

MINNOWS AS A MEANS OF MOSQUITO CONTROL EXTENDED TO NORTHERN WATERS THROUGH THE DISCOVERY OF A SPORT

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Thirty years ago Dr. David Starr Jordan, late president of Stanford University, California, recognized the value of small minnows as a mosquito control measure. He noted the absence of mosquitoes in the coastal marshes of Hawaii teeming with a small minnow called "millions" and began a search for a small native fish of the same type. He sent Hildenbrand and Seal, two of his assistants, in search of such a fish. They found *Gambusia affinis* in southern waters and *Gambusia holdbrookii* west of the Rockies. Since that time this little minnow has been used wherever malaria control is carried on. Dr. L. L. Williams, Assistant Surgeon General, U.S.P.H.S., states that *Gambusia* control is good as far as it goes but it doesn't go far enough to satisfy the requirements of malaria control in the southern states.

In the north, where malaria is less hazardous, the little minnow *Gambusia affinis* keeps mosquito propagation down to a margin so slim that mosquitoes emerging from a pond well stocked with this minnow are not sufficient to constitute an annoyance problem—thus it is a boon to the garden pool owner; to the landscape architect; and those who desire to conserve water resources in farm ponds, lagoons, marshes and swamps.

Winter freezing in shallow streams and marshes has been the main drawback to their life in northern waters. Its northernmost range is the big muddy river basin of Southern Illinois. Failure has always punctuated attempts to extend its range north of the Mason-Dixon Line until 17 years ago when it was found to withstand the rigors of northern winters in a sheltered garden pond on the estate of Roland D. Whitman, Hill Road, Winnetka. Simply by chance it was thought that this pool met the requirements: seven feet deep at the shaded end and a sunlit shallow grassy feeding area at the other end. This was considered to be an ideal pond and other ponds like this one were chosen elsewhere in the Chicago area as breeding pools. *Gambusia* minnows were shipped from Carbondale but failed to overwinter. Then minnows were taken from the Whitman pond and transplanted to these same similar breeding pools and thrived. There was no explanation but the mosquito abatement workers accepted the phenomenon and continued to stock new ponds and streams over a period of ten years. Dr. David H. Thompson, Zoologist of the State Department of Fisheries, found *Gambusia* in the Cook County Forest Preserves ponds and knowing that they should not

be in this region began an investigation to determine how they got there and whether the strain could be continued. Dr. Bronkhill of the Shedd Aquarium found *Gambusia* in Cook County streams and was likewise puzzled. A year later Dr. Thompson made a preliminary report upon the presence of *Gambusia* in northern Illinois at a meeting of ichthyologists at the Shedd Aquarium. At this meeting Dr. C. L. Turner of the Northwestern University, a specialist on tropical fish, came to the Des Plaines Valley Mosquito Abatement District to obtain a record of ponds and streams which had been stocked so that he and his students might make further studies of this unusual case. He found *Gambusia* in abundance and expressed his amazement freely. Being at wits end to account for the hardihood otherwise, he suggested that perhaps the strain taken from the Whitman pond was a sport or mutant and if so it would be well worth while to maintain this particular strain for wider distribution in other northern states.

In order to test their hardihood further Mr. Louis A. Krumholtz, Zoological Assistant, took a supply of the Whitman pond strain to Ann Arbor, Michigan, when he left the Illinois Department to join the staff of the Michigan Department of Conservation.

In 1942 a shipment of 300 *Gambusia* supposedly "sports" were shipped to Mr. Ralph B. Birks, Superintendent of Parks, Moline, Illinois.

Next month a shipment of the Whitman pond sports will be sent to Mr. George Otis Tapley, Bacteriologist, Director of the Board of Health, Brookline, Mass., who will observe their behavior in the Boston region. Each spring for the past twelve years Mr. Tapley has obtained a shipment of *Gambusia* from Florida for stocking park lagoons and garden pools but has been unable to carry the Florida strain through the winter. Last fall Mr. Tapley read the Saturday Evening Post story "Skeeter-Beater" by Wm. H. Kelty, which told of a strain of acclimated *Gambusia*, used in the Des Plaines Valley Mosquito Abatement District. Forthwith he wrote for a shipment of the mutants which he promises to handle with loving care in an attempt to determine if they are really sports!