

DEVELOPMENTS IN MOSQUITO CONTROL
Even the Oyster Becomes Better and
Fatter After Mosquito Control Ditch-
ing is Installed.

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A generation ago there was a good market for salt hay and the conical brown stacks of dried marsh grass were a familiar sight on New Jersey marshes. Within recent years there has been a great reduction in the harvesting of salt hay, hence with the loss of much of this one crop obtainable from our salt marsh these areas are now considered as pretty much a liability. Studies made in 1921 and 1922 by Dr. G. W. Martin at the New Jersey Oyster Research Laboratory of the Agricultural Experiment Station showed for the

first time that vast quantities of food of value to the oyster grows in the salt ponds and upon the wet surface of our tidal marshes, (Martin, G. W. 1923; "Food of the Oyster" Bot. Gaz. 75:143-169). Since no ditching had been done in this area at that time these large food supplies on the marsh were made available to the oyster only after hard rains or storm tides. Dr. Martin found at Barnegat by repeated examinations of the oyster's stomach contents that after heavy rains the diatoms and other food organisms characteristic of the offshore oyster beds were almost wholly replaced by plant organisms which thrive in the salt pond and upon the surface of the marsh.

Reporting to the New Jersey Mosquito Extermination Association (Proceedings for 1934; 149-152; 1935; 142-144) Dr. T. C. Nelson stressed the possible use of enclosed basins or claires cut in the marsh for fattening oysters as is done in France. The role of the salt marsh in furnishing food to the oyster was further emphasized.

The vast marshes adjoining the Mullica River have ever been one of the great mosquito breeding grounds in New Jersey. Through these marshes flows the largest river in the state to spread out into Great Bay. From the iron bridge which crosses the river on Route 4, 9 to the New Inlet lies a prosperous oyster and clam industry. Like these industries in other localities the Mullica-Great Bay areas have had their ups and downs. During the early boyhood of the writer one could almost walk from boat to boat across the mouth of the Mullica River on the opening day of the oyster tonging season. There followed a steady decline resulting from excessive tonging on the natural oyster beds and removal of shells.

Within recent years, however, there has been a steady improvement in the industry especially in the quality of the oysters which now rank among the very finest produced in New Jersey. Through enlargement of the inlet, which followed a heavy storm in 1919, the tidal rise and

fall has so increased that the average high tide now floods much of the surrounding marsh. Ditches cut through this marsh within recent years carry these flood tide waters to all parts of the marsh and as quickly drain them again as the tide falls.

The microscopic plant life which comprises the food of the oyster needs the inorganic nutrients required by all plants and which are furnished by the marsh. This oyster food also needs sunlight which it receives in abundance in the thin film of water which spreads over the marsh at high tide. Since the extent of the salt marshes is vastly greater than the surface of the Mullica River and of Great Bay combined there is thus created a great accessory garden for the growing of oyster food with the ditches furnishing a means of rapid transport of this food down to the oyster beds. This is important for some of these food organisms are very delicate and will not long survive the change from the shallow warm and brilliantly lighted marsh surface to the cooler, darker depths of the river.

Just how important this contribution from the marshes may be can only be determined by an extensive study of the water entering and leaving the mosquito ditches. Preliminary observations indicate that this source of food at certain times of the year at least may be very great. Recent investigations by the U. S. Fish and Wild-life Service and by the Oyster Research Laboratory show the marked stimulating effect of commercial fertilizers on diatom growth. It is possible that such fertilizer spread upon the marsh might greatly increase the food resources of nearby tidal creeks.

When we appreciate that one species of diatom in a year brought additional income of nearly a million dollars to the oyster industry of Delaware Bay it is obvious that here is a field of research which will yield rich returns. The greatest salt marsh areas in New Jersey are those of the Mullica just mentioned, and those lying