

wing-nuts hold the plexiglass cover in place on the basin, and the fragile electrical parts are completely enclosed and protected. Total cost for all parts purchased in Taiwan is approximately US \$5.00, less cost of the transformer converter. These parts would be perhaps slightly more expensive if purchased in the U. S.

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#### Literature Cited

BECK, E. C. 1952. Notes on the distribution of *Culicoides* in Florida (Diptera, Ceratopogonidae). Florida Ent. 35:101-107.

BECK, E. C. 1958. A population study of the *Culicoides*. Mosq. News 18:6-11.

BELTON, P. AND PUGAT, A. 1967. A comparison of different lights in traps for *Culicoides* (Diptera:Ceratopogonidae). Can. Ent. 99:267-272.

DU TOIT, R. M. 1944. The transmission of blue-tongue and horse sickness by *Culicoides*. Onderstepoort Jour. Vet. Sci. 19:7-16.

FOX, I. 1953. Light trap studies on *Culicoides* in Puerto Rico. Jour. Econ. Ent. 45:888.

FOX, I. AND CAPRILES, J. M. 1953. Light trap studies on mosquitoes and *Culicoides* in western Puerto Rico. Mosq. News. 13:165-166.

FOX, I. AND KOHLER, C. E. 1950. Distribution and relative abundance of the species of biting midges or *Culicoides* in eastern Puerto Rico as shown by light traps. Puerto Rico Jour. Pub. Health and Trap Med. 25:342-349.

JAMES, M. T. 1943. The genus *Culicoides* in Northern Colorado (Diptera, Ceratopogonidae). Pan-Pacif. Ent. 19:148-153.

JAMNBACK, H. AND WATTHEWS, T. 1963. Studies of populations of adult and immature *Culicoides sanguisuga* (Diptera:Ceratopogonidae). Ann. Ent. Soc. Am. 56:728-732.

KHALAF, K. T. 1952. The *Culicoides* of Wichita Refuge, Oklahoma, taxonomy and seasonal incidence (Diptera, Heleidae). Ann. Ent. Soc. Am. 45:348-358.

MADSEN, H. F. and SANBORN, R. R. 1962. Black light traps. California Agric. 16(2):12-13.

MESSERSMITH, D. H. 1965. *Culicoides* (Diptera: Ceratopogonidae) associated with poultry in Virginia. Mosq. News 25:321-324.

MULHERN, T. D. 1934. A new development in mosquito traps. Proc. New Jers. Mosq. Extern. Ass. 21:137-140.

SERVICE, M. W. 1969. Light trap catches of *Culicoides* spp. (Dipt., Ceratopogonidae) from southern England. Bull. Ent. Res. 59:317-322.

SUDIA, W. D. and CHAMBERLAIN, R. W. 1962. Battery-operated light trap, an improved model. Mosq. News 22(2):126-129.

WILLIAMS, R. W. 1955. Observations on the bionomics of some *Culicoides* of Cheboygan

county, Michigan, (Diptera, Heleidae). Bull. Brook. Ent. Soc. 50:113-120.

WIRTH, W. W. 1951. New species and records of Virginia Heleidae (Diptera). Proc. Ent. Soc. Washington 53:313-326.

WIRTH, W. W. and BOTTIMER, L. J. 1956. A population study of the *Culicoides* midges of the Edwards Plateau region of Texas, Mosq. News 16:256-266.

#### A CHECKLIST OF THE BLACKFLIES OF NEW JERSEY (DIPTERA:SIMULIIDAE)<sup>1</sup>

WAYNE J. CRANS AND LINDA G. MCCUISTON

During 1969, a survey was undertaken by the Department of Entomology and Economic Zoology at Rutgers University to ascertain the number and distribution of blackfly species in New Jersey. Although such information is available from neighboring states (Stone and Jamnback, 1955; Frost, 1949; Dimond and Hart, 1953), New Jersey does not at present have a published list of simuliid species. During a survey conducted in Passaic County in 1957, six species were collected and the identifications were confirmed by the U. S. National Museum (Lake, 1970 personal communication). An additional six species were identified from the Rutgers collection by the junior author. No further records are known for the state.

The checklist given here has been based entirely upon larval and pupal collections made in all counties of New Jersey during 1969. Details of the areas included and the methods employed may be found elsewhere (Crans and McCuiston, 1970). Additions to this list will be reported as new records become available.

The authors are indebted to Dr. Alan Stone of the United States National Museum for confirming each of the identifications included in this report.

#### Genus *Prosimulium* Roubaud

1. *Prosimulium fuscum* Syme & Davies
2. *Prosimulium magnum* Dyar & Shannon
3. *Prosimulium mixtum* Syme & Davies
4. *Prosimulium multidentatum* (Twinn)
5. *Prosimulium rhizophorum* Stone & Jamnback

#### Genus *Cnephia* Enderlein

6. *Cnephia dacotensis* (Dyar & Shannon)
7. *Cnephia mutata* (Malloch)

#### Genus *Simulium* Latreille

8. *Simulium aureum* Fries

<sup>1</sup> Paper of the Journal Series, Department of Entomology and Economic Zoology, Rutgers University—The State University of New Jersey, New Brunswick, N. J.

