

**INVERTEBRATES RECORDED FROM THE NORTHERN MARIANAS
ISLANDS
STATUS 2002**

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CREES - NORTHERN MARIANAS COLLEGE, SAIPAN
DECEMBER 2002

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INTRODUCTION

This report is based on work done under contract from March 1st 2001 to December 1st, 2002 on the CNMI Invertebrate collection, Northern Marianas College, Saipan. The collection was started by Dr. L.H. Hale during 1970, and was resurrected and expanded from 1979 due to the foresight and energy of Dr “Jack” Tenorio, who also contributed a great number of specimens. Originally the collection was intended as an insect collection to assist identification of insects affecting agriculture, horticulture and silviculture in the Northern Marianas, and to contribute to the ability of pupils and students to learn more about the subject. During 2001 the collection was expanded to include all terrestrial and freshwater invertebrates, and a collection management protocol was established (see Appendices 1 and 2).

The collection was originally owned by the CNMI Department of Land and Natural Resources, and was on loan to the NMC Entomology Unit for curation. During 2001 it was transferred to the NMC by agreement with Dr. “Jack” Tenorio, who emphasized the need to maintain separate teaching material as well as identified specimens in the main collection. As can be seen in Appendix 3, the collection serves the interests of farmers, landowners, teachers, students and researchers and indeed anybody with an interest in any aspect of invertebrates (whether benign or antagonistic!).

The page layout of Appendix 3 has been designed to give information on species known to be present in the Commonwealth of the Northern Mariana Islands (CNMI) and Guam (together called the Mariana Islands), as well as indicating which species are actually represented in the collection, and as such it was considered appropriate that the report was linked to the concept of biodiversity. Because of the importance of environmental conservation, which does not appear to be widely or efficiently practiced, or indeed believed in, by most of the inhabitants and tourists in the Northern Marianas, a section pertaining to conservation relating to each taxon reported on is given, as well as in the “Summary of Results”.

The report for each group is started at the top of a fresh page, so that future changes or additions can be made without disturbing the rest of the text.

PROCEDURES

1. The collection was examined and all specimens without labels, or which had dried up in containers and were damaged, or which were otherwise damaged so as to make their identification impossible, were discarded.
2. The general taxonomic arrangements given in Hickman *et al* 1979 and Borror *et al* 1989 were followed (except where more recent updating had changed such sequences), to arrange the drawers in sequence prior to attending to species arrangements.
3. All locally available literature was used to establish species present in the Mariana Islands, including Guam. Sources included, in particular "Insects of Micronesia", "Insects of Guam", "Pacific Insects" and "Pacific Insects Monographs". From these and other sources Species lists were compiled and these were used for the final arrangement of species in the drawers. Spaces were left for each species known to occur in the Northern Marianas, except for most of those animals, which were to be stored as wet specimens.
4. Field collecting was carried out, mainly on Saipan, but also during a trip to Sarigan,

to add to and update the collection.

5. Various individuals outside the college were contacted in attempts to solicit specimens (for example from mosquito and termite control groups and the Veterinary Department), none have so far been forthcoming.
6. Identifications were made using keys available in the references, by comparison with specimens in the Guam University collection, and by scanning websites, particularly of Museum holdings, which sometimes provided illustrations and descriptions.
7. Specimens were sent to appropriate workers for identification, or identification confirmation. These included Dr. M. Saaristo (University of Turku, Finland - spiders), Dr. D Plisko (Natal Museum, South Africa - earthworms) and Dr. D.Otte (Philadelphia Academy of Natural Sciences, USA – grasshoppers and crickets).
8. With some assistance from Mr. E. Benjamin and Dr L. Eavy, all specimens collected were preserved and labeled.
9. A report format was designed and used for the main body of the report (Appendix 3). Time constraints and a lack of available literature and expertise have led to obvious deficiencies in the lists. The decision as to whether a species was endemic, indigenous or alien to the Marianas was often arbitrary and in many cases was simply a guess based on known distribution – if a species was widely distributed it was likely to have been introduced. General information on the arthropods was derived in great part from Borror *et al* 1989. Where other sources were used these are indicated in the references.
10. An electronic database was planned, and had reached some way towards completion, but by the beginning of 2002 it became clear that under local work circumstances the job would not be completed. The plan was therefore shelved.

PROBLEMS AND RECOMMENDATIONS

Continuity

The curator ship of the collection has, over the past, fallen to the lot of people employed to do other things as well. Since the work involved (such as identification) can be very time consuming (or very expensive) this tended to be neglected, as did the regular checking of wet and dry preserved specimens. Up-dating the collection and the database, and rearranging specimens as more species are found is also an onerous but necessary task. My fear is that, when I leave, the work will not be continued, and this valuable heritage of local biota will suffer losses and decay. Given that a lot of effort, time and money have been involved in the collection during the last 30 years, and its real and intrinsic value, it would be nothing short of criminal to allow that to happen.

Recommendation – options in my order of preference.

A part time (4-5 hours per day) curator is employed whose function is entirely tied to collection and database management of the collection at NMC.

The collection from Guam University is amalgamated with that of the CNMI to form a Marianas collection, and is managed by a full-time curator – locality of the collection needs to be determined.

A Natural History Museum for the Marianas Islands is established to service the needs of research, education and public awareness, incorporating invertebrates as part of the system and managed professionally.

4. The collection is donated to a museum (e.g. Bishop Museum in Hawaii), provided proper curator ship is guaranteed – this should only be done if there is a strong threat of loss of the collection through neglect.

Biodiversity Conservation

Although surveys of vertebrates such as mammals, birds and reptiles have been done to a fair to good degree, most of the freshwater and terrestrial invertebrates have been poorly surveyed in the Northern Mariana Islands. Before any real conservation steps can be taken the presence, distribution and population status of the species need to be known. Given that for smaller invertebrate species this is very difficult, time-consuming and in many cases costly to achieve, there are nevertheless some steps that can be taken to at least attempt to maintain populations of indigenous, and especially endemic, species.

Recommendations.

1. Collect from specific areas known to represent the various habitats identified on the islands. In general terms, different vegetation complexes provide a good indication of different habitats – as do geological/soil maps, and altitude and aspect differences. It would be well worthwhile to identify and map these differences prior to doing intense collecting. One of the factors is the presence of large areas of transformed landscapes and vegetation complexes – this will help narrow down specific collecting sites.

1. Sites so identified will probably represent areas which should be conserved from development, these need to be carefully judged, and a conservation policy established which, as much as possible, bears the good will of the people. However, in view of the continuing poaching of species such as fruit bats and coconut crabs, it does not appear that there is a culture of nature conservation. This will not become evident until most of the people involved with land ownership and use understand the benefits of maintaining their natural heritage and the need to conserve (=put to wise use - as an end result to maintain viable populations of indigenous plants and animals).
2. The implication of what was said in #2, is that (a.) better education and conservation awareness of policy makers, community leaders, school- and post-school attendees and the general public is needed, and (b.) better laws are enacted, and better law enforcement is practiced.
3. Identify important species (all endemic species, for example) and attempt to establish, at least, their continued presence in the type locality and in other areas. Information on their habitats and habits is required to make this a practicable venture. Publicize results.

4. Identify experts in the identification of invertebrates, and solicit their help in building up a good database for use in education, science and natural biodiversity conservation.
5. Ensure the maintenance and development of the collection and the databases connected to it.

Teaching material

Surplus preserved and named specimens are available for teaching or awareness purposes. These are housed in a cupboard with the main collection, and several approaches have been made for material. However, there have been no follow-ups since initial contact. Groups of schoolchildren cannot be accommodated in the laboratory, since there is a space problem, and because the laboratory is to be used, in part, for test requiring sterile conditions and dealing with potentially harmful drugs.

Recommendation

Teaching material should be housed in another, more accessible area and controlled by a full-time teacher (such as an environmental or biology teacher) with whom the schools can establish liaison and who can ask the collection curator for any further required material, either surplus or on a temporary loan basis.

Specimen identification

The large number of organisms involved in the collection, the taxonomic changes which result from the international taxonomic and systematic efforts and the probability that new species will probably be collected, demand that the curator has access to appropriate taxonomists or institutions dealing with taxonomy. The curator will not be able to identify all the species, except perhaps for a few readily identifiable taxa and with access to up-to-date keys. Under some circumstances, the identification of species is tied to high costs (paying for the expertise, paying for postage), and the packing and sending of delicate specimens required some commitment to the task. However, having correctly named specimens is of critical importance to the value of the collection from, *inter alia*, agricultural and scientific points of view.

Recommendation

Institutions and individuals should be approached to enquire if they would be prepared to act as identification centers in exchange for specimens from the Marianas, provided that at least one named specimen from each batch sent to them is sent back for incorporation into the collection. Getting such a reciprocal arrangement in place will benefit not only the Marianas, but the International scientific community as well. In addition, much valuable information, including some identifications, is accessible on the international electronic websites, and these should be checked regularly for updated information.

Materials and equipment

Although most needed materials and equipment are available at present, there is a lack of some basic chemicals (e.g. formalin and materials to slide-mount very small and microscopic specimens). Extra cupboards will in all likelihood also be needed in the future. At present the finances cover a wide variety of items, some of which may take precedence over the needs of the collection.

Recommendation

A budget for the collection needs to be established so that needed items can be purchased as required. Use of this budget would have to include authorization by the curator.

Species representation

A large number of species recorded from the CNMI are not represented in the collection, and many islands have been poorly collected.

Recommendation

Deliberate targeting of needed species is required, and each poorly collected island needs to be surveyed for a minimum of one week, preferably two weeks during the beginning of the rainy period.

Administrative inefficiency.

Administrative inefficiencies are evident, and affect the work of individuals. As examples: late to very late payment of wages, and alleged illegal use of US federal funds related to this; very poor system for ordering small items (e.g. two weeks to replace an ink cartridge for a printer), a general lack of work ethic by many office workers. Regrettably, many of these are local people – the very ones who should be promoting their college as a center to demonstrate work ethic and excellence.

Recommendation

Employ people only if they have demonstrated a work ethic and the capability of actually doing whatever job they have been hired for. The worse thing that can happen to any country is to have its young people detrimentally affected because of politically employed, unqualified, untrained, greedy, lazy, corrupt and inefficient people put into positions of power and decision making. If the person or people commanding an organization are inefficient, there is very little chance of the organization running efficiently, even if it has good staff in most of the rest of the organization.

ACKNOWLEDGEMENTS

I thank my colleagues at CREES for their help and support, especially Dr Hugh Smith, Edwin Benjamin, David Attao and Dr. Lee Eavey; Dr. Ross Miller at the University of Guam for his help, Dr. Michael Saaristo (Finland), Dr. Neal Evenhuis, Dr. A. Samuelson and Mr. T. Gonsalves (all of Bishop Museum, Honolulu), Dr. R. H. Cowie (Honolulu), Dr. Dan Otte (USA), Dr. Christian Thompson (USDA), and staff in other overseas Universities and Museums, David Cooper for his great help with computerized programs and his support and advice, Dr. “Jack” Tenorio for his helpfulness and encouragement, and all those individuals who have helped me in one way or another in gathering information. To my wife Michelle, I express my heartfelt thanks for her support and love.

APPENDIX 1

POLICY AND PROTOCOL FOR CNMI INVERTEBRATE COLLECTION

Submitted 03/21/2001

Agreed verbally by Dr. Lee Eavy, CREES, CNM

Invertebrate collection Policy

A collection of non-marine invertebrates occurring as populations in the CNMI will be prepared and maintained for use as an invertebrate identification aid, for purposes of research and education/training, and for agricultural and environmental conservation decision making.

Invertebrate specimen keeping and recording protocol

a. At least one specimen of each species from each of the CNMI Islands will be collected, adequately labeled and preserved, and stored in the collection. Where a species shows major or consistent morphological variations (such as related to sex, age or locality), such variations will be included in the collection. The numbers of specimens of large and common species will be restricted to save space.

b. No long series of any species will be maintained except as part of a special project approved by the CNMI Entomologist, and then only on a temporary basis. Such series will be kept separately from the main collection, and will be offered to any appropriate institution (e.g. a museum, research institute) once its purpose has been served.

c. Alien species inadvertently imported into the country will not be stored in the body of the main collection, except such species which are a potential threat to crops, stock or humans. Selected voucher specimens will be arranged by country of origin. No more than two specimens of each species will be retained. Remaining specimens will be discarded unless a teaChing, education or other use can be found for them.

b. No specimens will be accepted if not supplied together with locality, date, or collector information, and specimens lacking such information will be discarded unless they are useful, such as for identification or education purposes.

c. A database will be established and maintained by the Collections Manager.

d. The collections Manager will be in charge of the collection and of the electronic database, and will be responsible for the correct maintenance of both. Access to the data base will be restricted to selected personnel, and no entries or deletions to the data base may be made by any but the Collections Manager, the CNMI Entomologist or by a person authorized by them.

e. No specimens may be removed from or added to the permanent collection except by the Collections Manager or by the CNMI Entomologist, or with their authority.

Electronic database

An electronic database should include the following:

1. Taxonomic categories (*Phylum*, *Class*, Subclass, *Order*, Suborder, Division, Superfamily, *Family*, *Genus*, *Species*, *Subspecies/Variety/Form*). The categories in italics are ones normally required – in some cases the other categories are needed to more clearly define a taxon. Author name to be given with species.
2. Common name/s (English and Chamorro only)
3. Occurrence on island/s (island names to be spelled out in full),
4. Whether in NMC collection, numbers of specimens, year of collection (first and last).
5. References used to produce database, with full list to be made available
6. Distribution map for each species (several related species can be entered onto each map when records are sparse). Maps to be A4 size and with 250, 500, 1000 and 1500 foot contour lines.
7. Human and Ecological value categories

A. Crops

1. Crop pests - (seriousness of threat: 1 = high, 2 = medium, 3 = low), food plants – refer to Moore and Tudela 1999 database, or include the data into this database), reference list
2. Crop pest predators – prey species, reference list

B. Human welfare

1. Parasites/diseases- seriousness of threat (high, medium, low)
parasite/disease carried or caused, predators, reference list
2. Stored food pests – food/s affected, seriousness of threats, predator species name/s,
reference list
3. Cloth pests- materials affected, seriousness of threats, predator species name/s,
reference list
4. Wood pests- wood affected, seriousness of threats, predator species name/s, reference
list
5. Species with venomous stings/bites- seriousness of threats, predator species name/s,
reference list
6. Irritating species – predator species name/s, reference lists
7. Species breaking down faces and carcasses – predator species name/s, reference list
8. Use by people – category of use (e.g. Food, medicine, ornament, research etc.)

C. Animal welfare

1. Internal parasites/diseases – seriousness of threat, parasite/disease carried or caused,
predator species name/s, references list.
2. External parasites/diseases – seriousness of threat, parasite/disease carried or caused,
Predator's species name/s, reference list

D. Biodiversity/environmental conservation issues

1. Species population status – common, occasional or rare, reference list
2. Endemic species – reference list
3. Alien – seriousness of invasive threat, reference list
4. Conservation status – Red Data status (extinct, endangered, threatened, rare,
indeterminate), reference list
5. Soil system maintenance/creation - detritus breakdown (soil microphone, millipedes),
soil mixing (earthworms), reference list
6. Plant pollinators – plant species, importance rating, reference list
7. Predators of undesirable plants– plant species, importance rating, reference list
8. Other – Food plants, prey species, reference list

* confiscated imported aliens to have own database established – see Appendix 2.

Imported species database

An “imported species” database should include the following:

1. Taxon – to nearest category, “The electronic database -... # 1 “ above
2. Country of origin
3. Method of transport
4. Date of capture, and whether dead or alive
5. Retained in collection, or disposed of (sent to another institution; discarded) after examination

APPENDIX 2

Taxa to be included in the CNMI collection

The taxa in bold type are those for which freshwater and terrestrial representatives are to be kept in the CNMI collection. A “?” indicates uncertainty of the presence of the taxon.

- 1. Phylum: Protozoa**
Subphylum: Sarcomastigophora
 - 1. Class: Phytomastigophora**
 - 2. Class: Zoomastigophorea**
 - 3. Class: Actinopodea**
 - 4. Class: Rhizopodea****Subphylum: Apicomplexa**
 - 5. Class: Sporozoa**
 - 6. Class: Piroplasmea****Subphylum: Cnidospora**
 - 7. Class: Myxospora**
 - 8. Class: Microspora**
 - 9. Class: Ciliophora**
 - 10. Class: Ciliata**
2. Phylum: Mesozoa
- 3. Phylum: Porifera**
 - 1. Class: Hexatinellidae**
 - 2. Class: Calcarea**
 - 3. Class: Demospongiae**
4. Phylum: Cnidaria
5. Phylum: Ctenophora
- 6. Phylum: Platyhelminthes Flat worms**
 - 1. Class: Turbellaria**
 - 2. Class: Monogenea**
 - 3. Class: Trematoda**
 - 4. Class: cestoda**
- 7. Phylum: Rhynchocoela (Nemertina) Ribbon worms ?**
 1. Class: Enopla
 2. Class: Anopla
- 8. Phylum: Rotifera Rotifers ?**
Order: Seisonacea
Order: Bdelloidea
Order: Monogononta
- 9. Phylum: Gastrotricha Gastrotrichs ?**
10. Phylum: Kinorhyncha Kinorhynchs
- 11. Phylum: Nematoda**
 - 1. Class: Phasmodia (Secernentea)**
 - 2. Class: Aphasmodia (Adenophorea)**
- 12. Phylum: Nematomorpha Horse-hair worms ?**

13. Phylum: Acanthocephala Spiny-headed worms

14. Phylum: Entoprocta Entoprocts ?

15. Phylum: Gnathostomulidea Gnathostomulids

16. Phylum: Mollusca Snails, slugs, squid, octopus

1. Class: Monoplacophora

2. Class: Polyplacophora

3. Class: Aplacophora

4. Class: Scaphopoda

5. Class: Gastropoda

Subclass: Prosobranchia

Subclass: Pulmonata

6. Class: Bivalvia

7. Class: Cephalopoda

17. Phylum: Sipuncula

18. Phylum: Echiura

19. Phylum: Annelida

1. Class: Myzostomaria

2. Class: Polychaeta

3. Class: Oligochaeta Earthworms

4. Class: Hirudinea Leeches

20. Phylum: Arthropoda

Subphylum: Chelicerata

1. Class: Xiphosura Horse-shoe crabs

2. Class: Pycnogonida Sea spiders

3. Class: Arachnida

Order: Scorpionida Scorpions

Order: Pseudoscorpionida Pseudoscorpions

Order: Phalangida Harvestmen

Order: Acari Mites and ticks

Order: Schizomida Short-tailed whip scorpions

Order: Araneida Spiders

Section: Mygalomorpha

Section: Araneomorpha

Subphylum: Mandibulata

4. Class: Crustacea Crustaceans

Subclass: Branchiopoda Fairy shrimps, tadpole shrimps

Subclass: Ostracoda

Subclass: Copepoda

Subclass: Malacostraca

Order: Isopoda

Order: Amphipoda

Order: Decapoda Lobsters, crabs, shrimps

5. Class: Diplopoda Millipedes

 Order: Polyxenida

 Order: Glomerida

Order: Polydesmida
 Order: Chordeumida
Order: Julida
Order: Spirobolida
Order: Spirostreptida
 Order: Cambalida
 Order: Polyzoniida
 Order: Platydesmida

6. **Class: Chilopoda** Centipedes
 Order: Scutigermorpha
 Order: Lithobiomorpha
 Order: Scolopendromorpha
 Order: Geophilomorpha

7. **Class: Pauropoda** Pauropods

8. **Class: Symphyla** Symphylans

9. **Class: Insecta**

Subclass: Apterygota

Order: Protura Proturans ?
Order: Collembola Springtails
Order: Diplura Diplurans
Order: Thysanura Bristletails

Subclass: Pterygota

Order: Ephemeroptera Mayflies
Order: Odonata Damselflies and dragonflies
Order: Phasmida stick Insects
Order: Orthoptera Grasshoppers and crickets
Order: Mantodea Mantids
Order: Blattaria cockroaches
Order: Isoptera Termites
Order: Dermaptera Earwigs
Order: Embioptera Webspinners
 Order: Plecoptera Stoneflies
 Order: Zoraptera Zorapterans
Order: Psocoptera Psocids
Order: Mallophaga Chewing lice
Order: Anoplura Sucking lice
Order: Hemiptera Bugs
Order: Homoptera Cicadas, hoppers, scale-insects
Order: Thysanoptera Thrips
Order: Neuroptera Alderflies, antlions, lacewings
Order: Coleoptera Beetles
Order: Strepsiptera Stylops
 Order: Mecoptera Scorpionflies
Order: Diptera Flies
Order: Siphonaptera Fleas
Order: Trichoptera Caddisflies
Order: Lepidoptera Butterflies and moths
Order: Hymenoptera Wasps, bees, ants

21. Phylum: Sipuncula

22. Phylum: Echiura

- 23. Phylum: Pogonophora
- 24. Phylum: Priapulida
- 25. Phylum: Pentastomida
- 26. Phylum: Onychophora
- 27. Phylum: Tardigrada
- 28. Phylum: Phoronida
- 29. Phylum: Ectoprocta (Bryozoa)
- 30. Phylum: Brachiopoda
- 31. Phylum: Echinodermata
- 32. Phylum: Chaetognatha
- 33. Phylum: Hemichordata
- 34. Phylum: Chordata

Appendix 3

Biodiversity of CNMI and collected material in CNMI collection

Contents.

Section	Taxon
1	Protozoa Single-celled animals
2	Porifera Sponges
3	Platyhelminthes Flat worms
4	Rhynchocoela (Nemertina) Ribbon worms
5	Rotifera Rotifers
6	Gastrotricha Gastrotrichs
7	Nematoda Roundworms
8	Nematomorpha Horse-hair worms
9	Acanthocephala Spiny-headed worms
10	Enteroprocta Enteroproctans
11	Mollusca Snails, slugs
12	Annelida Earthworms and leeches
13	Arachnida Spiders, scorpions, mites and ticks
14	Crustacea Crustaceans
15	Diplopoda Millipedes
16	Chilopoda Centipedes
17	Pauropoda Pauropods
18	Symphyla Symphyalans
19	Protura Proturans
20	Collembola Springtails
21	Diplura Diplurans
22	Thysanura Bristletails
23	Odonata Damselflies and dragonflies
24	Phasmida Stick-Insects
25	Orthoptera Grasshoppers, crickets
26	Mantodea Mantids
27	Blattarea Cockroaches,
28	Isoptera Termites
29	Dermaptera Earwigs
30	Embioptera Webspinners
31	Psocoptera Psocids
32	Mallophaga Chewing lice
33	Anoplura Sucking lice
34	Hemiptera Bugs
35	Homoptera Cicadas, hoppers, scale-Insects
36	Thysanoptera Thrips
37	Neuroptera Alderflies, antlions, lacewings
38	Coleoptera Beetles
39	Strepsiptera Stylops
40	Diptera Flies
41	Siphonaptera Fleas
42	Trichoptera Caddisflies
43	Lepidoptera Butterflies and moths
44	Hymenoptera Wasps, bees, ants

Phylum: Protozoa Subphylum: Sarcomastigophora

Diversity

Micronesia – ? species, Mariana Isl. – ? species, CNMI - ? species

Ecological and human significance

Sarcomastigophora are single-celled animals free-living in marine and fresh-water, and also as parasites in numbers of animal species. There are some that affect human and animal health (such as those causing various kinds of dysentery) to a greater or lesser extent. Others, particularly marine organisms, have had a great effect on the building of earth deposits (e.g. Foraminifera). Many of the species occupy the bottom rung of the food chain, and occur in countless millions in appropriate environments, such as the ocean.

Conservation

Conservation of the species requires the maintenance of a pollution free environment, with as many intact natural habitats and hosts as possible. Those species which have been introduced to the Commonwealth should be eliminated where possible.

Identification

No identification keys are available for in-house identifications.

Records of flagellate amoeboid protozoans from CNMI indicating areas (blank spaces) from which are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

,Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species records

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Species listed below will probably be found in the c:

Class: Phytomastigophorea

Class: Zoomastigophorea

Giardia lamblia (has been found in Guam)

Trichomonas sp. (has been found in Guam)

Class: Actinopodea

Class: Rhizopodea

Entamoeba histolytica - amoebic dysentery (found in Guam)

E. coli - in human intestine (found in Guam)

E. gingivalis - in human mouth

References

- Miller, R. and J.R. Baker. 1990. Medical Parasitology. Gower Medical Publishing Company, New York. 168 pp.
- Bohart, G.E. and J. Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.
- .

Phylum: Protozoa Subphylum: Apicomplexa

Diversity

Micronesia – ? species, Mariana Isl. – ? species, CNMI - ? species

Ecological and human significance

All are single-celled endoparasites of animals, some of humans. The group contains species of great veterinary and medical importance, such as *Plasmodium* spp. causing malaria, and *Eimeria* sp. causing severe dysentery or diarrhea in domestic animals.

Conservation

Conservation of the species requires the maintenance of a pollution free environment to maintain the hosts, with as many intact natural habitats as possible. Those species which have been introduced to the Commonwealth should be eliminated where possible.

Identification

No identification keys are available for in-house identifications.

Records of ampicomplexans from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Fara1 = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species records

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Species listed below will probably be found in CNMI.

Class: Sporozoa

Plasmodium falciparum - malignant tertian malaria carried by *Anopheles* sp. Guam 1966

P. vivax - benign tertian malaria “

P. malariae - quartan malaria “

P. ovale - Ovale tertian malaria “

Class: Piroplasmea

Subphylum: Myxospora

Subphylum: Microspora

Subphylum: Ciliophora

Class: Ciliata.

References

Miller, R. and J.R. Baker. 1990. Medical Parasitology. Gower Medical Publishing Company, New York. 168 pp.

Phylum: Porifera Class: Demospongiae

Diversity

Micronesia – ? species, Mariana Isl. – ? species, CNMI - 1 species

Ecological and human significance

Sponges are aquatic and feed on fine detritus particles, planktonic organisms and bacteria. They appear to be scarce in the CNMI in freshwater habitats.

Conservation

Little is known of freshwater sponges in the CNMI and before any specific plans for their conservation can be made a survey needs to be made. conservation of any species requires the maintenance of a pollution free environment, with as many intact natural habitats as possible. Those species which have been introduced to the Commonwealth should be eliminated where possible.

Identification

No identification keys are available for in-house identifications.

Records of sponges from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, ? = status uncertain, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

? Heteromyenia sp. x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Heteromyenia sp. Charanka Lake, Saipan n.d.

References

Best, Bruce R. and C. E. Davidson. 1981. Inventory and atlas of the inland aquatic ecosystems of the Mariana Archipelago. University of Guam Marine Laboratory Technical Report # 75. 226 pp.

Phylum: Platyhelminthes Class: Turbellaria

Diversity

Micronesia – 3 (4 -5 ?) species, Mariana Isl. – 3(4 –5 ?) species, CNMI– 3 (4 – 5 ?) species

Ecological and human significance

Turbellaria are free-living worms with soft, flattened bodies. Some are terrestrial species living mostly in sheltered areas under rocks or logs. Others live in freshwater or marine systems. None are parasitic, most are carnivores of small crustaceans, rotifers, nematodes and insects.

Conservation

Little is known of turbellarians in the CNMI and before any specific plans for their conservation can be considered a survey needs to be carried out. Conservation of any species requires the maintenance of a pollution free environment, with as many intact natural habitats as possible. Those species which have been introduced to the Commonwealth should be eliminated where possible.

Identification

No identification keys are available for in-house identifications.

Records of flatworms from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Platydemus sp. ?								x		x	
Microplaninae sp.					x						
Australopacifica sp.					x					x	
Sp. A					X						
Sp. B					X						

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Suborder: Tricladida

Family: Rhynchodemidae

Platydemus sp. ? Alamagan 1992, Agrihan 1992

Microplaninae sp. Anatahan 1992

Family: Geoplanidae

Australopacifica sp. Anatahn 1992, Agrihan 1992

Families?

Species A. 1(2 ?) species under stone near secondary forest edge, in garden, Saipan

CNMI 2000. colour white with three black lines (one mid-dorsal and one dorsolateral line on each side). Some specimens very long and narrow, others broader.

Species B. A shiny black species found under rotting planks in garden, Saipan, CNMI 2000.

References

Kawakatsu, M. and R.E. Ogren. 1994. A preliminary report on land planarians from the Northern Mariana Islands (Turbellaria, Tricladida, Terricola). Nat. Hist. Res., Special Issue, No. 1: 107-112.

Phylum: Platyhelminthes Class: Trematoda

Diversity

Micronesia – ? species, Mariana Isl. – ? species, CNMI - ? species

Ecological and human significance

Trematodes are all parasites, and as adults are almost all found in vertebrates. An intermediate stage in the life cycle is spent in an invertebrate – often one of the molluscs. Some digenetic flukes are of medical importance, such as the blood-fluke causing schistosomiasis, and the liver fluke (*Clonorchis sinensis*), in humans. Problems can also be caused to domestic animals, such as the liver fluke (*Fasciola hepatica*) of ruminants.

