

USE OF MILITARY AMPHIBIOUS VEHICLES, "WEASELS," IN MOSQUITO ABATEMENT OPERATIONS

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The Alameda County Mosquito Abatement District has for a long time realized that a light-weight amphibious vehicle equipped with caterpillar-type tracks, would be of great value in mosquito abatement operations on the marshes lying within this District. If left uncontrolled, the marshes quickly develop enormous numbers of mosquitoes. Therefore constant patrolling is necessary. These lands lie adjacent to the Bay and extend the full length of the county shore line. They are soft and muddy and are criss-crossed with an intricate network of drainage ditches, dikes, and sloughs. Although they lie in a relatively level plane, they nevertheless present effective obstacles for conventional wheel-type vehicles.

Recently this District purchased two amphibious full track three-quarter ton cargo vehicles designated as "weasels." They were formerly U. S. Marine Corps craft and were sold as surplus equipment through War Assets Administration. They are powered with 70-h.p. engines, equipped with a boat-like body and are capable of traveling over dry land, wet land, shallow or deep water. Field tests have confirmed the opinion that areas which were formerly inaccessible by boat or by walking can now be reached easily with the "weasels."

Quite often, extensive areas of marsh are flooded by high tides. These sections often remain inundated for prolonged periods, due to deficiencies in the marsh drainage system. Deficiencies are inherent even in a well-planned drainage system, because high tides deposit debris which causes clogging of the drains. Frequent patrolling to prevent development of mosquitoes in these badly drained areas requires walking over the marsh and diligently checking all areas of standing water. Such inspections often indicate the necessity for application of larvicide. Until acquisition of the "weasels," it was our practice to bring a supply of oil to the closest point accessible by vehicle and then carry the oil in knapsack sprayers to the point of application. Many trips to and from the supply point were required before adequate larviciding was accomplished. This procedure demands great expenditure of physical effort, and when repeated day after day it is very fatiguing and discouraging. It has the characteristic of never-ending drudgery, and the labor cost is high.

The ability of "weasels" to travel over marsh should eliminate this undesirable feature of mosquito abatement. In larviciding operations, "weasels" can move the supply point right up to the point of application. Furthermore, they can accomplish a better spraying job because of their ability to go far beyond the limits which are safe for walking. Physical area limitations are entirely eliminated. It is our intention to equip the "weasels" with a spray boom operated by a power sprayer. This will accomplish rapid area-spraying. A York-Hession smoke generator will also be mounted when there is necessity for adulticiding.

In addition to serving as patrol vehicles for inspection and larviciding, the "weasels" will be used for ditch maintenance processes. Maintenance of drainage ditches is an

extremely important phase of marsh drainage. As indicated above, this is a continuous problem due to tidal deposition of debris, and to growth of marsh grass (*Salicornia ambigua*). Development of a satisfactory device for cleaning ditches mechanically is still in the experimental stage. Our most successful experiments to date are with the "Martin V-Ditchers." A "weasel" can successfully pull a Standard Martin Ditcher, #20 over soft marsh where a tractor can not safely operate.

Our present ditch maintenance practice is manual removal of the debris and vegetation from the ditches. Until recently we have not regarded this as too much of a handicap in our operations because this task represented steady winter employment for crews which would otherwise lack productive winter projects. Prevailing wage scales, plus recent changes in materials, equipment, processes and scope of activities, have all added to increase the value of labor. The use of "weasels" to reduce manual labor promises to release personnel for assignment to maintenance of equipment and depots.

Another utilization of this released labor is for residual DDT spray programs. Residual spraying entails application of DDT to interiors of culverts, dairy barns and other structures. This is a highly desirable phase of our activities which has suffered curtailment because of personnel shortage. Use of "weasels" for marsh work will directly benefit the residual spray program.

Mr. Raley: I think that the gentlemen from out of state will agree with me that California has the variety of conditions to try everything that looks promising.

We will now have a report from Dr. Dow on his encephalitis activities during 1947.

VIRUS RECOVERIES

RICHARD P. DOW

What I have to say on encephalitis is in the progress report stage, because the State Virus Laboratory has not finished all the specimens submitted to it as yet.

Up to the present time, some 514 pools of mosquitoes have been tested and the results on 12 are still inconclusive.

Now I might say a word as to the history of this survey last summer. The truth of the matter is that up until last winter no virus had been recovered from California mosquitoes except in Kern County. In August, 1946, I had chased up and down San Joaquin Valley collecting mosquitoes and turning them in to the Virus Laboratory, and the results were negative. No recoveries were made. We decided that was perhaps due in part to not starting the survey until August, so last year we got an early start with four men in the field. They were Ernie Meyers, Don Grant, Bill Wirth, and Julie Fine. They were assigned to different areas up and down the length of the valley. The virus recoveries would suggest that they didn't go very far from their headquarters. That, I don't think, is quite a fair assumption, but I should say that the survey was made not on a real systematic survey basis; that is, it was not so many mosquitoes from each section, or done on any basis like that. The point was to get as many *tarsalis* as possible, because that was what we expected to get virus from, and to get them from all parts of the valley so far as possible. In Tulare and Kings County, 8,000 mosquitoes were collected,