

Insects and Other Arthropods from Midway Atoll

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Midway Atoll lies 1150 nautical miles northwest of Oahu and consists of a nearly circular rim of coral reef about 5 miles in diameter enclosing a lagoon. Near the southern rim of the atoll are two low islets, Sand Island measuring about a mile and one-half long by a mile wide, and Eastern Island, triangular in shape and a mile and a quarter long by three quarters of a mile wide. Though Eastern Island always has had a growth of low shrub, Sand Island was originally covered with nearly bare sand. When a cable station was established on Sand Island in 1902, numerous plants, together with shiploads of soil were imported, principally from Hawaii. Undoubtedly many insects were introduced at the same time. From 1935 to 1950, Sand Island was an operating base for Pan American Airways, and it has been a refueling base for east-bound Armed Forces transport planes.

The first insect recorded from Midway was the moth, *Peridroma fasciata*, described in 1894 by W. Rothschild, and probably collected in July, 1891 by Henry Palmer, a bird collector for Rothschild. A few insects were taken by G. P. Wilder in 1905, but the first scientific survey of Midway was made by the Tanager Expedition in 1923, with D. T. Fullaway as entomologist, during the course of an exploration of islands of the Hawaiian chain northwest of Kauai. The entomological results were published by E. H. Bryan, Jr. and collaborators in B. P. BISHOP MUSEUM BULLETIN 31, 1926, which lists 43 species of insects in 12 orders from Midway.

During the past few years C. F. Clagg, with the U. S. Naval District Public Works, and Yoshio Oshiro, a construction worker with Hawaiian Dredging Company, have brought in numerous specimens from Midway. E. J. Ford, Jr. made an intensive survey of the atoll in November, 1959. Their collections form the basis for the present list, and bring the total number of insect species to approximately 205, to which are added one species each of scorpion, centipede, and mite, and 13 species of spiders.

For their assistance in determining specimens thanks are due to J. W. Beardsley, F. A. Bianchi, E. J. Ford, Jr., W. J. Gertsch, C. R. Joyce, D. E. Hardy, L. W. Quate, E. S. Ross, C. Sabrosky, R. L. Usinger, R. H. Van Zwaluwenburg, R. A. Ward, and C. M. Yoshimoto. The information about Midway Atoll is largely taken from AMERICAN POLYNESIA AND THE HAWAIIAN CHAIN by E. H.

Bryan, Jr. Species marked with an asterisk were previously recorded from Midway in BISHOP MUSEUM BULLETIN 31, unless otherwise noted.

ARACHNIDA

ACARINA

Tetranychidae

Tetranychus ludeni Zacher, determined by E. W. Baker

ARANEIDA

Determined by W. J. Gertsch

Oonopidae

Oonops sp.

Sicariidae

Scytodes fusca Walckenaer

Scytodes longipes Lucas

Theridiidae

Achaearanea tepidariora Koch

Theridion sp.

Argiopidae

Colonus sp.

Neoscona vertebrata McCook

Clubionidae

Chiracanthium diversum Koch

Heteropoda venatoria Linnaeus

Salticidae

Hasarius adansoni Audouin

Menemerus bivittatus Dufour

Metaphidippus sp.

Sandalodes sp.

CHILOPODA

Scolopendridae

Scolopendra subspinipes Leach, immature

SCORPIONIDA

Buthidae

Isometrus maculatus DeGeer

INSECTA

THYSANURA

Lepismatidae

Ctenolepisma urbana Slabaugh

COLLEMBOLA

*Species not identified

ORTHOPTERA

Blattidae

Blatella germanica (Linnaeus)

Blatella lituricollis (Walker)

**Periplaneta americana* (Linnaeus)

Periplaneta australasiae (Fabricius)

**Pycnoscelus surinamensis* (Linnaeus)

Supella supellectilium (Serville)

Mantidae

Tenodera angustipennis Saussure (?); first instar nymphs

Acrididae

Atractomorpha sinensis Bolivar, determined by A. B. Gurney

Oxya chinensis (Thunberg)

Tettigoniidae

**Conocephalus saltator* (Saussure)

Elimaea punctifera (Walker)

Xiphidiopsis lita Hebard

Gryllidae

Gryllodes sigillatus (Walker)

