

A NEW ARTIFICIAL BREEDING PLACE FOR MOSQUITOES IN NEW MEXICO¹

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Within the past decade, game watering devices, called gallinaceous guzzlers, have come into general use in water-deficient areas of the Southwest and, at least in New Mexico, have become the breeding place of mosquitoes. Since 1950, the New Mexico Department of Game and Fish has placed in operation 181 of these watering units designed exclusively to furnish water to quail and other upland birds in the arid and semiarid areas of less than 6,500 feet elevation in the southern three-fourths of the state. Each guzzler is essentially an underground cistern constructed of concrete or fiber glass, measuring about five feet wide, 10 to 12 feet long, and about 2½ feet deep, and with a maximum storage capacity of between 650 and 700 gallons. Several inches of earth piled on the arched concrete or fiber-glass roof helps stabilize water temperatures and reduce evaporation. Water from natural precipitation is directed into the cistern from an adjacent collecting apron paved with concrete or asphalt. Birds gain access to the water by walking through a slit-shaped opening, about five feet long and six inches high, and down a ramp sloping inward from ground level to the bottom of the tank near the center. The guzzlers have proved effective in providing water throughout the year and almost invariably retain water even during periods of several consecutive years of drought. It is evident that the guzzlers are successful as permanent water holes for game birds.

Soon after the first New Mexico guzzlers were placed in operation, numerous organisms, including mosquito larvae, were found developing in some of the completed tanks. Records made during the past few years indicate that, for 129 guzzlers checked more or less regularly, 54 or 41.9 percent harbored mosquito larvae, or pupae, or both on one or more occasions. There is every reason to expect all the guzzlers to be capable of serving as a suitable habitat for larval mosquitoes. Field observations indicate that there is considerable variation in the extent to which a particular guzzler may support a mosquito population. In some guzzlers, mosquito larvae are found on virtually every examination, while occurrence is sporadic in other guzzlers. Most mosquito larvae were observed to be concentrated in the less strongly shaded shallow water adjacent to the ramp, but on looking through the usually covered manhole, some larvae have been observed in the deeper and more strongly shaded water far from the opening to the ramp. Whether the cistern is of concrete or fiber glass appears to have no relationship to the numbers of mosquito larvae present and there appears to be no particular correlation between the presence of larvae in general and the season of the year or the location of the guzzler. At least some guzzlers in every area of the state have been found to harbor mosquito larvae.

Adult mosquitoes are frequently numerous in the vicinity of guzzlers and in some cases it is almost unbearable to remain motionless near a guzzler. On removing the manhole cover, adult mos-

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quitoes are often observed hovering over the water without being concentrated in any particular part of the guzzler.

Between 1951 and 1956, inclusive, 32 representative collections of mosquito larvae were made from 30 different guzzlers in 10 different counties of the central and southern parts of New Mexico. The four species identified in these collections have previously been recorded from New Mexico (Ferguson and McNeel, 1954). All four are known to bite humans and two of the four have been shown capable of transmitting encephalitis virus (Carpenter and LaCasse, 1955). The most commonly found mosquito species is *Aedes atropalpus*, which was taken in 23 collections from guzzlers in nine different counties between June 1 and November 1. Seven collections of *Culiseta inornata* were taken from guzzlers in four counties during the months of September to January, while *C. incidens* was found in four guzzlers from four different counties, with collections confined to the months of October, December, and January. The least common species is *Culex salinarius*, which occurred in two collections, both taken

during September, one from a guzzler in Santa Fe County and the other from a guzzler in Doña Ana County. Additional collecting may well show the presence of other species, although restrictions imposed by microenvironmental conditions within the guzzler may preclude utilization by a wide variety of species.

The authors do not wish to imply a probable public health importance in the local increase of native mosquitoes resulting from the installation of guzzlers in remote semiarid and arid range lands that otherwise are inhospitable to mosquitoes. It seems appropriate, however, to call attention to the guzzler as an artificial habitat that allows the occasional development of a dense population of pestiferous mosquitoes. The advisability of and need for control are beyond the scope of this paper.

References

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