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PRIMARY RECORD OF *CULISETA MELANURA* BITING MAN IN NATURE

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The arthropod borne virus of eastern equine encephalitis (EEE) has been isolated from the mosquito *Culiseta melanura* (Coquillett) collected in Louisiana (1), Alabama (2), New Jersey (2, 3), and Massachusetts (4). The species has been considered a potential vector of the virus, since no other arthropod has been shown by virus isolation to be so closely associated with outbreaks of the disease throughout such a large geographic range. *C. melanura* is thought to be principally an avian feeder, and it has been postulated that it is involved in spreading the infection among the reservoir hosts—wild birds (5). A lack of evidence that it occasionally feeds on humans under natural conditions has precluded any specific hypothesis that this mosquito also spreads the infection to man. As recently as 1956 (6), it was noted that the feeding preferences and hosts of *C. melanura* were unknown. In the laboratory it has been induced to feed upon fowl, occasionally upon rabbits (7), upon mice (8), and once upon man

(8). This report documents observations upon *C. melanura* biting man under natural conditions.³

On September 5, 1957 during a visit to a known *C. melanura* habitat in a cedar swamp, located in Raynham, Massachusetts, a female mosquito was seen to alight upon the dorsal forearm of one of us (R. O. H., who had previously been immunized with EEE vaccine). Since it appeared to be *C. melanura*, especial interest was taken in its subsequent activity. The mosquito landed approximately 1.5 hours before sunset and commenced exploratory probing with its proboscis among the hairs of the arm. The exploratory movements were quite slow, and 5 minutes elapsed before it appeared to have successfully penetrated the skin. At no time during the biting activity did it seem that the mouth parts were being deeply inserted into the skin. This behavior was similar to that previously described for feeding on chicks (7). The proboscis penetration was sufficiently deep, however, to provide a firm attachment to the host, and it was

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quite difficult to dislodge the mosquito during the capture. Biting was allowed to continue for 10 minutes, after which, the mosquito was collected in an aspirator tube. Before the tube containing the captured mosquito was removed from the host's arm, its circumference was marked on the skin with a ball point pen to delineate the region of the bite. Five minutes later, a slight swelling was noticed in the region, and within 10 minutes the area of noticeable reaction had increased to its maximum diameter of about 0.25 inch. The wheal remained visible for about 1 hour; such a reaction is typically produced on the host by the bite of most mosquito species. Neither during, nor after the biting activity was there a marked stinging or itching sensation.

The captured mosquito was taken to the laboratory, chloroformed, and identified as *C. melanura*.⁴ Observation under a dissecting microscope revealed that there was no freshly imbibed blood visible, but that there was a small amount of undigested blood from a previous meal in the abdomen.

This biting record was obtained on a clear day having mild temperature. No special inducement to the mosquito was made, but it was not discouraged from biting. *C. melanura* adults had been collected from stump holes in this well shaded area on numerous occasions during the 3 previous months and have been repeatedly collected there since then without obtaining records of additional biting activity.

Apparently, under normal circumstances, this mosquito rarely feeds on humans. If *C. melanura* is the principal vector of

human EEE infections, this behavior could account for the relatively small numbers of human cases reported (5), and the occasional infective feeding by the species on man could be expected to occur only after large numbers had fed on reservoir hosts circulating the virus in their blood. This combination of conditions would be necessarily dependent upon an assortment of variables, such as: climatic conditions, reservoir host epizootics, and the relative accessibility of human hosts; the infrequent occurrence of this combination could result in the characteristic interepidemic period between outbreaks of human cases of EEE.

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