Myrmecophila quadrispina Perkins

ISOPTERA

Rhinotermitidae

Coptotermes formosanus Shiraki

Kalotermitidae

**Cryptotermes brevis* (Walker). (Keck, PROC. HAW. ENT. SOC. 14:351, 1952)

EMBIOPTERA

Oligotomidae

Oligotoma saundersii (Westwood), determined by A. B. Gurney

DERMAPTERA

Labiduridae

Anisolabis eteronoma Borelli

Anisolabis perkinsi Burr

**Euborellia annulipes* (Lucas)

Labidura riparia (Pallas), determined by A. B. Gurney

CORRODENTIA

Peripsocidae

Ectopsocus perkinsi Banks, determined by E. L. Mockford

*Psocids, unidentified

MALLOPHAGA

Determined by R. A. Ward

Philopteridae

Docophoroides sp., probably new

Halipeurus sp., nymph; host probably *Pterodroma* or *Puffinus*

Trabeculus sp., 1 female; host probably *Pterodroma* or *Puffinus*

Menoponidae

Austromenopon sp. host probably *Pterodroma* or *Puffinus*

THYSANOPTERA

Thripidae

Frankliniella minuta (Moulton), on *Verbesina encelioides*, determined by F. A. Bianchi

**Chirothrips mexicanus* Crawford, on sedges. (Bianchi, PROC. HAW. ENT. SOC. 11(1):37, 1941).

**Thrips hawaiiensis* (Morgan), on alfalfa and *Leucaena glauca*. (*ibid*)

**Thrips tabaci* Lindeman, on onions and cultivated flowers. (*ibid*)

Phlaeothripidae

**Haplothrips gowdeyi* Franklin, on *Eragrostis variabilis*. (*ibid*)

Heliothrips haemorrhoidalis (Bouché), determined by K. O'Neal.

HOMOPTERA

Cicadellidae

Balclutha timberlakei (Osborn), determined by R. Namba

Delphacidae

**Liburnia paludum* (Kirkaldy)

Membracidae

Spissistilus festinus (Say)

Vanduzea segmentata (Fowler)

Aleyrodidae

Specimen in poor condition.

Aphidae

**Aphis gossypii* Glover, on marigolds (Bianchi, PROC. HAW. ENT. SOC. 11 (1):37, 1941.)

**Aphis medicaginis* Koch. on alfalfa

Margarodidae

Icerya purchasi Maskell on *Casuarina*

Pseudococcidae

Phenacoccus gossypii (Townsend & Cockerell)

Planococcus citri (Risso), determined by J. W. Beardsley

Palmicola palmarum (Ehrhorn), determined by J. W. Beardsley

Coccidae

Coccus acuminatus (Signoret)

Coccus viridis (Green), determined by Beardsley

Saissetia nigra (Nietner), determined by Beardsley

Diaspididae

Chrysomphalus ficus (Ashmead) on coconut, determined by Beardsley

Pinnaspis strachani (Cooley), determined by Beardsley

HETEROPTERA

Cynidae

Geotomus pygmaeus (Dallas)

Coreidae

Liorhyssus hyalinus (Fabricius)

Lygaeidae (Determined by R. L. Usinger)

**Nysius fullawayi fullawayi* Usinger (B. P. BISHOP MUSEUM BULL. 173:93, 1942.)

Nysius kinbergi Usinger

Nysius plebeius Distant (?)

Nysius terrestris Usinger

Reduviidae

Empicoris rubromaculatus (Blackburn)

Empicoris sp. probably *whitei* (Blackburn), determined by Ford

Zelus renardii Kolenati

Nabidae

**Nabis capsiformis* Germar

Anthocoridae

**Orius persequens* (White)

NEUROPTERA

Chrysopidae

**Chrysopa lanata* Banks (Zimmerman, INSECTS OF HAWAII 6:90, 1957.)

Hemerobiidae

Symphorobius barberi (Banks)

LEPIDOPTERA

Tineidae

Ereunetis simulans (Butler)

Opogona aurisquamosa (Butler)

Hyponomeutidae

**Plutella maculipennis* Curtis

Gracilariidae

**Petrochroa dimorpha* Busck

Cosmopterygidae

Pyroderces rileyi (Walsingham), determined by Ford

Gelechiidae

Stoerberhinus testaceus Butler

Olethrutidae

Bactra sp., determined by J. F. G. Clark

Tortricidae

Amorbia emigratella Busck

Pterophoridae

Lioptilodes parvus (Walsingham) ? Rubbed specimen

**Megalorhipida defectalis* (Walker) (Recorded as *Trichoptilus oxydactylus* (Walker))

Pyralidae

Hymenia recurvalis (Fabricius)