Conservation

It does not appear as if any deliberate surveys of naturally occurring fluke populations have been carried out in the CNMI. Although sporadic cases of presence of trematodes (and others) may be found in the Marianas, they are probably not endemic as their life cycles depend on the presence of fresh water and carriers such as fish, crabs and snails. There do not appear to be freshwater molluscs or freshwater crabs which are eaten. The Crustaceans which are eaten are normally marine species. The freshwater prawn (*Machrobrachium lar*), and any fish imported for fish breeding purposes, or which have been released into any freshwater body need to be examined for the presence of flukes and other parasites potentially dangerous to humans. Conservation of any indigenous species requires the maintenance of a pollution free environment, with as many intact natural habitats to maintain the flukes' hosts as possible.

Identification

No identification keys are available for in house identifications.

Records of digenetic flukes from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species records

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

The following species will probably be found in CNMI:

Clonorchis sinensis Chinese liver fluke, *Gastrodiscoides hominis* Gastrodisciasis fluke
Metagonimus yokogawai Yokogawas fluke, *Paragonimus westerman* Lung fluke
Schistosoma japonicum Blood fluke - intestinal schistosomiasis (bilharziasis)

References

Miller, R. and J.R. Baker. 1990. Medical Parasitology. Gower Medical Publishing Company, New York. 168 pp.

Phylum: Platyhelminthes Class: Cestoda

Diversity

Micronesia – ? species, Mariana Isl. – ? species, CNMI - ? species

Ecological and human significance

Adult tapeworms are all endoparasites of vertebrates, and the majority require at least two hosts, with the host for the immature stage often being an invertebrate. Of the more than 1000 species known, a number can infect humans. Normally, adult tapeworms do little harm to their hosts. For example, the dwarf tapeworm (*Hymenolepis nana*) where the larvae infects flour beetles and the adult infects humans. Some members, at least, of all vertebrate groups are known to be hosts to tapeworms.

Conservation

It does not appear as if any deliberate surveys of naturally occurring tapeworm populations have been carried out in the CNMI. These should be carried out to establish presence of indigenous and alien species, as well as those of potential danger to humans. Aspects of conservation can only be considered once such a survey has been done. Conservation of any indigenous species requires the maintenance of a pollution free environment, with as many intact natural habitats to maintain the tapeworms' hosts as possible.

Identification

No identification keys are available for in house identifications.

Records of tapeworms from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species records

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

The following species possibly occur in the CNMI:

Diphyllobothrium latum Broad fish-tapeworm - diphyllobothriasis; *Taenia solium* Pork tapeworm - taeniasis, pigs – man; *Taenia saginata* Beef tapeworm - taeniasis, cattle – man; *Hymenolepis nana* Dwarf tapeworm - hymenolepiasis, man – flour beetles – man; *Echinococcus granulosus* Minute tapeworm - cattle/sheep – dogs – man, causes echinococcus (humans), hydatidosis (animals)

References

Miller, R. and J.R. Baker. 1990. Medical Parasitology. Gower Medical Publishing Company, New York. 168 pp.

Phylum: Nematoda

Diversity

Micronesia – 1+ species, Mariana Isl. – 1+ species, CNMI – 1+ species

Ecological and human significance

This is a large group (more than 12000 species), world wide in distribution; most being under 5 cm long (many are microscopic), but some being over a meter in length. They are either free-living or parasitic. Among the parasitic species are a number which affect man and his domestic animals, with often bizarre effects, such as elephantiasis (caused by *Wuchereria bancrofti*).

Conservation

It does not appear as if any deliberate surveys of naturally occurring nematode populations have been carried out in the CNMI. These should be carried out to establish presence of indigenous and alien species, as well as those of potential danger to humans. Aspects of conservation can only be considered once such a survey has been done. Conservation of any indigenous species requires the maintenance of a pollution free environment, with as many intact natural habitats to maintain free-living forms and the hosts of parasites as possible.

Identification

No identification keys are available for in house identifications.

Records of nematodes from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

? <i>Toxacara canis</i>	X
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Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

?*Toxacara canis* Saipan CNMI 2002, regurgitated by dog

Species listed below will probably be found in CNMI.

Class: Phasmdia (Secernentea)

Ancylostoma duodenale Old world hookworm (an *Ancylostoma* sp. has been found in Guam); *Necator americanus* New world hookworm; *Strongyloides stercoralis*; *Ascaris lumbricoides* intestinal roundworm (has been found in Guam); *Enterobius vermicularis* pinworm (found in Guam), *Trichuris trichiura* whipworm (has been found in Guam); *Wuchereria bancrofti* lymphatic filariasis; *Brugia malayi* Malayan lymphatic filariasis; *Angiostrongylus cantonensis* eosinophilic meningitis

References

Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop

Museum Bulletin 204. 152 pp, 17 plates.
Miller, R. and J.R. Baker. 1990. Medical Parasitology. Gower Medical Publishing Company,
New York. 168 pp.

Phylum: Mollusca

Diversity

Micronesia – 75+ species, Mariana Isl. – 75+ species, CNMI – 73 + species

Ecological and human significance

Molluscs are very diverse group of animals with probably more than 100000 living species. The Classes Gastropoda and Bivalvia, into which land and freshwater snails and slugs fall, contain over 40000 living species. They include animals which feed on garden plants and crops, as well as species which are used as food by humans. Although most slugs and snails are herbivorous, some are carnivorous.

Conservation

The CNMI has had problems with particularly one snail (*Achatina fulica*) which was introduced, and increased to the extent that it caused considerable crop and garden plant damage. An attempt to introduce a predator, another snail called *Euglandina rosea*, to control *Achatina* on Agrihan, failed. The introduced predator paid more attention to the indigenous snails than it did to *Achatina*. Shells of this introduced species were also found on Saipan, where an unrecorded introduction apparently took place. The Marianas has at least 27 endemic terrestrial snail species, and more work done on this group will probably bring to light an even greater number of endemics. As such the fauna is a rich one and deserving of special attention. Conservation of molluscs requires the maintenance of a pollution free environment, with as many appropriate intact natural habitats as possible. The removal of alien, introduced snails acting as competitors for food, or as predators would be highly desirable. Monitoring for presence of the endemic snail fauna on a two to three year basis needs to be instigated to be able to effect necessary conservation measures.

Identification

All unnamed specimens were sent to the Bishop Museum, which passed them on to Dr. R. H. Cowie for identification. No keys are available for in house identification.

Records of slugs and snails from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Georissa elegans</i>	x		X							
<i>Georissa laevigata</i>	x									
<i>Georissa rufula</i>										
<i>Georissa</i> sp.			X							
<i>Palaina taeniolata</i>	x									
<i>Diplommatinidae</i> sp.			X							
<i>Truncatella guerini</i>			X							
<i>Truncatellid</i> sp. A	x									
? <i>Allepthima</i> sp.	x									
<i>Omphalotropis</i> sp. A						x	x	x	x	
<i>Omphalotropis</i> sp. B						x				
<i>Omphalotropis cookei</i>	x		x							
<i>Omphalotropis elongatula</i>	x									
<i>Omphalotropis erosa</i>										
<i>Omphalotropis laevigata</i>	x									

[illegible]

Elasmias sp.					X	X	X	X		X		
Elasmias quadrasi	X		X	X		X						
Lamellidea sp.				X		X	X	X	X	X	X	X
Lamellidea subcylindrica	X											
Lamellidea microstoma					“Northern Marianas”							
Lamellidea moellendorffiana					“Northern Marianas”							
Pacificella ? variabilis	X											
Tornatellinops sp.						X	X	X		X		X
Gastrocopta (s.s.) sp.	X					X	X					
Gastrocopta sp						X	X	X	X	X	X	X
Gastrocopta pediculus					“Northern Marianas”							
Nesopupa quadrasi					“Northern Marianas”							
Nesopupa sp.	X											
Ptylachaea sp.						X	X	X	X	X		X
Pupisoma sp.							X	X		X		
Pupisoma orcula					“Northern Marianas”							

[illegible]

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Gonaxis kibweziensis	x	x	x					x		
Gulella bicolor					X					
Semperdon sp./spp.	x									x
Semperdon heptptychius	x									
Semperodon rotanus	x									
Himerconcha sp 1.	x									
Himerconcha sp 2.	x									
“Succinea” sp.	x				X		x	x	x.	x x
Lamprocystis sp. A.				x	x	x	x	x	x	
Lamprocystis sp B.				x					x	
Lamprocystis sp.	x									
Lamprocystis fastigata	x				X					
Liardetia sp/spp.	x		X	x	x	x	x	x	x	x
Liardetia tenuisculpta	x									
Liardetia doliolum	x		X							
Coneuplecta sp.									x	

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Euglandina rosea (Ferrussac)		X							x	
Palaina taeniolata										“Northern Marianas”
Georissa rufula										“Northern Marianas”
Pythia acuta										“Northern Marianas”
Bradybaena similis			X							
Galba viridis		x	x							
Lymnaea ollula		x	x							
Lymnaea pervia		x	x							
Melania granifera			x							
Neritina sp.			x							
Thiaria granifera			x							
Thiaria scabra			x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Land snails

Class: Gastropoda

Subclass: Prosobranchia

Family: Hydrocenidae

Georissa elegans Quadras and Moellendorff Rota 1996 (shells only), Guam 1894.

Georissa laevigata Quadras and Moellendorff Rota 1996, Guam 1973

Georissa sp. Saipan CNMI 2002

Georissa rufula (Moellendorff) “Northern Marianas” n.d.

Family: Diplommatinidae

Palaina taeniolata Quadras and Moellendorff Rota 1996, Guam 1894

Sp A. Saipan CNMI 2001

Family: Truncatellidae

Truncatella guerini (A. and J.B.Villa) Saipan CNMI 2001

Truncatellid spec. A Rota 1995, Guam (n.d.)

Family: Assiminaeidae

?*Allepthima* sp. Rota 1996.

Assimineia sp. Saipan CNMI 2001

Omphalotropis sp. A Sarigan, Guguan, Alamagan, Pagan 1992

Omphalotropis sp. B Sarigan 1992

Omphalotropis cookei Abbot Saipan 1949, Rota 1996, Guam 1949.

Omphalotropis elongatula Quadras and Moellendorff Rota 1995 (shells only), Guam 1894

Omphalotropis erosa (Q. et Gaimard) "Northern Marianas" 1992,

Omphalotropis laevigata Q. et M. Rota 1996, Guam 1967.

Omphalotropis octhogyra Q. et M. Rota 1996 (shells only), Guam 1894.

Omphalotropis semicostulata Q. et M. Rota 1996 (shells only), Guam 1894

Omphalotropis submaritima Q. et M. Rota 1996 (?), Saipan 1894, Guam 1894, "Northern Marianas" 1992

Omphalotropis suturalis Q. et M. Rota 1996, Guam 1894

Omphalotropis quadrasi Moellendorff Rota 1996 (shell only), Guam 1894

Omphalotropis sp. 1 Rota 1996 Shells only

Omphalotropis sp. 2 Rota 1996 Shells only

Omphalotropis sp. 3 Rota 1996 Shells only

Omphalotropis sp. 4 Rota 1996 Shells only

Omphalotropis sp. 5 Rota 1996 Shells only

Omphalotropis sp. 6 Rota 1996

Omphalotropis sp. 7 Rota 1996

Omphalotropis sp. Sarigan CNMI 2001

Paludinella conica (Q. et M.) Rota 1996, "Northern Marianas" 1992

Paludinella sp. Saipan n.d.

Quadrasiella clathrata Moellendorff Rota 1996, Guam 1874

?*Quadrasiella* sp. 1 Rota 1976 Shells only.

Subclass: Pulmonata

Family: Veronicellidae

Laevicaulis alte (Ferrusac) Introduced. Alamagan, Agrihan 1992

Semperula sp. (?) Slug. (tentative id. From Dr. D. Herbert, Natal Museum) Introduced. Common in disturbed garden area, under planks, rocks and other damp situations, House # 1, Santos Acres, Papago, Saipan. collected 11.xii.2000.

Veronicellidae spp. Saipan CNMI 2001, Rota CNMI 2001.

Family: Ellobidae

Pythia scarabaeus (L.) Rota 1925-1949; 1996 (Shells only)

Family: Achatinellidae

Elasmias sp. Anatahan, Sarigan, Guguan, Alamagan, Agrihan 1992

Elasmias quadrasi (Moellendorff) Sarigan CNMI 2001, Rota 1996, Saipan, Tinian, Guam, n.d.

Lamellidea sp. Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug 1992.

Lamellidea sp/spp. Sarigan CNMI 2001, Saipan CNMI 2001

Lamellidea subcylindrica (Q. et M.) Rota 1894, 1996, Guam 1894

Lamellidea microstoma (Q. et M.) "Northern Marianas" n.d.

Lamellidea moellendorffiana Pilsbry "Northern Marianas" n.d.

Pacificella ? variabilis Odhner Rota 1996, "Mariana Islands" n.d.

Tornatellinops sp. Sarigan, Guguan, Alamagan, Agrihan, Maug 1992

Family: Pipillidae (=Vertiginidae)

Gastrocopta (s.s.) sp. Sarigan, Guguan 1992, Rota 1949

Gastrocopta (Sinalbinuta) sp. Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug East, Maug West 1992

Gastrocopta pediculus (Shuttleworth) “Northern Marianas” n.d.

Nesopupa quadrasi (Moellendorff) “Northern Marianas” n.d., Guam 1894

Nesopupa sp. Rota 1925

Ptylarchaea sp. Sarigan, Guguan, Alamagan, Pagan, Agrihan, Maug East 1992.

Pupisoma sp. Alamagan, Guguan, Agrihan 1992.

Pupisoma orcula (Benson) “Northern Marianas” n.d.

Family: Partulidae

Partula gibba Ferussac Humped tree snail Sarigan CNMI 2001; Anatahan, Sarigan, Alamagan, Pagan 1992; Rota 1996, Guam 1992, Aguiguan 1992, Tinian (now believed extinct), Saipan (small population found, Dept. of Wildlife, pers.com. 2001), dead shells found CNMI (Papago)2001, and Saipan stock also survives in captivity (London Zoo, University of Virginia).

Partula cf. *aff. gibba* Ferussac Rota 1996

Partula radiolata (Pfeiffer) Pacific tree snail Guam n.d.

Partula salifana crampton Salifan tree snail Guam n.d.

Partula langfordi Kondod Langford’s tree snail Aguijan n.d.

Samoana fragilis (Ferussac) Fragile tree snail Rota 1959, 1996, Guam n.d.

Family: Ferussaciidae

Geostilbia sp. Sarigan, Alamagan n.d.

Family: Subulinidae

Subulina octona (Bruguiere) Introduced. Rota 1996, Saipan CNMI 1971- 1980, Anatahan, Pagan 1992.

Paropeas achatinaceum “small spire-shell” Introduced. Common under planks, rocks and in other damp places Saipan CNMI 2001-2002.

Allopeas spp. Saipan ?1984, Anatahan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug East, Maug West 1992.

Allopeas gracile (Hutton) Introduced. Saipan CNMI 2001

Lamellaxis oparanum (Pfeiffer) “Northern Marianas” n.d.

Lamellaxis micra Introduced. Saipan CNMI 2001-2002.

Family: Achatinidae

Achatina fulica Bowdick Introduced. Pagan, Agrihan 1992 (shells only ?); Aguiguan (introduced 1939), Tinian, very scarce 1985, Rota, introduced 1936-1938, but may be extirpated there. Saipan – ?1984, occurs in pockets (own obs, 2001). Shells widespread, and live snails seen *inter alia* on the campus on Northern Marianas college (18.xii.2000 – two collected), at Seventh Day Adventist clinic and at Santos Acres, Papago. Can harbour the rat lung-worm (*Angiostrongylus cantonensis*) which can cause eosinophilic meningoencephalitis in humans.

Family: Streptacidae

Indoeneea bicolor (Hutton) Introduced. Pagan 1992.

Gonaxis kibweziensis (Smith). This predatory snail was introduced to Aguiguan to try and control *Achatina fulica* during 1950 (Gressitt 1954). It was introduced to Rota (probably from Aguiguan) at some stage, and was still alive there during 1959; Pagan 1992 – but unclear if live or shells only; Saipan ?1983 (Reported 1984).

Gulella bicolor Sarigan 2001

Family: Charopidae

Semperdon heptptychius (Q. et M.) Rota 1996 (shells only), Guam n.d.

Semperdon sp. Rota 1996 (shells only), Maug East 1992.

Semperdon rotanus Solem Rota 1983.

Himeroconcha sp 1. Rota 1996 (Shells only)

Himeroconcha sp. 2 Rota 1996 (Shells only)

Family: Succineidae

“*Succinea*” sp. (10 mm) Sarigan, Alamagan, Pagan, Agrihan, Maug East, Uracas 1992.

Succinea spp. Rota 1925,1949; Guam (four species) n.d.

Succinea sp. Sarigan CNMI 2001

Family: Helicarionidae

Lamprocystis sp. A. Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, 1992.

Lamprocystis sp B. Anatahan, Agrihan 1992

Lamprocystis sp. Rota 1996.

Lamprocystis fastigata (Gude) Rota 1938, Sarigan CNMI 2001

Liardetia sp. Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug East, Maug West 1992.

Liardetia sp. Rota 1996.

Liardetia sp. Saipan CNMI 2001

Liardetia tenuisculpta (Moellendorff) Rota 1938, “Northern Marianas” n.d.

Liardetia doliolum (Pfeiffer) Rota 1938, Saipan CNMI 2001

Coneuplecta sp. Agrihan 1992.

Family: Olecinidae

Euglandina rosea (Ferrussac) Agrihan 1992, Saipan ?1983, Saipan CNMI 2002 (Shells only). Predator introduced to CNMI to control *Achatina fulica* but feeds on indigenous snails as well. Can harbour the rat lung-worm (*Angiostrongylus cantonensis*) which can cause eosinophilic meningoencephalitis in humans. There is no record of introductions to Saipan, assume the release/s to have been “unofficial”.

Family: Cyclophoridae

Palaina taeniolata (Q. et M.) “Northern Marianas” n.d

Family: Ellobiidae

Pythia acuta (Hombron et Jacquinot) “Northern Marianas” n.d.

Family: Bradybaenidae

Bradybaena similis Saipan CNMI 1980

Freshwater snails

Class: Gastropoda

Subclass:

Family: Lymnaeidae

Galba viridis Quoy and Gaimard Saipan–Charanka Lake, Lake Susupe; Tinian–Lake Hagoi n.d.

Lymnaea ollula Gould Saipan–Charanka Lake; Tinian–Lake Hagoi n.d.

Lymnaea pervia Von Martens Saipan–Charanka Lake; Tinian–Lake Hagoi n.d.

Subclass: Pulmonata

Family: Neritidae

Melania granifera Lamarck Saipan–Charanka Lake, Susupe Lake n.d.

Neritina sp. Saipan– Susupe Lake n.d.

Family Thiaridae

Thiaria granifera (Lamarck) Saipan– Susupe Lake n.d.

Thiaria scabra Muller Saipan–no specific locality n.d.

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- Smith, Barry D. 1995. Status of the endemic tree snail fauna (Gastropoda: Partulidae) of the Mariana Islands. Unpublished report for U.S. Fish and Wildlife Service, Pacific Islands Ecoregion. 19 pp.

Phylum: Annelida

Diversity

Micronesia – 7 ? species, Mariana Isl. – 7 ? species, CNMI – 7 ? species.

Ecological and human significance

Freshwater and terrestrial annelids are mostly free-living but some are parasitic. Earthworms are the most well known of the terrestrial annelids, and are extremely useful worldwide in the process of soil formation.

They do this by breaking down detrital material and by bringing subsoil to the surface and mixing it with topsoil. This results in potassium and phosphorus enrichment as well as of soil nitrogenous products from the worms' own metabolism. Earthworms assist in aerating soil by their burrowing habits. Some earthworms also assist in the breakdown of rotting wood. They form prey items of a number of vertebrates and invertebrates.

Leeches are mostly freshwater animals although some have adapted to marine and terrestrial habitats. They are predatory (a few are true parasites), feeding on the blood of cold-blooded and warm-blooded vertebrates, and some feed on small invertebrates.

Conservation

It does not appear as if any deliberate surveys of annelid populations have been carried out in the CNMI. These should be carried out to establish presence of indigenous and alien species. Aspects of conservation can only be considered once such a survey has been done.

Conservation of any indigenous species requires the maintenance of a pollution free environment, with as many intact habitats being protected as possible.

Identification

All unnamed specimens were sent to Dr. D. Plisko (S. Africa) for identification (2001 and 2002). These include specimens from Saipan, Tinian, Rota and Sarigan. No keys are available for in house identification.

Records of earthworms and leeches from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
A					X						
B					X						
C					X						
D					X						
E					X						
F								X			
G					X						
J		x									
Spp (x 3 ?)		X		X							

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Class: Oligochaeta

Family: ?

Species A and B (?) common in garden of House # 1, Santos Acres, Papago (15 10 9.8 N 145 44 56 E, 224 m asl). species probably A and/or B Under damp leaf litter in tangan-tangan (*Leucena leucocephala*) mixed forest, plateau above Bird Island beach, Saipan.

Species C Small species collected at Agricultural Station, Kagman, Saipan, CNMI 2001 , under damp weedy patch in otherwise dry and hard area. Soil with limestone nodules common.

Species D, E At least two species collected in Talofoto Valley, Saipan. 1. In coarse wet soil above second falls and about 20m upstream from depth gauge (one species) 2. In wet area with rotting leaf cover over shallow soil on rock, below first falls (2-3) species. CNMI 2001.

Species F. This earthworm species was found at below 50 m a.s.l, Sarigan. - unusually it was found on top of the soil layer under heavy, but dry, leaf litter, mostly of *Hibiscus tiliaceus*. The habitats were well shaded.

Species G. Small earthworms found in damp leaf litter and pieces of rotting wood, limestone forest, Saipan CNM I2001.

Species H & I (maybe more) Medium to small earthworms found in various sites on Anatahan. All specimens subsequently lost. Need to be recollected.

Species J. Oligochaeta sp. Sonson Spring, Rota

Class: Hirudinea

No species recorded

References

Best, Bruce R. and c. E. Davidson. 1981. Inventory and atlas of the inland aquatic ecosystems of the Mariana Archipelago. University of Guam Marine Laboratory Technical Report # 75. 226 pp.

Phylum: Arthropoda Class: Arachnida Order: Scorpionidae

Diversity

Micronesia – 3 species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

The scorpions are predators of invertebrates, and live in cracks, crevices and other spaces in rocks, logs or under bark. Although it has a poisonous sting which is used to kill its prey, the sting is not fatal to humans.

Conservation

There are no conservation issues involving the species. *Homurus* appears to be fairly widely spread and can occupy a number of terrestrial, sheltered habitats, included those disturbed even to a great degree by man. *Isometrus* has recently been found for the first time in the Marianas, but is probably more widespread than is thought.

Identification

Keys are available for in-house identification.

Records of scorpions from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Hormurus australasia</u>	X	x	x	X		X	X		X					
<u>Isometrus maculatus</u>				X										

Agri = Agrihan , Agui = Aguiquan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Ischnuridae

Hormurus australasia (Fabricius) Guam 1945, Saipan 1945, Saipan CNMI 1978-2001, Tinian 1945, Agiguan 1952, Rota 1945, Rota CNMI 2001, Sarigan CNMI 2001, Alamagan CNMI 2000, Anatahan CNMI 2002

Family: Buthidae

Isometrus maculatus (de Geer) Saipan CNMI 2002

References

Chapin, E.A. 1957. Scorpionida. In: Insects of Micronesia 3(2): 65 – 70.

Phylum: Arthropoda Class: Arachnida Order: Pseudoscorpionidae

Diversity

Micronesia – 45 species, Mariana Isl. – 13 species, CNMI - 12 species

Ecological and human significance

Pseudoscorpions, usually less than a few millimetres long, are predators of very small invertebrates. They live in litter, under bark or in rotten wood, usually in wooded or forest areas. They are harmless to humans.

Conservation

There appear to be no immediate conservation needs, as long as well wooded areas occur.

Identification

All specimens were sent to the Bishop Museum for identification, 2002. Keys are available for in house identification, but the group is a difficult one.

Records of pseudoscorpions from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Oratemnus samoanus

whartoni x x x

Paratemnus salomonis x

Nesocheiridium stellatum x

Allowithius australasiae x

Haplochernes insulanus x x

Nesidiochernes

caroliniensis dybasi x

Nesidiochernes

robustus x x x

Smeringochernes

guamensis x

Teratochernes oca x x

Tyrannochthonius

chamorro x x

Geogarypus javanus

formosanus Beier x x

Xenolpium oceanicum

palauensis x x

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Atemnidae

Oratemnus samoanus whartoni chamberlin Saipan 1945, Tinian 1945, Rota 1946, Guam 1947

Paratemnus salomonis Beier Saipan 1945

Family: Charidiidae

Nesocheiridium stellatum Beier Saipan 1945

Family: Cheliferidae

Allowithius australasiae Beier Saipan 1945

Family: Chernetidae

Haplochernes insulanus Beier Saipan 1945, Tinian 1952

Nesidiochernes caroliniensis dybasi Beier Saipan 1945, Sarigan 1992.

Nesidiochernes robustus Beier Saipan 1945, Tinian 1945, Rota 1952

Smeringochernes guamensis Beier Guguan, Agrihan, Pagan 1992, Saipan 1945, Guam 1947

Teratochernes oca chamberlin Saipan 1945, Tinian 1945, Guam 1945

Thapsinochernes flavus flavus Beier Guam 1947

Family: Chthoniidae

Tyrannochthonius chamorro chamberlin Saipan 1945, Tinian 1945, Pagan 1992, Guam 1947

Tyrranochthonius sp. Guguan, Pagan, Agrihan, 1992

Family: Garypidae

Geogarypus javanus formosanus Beier Saipan 1951, Tinian 1945, Guam 1948

Family: Olpiidae

Xenolpium oceanicum palauensis Beier Saipan 1951, Tinian 1945, Guam 1948

Beierolpium oceanicum (With) Guguan, Sarigan, Pagan, Maug 1992

References

Beier, M. 1957. Pseudoscorpionida. In: Insects of Micronesia 3(1): 1 – 64.

Sato, H. 1994. Pseudoscorpions from the northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue, No 1: 173-174.

Phylum: Arthropoda Class: Arachnida Order: Phalangida (Opiliones) Family: Phalangidae

Diversity

Micronesia – 6 species, Mariana Isl. – 2 species, CNMI - 1 species

Ecological and human significance

Most harvestmen feed on plant juices or dead Insects, although some apparently feed chiefly on living Insects. They live in sheltered areas under rocks or logs, and superficially resemble true spiders. Only one species is so far known from c.

Conservation

Little is known of this group in the Mariana Islands, and at present only two endemic species are known. Maintenance of natural habitats should be practised as a protection measure.

Identification

A key is available for in house identification, but is nearly 80 years old and may be outdated.

Records of harvestmen from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Zalmoxis marchei (?)

X

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

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Dibunus marianae Goodnight and Goodnight Guam 1947

Zalmoxis marchei Roewer “the Marianas” 1923, Saipan CNMI 2000-2001

No description of this species was provided by Goodnight & Goodnight (1957), but the characteristics (eyes on common unspined tubercle, tarsi on third and fourth legs without scopulae) indicate the genus, and excludes another species of *Zalmoxis* which has been found in Micronesia (but not in the Mariana Isls.) The only other species it may be is therefore *Z. marchei*, or it is a new species. This is unlikely since the species appears to be common, and will in all probability be *Z. marchei*, originally recorded from “the Marianas”.

References

Goodnight, c. J and M. L. 1957. Opiliones. In: Insects of Micronesia 3(2): 71 – 83.

Phylum: Arthropoda Class: Arachnida Order: Acari Suborder: Ixodides

Diversity

Micronesia – 5 + species, Mariana Isl. – 5 species, CNMI - 2 species

Ecological and human significance

Ticks are external parasites of terrestrial vertebrates and can be important vectors of a number of diseases. Some are able to induce paralysis by injecting a poison. This may be fatal if the ticks are not removed.

Conservation

Since all ticks known from the CNMI are aliens, control or eradication of the populations is the conservation strategy recommended. This will probably be impossible at present in view of the lack of control exercised over dog, cat, stock and rat populations; and because of an apparent lack of concern for this issue by both Government and most people.

Identification

Keys are available for in house identification.

Records of ticks from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection. Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Boophilus microplus</i>			x		X			x			
<i>Rhipicephalus sanguineus</i>											
<i>sanguineus</i>			X								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Argasidae

Ornithodoros capensis Neumann Guam 1945

Family: Ixodidae

Amblyomma cyprium cyprium Neumann Guam 1952

Amblyomma squamosum Kohls Guam 1945

Boophilus microplus Canestrini Cattle tick, also Texas fever cattle tick. Guam 1936, Saipan 1954, Alamagan 1951, Tinian 1946, Anatahan CNMI 2002 (on goat). Vector for babesia, anaplasma; hosts cattle, deer, goats and other hoofed animals.

Rhipicephalus sanguineus sanguineus (Latrielle) Brown dog tick Saipan 1945, Saipan CNMI 1969-2001, Guam 1929 Vector for numerous diseases

References

Kohls, Glen M. 1957. Acarina: Ixodoidea. In: Insects of Micronesia 3(3): 85 – 104.

Townes, H. 1946. Results of an inspection tour of Micronesia. U.S. Commercial Company, Economic Survey, Honolulu. Unpublished report, 53 pp.

Phylum: Arthropoda Class: Arachnida Order: Acari

Suborders: Opilioacariformes, Holothyrida, Mesostigmata (Gamasida), Acaridei, Tarsonemini, Tetrapodili, Prostigmata, Endeostigmata, Oribatei.

