NOTES ON CERTAIN SPECIES OF MOSQUITOES FROM DELAWARE COUNTY, PENNSYLVANIA

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In June, 1946 Wilson, Barnes, and Fellton published "A list of the mosquitoes of Pennsylvania with notes on their distribution and abundance." This is an excellent account. It is based partly on data from Delaware County, Pa., which included the County Commission's trap records and personal communications, and a previous report by the present writer (1945). Certain of their statements need minor revision, however, in the light of Delaware County's complete records for the years 1944, 1945 and 1946. The present notes are made from these records, principally those of the summer of 1946.

Especial thanks are due Major Russell W. Gies, Executive Secretary of the Commission. For the continued help of Richard L. Jones, Joseph E. Wickersham, Guy Kennedy, and James J. Walsh, the writer is most grateful.

Delaware County, Pennsylvania, has an area of some 184 square miles, embracing a population of about 350,000 persons (Gies, 1944). It possesses large areas of marsh land south of Philadelphia, and between Darby Creek and the Delaware River. From these low marshes, it extends into uplands of towns, woods, and farms. The County Mosquito Commission annually operated ten New Jersey light traps over this area from June 1st to October 1st. The catches were examined almost daily, and data obtained therefrom were added to other observations on mosquito abundance. Most of the statements in these notes refer to female mosquitoes only.

The writer will comment on the mosquito species in the order in which they were listed by Wilson, Barnes, and Fellton (1946), omitting those, however, which warrant no comment here.

Aedes canadensis. This was a common species in Delaware county, being a very troublesome biter in wooded areas. It was decidedly uncommon as a trap invader, however, and was taken in small numbers in June and July only.

Aedes cantator. This mosquito was a vicious biter (Stabler, 1945), and in many places was the earliest spring feeder. It bred freely in the flooded freshwater marshes of Tinicum Township. In July, 1944, these marshes, involving huge areas of inundation from abnormal rainfall and broken dikes, were producing this mosquito by the countless billions, every dipper yielding 200–300 larvae and pupae. Wilson, Barnes, and Fellton state that "it breeds in the brackish coastal marshes," not suggesting its freshwater possibilities.

Aedes cinereus. Though not abundant in Delaware County, this species was not rare. It was taken in six of the ten traps, in July and August only, and was a not infrequent biter.

Aedes sollicitans. That this striking form bred in Delaware County was never proven by the writer, despite constant larvae identification and rearing. As an adult, it was not a rarity, though it was in no place abundant in recent years. It was commonest in the more southern sections of the County, suggesting invasion from the brackish areas of the Delaware River to the south.

Aedes stimulans. Wilson, Barnes, and Fellton state that *A. stimulans* is "probably common throughout much of the State." In Delaware County, it was de-

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cidedly uncommon, and has been so for at least ten years. For five years no single specimen was taken by light trap. The writer took two biting females in three years.

Aedes taeniorhynchus. This form is rare indeed, less than a dozen specimens being taken at only three sites in the past three years.

Aedes triseriatus. Although not abundant in our traps, a trip to the woods found the individual quickly surrounded by this tree-hole species. Larvae were also taken in abundance from wooden tubs in widely scattered areas.

Aedes trivittatus. Taken in six of the ten traps, *A. trivittatus* did not appear to be abundant in the County. In certain local areas, however, it was excessively numerous. One such spot was frequently visited by the writer, and the hordes which promptly attacked nearly carried one away! A light trap only ¼ mile from this spot, however, took only an occasional specimen. Indeed, a retreat of only 100 yards from this site, even at dusk when they were most active, found most of the mosquitoes left behind.

Aedes vexans. This is the mosquito pest of Delaware County. It was, in certain localities, at times almost unbearable, and its eradication would at once reduce the County's mosquito problem to one of mere routine control. The flooding of the County's hundreds of acres of low lands produced *A. vexans* in, at times, astronomical numbers.

Anopheles barberi. Wilson, Barnes, and Fellton state that they have records of this species "from only two localities in the State," both "from privies." Neither is from Delaware County. The writer has taken two females there in light traps in three years, and has hand-caught three males, one under a bridge and two in a shack in the woods. It is a rare type there.