Hellula undalis (Fabricius)

Pyralis manihotalis Guenée

Noctuidae

Achaea janata (Linnaeus) (A single capture; may not be established)

**Agrotis* (*Peridroma*) *fasciata* (Rothschild) (Not seen; specimens in British Museum)

**Plusia chalcites* (Esper)

**Prodenia* sp. ? (Not seen; probably a misidentification)

Pseudaletia unipuncta (Haworth), determined by C. W. Capps

Spodoptera mauritia acronyctoides (Guenée), determined by Ford

COLEOPTERA

Staphylinidae

Philonthus spp. determined by Ford

**Staphylinid*, undetermined

Cleridae

Necrobia rufipes DeGeer

Oedemeridae

Ananca bicolor (Fairmaire)

Ananca decolor (Fairmaire)

Elateridae (Determined by R. H. Van Zwaluwenburg)

**Conoderus exul* (Sharp)

Conoderus pallipes (Eschscholtz)

Conoderus sp. not determined

Dermestidae

Attagenus gloriosae Fabricius

**Dermestes ater* (DeGeer) (Recorded as *D. cadaverinus* Fabricius)

Dermestes maculatus (DeGeer)

Eucnocerus anthrenoides Sharp

Histeridae

Saprinus lugens Erichson

Mycetophagidae

Typhaea stercorea (Linnaeus)

Colydiidae

Euxestus parki Wollaston

Lyctidae

Lyctus brunneus Stephens

Nitidulidae

Carpophilus dimidiatus (Fabricius), determined by Ford

Bostrychidae

Heterobostrychus aequalis Waterhouse, in rattan furniture from Honolulu, determined by Ford.

Coccinellidae

Coelophora inaequalis (Fabricius)

Olla abdominalis (Say)

Platyomus lividigaster Mulsant

Rodolia cardinalis (Mulsant)

Rhizobius ventralis Erichson, determined by E. A. Chapin

Scymnus notescens (Blackburn)

Tenebrionidae

Blapstinus dilatatus Leconte

Gonocephalum adpressiforme Kaszab, determined by T. J. Spilman

Platydemus subfascia Walker, determined by Ford

Tribolium castaneum (Herbst), determined by Ford

Cerambycidae

Ceresium unicolor (Fabricius)

Sybra alternans Wiedemann

Chrysomelidae

Diachus auratus (Fabricius)

Bruchidae

Mimosestes sallaei (Sharp), determined by Ford

Stator pruininus (Horn)

Curculionidae

Dryophthorus distinguendus Perkins, determined by Ford

**Dryotribus wilderi* Perkins

**Oodemus laysanensis* Fullaway

Oxydema fusiforme (Wollaston), determined by Ford

Oxydema longulus (Boheman), determined by Ford

Pantomorus godmani Crotch

**Pentarthrum halodorum* Perkins

Scolytidae

Hypothenemus sp. ? in dead *Hibiscus* sp., determined by Ford

Anthribidae

Araecerus levipennis Jordan

Exillis lepidus Jordan

Scarabaeidae

Adoretus sinicus Burmeister

**Anomala sulcatula* Burmeister (Van Zwaluwenburg, PROC. HAW. ENT. SOC. 16(1):2, 1956)

DIPTERA

Psychodidae

Psychoda williamsi Quate, determined by L. W. Quate

Culicidae

Aedes albopictus Skuse

**Culex quinquefasciatus* Say (Hu, PROC. HAW. ENT. SOC. 14(3):351, 1952)

Ceratopogonidae (Determined by D. E. Hardy)

Dasyhelea calvescens Macfie

Cecidomyiidae (Determined by Hardy)

- Giardomyia pallidithorax* Hardy
Parallelodiplosis bimaculata Hardy

Sciaridae

- Sciara (Lycoriella) garretti* Shaw, determined by Hardy
 **Sciara (Lycoriella) molokaiensis* Grimshaw (Probably a misidentification—Hardy)

Dolichopodidae

- Condylostylus* sp., determined by R. H. Foote
 **Chrysosoma fraternum* Van Duzee (recorded as *Psilopus patellifer* Thomson)
Chrysotus pallidipalpus Van Duzee, determined by Hardy
Medetera atrata Van Duzee

