materials to keep the cost down. The district spent less than $100.00 for these improvements on the speed-scavel.

A great deal of study and planning goes into our source reduction projects, including determining if the job can be done, if major mosquito sources will be reduced or eliminated, if the land-owners will go along with the project, and of course, who will be affected by the changes. We then obtain an easement and a release from all owners involved, and move ahead on the project. The land owner also benefits from a well planned source reduction project. With fewer mosquitoes to bother him and his family, he is able to control his irrigation water more efficiently.

We have been very successful with this program over the past 2 years. Our ditching crew has cleaned 157,790 ft of old ditch and constructed 283,740 ft. of new ditches this year. This has greatly reduced or eliminated hundreds of potential mosquito breeding areas.

We realize that possibly more restrictions might be placed on this type of work in the future by state agencies. But in the meantime our source reduction work will continue, along with the other methods of mosquito control.

THE FIRST 30 YEARS ARE THE EASIEST

W. I. BARTON

Metropolitan Mosquito Control District, 1802 Como Avenue, St. Paul, Minn. 55108

When my first Entomologist-Director Herbert A. Crandell (now deceased) started me out, I was learning integrated control techniques. My subsequent directors, George Hutton (now at Purdue), P. Bruce Brockway, Jr. (now retired), A. W. Buzicky (now deceased), and R. D. Sjogren, my present leader, have pushed my efforts toward those same goals. Integrated control techniques have been used and expanded over the years. The one point I would like to make is that I have not been able to reach enough of the public to inform them of our techniques.

I've learned much about chemical control, biological control, source reduction and modification as well as education of the public. I don't know of a mosquito control organization that does not train, re-train and upgrade the qualifications of field personnel. We study habitats, life cycles, habits and characteristics of various species of mosquitoes found in the areas where we work. We study populations and problems caused by different species of mosquitoes. Somehow I feel after 30 years that the people who paid my salary (the public) were not properly and sufficiently informed. They continue to pay, and that's good, but more interest, more dialogue, more questions and better communication between my taxpayers and me are in order.

After 11 years with the Toledo Area Sanitary District and 19 years with the Metropolitan Mosquito Control District, the most satisfaction has come from working with excellent co-workers. We are a great bunch of mosquito control experts. We are specialists. Field operational people in mosquito control are a special breed. I'm looking forward to the challenges of another mosquito season. I hope and pray you are also.

My only advice is to learn as much as possible about your mosquitoes, work diligently towards goals outlined for you, and try for more and better education of the public. Certain species of mosquitoes are not part of a quality environment. I'm certain the public can and will help more if informed.

IDENTIFICATION OF A SUITABLE GROUND OPERATED UNIT FOR DISPERSAL OF DURSBAN® 10 CR[1]

J. H. NELSON, D.P. DRIGGERS AND R.E. PARSONS

U.S. Army Medical Bioengineering Research & Development Laboratory, Fort Detrick, Frederick, MD 21701

Dursban® 10 CR, a controlled-release chlorpyrifos larvicide formulated in a chlorinated polyethylene matrix, received full EPA registration for mosquito control in June 1976. In anticipation of the registration approval the US Army Medical Bioengineering R&D Laboratory initiated a project to identify available ground equipment suitable for dispersal of this pelletized formulation. Due in part to its availability, the Buffalo Turbine, Model CS, Turbulent Air Sprayer-Duster was selected for evaluation as the candidate unit potentially capable of dispensing the material.

A standard 20 m^2 US Army tarpaulin was spread and anchored within a level, obstruction-free test area located at Fort Indiantown Gap, PA. With the unit loaded in the cargo area of a ¾-ton pick-up truck, and the air blast nozzle set at various angles to determine the optimum angle of dissemination, the larvicide pellets were applied perpendicular to the line of travel at high and low rates of application. Distribution patterns and uniformity of distribution were observed at high and low dispersal settings, at high and low vehicle speeds, and at varying nozzle angles with respect to the ground. Standard size (25 cm x 20 cm) sheets of black construction paper were selectively placed at various locations in the treatment area varying from 5–12 m from the point of discharge.

