not taken either larvae or adults since December, 1960. To our knowledge, *Culex inhibitator* has not been reported in the literature from Texas or the United States. However, a review of the *Melanoconion* in the Quarantine Station collection has shown the specimens determined as *peccator* represents this species and another resembling *inhibitator*. The specific status of this mosquito cannot be clarified until associated larval and pupal skins and male genitalia can be obtained. Unfortunately, this mosquito has not been seen since November, 1960, in Cameron County. Males, apparently of this mosquito, have been taken from the Mexican tankers.

SUMMARY.—Oil tankers on regular runs between two Mexican Gulf coast ports in Mexico and Brownsville have been inspected for mosquitoes and other insects in 1963 to prevent the introduction of nonindigenous species. At least 41 species of mosquitoes were collected, including 14 which have not been established in south Texas and 4 additional ones previously recorded but not believed to be in the area now. All of the mosquitoes taken were dead.

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OCCURRENCE OF *Culicoides paraensis* (GOELDI) (DIPTERA:CERATOPOGONIDAE) IN NORTHERN FLORIDA

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Studies on the bionomics of certain inland species of *Culicoides* in Alachua County, Florida supported by the National Institutes of Health Grant GM 12322-01, revealed the presence of *Culicoides paraensis* (Goeldi) which to our knowledge has not previously been reported from Florida. Snow *et al.* (1957, 1958) found this species in the Tennessee Valley regions of Tennessee, Alabama, and Mississippi breeding in the wet debris in oak tree holes. Wirth and Blanton (1959) reported that it was widely distributed in South and Central America and the West Indies from Argentina and Bolivia to Mexico and the eastern United States.

Our collections were taken from tree holes in magnolia (*Magnolia grandiflora* L.) trees located in the San Felasco Hammock about five miles northwest of Gainesville, Florida. A sample collected on October 6, 1964 and held in the laboratory at 72–74° F. produced 16 adults in 33 to 56 days. Three other samples collected on October 27, 1964 produced seven adults in 33 to 82 days. An associated species, *C. nanus* R & H., emerged from the same samples in larger numbers.

C. paraensis is a pestiferous, diurnal, man-biting species showing a preference for the higher canopy regions of forests where it disperses after migrating upwards on tree trunks during the day (Snow, 1955). It is a typical member of the *C. debilipalpis* Lutz group (Wirth and Blanton, l.c.) and its wing pattern is very similar to that of *C. stellifer* (Coq.).

Identifications of *C. paraensis* specimens were verified by Dr. F. S. Blanton, University of Florida Entomology Department.

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SUGAR-BAITED INSECTICIDE RESIDUES AGAINST MOSQUITOES

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Fay and Kilpatrick (1958) have reviewed the use of bait formulations combining organic insecticides with sugar or syrup for fly control. The importance of sugar-feeding to female mosquitoes in the field may have been obscured by the blood-feeding habit with its consequent relation to disease vectoring. Nevertheless, laboratory colonies and experimental adults are routinely provided with sugar or honey solutions or even dry sugar crystals (Eliason, 1963).

Several years ago I evaluated some materials as attractants for mosquitoes among which I included sucrose. Sucrose or "Karo" syrup was found to markedly enhance the effectiveness of residual deposits of either DDT or malathion against *Aedes aegypti*, whether the residual deposit was on paper, wood, or bean foliage. Subsequent laboratory experience has shown that the sugar-baits can be evaluated better in large cages than in small cages of the WHO-type.

The results of one type of large cage test are reported here, as they suggest the potential usefulness of sugar-baited insecticide residues in mosquito control. The procedure in this test was to treat pieces of filter paper by dipping them in a water emulsion of either the toxicant alone or of

the toxicant prepared with a 10 percent sucrose or 20 percent Karo syrup solution. The concentration of toxicant was varied, but the sugar was constant. The filter papers were allowed to dry for several days, and then each was fastened inside a 6" x 9" x 12" screen cage. The treated paper covered only 1/12 of the interior surface of the cage, and 50 *Aedes aegypti* (6-to-8-day-old sugar-fed females) were tested for each treatment and dosage. Based on the percentage mortality after 24 hours exposure, the effectiveness of malathion and malathion + 20 percent syrup residuals on 4-day-old and on 21-day-old test papers are compared in Table 1.

