the missing aculus connecting the larger light spot in cell R5 with the smaller distal spot. The absence of this aculus is frequent in specimens from the area. Internal organs could not be observed due to the distention of the abdomen by the parasites.

The specimen described was captured in a New Jersey mosquito light trap located in the southern residential area of Gainesville, Florida, on Oct. 20, 1965. The trap was located near the crest of a wooded ridge above a small spring-fed pool and its spillway ditch. Additional Culicoides taken in the same light trap catch consisted of 5 C. insignis Lutz (2 ♀, 3 ♂), 17 C. haematopus Malloch (3 ♀, 14 ♂), 18 C. stelleri (♀, 14 ♀) and 1 female of the C. debilipalpis Lutz group.

The rate of natural parasitism of Culicoides by mermithids is apparently very low in Alachua County, Florida, since only this specimen has been found in one year’s observations and examinations of thousands of specimens. However, the possible culture and dissemination of arthropod-parasitic nematodes is considered by Welch (1965) to be a promising method of biological control for certain pestiferous insects.

Acknowledgment is made to Dr. Vernon G. Perry, Professor of Nematology, for identification of the parasitic nematodes and to Mr. Charles C. Russell, graduate student in Entomology, for making the photomicrographs. This finding resulted from studies of the biometrics of inland species of Culicoides supported by NIH grant GM 12322.

References Cited


A Note on Pistia Control

Dr. J. S. Dodge Consultant, (Malariaologist) Ministry of Health, Northern Nigeria, and Abdel Ladhan Malaria Control Officer, Regional Malaria Unit, Northern Nigeria

Pistia stratiotes is commonly found growing in borrow pits in Northern Nigeria and interferes to a considerable extent with larval control measures. Borrow pits are found in considerable numbers in all the large towns (in Kano there are at present over 350 pits varying in size from 80,000 square feet to 600 square feet) and present a considerable surface of water available for mosquito breeding. The growth of Pistia weed renders the control of mosquito larvae by oiling nearly impossible and makes the action of DDT larviciding solutions much less effective as it is extremely difficult to ensure that the larviciding agent reaches all the water available for mosquito breeding.

Clearance of Pistia by hand, using long-handled rakes as noted by Service (1960) either from the side of the pit or from a home-made raft, is time-consuming and expensive in labour costs. The Pistia regenerates and has to be regularly
cleared. Herbicides have been used to control *Pistia* and have met with variable success: The more successful of these herbicides contain Diquat (1:1-ethylenc-2, 2-bipyridylum cation) and its use in Northern Nigeria has been described by Service (1962). After destruction of the *Pistia* by Diquat the *Pistia* will grow again, the period that elapses before it recovers the borrow pit increasing with each treatment. The presence of *Pistia* in other borrow pits nearby seems to be relevant and it may well be that birds can carry *Pistia* from one pit to another. Frequently borrow pits are linked together by ditches to form some sort of drainage system and in this case regrowth of *Pistia* along the course of the ditches has been noticed.

It was noticed that a number of borrow pits in Zaria City, the Provincial Capital of Zaria Province in Northern Nigeria (11°03' N, 07°43' E) are completely dried up in the dry season, when dried remnants of *Pistia* could be seen on a close examination of the dried surface of the borrow pit.

With the onset of the rains the borrow pits quickly filled with water and were soon covered with *Pistia*, to the comfort of mosquito larvae and the concern of the Health Office. It was therefore decided to try the effect of spraying with a herbicide during the dry season, when the *Pistia* might be eliminated. A herbicide with a residual action was chosen and the particular one used was "Atlamex," a herbicide with a long residual action. (Supplied by Imperial Chemical Industries Ltd.). This was sprayed onto the surface of two dried-up borrow pits in Zaria City in May 1965 at the dosage shown in Table I. In June with the onset of the rains the spray with the spraying solution delivered at a high pressure to the nozzle tip. A working pressure of 100 p.s.i. was used in this work. Twenty lbs of "Atlamex" was used in 25 gallons of water.

**Results.** No growth of *Pistia* occurred on one of the two borrow pits up to November 1965; in the other borrow pit, growth of *Pistia* was occurring along the ditch linking the borrow pit with one of the control borrow pits. By January, 1966 a few scattered small areas (1-3 square feet) of *Pistia* had appeared in the first borrow pit by direct spread from the ditch. The *Pistia* in the first of the sprayed borrow pits was young and growing vigorously whereas in October in the control pits the *Pistia* was matured and had completely covered the pits. No *Pistia* was present in the second borrow pit by January, 1966.

