

**CULICINE MOSQUITOES COLLECTED IN WESTERN YUNNAN,
CHINA DURING 1940-1942**

(DIPTERA, CULICIDAE)

By C. Y. CHOW, *Malaria Laboratory, National Institute of Health,
Nanking, China*

Relatively little work has been done on the survey of culicine mosquitoes in the interior of China. This paper reports the result of a two years' collection of culicine mosquitoes at Chefang, Western Yunnan, during April 1940-March 1942. The Chefang region on the Yunnan-Burma Road, with a population of approximately 25,000, is about 24.0° north and 97.6° east. It has an altitude of about 2,700 ft. above sea level, and is some 92 miles north of the Tropic of Cancer, being about 20-30 miles from the Burma border. The climate is subtropical with a high humidity and a temperature range of 45 to 92°F. The rainy season extends from May through October, with an average annual rainfall of 50-60 inches.

Feng (1938) listed 74 species of 11 genera of culicines for China but only two species, *Aedes* (*Aedimorphus*) *vexans* (Meigen) and *Ae.* (*Finlaya*) *yunnanensis* Gaschen, for the province of Yunnan. We found at Chefang and its vicinity 44 species of 11 genera, of which all but one (*Aedes vexans*) are newly recorded for Yunnan and 19 species are new for China. Those species new to China are marked with an asterisk in the following list.

**Megarhinus gravelyi* Edwards

Breeding place: Bamboo stumps.

**Megarhinus splendens* (Wiedemann)

Breeding place: Tree holes. It is much rarer than the former species and found on only one occasion during two years' survey. Known also from Hongkong.

**Tripterooides aranoides* (Theobald)

Breeding place: Bamboo stumps. Rather common here but does not bite man.

**Topomyia houghtoni* Feng

Breeding place: Leaf bases of *Colocasia*. This was collected on a hill near Chefang in August 1940, and described as a new species by Feng (1941). The type specimens have been deposited in the Division of Parasitology of the Peiping Union Medical College, Peiping, China. It is a rare and wild mosquito. The larva, of white-greenish color with a black head, has a tendency to remain at the bottom of water for several

minutes. It is predacious in habit and feeds on the larvae of other species like *Harpagomyia genurostris* which are present in the same breeding place, though, if not present, it would feed on other larvae of its own species. It waits for its prey, and does not seem to hunt it as do the larvae of *Megarhinus* or *Lutzia*. The breeding period is short, from July to October.

Harpagomyia genurostris (Leicester)

Breeding place: Leaf bases of banana, pineapple, *Colocasia*, and a local plant called "Tun-tun" by local "Shan" people. "Tun-tun" is about 8 ft. high, and has large, long, hard leaves with many spines on the edges. It is common here, and known also from Hongkong. The adults do not bite man. They rest on the stem of the plant of their breeding place. On the stems many big ants are usually climbing here and there. The mosquitoes probably take food from the mouth of these ants as Jacobson described (Barraud, 1934, p. 47).

Uranotaenia macfarlanei Edwards

Breeding place: Side pools of stream. Known also from Chekiang, Kiangsi and Kwangtung.

Orthopodomyia anopheloides (Giles)

Breeding place: Bamboo stumps and tree holes. Very common here. Known also from Chekiang. It does not attack man.

Mansonia uniformis (Theobald)

Breeding place: Attached to aquatic plants. Rare here. Known also from east coast of China.

**Heizmannia greeni* (Theobald)

Breeding place: Tree holes. Only one female was reared from a larva collected from a tree hole. The larva has not, so far, been described. Unfortunately, our single larval skin was lost due to the war. The characters of this single female agree very well with the description by Barraud (1934), and were checked also with that of the specimens collected from the type locality in Ceylon when the writer visited there. It is a small mosquito and distinguished by the presence of a collection of small hairs on the postnotum. The only other species of this genus occurring in China is *H. lii* Wu (reported from Chekiang Province), in which the mesonotal scales are dull grayish brown, with little or no metallic lustre, while those of *H. greeni* have a dark blue-metallic lustre.

Armigeres (*Armigeres*) *subalbatus* (Coquillett)

Breeding place: In very foul water, such as artificial water containers, latrines, tanks for pig or cow feces. It is very common and bites man voraciously day and night.

