RVEY FOR POSSIBLE MOSQUITO BREEDING IN CRAWFISH HOLES IN NEW ORLEANS, LOUISIANA

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NTRODUCTION. A study was made und the Moisant International Airport, w Orleans, Louisiana, to determine ether mosquitoes were breeding in the es of crawfish. Most work of this na- reported in the literature appears to e been done in connection with mos- toes in crab holes. Dunn (1928) found species of mosquitoes breeding in crab s in Nigeria. He recovered *Aedes ypti* Linn., a yellow fever mosquito, n three crab holes of a total of 200 ex- ned. Riqueau (1929) and Bruce- watt (1951) found *aegypti* breeding in holes in West Africa. Forattini 58) found *Culex carcinoxenus* Castro, *les taeniorhynchus* (Wied.), and *Ae. ventor* Cerqueira and Costa in crab s in Brazil, but reported no *aegypti*. normal habitat for *aegypti* larvae nprises various artificial containers such ires, cans, cisterns, and urns. Breeding ground water is very unusual for *ypti*.

arpenter *et al.* (1946) state that *nocerites cancer* Theob. and *D. spanius* ar and Knab) are found in crab holes southern Florida and Texas, respec- ly. Rueger and Druce in 1950 re- ed an adult *D. epitedeus* (Knab) in a t trap in Texas. However, there is vidence that this species is established e. The writer knows of no reports *Deinocerites* or other mosquito species rab holes or crawfish holes in Louis- a. Actually, no specific references were nd on mosquito breeding in crawfish s, although the habitat is similar to of crab holes.

IATERIALS AND METHODS. A large up of burrowing chimney-building vfish, *Cambarus diogenes ludovici- s* Faxon, occurs around the Moisant International Airport in fields that may flood after heavy rains. These crawfish build mud chimneys about five inches above the ground level. They burrow many feet downward to keep below the water table in dry weather.

Eighteen traps were placed over the crawfish holes to collect adult mosquitoes that might emerge. Figure 1 shows how a mason jar served as a receptacle for the mosquitoes and a waxed-paper cone helped retain the adults following their entry into the jar. The jar was set upon an eight-inch cylinder of copper screen to keep it high enough off the ground to prevent submersion should the fields flood after heavy rains. The traps were inspected and removed to a new set of holes every two weeks from March through November, 1961.

When the water table was sufficiently high, samples of water were drawn out of the burrows through a rubber suction tube into a white enamel pan. Mosquito larvae collected in this manner were then placed in vials for identification and study. The burrows were so tortuous that it was usually possible to follow them for only two or three feet. The water table often was too low to permit withdrawal of water from the hole. Water from a total of 450 crawfish holes was examined during the period March through November, 1961.

The walls of the burrows were scraped to a depth of about two or three inches below ground level for possible presence of mosquito eggs. These scrapings were taken to the laboratory where they were flooded for possible emergence of mosquito larvae. Scrapings from 349 burrows were taken during the summer and fall of 1961.

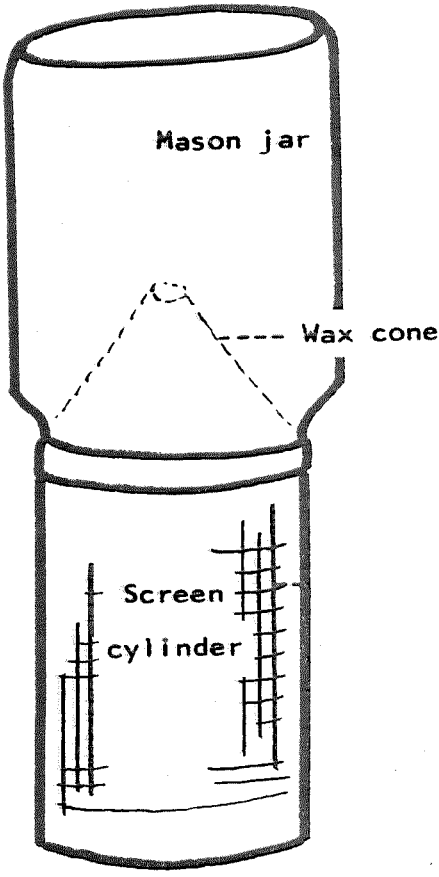

FIG. 1.—Trap for adult mosquitoes used over crawfish holes

RESULTS. Eight adult mosquitoes were recovered from the 18 traps placed over the crawfish holes. One adult *Culex quinquefasciatus* Say was recovered in March; seven adult *Psorophora confinnis* (Lynch-Arribalzaga) were recovered in August. This does not necessarily indicate breeding in this habitat since these adults may have been resting in the burrows before being trapped. Biting collections showed a heavy population of *confinnis* adults in the surrounding fi in August.