Wide area distribution was shown to be satisfactory

[1] The opinions contained herein are those of the authors and should not be construed as official or reflecting the views of the Department of the Army. Mention of proprietary products is for the purpose of identification only and does not imply endorsement by the Department of the Army.

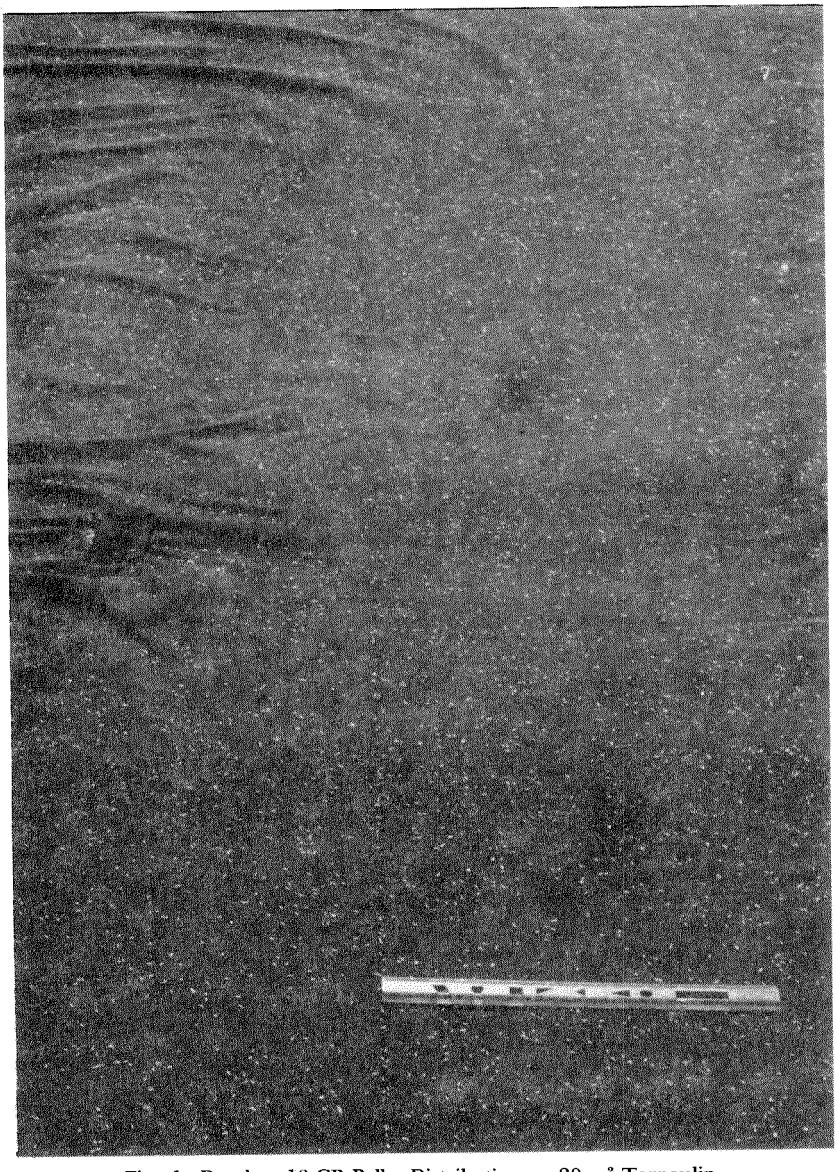

Fig. 1. Dursban 10 CR Pellet Distribution on 20 m^2 Tarpaulin.

in the tarpaulin test. Figure 1 shows the uniformity of distribution in the 20 m² area. Uniformity of distribution was also evident in the small scale area studies at both the high and low dispersal rates. Uniformity of application was quantitatively verified by the presence of relatively small variability in the counts made at the high and low treatment rates.

