

DEVELOPMENT AND USE OF THE "ONE MAN UNIT" IN CALIFORNIA

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Keeping pace with war-fostered developments, interested mosquito control workers in California have realized that control practices are being streamlined. New insecticides, the airplane, four wheel drive vehicles and the new awareness of the layman that mosquitoes are an economic hazard have pushed work ahead many years. The airplane has been accepted as standard equipment for large scale operations and for areas not readily accessible to ground equipment, and the four-wheel drive truck and concentrated, highly toxic chemicals have made it possible to carry on practical mosquito control from the ground in large districts. These new tools are being used to their fullest advantage in California.

It quickly became apparent that the four wheel drive vehicle was the answer to streamlined ground control. Detailed surveys of districts in California revealed that this unit's ability to travel off the road was making obsolete the practice of hand spraying by large crews and the need for high pressure sprayers with hundreds of feet of hose. Further observations indicated that only one man, using application techniques made possible by the new chemicals, could actually turn out more work in a day than two or more men on a truck. Allowed to set his own pace and with full responsibility for a given zone, one man with his four wheel drive unit has stepped up results far beyond the most optimistic estimate.

This very welcome fulfillment of an ideal, good mosquito control in large areas at a reasonable cost, has been further enhanced by the development of dispersed depots. Following in the footsteps of Harold Gray, Engineer of the Alameda County Mosquito Abatement district, nearly all large districts in California have

established sub-depots at strategic spots throughout the district. Along with this an effort has been made to hire personnel that live within the zone in which they work. This has not only cut operating costs but has increased the feeling of responsibility each man has for his particular zone. Mingling with neighbors both when on duty and off the job keeps the men more fully informed than they would be if they came into the area each morning and left each night.

Utilizing this one man unit for mosquito control to its fullest extent has necessitated development of several practical innovations. Probably no two districts in California see eye to eye on all aspects of the problem, but this has been a very wholesome and worthwhile condition. This initiative has developed some very practical ideas that are now more or less standard. Not to confuse the issue and to confine this paper to familiar ground the "One Man Unit" used at the Consolidated Mosquito Abatement District in Fresno County, will be outlined.

Based on past experience the quarter ton, four wheel drive truck was selected as the standard field unit at Consolidated. This sturdy, light weight unit was mobile in nearly every type of terrain accessible to man. Commonly referred to as the "Jeep" this truck had proven itself in one battle and seemed the most logical selection for the battle ahead. Economical to operate and stripped of all fancy trimmings it is ideally suited for work off the road. With the addition of proper equipment a driver could go into nearly any field and do mosquito control from the seat of the truck. Heavier trucks were limited in their field of operation and of course were much more expensive to maintain. Now that the field operator can work several hours with only a few

gallons of concentrated insecticides, plus readily available water, the need for large trucks has diminished.

Another standard piece of equipment at Consolidated is the Essick air pressure sprayer. As a companion to the Jeep, this sprayer holds up its end nicely. The 65 gallon tank with the light-weight air compressor mounted on top, fits into the bed of the truck with room to spare. Mounted parallel with, and directly over the rear axle, with the compressor on the back for easy accessibility, the sprayer's weight is well distributed. To help support the spray rig when it is filled and working in rough fields, two extra spring leaves are added to each of the regulation rear springs. Operational advantages of the Essick are manifold.

Using air pressure built up in the material tank as a propellant eliminates the need for any of the spray liquid to come in contact with any moving part of the sprayer. Because of the corrosive and abrasive properties of some insecticides, this has been a distinct asset. The minor repair work necessary to maintain this unit during a season's operations is a welcome relief. The reservoir of air pressure within the tank is a time saver for the men whenever they have small areas to spray. Once charged, the sprayer will operate for some time without the compressor running. The Essick can be used for many other purposes; namely, painting, cleaning equipment, servicing tires, charging hand spray cans, etc. Light-weight, two braid, $\frac{3}{8}$ inch neoprene hose completes the spray unit. One man can conveniently handle up to 150 feet of this hose.

A recent development at Consolidated has been a modified spray boom. Anchored to the rear of the truck bed extension this spraying aid is actually nothing but a glorified nozzle attached to the spray rig. Made up of $\frac{1}{4}$ inch pipe, two 8002 spray heads pointing to the rear, two homemade nozzles tilted at a 30° angle at the ends, with a valve to shut off one side, this boom is out of the way and is short enough to be

protected by the bed of the Jeep. A reasonably uniform deposition of spray material is spread over a 30 to 40 ft. swath, depending on the wind. For ditches or narrow ponds one side can be shut off without materially decreasing the distance covered by the spray.

