OPERATIONAL AND SCIENTIFIC NOTES

MOSQUITOES ATTACKING DOGS IN KNOX COUNTY, TENNESSEE[1]

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Many species of mosquitoes have been reported to feed on dogs, and 72 species may support development of the dog heartworm, *Dirofilaria immitis* (Hendrix et al. 1986). Walters and Lavoipierre (1982), Ernst and Slocombe (1984), and Pinger (1985) collected mosquitoes from dogs confined in traps. These investigators relied on one type of dog-baited trap to capture mosquitoes. This investigation was conducted to determine the species of mosquitoes attacking dogs in Knox County, Tennessee, and to compare the results of trapping using two different trap designs.

The study site was a wooded area supporting mixed hardwoods, subject to seasonal flooding, located in western Knox County, Tennessee, previously described by Hribar and Gerhardt (1985). Mosquitoes were collected two days each week from April to October 1984 in traps modified from Magoon (1935) and Shemanchuk (1978). The Magoon-type trap was 1.2 m wide × 2.44 m long × 1.83 m high, with louvers on two sides and partially screened (Fig. 1). The Shemanchuk trap was a 1.8 m × 1.8 m × 1.2m wooden frame with a 1 m high gable covered with fiberglass window screening (Fig. 2). The four sides could be raised to eliminate any physical barrier between the mosquitoes and the host animals. Two dogs, similar in size, color, and age were used as bait animals. On each trapping date both dogs were placed in the Magoon trap at the study site in the late afternoon, ca. 1600 hr. At ca. 2230 hr, all mosquitoes inside the Magoon trap were collected with a battery powered hand-held aspirator.

After this collection was made, one dog was tethered beneath the Shemanchuk trap while the other remained inside the Magoon trap. The animals were alternated between traps on each collection date. The sides of the Shemanchuk trap were lifted to allow mosquitoes access to the bait animal for 10 min, following which the sides of the trap were lowered, trapping any mosquitoes within. The mosquitoes were allowed to feed for 5 min, then were collected with the aspirator for 5 min. The sides of the trap were raised 20 min after the start of the previous collection period and the process repeated. All mosquitoes collected during this period were designated "Shemanchuk" collections. At ca. 2230 hr, the mosquitoes that had been trapped in the Magoon trap during the time that the Shemanchuk trap had been in operation (1830–2230 hr) were collected and were designated "Magoon" collections. At this time, the animal from the Shemanchuk trap was returned to the Magoon trap with the other dog and the trap was left overnight. The next morning all mosquitoes were transported to

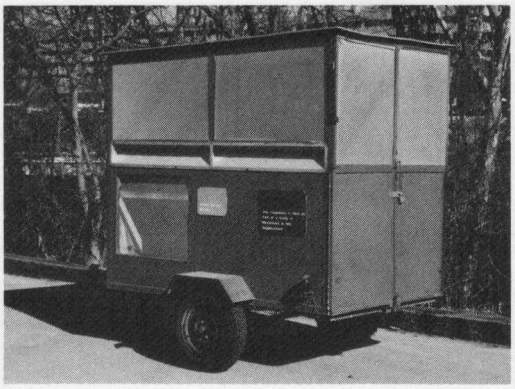

Fig. 1. Trailer mounted Magoon trap.

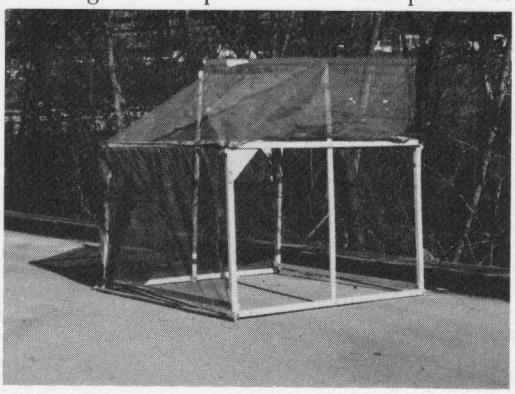

Fig. 2. Modified Shemanchuk trap with two sides rolled up.

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Table 1. Comparison of mosquitoes captured by Shemanchuk and Magoon traps, Knox County, Tennessee, 1984.

	Trap type				
	Shemanchuk		Magoon		
Species	Total	%	Total	%	Total
Psorophora ferox	173	70	74	30	247
Aedes trivittatus	119	52	112	48	231
Ae. triseriatus	54	15	316	85	370
Ae. vexans	25	71	10	29	35
Culex salinarius	4	15	22	85	26

the laboratory, killed by freezing, and identified to species.

A total of 2,213 mosquitoes was collected: *Aedes triseriatus* (Say) 32.9%, *Ae. trivittatus* (Coquillett) 32.5%, *Psorophora ferox* (von Humboldt) 24.2%, *Culex salinarius* Coquillett 6.1%, and *Ae. vexans* (Meigen) 3.2%. *Aedes infirmatus* (Dyar and Knab), *Ae. sticticus* (Meigen), *Ae. thibaulti* Dyar and Knab, *Anopheles punctipennis* (Say), *An. quadrimaculatus* Say, *Cx. pipiens* Linn., and *Ps. cyanescens* (Coquillett) collectively accounted for 1.2% of the total.

The abundance of the five most commonly collected species was compared (Table 1). *Psorophora ferox* and *Ae. vexans* were collected more often in the Shemanchuk trap. *Aedes triseriatus* and *Cx. salinarius* were collected more frequently in the Magoon trap, while *Ae. trivittatus* was collected about equally in both traps. More than one kind of animal-baited trap is necessary to get a true picture of the potential disease vectors that are attracted to a particular host. In this instance, reliance on only one type of trap would have resulted in distorted results for four of the five most commonly collected species.

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SUSCEPTIBILITY OF DDT, DIELDRIN AND MALATHION RESISTANT *ANOPHELES CULICIFACIES* POPULATIONS TO DELTAMETHRIN

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Anopheles culicifacies Giles is an important malaria vector in rural areas of India. DDT and dieldrin resistance has been found widespread in this species. Malathion resistance is also spreading. The analysis of data obtained during the past few years revealed that in western India comprising most parts of Gujarat, Maharashtra and bordering districts of Madhya Pradesh, Andhra Pradesh, and Goa, *An. culicifacies* has become resistant to malathion.

Synthetic pyrethroids have been found to be effective for control of insects. Rishikesh et al. (1978) and Taylor et al. (1981) evaluated several pyrethroid compounds as residual insecticides against adult mosquitoes. Rajvanshi et al. (1982) reported laboratory evaluation of 2 pyrethroids against the larvae of Indian vector mosquitoes.

Involvement of the *kdr* (knockdown-resistance) gene in the manifestation of resistance to DDT and pyrethroid compounds is well recognized in insects (Tsukamoto and Suzuki 1964) including mosquitoes (Halliday and Georghiou 1985a, 1985b). DDT resistance is also conferred by the *kdr* gene supplementing the *deh* gene which control dehydrochlorinase activity.