

# MOSQUITO CONTROL

Mosquitos are by no means a minor nuisance. There is a misconception that spending money to control them is wasteful. Recent outbreaks of serious illnesses in neighboring areas indicate that mosquitos can create a major health menace.

In addition, mosquitos directly affect the economy as in the case of tourism. When our east coast resorts are invaded by massive flights of mosquitos, there is an exodus of valued vacationers. These mosquitos appear at times when resort trade is at its very peak. Many of these tourists refuse to include Delaware in their future vacation plans with a consequent serious loss of income to our resort areas.

## CONTROL

The two basic methods of control are chemical spray and the engineering control of breeding areas.

While the most dramatic method is treatment of infested areas by chemicals usually applied by low-flying aircraft, it unfortunately has disadvantages. Weather conditions in many instances prevent timely spray applications thereby permitting widespread mosquito invasions of populated areas. Additionally, there is a growing concern

on the part of recognized authorities in the fields of agriculture, wild life and shellfish for the heavy use of chemicals where plant and animal life are concerned. Finally, for the past decade the use of at least six types of insecticides has shown the mosquito's increasing resistance to them. While chemical control works quickly and at relatively low cost, it is a temporary remedy at best.

Engineering control consists of installing permanent engineering features designed to attack the mosquito at its very source of life.

This control plan removes mosquito eggs from their natural habitat, relocating them where fish can consume them or they are washed into the bay. This is accomplished by *ditching* which provides a network of spillgates, outlet boxes, tidegates and culverts laced throughout the marsh. Alternate control methods, such as *impoundment* consists of dyking and flooding the breeding marshes thus preventing egg-laying on the marsh surface. But impoundment also eliminates run-off, depriving fish and other marine life of food material.

Another approach is the *champagne pool* method using a series of ponds about 100 feet in diameter connected to drainage ditches

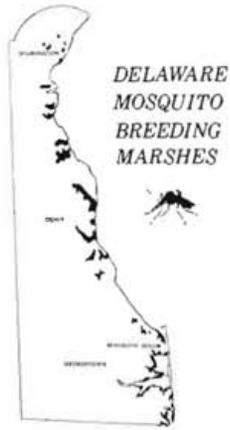
and so designed that daily high tide will lap over the pools replenishing them with water. The tidal water brings fish which devour the larvae that develop. However, champagne pools cannot be used in large marshlands isolated from tidal action.

The problem might also be attacked by filling the marshes, but this would result in destroying the wetlands in which much of our wildlife lives.

Based on experience of recent years, the cost of installing permanent control features averages \$100 per acre with a total required expenditure of approximately \$3,500,000 over a three to four year period.

Concluded during the fiscal year was the program of repair of permanent control installations with Federal funds initiated in the preceding November. Except for a very small amount of dredging on public lands below Dewey Beach, all objectives were achieved. A total of \$510,500 was granted by the Office of Emergency Planning and ninety-eight percent expended with Federal approval. Results:

Approximately 560,000 lineal feet of ditches cleaned; all work undertaken with contracted equipment and extra personnel for supervisory purposes.



*Crawler Tractor  
Amphibious Cargo Carrier  
3/4 yard Drag Line*



Approximately 143,000 cubic yards of material dredged from Rehoboth Bay, deposited and spread on public lands south of Dewey Beach.

Six outlet boxes and water control structures were reinforced at Dewey Beach, South Murderkill and Kitts Hummock.

Only 154,000 acres (exclusive of helicopter work in New Castle County), the most modest in the past eight years, were devoted to the airspray program. The major effort as in the past was in Kent County where 75,000 acres were sprayed, compared to 66,000 in Sussex and 13,000 in New Castle. Just two significant broods of mosquitos required attention; in the late summer of 1963 repeated rains created a major problem, and early in June, 1964, an unexpected tidal influx caused similar difficulties.

All effort in these applications was directed toward adult infection. Stress was placed on breeding marshes, with applications over urban areas when it was impossible to prevent migrations. Because of its economy, Dibrom was used as an active insecticide. An inventory carry over of Malathion permitted its use in some thirty percent of acreage applications, and Baytex was used experimentally

on some 8,000 acres. Supplementing aerial spray activity, fogging was again undertaken in the smaller inland communities of Sussex County.

Division personnel and equipment undertook usual ditching installation totalling approximately 460,000 lineal feet. Lack of funds made it impossible to operate all the machines of the Division. Chief effort was directed toward Broadkill River marshes and the area north of the Murderkill River marshes close to Frederica.

The fresh water mosquito control program was in its second year in New Castle County with considerable progress and changes. Although limited in personnel and with only one piece of equipment, a permanent control program of ditching and filling was maintained throughout the year. During the summer months, ten summertime employees were added in both inspection and temporary abatement work.

Abatement was expanded to include pre-hatch dispersment of dry insecticides, liquid applications by both hand and power means and dispersal of chemicals in full oil solutions by both aircraft and helicopter. Pre-hatch applications consisted of DDT dust, distributed in established breeding places by specially designed dusters. During breeding season Malathion, DDT, and Baytex were all distributed by hand and power sprayers. Nearly three tons of Paris Green, found impractical for aerial dispersment, was distributed by hand in spots revealing larvae activity.

The helicopter was employed for a total of 16,000 acres in addition to conventional aircraft during the summer months for operations against adult populations of mosquitos. It was used primarily in areas where congestion and industrial buildings prevented use of normal, low flying, fixed wing aircraft.