ment. Furthermore, CDC light trap collections are being made and monitored closely for possible EEE vectors. As funds are made available, other monitoring programs will be instituted.

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A MODIFIED GARDEN SPRAYER FOR SAMPLING CRAB HOLE WATER

M. S. GOETTEL[1], M. K. TOOHEY,[1] B. R. ENGBER[2] AND J. S. PILLAI[3]

The major vector of sub-periodic filariasis in the South Pacific, *Aedes polynesiensis* Marks, breeds profusely in crab holes of *Cardisoma carnifex* Herbst. These crab holes are usually between 5 and 10 cm in diameter and snake their way into the ground for up to 1.5 meters. The winding nature of the tunnels makes larval sampling very difficult.

Symes (1960) working in Fiji collected larvae by "sucking as much water as possible" from crab holes with a 6 foot rubber tube. In Nigeria, Dunn (1928) modified a car pump by reversing the diaphragm and removing the lower valve. The car pump was connected to a large suction bottle which in turn had a long rubber tube attached for placing into the crab hole.

During the course of ecological studies on the mosquitoes of Western Samoa, Tonga and Fiji, a satisfactory and effective method for extracting crab hole water was devised. The equipment consisted of a modified garden pressure sprayer and 1.5 m of reinforced plastic tubing (Fig. 1).

The garden pressure sprayer is basically a hand pump screwed onto the mouth of a 4.5 liter plastic container. To modify the pump, the cup washer and check valve assembly are reversed thereby creating a vacuum in the container rather than pressure (Fig. 2). This modification, although performed for us by the pump manufacturer (The Cambrian Engineering Co. Ltd., New Plymouth, New Zealand) can be easily done at any mechanical workshop. The type of sprayer used is manufactured by various companies and is available at most gardening supply stores.

A one and a half meter length of plastic tubing, 7 mm in diameter, reinforced along the outside with a length of round plastic electrical wire (used for extension cords) and pliable binding wire is substituted for the hose and spray nozzle assembly that is supplied with the sprayer. The end of the electrical wire is inserted for 1 cm into the distal end of the tubing (Fig. 3) and then attached to the plastic tubing along the outside by wrapping a length of pliable binding wire (1.6 mm diameter) around the two. A 1 cm square hole is cut at the distal end of the tubing, just above the area where the electrical wire has been inserted.

By twisting and turning while pushing, the end of the reinforced tube can usually be inserted deep enough into the crab hole to reach the water level. The wire reinforcement adds rigidity to the tubing, thereby making it easier to perform this task. Also, the modification of the tube end prevents the opening from being plugged by mud during tube insertion. Blowing air into one end of the tube while inserting the other into the crab hole helps in preventing the opening from becoming blocked by mud and sand and also informs the operator when the water level has been reached.

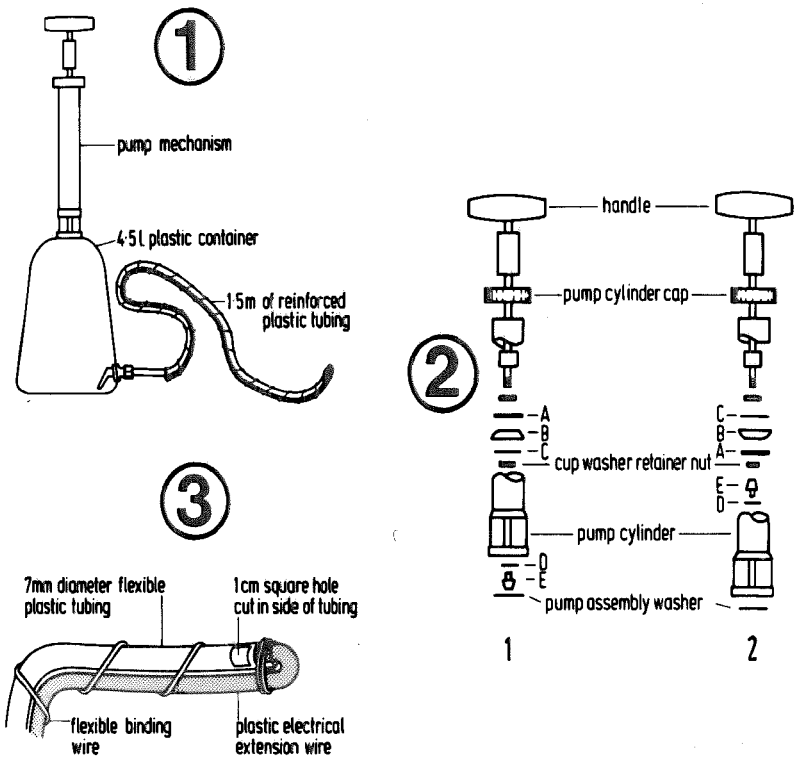
Once contact with water has been established, the free end of the tube is attached to the plastic container. A maximum of 4.5 liters of water can be pumped at a time. Once all the water from the crab hole has been removed, the pump portion is unscrewed and the sample water can then be transferred to another container and examined for larvae.

This pump may also be used for sampling other container breeding habitats such as treeholes and tires.

[1] Vector Research Unit, Ministry of Health, P.O. Box 30, Suva, Fiji.

[2] U.S. Peace Corps, Western Samoa. Present Address: The Johns Hopkins University, School of Hygiene and Public Health, Baltimore, MD 21205.

[3] Department of Microbiology, University of Otago, Dunedin, New Zealand.



Figs. 1–3 Showing modification of garden sprayer as a suction pump.

Fig. 1: Modified garden pressure sprayer used for pumping water from crab holes.

Fig. 2: Details showing the conversion of the pump mechanism from the pressure pump (1) to a suction pump (2). The details shown are for a Cambrian CSP/14 Garden Pressure Sprayer and may vary for different manufacturers. A-Cup backing washer B- Cup washer (leather) C- Cup spread washer D- Check valve O ring E- Check valve assembly.

Fig. 3: Details of the modifications and reinforcement of tubing used with the pump.

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