Diversity

Micronesia – 81 species, Mariana Isl. – 78 species, CNMI - 72 species

Ecological and human significance

Mites are small to microscopic animals, mostly terrestrial but some aquatic, which have adapted to feeding on a great variety of food items, both animal and vegetable. Among the important species are those causing mange and other skin problems in humans and larger vertebrate animals, and gall mites and spider mites causing damage to cultivated plants. A few mites are predators on small invertebrates. Mites form prey to a number of small invertebrate predators.

Conservation

Little appears to be known of the mite fauna of CNMI, and a survey needs to be carried out to ascertain biodiversity, distribution and conservation importance values. Following such a survey, recommendations can be made about conservation needs.

Identification

No keys are available for in house identification – the group is not an easy one from a taxonomic standpoint, and specimens need to be identified by experts.

Records of mites from CNMI indicating areas (blank spaces) from which records are required.

Because of identification uncertainties, no attempt has been made to classify species as endemic, indigenous or alien.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Parasitus</i> sp.							x							
<i>Asca aphidioides</i>							x	x	x	x		x	x	
<i>Asca quinquesetosa</i>							x			x	x		x	x
<i>Cheiroseius</i> sp.							x							
<i>Lasioseius</i> sp.							x	x		x		x		
<i>Ameroseius</i> sp 1								x						
<i>Ameroseius</i> sp 2											x			
<i>Rhodacarus</i> sp.							x	x	x	x	x	x	x	
<i>Gamasiphus</i> sp 1.							x		x	x	x		x	x
<i>Gamasiphus</i> sp 2							x	x	x	x	x	x		x
<i>Dendrolaelaps</i> sp							x	x					x	
<i>Podocinum jamaicensis</i>							x		x	x	x			
<i>Podocinum</i> sp.													x	
<i>Evimirus</i> sp.							x							
<i>Macrocheles</i> sp 1							x							
<i>Macrocheles</i> sp 2							x							
<i>Hypoaspis</i> sp 1								x	x	x	x			
<i>Hypoaspis</i> sp 2							x			x	x	x		
<i>Hypoaspis</i> sp 3							x	x	x			x		
<i>Hypoastis</i> sp 4									x			x		
<i>Hypoastis</i> sp 5							x							

[illegible]

<i>Galumna flabellifera</i>	X	
<i>Galumna valida</i>	X	
<i>Pergalumna altera</i>		X
<i>Pergalumna mauritii</i>	X	

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Suborder: Mesostigmata

Family: Parasitidae

Parasitus sp. Anatahan 1992

Family: Ascidae

Asca aphidioides (L.) Anatahan, Sarigan, Guguan, Alamagan, Agrihan, Asuncion 1992

Asca quinquesetosa Wharton Anatahan, Alamagan, Pagan, Asuncion, Maug, Uracas 1992

Cheiroseius sp. Anatahan 1992

Lasioseius sp. Anatahan, Sarigan, Alamagan, Agrihan 1992

Family: Ameroseidae

Ameroseius sp 1 Sarigan 1992

Ameroseius sp 2 Pagan 1992

Family: Rhodacaridae

Rhodacarus sp. Anathan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion 1992

Family: Ologamasidae

Gamasiphus sp 1. Anatahan, Guguan, Alamagan, Pagan, Asuncion, Maug 1992

Gamasiphus sp 2 Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Maug 1992

Family: Digamasellidae

Dendrolaelaps sp Anatahan, Sarigan, Asuncion 1992

Family: Podocinidae

Podocinum jamaicensis Evans and Hyatt Anatahan, Guguan, Alamagan, Pagan 1992

Podocinum sp. Asuncion 1992

Family: Eviphididae

Evimirus sp. Anatahan 1992

Family: Macrochelidae

Macrocheles sp 1 Anatahan 1992

Macrocheles sp 2 Anatahan 1992

Family: Laelapidae

Hypoaspis sp 1 Sarigan, Guguan, Alamagan, Pagan 1992

Hypoaspis sp 2 Anatahan, Alamagan, Pagan, Agrihan 1992

Hypoaspis sp 3 Anatahan, Guguan, Sarigan, Agrihan 1992

Hypoastis sp 4 Guguan, Agrihan 1992

Hypoastis sp 5 Anatahan 1992

Hypoastis sp 6 Anatahan 1992

Family: Sejidae

Sejus sp. Alamagan, Agrihan, Asuncion 1992

Family: Uropodidae

Trigonuropoda sp A Anatahan 1992

Trigonuropoda sp B Guguan, Pagan, Maug, Asuncion 1992

Trigonuropoda sp Anatahan, Alamagan 1992

Trigonuropoda sp D Anatahan, Pagan, Agrihan 1992

Uroobovella sp A Guguan, Maug 1992

Uroobovella sp B Alamagan, Pagan, Agrihan, Asuncion, Maug, Uracas 1992

Uroobovella spCNMI Alamagan, Pagan, Agrihan, Asuncion, Maug, Uracas 1992

Uroobovella sp D Agrihan 1992

Metagynella sp A Pagan 1992

Metagynella sp B Agrihan 1992

Trachyuropoda sp A Asuncion 1992
Trachyuropoda sp B Maug 1992
 Suborder: Tarsonemini
 Family: Tarsonemidae
Polyphagotarsonemus latus (Banks) Broad mite Marianas
 Family: Tenuipalpidae
Tenuipalpus pacificus Baker Phalaenopsis mite Guam, n.d.
 Family: Tetranychidae
Tetranychus sp. Spider mite CNMI
Tetranychus sp. Spider mite Marianas
Tetranychus cinnabarinus (Boisd.) Carmine spider mite Marianas
Tetranychus truncatus Ehara Spider mite Guam
Tetranychus tumidus Spider mite Marianas
 Suborder: Mesostigmata ?
 Family: Spinturnicidae
Meristaspis calcaratus (Hirst) Guam, Saipan n.d., Saipan 1944 (from fruit bat).
 Suborder: Tetrapodili
 Family: Eriophyidi
Keiferophyes guamensis Mango budmite Guam
 Suborder: Oribatei
 Family: Ctenacaridae
Ctenacarus araneola (Grandjean) Maug 1992
 Family: Hypochthoniidae
Eohypochthonius concavus Aoki Maug 1992
 Family: Phthiracaridae
Hoplophthiracarus marianus Aoki Uracas, Maug 1992
Atropacarus cucullatus (Ewing) Uracas 1992
 Family: Oribotritiidae
Austrotritia unicarinata Aoki Maug 1992
 Family: Euphthiracaridae
Rhysotritia ardua (c.L.Koch) Maug 1992
 Family: Nothridae
Nothrus sp. Maug 1992
 Family: Allonothridae
Allonothrus schuilingi Hammen Maug 1992
 Family: Malaconothridae
Malaconothrus foliatus Aoki Maug 1992
 Family: Nanhermannidae
Nippohermannia robusta Aoki Maug 1992
 Family: Hermanniellidae
Hermanniella aristosa Aoki Maug 1992
Hermanniella diversisetosa Hammer Maug 1992
 Family: Liodidae
Liodes bataviensis (Sellnick) Maug 1992
 Family: Eremaezetidae
Eremaezetes kurozumii Aoki Uracas 1992
 Family: Damaeolidae
Fosseremus quadripertitus Grandjean Maug 1992
 Family: Basilobelbidae
Basilobelba insularis Mahunka Maug 1992
 Family: Carabodidae

Gibbicepheus frondosus (Aoki) Maug 1992
 Family: Cymbaeremaeidae
Scapheremaeus fisheri Aoki Uracas 1992
 Family: Xylobatidae
Xylobates sp Maug 1992
 Family: Oribatulidae
Oribatula acuminata marianna Aoki Uracas 1992
 Family: Haplozetidae
Peloribates uracasensis Aoki Uracas 1992
Incabates sp Uracas 1992
 Family: Sceloribatidae
Scheloribates sp M1 Maug 1992
Scheloribates sp M2 Maug, Uracas 1992
Ischeloribates sp Uracas 1992
 Family: Oripododae
Oripoda sp Maug 1992
 Family: Oribatellidae
Lamellobates palustris Hammer Uracas 1992
 Family: Galumnidae
Galumna flabellifera Hammer Maug 1992
Galumna valida Aoki Maug 1992
Pergalumna altera (Oudemans) Uracas 1992
Pergalumna mauritii Mahunka Maug 1992

References

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 McConnell, J. Undated. Phalaenopsis mite. Guam Pest Series, GCE Publication # PP 88-19. 1 page.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.
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Phylum: Arthropoda Class: Arachnida Order: Schizomida

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

Whip scorpions are somewhat scorpionlike in appearance but lack a sting at the end of the abdomen. Some have their fourth legs modified for jumping and superficially resemble small crickets in the field. All are predators of small invertebrates, most appear to be nocturnal and live in leaf litter and under rocks.

Conservation

Little appears to be known of the whipscorpions of CNMI and a survey needs to be carried out to ascertain biodiversity, distribution and conservation importance values. Following such a survey, recommendations can be made about conservation needs. Certainly, as a basic step, natural forests need to be maintained in an unpolluted state to ensure survival of possibly occurring endemic species.

Identification

No keys are available for in house identification

Records of short-tailed whip-scorpions from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Orientzomus</u> sp.				x			x					x		
Gen et spec. nov				x										

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Hubbardiidae

Orientzomus sp. Sarigan 1992, Asuncion 1992, Saipan 1944-1945 Guam 1945

Gen et spec. nov Saipan 1944-1945.

References

Cokendolpher, J.C. and N. Tsurusaki. 1994. Schizomida (Arachnida) of the Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 195-198.

Phylum: Arthropoda Class: Arachnida Order: Araneida Section : Mygalomorpha Families: Atypidae, Ctenizidae, Dipluridae, Hexathelidae, Idiopidae, Microstigmatidae, Nemesiidae, Theraphosidae

Diversity

Micronesia – 3 species, Mariana Isl. – 3 species, CNMI - 3 species

Ecological and human significance

Mygalomorph spiders have large and powerful chelicerae that move in a plane more or less parallel to the median plane of their bodies. They are all carnivorous, feeding on invertebrates and the larger species on small vertebrates. All carry venom, but very few can affect man seriously with a bite. This group includes the tarantulas and trap-door spiders.

Conservation

Little is known of these animals in the Marianas, and more work needs to be carried out to establish the conservation requirements.

Identification

No keys are available for in house identification

Records of mygalomorph spiders from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Chrysopelma maculata			x	x										
<u>Masteria hirsuta</u>			x											
<u>Ischnocolella senffti</u>				x										

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Barychelidae

Chrysopelma maculata Roewer Tinian 1945, Saipan 1945

Family: Dipluridae

Masteria hirsuta L.Koch Tinian 1945

Family: Theraphosidae

Ischnocolella senffti Strand Saipan 1945, Guam 1946

References

Roewer, 1963. Araneina: Orthognatha and Labidognatha. In: Insects of Micronesia 3(4): 105 – 132.

Diversity

Micronesia – 84 + species, Mariana Isl. – 84 + species, CNMI– 84 + species.

The araneomorph spiders include a great diversity of species, from web-spinning orb spiders to spiders which stalk their prey on the ground or on plants. Their chelicerae move laterally, or in and out, rather than in a vertical plane. They occupy a great variety of habitats, and occur in a variety of sizes. With very few exceptions, the great majority have venom, but relatively few are harmful to man. All are carnivorous, most feeding on small invertebrates, but some of the larger species can feed on small vertebrates. Spiders are a great aid to man in helping to keep down insect pests.

Until more is known of this group, little can be said about conservation requirements, except to conserve as great a variety of natural habitats as possible, and to curtail the use of any chemicals which could lead to pollution and poisoning.

No keys are available for in house identification, and specimens are sent to Dr. M. Saaristo, Turku University, Finland, for identification

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

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Orientzomus sp. nov. ?	x		x		x
Neonesiotes remiformis	X		X		
Erigone sp. 1	X				
Micronetinae			X		

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Lycosidae sp. A		X		X		X	X							
Lycosidae sp. B.		X		X		X	X							
Mysmenidae sp 1			X											
Mysmenella illectrix				X										
Speocera sp. 1.						X			X					
Theotima minutissima				X										
Gamasomorpha loricata				x										
Ischothyreus pacificus				x										
Opopaea foveolata				x	x									
Opopaea sp. 1						X	X							
Orchestina sp. 1				X										
Oxyopes sp. 1		X	X	X				X						
Pholcidae						X								
Pholcidae sp.						X								
Pholcidae sp. 1								X						
Physocyclus globosus				X										

Cosmophasis sp.			X		X
Hasarius adansonii		X			
Menemerus bivittatus		X			
Myrmarachne sp.1				X	
Myrmarachne sp.			X		
Salticid sp. 1		X			
Salticid sp. 2		X			
Salticid sp. 3		X		X	
Salticid sp. 4		X	X		
Salticidae	X	X			
Scotodes striatipes	X	X			
“Scytodes” fusca					X
“Scytodes” lugubris			X	X	
Sparassidae sp. 1		X			
Selenops sp.					X

Heteropoda venatoria	X	X	X				X
Rhinoblemma unicornis				Mariannas			
Tetrablemma alterum			x				
Dyschiriognatha sp. 1			X				

"Leucauge" sp			X		X
"Leucauge" sp 2	X	X	X		
"Leucage" sp. B			X		
"Leucage" sp. 3				X	
"Leucage" sp. C			X		
"Leucauge" sp 4					X
"Leucage " sp. 5				X	
Tetragnatha ?maxillosa			X		X
Mesida sp. 1		X	X		X
? Metinae sp. 1			X		X
Argyrodes argentatus				X	X
Argyrodes sp. 2					X

Bold = endemic to Mariana Islands, **Underlined** = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Argyrodes sp. 3						X				
Argyrodes sp. 4						X				
Coleosoma floridana				X		X	X			
Theridiidae sp. 1				X						
Theridiidae sp. 2				X						
Theridiidae sp. 3				X						
Theridiidae sp. 4						X				
Theridiidae sp. 5				X						
Theridiidae sp. 6				X						
Theridiidae sp. 7				X						
Theridiidae				X						
Theridiidae no palps				X						
"Theridiosoma" sp. 1				X						
" <i>Thomisus</i> " sp.1				X			X			
Thomisidae sp. 1				X		X				

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Araneomorpha: Cribellate

Family ?

Species 1 Anatahan CNMI 2002

Family: Uloboridae

Zosis geniculatus (Oliver) Aguiguan CNMI 2002 (Pillar Cave)

Araneomorpha: Ecribellate

Family: Araneidae

Argiope appensa (Walck.) Saipan CNMI 2000 , Sarigan CNMI 2001, Anatahan CNMI 2002, Aguiguan CNMI 2002, Alamagan CNMI 2000,

Cyclosa bifida (Doleschall) Anatahan CNMI 2002, Tinian CNMI 2002, Saipan CNMI 2001
Cyrtophora moluccensis (Doleschall) Anatahan CNMI 2002, Sarigan CNMI 2001, Saipan CNMI 1984-2001, Makes a large three dimensional labyrinth of threads supporting a central dome, a series of 1 to 4 egg pouches above the hub of the dome. Nests are also occupied by small *C. moluccensis*, *Argyrodes* spp., *Leucage* spp., *Gea* or *Argiope* spp. The adult females are about 2.5 cm long, the males are about 3 mm long. Female abdominal patterns are extremely variable with large areas of black and reddish brown to bright greenish orange mottling on white/whitish background. Abdominal patterns of juveniles always white green and silver.

Neoscona sp. Anatahan CNMI 2002, Saipan CNMI 2001-2002
Neoscona sp. 1. Saipan CNMI 2001, Aguiguan CNMI 2002
Neoscona theisi (Walck) Saipan CNMI 1979, Tinian CNMI 1985, Anatahan CNMI 2002, Sarigan 2001
Thelacantha mammosa(C.L.Koch) Saipan CNMI 2001-2002, Sarigan CNMI 2001, Aguiguan CNMI 2002,

Family: Clubionidae

Clubionidae sp. 1. Saipan CNMI 2000-2001,
Clubionidae sp. Anatahan CNMI 2002
Clubiona sp. A Aguiguan CNMI 2002, Saipan CNMI 2002
Clubiona sp. B Saipan CNMI 2002

Family: Corinnidae

Oedignatha scrobiculata (Thorell) Saipan CNMI 2000-2002, Sarigan CNMI 2001, Aguiguan CNMI 2002

Family: Gnaphosidae

Gnaphosidae sp. (b/w abd.) Saipan CNMI 2001
Gnaphosidae sp. A Anatahan CNMI 2002
Odontodrassus aphanes (Thorell) Sarigan CNMI 2001,

Family: Hubbardiidae

Orientzomus sp. nov. ? Sarigan 1992, Asuncion 1992, Saipan 1944-1945, Guam 1945
Gen et spec nov ? Saipan 1945

Family: Linyphiidae

Neonesiotes remiformis Millidge Saipan CNMI 2000-2002, Anatahan CNMI 2002
Erigone sp. 1 Saipan CNMI 2000
Micronetinae Anatahan CNMI 2002

Family: Lycosidae

Lycosidae sp. A Anatahan CNMI 2002, Aguiguan CNMI 2002, Saipan CNMI 2000 - 2002, Sarigan CNMI 2001
Lycosidae sp. B. Saipan CNMI 2000-2002, Sarigan CNMI 2001, Anatahan CNMI 2002, Aguiguan 2002,

Family: Mysmenidae

Mysmenidae sp 1 Saipan CNMI 2002
Mysmenella illectrix (Simon) Saipan CNMI 2000-2002,

Family: Ochyroceratidae

Speocera sp. 1. Anatahan CNMI 2002, Saipan CNMI 2002
Theotima minutissima (Petrunkévitch) Saipan CNMI 2002

Family: Oonopidae

Gamasomorpha loricata (L. Koch) Saipan 1945, Guam 1945

Ischothyreus pacificus Roewer Saipan 1945, Guam 1945
Opopaea foveolata Roewer Saipan 1945, Tinian 1945, Guam 1945
Opopaea sp. 1 Sarigan CNMI 2001, Anatahan CNMI 2002
Orchestina sp. 1 Saipan CNMI 2001

Family: Oxyopidae

Oxyopes sp. 1 Tinian CNMI 1985, Saipan CNMI 1979, Sarigan CNMI 2001, Aguiguan CNMI 2002

Family: Pholcidae

Pholcidae Anatahan CNMI 2002
Pholcidae sp. Anatahan CNMI 2002
Pholcidae sp. 1 Sarigan CNMI 2001
Physocyclus globosus (Taczanowski) Saipan CNMI 2001-2002

Family: Salticidae

Cosmophasis sp. Anatahan CNMI 2002, Alamagan CNMI 2000,
Hasarius adansonii (Audoin) Saipan CNMI 2001
Menemerus bivittatus (Dufour) Saipan CNMI 2001-2,
Myrmarachne sp.1 Sarigan CNMI 2001
Myrmarachne sp. Anatahan CNMI 2002
Salticid sp. 1 Saipan CNMI 2000,
Salticid sp. 2 Saipan CNMI 2001
Salticid sp. 3 Saipan CNMI 2001, Sarigan CNMI 2001
Salticid sp. 4 Saipan CNMI 2001-2002, Anatahan CNMI 2002
Salticidae Anatahan CNMI 2002, Saipan CNMI 2002

Family: Scytodidae

Scotodes striatipes (L. Koch) Saipan 1945, Tinian 1945, Guam 1945-1952
“*Scytodes*” *fusca* (Walck.) Anatahan CNMI 2002
“*Scytodes*” *lugubris* (Thorell) Sarigan CNMI 2001, Anatahan CNMI 2001

Family: Sparassidae

Sparassidae sp. 1 Saipan CNMI 2000
Selenops sp. Alamagan CNMI 2000
Heteropoda venatoria (L.) Tinian CNMI 2002 (ex military equipment from Okinawa),
Aguiguan CNMI 2002, Saipan CNMI 2002, Alamagan CNMI 2000

Family: Tetrablemmidae

Rhinoblemma unicornis (Roewer)
Tetrablemma alterum Roewer Saipan 1945

Family: Tetragnathidae

Dyschiriognatha sp. 1 Saipan CNMI 2001-2002
“Leucauge” sp Anatahan CNMI 2002, Alamagan CNMI 2000
“Leucauge” sp 2 Anatahan CNMI 2002, Tinian CNMI 1985, Saipan CNMI 2001
“Leucage” sp. B Anatahan CNMI 2002
“Leucage” sp. 3 Sarigan CNMI 2001
“Leucage” sp. C Anatahan CNMI 2002
“Leucauge” sp 4 Sarigan CNMI 2001
“Leucage “ sp. 5 Anatahan CNMI 2002
Tetragnatha ?*maxillosa* Thorell Saipan CNMI 2001, Sarigan CNMI 2001
Mesida sp. 1 Saipan CNMI 1979-2001, Tinian CNMI 1985, Sarigan CNMI 2001
? Metinae sp. 1 Saipan CNMI 2001, Sarigan CNMI 2001

Family: Theridiidae

Argyrodes argentatus (Pickard-Cambridge) Anatahan CNMI 2002, Sarigan CNMI 2001

Argyrodes sp. 2 Saigan CNMI 2001

Argyrodes sp. 3 Anatahan CNMI 2002

Argyrodes sp. 4 Anatahan CNMI 2002

Coleosoma floridana Banks Saipan CNMI 2000-2002, Sarigan CNMI 2001, Anatahan CNMI 2002,

Theridiidae sp. 1 Saipan CNMI 2001

Theridiidae sp. 2 Saipan CNMI 2001

Theridiidae sp. 3 Saipan CNMI 2001

Theridiidae sp. 4 Anatahan CNMI 2002

Theridiidae sp. 5 Saipan CNMI 2002

Theridiidae sp. 6 Saipan CNMI 2002

Theridiidae sp. 7 Saipan CNMI 2002

Theridiidae Saipan CNMI 2002

Theridiidae no palps Saipan CNMI 2002

Family: Theridiosomatidae

“Theridiosoma” sp. 1 Saipan CNMI 2001

Family: Thomisidae

“*Thomisus*” sp.1 Saipan CNMI 2000, Sarigan CNMI 2001

Thomisidae sp. 1 Saipan CNMI 2001, Anatahan CNMI 2002

References

Saaristo, Dr. M, University of Turku, Finland. Pers. corresp. 2001-02. Dr Saaristo provided all identifications of collected specimens.

Sabbath, Sabbath & Morre 1974 (*Cyrtophora* only)

Roewer, 1963. Araneina: Orthognatha and Labidognatha. In: Insects of Micronesia 3(4): 105 – 132.

Phylum: Arthropoda Class: Crustacea Subclass: Ostracoda

Diversity

Micronesia – 1+ species, Mariana Isl. – 1 species, CNMI - 1 species .

Ecological and human significance

Ostracods are small (many less than 1 mm, range 0.25-8 mm) aquatic creatures classified into 6 extinct and extant orders with over 50000 named taxa (species and genera). Their calcareous bivalved carapaces cover the whole body and there is a rich fossil record extending back to the Cambrian. They are of proven value for interpreting geological age, depth, salinity and other parameters of sedimentary rock. Their feeding habits are diverse and the species are detritus, plant and carrion feeders, or predators, and are themselves fed upon by numerous small predators, mainly other invertebrates.

Conservation

Little appears to be known of the mite fauna of CNMI and a survey needs to be carried out to ascertain biodiversity, distribution and conservation importance values. Following such a survey, recommendations can be made about conservation needs.

The maintenance of natural fresh-water habitats need to be deliberately carried out to conserve these and other indigenous freshwater inhabitants.

Identification

There are no keys available for in house identification.

Records of ostracods from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Species A								X						
Species A ?					X									

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family unknown.

Species A From rainwater-filled concrete reservoir on Sarigan, CNMI 2001 .

Species A ? From rainwater ex roof tanks, Saipan ii/2002.

References

- Maddocks, R.F. 1992. Ostracoda. Microscopic Anatomy of Invertebrates, vol 9, Crustacea, p. 415-441. Wiley-Liss, Inc., New York.
- Hickman C.P, Sr., Hickman C. P. Jr., Hickman F.M. and L.S. Roberts. 1979. Integrated principles of zoology. The C.V. MosbyCompany, St. Louis. 1086 pp.

Phylum: Arthropoda Class: Crustacea Subclass: Copepoda

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Some copepods are free-swimming while others are parasitic on fish. Both marine and freshwater species occur. Parasitic copepods can seriously injure their hosts. Some species serve as intermediate hosts for certain human parasites (eg. the fish tapeworm).

Conservation

Little appears to be known of the copepod fauna of CNMI, and a survey needs to be carried out to ascertain biodiversity, distribution and conservation importance values. Following such a survey, recommendations can be made about conservation needs.

Certainly, as a basic step, natural freshwaterbodies need to be maintained in an unpolluted state to ensure survival of possibly occurring endemic species.

Identification

There are no keys available for in house identification.

Records of copepods from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Phylloganthopus viguieri

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family Phyllognathopodidae

Phylloganthopus viguieri (Maupas) Agrihan 1992

References

Kikuchi, Y. 1994. The occurrence of a terrestrial harpacticoid copepod, *Phyllognathus viguieri* (Maupas, 1892) from Agrihan Island, the northern Mariana Islands, Micronesia.

Phylum: Arthropoda Class: Crustacea Subclass: Malacostraca Order: Amphipoda
Family: Talitridae

Diversity

Micronesia – 8 (9?, 10?) species, Mariana Isl. – 3(4? 5?) species, CNMI – 3 (4? 5?) species

Ecological and human significance

Most amphipods are marine, but a number occur in fresh water or are semi-terrestrial or terrestrial. They cannot survive in dry areas, and are restricted to wet or relatively moist environments, such as forest litter.

All of the terrestrial amphipods belong to the family Talitridae. Talitrids eat dead plant material and are thus decomposers of organic matter, and contribute directly to soil formation. They are usually active at night, and may climb grass stems or even or even trees to reach above ground leaf material. They are probably preyed on by lizards, land crabs, scorpions, centipedes, spiders and other small predators.

Conservation

Little is known about the amphipods in the CNMI and conservation issues cannot be recognised without a survey of species and distributions being done. In the meanwhile, natural forest habitats should be protected wherever possible.

Records of talitrid amphipods from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Floresorchestia anomala								x	x	x	
Floresorchestia sp.							x				
Species A				X							
Species B							X				
Amphipod sp.		x									

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Taltridae

Floresorchestia anomala (Chevreux) Agrihan, Pagan, Alamagan 1992

Floresorchestia sp. Sarigan 1992

Species A Saipan CNMI 2000-2001

Species B Sarigan CNMI 2001

Family unknown.

Amphipod sp. Rota, Babao stream (Best and Davidson 1981).

References

- Barnard, J.L. 1960. Crustacea : Amphipoda: Strand and Terrestrial Talitridae. In: Insects of Micronesia 4(2): 13 – 30.
- Best, Bruce R. and c. E. Davidson. 1981. Inventory and atlas of the inland aquatic ecosystems of the Mariana Archipelago. University of Guam Marine Laboratory Technical Report # 75. 226 pp.
- Duncan, K.W. 1994. Terrestrial Talitridae (Crustacea: Amphipoda). Fauna of New Zealand 31, 128 pp.
- Morino, H. 1994. Talitridae (Crustacea: Amphipoda) from the northern Mariana Islands, Micronesia. Nat. hist. Res., Special Issue, No. 1: 263-264

Phylum: Arthropoda Class: Crustacea Subclass: Malacostraca Order: Isopoda
Suborder: Oniscidea

Diversity

Micronesia – 28 + species, Mariana Isl. – 28 species, CNMI – 19 species

Ecological and human significance

Isopods need moist habitats in which to live, such as forest litter. They feed on vegetable matter, and serve as decomposers, aiding directly towards soil formation. In some areas in the world sowbugs are important pests to cultivated plants, but this has not yet been found in the CNMI. They are probably food items to a number of ground-dwelling predators.

Conservation

Little is known about the isopods in the CNMI, and conservation issues cannot be recognised without a survey of species and distributions being done. In the meanwhile, natural forest habitats should be protected wherever possible, and pollution of all areas should be kept to a minimum.

Identification

There are no keys available for in house identification.

Records of isopods from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Hybodillo</i> sp.									x					
<i>Sphaerillo</i> sp. 1									x					
<i>Sphaerillo</i> sp. 2					x	x				x		x		
<i>Sphaerillo</i> sp. 3							x							
<i>Sphaerillo</i> sp. 4									x					
<i>Ligia</i> sp.										x				
Trichoniscidae sp.					x			x	x	x				
<i>Alloniscus</i> sp. 1											x			
<i>Alloniscus</i> sp. 2								x					x	
<i>Setaphora</i> sp. 1					x	x	x	x	x	x	x			
<i>Setaphora</i> sp. 2							x			x			x	
<i>Setaphora</i> sp. 3										x				
Philoscidae sp.										x				
Oniscidae sp.									x					
<i>Nagurus</i> sp. 1							x			x			x	
<i>Nagurus</i> sp. 2					x								x	
<i>Nagurus</i> sp. 3													x	
<i>Nagurus</i> sp. 4								x						
<i>Porcellionides pruinosus</i>											x		x	
Spp. ?	X		X	X		X	X							

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

This list was extracted from the “ World List of Terrestrial Isopoda, 13 January 2000: Web site NMNH.si.edu/gopher-menus”. While three other species have been found in Polynesia and Melanesia, these have not been listed for Micronesia. Those of a known wide tropical distribution, but as yet not recorded from the Marianas, are given as well..

