

## Mosquitoes of Afghanistan - An Annotated Checklist

Ronald A. Ward  
Department of Entomology  
Walter Reed Army Institute of Research  
Washington, D. C. 20012

As late as 1949 there was no information concerning the mosquito fauna of Afghanistan. This is borne out by Beklemishev's statement in Boyd's "Malariology" that data concerning the Anopheles of Afghanistan and Central Asia are completely lacking (1). It is true that publications as early as 1943 did contain keys for the identification of the anophelines of this nation, but these were based upon information from Indian and Iranian collections (9).

Anopheles superpictus Grassi was the first mosquito to be definitely recorded from Afghanistan. Larvae of this species were collected by K. Lindberg, a Swedish physician with strong interests in tropical medicine and zoology, during May - June 1947 in the northern portion of the country (7). During 1959, Dr. Lindberg collected several culicine species which were identified by P. F. Mattingly. These were deposited in the British Museum (Natural History).

Various entomologists affiliated with the World Health Organization have surveyed the anopheline fauna beginning in 1949 (3,6,8 and 10). Certain of their specimens were later submitted to the British Museum for identification by J. A. Reid. The anophelines were discussed in a geo-medical survey of Afghanistan conducted by Professor L. Fischer, an epidemiologist from Tübingen, Germany (4). This review was based upon a literature survey, his personal observations and records of the Afghan Malaria Institute.

During 1968 and 1970, the Geographical Epidemiology Unit from the Johns Hopkins University School of Public Health conducted a series of epidemiological studies in rural Afghanistan<sup>1</sup>. Two Anopheles species (A. pulcherrimus Theobald and A. hyrcanus (Pallas)) and 8 culicine species were collected. The anophelines were identified by J. E. Scanlon and R. A. Ward while Alan Stone identified the culicines. Series of specimens were deposited in the Smithsonian Institution. The medical significance of these species are discussed in a recent book (2).

At present there are no records of Afghanistan mosquitoes in the systematic literature. Furthermore, few museum specimens are available. The purpose of this paper is to analyse the available references that do cite mosquitoes from this country, point out instances of erroneous identifications and record specimens which are in the collections of the British Museum (Natural History) and the Smithsonian Institution. These are indicated by the abbreviations BM and SI.

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## Notes on the Species

1. Anopheles (A.) algeriensis Theobald  
Previous records: Kunduz Province (10). A single larva collected by WHO personnel in 1959.
  2. Anopheles (A.) claviger (Meigen)  
Previous records: Herat Province (4): Obay, Herat (3); Kunduz Province (4): Ishkamish (3), Turkman, Dandi Ghorī (10).
  3. Anopheles (A.) habibi Mulligan and Puri  
Previous records: Kunduz Province: near Kunduz (4).  
Material examined: Kunduz Province: Puri, coll. A. M. Shalaby (BM).
  4. Anopheles (A.) hyrcanus (Pallas)  
Previous records: Laghman Province (8); Helmand and Kandahar Provinces (3); Kabul Province: Sarobie (5); Farah and Parwan Provinces (4); identified as A. pseudopictus Grassi, Kunduz Province: Turkmen, Mafileh (10); identified as A. hyrcanus var. pseudopictus Grassi and A. hyrcanus var. sinensis Wiedemann, Kunduz Province: Kunduz, Khanabad (3).  
Material examined: Kunduz Province: Khanabad, Kunduz-Khanabad Road, Chaulachah, coll. Coher (BM); Kunduz area (Urtaqlac), Khanabad area (Berut Sazi), Jungle Bashi, coll. A. S. Badawi (BM). (British Museum specimens identified as A. hyrcanus pseudopictus Grassi). Kunduz Prov.: Bulla Quchi, coll. D. P. Wojcik and R. A. Ward; Angour Bajhr, coll. R. A. Ward (SI).
- Several hundred specimens of this species have been examined from Afghanistan. Over 98% of the individuals have the hind tarsal segment 4 entirely white, which is a characteristic of virtually all Palearctic populations of A. hyrcanus. The few specimens from Kunduz Province which had black or mixed colored hind tarsal segment 4 were simultaneously collected with the typical forms. Although breeding studies are absent, it is believed these dark individuals represent mutants. There is no evidence that A. sinensis Wiedemann occurs in Afghanistan and it is suspected that specimens with dark hind tarsi have been misidentified.
5. Anopheles (A.) lindesayi Giles  
Previous records: Laghman Province: Nangaraj, Mamo, Sandawar (10).  
Material examined: Laghman Province: Nangaraj, coll. Coher (BM)
  6. Anopheles (A.) peditaeniatus (Leicester)  
Previous records: Laghman Province: Jalalabad area (10). Several larvae and one adult were collected. The identity of this material is subject to question on the basis of the known distribution of this species.
  7. Anopheles (A.) sacharovi Favre  
Previous records: Kunduz Province: Dandi Ghorī (10).
  8. Anopheles (Cellia) annularis Van der Wulp  
Previous records: Laghman Province (8): Ghazibad (10); Kabul Province (4) Kabul (6)