The following operating conditions for adequate distribution were considered optimal:

Vehicle Speed: 5–10 mph
Dispersal Swath: 6–12 m
Nozzle Angle: 30–45°

The Buffalo Turbine Model CS Turbulent Air Sprayer-Duster is currently available and is utilized Army-wide in installation pest management/vector control programs. Based on the findings in this evaluation and the availability of this equipment through standard procurement channels, this dispersal unit is the equipment of choice for large-scale ground application of the pelletized formulation of Dursban 10 CR.

The utilization of this equipment is by its very nature self-limiting. Weight and size restrict its use to areas which are relatively accessible. For limited and/or remote area control it would be advantageous to have a motorized backpack, a manual dispersal unit or an aerial dispersal unit capable of applying pelletized pesticide formulations. Efforts are presently underway at the US Army Medical Bioengineering R&D Laboratory to identify or develop suitable backpack and aerial dispersal equipment for this purpose.

INITIAL RECORD OF *AEDES TORMENTOR* IN KENTUCKY[1]

EDWARD S. SAUGSTAD,
HEV Actv, MEDDAC,
Fort Knox, KY 40121

Although *Aedes atlanticus* Dyar and Knab has been confirmed as occurring in Kentucky by Covell (1968) (a larva collected in 1961, identified by Dr. P. J. Christain, University of Louisville; not an adult as indicated in Table 1 of this reference (Covell, D. V., Jr., 1977, Pers. Comm.)), its close relative and frequent associate, *Ae. tormentor* Dyar and Knab had not been recorded from Kentucky prior to 1976. Collection records (provided courtesy of CPT H. A. Harlan, USAEHA, Regional Division South, Fort McPherson, GA 30330) from Fort Campbell, KY, some 260 km south of Fort Knox, showed 41 adult "*Aedes atlanticus-tormentor*" collected in light traps from 1960–1976. Additional records of *atlanticus-tormentor* from Fort Campbell included an adult biting in 1958, and a larva collected in 1974. It seems rather odd that the latter was not identified to species, as *atlanticus* and *tormentor* are readily distinguished in this stage; whereas the adult females are virtually identical.

During the course of an expanded mosquito surveillance program at Fort Knox, a few larvae identified as *Ae. tormentor* were collected from shallow, leafy, shaded, temporary woodland pools near the Van Voorhis housing area at Fort Knox. The initial collection (Fort Knox No. 60525) was made 4 June 1976, in a small (ca. 2m wide, 10 cm deep), shaded, leafy woodland pool. The 2nd collection (Fort Knox No. 60547) was made 7 June 1976, from a similar temporary pool about 300 m NNW of the first pool. Associated species collected were *Ae. vexans* (Meigen) and *Psorophora columbiae* (Dyar and Knab). Other collections made at these sites from 24 March through 2 July 1976, were negative for *Ae. tormentor*. Numerous collections from other shaded temporary pools made from March through November were likewise negative for *tormentor*, although a single *Ae. atlanticus* larva was collected from a large (ca. 25 m × 10 m × 35 cm) shaded temporary pool in early July. This appears to be the first record of *Aedes atlanticus* from Fort Knox.

Two larvae from collection No. 60547 were killed and preserved in ethanol, the remainder individually reared to adults. The preserved larvae were sent to the USNM, mounted in balsam and confirmed as *Ae. (Ochlerotatus) tormentor* Dyar and Knab. One specimen was deposited at the USNM.

Ae. tormentor has been previously recorded from 3 states bordering Kentucky, namely, Illinois (Carpenter 1968), Missouri (Carpenter and LaCasse 1955) and Ohio (Ibid.). It is apparently widely distributed in the southeastern United States, but usually occurs in fewer numbers than *Ae. atlanticus* (Carpenter and LaCasse 1955; King et al 1960). The larvae have been reported from temporary woodland pools, usually associated with *Ae. atlanticus* and *Ae. infirmatus* (Ibid.). Little is apparently known of its relationships with man, but as *Ae. atlanticus* has been implicated in vectoring some California group arboviruses (Taylor et al 1971), it should not be discounted as unimportant.

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[1] The opinions or assertions contained in this article are the private views of the author, and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.