**Discussion.** Complete eradication of *Pistia* was obtained in one borrow pit and in the other, re-introduction of the *Pistia* was by growth along a connecting ditch. Local residents from houses alongside the two treated pits stated that they had not known them free of water weed previously. Eight months after the spraying of the two pits no growth occurred in one of the pits and growth in the other one was due to direct spread from a neighbouring "infected" borrow pit.

No growth from the *Pistia* remnants left when the borrow pit dried up had taken place in contrast to the control pits where *Pistia* had rapidly appeared as soon as the pits became filled with water.

In Zaria about two-thirds of the borrow pits

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<th>Table 1.—Dosage of “Atlamex”; Zaria Pistia Control Trial</th>
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Desired dosage: 2 lbs. in 2½ galls. per 24 square yards.
Dosage achieved: Pit I 2 lbs. in 2½ galls. per 21 sq. yards.
Pit II 2 lbs. in 2½ galls. per 22 sq. yards.
NEWS AND NOTES

AUSTIN W. MORRILL, JR.

AL BUZICKY, CHAIRMAN OF SECTION D OF THE ENTOMOLOGICAL SOCIETY OF AMERICA HAS BEEN BUSY WITH ARRANGEMENTS FOR THE PROGRAM FOR THE NEXT MEETING which is to be held the week beginning 28 November in Portland, Oregon. In this, he has been assisted by the other Section D officers, AMCA'ers all, one of whom has written: "Thanks to some fine work by last year's chairman, Harry Pratt, a plenary symposium entitled 'Entomology Looks at Its Mission' will be presented. Within Section D two symposia, 'Insecticides in Public Health Entomology' and 'Animal Systemic Insecticides', are being prepared, as well as two Highlights papers and three other invitation papers. All in all, it promises to be a fine meeting—plan now to be there!" To which we add: (!)

Lt. Col. Bob Altman and the Entomologists of the Military Services in Washington, acting through the Armed Forces Pest Control Board, repeated last year's highly successful course entitled "Advanced Training for Military Entomologists" during the last two weeks of August, in Atlanta, Ga. The course was given, last year and this, in conjunction with and using the magnificent facilities of the Communicable Disease Center of the USPHS. We're sorry we couldn't have announced the exact dates well enough in advance for those of you who didn't get them otherwise, but make a mark in your book for next August, you Reserve Officers who haven't yet taken this very worthwhile course. You'll gain a lot more than Points!

George Thompson and his Jefferson (Texas) Mosquito Control District have had "sorrowfully" to announce that their county (and District) no longer contains 967 square miles but instead is now about 1,487 square miles while Texas itself has stretched some 2 1/2 BILLION acres. George says the change was caused by a resurgence and that the old figure was based on the tax roles and probably excluded public and school lands; and though he admits Texas would like to get back up there where she was, and pass Alaska, he doubts if this will quite do it.

G E N E G E R B E R G and his Insect Control and Research Inc. of Baltimore (Md.) came in for some mighty nice publicity last May, when the Sunday SUN Magazine ran a three-page spread on Gene's laboratory's operations, complete with seven excellent photographs. They must have talked to Gene, too, and taken notes, what's more, because the accompanying article was not only full but factual and should have done much to enlighten the general public, not only about the control of mosquitoes—and falciparum malaria—in Viet Nam, which is what the article was primarily about, but also about mosquito control in its whole aspect. So, Congratulations, Gene . . . and thanks!

CHET ROBINSON has recently shown that Texas isn't all that's growing. Emboldened, perhaps, by George's expansion and by Bob Hedeen's and Gardner MacFarland's, that we told you about, Chet has recently taken his courage in his hands and accepted the addition of Murray Township to his district, thus bringing it up to 815 1/2 square miles. Watch out George . . . there's a lot more of California isn't been tech'd yet, and it's filling up with people. (Just before we left we saw a car window sign that said, "California is full—GO HOME!") With the growth, Chet also announced an all time low of service calls, down to 18, following an early-season catch-basin spraying program.

While we were in Japan visiting Hugh Keegan and Vern Tipton at the Army's 406 Medical General Laboratory, we learned that Ted Blakelee is on route to the 9th MGL in Vietnam vice Larry Johnston, whom we later saw in Okinawa en route to San Francisco and the 6th Army Med. Lab at Ft. Baker. Hugh's going to the Medical Field School at Fort Sam Houston in San Antonio (Texas) and Vern, of course is replacing him in Japan. Complicated, ain't it? To make it worse, Hugh was leaving just before the Pacific Science Congress and its symposia on Filariasis and ARBO-VIRUSES (there, we finally said it), which he had done so much to help set up. But he was due back again.