Armigeres (A.) kuchingensis Edwards

Breeding place: Bamboo stumps. The adult bites man.

Armigeres (Leicesteria) flavus (Leicester)

Same as the former species, but not so prevalent.

Armigeres (L.) magnus (Theobald)

Same as above. Known also from Hongkong.

**Armigeres (L.) annulipalpis* (Theobald)

Habitat same as above.

Aedes (Aedimorphus) vexans (Meigen)

Breeding place: Ground pools. This is a rather common species in China. The adult bites man at night and in daytime.

**Aedes (Aedimorphus) caecus* (Theobald)

Breeding place: Ground pools.

Aedes (Banksinella) lineatopennis (Ludlow)

Breeding place: Natural pools and ricefields. Known also from Amoy, Fukien Province.

Aedes (Finlaya) assamensis (Theobald)

Breeding place: Tree holes and bamboo stumps.

Aedes (F.) albocinctus Barraud

Breeding place: Tree holes. The characters of the adults, the male genitalia, the larvae and the pupae of my specimens are identical with that of the type specimens. Barraud (1934) writes that the hypopygium "does not show any marked modification," but gives no drawing and description, so the writer intends to publish a description and drawing of the male genitalia in a separate paper.

Aedes (F.) albotaeniatus var. *mikiranus* Edwards

Breeding place: Bamboo stumps. The males of my specimens and the type males of *Ae. albotaeniatus* and *Ae. lepchana* are identical in all respects including the genitalia. The females of my specimens appear identical with that of *Ae. albotaeniatus* var. *mikiranus*. The pupae of my specimens also agree well with the pupal pelt from the type locality. However the larvae of my specimens are quite different from Barraud's description (1934) of Terzi's drawing of the larva of *albotaeniatus*. The descriptions and drawings of the larva and male genitalia of my specimens will thus be given in a separate paper.

Aedes (F.) harveyi Barraud

Breeding place: Bamboo stumps and tree holes.

Aedes (F.) formosensis Yamada

Breeding place: Bamboo stumps. This species was not by

then included in Feng's list (1938), although it was originally described from Taiwan (Formosa).

Aedes (F.) dissimilis (Leicester)

Breeding place: Tree holes.

Aedes (F.) albolateralis (Theobald)

Breeding place: Tree holes and bamboo stumps.

Aedes (Stegomyia) annandalei Theobald

Breeding place: Tree holes and bamboo stumps. The female bites man in daytime. Known also from Chekiang.

Aedes (S.) w-albus Theobald

Breeding place: Bamboo stumps. Known also from Chekiang and Taiwan.

Aedes (S.) albopictus (Skuse)

Breeding place: Bamboo stumps, tree holes, leaf bases of "Tun-tun" and "Moo-in-ka," and occasionally in artificial water containers. This is a very common species in China, and very prevalent in this locality. The observation of Buddle (1928) in Canton, South China, showed epidemiologically the relationship of this species with dengue fever. However it seems not to be responsible for the transmission of disease in this locality, although dengue fever occurs in Rangoon, Burma. It is interesting to note that its related common species, *A. aegypti*, has not been found here.

Culex (Lutzia) fuscans Wiedemann

Breeding place: Natural pools.

Culex (L.) vorax Edwards

Same as above species.

Culex (Neoculex) brevipalpis Giles

Breeding place: Tree holes. Known also from Chekiang, Fukien and Kwangtung.

Culex (Mochthogenes) malayi Leicester

Breeding place: Ditches and ponds. Rather common in China.

Culex (Lophoceratomyia) minor Leicester

Breeding place: Bamboo stumps.

Culex (L.) uniformis Theobald

Breeding place: Bamboo stumps.

Culex (Culiciomyia) pallidothorax Theobald

Breeding place: Tree holes. Known also from Chekiang, Fukien and Kwangtung.

Culex (Culex) bitaeniorhynchus Giles

Breeding place: Streams, pools, ricefields and ditches. Common species in China.

Culex (C.) vishnui Theobald

Same as the former species.

Culex (C.) whitmorei (Giles)

Breeding place: Ricefields.

Culex (C.) gelidus v. *bipunctatus* Theobald

Breeding place: Contaminated pools.

