–138.