

mosquito populations to flourish. It is supplied with four floodplains, heavy annual rainfall, and warm temperatures. The four floodplains are those of the Saluda, Broad, Congaree, and Wateree Rivers. After heavy rains, relatively large populations of floodwater mosquitoes appear, creating a nuisance problem of great concern to the citizens of the county.

The Richland County Vector Control Team first received appropriations for a full time mosquito control program in 1970. In 1972 a Leco HD Model ULV was purchased. Subsequent approval of the program led to the purchase of a second Leco ULV in 1974. The program now has an annual budget of approximately \$40,000 being somewhat curtailed by an austere government.

As a result of low budgets, the mosquito control program in Richland County utilizes a balanced attack on the mosquito problem. The program has been divided into 4 large areas of responsibility: surveillance and inspection, larviciding, adulticiding, and education, with mass source reduction playing a small part due to the small budget.

There are now three full-time inspectors employed in mosquito control. Each inspector is responsible for an arbitrarily designated region of the county. The 3 regions of the county are further divided into surveillance areas. Each day during the mosquito season, landing rate counts, resting places and larval dips are made in each area. Twice a week light trap collections are made from New Jersey type light traps. Once a week oviposition paddles are collected from CDC type black jars for determining *Aedes aegypti* population densities. Citizen complaints are investigated as received. It is through citizen complaints that most source reduction is achieved.

The adult density index arrived at by the results of surveillance plus citizen requests indicates which areas need chemical treatment to reduce the population of mosquitoes.

The two types of chemical treatment employed by Richland County are larviciding with X-87 and adulticiding by ULV dispersal of malathion. Part-time summer help is utilized in chemical treatment. Larvicide crews are dispersed each day into areas known to consistently breed mosquitoes. The adulticiding crew is sent into the same area if the adult mosquito population warrants it. Adulticiding is employed only when the adult population is sufficiently numerous.

Records are kept on all activities. Daily surveillance records on landing rate and resting counts, larval dips, and larvicide spraying are kept. These are compiled into weekly and monthly averages. Daily rainfall and temperature is kept. Each night of ULV is recorded as to miles driven and malathion dispersed as well as any malfunctions of equipment and vehicle.

Light trap collections of mosquitoes are identified by the full-time employees. A monthly compilation is sent to the State of South Carolina Vector Control Division each month, along with a report of monthly averages of landing rate counts, resting stations, oviposition paddles and egg counts and light trap numbers.

HIGH QUALITY CONTROL ON A LOW BUDGET

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The Richland County, South Carolina, Mosquito Control Program, like all government agencies of recent times, has been forced to control mosquitoes to a level acceptable to the citizens of the county with a shoestring budget. In previous years, large scale adulticiding by ULV dispersal of malathion was the acceptable means of control along with the larviciding of all accessible standing water. As many as 8 part-time summer employees were utilized to treat chemically the mosquitoes of Richland County in addition to 4 full-time employees. Suddenly in the summer of 1976, the budgets were cut and large-scale spraying became a thing of the past.

The summer of 1976 saw the work force reduced to 3 full-time employees and 2½ part-time employees. The question involved was to how to furnish services to the citizens in the manner to which they were accustomed utilizing half as many people and spending half as much money. The answer was far from easy.

The first attempt in solving the program was to hire the most efficient part-time help. All applicants were interviewed and their potential carefully analyzed. One college student was hired to larvicide and one student was hired to drive the ULV truck. A third student was shared with another agency. This student was used both for larviciding and adulticiding wherever he was needed most.

Larviciding was assigned each day based on amount of standing water in the area, adult densities, and citizen complaints. Full-time employees spent most of their time gathering information on adult densities and investigating complaints. All spray requests were investigated to determine if source reduction or larviciding could accomplish the alleviation of nuisance in lieu of adulticide ULV spraying. By utilizing such an approach only one truck-mounted ULV was operated most of the summer as compared with two

machines operating each night in previous summers. Two trucks were operated in July as a result of heavy rains causing flooding and the subsequent emergence of large populations of floodwater mosquitoes.

More extensive surveillance to locate the source of breeding and routine larviciding of breeding sites allowed Richland County to limit the expensive ULV spraying to 312 gallons of malathion as compared to over 600 gallons the previous year. It is felt that adequate control was achieved at a lowered cost due to the increased surveillance and inspection done by the 3 field inspectors. Areas were treated according to mosquito density as determined by light trap collections, landing rate and resting station counts, and oviposition traps collected rather than simply by citizen requests.

In summary, it is possible to deliver high quality control on a small budget if one is willing to utilize the material on hand more efficiently. Give more concentrated time to surveillance and public education at minimal cost, and the need for high cost chemical treatment is lessened proportionately.

SELF-INSURANCE COVERAGE¹ FOR LOSS OF EQUIPMENT

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The Brevard Mosquito Control District became self-insured for loss of equipment in 1971. At that time the district had the following coverage:

1. Helicopter—hull	\$7,734.00
2. Airplanes—hull, not in motion	2,232.00
3. Draglines	1,284.00
Total	\$11,250.00

The premium on a 2nd helicopter to be delivered that same year, plus an increase in premium which had gone in effect, would have increased this premium to \$20,000 or more per year. A loss of at least one helicopter every third year would be required to justify such a premium. Therefore, it was decided to go self-insured.

House Bill 1503 was passed May 22, 1971 permitting a self-insured fund. \$45,000 was budgeted the first year, \$75,000 the second, and \$100,000 thereafter.

In five years of being self-insured, \$100,000 has been saved in premiums, and \$19,883.76 has been earned in interest through September, 1975. The present certificate is earning \$7,625.00.

The \$100,000 presently in the bank has been made possible at no cost to the district, and the district is saving at least \$20,000 in premiums, and earning over \$7,000 in interest each year. In addition, all equipment is presently covered. Previously the district had no coverage for vehicles, and the airplanes were covered only while not in motion.

The district is presently considering either compounding the interest to increase the coverage each year, or possibly, catastrophic coverage. This is a "not in motion" sort of policy to cover major losses such as fire. Coverage of this type is relatively inexpensive, and the interest earned on \$100,000 should more than pay this premium. In either case, our equipment would still be covered at no additional cost to the district other than the \$100,000 which was deposited in the bank in lieu of payments on premiums.

OCCURRENCE OF *ORTHOPODOMYIA* *ALBA* BAKER AND *ORTHOPODOMYIA* *SIGNIFERA* (COQUILLET) IN MICHIGAN¹

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The distribution of *Orthopodomyia signifera* extends over the District of Columbia and 36 states including the Michigan border states of Illinois, Indiana, and Ohio (Zavortink 1968) while that of *O. alba* extends over the District of Columbia and 19 states including Illinois, Indiana, and Ohio (Brooks 1947, Ross 1947, Zavortink 1968).

Previous to this report, the apparent single record of the genus *Orthopodomyia* in Michigan was of a single female collected in a light trap in the mid-1940's and was identified only to genus; this was reported in an unpublished M.S. thesis (H. D. Newson, pers. comm.).

Collections made over a 2-year period in Warren Woods State Park, Berrien County, in southwestern Michigan, have yielded several hundred larvae of *O. alba* and less than 50 *O. signifera*. All larval collections have been from beech (*Fagus*

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