Family: Armadillidae

- Armadillium vulgare* Latrielle Cosmopolitan (Probably occurs in CNMI)
Cubaris galbineus (Escholtz) Guam n.d.
Hybodillo sp. Pagan 1992
Sphaerillo montivagus (Buddle-Lund) Tropical Pacific (Probably occurs in CNMI)
Sphaerillo vitiensis Dana Pacific and Indian Oceans (Probably occurs in CNMI)
Sphaerillo sp. 1 Pagan 1992
Sphaerillo sp. 2 Maug, Asuncion, Agrihan, Sarigan, Anatahan 1992
Sphaerillo sp. 3 Guguan 1992
Sphaerillo sp. 4 Pagan 1992
Venezillo parvus (Buddle-Lund) Pantropical (Probably occurs in CNMI)

Family: Ligiidae

- Ligia* sp. (nr. *yamanishii* Nunomura) Agrihan 1992
Ligia exotica Roux cosmopolitan (Probably occurs in CNMI)

Family: Trichoniscidae

- Trichoniscidae sp. Agrihan, Pagan, Alamagan, Anatahan 1992

Family: Scyphacidae

- Alloniscus* sp. 1 (nr. *boninensis* Nunomura) Asuncion 1992
Alloniscus sp. 2 Maug, Alamagan 1994

Family: Philoscidae

- Setaphora* sp. 1 Asuncion, Agrihan, Pagan, Alamagan, Guguan, Sarigan, Anatahan 1992
Setaphora sp. 2 Maug, Agrihan, Alamagan, Sarigan 1992
Setaphora sp. 3 Agrihan 1992
Philoscidae sp. Agrihan 1992

Family: Oniscidae

- Oniscidae sp. Pagan 1992

Family: Platyarthridae

- Trichorina heterophthalma* Lemos de castro Pantropical (Probably occurs in CNMI)
Trichorina tomentosa (Buddle-Lund) Pantropical (Probably occurs in CNMI)

Family: Styloniscidae

- Clavigeroniscus riquieri* Arcangeli Pantropical (Probably occurs in CNMI)

Family: Trachelipodidae

- Nagurus* sp. 1 Maug, Agrihan, Guguan 1992
Nagurus sp. 2 Maug, Anatahan 1992
Nagurus sp. 3 Maug 1992
Nagurus sp. 4 Alamagan 1992

Nagurus cristatus (Dollfus) Pantropical (Probably occurs in CNMI)
Nagurus nanus (Buddle-Lund) Pantropical (Probably occurs in CNMI)

Family: Porcellionidae

Porcellionides pruinosus (Brandt) Maug, Asuncion 1992

Unidentified species Rota, Tinian, Saipan, Sarigan, Anatahan.

References

Anon 2001. NMNH.si.edu/gopher-menus/ World list of terrestrial Isopoda, 13 January 2001

Nunomura, N. 1994. Preliminary list of terrestrial Isopod Crustaceans from the Northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue No. 1: 259-261

MARIANA ISLANDS BIODIVERSITY. **Freshwater and terrestrial shrimps and crabs.**

Phylum: Arthropoda Class: Crustacea Subclass: Malacostraca Order: Decapoda

Diversity

Micronesia – 16 + species, Mariana Isl. – 16 species, CNMI - 16 species .

Ecological and human significance

Decapods include the large, well-known crabs, prawns and shrimps of marine and fresh-waters. Many of these animals are important food items for humans and for other animals. The “terrestrial” species (although living most of their lives on land, such species always have to return to water to shed their eggs or larvae, hence the inverted commas) include species which have been implicated in crop damage. Some species act as intermediate hosts for such parasites as flukes, which can affect humans eating uncooked decapod meat. Decapods are scavengers and/or carnivores and herbivores, and are themselves fed on by a wide variety of both vertebrate and invertebrate animals.

Conservation

Because of heavy use by humans, the coconut crab (*Birgus latro*), is scarce on those islands on which it still occurs, and it is protected. However, there is still an open season during which people may gather it under authority of a license and it is unlikely that large populations will ever again occur on the Northern Islands. On uninhabited islands such as Sarigan, with large numbers of coconuts, very few of this species are in evidence. In contrast, Anatahan appears to have a good population in the uninhabited areas. There seems little doubt that the closed season is mostly ignored on the islands.

For the freshwater species, it is imperative that the natural water systems are maintained in an unpolluted condition. There do not appear to be conservation requirements for any of the other species.

Identification

There are no keys available for in house identification.

Records of freshwater and terrestrial shrimps and crabs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands											
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun
<u>Macrobrachium lar</u>	x			X								
<u>Palaemon sp. ?</u>				X								
<u>Palaemon debilis</u>				x								
<u>Birgus latro</u>	x	x	x	x	x	x	x		x			
<u>Coenobita perlatus</u>				X	x	X		x	x	x	x	x
<u>Coenobita brevimanus</u>				X	x	X	x					
<u>Coenobita purpureus</u>												x
<u>Coenobita rugosus</u>					x		x	x	x	x	x	x
<u>Calcinus latens</u>			x		x		x	x				x
<u>Calcinus laevimanus</u>					x		x	x			x	x
<u>Calcinus seurati</u>					x	x	x		x	x		x
<u>Clibanarius humilis</u>							x	x				
<u>Clibanarius virescens</u>							Marianas					
<u>Cardisoma hirtipes</u>			X		X	X						
<u>Cardisoma rotundum</u>											x	

Species list

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Infraorder: caridea

Family: Palaemonidae (Shrimps, prawns)

Macrobrachium lar (Fabricius) . In Talofoto Stream (Sadog Talofoto), Saipan, 1956. Talofoto Stream CNMI 200 ; Rota – West Hasfina Stream, Baboa Stream

Palaemon sp. ? Talofoto Stream above Talofoto Falls, Saipan CNMI 2001

Palaemon debilis Saipan – Charanka Lake, Lake Susupe

Infraorder: Anomura

Family: Coenobitidae (Land hermit crabs)

Birgus latro L. Coconut crab Aguihan, Guguan, Pagan, Saipan, Tinian and Rota (pers. com, Ms. Tina de Cruz, Dept. Fisheries and Wildlife, Saipan, 2001), Maug, Asuncion, Guam n.d., Sarigan 2001 (sight record, photograph), Anatahan 2002 (sight record, photograph),

Coenobita perlatus Milne-Edwards. Red hermit crab Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug 1992, Saipan CNMI 2001, Sarigan 1992, CNMI 2001, Anatahan 1992, sight 2002

Coenobita brevipennis Dana Short-handed hermit crab. Anatahan, Guguan 1992, Saipan CNMI 2001, Sarigan CNMI 2001.

Coenobita rugosus H. Milne-Edwards Anatahan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug 1992

Coenobita purpureus Stimpson Maug 1992.

Family: Diogenidae (Hermit crabs)

A number of hermit crabs regularly forage and shelter on dry land above high-tide mark, and may therefore be classed as partially to greatly terrestrial.

Calcinus latens (Randall) Saipan, Guam (Wooster 1982), Anatahan, Guguan, Alamagan, Maug 1992

Calcinus laevimanus (Randall) Anatahan, Guguan, Alamagan, Maug 1992; Maug, Asuncion, Guguan, Anatahan, Guam (Wooster 1982)

Calcinus seurati Forest Anatahan, Sarigan, Guguan, Pagan, Agrihan, Maug, Uracas 1992

Clibanarius humilis Dana Guguan, Alamagan 1992

Clibanarius virescens (Krauss) Marianas (Wooster 1982)

Infraorder: Brachyura (Crabs)

Except for ghost crabs, crabs occupying the intertidal zone, and venturing above high-tide mark but not too far from water, were not included in this list.

Family: Gecarcinidae Land crabs

Cardisoma hirtipes Saipan CNMI 2001, Sarigan CNMI 2001 , Anatahan CNMI 2002

Cardisoma rotundum (Quoy and Gaimard) Maug 1992

Family: Ocypodidae

Ocypode ceratophthalmus (Pallas) horn-eyed ghost crab Marianas

Ocypode sp. Saipan CNMI 2001

References

- Asakura, A., T. Kurozumi and T. Komai. 1994. Anomura (Crustacea: Decapoda) collected from the northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue No. 1: 275-283
- Best, Bruce R. and C. E. Davidson. 1981. Inventory and atlas of the inland aquatic ecosystems of the Mariana Archipelago. University of Guam Marine Laboratory Technical Report # 75. 226 pp.
- Cloud, Preston E. ; Schmidt, Robert George, and Harold W. Burke. 1956. Geology of Saipan – Mariana Islands Part 1. General Geology. United States Government Printing Office, Washington. 126 pp + 1 Fig., and Plates 5-24.
- Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1
- Takeda, M., Y. Fukui, K. Wada and A. Asakura. 1994. Brachyura (crustacea: Decapoda) from the northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue No. 1: 285-29
- Wooster, Daniel s. 1982. The Genus *Calcinus* (Paguridae, Diogenidae) from the Mariana Islands including three new species. Micronesica 18 (2): 121-162

Phylum: Arthropoda Class: Diplopoda

Diversity

Micronesia – 13 + species, Mariana Isl. – 11 +species, CNMI - 11+ species

Ecological and human significance

Millipedes are generally nocturnal and diurnal ground-living scavengers, feeding on decaying vegetation. There are about 10000 living species. Many have stink glands for protection, but even so, they are preyed upon by some birds, mammals, amphibians and other invertebrates. Millipedes, where they are numerous, play an important role in humus formation. Some species can become pests of vegetables and other cultivated plants, usually by destroying roots or other parts of the plant situated below ground level. There appear to be no great problems with millipedes as agricultural pests in the CNMI however.

Conservation

There does not appear to be much known about the number of millipede species and their distribution in the region. Work needs to be done in this respect. Conservation issues cannot be determined without this knowledge.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of millipedes from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands														
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac	
Species A					X										
Species B					X										
Species C								X							
Species D					X										
Species E												X			
Species F					X										
Species G					X										
Species PA					X										
Species PB					X										
Species PC					X										
Colobognatha sp A					X		X								
Trigoniulus lubricinus						Southern Marianas (Townes 1946)									
Oxidus gracilis					“		“		“						
Spp ?		X		X											

Species list

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Order: Spirobolida

Species A. A common red to red- brown small millipede with brown legs and 49-51 body segments. Saipan CNMI 2000 – 2001 (Papago, Tank Beach)

Order: Spirostrepsida

Family: Julidae

Species B. A black and brown banded species with white legs and 50-51 body segments . Saipan CNMI (Naftan Peninsula, Kalabera Cave, Tank Beach)

Order/Family unidentified.

Species C A dark brown species with lighter edges to posterior body segments, 43-44 body segments. Sarigan CNMI 2001

Species D A red-brown species with posterior edges of body segments slightly lighter , and a dark spot mid-laterally at the anterior edge of each body segment – giving a slurred dotted-line effect. Legs redbrown, paler at tibia and tarsus. Saipan CNMI 2001 (Naftan Peninsula)

Species E Olive-grey with head and first segment dark brown, legs dark brown, about 50 body segments, and about 40 mm long. ?Pagan CNMI 1999.

Species F A small straw to pale brown coloured species with a tadpole-shaped dot mid laterally on each body segment, legs white. About 36 body segments. Saipan CNMI 2001 (Naftan Peninsula)

Species G? A pale millipede with what look like little “hooks” projecting from the sides of segments 6 – 20. Tank Beach, among vegetation and debris at bases limestone cliffs and rocks 6/1/2001. Specimens sent away for identification (unsuccessfully) and more need to be collected.

Order: Polydesmida (Keeled millipedes)

Species PA. Small species (juveniles ?) 4-5 mm long, 19 body segments, 6 antennal segments, and white body and legs. Preapical antennal segment brown.

Species PB. A dark brown species with prominent hooked, yellow lateral keels, legs cream to light brown, 19 body segments. Saipan CNMI 1980-2001 (Obiyan, Papago, Naftan Peninsula). Open secondary and disturbed areas.

Species PC ? Very similar to species B, but with prominent hairs on dorsal surface, and antennae white tipped - in forest. Saipan CNMI 2001 (Naftan Peninsula).

Superorder: Colobognatha

Species A Saipan CNMI 2002, Anatahan CNMI 2002

Other.

Trigoniulus lubricinus Southern Marianas (Townes 1946)

Oxidus gracilis “ “ “

Spp ? Tinian and Rota CNMI 2002.

References

Lawrence, R.F. 1984. The centipedes and millipedes of southern Africa. A.A. Balkema, Cape Town. 148 pp.

Phylum: Arthropoda Class: Chilopoda

Diversity

Micronesia – 8 + species, Mariana Isl. – 8 species, CNMI - 8 species

Ecological and human significance

Centipedes are normally nocturnal, ground-living and predatory. They range from a few millimetres to 26 cm in length. They have strong mandibles developed for grinding up food, and the first pair of legs have developed into poison injecting “fangs”, situated very close to the mouth. Large centipedes, such as *Scolopendra subspinipes* and *S. morsitans* can inflict painful bites to humans, but these are only lethal in very exceptional circumstances. There is a story told in CNMI that these large centipedes are responsible for killing pigs, but this is highly unlikely and there is no evidence that this has actually happened where large centipedes are found. centipedes feed mainly on other invertebrates, but the larger ones are capable of killing small vertebrates such as geckoes and other lizards. Many of the smaller species (less than 3 mm long) live in forest litter, and, in general a large amount of litter seems to encourage centipedes.

Conservation

There does not appear to be much known about the number of centipede species and their distribution in the region. Work needs to be done in this respect. Conservation issues cannot be determined without this knowledge.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of centipedes from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
GA											X
GB											X
<i>Scolopendra</i> A											X
<i>Scolopendra</i> B				X							
SA									X		
LA									X		
LB									X		
SCA									X		
Spp. ?		X		X							

Species list

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Order: Geophilomorpha (earth centipedes). Small species usually not more than 10 mm long, with no eyes and antennae with 14 segments.

Species GA. Found in sheltered, usually moist sites such as in rotting logs, or in damp soil. This species is long and slender, with a white or cream body and a red-brown head. The yellow antennae have the basal segments sparsely hairy. There are 49 pairs of short legs, the last pair being only slightly longer than the rest, and hairy. Saipan CNMI 2001. Two specimens.

Species GB. Found in limestone forest litter. A white slender species with no head pigmentation, with long head and fangs; antennae with flattened segments; legs in about 43 pairs, the last pair being relatively delicate and hairy. From above there appears to be two dark lines running the length of the body – but these may reflect some internal system (blood ?) rather than cuticular pigmentation. Saipan, CNMI 2001. One specimen.

Order: Scolopendromorpha (large centipedes) Up to 150 mm long. Legs never more than 27 pairs, antennae with 17-20 segments.

Scolopendra sp.A (? *subspinipes* Leach) 18 antennal segments and 21 pairs of legs, the last pair long and with spines on the first segment. At the distal end of this first segment is a peduncle projecting at about 45 degrees and ending in two spines. In young animals the first three antennal segments are glabrous while the rest are finely hirsute, in large animals the antennal segments are glabrous. Saipan CNMI 2000-2001, Pagan CNMI 2000. 9 specimens.

Scolopendra sp. B (? *morsitans*) Antennal segment and leg numbers as for previous species. The distal end of the first segment of the last legs has a short peduncle angled at about 30 degrees and bearing three short spines. The body seems deeper and the head relatively narrower than the previous species. Tinian CNMI 2000. One specimen.

Species SA. A small species 6-7 mm long, under rock in garden and in forest litter. 20 pairs of legs, last pair large and hairy, and 17 antennal segments. Body colour whitish with mottlings of grey. Saipan CNMI 2000-2001. Two specimens.

Order: Lithobiomorpha (stone centipedes) Small species up to 20 mm long. 15 pairs of legs, antennae with 13 – 100 segments.

Species LA. A small dark brown species found under flower-pot in garden. Antennae robust, tapering to a fine point, with 24 segments. Saipan CNMI 2000.

Species LB. Found in forest litter. Preserved in alcohol the species has a pale mauve body, an orange head plate and mauve antennae with tips being yellow. The antennae have 17 segments and have short standing hairs. There are 15 (?) pairs of legs. Saipan CNMI 2001

Order: Scutigermorpha (house centipedes) Small species 10-15 mm long. 15 pairs of legs, antennae with about 400 segments

Species SCA. Found in sheltered situations such as under rocks or in forest litter. A dark brown species with 15 pairs of long slender legs, the last pair being whiplike and longer than the body; long filiform antennae; large eyes and 7 large dorsal body plates. Saipan CNMI 2001. Two specimens.

References

- Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.
- Lawrence, R.F. 1984. The centipedes and millipedes of southern Africa. A.A. Balkema, Cape Town. 148 pp.

Phylum: Arthropoda Class: Pauropoda

Diversity

Micronesia – 6 species, Mariana Isl. – 6 species, CNMI - 3 species

Ecological and human significance

Pauropods are very small (under 2 mm long), avoid light by living in dark and hidden places such as fallen leaves in forest mould and crevices in damp wood or under stones. They apparently feed on decaying organic matter, thus functioning as one of the soil formers. They are preyed upon by small predators such as spiders and mites.

Conservation

There does not appear to be much known about the number of pauropod species and their distribution in the region. Indeed, the three known species are all recorded from Guam, none from the CNMI. Work needs to be done in this respect. Conservation issues cannot be determined without this knowledge.

Identification

There are no keys available for in house identification.

Records of pauropods from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Allopauiropus</i> sp 1									x					
<i>Allopauiropus</i> sp 2						x		x	x			x		
<i>Allopauiropus</i> sp 3										x	x			

Species list

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- Allopaupopus* sp 1 (nr. *A. danicus* (Hansen)) Pagan 1992
Allopaupopus dybasi Remy Guam 1947
Allopaupopus guamensis Remy Guam 1947
Allopaupopus sp 2 (possibly *A. guamensis* Remy) Sarigan, Pagan, Maug, Alamagan 1992
Allopaupopus sp 3 Agrihan, Asuncion 1992
Hemipauropopus gressitti Remy Guam 1947

References

- Lawrence, R.F. 1984. The centipedes and millipedes of southern Africa. A.A. Balkema, Cape Town. 148 pp.
 Remy, P.A. 1957. Pauropoda. In: Insects of Micronesia 4(1): 1 – 12.
 Hagino, Y. 1994. A preliminary list of Pauropoda from the northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue No. I: 249-250.

Micronesia – 3 species, Mariana Isl. – 2 species, CNMI - 2 species

Symphyla are small (up to 8 mm long), slender whitish animals living in humus, under stones, in decaying wood and in other damp situations.

There does not appear to be much known about the number of symphylian species and their distribution in the region. Conservation issues cannot be determined without this knowledge.

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of symphyla from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands								
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam Paga Agri Asun Maug Urac
<i>Symphylella marianensis</i>					X			X	
<i>Milotellina remyi</i>			X						
<i>Symphyla</i> sp.			X						

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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Symphylella marianensis Scheller Anatahan, Alamagan 1992

Milotellina remyi Jub.-Jup & Rev. Saipan, Guam n.d.

Species A	Saipan CNMI	2001
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
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74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

References

Scheller, Ulf. 1994. A new Scolopendrellidae species (Myriapoda: Symphyla) from the northern Mariana Islands, Micronesia, with a list of west Pacific Symphyla species. Nat. Hist. Res., Special Issue No. I: 251-256.

Phylum: Arthropoda Class: Insecta Order: Collembola

Diversity

Micronesia – 4 (to 8 ?) species, Mariana Isl. – 4(to 8 ?) species, CNMI - 4 (to 8 ?) species

Ecological and human significance

Springtails are small insects usually less than 7 mm long. They can be aquatic or terrestrial, usually in sheltered areas in litter, rotting wood or under stones or logs. Most soil inhabiting springtails feed on decaying plant material, fungi and bacteria, others feed on arthropod faeces, pollen, algae and other organic materials. Springtails are the prey of numerous small invertebrate predators.

Conservation

Little is known about the springtails in the CNMI and conservation issues cannot be recognised without a survey of species and distributions being done. In the meanwhile, natural forest habitats should be protected wherever possible.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of springtails from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Neelus minimus</i>							x			x	x	x	x	
<i>Bourletiella</i> sp														x
<i>Sphaeridia pumulis</i>								x				x		
<i>Sphaeridia biniserrata</i>							x							
Springtail A						X								
Springtail B						X								
Springtail C						X								
Springtail D						X								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Neelidae

Neelus minimus (Willem) Anatahan, Alamagan, Pagan, Agrihan, Asuncion 1992.

Family: Sminthuridae

Bourletiella sp Uracas 1992

Sphaeridia pumulis (Krausbauer) Pagan, Sarigan 1992

Sphaeridia biniserrata (Salmon) Anatahan 1992

Unidentified

Four (?) species Saipan CNMI 2001.

References

Itoh, R. 1994. Symphypleona (Insecta: Collembola) from the Northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 217-218.

Phylum: Arthropoda Class: Diplura

Diversity

Micronesia – 2 (3 ?) species, Mariana Isl. – 2 (3 ?) species, CNMI - 2 (3 ?) species

Ecological and human significance

Diplurans are found in damp places – under bark, logs, rocks and in debris. They are small animals (usually less than 7 mm long, but some can grow to 20 mm).

Conservation

Little is known about the diplurans in the CNMI and conservation issues cannot be recognised without a survey of species and distributions being done. In the meanwhile, natural habitats should be protected wherever possible.

Identification

There are no keys available for in house identification.

Records of diplurans from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Campodeidae sp.						x								
Campodeidae sp. A				X										
<i>Parajapyx</i> sp.							x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Campodeidae

Campodeinae sp. Sarigan 1992

Species A Saipan CNMI 2001

Family: Parajapygidae

Parajapyx sp. Guguan 1992

References

Nakamura, O. 1994. Diplura (Insecta) from the northern Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 219

Phylum: Arthropoda Class: Insecta Order: Thysanura

Diversity

Micronesia – 3 species, Mariana Isl. – 3 species, CNMI - 3 species

Ecological and human significance

Bristletails vary in size from minute to 20 mm long. They occur in a variety of situations which are invariably damp or sheltered. Some live in termite and ant nests, others in buildings, or caves, under debris, bark, stones or logs. Some are pests, feeding on starchy substances such as those in bookbindings, labels, clothing, curtains, linens, silks and various paper, vegetables and other foods.

Conservation

Little is known about the bristletails in the CNMI and conservation issues cannot be recognised without a survey of species and distributions being done. In the meanwhile, natural habitats should be protected wherever possible.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of bristletails from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Species A					X									
Species B					X									
Species C					X									
Species ?							X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Lepismatidae.

Species A Scales grey, setae round front of head, ca. 8 mm. Saipan CNMI 2001

Species B Scales yellow and brown, no setae around front of head, ca. 10 mm. Saipan CNMI 2001

Species C Scales brown and yellow, setae fringing head, ca. 12 mm. Saipan CNMI 2001 (NMC campus).

Species ? Anatahan CNMI 2002

References

No specific references found.

Phylum: Arthropoda Class: Insecta Order: Odonata

Diversity

Micronesia – 47 species, Mariana Isl. – 13 species , CNMI – 12 species

Ecological and human significance.

The damselflies and dragonflies are diurnal insectivores (feeding on flying Insects caught on the wing) in their adult stage, and are freshwater carnivores during their aquatic larval stages, feeding on invertebrates, tadpoles and fish. They are useful to man because they feed, *inter alia*, on biting flies such as midges and mosquitoes.

Conservation

Water bodies in which dragonflies breed need to be maintained, especially for the endemic species. The use of poisonous chemicals over, at or near the water bodies should be strictly controlled as not only dragonflies, but a host of other animals and plants could be affected. The absence of dragonflies from some of the islands simply reflects a lack of suitable permanent or semi-permanent waterbodies. Neither of the two endemic taxa have been recorded for over 50 years, and their presence needs to be confirmed.

Identification

Keys are available for in house identification.

Records of dragonflies and damselflies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection. Agri = Agrihan Agui = Aguihan Alam = Alamagan Asun = Asuncion Fara = Farallon de Medinilla Urac = Farallon de Pajaros Gugu = Guguhan Paga = Pagan Sari = Sarigan Saip = Saipan Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<u>Agriocnemis femina</u>										
<u>femina</u>									X	
<u>Ischnura aurora</u>										
<u>aurora</u>		X		x		X				
<u>Anaciaeschna jaspidea</u>						X				
Anax piraticus						x				
Hemicordulia mindana							X			
Agrionoptera insignis										
guamensis				x		x		x		
<u>Diplacodes bipunctata</u>		x				X		X		x
<u>Macrodiplax cora</u>						x				
<u>Pantala flavescens</u>		x		x		X				
<u>Rhyothemis regia</u>										
<u>chalcoptylon</u>						X				x
<u>Tholymis tillagra</u>		x				X		x		
<u>Tamea transmarina</u>		x				X				

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana's collection, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference. Brackets denote so far not found in Northern Mariana Isls, but occurring in Guam.

Suborder: Zygoptera Damselflies

Family: Caenagrionidae

Agriocnemis femina femina Brauer Saipan 1945, Saipan CNMI 2000-2001, Guam 1952

Ischnura aurora aurora (Brauer) Saipan 1945-1992, Saipan CNMI 1970-1979, Tinian 1946, Rota 1951, CNMI 2002, Pagan 1992, Guam 1957. *Ischnura aurora* is able to breed in small quantities of stagnant fresh water, such as that caught in a coconut shell.

Suborder: Anisoptera Dragonflies

Family: Aeshnidae

Anaciaeschna jaspidea (Burmeister) Saipan 1951, Saipan CNMI 2001, Tinian (Tinian coll 2001), Guam 1945.

Anax piraticus Kennedy Saipan 1945, Guam nd.

Family: Cordulidae

Hemicordulia mindana Needham and Gyger Anatahan CNMI 2002, Guam 1945

Family: Libellulidae

Agrionoptera insignis guamensis Lieftinck Guam 1946, Saipan (Asahina 1940), Tinian (Asahina 1940), Anatahan 1992.

Diplacodes bipunctata (Brauer) Anatahan 1951-1992, CNMI 2002, Pagan 1951-1992, Agrihan 1992, Saipan 1951, Saipan CNMI 1970-2001, Tinian CNMI 2002, Rota 1951, Guam 1945.

Macrodiplax cora (Brauer) Saipan 1951, Pagan 1992

Pantala flavescens (Fabricius) Saipan 1944, Saipan CNMI 1970-2000, Tinian CNMI 2002, Asahina 1940, Rota (Asahina 1940), 2002 (sight OB), Alamagan 1992, Guam 1945

{*Rhyothemis phyllis vitellina* Brauer Guam 1945}

Rhyothemis regia chalcopitlon (Brauer) Pagan 1951, Saipan 1951, CNMI 1970

Tholymis tillagra (Fabricius) Anatahan 1951, sight 2002 (O. Bourquin), Saipan 1945, Saipan CNMI 1970-2001, Tinian CNMI 2002, Rota 1992, Guam 1945

Tramea transmarina eurytale Selys Saipan 1945, Saipan CNMI 1970-2001, Tinian (Tinian coll 2001), Rota 1992.

Extralimital: *Neurothemis terminata terminata* Ris. Koror (Belau) CNMI 1973.

References

Lieftinck, M. A. 1962. Odonata. In: Insects of Micronesia 5(1): 1 – 95.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Phasmida Family: Phasmatidae

Diversity

Micronesia – 10 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

The single Marianas endemic species known from CNMI feeds on coconut fronds and leaves of other plants, thus being a herbivore breaking down live plant material. Although known to feed on coconut fronds, its contribution to overall damage to coconuts has not been proven to be significant. It no doubt forms a prey item for a number of vertebrate and invertebrate predators.

Conservation

There are no conservation issues recognised at present.

Identification

There are no keys for in house identification.

Records of stick-insects from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Acanthograeffea

<u>denticulata</u>	x		X		X	X		X		x
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Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Acanthograeffea denticulata (Redtenbacher) Denticulate stick-insect Alamagan 1992, CNMI 2000, Anatahan 1992, CNMI 2002, Pagan, Rota, Guam n.d.; Saipan CNMI 1970, Sarigan 1992, CNMI 2001

References

- Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Orthoptera Suborder: Caelifera Superfamilies: Tetrigoidea and Acridoidea.

Diversity

Micronesia – 23 species, Mariana Isl. – 10 species, CNMI - 9 species

Ecological and human significance

Short-horn grasshoppers are herbivores usually living in open grassy or weedy areas. Although they have been implicated in crop damage, such as maize, severe damage usually occurs only when there is a buildup of numbers, such as that occurring sometimes with the locust (*Locusta migratoria*). It is unlikely that any of the grasshoppers are indigenous to the Northern Mariana Islands as they are dwellers of open grassland or of, at least, low-cover, open areas. It is probable that most of the islands were mostly covered by forest prior to the advent and influence of man.

It does seem that *Stenocatantops splendens* has recently entered the Northern Marianas, as , although it is now common on Saipan, there were no records prior to the recent (2000) collected material. It is a moderately sized animal and unlikely to be missed by collectors. *Heteropternis obscurella* seems, similarly, to have recently colonised the CNMI although its presence on Sarigan indicates a longer occupation period. Both species are in the University of Guam collection but were not recorded by Kevan et al 1997 from the Marianas.

Conservation

There are no conservation issues recognised at present, and none can really be determined until a thorough survey of the areas has been undertaken. All remaining natural habitats need to be conserved as much as possible.

