

A Revised List of the *Anopheles* of Cambodia¹

by

Bruce A. Harrison
Department of Entomology
North Carolina State University
Raleigh, North Carolina 27607

and

J. M. Klein
Institut Pasteur
Saigon, Vietnam

ABSTRACT. The list of anophelines known from Cambodia is reviewed and updated to include 37 species. New distribution records in Cambodia are noted for 10 species: *argyropus*, *baezai*, *barbumbrosus*, *jeyporiensis*, *letifer*, *niger-rimus*, *ramsayi*, *roperi*, *separatus* and *whartoni*.

During the course of separate studies, i.e., the "Mosquitoes of Cambodia" (J.M.K.) and the "Subgenus *Anopheles* in Thailand" (B.A.H.), the authors encountered a number of *Anopheles* species that are new to the Cambodian faunal list. These new distribution records and a review of the literature revealed that an updated list of Cambodian anophelines would be very useful to the malaria control personnel of that country.

Few publications have dealt with the mosquitoes of Cambodia and of these, Büttiker and Beales [1964 (1965)] has been the most important reference on the anophelines. These authors listed 22 species, 3 subspecies and one variety of *Anopheles* from Cambodia; 25 additional taxa from neighboring countries; and furnished keys to the adults and larvae of all of these. They apparently overlooked records of 2 other species, *pursati* Laveran 1902 and *sinensis* Wiedemann 1828. *Anopheles pursati*, resurrected from synonymy under *niger-rimus* Giles by Reid (1963), has its type-locality near the town of Pursat (Pursat Province), Cambodia. *Anopheles sinensis* was listed from southern Cambodia by Foote and Cook (1959). Since 1965, 2 of the subspecies listed by Büttiker and Beales (*aitkeni bengalensis* and *annandalei interruptus*) and the variety (*subpictus* var. *indefinitus*) have been elevated to specific level, and the remaining subspecies (*maculatus willmorei*) has been synonymized under *maculatus* (Reid 1965, 1966, 1968).

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More recently one of the authors (J.M.K.) made extensive mosquito surveys in Cambodia under the auspices of the Office de la Recherche scientifique et technique Outre-Mer (ORSTOM), Paris. Specimens from those surveys are deposited in the ORSTOM collections at Bondy, France. Among this material are a number of specimens to substantiate the Büttiker and Beales records of *crawfordi*, *hodgkini*, *interruptus*, *nitidus* and *peditaeniatus* and the Foote and Cook record of *sinensis*. There are also specimens of 10 species not previously recorded from Cambodia. These last 10 species (marked by an asterisk) are included in the following revised list of *Anopheles* known from Cambodia.

Subgenus *Anopheles* Meigen 1818

- **argyropus* (Swellengrebel) 1914
- **baezai* Gater 1933
- barbirostris* Van der Wulp 1884
- **barbumbrosus* Strickland and Choudhury 1927
- bengalensis* Puri 1930
- campestris* Reid 1962
- crawfordi* Reid 1953
- hodgkini* Reid 1962
- insulaeflorum* (Swellengrebel and Swellengrebel-de Graaf) 1919
- interruptus* Puri 1929
- **letifer* Sandosham 1944
- **nigerrimus* Giles 1900
- nitidus* Harrison, Scanlon and Reid 1973 (Büttiker and Beales, as *indiensis*)
- peditaeniatus* (Leicester) 1908
- pursati* Laveran 1902
- **roperi* Reid 1950
- **separatus* (Leicester) 1908
- sinensis* Wiedemann 1828
- **whartoni* Reid 1963

Subgenus *Cellia* Theobald 1902

- aconitus* Dönitz 1902
- annularis* Van der Wulp 1884
- balabacensis* Baisas 1936
- fluviatilis* James 1902
- indefinitus* (Ludlow) 1904
- **jeyporiensis* James 1902
- karwari* (James) 1903
- kochi* Dönitz 1901
- maculatus* Theobald 1901
- minus* Theobald 1901
- pampanai* Büttiker and Beales 1959
- philippinensis* Ludlow 1902
- **ramsayi* Covell 1927
- splendidus* Koizumi 1920

subpictus Grassi 1899
sundaicus (Rodenwaldt) 1925
tessellatus Theobald 1901
vagus Dönitz 1902

Provincial data for 8 of the 10 newly recorded species are as follow: *baezai* (Kampot); *barbumbrosus* (Kompong Speu); *jeyporiensis* (Kompong Chhnang); *letifer* (Kampot, Kompong Speu); *nigerrimus* (Kompong Chhnang, Takeo); *roperi* (Kampot); *separatus* (Kampot, Kompong Chhnang, Kompong Speu); and *whartoni* (Kompong Chhnang, Kompong Speu). Specimens of *pursati* from Kandal Province were also examined. Locality data for the other 2 newly recorded species and additional data for the above species will be published in the future.

The most current keys including all of the above 37 species are Reid (1968) and Rattanaarithikul and Harrison (1973, larvae only). The latter authors record 55 species and 2 subspecies from neighboring Thailand, and Nguyen-Thuong-Hien (1968) records 44 species-group taxa from neighboring Republic of Vietnam. Thus, persons working with anophelines in Cambodia should be aware that additional unrecorded species probably occur there.

The addition of *baezai*, *jeyporiensis*, *letifer*, *roperi*, *separatus* and *whartoni* to the Cambodian fauna should have special significance to public health personnel. These species have been implicated in the transmission of pathogens either in Malaysia (Reid 1968) or in Indo-China (Puri 1949).

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