TABLE 1.—Residual effectiveness of malathion or malathion+20% Karo. Mortality counts made after 24 hours in screen cage in which 1/12 of the interior was lined with treated paper, 50 *Aedes aegypti* ♀♀ per cage.

Malathion concentration	Mortality after 24 hrs. Malathion	Malathion +20% Karo	Age of test papers Days
1 mg./ml.	64%	100%	4
0.5 mg./ml.	26%	100%	4
0.1 mg./ml.	4%	70%	4
0.5 mg./ml.	12%	96%	21
0.25 mg./ml.	0	60%	21

In this example, only 1/10 of the toxicant was needed when sugar was present on the treated surface. Furthermore, the period of effectiveness of the sugar-baited residues was considerably extended. The females probed the sugar-treated paper and remained in contact with the residual treatment longer. Sugar-baited residual treatments might, therefore, be effective against populations which have developed the behavioral characteristic of "insecticide avoidance" (Mattingly, 1962). Males should be susceptible to sugar-baited residues since they feed on nectar, and if a breeding site was small and clearly defined, a sugar-residual treatment of nearby vegetation could be effective against both the male and female populations. Finally, sugar-residuals might also be tested in a program of premises spraying (i.e. the exterior of a house and vegetation adjacent to buildings) as an adjunct to current methods of combatting encephalitis epidemics in urban areas, provided the emergency warranted the hazard to beneficial insects.

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A NEW DISTRIBUTION RECORD AND AN INCIDENCE OF MERMITHID NEMATODE PARASITISM FOR *Leptoconops kerteszi* KIEFFER (DIPTERA:CERATOPOGONIDAE)

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Recently Dr. D. W. Kirkland, of the University of New Mexico, sent me a number of adult gnats collected from Carmen Island, Baja California, Mexico in January, 1964. The material received for determination consisted of 1 male and 9 female *Leptoconops* (*Holoconops*) *kerteszi* Kieffer.

Carmen Island is in the Gulf of California directly opposite Loreto and 130 miles northwest of La Paz. The island has a length of 20 miles and an average width or about 3 miles. The gnats were collected at Salinas Bay which opens to the south and is protected from the prevailing winds.

Dr. Kirkland (p.c., 1965) relates that isolated depressions in the beach deposits are ideally suited for *L. kerteszi* breeding. The salinity of the water in these depressions is relatively low, but periodic flooding with sea water occurs throughout the year. Following summer rains an increased nuisance problem is experienced by the occupants of a nearby settlement.

The male terminalia agreed in all important aspects with the description given by Freeborn and Zimmerman (1934). Examination of the antennae, palpi, lamellae, spermathecae, and wings of 4 female specimens did not reveal any distinctly different characters from those described by Carter (1921) and Smith and Lowe (1948).

Fox (1955) lists *L. kerteszi* in the Western United States from California, Colorado, Montana, Nebraska, New Mexico, Utah, and Wyoming. The occurrence of *L. kerteszi* in Canada was reported by Curtis (1957). This is the first record of this species in Mexico.

One of the female gnats possessed an entomophilic nematode in the abdomen. Dr. H. E. Welch of the Canada Department of Agriculture, Belleville, Ontario examined the specimen and reported that it was an immature mermithid parasite. Unfortunately, a generic identification was not possible as the taxonomy of the mermithids is based on mature adults. In addition, this specimen was not very well preserved.

Mention is made of mermithid parasitism in Ceratopogonidae in a recent review by Welch (1965).

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