artificial containers. A modified system may also be applicable for sampling *Culiseta melanura* (Coquillett) larvae found in difficult to sample holes associated with tree root systems in swamps.

The authors thank Kathy O'Guin for the drawings and Drs. Marc Slaff and John Howard for editorial comments on an earlier version of this paper.

References Cited

Allan, S. A., G. A. Surgeoner, B. V. Helson and D. H. Pengelly. 1981. Seasonal activity of *Mansonia perturbans* adults (Diptera: Culicidae) in southwestern Ontario. Can. Entomol. 113:133–139.

Barton, W. I. 1964. A survey technique for *Mansonia perturbans*. Mosq. News 24:224–225.

Bidlingmayer, W. L. 1954. Description of a trap for *Mansonia* larvae. Mosq. News 14:55–58.

Gozhenko, V. A. 1978. Biotopes and times of development of *Mansonia richiardii* (Ficalbi) 1889 in the conditions of the Ukrainian steppes (In Russian). Med. Parazitol. Parazit. Bolezni 47:36–40.

Guille, G. 1975. Recherches eco-ethologiques sur *Coquillettidia (Coquillettidia) richiardii* (Ficalbi), 1889 (Diptera-Culicidae) du littoral Mediterraneen Francais. I.—Techniques d'etude et morphologie. Ann. Sci. Natur. Zool., Paris 17:229–272.

Guille, G. 1976. Recherches eco-ethologiques sur *Coquillettidia (Coquillettidia) richiardii* (Ficalbi), 1889 (Diptera-Culicidae) du littoral Mediterraneen Francais. II.—Milieu et comportement. Ann. Sci. Natur. Zool., Paris 18:5–112.

Hagman, L. E. 1953. Biology of *Mansonia perturbans* (Walker). Proc. N. J. Mosq. Exterm. Assoc. 40:141–147.

Lounibos, L. P. and R. L. Escher. 1983. Seasonality and sampling of *Coquillettidia perturbans* (Diptera: Culicidae) in south Florida. Environ. Entomol. 12:1087–1093.

McNeel, T. E. 1931. A method for locating the larvae of the mosquito *Mansonia*. Science 74:155.

Morozov, V. A. 1965. The distribution of mosquitoes of the species *Mansonia richiardii* Fic. in the Krasnodar territory and methods for collecting larvae (In Russian). Med. Parazitol. 34:514–517.

Rademacher, R. E. 1979. Studies of overwintering larvae of *Coquillettidia perturbans* mosquitoes in Minnesota. Mosq. News 39:135–136.

WILD-CAUGHT *AEDES TRIVITTATUS* NATURALLY INFECTED WITH FILARIAL WORMS IN KNOX COUNTY, TENNESSEE[1]

LAWRENCE J. HRIBAR[2] AND REID R. GERHARDT[3]

Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN 37901–1071

In an attempt to identify naturally infected mosquito vectors of *Dirofilaria immitis* (Leidy), a suspected focus of dog heartworm disease was located in western Knoxville, Knox Co., Tennessee. The focus was identified by mapping of confirmed dog heartworm cases from the University of Tennessee College of Veterinary Medicine records. The suspected focus was a recreation field surrounded by suburban development with many free-running dogs. The primary mosquito breeding area was a wet weather pond ca 0.25 hectare adjacent to the recreational field. Mosquitoes were collected from the suspected focus using a heartworm-free dog in traps modified from Magoon (1935) and Shemanchuk (1978) from June to September 1984. Mosquitoes were identified to species, dissected in insect saline (Taylor 1960) and examined microscopically for filarial worms within 24 hr of collection.

Eight hundred and forty-four mosquitoes were dissected during this study. One of 530 *Aedes trivittatus* (Coq.) examined contained 5 L_2 in the Malpighian tubules, and 15 L_3 in the hemocoel. None of 3 *Ae. thibaulti* Dyar and Knab, 114 *Ae. triseriatus* (Say), 52 *Ae. vexans* (Meigen), 9 *Anopheles punctipennis* Theobald, 1 *An. quadrimaculatus* Say. 2 *Culex pipiens* Linn., 5 *Cx. salinarius* Coq., 1 *Psorophora cyanescens* (Coq.) and 127 *Ps. ferox* (von Humboldt) were infected.

Aedes trivittatus has been implicated as a vector of *D. immitis* in Iowa (Christensen and Andrews 1976) and Indiana (Pinger 1982). Pinger (1982) states that this species should be considered an important vector of the parasite whenever it occurs in large numbers. Live mammal trapping and examination for footprints of the sus-

[1] Part of a thesis submitted in fulfillment of requirements for the degree of Master of Science.

