

OPERATIONAL NOTES

P. BRUCE BROCKWAY, JR.

During the late summer and early fall months of 1962 some parts of our country became exposed to epidemics of encephalitis. I asked some of our friends who were faced with an epidemic of encephalitis for helpful hints concerning preventive steps to be taken that would be of assistance if an epidemic broke out in an area that had not been prepared beforehand. I had hoped

that we would have been able to bring this information together into the December Operational Notes, but most of the inquiries were not answered in time. We now have an account, printed below, of the anti-mosquito, anti-encephalitis operations in Pinellas County, by Louis Fernald, Director of the Pinellas County Anti-Mosquito District.

ENCEPHALITIS CONTROL OPERATIONS IN PINELLAS COUNTY, FLORIDA, IN 1962

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Director, Pinellas County Anti-Mosquito District

On August 6, 1962, four suspected cases of encephalitis were reported to the Pinellas County Anti-Mosquito District by the Pinellas County Health Department. An arthropod control program was, and had been, in effect within the District, with domestic and fresh water mosquitoes being the chief concern. The District's salt marsh problems have been virtually eliminated through permanent control program.

Because of the far-reaching gravity of the situation, and by the time we knew we indeed had an encephalitis outbreak on our hands, all governmental units within the county, including cities and municipalities, coordinated their efforts into one giant plan of action to reduce to a minimum all breeding sources within the county. Fire Department personnel, Road Department employees, municipal and health workers were all thrown into the task of domestic and general inspection work. In some instances these workers reported breeding areas to our men who would in turn eradicate the breeding areas. Some of the municipalities took it upon themselves to inspect and eradicate at the same time.

Since domestic mosquitoes were suspected to be the encephalitis vectors, it was felt that a great deal of emphasis should be placed upon citizen education, as to controlling breeding on their own premises. The newspapers, television stations and radio stations all cooperated splendidly with daily reminders to the people to eliminate all standing water, both on their premises and outside their homes. This was quite successful.

The District's domestic inspectors, aided by members of the State Bureau of Entomology and CDC workers, began a close check on domestic breeding. First inspections gave us a domestic breeding index of 10.2 percent. However, after the widespread publicity furnished through the news media, this index dropped rapidly to 9.6 percent, 7.5 per cent and then to 2.5 percent. However, through the poorer areas, the index consistently held a rather higher percentage and

we found it necessary to concentrate our efforts in these areas to a greater degree. Health Department sanitarians were called into this project and were quite helpful to us. The overall index then continued to drop until the announcement came that the epidemic had been checked. After this announcement, there was a noticeable rise to about 5 percent, and this percentage held for a time until, with continued effort to keep property owners constantly alert to the problem, the rate again went down to 2.5 percent on October 12, and to .7 percent on October 20.

Virus isolation studies strongly indicated *Culex nigripalpus* as the vector. Although the biology of this species is not well known, it is known to breed in ditches, ground pools, etc., as well as in domestic containers.

The District is divided into 17 larviciding areas, and normally one man is assigned to each area. He begins his larviciding program in the center of the heaviest populated points and works outward toward the fringes. It is felt that a man can cover his area with fairly good results at least once a week. However, we felt it wise to step this program up also, and hired additional workers to help out wherever they were needed. Larviciding with diesel oil and paris green was accomplished by ground application from trucks and also by men on foot in areas inaccessible to the trucks. Because of building up an immunity through the use of chemicals in our larviciding program, and the obvious perils of doing so, we relied completely on the use of diesel oil and paris green. Catch basins, sewage disposal plants and commercial effluents were checked and treated routinely.

According to reports of biologists and ornithologists, the urban areas of our county were found to be more densely populated with wild birds than any other area in the nation. There are three separate flocks of parakeets here which number in the thousands. There are also mourning doves (turtle doves) here in great abundance,

as well as pigeons and many other species of birds. Because of the relationship of birds to an encephalitis epidemic, an appeal was made to the residents to forego feeding the birds in hopes of encouraging their migration away from the urban areas. The City of St. Petersburg passed an ordinance making it unlawful to feed or water wild birds—at least during the summer period.

Upon notification of the first suspected cases of encephalitis, an intensified fogging program was begun, until we were covering the populated areas of the county every four days by ground fogging. The intent here was to cut the life span of the adult mosquitoes as short as possible, in order to break the virus transmission cycle. Seventeen trucks were employed, fogging at the rate of 40 gallons per hour, while driving at a rate of 5 m.p.h. Until the middle part of

Glen C. Collett, from Salt Lake City Abatement District, brings to our attention his method of using aerial photographs. Of course, many Dis-

August, we were using a 3-3-94 fogging solution of 90 percent malathion, Lethane 384 and # diesel oil, at which time we began the use of Dibrom 14, using 6¼ pints to 100 gallons of diesel. All machines were grouped together to fog completely a large segment of a populated area at the same time, thus reducing the chance for mosquito movements from untreated blocks into treated blocks.

While it would be difficult to credit any one of the aforementioned phases of mosquito control with completely checking the outbreak, since they were all necessary precautions, it is our feeling that cutting down the life span of the adult mosquitoes via the stepped up fogging program was the greatest contributing factor. We only know the epidemic was checked—and it was checked long before cool weather began.

tricts use the U.S.D.A. aerial photos and in some districts special commercial aerial photographs are also available.—P. B. B.

THE USE OF AERIAL PHOTOGRAPHS IN MOSQUITO CONTROL

GLEN C. COLLETT

During the past ten years we have made extensive use of aerial photographs in our control program. Undoubtedly, many districts also use them, but possibly there are some managers who may not be aware that they are available from the U. S. Department of Agriculture for a very moderate price. Various enlargements are available, but we find for our needs the 27 inch by 28 inch size with an approximate scale of 660 feet per inch is satisfactory. The cost for this size is \$2.20 each in quantities of 6 to 100.

We find aerial photographs of our marshes along the Great Salt Lake extremely useful in the airplane larviciding of this area. Rather than doing mass spraying of this source, we are able

by careful inspection of the area to pinpoint on the mosquito producing areas, thus reducing the amount of spraying done. By using clear acetate overlays the inspectors can mark over the photos with wax pencil, areas needing spraying and this is then taken to the landing strip for the pilot use.

There are many other uses of aerial photographs such as checking acreage, planning water management and source reduction programs, familiarizing new employees with their areas, and other uses too numerous to mention. Although crop changes occur in agricultural areas, aerial photographs can be a useful tool in the mapping of mosquito producing areas in a district.

SCIENTIFIC NOTES

THE OCCURRENCE OF *Aedes taeniorhynchus* (WIEDEMANN), *Anopheles barberi* (COQUILLETT), AND *Culex thriambus* (DYAR) IN ARIZONA

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This note reports the collection of three species of mosquitoes which are believed to be new distribution records from Arizona.

(1) *Aedes taeniorhynchus*. A single female, taken in a biting collection at Yuma Test Station, Arizona on June 5, 1962.

(2) *Anopheles barberi*. A single male, reared

from a larva taken from a tree hole at Fort Huachuca, Arizona on September 17, 1962.

(3) *Culex thriambus*. A single male taken in a mosquito light trap at Fort Huachuca, Arizona on September 27, 1962.

The authors are indebted to Colonel Stanley J. Carpenter and Dr. Alan Stone for verification of identifications.