MOSQUITO SURVEYS AND INSPECTIONS IN THE DISTRICT OF COLUMBIA AREA *

NEWELL E. GOOD
P. A. Sanitarian (R), U. S. Public Health Service, MCWA, District of Columbia

Mosquito control has been carried on since 1930 in the District of Columbia on a cooperative basis between the U. S. Public Health Service, the D. C. Health and Sewer Department, and the National Capitol Park Service. In 1942 a regular Malaria Control in War Areas program was inaugurated jointly by the U. S. Public Health Service and the D. C. Health Department. Under this program mosquito breeding surveys and regular inspections were made by the entomologist and inspectors, and *Anopheles* control was carried out by labor crews working under the direction of the sanitary engineer in charge. The District of Columbia was divided into ten zones which were in turn divided into an average of 20 subzones each. Each subzone comprised a fairly homogeneous area averaging somewhat over 200 acres. In order to provide a visual ready-reference guide to the problems and progress of the work an extensive map-pin system was used. Streams, ponds, and other breeding places were plotted and given individual numbers, and natural resting places and light trap locations were indicated. Colored pins were used to indicate the species, stage and abundance of *Anopheles* and other mosquitoes in each locality, and the type and progress of control work. All information was brought up to date weekly.

The District of Columbia covers only 69 square miles, varies in elevation from sea level to 420 feet, and is occupied in large part by built-up portions of the city of Washington. The most extensive areas still remaining in their natural condition are under the jurisdiction of the National Capitol Park Service and comprise a large percentage of the lands bordering Rock Creek and the Potomac and Anacostia Rivers. Most of the unimproved land along both rivers is flat and swampy, and provides favorable breeding places for *Aedes vexans* and other mosquitoes.

Special mosquito problems in the District of Columbia during the 1942–1945 period were the following. Street catch basins, of which there are 16,000 in Washington, provided favorable breeding places for *Culex pipiens* and to a lesser extent for *C. restuans*. These proved to be the largest single mosquito control problem although very little inspection was required. Control was by regular oiling by the D. C. Sewer Department. Ornamental pools or lily ponds were second in numbers, it being estimated that there were about 1,000 private ornamental pools in the city. The majority were kept clean and stocked with goldfish but about one out of five was found to contain numerous *Culex* or *Anopheles punctipennis* larvae. *A. quadrimaculatus* was found only rarely in small, private pools but was quite common in larger public ornamental ponds in some of the parks and government reservations. Water chestnut, *Trapa natans*, growing in the bay at the mouth of Oxon Run on the Potomac River in the extreme southern corner of the District provided a favorable breeding place for *A. quadrimaculatus* until it was eliminated by cutting in 1943 and subsequent hand pulling in 1944. The breaking of the banks of the old C. & O. canal during the floods of October, 1942, provided a series of shallow ponds in the canal bed in which *A. quadrimaculatus* and other species bred during the summer of 1943. This condition was easily controlled by oiling until the repairing of the banks eliminated the condition. The usual number of ponds on vacant lots and

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similar locations provided breeding places for all types of mosquitoes. Each of these was dealt with according to the individual problem presented. After the release of the MCWA labor crews in July, 1944, the elimination of standing water on private property has been dealt with as the responsibility of the individual owner and enforced by the legal powers of the Health Department's Bureau of Sanitation. In the District of Columbia the Potomac and Anacostia Rivers, although containing fresh water, are tidal, having a fluctuation of several feet, and offer no breeding places for mosquitoes except in densely matted growths such as that of water chestnut. Creeks were of moderate importance at all times as breeding places for *A. punctipennis* and *Culex* spp., but especially so in prolonged dry periods when the smaller ones dried up into a series of stagnant pools.

The mosquitoes of the District of Columbia were quite extensively collected, particularly by members of the staff of the U. S. Bureau of Entomology, during the years 1893 to 1915. During that time 32 species were taken. No additional species were found after 1914 until MCWA collections during 1942–1945 contained specimens of *Aedes cinereus, Aedes mitchellae, Anopheles barberi, Culex erraticus,* and *Culiseta melanura,* thus raising the total number of species collected to date to 37. All except four of the original 32 species were retaken during this period, one of these being *Aedes aegypti* for which there are no authentic District of Columbia records since 1908. The most abundant species in the District are *Culex pipiens, Aedes vexans, Culex restuans,* and *Anopheles punctipennis. Aedes canadensis* are very numerous in the spring, larvae being taken as early as February 27, but disappear in June. *Psorophora confinnis* and *P. ferox* occasionally become numerous and annoying after floods or heavy rains. Adult female salt marsh mosquitoes, *Aedes sollicitans* and *A. taeniorhynchus* are fairly common at times during the summer, apparently flying in from the Chesapeake Bay area 25 or more miles distant. *Anopheles quadrimaculatus,* toward the control of which most of our efforts have been directed, have been found in each of the ten zones of the District of Columbia, breeding starting about June 1 and reaching a peak around the last week of August. In only a few cases has this species been found in other than small numbers.