[2] Present address: Department of Zoology/Entomology, Auburn University, Auburn, AL 36830.

[3] Author to whom reprint requests should be addressed.

pected focus did not reveal the presence of raccoons, thus reducing the chance that *D. tenuis* was present. A single infected mosquito does not allow any definitive statements to be made, but *Ae. trivittatus* should be considered a potential vector of dog heartworm in Knox Co., Tennessee.

We wish to thank E. C. Bernard, R. G. Breene, L. F. Johnson, and P. L. Lambdin for reviewing the manuscript.

References Cited

Christensen, B. M. and W. N. Andrews. 1976. Natural infection of *Aedes trivittatus* (Coq.) with *Dirofilaria immitis* in central Iowa. J. Parasitol. 62:276–280.

Magoon, E. H. 1935. A portable stable trap for capturing mosquitoes. Bull. Entomol. Res. 26:363–369.

Pinger, R. R. 1982. Presumed *Dirofilaria immitis* infections in mosquitoes (Diptera: Culicidae) in Indiana, USA. J. Med. Entomol. 19:553–555.

Shemanchuk, J. A. 1978. A bait trap for sampling the feeding populations of blood-sucking Diptera on cattle. Quaest. Entomol. 14:433–439.

Taylor, A. E. R. 1960. The development of *Dirofilaria immitis* in the mosquito *Aedes aegypti*. J. Helminthol. 34:27–38.

AEDES THIBAULTI: A NEW ADULT RECORD FROM RHODE ISLAND[1]

J. E. COOKMAN[2], N. E. SCARDUZIO[2] AND R. A. LEBRUN[3]

The first recorded capture of *Aedes (Ochlerotatus) thibaulti* Dyar and Knab occurred at South Kingstown, Washington County, Rhode Island on August 16, 1984. The adult female was trapped in a CO_2-baited CDC light trap during a state-wide survey for mosquitoes infected with Eastern equine encephalitis virus. Three more adult females were captured at the same site on August 22, 1984, and another adult female was trapped on September 7 in Warwick, Kent County at a site about 30 miles north of the South Kingstown site. This record now brings to 38 the total number of mosquito species reported from Rhode Island (LeBrun et al. 1983). Prior to this, Connecticut was the only New England state from which *Ae. thibaulti* had been reported (Darsie and Ward 1981).

Identification was made by Dr. Ronald A. Ward, Walter Reed Army Institute of Research, Washington, D. C. Voucher specimens are deposited in the University of Rhode Island reference collection.

References Cited

Darsie, R. F., Jr. and R. A. Ward. 1981. Identification and geographical distribution of the mosquitoes of North America, north of Mexico. Mosq. Syst. Suppl. 1:1–313.

LeBrun, R. A., D. Boyes, P. Capostosto and J. Marques. 1983. Annotated list of the mosquitoes of Rhode Island. Mosq. News 43:435–437.

[1] Rhode Island Agricultural Experiment Station Journal Article No. 2265.

[2] Rhode Island Department of Environmental Management, Government Center, Wakefield, RI 02879.

[3] Department of Plant Pathology and Entomology, University of Rhode Island, Kingston, RI 02881.

TWO BASIC PROGRAMS FOR STATISTICAL ANALYSIS OF PERIODICITY DATA, BASED ON THE SINE-WAVE FUNCTION[1]

J. R. LINLEY

Florida Medical Entomology Laboratory, Institute of Food and Agricultural Sciences, University of Florida, 200 9th Street, S.E., Vero Beach, FL 32962.

To provide a simplified statistical approach to the analysis of microfiliarial periodicity in human filariasis, Aikat and Das (1976) developed a modified form of the harmonic (sine-wave) equation first applied to such data by Sasa and Tanaka (1972, 1974). Several examples of the method as applied to microfilarial periodicity of the mosquito-borne human parasite *Wuchereria bancrofti* are given by Aikat and Das (1976). Similarly, Pichon (1983) has recently tested the periodicities of *Mansonella ozzardi* microfilariae in individual human infections. Since *Culicoides* spp. are involved in the transmission of *M. ozzardi,* I became interested in a better understanding of the method and developed two BASIC programs, SINFIT and SINCOM, which will plot the data and perform the required calculations. Personal computers are now in common use and it was felt that the programs might be useful to other workers. SINFIT fits the data to the sine-wave function, performs a test for significant periodicity,

[1] University of Florida, Institute of Food and Agricultural Sciences Experiment Station Journal Series No. 6145.