Identification

There are no keys for in house identification, specimens have been sent (2002) to Dr. Dan Otte, Philadelphia Academy of Natural Sciences, U.S.A. Identifications are awaited..

Records of short-horn grasshoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands											
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun
<u>Paratettix pullus</u>	x		x	X								
<u>Oxya japonica japonica</u>			X	X								
<u>Valanga excavata</u>	x	x	X	X		X	X		X	x		
<u>Locusta migratoria</u>												
<u>manilensis</u>	x		X	X	x	X	x		x	x		
<u>Aiolopus thalassinus</u>												
<u>tamulus/ Aiolopus</u>												
<u>thalassinus dubius</u>												
intergrades	X		X	X		X	X	X	X	X	x	x
<i>Stenocatantops splendens</i> .		X	X	X		X						
<i>Heteropternis obscurella</i>			X	X			X					
<i>Acridid sp.</i>				X								
“ “			X									
Green species: white spot			X	X								
Green species : black spot			X	X		X						

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Superfamily: Tetrigoidea

Family: Tetrigidae

Subfamily: Tetriginae

Euparatettix sp. Guguan 1992

Paratettix pullus Bolivar Guam 1971, Saipan 1951, ?CNMI 2001, Tinian 1984, Rota 1946

Superfamily: Acridoidea

Family: Pyrgomorphidae

Atractomorpha psittacina psittacina (Haan) Guam 1981 }

Family: Acrididae

Subfamily: Oxyinae

Oxya japonica japonica (Thunberg) Japanese grasshopper Saipan 1971, Saipan CNMI 1970-1973, Tinian 1985, CNMI 2002.

Gesonula mundata zonocera (Navas) Guam 1984 }

Subfamily: Cyrtacanthacrininae

Valanga excavata (Stal) Agrihan 1949, Anatahan CNMI 1991-2002, Pagan 1940, Pagan CNMI 1999, Sarigan CNMI 2001, Saipan 1946-1951, Saipan CNMI 1970-2001, Tinian 1946-1985, CNMI 2002, Agiguan 1952, Rota 1946, 2002 (in Rota collection), Guam 1985

Extra-limital:

Palau CNMI 1973, Yap CNMI 1973

Locusta migratoria manilensis (Meyen). Migratory locust Pagan 1954, Saipan 1946, Saipan CNMI 1970-1980, Tinian 1946-1985, Tinian CNMI 1973-2002, Farallon de Madinilla 1984, Rota 1952, Guguan, Maug, Pagan, Uracas 1992, Anatahan 1992, CNMI 2002, Guam 1984

Green species A (white spots) Sarigan CNMI 2001, Saipan CNMI 2001, Tinian CNMI 2002

Green species B (black spots) Saipan CNMI 2001, Tinian CNMI 2002

Subfamily: Catantopinae

Trilophidia annulata (Thunberg) Guam 1945 }

Aiolopus thalassinus tamulus (Fabr.)/ *Aiolopus thalassinus dubius* Willemse intergrades
Pagan 1951, Pagan CNMI 1971-1999, Sarigan CNMI 2001, Agrigan 1992, Agrigan CNMI 1971, Saipan 1945-1977, Saipan CNMI 1970-2000, Tinian 1945-1985, CNMI 2002, Aguiguan 1952-1962, Rota 1937-1951, CNMI 2002, Anatahan 1992, CNMI 2002, Alamagan CNMI 2000, Maug 1992, Guam 1962

Stenocatantops splendens (Thunberg) Saipan 1992, Saipan CNMI 2000-2001; Tinian CNMI 2002, Aguiguan CNMI 2002, Anatahan 1992, CNMI 2002; Rota 2002 (in Rota collection), Guam, in University of Guam collection. Not recorded by Kevan et al 1997 from Micronesia.

Heteropternis obscurella (Blanchard) Not recorded from Marianas by Ref. 1, but from Pohnpei, Yap, Palau and Chuuk. Saipan CNMI 1970-2001; Sarigan CNMI 2001, Tinian CNMI 2002, Guam, in University of Guam collection.

Unidentified species.

Acridinae ? sp. Saipan CNMI 2001

“ “ Tinian CNMI 2002

(??Romaleinae)

Green species (white spots) Sarigan CNMI 2001, Saipan CNMI 2001, Tinian CNMI 2002

Green species (black spots) Saipan CNMI 2001, Tinian CNMI 2002

References

- Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257
- Kevan, D. Keith McE, Vernon R. Vickery and Mary-Lynn English. 1997. Acridoidea and related Orthoptera (Grasshoppers) of Micronesia. *Micronesica* 30(1): 127-168.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.
- Swezey, O.H. 1946. Orthoptera and related orders of Guam. In: Insects of Guam – II, pp 3-8 Bulletin 189, Bernice P. Bishop Museum, Honolulu, Hawaii. 257 pp.
- Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257

Phylum: Arthropoda Class: Insecta Order: Orthoptera Suborder: Caelifera Superfamilies: Gryllacridoidea and Phaneropteroidea

Diversity

Micronesia – 52 species, Mariana Isl. – 14 species, CNMI – 11+ species

Ecological and human significance

Long-horn crickets are mostly plant feeders, some feed on other insects. They have long, hair-like antennae and most have well developed stridulatory organs. Their colours are usually green or brown. They are preyed on by a variety of birds and invertebrate predators. None are recognized as insect pests, although they may do limited damage to crops and ornamentals. A number are introductions to the CNMI.

Conservation

There are no conservation issues recognised at present, and none can really be determined until a thorough survey of the areas has been undertaken. All remaining natural habitats need to be conserved as much as possible.

Identification

There are no keys for in house identification, specimens have been sent to Dr. Dan Otte, Philadelphia Academy of Natural Sciences, U.S.A. Identifications are awaited..

Records of long-horn crickets from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Conocephalus</u>														
<u>longipennis</u>	x					x								
<u>Conocephalus upoluensis</u>						x								
Connocephalid sp.						X								
<u>Euconocephalus nasutus</u>	x		X	X			X			x				
?Holochlora fuscospinosa						X								
Melaneremus marianae														
rotaensis	x													
Melaneremus saiensis						x								
Mecopoda elongata				x		X				X				
<u>Phaulula trukensis</u>	X		x	x		X								
<u>Phaneroptera furcifera</u>	X			X		X				X				
<u>Phisis parva</u>				x		x				X		X		
Salomona guamensis	x													
Sp. Medium A							X							
Gryllacridid spp							X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Superfamily: Phaneropteroidea Winged longhorn grasshoppers

Family: Mecopodidae

Subfamily: Mecopodinae

Mecopoda elongata (L.) Saipan CNMI 2001, Sarigan CNMI 2001, Tinian (Tinian collection)
2002, Guam 1984

Family: Phaneropteridae

Subfamily: Phaneropterinae

Phaulula trukensis Willemse Guam 1958, Rota 1946, Rota CNMI 1975-2002, Agiguan 1954,
Tinian 1952, Saipan 1940, Saipan CNMI 1965-2000.

{*Elimaea punctifera* (Walker) Guam 1950's}

Holochlora fuscospinosa Brunner v. W. Saipan CNMI 1970, Guam 1984

Phaneroptera furcifera Stal Saipan 1977, Saipan CNMI 2000; Tinian 1985, CNMI 2002,
Anatahan 1992, CNMI 2002, Rota CNMI 2002, Guam 1984

Family: Conocephalidae

Subfamily: Conocephalinae

Conocephalus longipennis (Haan) Guam 1946, Saipan 1946, Rota 1946

Conocephalus upoluensis (Karny) Saipan 1936

Subfamily: Copiphorinae

Euconocephalus pallidus (Redtenbacher) Alamagan 1992

Euconocephalus nasutus (Thunberg) Saipan 1971, Saipan CNMI 1970-2001, Rota 1951,
Tinian 1984, CNMI 2002, Pagan 1954, Sarigan CNMI 2001, Guam 1984

Subfamily: Agraeciinae

Salomona guamensis Hebard Guam 1986, Rota 1969

Family: Meconematidae

Subfamily: Phisidini

Phisis parva Kevan Saipan 1946, Tinian 1946, Rota 1946, Sarigan CNMI 2001, Anatahan CNMI
2002, Guam 1952

Phisis sp Alamagan 1992

Superfamily: Gryllacridoidea

{*Niphetogryllacris marianae* Vickery and Kevin Guam 1979}

{*Melaneremus marianae marianae* Vickery and Kevan Guam 1979}

Melaneremus marianae rotaensis Vickery and Kevan Rota 1946

Melaneremus saiensis Vickery and Kevan Saipan 1946

Family: Gryllacrididae

Species A Saipan CNMI 2000

Unidentified

1. Conocephalidae Sp A Saipan CNMI 1972-2000.
2. A large species Tinian CNMI 2002
3. The species identified as *Conocephalus nasutus* may be a mixed collection of three species.

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
- Vickery, Vernon R., D. Keith McE. Kevan and Mary-Lynn English. 1999. Insects of Micronesia 5 (4), Gryllacridoidea, Rhaphidophorioidea and Tettigonoidea (Grylloptera). In: Micronesica 32(1): 11 - 83

Phylum: Arthropoda Class: Insecta Order: Orthoptera Suborder: Ensifera

Diversity

Micronesia – 14 + species, Mariana Isl. 14 (to 19 ?) – species, CNMI - 5 (to 10 ?) species

Ecological and human significance

The crickets are mainly nocturnal plant or debris feeders, and are not well known in the CNMI. Further collecting is required to ascertain species richness and distribution, and their effect on crops and ornamentals.

Conservation

At present there is little to say about conservation issues regarding crickets.

Identification

There are no keys for in house identification, specimens have been sent to Dr. Dan Otte, Philadelphia Academy of Natural Sciences, U.S.A. Identifications are awaited..

Records of crickets and mole-crickets from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Oecanthinae sp.				X							
Eneopterinae sp.				X							
Anaxipha sp	x		x		x				x		
Trigonidiinae sp A			X								
Trigonidiinae sp B			X								
Trigonidiinae sp C			X								
Ornebius sp					x	x	x		x		x
Mogoplistinae sp A			X								
Polionemobius sp.							x	x	x		
Nemobinae sp A			X								
Trigonidiinae sp A			X								
Trigonidiinae sp B			X								
Trigonidiinae sp C			X								
Gryllotalpa orientalis	x		X	X		X					

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Gryllidae

Subfamily: Oecanthinae Tree crickets

Oecanthus rufescens A. – Serv. In Guam collection
Oecanthinae sp. Saipan CNMI 1970-2000

Subfamily: Eneopterinae Bush crickets
Ahponoides gracilis chop In Guam collection
Eucyrtus hemelytrus (Haan) In Guam collection
Lebinthus bitaeniatus Stal In Guam collection
? Sp A Saipan 2000

Subfamily: Trigonidiinae Sword-bearing crickets
Anaxipha rubinotata chop. In Guam collection
Anaxipha sp. Agrihan, Anatahan, Rota, Saipan 1992
Trigonidium(*Metioche*) *vittaticollis vittaticollis* Stal In Guam collection
?Sp. A Saipan, Tank Beach, Papago CNMI 2000
?Sp. B Saipan, Tank beach, Talofoto, Papago CNMI 2000-2001
?Sp C Saipan, Tank Beach CNMI 2000, Sarigan CNMI 2001
?Sp D Rota CNMI 2002
?Sp. E Rota CNMI 2002n

Subfamily: Mogoplistinae
Ornebius sp. Agrihan, Anatahan, Guguan, Sarigan, Maug 1992; Guam - in Guam collection
?Sp. A Saipan CNMI 2000

Subfamily: Nemobinae
Polionemobius sp. Agrihan, Alamagan, Guguan 1992
Pteronemobius taprobanensis (Walker) In Guam collection
Pteronemobius tarsipes (Walker) In Guam collection
?Sp. A Saipan CNMI 2001

Subfamily: Gryllinae
Acheta oceanica (Leguillon) ?Saipan CNMI 1971, In Guam collection
Gryllodes sigillatus (=supplicans) (Walker) Guam 1946
Modicogryllus (=Gryllus) *conspersus* Schaum Guam
Modicogryllus sp. In Guam collection
Sp. A Tinian CNMI 1997
Sp. B Saipan CNMI 2001
Sp. C Tinian CNMI 1971

Family: Gryllotalpidae
Gryllotalpa orientalis Burmeister Oriental mole cricket This cricket was incorrectly referred to as the African mole cricket (*G. africana*) until the error was corrected in the late 1980's.
Saipan CNMI 1970-2001, Rota 1946, Tinian CNMI 1972, Anatahan CNMI 2002, Guam CNMI 1966

References

- Anon. Undated. Oriental mole cricket At: <http://molecrickets.ifas.ufl.edu>
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
Swezey, O.H. 1946. Orthoptera and related orders of Guam. In: Insects of Guam – II, pp 3-8. Bulletin 189, Bernice P. Bishop Museum, Honolulu, Hawaii. 257 pp.

Phylum: Arthropoda Class: Insecta Order: Mantodea

Diversity

Micronesia – 9 species, Mariana Isl. – 7 species, CNMI - 4 species

Ecological and human significance

Mantids, or praying mantises (not “preying mantises”), are diurnal predators and feed mainly on invertebrates caught in their spiny front legs. They are thus in some ways beneficial Insects by killing some insect pests, but also catch pollinating insects, such as bees.

Conservation

There is confusion as to whether some of the species were introduced or not. Further collections from other islands might indicate answers.

Identification

There are no keys for in house identifications.

Records of mantids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Orthodera burmeisteri</i>				X	X									
<i>Hierodula patellifera</i>		X	X	X	X									
<i>Statilia pallida</i>				x	X									
<u><i>Tenodora angustipennis</i></u>				X	X		X	X						

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Orthoderidae

Orthodera burmeisteri Wood-Mason Saipan 1958, CNMI 1970-1971; Tinian CNMI 1970, Guam (n.d.).

Family: Mantidae

Hierodula patellifera (Audinet-Serville) Saipan CNMI 1979-2002; Tinian CNMI 2002, Aguiguan CNMI 2002, Rota CNMI 2000, Guam 1989

{*Polyspilota aeruginosa* (Goeze) Guam (n.d.)}

Statilia pallida Werner Tinian 1985, Saipan CNMI 1973-2000, Guam (n.d.).

Tenodora angustipennis Saussure Saipan 1971, CNMI 1979-1982; Tinian CNMI 1972 - 2002; Sarigan CNMI 2001, Anatahan CNMI 2002 – a nest from which 112 young hatched was collected; Guam ? (n.d.).

{*Tenodora australasiae* (Leach) Guam (n.d.)}

Family: Sibyllidae
{*Sibylla pretiosa* Stal Guam (n.d.)}

References

Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.

Phylum: Arthropoda Class: Insecta Order: Blattaria

Diversity

Micronesia – 27 species, Mariana Isl. – 19 + species, CNMI – 19 species

Ecological and human significance

Some species of cockroaches are well known as invaders of habitations, often becoming serious pests by food damage. None is known to be a specific vector of disease. Some cockroaches are winged, others are wingless, and many live in litter and debris, or under stones or logs, of woodland and forest. They all feed on various forms of dead or decaying vegetable or animal matter.

Conservation

Too little is known about the cockroaches in the CNMI and surveys need to be carried out to determine presence and habitats of indigenous species. Introduced species should be eliminated or controlled whenever possible.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of cockroaches from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
“Black stinking cockroach”				X										
Periplaneta americana				X						x				
Periplaneta australasia					x					x				
?Platyzosteria(= Cutilia)														
soror			x				X							
Blattid Sp. A						X								
Blattid Sp. B										X				
Blattid sp. C		X								X				
Pycnoscelus indicus		x				x	x	x	x	x				x
?Pycnoscelus indicus			X	X		X	X							
?Pycnoscelus surinamensis					X									
Balta notulata							x		x	x				x
? “ “ “	X				X		X			X				
Blatella germanica			x	X										
Blatella lituricollis			x	x						x				
<u>Megamareta fascifrons</u>			x											
Blatellid Sp A					X									
Blatellid Sp.B					X									
Blatellid Sp. C						X	X							
Blatellid Sp. D					X									

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Blattidae

Neostylopyga rhombifolia (Houttyn in Stoll) Guam n.d.

Periplaneta americana (L.) American cockroach Guam n.d., Saipan CNMI 1971-2001 ,
Pagan 1992

Periplaneta australasia (Fabricius) Australasian cockroach Anatahan 1992, Pagan 1992
Guam n.d.

Platyzosteria(= *Cutilia*) *soror* Brunner v. W. Guam , Tinian n.d., ?Sarigan 1992

"Black stinking cockroach" Saipan CNMI 2001

Family: Blaberidae (=Nauphoetidae)

Pycnoscelus indicus (F.) Rota 1992, Aghrihan 1992, Alamagan 1992, Anatahan 1992, ?CNMI
2002, Guguan 1992, Pagan 1992, Sarigan 1992, ?CNMI 2002, ?Aguiguan CNMI 2002,
?Tinian CNMI 2002, Uracas 1992, Guam ? n.d.

Pycnoscelus surinamensis (L.) ?Saipan CNMI 1972-2001, Guam n.d.

Family: Blatellidae

Balta (= *Onychostylus*) *notulata* (Stal) ?Rota CNMI 1979, Agrihan 1992, Alamagan 1992, Pagan
1992, Sarigan 1992, Maug 1992, Guam , Tinian n.d.

Balta sp. Locality ? "a small pale green species on leaves of trees with denser foliage"

Blatella germanica (L.) German cockroach Saipan CNMI 1973, Guam , Tinian n.d's

Blatella lituricollis (Walker) Guam, Saipan, Tinian n.d., Pagan 1992

Margattea sp. nov. Guam 1969

Megamareta fascifrons (Chopard) Guam n.d. , Tinian 1984,

Supella longipalpa (F.) Guam n.d.

Symploce pallens (Stephens) Guam

Sp. A Saipan CNMI 1998-2002

Sp. B Saipan CNMI 2001

Sp. C Anatahan CNMI 2002, Sarigan CNMI 2001

Sp. D Saipan CNMI 2002

At least 6 species still require identification, and named animals need the identifications confirmed.

References

Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.

Swezey, O.H. 1946. Orthoptera and related orders of Guam. In: *Insects of Guam – II*, pp 3-8. Bulletin 189, Bernice P. Bishop Museum, Honolulu, Hawaii. 257 pp.

Phylum: Arthropoda Class: Insecta Order: Isoptera

Diversity

Micronesia – 23 species, Mariana Isl. – 9 species, CNMI - 4 species

Ecological and human significance

Termites are small to medium sizes Insects that live in colonies and have a highly developed caste system. Some live in moist subterranean habitats, and others live in dryer habitats above ground. Most termites eat wood, and are thus a considerable pest to many people. Ecologically they are important as being able to break down wood, and thus aid in soil formation. They are also a prey item fed upon by many vertebrates and invertebrates - especially when the winged reproductive caste (the kings and queens) swarm out to form new colonies, usually after rain when the earth is moist.

Conservation

It is possible that all the termite species in CNMI were introduced. As such, the only conservation issue is their control or elimination.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of termites from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Cryptotermes domesticus</i>					x	X	x				
<i>Neotermes connexus</i>	X		X		X						
<i>Coptotermes formosanus</i> (?)			X								
<i>Proterhinotermes</i>											
<i>inopinatus</i>			X		X			x	x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Suborder: Afontanella

Family: Kalotermitidae

Cryptotermes domesticus (Haviland) Agrihan, Anatahan, Guguan, Sarigan 1992, Sarigan
CNMI 2001; Guam n.d.

{*Cryptotermes daidleyi* Bank Guam 1993}

{*Incisitermes marianus* (N. Holmgren) Guam n.d.}

Neotermes connexus (Snyder) Saipan CNMI 2001, Rota CNMI 1970; Anatahan CNMI 2002,
Guam n.d.

Suborder: Fontanella

Family: Heterotermitidae (=Rhinotermitidae)

Coptotermes formosanus Shiraki Saipan CNMI 2001; Guam (see next species)

Coptotermes vastator Light Guam 1993 (No *c. formosanus* collected during 1993 survey, possibly original wrong identification, and possibly the specimens from Saipan named *c. formosanus* are *c. vastator*)

Prorhinotermes inopinatus Silvestri Saipan CNMI 2001; Agrihan 1992, Pagan 1992, Anatahan 1992, CNMI 2002, Guam n.d.

Family: Macrotermitidae

{*Microtermes* sp. Guam 1993}

Family: Nasutitermitidae

{*Nasutitermes* sp. Guam 1993}

References

- Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.
- Miles T. G. 1998. www.utoronto.ca
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.
- Nay-Yao Su and R.H. Scheffrahn. 1998. *Coptotermes vastator* Light (Isoptera: Rhinotermitidae). *Proc. Hawaiian Ento. Soc.* 33: 13-18

Phylum: Arthropoda Class: Insecta Order: Dermaptera Suborder: Forficulodea

Diversity

Micronesia – 28 species, Mariana Isl. – 9 species, CNMI - 8 species .

Ecological and human significance

Earwigs are largely nocturnal and hide during the day in cracks, crevices, under bark and in similar places. They are mainly scavengers, but sometimes herbivorous. The eggs are laid in burrows in the ground and are guarded by the female until they hatch. Earwigs are harmless to people, although the large species can exert a painful pinch with their cerci, or anal forceps. They have not been implicated in any crop, stock or materials damage.

Conservation

At present there is not enough information to say whether any conservation issues apply to earwigs. However, as many indigenous vegetation communities should be conserved as possible.

Identification

Keys are available for in house identification.

Records of earwigs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<u>Euborellia annulata</u>	X		x	X		X					
<u>Euborellia annulipes</u>				X	x		x		x		x
Labidura riparia				X							
Chaetospania fuscata											
clavata						X					
<u>Paralabellula curvicauda</u>			x	X		x		x		x	
<u>Nesogaster aculeatus</u>			x	X							
<u>Chelisoches morio</u>	X			X		X	X			x	
<u>Hamaxas nigrorufus</u>				X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Anisolabididae (=Carcinophoridae)

Euborellia annulata (F.) (=stali (Dohrn)) Saipan 1945, CNMI 1974, Tinian 1945, Anatahan CNMI 2002, Rota CNMI 1980, Guam 1952

Euborellia annulipes (Lucas) Saipan 1958, CNMI 1980-2002, Tinian 1945, Alamagan, Asuncion, Sarigan, Maug 1992, Guam 1945

**Anisolabis maritima* Gene Seaside earwig

Family: Labiduridae

Labidura riparia (Pallas) Saipan 1944, CNMI 1974

Family: Spongiphoridae (=Labiidae)

Chaetospania fuscata clavata Brindle Anatahan CNMI 2002, Guam 1945

Paralabellula (= *Labia*) *curvicauda* (Motshulsky) Saipan 1945, CNMI 2000, Tinian 1945, Agrihan, Alamagan, Anatahan 1992, Guam 1947

{*Spirolabia* (= *Labia*) *pilicornis* (Motschulsky) Guam 1911}

Nesogaster aculeatus (Bormans) (= *reditus* Rehn) Guam 1945, Tinian 1945, Saipan CNMI 1980-2002

**Marava arachidis* (Yersin)

Family: Chelisochidae

Chelisoches morio (Fabricius) Large black earwig Saipan 1946, CNMI 1974-2001, Agrihan

1992, Sarigan CNMI 2001, Anatahan CNMI 2002, Rota 2000 (in Rota collection), Guam 1958

Hamaxas nigrorufus (Burr) Saipan 1945, CNMI 2000

- = species included in list because they are likely to be recorded from CNMI

References

Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Embiidina Suborder: Embiodea
Family: Oglitomatidae

Diversity

Micronesia – 5 species, Mariana Isl. – 3 species, CNMI - 3 species

Ecological and human significance

Webspinners are small (up to 8 mm long) slender insects which live in sheltered places in silken galleries, constructed by themselves. They feed on various plant materials, principally dead grass and leaves, moss, lichens and bark., and therefore contribute to soil formation. They are prey to small invertebrate predators.

Conservation

At present there is not enough information to say whether any conservation issues apply to webspinners. However, as many habitats indigenous to the CNMI as possible should be protected.

Identification

There are keys available for in house identification.

Records of webspinners from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac

<i>Aposthonia micronesiae</i>				X				x						
<u><i>Oligtoma humbertiana</i></u>		x		x				X						
<i>Oligotomidae</i> sp.								x					x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Aposthonia micronesiae (Ross) Anatahan 1951, Saipan CNMI 2002
Oligtoma humbertiana (Saussure) Saipan 1945, Tinian 1945, Anatahan CNMI 2002, Guam 1945
Oligotomidae sp. Agrihan, Anatahan 1992

References

- Kevan, D. Keith McE and Vernon R. Vickery. 1997. An annotated provisional list of non-saltatorial orthopteroid Insects of Micronesia, compiled mainly from literature. *Micronesica* 30(2): 269-353.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.
- Ross, Edward S. 1955. Embioptera. In: *Insects of Micronesia* 8(1): 1 – 8.

Phylum: Arthropoda Class: Insecta Order: Psocoptera

Diversity

Micronesia – 90 species, Mariana Isl. – 54 species, CNMI - 41 species

Ecological and human significance

Psocids are small soft-bodied insects, mostly less than 6 mm long. Wings can be present or absent. The insects live on the bark or foliage of trees and shrubs, or under bark or stones. Their food consists of moulds, fungi, cereals, pollen, fragments of dead insects and similar materials. They do no harm to human beings.

Conservation

As many indigenous habitats should be conserved in the CNMI as possible.

Identification

There are no keys for in house identification, specimens have been sent to the Bishop Museum, Honolulu.

Records of psocids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac

Archipsocus dybasi														X
Archipsocus spinosus														X X
<u>Caecilius analis</u>	X													X
Caecilius casarum														X X
Caecilius leuroceps														X
Ectopsocopsis														
cryptomeriae													X	X
Ectopsocus briggsi														X
Ectopsocus denervis														X
Ectopsocus fenestratus													X	X
Ectopsocus maindroni													X	X
Ectopsocus marginatus													X	X
<u>Ectopsocus ornatoides</u>													X	X
Ectopsocus pumilis														X
Ectopsocus thysanus													X	X
Lachesilla pedicularia														X
<u>Cyrtophania marginata</u>													X	X
<u>Echmepteryx lunulata</u>													X	X
Echmepteryx														
madagascariensis													X	X
Echmepteryx picticeps													X	X
Echmepteryx dybasi														X
<u>Lepidosocus maculatus</u>														X

Species	Islands									
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<u>Lepidosocus marmoratus</u>	x	x	
<u>Lepidosocus pretiosus</u>	x	x	x
Lepidosocus pallidus		x	
Nepticulomima lineatus	x		
Lophopterygella			
cincticornis	x		
<u>Myopsocus clunius</u>		x	
<u>Myopsocus punctatus</u>	x	x	
<u>Pachytroctes insularis</u>	x	x	
<u>Tapinella formosana</u>	x	x	
Tapinella mariana	x		
<u>Tapinella pictipenna</u>		x	
<u>Peripsocus ferrugineus</u>	x	x	
<u>Peripsocus pauliani</u>	x	x	
Haplophallus fuscistigma		x	
<u>Heterocaecilius dybasi</u>	x	x	
<u>Lobocaecilius fennecus</u>		x	x
<u>Pseudocaecilius criniger</u>		x	
<u>Pseudocaecilius</u>			
<u>tahitiensis</u>	x	x	
<u>Ptycta angulata</u>	x	x	
Ptycta marianensis	x	x	
<u>Rhyopsocus pandanicola</u>	x	x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Pseudocaeciliidae (=Archipsocidae, Caeciliidae)

Archipsocus dybasi Thornton, Lee and Chin Tinian 1945

Archipsocus spinosus Thornton, Lee and Chin Saipan 1945, Tinian 1945

Caecilius analis Banks Saipan 1945, Tinian 1945, Rota 1951, Pagan 1951

{*Caecilius arotellus* Banks Guam (Banks, 1942)

Caecilius casarum Badonnel Saipan 1945, Tinian 1945

Caecilius leuroceps Thornton, Lee and Chin Saipan 1945, Guam 1957

Caecilius marianus Thornton, Lee and Chin Guam 1958}

Family: Ectopsocidae

Ectopsocopsis cryptomeriae (Enderlein) Saipan 1945, Tinian 1945

Ectopsocus briggsi McLachlin Saipan 1945

Ectopsocus denervis Thornton and Wong Saipan 1945, Guam 1945

Ectopsocus fenestratus Thornton and Wong Saipan 1958, Tinian 1945, Guam 1952

Ectopsocus maindroni Badonnel Saipan 1945, Tinian 1945

Ectopsocus marginatus Thornton and Wong Saipan 1945, Tinian 1945, Guam 1958

Ectopsocus ornatoides Thornton and Wong Saipan 1945, Tinian 1945

Ectopsocus pumilis (Banks) Saipan 1945

{*Ectopsocus salpinx* Thornton and Wong Guam 1958}

Ectopsocus thysanus Thornton and Wong Saipan 1945, Tinian 1945, Guam 1958

Ectopsocus waterstradti (Enderlein) Guam (Banks, 1942)

Family: Hemipsocidae

{Hemipsocus chloroticus (Hagen) Guam 1958}

Family: Lachesillidae

Lachesilla pedicularia (Linnaeus) Saipan 1945

Family: Lepidopsocidae

Cyrtophania marginata Thornton, Lee and Chin Saipan 1951, Tinian 1945, Guam 1958

Echmepteryx lunulata Thornton, Lee and Chin Saipan 1945, Tinian 1945, Guam 1945

Echmepteryx madagascariensis (Kolbe) Anatahan 1951, Saipan 1945

Echmepteryx picticeps Thornton, Lee and Chin Saipan 1945, Tinian 1945

Echmepteryx dybasi Thornton, Lee and Chin Saipan 1945

Lepidosocus maculatus Thornton, Lee and Chin Saipan 1945

Lepidosocus marmoratus (Banks) Saipan 1945, Tinian 1945

Lepidosocus pretiosus (Banks) Pagan 1940, Saipan 1951, Tinian 1945, Guam 1950

Lepidosocus pallidus Thornton, Lee and Chin Saipan 1945

Nepticulomima lineatus Thornton, Lee and Chin Tinian 1945

{Soa dahliana Enderlein Guam (Banks, 1942)}

Family: Myopsocidae

Lophopterygella cincticornis Thornton, Lee and Chin Tinian 1945

{Myopsocus bakeri Banks Guam 1936}

Myopsocus clunius Thornton, Lee and Chin Saipan 1945

Myopsocus punctatus Thornton, Lee and Chin Saipan 1945, Tinian 1945, Guam 1952

Family: Pachytroctidae

Pachytroctes insularis Thornton, Lee and Chin Saipan 1945, Tinian 1945

Tapinella formosana Enderlein Saipan 1945, Tinian 1945

Tapinella mariana Thornton, Lee and Chin Tinian 1945

Tapinella pictipenna Thornton, Lee and Chin Saipan 1945

Family: Peripsocidae

Peripsocus ferrugineus Thornton, Lee and Chin Saipan 1945, Tinian 1945, Guam 1958

Peripsocus pauliani Badonnel Saipan 1945, Tinian 1945

{Peripsocus suffitus Enderlein Guam (Banks, 1942)}

Family: Philotarsidae

Haplophallus fuscistigma Thornton, Lee and Chin Saipan 1945

Family: Pseudocaeciliidae

Heterocaecilius dybasi Lee and Thornton Saipan 1945, Tinian 1945

Lobocaecilius fennecus Lee and Thornton Anatahan 1951, Saipan 1945, Guam 1958

Pseudocaecilius criniger (Perkins) Saipan 1945, Guam 1945

{Pseudocaecilius marshalli Karny Guam 1936}

Pseudocaecilius tahitiensis (Karny) Saipan 1945, Tinian 1945

{Pseudoscotiella ornatus (Banks) Guam 1958}

Family: Psocidae

Ptycta angulata Thornton, Lee and Chin Saipan 1951, Tinian 1945, Guam 1936

Ptycta marianensis Thornton, Lee and Chin Saipan 1945, Tinian 1945, Guam 1958

{Ptycta parvula Thornton, Lee and Chin Guam 1957}

Family: Psoquillidae

Rhyopsocus pandanicola Thornton, Lee and Chin Saipan 1945, Tinian 1945, Guam 1952

Family: Psyllipsocidae

{Psyllipsocus ramburii Selys-Longchamps Guam (Banks, 1942)}

References

Thornton, Ian W. B., Lee S. S. and W.D.Chin. 1972. Psocoptera. In: Insects of Micronesia
8(4): 45 – 144.