9. *Simulium congarinarum* (Dyar & Shannon)
10. *Simulium decorum* Walker
11. *Simulium gouldingi* Stone
12. *Simulium jenningsi* Malloch
13. *Simulium parnasum* Malloch
14. *Simulium tuberosum* (Lundström)
15. *Simulium verecundum* Stone & Jamnback
16. *Simulium vittatum* Zetterstedt

#### References Cited

CRANS, W. J. and McCUISTON, L. G. 1970. The current status of blackfly investigations in New Jersey. Proc. 57th Ann. Mtg. N. J. Mosq. Ext. Assoc. (In press).

DIMOND, J. B. and HART, W. G. 1953. Notes on the blackflies (Simuliidae) of Rhode Island. Mosq. News 13(4):238-242.

FROST, S. W. 1949. The Simuliidae of Pennsylvania (Dipt.). Ent. News 60:129-131.

STONE, A. and JAMNBACK, H. A. 1955. The Blackflies of New York State. (Diptera-Simuliidae). Bull. N. Y. State Mus. 349:1-144.

#### THE OCCURRENCE OF *Aedes flavescens* (MÜLLER), *Psorophora cyanescens* (COQUILLET) AND *Culex erraticus* (DYAR AND KNAB) IN NEW JERSEY.<sup>1</sup>

WAYNE J. CRANS

The most recent checklist of New Jersey mosquitoes (Crans, 1967) lists fifty-two species known to occur in the State. Since the time of that publication, three additional mosquito species representing three different genera have been collected and identified by various New Jersey investigators. The details of these initial records are included in this report.

*Aedes flavescens* (Müller). *Aedes flavescens* is recognized as a northern mosquito species with a single generation each year. Although the adults appear very early in the spring, the females often survive until late in the season (Carpenter and LaCasse, 1955). In all probability, New Jersey now represents the southernmost boundary for this species in the northeast.

A single adult female *Aedes flavescens* was taken in a light trap near Rutherford, New Jersey on 3 June 1968 by Mr. Herman Ehrenberg of the Bergen County Mosquito Extermination Commission. The specimen was identified by Mr. Ehrenberg and forwarded to the author at that time. One additional specimen has since been taken from a neighboring area.

*Psorophora cyanescens* (Coquillett). *Psorophora cyanescens* is a fairly common mosquito of the southeastern United States, recently reported as far north as Delaware (Lake et al., 1967). It would now appear that southern New Jersey represents the northernmost boundary for this species on the Atlantic seaboard.

Several adult female *Psorophora cyanescens* were taken in a sweep collection by the author near Woodbine, New Jersey on 11 August 1967 and submitted alive to the New Jersey State Department of Health with numerous other species for virus investigations. Mr. George Bordash of the State Department of Health recognized and identified the first record of this species from that collection. Since that time, numerous adults have been taken in light traps from Cape May, Cumberland, Salem and Ocean Counties and it would appear that the species is now well established in the southern portion of the State.

*Culex erraticus* (Dyar & Knab). *Culex erraticus* is known to occur along the Atlantic coast as far north as New York State (Barr, 1958). Prior to this report, however, the species had not been recorded in New Jersey.

The first record of this species in New Jersey was taken on 12 August 1969 by Dr. Lyle Haggman of the Department of Entomology and Economic Zoology at Rutgers University and Mr. Boyd Lafferty of the Cape May County Mosquito Extermination Commission from a resting box near Dennisville. Mrs. Linda G. McCuiston made the original identification at Rutgers. Simultaneously, Mr. Walter Gusciara and Mr. George Bordash of the New Jersey State Department of Health collected and identified several specimens from the same area. Additional collections have revealed the species to occur infrequently in the southernmost portion of New Jersey.

The addition of these three mosquito species now brings the New Jersey state list to fifty-five. Each of the original collections herein mentioned were graciously received and confirmed by Dr. Alan Stone of the United States National Museum.

#### References Cited

BARR, A. R. 1958. The Mosquitoes of Minnesota. Univ. of Minn. Ag. Exp. Sta. Tech. Bull. 228.

CARPENTER, S. J. and LACASSE, W. J. 1955. Mosquitoes of North America. University of California Press, Berkeley and Los Angeles.

CRANS, W. J. 1967. *Anopheles earlei* Vargas, an addition to the checklist of New Jersey mosquitoes. Mosq. News 27(3):430.

LAKE, R. W., MURPHEY, F. J. and STACHECKI, C. J. 1968. The occurrence of *Psorophora cyanescens* (Coquillett), *P. horrida* (Dyar & Knab) and *P. varipes* (Coquillett) in Delaware. Mosq. News 28(3):470.

<sup>1</sup>Paper of the Journal Series, Department of Entomology and Economic Zoology, Rutgers-The State University of New Jersey, New Brunswick, N. J.