9. Anopheles (C.) culicifacies Giles  
Previous records: Laghman Province (8): near Kunar (4), Jalabad area (Samachail), Sandarwar (10); Kabul Province; Kabul (6); Helman and Kandahar Provinces (3); Farah Province (4).
10. Anopheles (C.) fluviatilis James  
Previous records: Laghman Province (8): Jalalabad area (Samachail, Sumuchu, Nazirabad) (10); Kabul Province (4): Kabul (6); Farah Province (4).  
Material examined: Samarkhail, coll. Coher (BM).
11. Anopheles (C.) maculatus Theobald  
Previous records: Laghman Province (8): Ghazibad, Mamo (10).
12. Anopheles (C.) maculatus willmosi James  
Previous records: Laghman Province; Nangaraj (10).
13. Anopheles (C.) moghulensis Christophers  
Previous records: Laghman Province (4,8).
14. Anopheles (C.) multicolor Cambouliu  
Previous records: Helmand and Kandahar Provinces (3); Farah Province(4).  
Material examined: Kandahar Province: Laymanda, near Grishk, coll. I. A. H. Ismail (BM).
15. Anopheles (C.) pulcherrimus Theobald  
Previous records: Laghman Province (8); Helmand and Kandahar Provinces (3,4); Farah Province (4); Kunduz Province; Kunduz and Khanabad (3), Mafileh and Hazrat Sultan (10).  
Material examined: Kunduz Province: Bulla Quchi, coll. D. P. Wojcik and R. A. Ward, Anguor Baugh, coll. R. A. Ward (SI).
16. Anopheles (C.) splendidus Koizumi  
Previous records: Laghman Province (8): Ghazibad, Nangarej (10).  
Material examined: Laghman Province: Nangarej, Coll. Coher (BM).
17. Anopheles (C.) stephensi Liston  
Previous records: Laghman Province (8): Jalalabad area, Kalar Tek, Sandarwar (10); Kabul Province: Kabul (6); Sarobie (5); Helmand and Kandahar Provinces (3); Farar and Parwan Provinces (4).  
Material examined: Samarkhail, coll. Coher (BM).
18. Anopheles (C.) subpictus Grassi  
Previous records: Laghman Province (8): Jalalabad area, Kalar Tek, Shamangel, Ghazibad, Mangu, Nangaraj, Sandarwar (10); Kabul Province(4); Kabul (6).
19. Anopheles (C.) superpictus Grassi  
Previous records: Laghman Province (8): Jalalabad area, Nangaraj, Mamo, Sandarwar (10); Kabul Province: Kabul (6); Sarobie (5) Herat Province (4): Herat (7); Helmand and Kandahar Provinces (3); Kunduz Province: Kunduz and Khanabad (3); Kona Kala, Shorek Ab, Chogah, Chanalaca, Dandi Ghor, Pulikhumri (10); Farah and Parwan Provinces (4).  
Material examined: Laghman Province: Nangaraj; Kunduz Province: Shorak Ab, Chanlathan, Konakola, Pulikumai, coll. Coher (BM).

20. Anopheles (C.) turkhudi Liston  
Previous records: Laghman Province (8): Jalalabad area, (Samachail, Sumuchu) (10); Helmand and Kandahar Provinces (3); Kabul Province: Kabul (6); Farah Province (4).
21. Anopheles (C.) vagus Donitz  
Previous records: Laghman Province (8). This record is based upon 2 females collected in 1949. There are doubts concerning the presence of this species in Afghanistan and it is believed this material was actually A. subpictus (10).
22. Uranotaenia (Uranotaenia) unguiculata Edwards  
Material examined: Kunduz Province: Bulla Quchi, coll. D. P. Wojcik(SI).
23. Aedes (Ochlerotatus) caspius (Pallas)  
Material examined: Kunduz Province: Bulla Quchi, coll. D. P. Wojcik, Anguor Baugh, coll. R. A. Ward; Helmand Province: Gawargin, coll. D. P. Wojcik (SI). Herat Province: Herat, Coll. K. Kindberg (BM).
24. Culiseta (Allotheobaldia) longiareolata (Macquart)  
Material examined: Parwan Province: Sayedabat; Herat Province: Kharukh, coll. D. P. Wojcik (SI). Herat Province: Herat, coll. K. Lindberg (BM).
25. Culex (Barraudius) pusillus Macquart  
Material examined: Kunduz Province: Bulla Quchi; Helmand Province: Gawargin, coll. D. P. Wojcik (SI).
26. Culex (Neoculex) deserticola Kirkpatrick  
Material examined: Herat Province: Kharukh, coll. D. P. Wojcik (SI)
27. Culex (N.) quettensis Mattingly  
Material examined: Afghanistan, locality not specified, coll. K. Lindberg (BM).
28. Culex (Culex) pipiens fatigans Wiedemann  
Previous records: Laghman Province (8).  
Material examined: Herat Province: Herat, coll. K. Lindberg (BM). Kunduz Province: Bulla Quchi; Helmand Province: Gawargin, coll. D. P. Wojcik (SI).
29. Culex (C.) theileri Theobald  
Material examined: Kunduz Province: Bulla Quchi, coll. D. P. Wojcik, Anguor Baugh, coll. R. A. Ward; Parwan Province: Sayedabat; Helmand Province: Gawargin; Herat Province: Kharukh, coll. D. P. Wojcik (SI).
30. Culex (C.) univittatus Theobald  
Material examined: Kunduz Province: Bulla Quchi; Helmand Province: Gawargin, coll. D. P. Wojcik (SI).

Specimens of 19 of the above 30 taxa enumerated have been examined in the British Museum or Smithsonian Institution. With the exception of Anopheles peditaeniatus, Anopheles vagus and possibly one of the subspecies of Anopheles maculatus, all the remaining records appear to be valid.

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