

# PAST AND PRESENT MOSQUITO CONTROL IN CALIFORNIA

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The preamble, so to speak, of the California Mosquito Control Association, began in 1903 in the area surrounding San Rafael. In 1905, community action was instituted against the salt-marsh mosquito in Burlingame in San Mateo County. In 1910, Professor Herms squared off on the anopheline problem when he and Harold Gray successfully demonstrated mosquito control techniques on the anopheline species in a little town called Penryn in the Sierra Foot Hills.

In 1915 the State Legislature was persuaded to add to the State Public Health Code those sections now better known as the "Mosquito Abatement Districts Acts." These statutes definitely tied mosquito control to public health. It should be stated at this point that the authors of the Legislative Act had great vision and

foresight as they went beyond the mosquito and included arthropod vectors of public health significance. This alliance with public health has continued throughout the years to the present time.

During the years from 1915 to 1946 Mosquito Abatement Districts fought hard to gain ground against the constantly increasing mosquito problem. Their weapons consisted largely of shovels, more commonly known as "idiot sticks," and oil larvicides. In fact, this period in the history of California mosquito control could be termed the era of "Fuel Oils."

In 1946, recognition of mosquito abatement districts came swiftly with the unveiling of the then "new" chlorinated hydrocarbon insecticides. The period between 1946 and 1949 could be termed the marriage of mosquito control to chlorinated hydrocarbons. This marriage was short-lived, however, when attention was focused on the problem of species of mosquitoes becoming resistant to DDT. The

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districts suddenly became conscious of the need to return to the source reduction programs which had guided early mosquito control men.

The number of Mosquito Abatement Districts has increased from twenty-one in 1942 to the present fifty-three active Districts providing protection to 33,000 square miles of area and 7,000,000 or more people. The last figure I gave is of little value in view of the rapid population growth occurring in our State.

This has been a very brief history of mosquito control development from the beginning to the present. It is the present and the future unknowns in mosquito control problems with which we are concerned. Therefore, we would like to present certain happenings, or trends, which we feel have some significance in mosquito control in California and, possibly, in other areas as well.

Let us examine the record as it relates to larval and adult control. We need only to mention briefly the chlorinated hydrocarbon family of insecticides and the tolerance factor developed by the mosquitoes—we have all experienced to some degree this particular problem. Now the question of tolerance to the phosphate family is here before us. According to recent work done by C. M. Gjullin and L. W. Isaak,\* it has been demonstrated that *Culex tarsalis*, in the Fresno area, are 21–23 times as resistant to malathion as formerly; however, they are still normally susceptible to parathion. If we must mention “firsts” in mosquito control, we probably have the dubious honor of being first in the development of a species of mosquito which is resistant to one of the phosphate insecticides. We must continue to examine, evaluate, and test new materials as soon as they are available or our temporary control programs will be hard pressed.

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\* Gjullin, C. M. and Isaak, L. W. (1957). Present status of mosquito resistance to insecticides in the San Joaquin Valley in California. *Twenty-fifth Proceedings. California Mosquito Control Association.* (In press.)

Another trend of importance is the continued and increasing awareness of fly control by mosquito abatement districts. This awareness, in part, has been brought about by public demand, and, in part, by efficient mosquito control techniques. Through the reduction of adult mosquito populations, populations of other aquatic flies have become more discernible and this has resulted in an increased demand for the services of mosquito abatement personnel. Actually, one mosquito abatement district already has entered the field of fly control; one district has requested that a fly survey be made by the Bureau of Vector Control, State Department of Public Health; and a few others have, indirectly, become interested through their efforts to effect mosquito control measures in sewage holding ponds.

Another trend that has become apparent is that of weed control. When mosquito control agencies in California began to return to the concept of source reduction as an integral part of their control operations, it was only a matter of time before the need for weed control became apparent, if the effectiveness of a source reduction program was to be maintained. In fact, the Insecticide Committee of the California Mosquito Control Association, which brought forth “A Guide and Recommendations for the Use of Insecticides in California,” has been given the responsibility of developing a similar pamphlet on the “Use of Herbicides by Mosquito Abatement Districts.” This pamphlet will be ready for the press sometime late in 1957 or early in 1958.

Finally, I must mention that, in spite of the heavy winter rainfall and flooded conditions that prevailed throughout much of the State in the early part of 1956, the much-feared upsurge in mosquito populations did not occur. This was undoubtedly due, in part, to the excellent mosquito control programs that were executed very early in the season. Thus, I am happy to report that the year 1956 was good to us and we look forward to 1957 with renewed vigor and hope.