Phylum: Arthropoda Class: Insecta Order: Mallophaga

Diversity

Micronesia – 200 species (estimated), Mariana Isl. – 12 species, CNMI - ? species

Ecological and human significance

Chewing lice are small, usually flattened , wingless external parasites on birds and mammals, but not man. They feed on bits of hair, feathers and skin of the host. Some species are important pests of domestic pets, particularly poultry.

Conservation

At present there is not enough information to say whether any conservation issues apply chewing lice.

Identification

There are no keys for in house identification.

Records of chewing lice from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

No species recorded

References

Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.

Phylum: Arthropoda Class: Insecta Order: Anoplura

Diversity

Micronesia – 6 species, Mariana Isl. – 5 species, CNMI – 2 species

Ecological and human significance

Sucking lice are small, wingless external parasites of mammals and birds, and there are three species that parasitize man. The lice feed on blood and some are important vectors of disease, as well as being irritants to their hosts.

Conservation

At present there are no records of indigenous lice in the region. Hence there is no concern for the survival of sucking lice in the CNMI.

Identification

There are no keys for in house identification.

Records of sucking lice from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Hoplopleura pacifica</i>		x	x								
<i>Linognathus africanus</i>				x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Haematopinidae

Haematopinus tuberculatus (Burmeister) Guam 1945 (ex *Bos bubalus*)

Haematopinus suis (Linnaeus) Guam 1939 (ex *Sus scrofa*)

Family: Hoplopleuridae

Hoplopleura pacifica Ewing Saipan 1945, Tinian 1945 (ex *Rattus* sp; and *Rattus rattus*)

Family: Linognathidae

Linognathus africanus Kellogg and Paine Saipan 1944 (ex *Capra hirtus*)

Family: Pediculidae

Pediculus humanus (Linnaeus) Guam 1937 (ex humans)

References

- Ferris, G.F. 1959. Anoplura. In: Insects of Micronesia 8(2): 9 – 12.
 Wilson, Nixon. 1972. Anoplura – Supplement. In: Insects of Micronesia 8(4): 145-14 8.
 Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.

Diversity

Ecological and human significance

Conservation

Identification

Records of backswimmers from CNMI indicating areas (blank spaces) from which records are required.

[illegible]

Species list

Anisops sp. Rota 1992
Anisops cleopatra Guam (Townes 1946)
Anisops nasuta Guam (Townes 1946)

References

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera)
Suborder: Amphibicorizae Family: Gerridae

Diversity

Micronesia – 7 (+ ?) species, Mariana Isl.– 7(+ ?) species, CNMI - 3 (to 6 ?) species.

Ecological and human significance

Water-striders are long-legged, small insects which live on the surface of water, either running or skating on it. There are freshwater and marine species of quiet or protected waters. They feed on on invertebrates falling on the water surface, and are harmless to man.

Conservation

As many natural frehwater bodies should be preserved as possible .

Identification

There are no keys for in house identification.

Records of water striders from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u><i>Halobates mariannarum</i></u>	x	
<u><i>Halobates micans</i></u>		“Mariana Islands”
<u><i>Halobates sericeus</i></u>		“Mariana Islands”
Gerridae species A	X	
Gerridae species B	X	
Gerridae species C	X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Halobates mariannarum Esaki Mariana islands Rota, Guam (Townes 1946).
Halobates micans Escholtz An open ocean species Mariana islands
Halobates sericeus Escholtz An open ocean species. Mariana islands
Limnometra ciliata Guam collection, fresh water
Limnometra pulchra Mayr Guam collection, fresh water
Limnogonus fossarum (F.) Guam collection, fresh water
Limnogonus luctuosus (Montrouzier) Guam collection, fresh water
 “Three species of *Limnogonus* occur in the southern Marianas.” Townes 1946.

References

Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.
 Herring, J.L. 1961. The Genus *Halobates*. Pacific Insects 3(2-3): 223-305.

Diversity

Ecological and human significance

Conservation

Identification

Records of water runners from CNMI indicating areas (blank spaces) from which records are required.

[illegible]

Species list

Halovelvia sp. Guam (Townes 1946)
Microvelia douglasi Guam (Townes 1946)
Microvelia diluta Saipan, Guam (Townes 1946)

References

Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.

Diversity

Ecological and human significance

Conservation

Identification

Records of shore bugs from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Saldula guamensis Drake and Hottes Guam 1936

Saldula marianarum Usinger Guam 1936

Salduncula swezeyi (Usinger) Guam 1945

References

Drake, Carl J. 1961. Hemiptera: Saldidae. In: *Insects of Micronesia* 7(6): 287 – 305.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Cimicidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species .

Ecological and human significance

Bed-bugs are flat, wingless parasites, feeding on blood of birds and mammals. The only species listed below feeds on man, and although the bites are irritating, the species is not a disease vector.

Conservation

The only species recorded is alien, and there are no conservation issues other than controlling or destroying the populations.

Identification

There are no keys for in house identification.

Records of bed-bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Cimex hemipterus	x
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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Cimex hemipterus (Fabricius) Saipan 1944, Guam 1936

References

Usinger, Robert L. and G. F. Ferris. 1960. Heteroptera: Cimicidae. In: Insects of Micronesia 7(5); 285 – 286.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Anthocoridae

Diversity

Micronesia – 20 species, Mariana Isl. – 14 species, CNMI - 12 species .

Ecological and human significance

Most minute pirate bugs are black with white markings, are 3-5 mm long and live on flowers, while some occur under loose bark, in leaf litter or in decaying fungi. They feed on small insects and insect eggs and are harmless to man.

Conservation

Natural vegetation types in the CNMI should be conserved wherever possible, and the use of insecticides should be limited to absolutely necessary applications.

Identification

There are keys for in house identification.

Records of minute pirate bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguhan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands												
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug

Blaptostethus pacificus														X
Amphiareus constrictus														x
Buchananiella sodalis		x		x		x							x	
<u>Cardiastethus minutissimus</u>														x
Lasiochilus campylus														x
<u>Lasiochilus marianensis</u>		x		x										
<u>Lasiochilus mesostenus</u>														x
<u>Lasiochilus palauensis</u>														x
<u>Lasiochilus swezeyi</u>													x	
<u>Physopleurella mundula</u>														x
Scoloposcelis parallelus		x		x										
Xylocoris dybasi														x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Anthocorinae

Blaptostethus pacificus Herring Saipan 1951, CNMI 1971

Orius niobe Herring Guam 1952

Subfamily: Lictocorinae

Amphiareus constrictus (Stal) Saipan 1945, Guam 1945
Buchananiella sodalis (White) Pagan 1939, Anatahan 1951, Saipan 1945, Tinian 1945, Guam 1952
Cardiastethus minutissimus Usinger Saipan 1945, Guam 1945
Lasiochilus ather Herring Guam 1945
Lasiochilus campylus Herring Saipan 1945, Guam 1945
Lasiochilus marianensis Usinger Saipan 1945, Tinian 1945, Guam 1946
Lasiochilus mesostenus Herring Saipan 1945, Guam 1945
Lasiochilus palauensis Herring Saipan 1944, Guam 1945
Lasiochilus swezeyi Usinger Pagan 1940, Saipan 1940, Guam 1936
Physopleurella mundula (White) Saipan 1945, Guam 1946
Scoloposcelis parallelus (Motschusky) Saipan 1945, Tinian 1945, Guam 1946
Xylocoris dybasi Herring Saipan 1945, Guam 1945

Unidentified species

Two unidentified species Saipan CNMI 1970-1980

References

Herring, Jon L. 1967. Heteroptera: Anthocoridae. In: Insects of Micronesia 7(8): 392 – 414.

Diversity

Ecological and human significance

Conservation

Identification

Records of leaf bugs from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

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Lygus saipanensis			x
Sidnia rotaensis	x	x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Cylapinae

Fulvius angustatus Usinger Pagan 1940, Saipan 1940, Guam 1945
 {*Fulvius brevicornis* Reuter Guam 1945}
 {*Peritropis guamensis* Carvalho Guam 1945}

Subfamily: Deraeocorinae

Deraeocoris guamensis Usinger Guguan 1992 ?, Guam 1945
 {*Deraeocoris trukensis marianae* Carvalho Guam 1952}
Deraeocoris ponapensis Carvalho Saipan 1940

Subfamily: Bryocorinae

{*Felisacus crassicornis* Usinger Guam 1952}
Felisacus ochraceus Usinger Saipan 1940, Guam 1952
 {*Monalocoris filicis* (Linnaeus) Guam 1945}

Subfamily: Phylinae

Campylomma breviceps Usinger Tinian 1956, Pagan 1992, Guam 1952
Campylomma bruneicollis Usinger Pagan 1940, Saipan 1940, Rota 1951, Guam 1950
Campylomma lividicornis Reuter Pagan 1992
Campylomma pallida Usinger Tinian 1946
Tytthus Chinensis (Stal) Saipan 1945, Tinian 1946, Rota 1936, Guam 1952
Psallops oculatus Usinger Saipan 1945
Cyrtopeltis nicotianae (Konigsberger) Saipan 1949
Cyrtopeltis tenuis (Reuter) Saipan 1946, Tinian 1946, Guam 1952

Subfamily: Orthotylinae

{*Halticus insularis* Usinger Island fleahopper Guam 1952}
Halticus tibialis Reuter Black garden fleahopper Saipan CNMI 1970-1977, Agrigan CNMI 1971, Sarigan CNMI 2001, Tinian 1952, Rota 1951, Guam 1952
Cyrtorhinus lividipennis Reuter Rota 1952, Guam 1945
 {*Orthotylellus pallescens* Usinger Guam 1945}
 {*Orthotylellus rufescens* Usinger Guam 1946}
Orthotylellus signatus (Usinger) Saipan 1951, Rota 1936, Guam 1952
Pseudoloxops bifasciatus (Usinger) Rota 1946, Guam 1952
Zanchius fragilis Usinger Rota 1940, Guam 1952
 {*Zanchius piperi* Usinger Guam(n.d.)}
 {*Zanchius virescens* Usinger Guam (n.d.)}

Subfamily: Mirinae

Trigonotylus dohertyi (Distant) Pagan 1940, Rota 1952, Anatahan 1992, Guam 1952
 {*Hyalopeplis guamensis* Usinger Guam 1945}
Macrolonidea hyalinus Usinger Saipan 1944, Tinian 1946
Creontiades pallidifer (Walker) Sweetpotato yellow bug Saipan 1946, Rota 1936, Agrihan, Anatahan, Asuncion, Maug, Uracas 1992, Guam 1952
Eurystylus costalis var. *unicolor* Poppius Pagan 1951, Guam 1952

Lygus fullawayi Usinger Tinian 1946, Agiguan 1952, Guam 1952
Lygus guamensis Usinger Rota 1946, Guam 1945
 {*Lygus pallidulus* (Blanchard) Guam 1952}
Lygus rotaensis Carvalho Rota 1946, Tinian 1946
Lygus rubrotinctus Carvalho Saipan 1940
Lygus saipanensis Carvalho Saipan 1940
 {*Nesodaphne marianaensis* Usinger Guam 1946}
 {*Proboscidocoris malayus* Reuter Guam pre 1907}
 {*Sidnia cruzi* (Usinger) Guam (n.d.)}
Sidnia rotaensis Carvalho Rota 1946

References

- Carvalho, Jose C. M. Heteroptera: Miridae. In: Insects of Micronesia 7(1): 1-100.
 Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Nabidae

Diversity

Micronesia – 4 species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

Damsel bugs are small bugs which predate on many different kinds of insects, including aphids and small caterpillars. They are harmless to humans.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of damsel bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Nabis capsiformis	x		x	X		X		x		x				
<u>Nabis nigrolineatus</u>						x	x	x		x	x	x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Nabis capsiformis Germar Agrihan 1951, Alamagan 1949, Saipan 1946, Saipan CNMI 1970, Tinian 1952, Rota 1951, Sarigan CNMI 2001 , Guam 1957

Nabis nigrolineatus (Distant) Agrihan, Alamagan, Anatahan, Asuncion, Guguan, Maug 1992.

References

- Gross, Gordon F. 1963. Heteroptera: coreidae, Neididae and Nabidae. In: Insects of Micronesia 7(7): 357-390
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Eniocephalidae

Diversity

Micronesia – 5 species, Mariana Isl. – 1 species, CNMI - 0 species

Ecological and human significance

Gnat bugs are small, slender predatory bugs feeding on small invertebrates. They are harmless to humans.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of gnat bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Onyclocotes swezeyi Usinger Guam 1945

References

Usinger, Robert L. and Pedro Wygodzinsky. Heteroptera: Eniocephalidae. In: Insects of Micronesia 7(5): 219 – 230.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Reduviidae

Diversity

Micronesia – 30 species, Mariana Isl. – 11 species, CNMI– 2 species

Ecological and human significance

Assassin bugs are medium sized- to large (up to 25 mm). Most are predators feeding on other insects, but a few are blood-sucking and frequently bite man. No bloodsucking assassin bugs are known from the CNMI however.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of assassin bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Peregrinator biannulipes

x

Scadra rufidens

X

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Emesinae

Ademula distincta Usinger Guam (Usinger, 1946)

Emesopsis nubilis Uhler Guam 1945

Emesopsis pallidicoxa (Usinger) Guam 1945

Empicoris minutus Usinger Guam 1947

Empicoris tessellatoides Wygodzinsky and Usinger Guam (Usinger, 1946)

Ploiaria insolida (B.White) Guam 1945

Subfamily: Saicinae

Polytoxus marianensis Usinger Guam (Usinger, 1946)

Polytoxus pilosa Usinger Guam (Usinger, 1946)

Subfamily: Reduviinae

Peregrinator biannulipes Montrouzier and Signoret Saipan 1944, Guam 1945

Physoderes minor Usinger Guam 1952

Subfamily: Ectrichodiinae

Scadra rufidens Stal Saipan CNMI 1969-1970, Anatahan 1992, Guam 1947

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215.
- Wygodzinsky, Pedro and Robert L. Usinger. 1960. Heteroptera: Reduviidae. In *Insects of Micronesia* 7(5): 231 – 283.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Tingidae

Diversity

Micronesia – 11 species, Mariana islands – 2 species, CNMI – 2 species

Ecological and human significance

Lace bugs are 5-6 mm in length and feed chiefly on the leaves and bark of trees and shrubs, and can cause damage to leaves. They are harmless to humans.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of lace bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<u>Berotingis rugiana</u>	x		X	X				X		
Teleonemia scrupulosa				X						

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Tinginae

Berotingis guamensis Drake Guam (Drake 1941)

Berotingis rugiana Drake Saipan CNMI 1970, Tinian CNMI 1977, Alamagan CNMI 1971,
Rota 1946, Guam 1936

Teleonemia scrupulosa Stal Lantana bug Saipan CNMI 1979 Not previously recorded from
Marianas

References

Drake, Carl J. 1956. Hemiptera: Tingidae. In: Insects of Micronesia 7(2): 101-116.

Diversity

Ecological and human significance

Conservation

Identification

Records of flat bugs from CNMI indicating areas (blank spaces) from which records are required.

Species	Islands								
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam Paga Agri Asun Maug Urac
<i>Calisius saipanensis</i>				x					
<i>Calisius tinianensis</i>			x	x					
<i>Chiastoplonia ponapensis</i>				x					
<i>Glochocoris crassicornis</i>				x					
<i>Arictus marianensis</i>			X	X					
<i>Mastigocoris angulatus</i>				x					
<i>Mezira membranacea</i>			X	x	X				
<u><i>Mezira micronesica</i></u>	x							x	
<u><i>Neuroctenus pacificus</i></u>	x		X	X					

Species list

Subfamily: Aneurinae

Aneurus lobatus Matsuda and Usinger Guam 1947

Subfamily: Cakisiinae

Calisius dilaticeps Usinger Guam 1945

Calisius infuscatus Matsuda and Usinger Guam 1945

Calisius saipanensis Matsuda and Usinger Saipan 1945

Calisius tinianensis Matsuda and Usinger Tinian 1945, Saipan 1945

Chiastoplonia ponapensis Esaki and Matsuda Saipan 1945

Subfamily Mezirinae

Arictus (Mezira) marianensis (Usinger) Saipan 1945, Saipan CNMI 1970-1980, Tinian CNMI
2001-2002, Guam 1945

Mastigocoris angulatus Matsuda and Usinger Saipan 1945

Mezira funebra Kormilev Guam n.d.

Mezira membranacea (Fabricius) Saipan CNMI 1970-1973, Tinian 1952, Agiguan 1952, CNMI 2002, Guam 1947

Mezira micronesica Esaki & Matsuda Rota 1992, Agrihan, Guam n.d.

Neuroctenus angulatus Matsuda and Usinger Guam 1945

Neuroctenus pacificus Usinger Saipan 1944, Saipan CNMI 1970, Tinian 1945, Tinian CNMI 1970, Rota 1945, Guam 1952

Neuroctenus variegatus Matsuda and Usinger Guam 1945

Glochocoris (Pictinus) crassicornis Matsuda and Usinger Saipan 1945

References

Kormilev, N.A. 1971. Mezirinae of the Oriental region and south Pacific (Hemiptera-Heteroptera: Aradidae). Pacific Insects Monographs 26: 1-165.

Matsuda, Rynichi and Robert L. Usinger. 1957. Heteroptera: Aradidae. In: Insects of Micronesia 7(3): 117 – 172.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocoryzae
Family: Lygaeidae

Diversity

Micronesia – 43 species, Mariana Isl. – 21 species, CNMI - 16 species .

Ecological and human significance

The seed bugs include species which feed on seeds, on the sap of host plants or on other insects. Some cause problems to man by damaging crops and turf grasses. Predators on the seed-bugs include invertebrate and vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of seed bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Graptostethus nigriceps</u>										X				
<u>Nysius caledoniae</u>	x		x	x			x			x	x	x		
<u>Nysius pulchellus</u>	x		x	x		x		x	x	x		x	x	
<u>Ninus insignis</u>				X		X			X					
<u>Cymoninus phillipinus</u>				x										
<u>Oxycarenus bicolor</u>		x		x										
<u>Pachybrachius chinai</u>				x										
<u>Pachybrachius nietneri</u>	x		x	x										
<u>Pachybrachius nigriceps</u>			x	x			x		x	x				
<u>Pachybrachius Pacificus</u>	x		x	x						x				
Paromius gracilis					x									
<u>Paromius pallidus</u>	x	x		x					x					
<u>Paromius piratoides</u>				x										
<u>Bedunia insularis</u>		x												
Bedunia pagana		x	x						x					
Cligenes marianensis	x			x					x					
Unidentified spp (6)				X		X								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Lygaeinae

Graptostethus nigriceps Stal Agrihan 1992, Guam 1911

Nysius caledoniae Distant Saipan 1945, Tinian 1946, Rota 1946, Agrihan, Asuncion, Guguan, Maug 1992, Guam 1952

Nysius pulchellus Stal Lygeid bug Uracas 1992, Maug 1992, Pagan 1940, Anatahan 1951-1992, Agrihan 1951, Alamagan 1949, Saipan 1946, Tinian 1952, Rota 1946, Guam 1946

Subfamily: Cyminae

Ninus insignis Stal Saipan 1946, Saipan CNMI 1970-1980, Sarigan CNMI 2001, Pagan CNMI 1970

Cymoninus phillipinus Bergroth Saipan 1952

Subfamily: Oxycareninae

Oxycarenus bicolor Fieber Stainer bug Saipan 1948, Agiguan 1954

Subfamily: Rhyparochrominae

Clerada apicicornis Signoret Guam 1945

Pachybrachius chinai Usinger Saipan 1940, Guam 1945

Pachybrachius limbatus Stal Guam 1952

Pachybrachius nietneri (Dohrn) Saipan 1945, Tinian 1952, Rota 1937, Guam 1945

Pachybrachius nigriceps (Dallas) Agrihan 1954, Alamagan 1949, Saipan 1951, Tinian 1952, Pagan 1992, Guam 1956

Pachybrachius pacificus (Stal) Agrihan 1949, Saipan 1946, Tinian 1952, Rota 1951, Guam 1952

Paromius gracilis (Ramber) Anatahan 1992

Paromius pallidus (Montrouzier) Pagan 1951, Saipan 1951, Agiguan 1954, Rota 1951, Guam 1952

Paromius piratoides (costa) Agiguan 1954

Bedunia insularis Stal Agiguan 1952, Guam 1945

Bedunia pagana Barber Guam 1948, Agiguan 1952, Tinian 1952, Pagan 1954

Cligenes marianensis Usinger Pagan 1940, Saipan 1945, Rota 1936, Guam 1945

Aphanus sordidus (Fabricius) Guam 1945

Unidentified species

Sp A Saipan CNMI 1980, Sarigan CNMI 2001

Sp B Saipan CNMI 1973, Sarigan CNMI 2001

Sp C Saipan CNMI 1970

Sp D Saipan CNMI 1970

Sp E Saipan CNMI 1970

Sp F Sarigan CNMI 2001

References

Barber, Harry G. 1958. Heteroptera: Lygaeidae. In: Insects of Micronesia 7(4): 173 – 218.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Family: Coreidae

Diversity

Micronesia – 15 species, Mariana Isl. – 10 species, CNMI - 10 species

Ecological and human significance

Leaf-footed bugs are large insects and are mostly plant feeders, although a few are predaceous on other insects. The can be implicated in crop damage, but may equally assist in getting rid of unwanted alien plants.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of leaf-footed bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Liorhyssus hyalinus</i>			x	x							
<i>Leptocoris carniverus</i>	X										
<u><i>Leptocoris tagalica</i></u>			x	X							
<u><i>Leptocoris vicina</i></u>	x										
<u><i>Leptocorixa acuta</i></u>	X		x	X					x		
<u><i>Melanacanthus</i></u>											
<u><i>margineguttatus</i></u>	x	x	x	x					x		
<i>Acanthocoris scaber</i>				X							
<i>Leptoglossus australis</i>	x	x	x	X					X		
<i>Physomerus grossipes</i>	X		X	X		X				x	
<i>Plinachtus acicularis</i>	x	x									

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Rhopalinae

Liorhyssus hyalinus (Fabricius) Saipan 1946, Tinian 1952, Guam 1952

Leptocoris carniverus Rota CNMI 1973, Saipan CNMI 2000-2001

Leptocoris tagalica Burmeister Saipan 1958, Saipan CNMI 1970-1980, Tinian 1946

Leptocoris vicina (Dallas) Saipan 1939, Rota 1952, Guam 1949

Subfamily: Alydinae

Leptocorixa acuta Thunberg Pagan 1940, Saipan 1944-1955, Saipan CNMI 1970-2002, Tinian 1945-1952, Rota 1951, CNMI 2002, Guam 1936-1952

Melanacanthus margineguttatus Distant Guam 1946, Rota 1946, Agiguan 1952, Tinian 1952,
Saipan 1948, Pagan 1940

Subfamily: Coreinae

Acanthocoris scaber (Linnaeus) Saipan CNMI 1970-1982, Tinian CNMI 1970-2002, Guam 1957

Leptoglossus australis (Fabricius) Leaf-footed plant bug Pagan 1954, Pagan CNMI 1971,
Saipan 1951, Saipan CNMI 1970-1979, Tinian 1952, Agiguan 1949, Rota 1945,
Guam 1957

Physomerus grossipes (F.) Large spine-footed bug Saipan CNMI 1970-2000, Rota CNMI
1970, Rota 1992, Tinian CNMI 1970, Sarigan CNMI 2001, Agrihan 1992

Plinachtus acicularis (Fabricius) Agiguan 1955, Rota 1937, Guam 1958

References

Gross, Gordon F. 1963. Heteroptera: Coreidae, Neididae and Nabidae. In: Insects of Micronesia
7(7):

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the
expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Superfamily: Pentatomoidea; Family Cydnidae.

Diversity

Micronesia – 2 species, Mariana Isl. 2 – species, CNMI - 1 species

Ecological and human significance

Burrower bugs are small (usually less than 8 mm long) , and can be found underneath boards or stones, or in sand , or mould around grass root tufts. They are not harmful to man.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of burrower bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, **Underlined** = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<u>Geotomus pygmaeus</u>	x		x	X					x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Cydnidae

Adrisa flavomarginata (Vollenhoven) Guam (Townes 1946, “recorded ... by Usinger”).

Geotomus pygmaeus (Dallas) Pagan 1954, Saipan 1947, Saipan CNMI 1970-1971, Tinian 1945, Rota 1945, Guam 1952

References

Ruckes, Herbert. 1963. Heteroptera: Pentatomoidea. In: Insects of Micronesia 7(7): 307-356.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Superfamily: Pentatomoidea Family Alydidae.

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species .

Ecological and human significance

Broad-headed bugs are small to medium sized plant feeders, and are often common on the leaves of weeds and shrubs in secondary areas.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are no keys for in house identification.

Records of broad-headed bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Melanacanthus

margineguttatus

x

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Melanacanthus margineguttatus Distant Anatahan, Guguan 1992

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Diversity

Ecological and human significance

Conservation

Identification

Records of stink bugs from CNMI indicating areas (blank spaces) from which records are required.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u>Coleostichus breddeni</u>	x	x	x	X						x
Coleostichus marianensis	x									
<u>Calliphara munda</u>	x	x	x	x						
Bulbostethus										
chrysopterus	x									
Bulbostethus										
transversalis			x	x		x	X		x	x
?Bulbostethus sp.				X						
Parealda bouvieri	x	x	x	x						
Alciphron glaucus	x			X						
<u>Glaucias amyoti</u>	x		x	X						
Glaucias eburnopictus	x									
Glaucias fulvescens	x			x						
Nezara viridula	x		X	X				X	X	X
<u>Pegala laevis</u>		x	x	X		x	x			
Piezodorus hybneri				X						x
Pentatomid sp.	X									

Species list

Subfamily: Scutellerinae

Coleostichus breddeni Schoutenden Pagan 1940, Saipan 1952, Saipan CNMI 1970-1978,

Tinian 1952, Agiguan 1952, Rota 1946, Guam 1945
Coleostichus marianensis Usinger Rota 1946, Guam 1945
Calliphara munda Stal Saipan 1945, Tinian 1946, Agiguan 1952, Rota 1951, Guam 1936
Chrysocoris sp. (?) "Marianas" - needs confirmation.

