

Notes on the Identification of Some Female *Culex* (*Aedinus*)
and Their Flight and Feeding Patterns

Thomas H. G. Aitken
Yale Arbovirus Research Unit
Yale University School of Medicine
60 College Street
New Haven, Connecticut 06510

One of the last taxonomic works to appear from the laboratory of the late John Belkin is the following, "Mosquito Studies (Diptera, Culicidae) XXXVI. Subgenera *Aedinus*, *Tinolestes* and *Anoedioporpa* of *Culex*" by O. G. W. Berlin and John N. Belkin, Contributions of the American Entomological Institute, Vol. 17, No. 2, 104 pp., 1980.

On page 10, the authors discuss the bionomics and medical importance of the species of *Aedinus*, commenting that "Though blooded females have been collected, it is not known whether females are attracted to man." They say that eight arboviruses have been recovered in Trinidad from two species (*Culex accelerans* and *Culex amazonensis*) so that it is apparent that the mosquitoes are transmitting these viruses among forest animals. They further call attention to the difficulty, if not near impossibility, of differentiating adult female specimens.

I would like to clarify some of these impressions by first pointing out that there is a great difference between working with dried museum specimens and material freshly brought in from the field or specimens allowed to emerge in the laboratory and studied while alive or freshly dead. In the fresh or living insect there are evanescent colors in the integument which disappear with dessication; likewise, there may be spotting or more general marking of the integument (e.g., on the pleurae) which fades with time. Further, abdominal sclerites, as they harden, may become recurved, resulting in the hiding of scale patterns.

At the Trinidad Regional Virus Laboratory we were concerned with these matters because of the difficulty of identifying certain *Culex* species which were being processed for arbovirus isolation. In 1957, or earlier, we began studying freshly-caught specimens as well as freshly-reared adults for differential characters. For many species such characters were found and so it was possible to identify a number of species of *Melanoconion* as well as the two *Aedinus* mentioned above. *Culex accelerans* was recognized by the smoky blue-gray appearance of the pleurae and the uniformly dark abdomen. The pleuron of *Cx. amazonensis* is pale brown and the dark abdominal tergites carry a thin lateral line (3-4 scales wide) of golden/white scales which are a dorsal continuation of the scale pattern of the sternites (best seen in an engorged specimen where the abdomen is extended). Similar studies of living or freshly-dead mosquitoes have been undertaken at the Gorgas Memorial Laboratory. In fact, Pedro Galindo provided invaluable identification assistance at times.

That these two *Aedirus* species (particularly *accelerans*) are readily attracted to man (and will bite him if permitted) is evident from the 24-hour human bait collections made in Bush Bush Forest. *Culex accelerans* was the fifth most abundant (3,463 specimens) and *amazonensis* the seventh (696 specimens) of 30 mosquito species recovered during 11 collecting sessions. These two species also are readily attracted to other mammals (rodents) but less so to birds (chickens); in addition they may be strongly attracted to lizard bait. The Bush Bush studies furthermore demonstrated that *accelerans* is a species primarily found in the forest canopy. Both species bite during the day, particularly *accelerans* but the peak of feeding activity is at dawn and dusk. For further details see Aitken, Atas do Simpósio sobre a Biota Amazônica 6:65-73, 1967, and Aitken et al., Am. J. Trop. Med. & Hyg. 17(2):253-268, 1968.

In closing, I quote from Pedro Galindo's letter of 15 March 1982. "I read with interest your scientific note on *Culex amazonensis* and *Cx. accelerans* and I fully agree with all your taxonomic comments. I had a great deal of experience with *Cx. amazonensis* in the lowlands of the Pacific side of Panama and I hereby verify that they do bite man, if given the chance, although I consider them primarily rodent biters. They attacked exposed rodents (including sentinel hamsters) in numbers, even during the daytime in the shade, but, as you pointed out, they showed an ample spectrum of host selection. This is also substantiated by precipitin tests on freshly-engorged wild-caught females done by Dr. C. Tempelis at Berkeley and, later, by Dr. H. Christensen at GML. We also gathered a great deal of evidence pointing to *Cx. amazonensis* as one of the species responsible for feedback of VEE virus into exposed hamster populations in the above-mentioned area." (Quoted with permission).