

pupal skins of thirty-two species of mosquitoes occurring in North and Central America, representing thirteen genera. The following genera and species were examined: *Anopheles albimanus* Wiedemann, *A. aquasalis* Curry, *Toxorhynchites hypoptes* Knab, *Trichoprosopon digitatum* (Rondani), *Sabethes cyaneus* (Fabricius), *S. chloropterus* (Humboldt), *Wyeomyia scolinomus* Dyar and Knab, *W. arthrostigma* Peryassu, *W. personata* (Lutz), *Limatus durhamii* Theobald, *Uranotaenia geometrica* Theobald, *Culiseta incidens* Thomson, *C. maccrackenae* Dyar and Knab, *Orthopodomyia fascipes* Coquillett, *Psorophora ferox* (Humboldt), *Aedes taeniorhynchus* (Wiedemann), *A. euplocamus* Dyar and Knab, *A. leucocelaenus* Dyar and Shannon, *A. leucotaeniatus* Komp, *A. terreus* (Walker), *A. septemstriatus* Dyar and Knab, *Haemagogus spegazzinii falco* Kumm et al., *H. equinus* Theobald, *H. argyromeris* Dyar and Ludlow, *H. chalcospilans* Dyar, *H. lucifer* Howard, Dyar and Knab, *Culex mollis* Dyar and Knab, *C. quinquefasciatus* Say, *C. bihaicolus* Dyar and Nunez Tovar, *C. secundus* Bonne-Wepster and Bonne, *C. conservator* Dyar and Knab and *C. corrigani* Dyar and Knab.

The size of the tenth segment or genital

pouch corresponds to the size of the genitalia of the adult male or female mosquito in question. The genital pouch of pupae examined for male mosquitoes differed in size according to the genera and species. In some *Culex* species the pouch was only about one-third as long as the pupal paddles, while in some other genera, particularly *Limatus*, it extended to the outer one-third of the paddles. In the males the pouch was always bifurcate to near the base, while in the females it was always shorter than in the males and broadly rounded, sometimes slightly indented posteriorly.

This sexual character can be seen quite readily in the living pupa by taking the specimen up in a transfer pipette as described by Moorefield and rotating the pipette into proper position and examining the specimen under a binocular dissecting microscope or a good hand lens. This means of sexing mosquito pupae is of considerable value when mosquitoes are being reared and associated with their exuviae for taxonomic studies.

#### Literature Cited

- MOOREFIELD, H. H. 1951. Sexual Dimorphism in Mosquito Pupae. *Mosquito News*, 11(3): 175-177.

## A FIRST RECORD OF *Aedes diantaeus* H. D. & K. FOR MASSACHUSETTS WITH NOTES ON ASSOCIATED SPECIES<sup>1</sup>

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On April 1, 1951, in a kettlehole about three miles north-northeast of Westhampton, Massachusetts, many first instar larvae of *Aedes diantaeus* were collected

with numerous other Culicine larvae. This species has never been reported from Massachusetts, nor has it been reported south of Dublin, New Hampshire, its type locality. Dyar (1928) reports the distribution as "Canadian forested region from N. H. and Ontario to British Columbia. The species is rare and local, frequenting

<sup>1</sup>Contribution of the Department of Entomology, University of Massachusetts, Amherst, Mass.

the darkest woods." A species collected in Belchertown, Mass., was thought to be *diantaeus* until the collections in Westhampton were made. Dr. Marion E. Smith of the University of Massachusetts has determined that the Westhampton specimens are *diantaeus* by comparing them with the type in Washington, D. C. The Belchertown specimens represent a new species which she is presently describing.<sup>1</sup> A single larva of the new species was taken with *diantaeus* in Westhampton on April 22.

During a period of a little more than a month (April 1 to May 6), all larval instars and pupae of *diantaeus* were collected, as well as larvae of 11 species of *Aedes*, *Mochlonyx culiciformis* (*karnnerensis*), and *Culiseta morsitans*. All of the collections were made in the same pool. The abundance of the various species of *Aedes* in a month of larval collecting was as follows:

Present in great numbers: *excrucians*, *implacabilis*, *diantaeus*, *fitchii*; present in moderate numbers: *trichurus*, *canadensis*, *intrudens*; present in small numbers: *communis*, *punctor*, *cinereus*; single specimens taken: *stimulans* and a new species.

Larvae of *Mochlonyx culiciformis* (*karnnerensis*) were extremely abundant and fed freely on the larval population, accounting in part for the decreased numbers of many species as the season advanced. *Culiseta morsitans* larvae were not common, but several were taken. An adult of *A. aurifer* was found on May 6, along with 2 adults of *diantaeus*. Many adults of the latter were reared in the laboratory, providing material for study. Thus a total of 15 species of Culicidae, 13 of them *Aedes*, were found in one small pool.

<sup>1</sup> Subsequently described as *A. pseudodiantaeus* Smith in Bull. Brook. Ent. Soc. XLVII(1):19-28. 1952.

The pool itself measures about 40 feet in diameter and 1 to 3 feet in depth in the spring, but is nothing more than soggy ground in late summer, at least during wet years. There is an abundance of cattails (*Typha latifolia*), sedges (Cyperaceae), and woody shrubs common to swampy, cool, woodland soils. These seem to create some variable conditions of shade and environment in different parts of the pool. Sphagnum is not present. The locality is of interest since it is in open woods about 100 feet from a roadway and, in addition, only at 500 feet elevation. *Diantaeus*, being a northern species, might be expected to occur at higher elevations in Massachusetts. The locality is characterized by scattered, mature white pines remaining from the hurricane of 1938, and a ground cover of young hardwoods and perennials, especially wild *Rubus*. The surrounding area is wooded, with occasional farms and meadows. Although the kettlehole has no outlet, a temporary stream runs just below, emptying into a large permanent stream some 150 yards distant.

In conclusion, *Aedes diantaeus* now has been found in Massachusetts, being both a first record for the state and a new southern limit in the distribution of the species. The locality from which it was taken is remarkable in the experience of local workers in that such a large number of species of *Aedes* occurs at the same time and in so small an area.

#### References

- DYAR, H. G. 1928. *The Mosquitoes of the Americas*. Carnegie Institute Wash. Pub. 387.
- FELLTON, HERMAN L., RALPH C. BARNES, and CLIFTON A. WILSON. 1950. New Distribution Records for the Mosquitoes of New England. *Mosq. News* 10, 2:84-91.
- GETTING, V. A., and R. F. FEEMSTER. 1940. A Survey of the Mosquitoes of Massachusetts. Processed Report, Mass. Dept. Pub. Health.