Subfamily: Asopinae

Bulbostethus chrysopterus (Herrich-Schaeffer) Rota 1946, Guam 1946
Bulbostethus transversalis Ruckes Tinian 1945, Agrihan 1949, Pagan 1940, Saipan 1949,
Anatahan 1992, Sarigan 1992, Sarigan CNMI 2001
? *Bulbostethus* sp. Saipan CNMI 1970
{*Eocanthecona furcellata* (Wolff) Guam 1989}
Parealda bouvieri Schoutenden Saipan 1948, Tinian 1945, Agiguan 1952, Rota 1946, Guam
1957

Subfamily: Pentatominae

Alciphron glaucus (Fabricius) Saipan 1945, Saipan CNMI 1970-1979, Rota 1946, Guam 1952
Glaucias amyoti (White) Saipan 1945, Saipan CNMI 1970-2001, Tinian 1945, Rota 1946,
Guam 1957
Glaucias eburnopictus Ruckes Rota 1946
Glaucias fulvescens Ruckes Saipan 1945, Rota 1946, Guam 1952
{*Glaucias inornatus* (Stal) Guam (n.d.)}
{*Glaucias lyratum* Ruckes Guam 1946}
Nezara viridula (Linnaeus) Southern green stinkbug Saipan 1958, Saipan CNMI 1970-1973,
Tinian 1952, Tinian CNMI 1979, Rota 1946, Alamagan 1992, CNMI 2000, Agrigan
1992, Pagan CNMI 1970, Agrigan CNMI 1970, Guam 1957
Pegala laevis Bergroth Saipan 1951, Saipan CNMI 1970, Tinian 1946, Agiguan 1955, Guguan
1992, Sarigan 1992, Guam 1952
Piezodorus hybneri (Gmelin) Saipan 1958, Saipan CNMI 1970-1973, Pagan 1992, Guam 1958

Subfamily: Acanthosomidae

{*Elasmotethus gracilis* Ruckes Guam 1957}

Unidentified.

Pentatomid sp. A Rota CNMI 1971

Pentatomid sp. B Saipan Airport, on inflight, CNMI 1981

References

Ruckes, Herbert. 1963. Heteroptera: Pentatomoidea. In: Insects of Micronesia 7(7): 307-356.
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the
expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Hemiptera (Heteroptera) Suborder: Geocorizae
Superfamily: Pentatomoidea; Family: Plataspidae

Diversity

Micronesia – 4 species, Mariana Isl. – 4 species, CNMI - 3 species

Ecological and human significance

Stink bugs are small convex insects which feed on plants. Some cause damaged to crops.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied

Identification

There are keys for in house identification.

Records of stink bugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Brachyplatys insularis	X		X	X				X			
<u>Brachyplatys subaeneus</u>							x			x	x
Coptosoma											
xanthogramma	X		X	X	X	X					

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Plataspidae

Brachyplatys insularis Ruckes Saipan 1949, Saipan CNMI 1970-2000, Tinian CNMI 1971-1979, Rota 1946, Rota CNMI 1971-2002, Pagan CNMI 1971, Guam 1952

Brachyplatys subaeneus Westwood Asuncion, Guguan, Maug 1992

{Coptosoma variegata (Herrich-Schaeffer) Guam 1945}

Coptosoma xanthogramma (White) Anatahan 1992, CNMI 2002; Asuncion, Guguan 1992, Saipan CNMI 1970, Tinian CNMI 1971, Rota CNMI 1971, Sarigan 1992, Sarigan CNMI 2001

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
Ruckes, Herbert. 1963. Heteroptera: Pentatomoidea. In: Insects of Micronesia 7(7): 307-356.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Family: Membracidae

Diversity

Micronesia – 3 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Treehoppers are usually 10-12 mm long, and feed on trees and shrubs, and most species feed on specific host plants. Only a few species of this group cause problems for man. Numbers of invertebrate and vertebrate predators feed on treehoppers.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied

Identification

There are keys for in house identification.

Records of treehoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Leptocentrus taurus x x x X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Leptocentrus taurus (Fabricius) Eggplant horned planthopper Saipan 1951, Saipan CNMI
1970, Tinian 1952, Agiguan 1952, Rota 1951, Guam 1958

References

Kato, Masayo. 1960. Homoptera: Membracidae. In: Insects of Micronesia 6(5): 345 – 351.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Family: Cercopidae

Diversity

Micronesia – 25 species, Mariana Isl. – 7 species, CNMI - 5 species .

Ecological and human significance

Froghoppers are small (rarely over 13 mm long) hopping insects feeding on grubs and herbaceous plants. A few species cause problems, but most are harmless to man. They are fed on by a variety of invertebrate and vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied

Identification

There are keys for in house identification.

Records of froghoppers and spittlebugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Lallemandana phalerata</u>	X		X	x			x							
Lallemandana phalerata														
f. saipanensis				x										
<u>Lallemandana phalerata</u>														
<u>f. luteomaculata</u>	x			x										
<u>Lallemandana phalerata</u>														
<u>f. flavifrons</u>	x													
Lallemandana spinifera	x													

Species list

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Lallemandana phalerata (Stal) Saipan 1945, Rota 1937, Rota CNMI 1973-1975, Tinian
CNMI 1977, Guguan 1992, Guam 1952
Lallemandana phalerata f. saipanensis Synave Saipan 1951
Lallemandana phalerata f. carolinensis Metcalf Guam 1952
Lallemandana phalerata f. luteomaculata Lallemand Saipan 1951, Rota 1952, Guam 1952
Lallemandana phalerata f. flavifrons Metcalf Rota 1954
Lallemandana spinifera Metcalf Rota 1937
Lallemandana upiana Lallemand Guam 1946

References

Synave, H. 1957. Homoptera: Cercopidae. In: Insects of Micronesia 6(4): 213 – 230.

Phylum: Arthropoda Class: Insecta Order: Homoptera

Suborder: Auchenorrhyncha

Family: Cicadellidae

Diversity

Micronesia – 97 species, Mariana Isl. – 35 species, CNMI - 21 species

Ecological and human significance

Leafhoppers are a large group of small (rarely longer than 13 mm) insects feeding principally on leaves of plants. The food plants of most species is quite specific, and many leafhopper species cause crop damage. They form the prey of a number of invertebrate and vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied

Identification

There are keys for in house identification.

Records of leafhoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Balclutha hebe				x										
<u>Balclutha flexuosa</u>				x										
Balclutha frontalis				x										
Balclutha incisa				x										
Balclutha saltuella				x										
Batrachomorphus														
atrifrons				x										
Batrachomorphus														
viridoflavidus				x										
Cicadulina bipunctella				x										
<u>Deltocephalis subviridis</u>			x	x										
Empoasca bipunctulata				X										
Exitianus capicola	x		x	x										
Inemadara distincta				x										
Jamitettix guamensis	x			x										
Nephotettix apicalis														
apicalis				x										
<u>Nesophrosyne argentatus</u>				x										
nr. <u>Parabolacratus gressetti</u>				X										
Sundapteryx biguttula				x										
Tartessus cristatus		x	x	x										
Tartessus swezeyi	x													
Tharra ocellata	x													
<u>Xestocephalus izzardii</u>			x											
sodalis														

Species list

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Subfamily: Iassinae

Batrachomorphus atrifrons (Metcalf) Saipan 1945, Guam 1952-1958

Batrachomorphus viridoflavidus (Metcalf) Saipan 1945, Guam 1936-1958

Subfamily: Typhlocybinae

Empoasca barringtoniae Metcalf Guam 1936

Empoasca bipunctulata Metcalf Saipan 1946, Saipan CNMI 1977, Guam 1936

Empoasca fuscovittata Metcalf Guam 1936

Empoasca macarangae Metcalf Guam 1945

Empoasca morillkndae Metcalf Guam 1952-1958

Empoasca pipturi Metcalf Guam 1945

Empoasca pitiensis Metcalf Green leafhopper Guam 1936-1957

Empoasca yona Metcalf Guam 1952

Sundapteryx biguttula (Ishida) Indian cotton jassid Saipan 1958, Guam n.d.

Subfamily: Coelidiinae

Tharra ocellata Metcalf Rota 1946, Guam 1952

Subfamily: Deltocephalinae

Balclutha hebe (Kirkaldy) Saipan 1946, Guam 1952

Balclutha flexuosa Linnavuori Saipan 1945, Guam 1936

Balclutha frontalis (Ferrari) Saipan 1958, Guam 1959

Balclutha incisa (Matsumura) Saipan 1945, Guam 1945-1959

Balclutha rufofasciata Merino Guguan 1992

Balclutha saltuella (Kirschbaum) Saipan 1958

Cicadulina bipunctella (Matsumura) Leafhopper Saipan 1945, Guam 1945-1958

Deltocephalis hospes Kirkally Guam 1945

Deltocephalis subviridis (Metcalf) Saipan 1945, Tinian 1952, Agrihan 1992, Guam 1952

Exitianus capicola (Stal) Leafhopper Saipan 1945, Tinian 1946, Guam 1952, Rota 1951

Exitianus indicus (Distant) Uracas 1992

Exitianus plebeius (Kirkaldy) Leafhopper Guam 1957

Inemadara distincta (Motschulsky) Saipan 1945, Guam 1945

Jamitettix guamensis Metcalf Saipan 1945, Rota 1946, Guam 1948

Nephotettix apicalis apicalis (Moschulsky) Saipan 1945, Guam 1948-1957

Nesophrosyne argentatus (Evans) Saipan 1944, Guam 1946

Opsianus picturatus (Metcalf) Guam 1952

Orosius argenlatus (Evans) Anatahan, Uracas 1992

Orosius lotophagorum Kirkaldy Guguan 1992

Tartessus cristatus Linnavuori Saipan 1944, Tinian 1945, Agiguan 1952

Tartessus ochraeus Metcalf Guam 1936

Tartessus swezeyi Metcalf Rota 1936, Guam 1952-1958

Xestocephalini izzardi sodalis Linnavuori Tinian 1952, Guam 1952

Subfamilies ?

nr. *Parabolacratus gressetti* Linnavoni Saipan CNMI 1970-1971

Protalebrella braziliensis (Baker) Brazil leafhopper Guam n.d.

Recilia hopponis (Matsumura) Guam 1958

Recilia pacifica (Osborn) Guam 1958

References

- Linnavuori, R. 1960. Homoptera: Cicadellidae. In: Insects of Micronesia 6(5): 231 - 344
- Linnavuori, R. 1975. Homoptera: Cicadellidae supplement. In: Insects of Micronesia 6(9):
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoridea Family : Delphacidae

Diversity

Micronesia – 64 species, Mariana Isl. – 32 species, CNMI – 17 species

Ecological and human significance

Delphacid planthoppers are small insects feeding on plant juices. Very few cause crop damage. They are eaten by various invertebrate and vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Records of delphacid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Chloriona eupompe</u>														x
Chloriona fieberi														x
<u>Chloriona formosella</u>														X
<u>Chloriona geranor</u>														x
<u>Chloriona kolophon</u>														x
<u>Chloriona paludum</u>			x											
<u>Coronacella kirkaldyi</u>														x
<u>Delphacodes matanitu</u>														x
<u>Peregrinus maidis</u>	X		x			X								
<u>Phyllodinus</u>														
<u>granulinervis</u>														x
<u>Tarophagus prosperpina</u>		x				X								
<u>Toya(=Delphacodes)</u>														
<u>lyraeformis</u>														x
<u>Toya(= Delphacodes)</u>														
<u>propinqua</u>			x	x						x				x
Ugyops anatahani				x		x		x				x		
Ugyops annulipes														
annulipes			x	x										
Ugyops kinbergi														
guahoni	x		x											
Ugyops rotana	x													x

Species list

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Family: Delphacidae

Chloriona albotristriata (Kirkaldy) Guam (Swezey 1946)
Chloriona eupompe (Kirkaldy) Saipan 1951, Guam 1945
Chloriona euterpe Fennah Guam 1945
Chloriona fieberi (Muir) Saipan 1945
Chloriona formosella (Matsumura) Saipan 1945, Saipan CNMI 1970-1977, Guam 1945
Chloriona furcifera (Horvath) Guam 1945
Chloriona geranor (Kirkaldy) Saipan 1949
Chloriona kolophon (Kirkaldy) Saipan 1945, Guam 1945
Chloriona ochrias (Kirkaldy) Guam (Swezey 1946)
Chloriona paludum (Kirkaldy) Tinian 1946, Guam 1945
Coronacella kirkaldyi (Muir) Saipan 1944, Guam 1952
Delphacodes albicollis (Motschulsky) Guam 1945
Delphacodes amblystylis Fennah Guam 1945
Delphacodes drypoe (Kirkaldy) Guam 1946 Requires confirmation.
Delphacodes matanitu (Kirkaldy) Saipan 1945
Eudellana carolinensis Metcalf Guam 1945
Harmalia sameshimae (Matsumura and Ishihara) Guam 1959
Nycheuma cognatum (Muir) Guam 1956
Peregrinus maidis (Ashmead) corn delphacid Saipan 1945, Saipan CNMI 1970-1971, Tinian 1937, Rota 1952, CNMI 1971, Guam 1952 - 1959
Perkinsiella thompsoni Muir Guam 1945
Phyllodinus granulinervis (Stal) Saipan 1945, Guam 1945
Phyllodinus nigromaculosus Muir Guam 1945
Sogatodes placitus (Van Duzee) Guam 1958
Stenocranus agamopsyche Kirkaldy Guam 1945
Syndelphax matanitu (Kirkaldy) Guam 1959
Tarophagus prosperpina (Kirkaldy) Agiguan 1952, Saipan CNMI 1970
Toya(=*Delphacodes*) *lyraeformis* (Matsumura) Saipan 1945, Guam 1945, 1958, cocos 1957
Toya(=*Delphacodes*) *propinqua* (Fieber) Saipan 1946, 1958, Tinian 1946, Agrihan, Uracas 1992, Guam 1945, 1959
Ugyops anatahani Fennah Anatahan 19 ?, Saipan 1951, Guguan, Maug 1992
Ugyops annulipes annulipes (Stal) Saipan 1945, Tinian 1948, Guam 1958
Ugyops kinbergi guahoni Fennah Guam 1954, Agiguan 1952, Rota 1946
Ugyops rotana Fennah Rota 1951, Saipan 1945

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoroidea Family: Meenoplidae

Diversity

Micronesia – 2 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Meenoplid planthoppers are small plant-feeders. Their nymphs are root feeders.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of meenoplid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Meenoplidae

Nisia atrovenosa (Lethierry) Guam 1945

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoridea Family: Derbidae

Diversity

Micronesia – 57 species, Mariana Isl. – 11 species, CNMI – 6 species

Ecological and human significance

Derbid planthoppers are small insects feeding on woody fungi. They are prey of numbers of invertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of derbid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Eusyphax bivittatus

lineatus

x

Flaccia dione

“Marianas”

Levu pallescens

pallescens

x

x

x

Phaciocephalus phaedra

x

Proutista moesta

x

X

Swezeyia zephyrus

“Marianas”

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Derbidae

Eusyphax bivittatus lineatus Fennah Saipan 1945, Guam 1952

Flaccia dione Fennah Derbid planthopper Marianas

Lamenia caliginea fullawayi (Muir) Derbid planthopper Guam 1952

Lamenia candida Fennah Guam 1952

Lamenia numitor numitor Fennah Guam 1952

Levu matsumurae guamana Fennah Guam 1952

Levu pallescens pallescens (Metcalf) Saipan 1945, Tinian 1945, Rota 1937, Guam 1952, 1957

Nesorhamma badia (Muir) Guam 1952

Phaciocephalus phaedra Fennah Saipan (n.d.)

Proutista moesta (Westwood) Erect-winged blue planthopper Tinian 1945, Tinian CNMI 1970, Rota 1937, Guam 1953

Swezeyia zephyrus Fennah Guam 1952, 1959, Marianas

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
- Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoroidea Family: Cixiidae

Diversity

Micronesia – 30 species, Mariana Isl. – 7 species, CNMI – 3 species

Ecological and human significance

These small planthoppers are plant feeders with the nymphs of some species being subterranean feeders on the roots of grasses. They are fed on by invertebrate and some vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of cixiid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Myndus cressida	x	x	x											
<u>Myndus dibaphus</u>		x												
Myndus irreptor			x											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Cixiidae

<i>Myndus bifurcatus</i> Metcalf	Guam 1945
<i>Myndus cressida</i> Fennah	Aguihan 1952, Tinian 1945, Rota 1936
<i>Myndus dibaphus</i> Fennah	Guam 1952, Aguihan 1952
<i>Myndus irreptor</i> Fennah	Guam 1945, Tinian 1945
<i>Myndus nearcus</i> Fennah	Guam 1952
<i>Myndus polycator</i> Fennah	Guam 1945
<i>Myndus</i> sp.	Guam 1952

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoroidea Family: Dictyopharidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI– 1 species

Ecological and human significance

Members of this group are small insects, primarily feeders on grass. They are eaten by a number of invertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of dictyopharid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Chanithes gramineus X x X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Dictyopharidae

Chanithes gramineus (F.)(=*Doryphorina sobrina* (Stal)) Saipan 1951, Saipan CNMI 1970, Tinian 1952, Rota CNMI 1973, Guam 1952-1958

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoroidea Family: Tropiduchidae

Diversity

Micronesia – 20 species, Mariana Isl. – 2 species, CNMI – 1 species

Ecological and human significance

These are small insects living on plant juices. They are preyed on by numerous invertebrates and small vertebrates.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of tropiduchid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Tambinia guamensis

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Tropiduchidae

Tambinia guamensis Metcalf Saipan 1945, Guam 1952

Swezeyaria viridiana viridiana Metcalf Guam 1945

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Auchenorrhyncha
Superfamily : Fulgoroidea Family: Issidae

Diversity

Micronesia – 10 species, Mariana Isl. – 3 species, CNMI – 2 species

Ecological and human significance

Issid planthoppers are small insects feeding on plant juices, and being fed on by a variety of invertebrate and small vertebrate predators.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Records of issid planthoppers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Issarius panope

x x

Issarius tartarus

x x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Issidae

Issarius panope Fennah Saipan 1945, Tinian 1945

Issarius surenas Fennah Guam 1954

Issarius tartarus Fennah Rota 1946, Agiguan 1955

References

- Fennah, R. G. 1956. Homoptera: Fulgoroidea. In: Insects of Micronesia 6(3): 39 – 211.
Fennah, R. G. 1971. Homoptera: Fulgoroidea. Supplement In: Insects of Micronesia 6(8): 563 – 609.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Sternorrhynchia
Family: Psyllidae

Diversity

Micronesia – 22 species, Mariana Isl. – 12 species , CNMI – 7

Ecological and human significance

Jumping plantlice are small (2-5 mm in length) insects feeding on plant juices. Some are pest species and can introduce a virus into the plants on which they feed, causing yellowing and yield reduction.

Conservation

Maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of jumping plantlice from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Heteropsylla cubata													X	
Heteropsylla cf incisa													X	
Insnesia extrema		X		X	X									
Insnesia glabrascuta	X				X									
Isogonoceria venusta				X	X									
<u>Mesohomotoma hibisci</u>					X	X				X				
Trioza catillus					X									
Trioza guami			X						X					

Species list

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Chineura latipennis Tuthill Guam 1945
Heteropsylla cubata Crawford Saipan 1992
Heteropsylla sp. cf *incisa* Saipan ca 1985, Guam 1985.
Insnesia extrema (Tuthill) Saipan 1946, Tinian 1945, Aguihan 1952, Guam 1946
Insnesia glabrascuta (caldwell) Saipan 1946, Rota 1946, Guam 1936-1952
Isogonoceria venusta Tuthill Saipan 1945, Tinian 1946
Leptynoptera sulfurea Crawford Guam 1936
Mesohomotoma hibisci (Froggatt) Agrihan 1945, Anatahan 1951, Saipan 1946, Guam 1932-1954
Nesiope ornata Kirkaldy Guam 1936

Trioza catillus Tuthill Saipan 1945
Trioza guama Caldwell Pagan 1940, Tinian 1945, Guam 1936-1947
Trioza suavis Tuthill Guam 1958

References

- Caldwell, J.S. 1942. Psyllidae from Guam. Pp. 20-22. In : Insects of Guam-1. Bernice P. Bishop Museum Bulletin 172. Honolulu, Hawaii.
- Tuthill, Leonard D. 1964. Homoptera – Psyllidae. In: Insects of Micronesia 6(6): 353-376.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Sternorrhyncha
Family: Aleyrodidae

Diversity

Micronesia – 15 + species, Mariana Isl. – 15 species, CNMI - 11 species

Ecological and human significance

Small (2-3 mm) flying insects feeding on sap sucked from leaves of a wide range of plants. Serious pests of crops include *Bemisia tabaci* – B biotype, a new aggressive form of *B. tabaci* (which was considered a relatively unimportant crop damager) which had developed, or had at least been recognised, by the 1980's. A range of crop vegetables (in the cabbage family, cucumber family, and Solanum family) and numerous weeds act as hosts. The spiralling whitefly (*Aleurodicus dispersus*) also has pest status, and to a lesser degree so do *A. spiniferus*, *A. floccosus* and *Dialeurodes citrifolii* – all on citrus.

The insects are probably preyed on by a wide variety of invertebrate, and small vertebrate, predators. Parasitoids are known from the Hymenopteran genera *Encarsia* and *Eretmocerus* (Chalcidoidea: Aphelinidae). An insect pathogenic fungus (*Paecilomyces fumosoroseus*) may also be an effective pathogen, but is limited by a requirement for high humidity.

Conservation

Control of whiteflies is usually by the use of pesticides – sometimes the applications are heavy. This will prevent effective biological control by killing parasitoids, and will also kill other non-target invertebrates. As all whiteflies in the CNMI are aliens, the elimination of this group should be a conservation goal, but not using insecticides.

Identification

There are keys for in house identification.

Records of whiteflies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Aleurothrixus floccosus</i>										
<i>Aleurodicus dispersus</i>										
<i>Bemisia gossypiperda</i>										
<i>Bemisia tabaci</i>										
<i>Bemisia tabaci</i> –B										
<i>Bemisia tabaci</i> –“Nauru”										
<i>Dialeurodes kirkaldyi</i>										
<i>Dileuropora</i>										
<i>decempuncta</i>										
<i>Minulategyrodes minuta</i>										
<i>Neomaskellia bergii</i>										
<i>Paraleyrodes bondari</i>										

Species list

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- Aleurothrixus floccosus* Woolly whitefly Guam 1984, Saipan, Rota (De Barro 1997)
Aleurocanthes spiniferus (Quaintance) Orange spiny whitefly Guam 1952
Aleurodicus dispersus Russell Spiralling whitefly Guam, Saipan, Rota (De Barro 1997)
Aleurotiber culatus nr *takahashii* Guam (De Barro 1997)
Bemisia gossypiperda Misra and Lamba Sweetpotato whitefly Saipan 1936
Bemisia tabaci (Gennadius) Silverleaf whitefly Saipan 1930's, Guam 1985
Marianas
Bemisia tabaci –B CNMI De Barro 1997
Bemisia tabaci –“Nauru” CNMI De Barro 1997
Dialeurodes citrifolii Guam (De Barro 1997)
Dialeurodes kirkaldyi (Kotinsky) Saipan 1939, Guam 1952 (but not by De Barro 1997)
Dileuropora decempuncta Guam, Rota (De Barro 1997)
Minulatelyrodes minuta Saipan (De Barro 1997)
Neomaskellia bergii (Signoret) Pagan 1951, Tinian 1946, Rota 1937, Guam 1947
Paraleyrodes bondari Rota (De Barro 1997)
Tetraleyrodes acaciae Guam (De Barro 1997)

References

- De Barro, P. 1997. Survey of *Bemisia tabaci* Biotype B whitefly (also known as *B. argentifolii*) and its natural enemies in the South Pacific. Final report, ACIAR Project No. 96/148. CSIRO Entomology, Canberra. 22 pp.
Moore, A. and A. Tudela. 1999. <http://WWW.CREES.org/plant protection>. Northern Marianas college, Saipan. Updated February 16, 1999.
Nafus, D. Undated. Orange spiny whitefly. Guam Pest Series, Agriculture and Natural Resources, University of Guam. CES Publication # PS 88-14. 1 p.
Schreiner, I. Undated. Woolly whitefly. Guam Pest Series, Agriculture and Natural Resources, University of Guam. CES Publication # PS 88-13. 1 p.
Takahashi, R. 1956. Homoptera: Aleyrodidae. In: Insects of Micronesia 6(1): 1 – 13.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Sternorrhynchia
Family: Aphididae

Diversity

Micronesia – 25 species, Marianas - 20 species, CNMI - 9 species

Ecological and human significance

Aphids are small, soft-bodied insects which feed on plants by sucking their sap. They can build up to enormous numbers, and some serious pests of cultivated plants are included among them. Aphids produce honeydew which is a sweet substance used by ants, which in some cases cause the ants to tend the aphids, providing them some protection. Aphids are prey to numerous insect predators and are hosts to a number of parasites.

Conservation

Most aphids in CNMI appear to be introduced aliens – as such their populations need to be controlled or eradicated.

Identification

There are keys for in house identification.

Records of aphids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Aphis craccivora</i>										
<i>Aphis gossypii</i>		x		x	x					
<i>Aphis medicaginis</i>		x		x	x					
<i>Cerataphis lataniae</i>										
<i>Lipaphis erysimi</i>										
<i>Myzus persicae</i>										
<i>Pentalonia nigronervosa</i>										
<i>Rhopalosiphum maidis</i>		x		x	x					
<i>Toxoptera aurantii</i>										

Species list

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Aphis craccivora Koch Cowpea aphid Marianas, feed on banana, breadfruit

Aphis gossypii Glover Cotton or melon aphid Saipan 1946-1947, Tinian 1946, Rota 1946, Guam 1911 - 1952

Aphis helianthi Monell Guam n.d.

Aphis medicaginis Koch Saipan 1946-1948, Rota 1946, Tinian 1946, Guam 1946-1952

Aphis nerii Boyer de Fonscolombe Guam 1952

Aphis rumicis L. Guam n.d.

Aphis spiraecola Patch Guam 1999

Brevicoryne brassicae L. Guam 1999
Cerataphis lataniae (Boisduval) Lantania aphid Saipan 1937, Feed on coconut palm, betelnut palm
Hyalopterus pruni (Geoffroy) Guam 1936
Hysterooneura setariae (Thomas) Guam 1999
Lipaphis erysimi (Kaltenbach) Turnip aphid Marianas Feed on *Brassica* (cabbages and related crops)
Myzus (Myzodes) persicae (Sultzer) Green peach aphid Saipan 1948, Feed on banana, *Brassica* (cabbage and related plants)
Pentalonia nigronervosa coquerel Banana aphid Saipan 1947, Guam 1954 Feed on banana, avocado
Rhopalosiphum maidis (Fitch) corn leaf aphid Saipan 1946-1948, Rota 1946, Tinian 1946, Guam 1911-1946
Rhopalosiphum pseudobrassicae (Davis) Guam (Oakley 1954)
Rhopalosiphum rufiabdominale (Sasaki) Guam 1947
Tetraneura akinire Sasaki Guam 1947
Toxoptera aurantii (Boyer de Fonscolombe) Black citrus aphid Guam 1952 Feed on citrus, cucumber
Toxoptera cutricida (Kirkaldy) Guam 1999

References

- Essig, E. O. 1956. Homoptera : Aphididae. In : Insects of Micronesia 6(2): 15 – 37.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas college, Saipan. Updated February 16, 1999.
 Oakley 1946
 Pike, K.S. , R.H.Miller and P. Sary. 2000. Aphid fauna (Hemiptera: Aphididae) and associated flora of Guam. *Micronesica* 33(1/2): 179-207

Family: Margarodidae

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Sternorrhynchia
Superfamily: Coccoidea Family: Diaspididae

Diversity

Micronesia – 64 species, Mariana Isl. – 33 species CNMI - 20

Ecological and human significance

Armoured scale insects are plant sap feeders, and can kill the host if they are present in large enough numbers. A number of species are important agricultural pests, principally of trees and shrubs.

Conservation

For the alien armoured scales there is no conservation requirement except that of getting rid of the species involved. For the indigenous scales, maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied.

Identification

There are keys for in house identification.