The truck bed extension is made by using the tail gate and a length of 10 inch, 16 gauge sheet iron. This sheet iron is fitted to the outside edge of the tail gate, turned at the edge and ends and bolted to the bed of the Jeep and the tail gate. To give the bottom (tail gate), added support, a piece of strap iron is anchored to the outside edge of the tail gate and to the bed of the truck, near the top edge. This extension will hold 3 to 5 five-gallon cans, which is adequate for any one day's supply of concentrates. As a general rule the men carry as little as possible in this compartment to keep weight down.

Alongside the spray tank, bolted to the shelves covering the rear tires, is a tank for aerosol liquid on the left, and a tool box on the right. The aerosol tank holds approximately 12 gallons of material and is fitted with a wide mouth fill cap and a breather line. The tool box, 9 x 14 x 28 is large enough to hold all miscellaneous tools, rags and a gallon can for extra gas.

On the dash board to the left of the steering wheel is a first aid kit. Over the instrument panel on the windshield frame is a "catch-all" box. Used to hold flashlight, pill boxes and all the other odds and ends of the trade, this compartment is divided into sections for easier convenience. This box plus a clip board is the field office equipment. On the right cab panel, just under the dash, is a fire extinguisher, a must for all vehicles. To the left of the driver, between the seat and the side board is the control valve for the aerosol exhaust generator.

The hand sprayer, a three gallon air pressure model, is mounted on the side of the cab, just behind the front fender. The hanger is made from 8 inch well casing supported by the Jeep step and

brackets bolted to the side panel of the cab. A piece of 2 inch pipe is welded to the well casing to hold the spray wand. Gaskets made from old bicycle tires or inner tubes are fitted to the top edge of the casing to eliminate rattles. The top of the hand sprayer is fitted with a valve which can be used for charging the sprayer with air pressure from the Essick.

The aerosol generator is fitted to a "tee" which is welded to the exhaust pipe, cut off approximately 4 inches from the manifold. A hole is cut in the fender apron just above the body frame and the pipe of the generator is coupled to the "leg" of the "tee." For greater efficiency of Jeep operation in normal driving, a quick opening gate valve is installed on the bottom "arm" of the "tee," and connected to the muffler. When this valve is open, all the exhaust gases are forced through the regular exhaust line by plugging the opening of the generator. A spring hanger, anchored to the side of the fender, is used to support the generator. An air

vent, controlled by a gate valve, is installed in the feed line to reduce carbonizing. To increase the range of the generator, 6 foot lengths of flexible tubing are used to direct the fog into culverts, buildings and other confined areas. The "Plumber's Nightmare" is a very handy gadget to have around when the going gets tough. The very positive results obtained from its proper use against both mosquito larvae and adults, are a welcome aid to good public relations.

Without minimizing the benefits of temporary relief achieved by proper larviciding and adulticiding this one man blitz will be truly effective only if steps are taken to establish sound, permanent control. A full understanding of the actual and potential mosquito problem, plus a well conceived educational program aimed at reducing sources of mosquito larvae will pay dividends to all parties concerned. Well trained personnel with a desire to achieve this end is the best security any district can have.

NOTES ON THE MOSQUITO, *URANOTAENIA SYNTHETA* DYAR & SHANNON (DIPTERA: CULICIDAE)

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The mosquito, *Uranotaenia syntheta* Dyar & Shannon was described in 1924 from a single female that had been reared from a larva collected at Mission, Texas (Dyar & Shannon 1924). The male was not known at that time, and the larva from which the female was reared was not described. The status of this species remained somewhat in doubt for many years, but in 1943 Dampf described the male, and stated that the species was rather abundant in parts of Mexico (Dampf 1943). The larva was described in 1946 from a single specimen collected

at Forth Worth, Texas (Porter 1946). Although this larva was not reared to an adult, it was thought probable that it was *Uranotaenia syntheta* since it differed from the larvae of *U. lowii* and *U. sapphirina*, the only other species of *Uranotaenia* known to occur in Texas. A male of *U. syntheta* was also collected from the same area which supported this conclusion.

Collections of this species in the United States have been relatively rare, and in most instances the mosquito has been represented by only an individual or a very few specimens. So far as could be deter-