Twelve *confinnis* larvae were recove in June, August, and September fr water withdrawn from the crawfish ho All larvae collected were in the second third instar. Since the larval period is ported to be relatively short (4 to 10 d Carpenter *et al.*, 1955), it is assumed t the larvae collected hatched within the ceding week. There was a heavy r the week preceding the collection in J during which the one larva recovered month may have been washed into burrow. *P. confinnis* larvae have b found breeding in ponds and ditches this area. Eleven *confinnis* larvae w recovered in August and Septem There were light showers the preced week of both collections, but no flood of the fields. It would therefore seem likely that these latter larvae were was into the crawfish holes.

The strongest evidence of mosq breeding in this habitat was the reco of a total of seven *confinnis* larvae f eggs from the mud scrapings taken f inside the crawfish burrows in Septen and October.

Horsfall (1955) reported that *confi* larvae are found in shallow ground p subject to periodic drying and flood Such sites are roadside ditches, gr swales, rice fields, savannahs, and casionally woodland pools. No rep have been found of *confinnis* breedin crawfish or crab holes.

CONCLUSIONS. Evidence indicates *Psorophora confinnis* will breed in cr fish holes around the Moisant Inte tional Airport at New Orleans, Louisi It is not possible to say at present how large an area this occurs, or its tive importance to its more conventi breeding areas.

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Literature Cited

RUCE-CHWATT, L. J., and FITZ-JOHN, R. A. I. Mosquitoes in crab-burrows on the coast West Africa and their control. Jour. Trop. l. 54:116–121.

ARPENTER, S. J., and LACASSE, W. J. 1955. squitoes of North America. Univ. of Calif. s: Berkeley and Los Angeles. 360 pp.

ARPENTER, S. J., MIDDLEKAUFF, W. W. and MBERLAIN, R. W. 1946. The mosquitoes he southern United States east of Oklahoma Texas. Univ. Press: Notre Dame. 292 pp.

UNN, L. H. 1928. Further observations on mosquito breeding in tree-holes and crab-holes. Bull. Ent. Res. 18(3):247–250.

FORATTINI, O. P. 1958. Mosquitoes developing in crab burrows. Rev. Brasil Biol. 18(2): 175–179.

HORSFALL, W. R. 1955. Mosquitoes, their bionomics and relation to disease. Ronald Press: New York. 722 pp.

RIQUEAU. 1929. Les trous de crabes, gites à larves. Bull. Soc. Path. Exotique 22(3):175–179.

RUEGER, M. E., and DRUCE, S. 1950. New mosquito distribution records for Texas. Mosq. News 10(2):60–63.

)MPARATIVE INFECTIVITY OF *PLASMODIUM FALCIPARUM* COLOMBIA STRAIN) TO *ANOPHELES QUADRIMACULATUS* SAY AND *ANOPHELES ALBIMANUS (WIED.).*

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NTRODUCTION. Studies on the comparasusceptibility of *Anopheles quadrimatus* and *A. albimanus* to *Plasmodium iparum* have been made previously by eral workers. Boyd *et al.* (1938) and d and Jobbins (1940) found that *A. manus* from Cuba and Panama were hly susceptible to *P. falciparum* from ir own region, but distinctly refractory strains of the same parasite species n the Nearctic region. *A. quadrimacus* mosquitoes from Florida exhibited a h degree of susceptibility to infection strains of *P. falciparum* from both the otropical and the Nearctic regions. es and Young (1950), in a similar ly using a South Carolina strain of *P. iparum,* a Panama strain of *A. albinus,* and the Q-1 strain of *A. quadaculatus,* found that the latter species more susceptible to infection. Jeffery *al.* (1950) showed that *A. albimanus* n Panama (A-2 strain) was markedly erior to *A. albimanus* from the Florida ys (A-3 strain) and the Q-1 strain in susceptibility to infection with a Pana strain of *P. falciparum.* Because of these previous reported differences, studies were made on the comparative infectivity of a Colombia, South America, strain of *P. falciparum* to the Q-1 strain of *A. quadrimaculatus* and a Central American strain of *A. albimanus.*

METHODS AND PROCEDURES. The Colombia strain of *Plasmodium falciparum* is a chloroquine-resistant strain described by Young and Moore (1961) and was originally from the Magdalena Valley of Colombia, South America.

The *A. quadrimaculatus* (Q-1 strain) mosquitoes were originally from the southeastern United States and have been maintained in the laboratory since 1941. The *A. albimanus* (A-9 strain) mosquitoes were originally from El Salvador and were obtained through the courtesy of Dr. H. G. Simkover, Shell Development Company, Modesto, California. The colony has been maintained since 1960.

The patients were adult Negro males being treated for neurosyphilis. Patients A and B were infected by intravenous inoculation of parasitized blood which had been stored frozen in a dry ice chest