Culex (C.) mimeticus Noé

Breeding place: Streams and pools.

Culex (C.) mimulus Edwards

Breeding place: Natural pools. Known also from Hunan and Hongkong.

Culex (C.) fuscifurcatus Barraud

Breeding place: Natural pools. The larval description will be given in a separate paper.

Culex (C.) vagans Wiedemann

Breeding place: Ground pools.

Culex (C.) quinquefasciatus Say

Breeding place: Pools, ponds, ditches, and domestic collections of water. Common in South China.

Culex (C.) fuscocephalus Theobald

Breeding place: Ground pools.

SUMMARY

Forty-four species of culicine mosquitoes have been found from Chefang, Western Yunnan. Among these, all species but one are newly recorded for the province of Yunnan, and 19 species are new to China. Their breeding places and known geographical distribution in other provinces of China are given.

ACKNOWLEDGEMENT

The work herein reported was done under the auspices of the National Institute of Health of China in cooperation with the International Health Division of the Rockefeller Foundation. The writer is indebted to Dr. M. C. Balfour, Regional Director in the Far East of the IHD of the Rockefeller Foundation, for constant help; to Prof. L. C. Feng of the Parasitology Dept. of the Peiping Union Medical College for kind

help in the identification of most of the species; to Dr. Alan Stone of the U. S. National Museum, and Lt. Comdr. K. L. Knight of the U. S. Naval Medical Research Institute, for checking over the two species, *Aedes albocinctus* and *A. albo-taeniatus* v. *mikiranus*, and valuable suggestions to the manuscript; and to Mr. P. F. Mattingly of the British Museum for the comparison of the above two species with the type specimens.

REFERENCES

- Barraud, P. J. 1934. The Fauna of British India. Diptera. Vol. V. Culicidae. London.
- Buddle, R. 1928. Entomological Notes on the Canton Delta, JI. Roy. Nav. Med. Serv., 14:190-200.
- Feng, L. C. 1938. A Critical Review of Literature regarding the Records of Mosquitoes in China. Peking Nat. Hist. Bull., 12:285-318.
- Feng, L. C. 1941. A new mosquito, *Topomyia houghtoni* sp. nov., from Western Yunnan, China. Bull. Fan Mem. Inst. Zool. Ser., 10:244-254.

BOOK REVIEW

HENRY DAVID THOREAU, by Joseph Wood Krutch, Brander Matthews Professor of Dramatic Literature, Columbia University. American Men of Letters Series, 8vo., cloth, 295 pp., illus., N. Y., William Sloane Associates, 1948, \$3.50.

It was something over sixty years ago that the writer of this review, then a small boy, first began to find enjoyment in reading the natural history writings of Henry David Thoreau (1817-1862), American naturalist, educator, poet and philosopher. It is noteworthy that the same individual, after long years, still enjoys rereading them. Truly these writings last well! Comparatively unknown during his life-time, such of Thoreau's works as had then been published had only limited circulation. However, in the eighty odd years which have elapsed since his death, much hitherto unpublished material written by him has been issued, and his writings and his philosophy, decade by decade have spread abroad until he has become known and his writings have been loved all over the world. It was in the fields and woods of his birth-place, Concord, Massachusetts, that Thoreau learned in youth the love of nature which later became one of his outstanding characteristics, and of which in later life he had learned to write in phraseology of exquisite beauty. A graduate of Harvard University, he was a valued friend of those famous naturalists Louis Agassiz and Thaddeus William Harris and made many biological collections at various times for them. However, it was in 1845, when he was twenty-eight years old, that Thoreau began the experiment in simplification of living by which he is probably most widely known. He retired to a self-built hut in the woods by the shores of Walden pond near his native village, and there for some two years he made studies and wrote of birds and plants, of



Chow, C Y. 1949. "Culicine mosquitoes collected in Western Yunnan, China during 1940-1942 (Diptera, Culicidae)." *Proceedings of the Entomological Society of Washington* 51, 127-132.

View This Item Online: <https://www.biodiversitylibrary.org/item/54666>

Permalink: <https://www.biodiversitylibrary.org/partpdf/92227>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Smithsonian

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Entomological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.