Syrphidae

- Xanthogramma scutellaris* Fabricius

Calliphoridae

- Chrysomyia megacephala* Fabricius
Dyscritomyia sp., teneral
 **Lucilia graphita* Shannon
 **Ophyra chalcogaster* Wiedemann, determined by C. R. Joyce
Phaenicia sericata (Meigen)
Rhinia testacea (Robineau-Desvoidy), determined by C. R. Joyce

Sarcophagidae

- **Goniophyto bryani* Lopes (Lopes, B. P. BISHOP MUS., OCC. PAPERS 14(11): 195, 1938)
Helicobia morionella (Aldrich), determined by Joyce
Parasarcophaga argyrostoma (Robineau-Desvoidy)
Parasarcophaga misera (Walker), determined by Joyce

Muscidae

- Fannia pusio* (Wiedemann)
Fucellia sp., determined by R. Foote
Musca domestica Linnaeus (Also reported as *M. vicina* Macquart)
Muscina assimilis (Fallen), determined by Joyce
Ophyra aenescens (Wiedemann), determined by Hardy
Ophyra sp.

Chyromyidae

- Chyromyia* sp., in poor condition, determined by C. Sabrosky

Lauxaniidae

- Homoneura unguiculata* (Kertész)

Drosophilidae

- Drosophila simulans* Sturtevant, determined by Hardy

Chloropidae

- **Cadrema pallida* Loew (Misidentified as *Hippelates nigricornis flavus* Thomson—Hardy)

Siphunculina signata Wollaston, determined by Hardy

Agromyzidae

Liriomyza sp., in poor condition, determined by Hardy

Phytobia sp., determined by Hardy

Phytoliriomyza sp., determined by Hardy

Ephydriidae

Hecamede persimilis Hendel, determined by Hardy

Tethinidae

Tethina albula (Loew)

Tethina insularis Aldrich, determined by Hardy

Milichiidae

Desmometopa tarsalis Loew, determined by Hardy

Desmometopa sp., determined by Hardy

**Milichiella lacteipennis* (Loew)

Canaceidae

Nocticanace sp., determined by W. W. Wirth

Sphaeroceridae

**Limosina* sp., near *ferruginata* (Stenhammer) (reported as *Leptocera* sp.)

HYMENOPTERA

Evaniidae

Evania appendigaster (Linnaeus)

Braconidae

Apanteles carpatus (Say), determined by C. F. W. Muesebeck

**Chelonus blackburni* Cameron

Phanerotoma hawaiiensis Ashmead, determined by C. M. Yoshimoto

Urosigalphus bruchi Crawford, determined by Muesebeck

Ichneumonidae

Diplazon laetatorius Fabricicius

Idechthis canescens (Gravenhorst), determined by Yoshimoto

Idechthis sp. near *canescens*

Chalcididae

Antrocephalus pertorvus (Girault), determined by Muesebeck

Encyrtidae

**Anagyrus swezeyi* Timberlake

**Pauridia peregrina* Timberlake

Pteromalidae

Lariophagus texanus Crawford, determined by B. D. Burks

Eulophidae

**Elachertus advena* Timberlake

Tetrastichus sp., determined by K. V. Krombein

Formicidae

Camponotus variegatus hawaiiensis Forel, determined by Ford

**Cardiocondyla nuda minutior* Forel

**Monomorium minutum* Mayr

**Nylanderia bourbonica hawaiiensis* (Forel)

Paratrechina longicornis (Latreille), determined by Hardy

**Pheidole megacephala* Linnaeus

Plagiolepis alluaudi Emery, determined by R. M. Smith

Solenopsis geminata Fabricius

**Tapinoma melanocephalum* (Fabricius)

**Tetramorium guineense* (Fabricius)

Bethylidae

Epyris sp., determined by Krombein

Mymaridae

**Polynema reduvioli* Perkins

Vespidae

Icaria marginata (Lepeletier)

Pachodynerus nasidens Saussure

Polistes aurifer Saussure

Ampulicidae

Ampulex compressa (Fabricius)

Dolichurus stantoni Ashmead

Sphecidae

Chlorion (Spheg) harrisi (Fernald)

Sceliphron caementarium (Drury)

Megachilidae

**Megachile (Eumegachile) umbripennis* Smith

Apidae

Xylocopa varipuncta Patton