

INSECTS FROM BIKINI ATOLL, MARSHALL ISLANDS¹

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The writer was privileged to be a member of the Bikini Scientific Resurvey staff which studied the biology of Bikini Atoll, Marshall Islands. The resurvey, under the direction of Captain C. L. Engleman, U.S.N., was conducted during July and August, 1947. For some further information on general aspects of the resurvey, the reader is referred to a paper by Schultz (1947).

The land areas of Bikini Atoll consist of a number of sandspits and small vegetated islets fringing the central lagoon. In general the soil of the vegetated areas is thin and infertile. Conspicuous plants are *Pandanus* (screw-pine) the fruit of which provides food for a considerable number of insects. These are scattered everywhere except on the sandspits and along the beaches. Coconut palms grow on the more decayed stony areas. *Portulaca* sp., the food plant of one of the predominant butterflies (*Hypolimnas bolina jaluita*) is abundant. *Hibiscus tiliaceus* forms bushy clumps up to 30 feet in height; *Cassytha filiformis*, a leafless liana, grows in the middle of the islets; white and purple *Convolvulus* spp. are in open areas; and *Pemphis*, *Scoevola*, and *Tournefortia* form a belt of shrubby brush along the seaward shore and somewhat resemble mixed laurel and thorn thickets.

Insect collections were made by the writer on Bikini, Enyu, Prayer, Rokar, and Namu islands. Special attention was directed to a study of the ants (Cole, 1949). The purpose of these collections and associated taxonomic studies was to sample, in so far as time permitted, the insect population of Bikini Atoll, as a part of the overall biotic community, and to investigate the existence of any structural anomalies. Insects were represented on all of the islets despite the fact that Bikini Atoll had been dusted with DDT prior to the arrival of the resurvey staff. Unfortunately no population studies of insects had been made prior to the Operation Crossroads atom bomb tests, so no real basis existed for post-test comparisons. In any event the findings would have been obscured by use of DDT. More insects, both quantitatively and qualitatively, were found on Bikini Island than on the other islets, although they were not an especially conspicuous element of the fauna in any locality. The existing differences in population are not believed to be correlated with any radiation effects, but rather with the fact that Bikini Island has an extensive growth of vegetation and supported a human settlement prior to Operation Crossroads. At the present time, there is apparently no

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way in which the normal, endemic insect population of Bikini Atoll may be ascertained. Many of the insects which were collected have a wide distribution in Micronesia.

The following list² comprises the insects collected from Bikini Atoll. That the list is by no means complete the writer is quite aware.

THYSANURA

Lepismatidae: *Lepisma* sp.

ORTHOPTERA

Blattidae: *Cutilia soror* (Brunn.), *C. nitida* (Brunn.). *Pycnoscelus surinamensis* (L).

Gryllidae: *Cycloptilum* sp., *Gryllodes sigillatus* (Walk.)

ISOPTERA

Kaloterms repandus Hill.

NEUROPTERA

Chrysopidae: *Chrysopa ramburi* Schn.

HEMIPTERA

Cicadellidae: *Euscelis transversus* Metc.

Coreidae: *Liorhyssus hyalinus* (F.)

Lygaeidae: *Nysius picipes* Usinger

Nabidae: *Nabis capsiformis* Germar

Pentatomidae: *Oechalia consocialis* (Boisduval)

Veliidae: *Halovelia maritima* Bergroth

COLEOPTERA

Anthicidae: *Anthicus* sp.

Coccinellidae: *Coccinella arcuata* F.

Curculionidae: *Trigonops* sp.

Nitidulidae: *Carpophilus* sp., *Haptoncus* sp.

Oedemeridae: *Sessinia* sp.

LEPIDOPTERA

Hesperiidae: *Badamia exclamationis* (Fab.)

Nymphalidae: *Hypolimnas bolina jaluuta* Fruhstorfer, *Junonia villida bismarkiana* Hagen.

DIPTERA

Asilidae: *Stenopogon* (?) sp.

Canaceidae: *Canace* sp.

Dolichopodidae: *Chrysosoma leucopogon* Wied., *Cymatopus* sp.

Drosophilidae: *Drosophila melanogaster* Meigen

Hippoboscidae: *Olfersia aenescens* Thom.

²The writer is grateful to the staff of the U. S. National Museum for making determinations.

- Lauxaniidae: *Homoneura* sp.
 Lonchaeidae: *Lampronchaca aurea* (Macq.)
 Milichiidae: *Milichiella lacteipennis* (Lw.)
 Muscidae: *Atherigona* sp., *Musca sorbens* Wd.
 Sarcophagidae: *Sarcophaga dux* Thoms.
 Stratiomyiidae: Near *Lasiopa* sp.
 Syrphidae: *Xanthogramma scutellaris* (Fabr.)
 Tephritidae: *Dacus frauenfeldi* Schin.

HYMENOPTERA

- Braconidae: *Macrocentrus* sp.
 Evaniidae: *Szepligetella sericea* (Cam.)
 Formicidae: The 13 species of ants collected have already been listed by Cole (1949).
 Megachilidae: *Megachile loiensis* Ckll.
 Sphecidae: *Pison hospes* Sm.
 Vespidae: *Pachodynerus nasidens* (Latr.)

In summarizing studies of the insects of Bikini Atoll, the following conclusions may be noted: first, the insect population might be termed normal for islands of this general area; and second, no structural anomalies were observed which might have been caused by blast or radiation effects. Continuing studies of *Drosophila* cultures, taken in living form at Bikini Island, have not thus far revealed genetic abnormalities in excess of normal variability.

LITERATURE CITED

- Cole, A. C. 1949. The ants of Bikini Atoll, Marshall Islands. *Pan-Pacif. Ent.* XXV:172-174.
 Schultz, L. P. 1947. The biology of Bikini Atoll, with special reference to the fishes. *Rep. Smithsonian Institution*, Pub. 3931:301-316.

NEWS OF TENNESSEE SCIENCE

(Continued from page 245)

of Tennessee School of Medicine, Memphis; E. C. Bauer, Pharmacology; R. R. Overman, D. B. Zilversmit, Physiology. Vanderbilt University, Nashville; Donald E. Pearson, R. E. Rummel, Chemistry; James H. Gregg, Biology. Carson-Newman College, Jefferson City; C. T. Bahner, Chemistry.

Dr. Philip G. Davidson, Dean of the Senior College and Graduate School, and Provost of the Undergraduate Colleges at Vanderbilt University, has become President of the University of Louisville, and assumed his duties at the latter institution during the summer of 1951.

Dr. Samuel L. Meyer, Professor of Botany in the University of Tennessee and former President of the Academy, has become Professor of Botany and head of the department at the Florida State University, Tallahassee. Dr. Meyer began his duties in Florida on June 28.

Dr. Forrest Westens, Associate Director of the Division of Health Physics, Oak Ridge National Laboratory, has left Oak Ridge to become a member of the staff of the Biophysics Branch, Division of Biology and Medicine, U. S. Atomic Energy Commission, Washington.

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