Anopheles crucians. Classed as a "relatively rare" species in Pennsylvania, *A. crucians* does not seem to be so in certain parts of Delaware County. In fact, the traps showed more of them in 1946 than of *A. punctipennis,* a very widespread, abundant anopheline there. This may be serious in a county with Delaware's population because of recent evidence that this species *(crucians)* is important as a vector of malaria.

Anopheles quadrimaculatus. As stated by Wilson, Barnes, and Fellton, this queen of eastern U. S. malaria transmitters is not common, at least in Delaware County. Certain resting places would generally yield a few specimens, but collections were very small.

Anopheles walkeri. "Only four localities" for this species were given by Wilson, Barnes, and Fellton. It is rare in Delaware County, only seven specimens having been trapped there in three years.

Culex apicalis. Though not a feeder on man, this species goes into light traps more abundantly than many realize. An actual tabulation from one trap in Delaware County showed 23 per cent of a month's catch of *Culex* mosquitoes to be *apicalis.*

Culex erraticus. The two females of this species taken by the writer were sent to Barnes for identification. In their paper, Wilson, Barnes, and Fellton list them as being one from "Norwood" and the other from "Philadelphia, (Tinicum)." The latter location as given is rather misleading as this second female was from the Tinicum trap, located in Tinicum Township, directly across Darby Creek and its marshes from Norwood. This is quite some distance from Philadelphia.

Culex pipiens. Wilson, Barnes, and Fellton state this to be "probably the most important of the pest mosquitoes in Pennsylvania." This is certainly not true of Delaware County. There, where successive downpours give rise to successive crops of *vexans,* the great areas of lowlands produce mosquitoes which make outdoor work in some sections virtually impossible after dusk.

Culiseta melanura. Again listed by Wilson, Barnes, and Fellton as "appar-

ently a rare species in this State," with only two locations given (Chester and Norwood in Delaware County). In 1946 in this County, this form was trapped in Chester, Linwood, Norwood (23 ♀ ♀), Ridley Park, Sharon Hill, and Tinicum. A total of forty was trapped, and numerous females were taken biting. It is not rare there.

Orthopodomyia signifera. Stated as having "been taken in only two localities" (Glen Mills and Philadelphia), the writer trapped 66 ♀ ♀ in 1946 from Chester, Glen Mills, Linwood, Media, Norwood (43 specimens), and Sharon Hill. This species is not abundant, but certainly is not rare, in Delaware County.

Psorophora confinnis. This is listed as being probably of not much importance in Pennsylvania. In 1946, 229 ♀ ♀ were trapped, and in some locations it was a quite annoying mosquito. In years past Delaware County catches have run into the thousands for this species.

Psorophora ferox. Wilson, Barnes, and Fellton state that this striking species "is extremely rare in Pennsylvania." The writer's data do not bear this out, at least for Delaware County. Eight females were trapped in 1946 in Bryn Mawr, Norwood (6), and Swarthmore. One or two biting females could nearly always be taken in a particular patch of woods near Glen Mills.

Uranotaenia sapphirina. This beautiful little mosquito is widespread, though not abundant, in Delaware County. In 1945, 190 ♀ ♀ were taken in eight traps. Wilson, Barnes, and Fellton describe it as "only recently reported from the State." The records of the Delaware County Mosquito Commission report it as early as 1936.

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A FAR SOUTH RECORD OF *Anopheles quadrimaculatus* SAY IN FLORIDA[1]

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The first known record of *Anopheles quadrimaculatus* Say in Monroe County, Florida was made by the writer, based on the collection of four males and eight females, July 18, 1946. This discovery made in connection with statewide anopheline density studies being carried out in the state is a record in the last county from which *A. quadrimaculatus* Say was unreported in Florida.

These specimens were taken resting in an abandoned trailer on Florida Highway No. 27 at Pine Crest, a community represented at the present time by one vacant house. This collection on the mainland of Monroe County is believed to represent the farthest southwest limit of breeding of *A. quadrimaculatus* Say in the state. Pritchard *et al* (1947) did not report this species from the Florida Keys. An extensive anopheline survey of the Florida Keys and the Cape Sable area during the winter of 1946–1947 failed to produce any specimens of this anopheline.

[1] A contribution from the Florida State Board of Health, Jacksonville, Florida and the Communicable Disease Center, Atlanta, Georgia.

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