Records of armoured scales from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac

Aonidiella comperei			x	x										
Aonidiella orientalis	x		x	x										
Aspidiella sacchari	x		x	x										
Aspidiotus destructor	x	x	x	x										
Aspidiotus excisus			x	x										
Chrysomphalus														
dictyospermi				x										
Fioriniae nephelii				x										
<u>Furcaspis oceanica</u>				x										
Furcaspis biformis				x										
Hemiberlesia lataniae				x										
Hemiberlesia palmae				x										
Ischnaspis longirostris				x										
<u>Lepidosaphes bladhaie</u>			x	x										
<u>Lepidosaphes esakii</u>						x			x					
Lepidosaphes gloverii				x										
Lepidosaphes														
laterchitinsa														"Marianas"
Lepidosaphes similis														"Marianas"
Parlatoria cinerea				x										
Pinnaspis strachani		x												
Pseudaulacaspis														
pentagona				x										

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Family: Diaspididae

- Andaspis punicae* (Leonardi) Guam 1957
Aonidiella aurantii (Maskell) California red scale Guam 1945
Aonidiella comperei McKenzie False yellow scale Tinian 1946, Saipan 1946
Aonidiella inornata McKenzie Inornate scale Guam 1949
Aonidiella orientalis (Newstead) Oriental scale Saipan 1946, Tinian 1946, Rota 1946, Guam 1953
Aspidiella harti (Cockerell) ? Guam 1946
Aspidiella sacchari (Cockerell) Saipan 1946-1956, Tinian 1946, Rota 1946, Guam 1938
Aspidiotus destructor Signoret coconut scale Saipan 1946-1957, Tinian 1946, Agiguan 1952, Rota 1951, Guam 1946-1960
Aspidiotus excisus Green Saipan 1946, Tinian 1946
Chrysomphalus dictyospermi (Morgan) Dictyospermum scale Saipan 1946, Guam n.d.
Duplaspidiotus claviger (Cockerell) Guam 1954
Duplaspidiotus tessaratus (de charmoy) Guam 1946
Fiorinia nephelii Maskell Saipan 1939
Furcaspis oceanica Lindinger coconut red scale Saipan 1943, Guam 1946
Furcaspis biformis (Cockerell) Red orchid scale Saipan
Hemiberlesia lataniae (Signoret) Lantania scale Saipan 1946, Guam 1918
Hemiberlesia palmarum (Cockerell) Palm scale Saipan 1949
Ischnaspis longirostris (Signoret) Black thread scale Saipan 1946, Guam 1948
Lepidosaphes beckii (Newman) Purple scale Guam 1951
Lepidosaphes bladhiae Takahashi Saipan 1946, Tinian 1946, Guam 1954
Lepidosaphes esakii Takahashi Pagan 1959, Anatahan 1951
Lepidosaphes gloverii (Packard) Saipan 1946
Lepidosaphes laterchitina Green Armoured scale Marianas
Lepidosaphes similis Beardsley Marianas
Lepidosaphes spinulosa Beardsley Guam 1948
Lepidosaphes tokionis (Kuwana) croton mussel scale Guam 1954
Melanaspis bromeliae (Leonardi) Guam 1957
Parlatoria cinerea Hadden Saipan 1939, Guam 1939
Parlatoria proteus (curtis) Proteus scale Guam 1954
Phenacaspis inday (Banks) Inday scale Guam 1946
Pinnaspis buxi (Bouche) Ti scale Guam 1954
Pinnaspis strachani (cooley) Lesser snow scale Rota 1946, Guam 1955
Pseudaulacaspis pentagona (Targioni-Tozzetti) White peach scale Saipan 1946-1949, Guam 1954

References

- Beardsley, J. W. Jr. 1966. Homoptera: Coccoidea. In: Insects of Micronesia 6(7): 377-562.
Beardsley, J. W. Jr. 1975. Homoptera: Coccoidea supplement. In: Insects of Micronesia 6(9):
Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant_protection). Northern Marianas college, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Homoptera Suborder: Sternorrhynchia
Superfamily: Coccoidea Family: Coccidae

Diversity

Micronesia – 20 species, Mariana Isl. – 15 species, CNMI - 11 species

Ecological and human significance

Soft scales feed on plant sap and many species attack a wide variety of cultivated plants, in some cases causing considerable damage.

Conservation

There appear to be no indigenous soft scales and therefore there is no conservation matter except that of getting rid of the species involved.

Identification

There are keys for in house identification.

Records of soft scales from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Ceroplastes floridensis	x													
Ceroplastes rubens	x			x										
Chloropulvinaria psidii				x										
Coccus elongatus			x	x										
Coccus hesperidum				x										
Coccus longulus														Marianas
Coccus viridus			x	x										
Pulvinaria urbicola				x										
Saisettia coffeae			x											
Saisettia nigra			x	x										
Saisettia oleae				x										

Species list

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Family: Coccidae

Ceroplastes ceriferus (F.) Indian wax scale Guam 1982

Ceroplastes floridensis comstock Florida wax scale Rota(Takahashi 1936), Guam (Fullaway 1946)

Ceroplastes rubens Maskell Red wax scale Saipan 1949, Rota 1946, Guam 1953 *Chloropulvinaria psidii* Maskell Green shield scale Saipan 1946, Guam 1958

Coccus acuminatus (Signoret) Guam 1938

Coccus elongatus (Signoret) Saipan 1946, Tinian 1946, Guam 1953

Coccus hesperidum Linnaeus Brown soft scale Saipan 1946
Coccus longulus (Douglas) Long brown scale Marianas
Coccus moestus De Lotto Coccid scale Guam 1946
Coccus viridus (Green) Green scale Saipan 1949, Tinian 1946, Guam 1954
Pulvinaria urbicola Cockerell Saipan 1937, Guam 1953
Saisettia coffeae (Walker) Hemispherical scale Tinian 1946, Guam 1953
Saisettia hemisphaerica (Targ) Guam 1946
Saisettia(Parasaisettia) nigra (Nietner) Nigra scale Saipan 1946, Tinian 1946, Guam 1947
Saisettia oleae (Bernard) Black scale Saipan 1946, Guam 1953

References

Beardsley, J. W. Jnr. 1966. Homoptera: Coccoidea. In: Insects of Micronesia 6(7): 377-562.
 Beardsley, J. W. Jnr. 1975. Homoptera: Coccoidea supplement. In: Insects of Micronesia 6(9):
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas
 college, Saipan. Updated February 16, 1999.
 Oakley 1946

Pit scales

Diversity

Ecological and human significance

Conservation

Identification

There are keys for in house identification.

Records of pit scales from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

[illegible]

Species list

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<i>Asterolecanium bambusae</i> (Boisduval)	Bamboo scale	Tinian 1946, Guam 1954
<i>Asterolecanium miliaris</i> (Boisduval)	Bamboo scale	Tinian 1946, Guam 1952
<i>Asterolecanium pseudomiliaris</i> Green)	Bamboo scale	Guam 1952
<i>Asterolecanium pustulans</i> (Cockerell)	Oleander pit scale	Guam 1953
<i>Asterolecanium robustum</i> (Green)	Bamboo scale	Guam 1953

References

- Beardsley, J. W. Jnr. 1966. Homoptera: Coccoidea. In: Insects of Micronesia 6(7): 377-562.
Beardsley, J. W. Jnr. 1975. Homoptera: Coccoidea supplement. In: Insects of Micronesia 6(9):
Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas
college, Saipan. Updated February 16, 1999

Diversity

Ecological and human significance

Conservation

Identification

Records of mealybugs from CNMI indicating areas (blank spaces) from which records are required.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<i>Antonina graminis</i>					x		
<i>Chaetococcus bambusae</i>					x		
<i>Dysmicoccus brevipes</i>	x	x	x	x			
<i>Dysmicoccus neobrevipes</i>	x						
<i>Dysmicoccus saipanensis</i>					x		x
<i>Ferrisia virgata</i>			x	x			
<i>Planococcus citri</i>					x		
<u><i>Pseudococcus</i></u>							
<u><i>neomaritimus</i></u>					x		
<u><i>Pseudiococcus orchidicola</i></u>	x		x	x			
<i>Saccharicoccus sacchari</i>	x		x	x			
<i>Trionymus townesii</i>			x				

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

<i>Antonina graminis</i> (Maskell)	Rhodesgrass mealybug	Guam 1947, Saipan (Takahashi 1941)
<i>Chaetococcus bambusae</i> (Maskell)	Saipan 1946	

<i>Dysmicoccus boninsis</i> (Kuwana)	Guam 1911}	
<i>Dysmicoccus brevipes</i> (Cockerell)	Pineapple mealybug	Saipan 1946, Tinian 1946, Agiguan 1952, Rota 1946, Guam 1946-1952
<i>Dysmicoccus neobrevipes</i> Beardsley	Grey pineapple mealybug	Rota 1946, Guam 1953

Dysmicoccus saipanensis Shiraiwa Saipan mealybug Pagan 1959, Alamagan 1948, Saipan 1946, Guam 1953

Ferrisia virgata (Cockerell) Striped mealybug Saipan 1946, Tinian 1946-1956, Guam 1948

Maconellicoccus hirsutus (Green) Egyptian Hibiscus mealy bug Guam 1984

{Nipaecoccus vastator (Maskell) Guam 1977}

{Palmiculator guamensis Beardsley Guam mealybug Guam 1946}

{Phaenococcus gossypii Townsend and Cockerell Guam 1972}

{Phenacoccus madeirensis Green mealybug Guam n.d.}

Planococcus citri (Risso) Citrus mealybug Saipan 1946-1949, Guam 1958

{Planococcus lilacinus (Cockerell) Lilac mealybug Guam 1953}

Pseudococcus neomaritimus Beardsley Saipan 1946, Guam 1954

Pseudococcus orchidicola Takahashi Orchid mealybug Rota 1946, Saipan 1945, Tinian 1945

Saccharicoccus sacchari (Cockerell) Pink sugarcane mealybug Saipan 1946, Tinian 1946, Rota 1946, Guam 1937

Trionymus townesii Beardsley Tinian 1946

References

Beardsley, J. W. Jnr. 1966. Homoptera: Coccoidea. In: Insects of Micronesia 6(7): 377-562.

Beardsley, J. W. Jnr. 1975. Homoptera: Coccoidea supplement. In: Insects of Micronesia 6(9):

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant protection). Northern Marianas College, Saipan. Updated February 16, 1999

Schreiner & Nafus 1986

Oakley 1946

Phylum: Arthropoda Class: Insecta Order: Thysanoptera

Diversity

Micronesia – 30 + species, Mariana Isl. – 30 species, CNMI - 16 species

Ecological and human significance

Thrips are minute, slender-bodied animals 0.5-5.0 mm in length. Wings may be present or absent. Mouthparts are of the sucking type, and a great many of the species are plant feeders, attacking twigs, buds, flowers, fruits and leaves on a great many different plant species. They destroy plant cells by their feeding and some species act as vectors to plant diseases. Some feed on fungal spores and a few are predators of small arthropods – some species may even bite man. They are prey items for a number of invertebrate predators. The thrips responsible for crop damage in the CNMI include red-banded thrips (beans, cocoa, guava, mango, papaya), melon thrips (bananas, cucurbits, eggplant, radish), onion thrips (bananas, cabbages and related crops, coffee, cotton, cucurbits, okra, onion, pineapple, potato, rice, tomato), greenhouse thrips (betelnut, cucurbits, mango), *Aleurodothrips fasciapennis* (coffee), *Karnyothrips melaleuca* (coffee) and *Bolacidothrips orizae* (rice)

Conservation

Most of the thrips appear to have been introduced, and there would not appear to be any conservation requirements. Better surveys of the northern islands need to be undertaken.

Identification

There are no keys for in house identification.

Records of thrips from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

species*	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Aleurodothrips fasciapennis														
Allothrips sp.													x	
Bolothrips artocarp				x										
Deiothrips madrasensis						x			x					
Dolichothrips pumilus				x										
Haplothrips pallescens						x								
Heliothrips haemorrhoidalis				x										
Karnyothrips melaleuca						“Marianas”								
Machatothrips artocarp				x										
Pseudothrips sp.						x								
Rhaebothrips lativentris				x			x							
Rhaebothrips sp.										x				
Selenothrips rubrocinctus				x										
Taeniothrips setipennis				x										
Thrips palmi						“Marianas”								
Thrips tabaci						“Marianas”								

- **Unable to determine any that were indigenous**

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Thripidae

{Bolacidothrips orizae Moulton Guam 1936}
{Dendrothripoides ipomeae Bagnall Guam 1936}
{Dinurothrips guamensis Moulton Guam 1936}
{Microcephalothrips abdominalis (Crawford) Guam 1964}
Pseudothrips sp. Sarigan 1992
Heliothrips haemorrhoidalis (Bouche) Greenhouse thrip Saipan 1964, Guam 1936
{Scirtothrips clarus Moulton Guam 1936}
Selenothrips rubrocinctus (Giard) Redbanded thrip Saipan 1964, Guam 1936
Taeniothrips setipennis Karny Saipan 1964, Guam 1936
{Taeniothrips vitticornis Karny Guam 1936}
{Thrips leucaenae Moulton Guam 1936}
Thrips palmi Karry Melon thrips Marianas, Guam 1983
Thrips tabaci Lindeman Onion thrips Marianas

Family: Phlaeothripidae

Allothrips sp. Pagan 1992
{Aleurodothrips fasciapennis (Franklin) Guam 1936}
Dexiothrips madrasensis (Anauthakrishnan) Anatahan, Pagan 1992
Dolichothrips pumilus Presner Saipan 1964
Bolothrips artocarpi Moulton Saipan 1964, Guam 1936
{Gynaikothrips uzeli (Zimmerman) Guam 1936}
Haplothrips pallescens (Hood) Anatahan 1992
{Haplothrips phyllanthi Moulton Guam 1936}
{Haplothrips gowdeyi (Franklin) Guam 1936}
{Karnyothrips flavipes (Jones) Guam 1936}
{Karnyothrips melaleuca (Bagrall) Guam 1936}
Machatothrips artocarpi Moulton Saipan 1964, Guam 1936
{Macrophthalthothrips usingeri Moulton Guam 1936}
{Maconellicoccus hirsutus (Green) Egyptian Hibiscus mealy bug Guam 1984}
{Mesothrips guamensis Moulton Guam 1936}
{Mesothrips swezeyi Moulton Guam 1936}
Rhaebbothrips (= *Nesothrips*) *lativentris* Karny Saipan 1963, Guguan 1992, Guam 1936-1939
Rhaebbothrips sp. Guguan 1992

References

- Bianchi, Fred A. 1965. New Thysanoptera records from the Caroline and Mariana Islands. Proc. Hawaiian Ento. Soc. XIX(1): 69-72
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
- Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant protection). Northern Marianas College, Saipan. Updated February 16, 1999.
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- Sakimvra, K. 1971. A review of the Genus *Rhaebbothrips* Karny (Thysanoptera : Phlaeothripidae). Pacific Insects 13(2): 291 – 403.
- Schreiner, I. Undated. Red-banded thrips. Guam Pest Series, Agriculture and Natural Resources, University of Guam. CES Publication # PS 88-8. 1 p.

Micronesia – 18 species, Mariana Isl. – 11 species, CNMI - 10 species.

Lacewings are small to large insects in which most of the adult and larval stages are predaceous on other insects. They are preyed upon by a number of invertebrate and vertebrate predators. The species are not harmful to man.

For the indigenous species, maintenance of natural vegetation habitats and as little use of pesticides as possible should be applied in those habitats.

There are keys for in house identification.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

[illegible]

Micromius navigatorum			x						x
Distoleon bistrigatus		X	x					x	
Myrmeleon acer	x	x	x	X?					
Mallada alcestitis				x					
Chrysops basalis		x	x	x	X	x	x	x	x
Chrysops jolyana (?)			x						
Chrysops oceanica		x	X	X	X			x	
Chrysops ramburi									x
Chrysops scelestes		x							
Chrysoperla krakatauensis								x	

Species list

Micromius navigatorum Brauer Agrihan 1949, Saipan 1945, Guam 1946

Myrmeleon acer Walker Saipan 1951, Tinian 1952, Rota 1946, Guam 1947

Family: Chrysopidae

Chrysops(*Mallada* ?) *basalis* Walker Asuncion, Guguan, Sarigan 1992, Agrihan 1945, Pagan 1940, Saipan 1952, Tinian 1946, Agiguan 1952, Anatahan CNMI 2002 , Guam 1945

Mallada alcestis (Banks) Anatahan 1992

Chrysops jolyana (?) Navas Saipan 1949

Chrysops(*Plesiochrysa* ?) *oceanica* Walker Pagan 1951, Tinian 1952, Saipan 1946-1992, Saipan CNMI 1980, Anatahan 1992, CNMI 2002, Sarigan 1992, Sarigan CNMI 2001, Guam 1936

Chrysops ramburi Schneider ?Saipan CNMI 2000, Agrihan 1949, Guam 1945

Chrysops satilota Banks Guam 1945

Chrysops scelestes Banks Tinian 1946

Chrysoperla krakatauensis Tsukaguchi Pagan 1992

References

Carpenter, F. M. 1961. Neuroptera: Hemerobiidae. In: Insects of Micronesia 8(3): 35 – 43.

Adams, J. 1959. Neuroptera: Myrmeleontidae and Chrysopidae. In: Insects of Micronesia 8(2): 13 – 33.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Diversity

Ecological and human significance

Conservation

Identification

●

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Aephnidius opaculus (Zimmerman) Guam 1937, Uracas 1992
Anchista binota (Dejean) Saipan 1942, Guam 1937
Chlaenius flaviguttatus Macleay Saipan 1954, Rota 1952, Guam 1952
Chlaenius marianensis Darlington Agiguan 1954, Saipan n.d.
Clivina fasciata Putzeys Guan n.d., Saipan 1944
Egadroma smaragdula (Fabricius) Saipan, Rota, Guam (1937-1948), Saipan CNMI 1970-1979
Endynomena pradierei (Fairmaire) Anatahan 1941, Guam 1946
Gnathaphanus licinoides Hope Saipan 1944
Gnathaphanus picipes (Macleay) Saipan 1945, Tinian 1945
Lesticus sp.? Guam 1936
Mochtherus tetraspilatus (Macleay) Tinian 1945, Guam 1949
Notagonum caritum Darlington Guam 1945
Parena nigrolineata (chaudoir) Rota 1992
Pentagonica blanda Andrewes Saipan 1944
Pentagonica erichsoni Schmidt-Goebel Guam 1945
Perigona nigriceps (Dejean) Saipan, Rota, Tinian, Guam (1937-1945)
Plochionus pallens (Fabricius) Saipan 1942
Selenophorus pyritosus Dejean Guam 1924
Stenolophus smaragdina (F.) Pagan 1992
Tachys brachys Andrewes Agrihan, Anatahan 1992
Tachys ceylanicus (Nietner) Guam 1937, Saipan 1945
Tachys luteus Andrewes Saipan 1945
Tachys truncatus (Nietner) Saipan 1945
Tachys umbrosus Motschulsky Guam 1945
Tachys yunax Darlington Guam 1945
Typhlonesiotes zwaluwenburgi Jeannel Saipan 1945

References

- Darlington, P.J. 1970. Coleoptera: Carabidae including Cincidelinae. In: Insects of Micronesia 15(1): 1 – 509
- Kasahara, S. 1994. Carabidae (Insecta: Coleoptera) of the Mariana Islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 221-222.
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Dytiscidae

Diversity

Micronesia – 6 species, Mariana Isl. – 6 species, CNMI – 4 species

Ecological and human significance

As their name implies, these beetles are aquatic, and can remain submerged under the water in ponds and streams for long periods. Both larvae and adults are highly predaceous, feeding on invertebrates and even small vertebrates such as tadpoles and fish. Some species can grow to 40 mm long.

Conservation

The maintenance of indigenous diving beetles requires conservation of freshwaterbodies in an undisturbed and pollution free state.

Records of predaceous diving beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Cybister tripunctatus

X

Rhantus sp.

X

Rhantus pulverosus

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

{*Bidessus gentilis* Sharp Guam n.d.}

Cybister tripunctatus Ol. Saipan CNMI 1969-1979, Guam 1911-1936

{*Eretes sticticus* (L.) Guam 1936}

Rhantus sp. Tinian CNMI 1971

Rhantus pulverosus Stephens Anatahan 1992, Guam 1936

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Hydrophilidae

Diversity

Micronesia – 3(4?) species, Mariana Isl. – 3(4 ?) ,CNMI– 1 species

Ecological and human significance

Water scavenger beetles are aquatic, living in quiet ponds and streams, the larvae being predators on invertebrates, and the adults usually being scavengers.

Conservation

Little is known of these beetles in CNMI but their maintenance requires conservation of freshwaterbodies in an undisturbed and pollution free state.

Identification

There are no keys for in house identification.

Records of water scavenger beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Species A

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Species A Tinian CNMI 1971

Dactylosternum abdominale (F.) Guam 1936

Enochrus rubrocinctus (Regimbart) Guam 1936

Noteropagus obscurus d'Orchymont Guam 1936

References

Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Histeridae

Diversity

Micronesia – 3 ? species, Mariana Isl. – 3 ? species, CNMI – 3 ? species

Ecological and human significance

Hister beetles are small (usually under 10 mm long) and are generally found in or near decaying organic matter such as dung, fungi or carrion. They are generally predators found on the insects living in these situations.

Conservation

For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of hister beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Platysoma anatahensis														x
Species A			X											
Saprinus cf cyaneus														X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Platysoma anatahensis Ohara Anatahan 1992

Species A Tinian CNMI 1971

Saprinus cf *cyaneus* F. Anatahan CNMI 2002

References

Ohara, M. 1994. A new histerid beetle (Insecta: Coleoptera: Histeridae) from the northern Mariana islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 223-226.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Staphylinidae

Diversity

Micronesia – 33 (to 42? species) species, Mariana Isl. – 33 (to 42? species) , CNMI – 12 (to 17 ?) species

Ecological and human significance

Rove beetles grow up to 25 mm long, and most are active predators on invertebrates. They live in and about decaying materials such as dung or carrion, but also occur under stones, in fungi and leaf litter and in the nests of birds, ants and termites.

Conservation

For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of rove beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Astenus sp.										x				
Scopaeus sp. 1					x			x						
Scopaeus sp. 2										x				
Anotylus sp.			X		x									
Carpelimus sp.					x									
Edaphus sp.					x					x				
Medon sp. 1							x			x				
Medon sp. 2													x	
Philothus longicornis						X								
Aleocharinae sp.						X								
Omalinae sp.						X								
Osorius sp.			X											
Species 1-5					X									

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Oxytelinae

Espeson crenicollis Fauvel Guam 1936

Lispinus foveatus Fauvel Guam 1936

Lispinus impressicollis guamensis Bernhauer Guam 1936
Lispinus impressicollis iridescens Bernhauer Guam 1936
Phloeonomus hebridensis Bernhauer Guam 1936
Phloeonomus singularis Kraatz Guam 1936
Trogophloeus exiguus Erichson Guam 1936
Trogophloeus usingeri Bernhauer Guam 1936
Anotylus sp. Anatahan 1992, Saipan CNMI 2002
Carpelimus sp. Anatahan 1992
 Subfamily: Paederinae
Astenus horni (Bernhauer) Guam 1936
Astenus sp. Asuncion 1992
Dibelonetes formosae Bernhauer Guam 1936
Stilicopsis setigera (Sharp) Guam 1936
Medon sp. 1 Agrihan, Sarigan 1992
Medon sp. 2 Maug 1992
Osorius sp. Saipan CNMI 2002
Palaminus swezeyi Bernhauer Guam 1936
Palaminus minutissimus Bernhauer Guam 1936
Scopaeus opacicollis Bernhauer Guam 1936
Scopaeus sp. ! Alamagan, Anatahan 1992
Scopaeus sp. 2 Agrihan 1992
 Subfamily: Staphylininae
Leptacinus flavipennis Kraatz Guam 1936
Philonthus discoideus Gravenhorst Guam 1936
Philonthus quisquiliarius (Gyllenhal) Guam 1936
Philonthus sp. Guguan 1992
Philonthus longicornis Stephens Anatahan CNMI 2002
 Subfamily: Aleocharinae
Atheta (Microdota) usingeri Bernhauer Guam 1936
Gyrophana moluccensis Fauvel Guam 1936
Gyrophana variolosa Fauvel Guam 1936
Homalota cribrum (Fauvel) Guam 1936
Oligota apicata obscuricornis Bernhauer Guam 1936
Oligota flavicornis Lacordaire Guam 1936
Thamaraea insigniventris Fauvel Guam 1936
Aleocharinae sp. Anatahan CNMI 2002
 Subfamily: Omaliinae
Omaliinae sp. Anatahan CNMI 2002
 Subfamily: Osorhiinae
Holotrochus swezeyi Bernhauer Guam 1936
 Subfamily: Evasthetinae
Edaphus sp. Agrihan, Anatahan 1992

At least 5 unidentified species in CNMI collection

References

- Bernhauer, H. 1942. Coleoptera – Staphylinidae of Guam. Pp. 41-44. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.
 Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
 Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Pselaphidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Mould beetles are very small species (under 5 mm long) and can be found under stones and logs, in rotten wood and in moss.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

Records of short-winged mould beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Mayetia sp.

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Mayetia sp. Agrihan 1992

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Ptiliidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Feather winged beetles include some of the smallest beetles known, many being less than 0.5 mm, and most being less than 1mm long. They occur in rotting wood, dung and in leaf litter, and feed chiefly on fungal spores.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Records of feather-winged beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Acrotrichis sp

x

x

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Acrotrichis sp. Agrihan, Anatahan, Asuncion 1992

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Scaphidiidae

Diversity

Micronesia – 10 species, Mariana Isl. – 2 species, CNMI – 2 species

Ecological and human significance

Shining fungus beetles are up to 7 mm long, and occur in fungi, rotting wood, under bark and in litter.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

Records of shining fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Scaphisoma dybasi

x

Scaphisoma sp ?

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Scaphisoma dybasi Lobl Saipan 1945

Scaphisoma sp. Guguan 1992

References

Lobl, I. 1981. Coleoptera: Scaphidiidae. In: Insects of Micronesia 15(2): 69-80

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Rhipiceridae

Diversity

Micronesia – 1 species, Mariana Isl. – 1, CNMI– 0 ? species

Ecological and human significance

cedar beetles attain lengths of up to 24 mm long.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of cedar beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded yet

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Callirhipis onoi Blair Guam 1936

References

Zimmerman, E. c. 1971. Rhipiceridae of Guam. In: Insects of Guam, Bernice P. Bishop Museum Bulletin 172. Pp. 45-47.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Lucanidae

Diversity

Micronesia – 3 species, Mariana Isl. – 3(4?) species, CNMI – 2 (3?) species

Ecological and human significance

Stag beetles are usually found in wooded areas, their larvae are found in decaying wood where they feed on the juices of such wood.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of stag beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Figulus integricollis		x								x
<u>Figulus mento semperi</u>										
Sp A ?							X			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Figulus integricollis Thomson Agrihan, Anatahan, Rota 1992 Guam 1936
Figulus lilliputanus Westwood Guam 1936
Figulus mento semperi Kriesche Anatahan CNMI 2002 (in Bishop Museum Collection)
 Sp A ? Sarigan CNMI 2001

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Passalidae

Diversity

Micronesia – 10 species, Mariana Isl. – 1, CNMI – 1 species

Ecological and human significance

Bess beetles are usually found in colonies in galleries in decaying logs. The adults prepare food (decaying wood) with their salivary secretions and feed it to the young.

Conservation

Little is known of these beetles in CNMI. For the indigenous species, conservation will entail maintenance of natural forest habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of bess beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Popilius sp ?		X		X		X		X	
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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Popilius sp ? Saipan CNMI 1979-2001, Sarigan CNMI 2001, Aguiguan CNMI 2002, Anatahan CNMI 2002 .

References

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Scarabeidae

Diversity

Micronesia – 27 species, Mariana Isl – 20 species, CNMI – 12 species

Ecological and human significance

Scarab beetle species vary greatly in size and in habits. Many are dung feeders, or feed on decomposing plant materials, carrion and the like. A few feed on fungi, many feed on plant materials such as grasses, foliage, fruits and flowers, and some of these are serious pests lawns and various agricultural crops. Some live in the nests or burrows of vertebrates, or in the nests of termites. Scarabs are eaten by a variety of invertebrate and vertebrate predators.

Conservation

For the very few indigenous species, conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of scarab beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Aphodius lividus	x		x	X	X			x			
Ataenius cognatus			X	X							
Ataenius nocturnus				x							
Ataenius orbicularis	x		x	x	X						
Ataenius pacificus				x							
Ataenius peregrinator		x	x	x							
Omorgus suberosus	x	x									
Adoretus sinicus	X		X	X	X						
Anomala sulcatula	x		x	X							
Holotrichia mindanaoana				X							
Protaetia fusca			X	X							
Protaetia orientalis			X	X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Scarabeinae

Onthophagus armatus Blanchard Guam n.d.

Onthophagus paeceus Say Guam CNMI 1968

Subfamily: Aphodiinae

Aphodius lividus (Olivier) Guam 1936, Tinian, Rota, Saipan n.d., Saipan CNMI 1970, Pagan

1992, Anatahan CNMI 2002

Ataenius cognatus Le conte Saipan CNMI 1970-1997, Tinian CNMI 1972, Guam 1936
Ataenius gracilis (Melsheimer) Guam 1936
Ataenius nocturnus (Nomura) Saipan n.d.
Ataenius orbicularis Schmidt Anatahan CNMI 2002, Saipan, Tinian, Rota, Guam n.d.
Ataenius pacificus Sharp Saipan n.d.
Ataenius peregrinator Harold Saipan, Tinian, Agiguan, Guam n.d.
Ataenius yasumatsui Nomura Guam n.d.
Saprosites pygmaeus Harold Guam n.d.

Subfamily: Troginae

Omorgus suberosus (Fabricius) Agiguan, Rota n.d.

Subfamily: Melolonthinae

Lepidiota carolinensis Arrow Guam n.d.
Microserica guamensis Gordon Guam 1945
Phyllophaga bipunctata (Brenske) Mindanao June beetle Guam n.d.

Subfamily: Rutelinae

Adoretus sinicus Burmeister Chinese rose beetle Rota n.d., Rota CNMI 1997-2002, Tinian
CNMI 2002, Saipan CNMI 1970-2002, Anatahan CNMI 2002, Pagan 1992, Guam
(first found 1948)
Anomala sulcatula Burmeister Chafer beetle Saipan n.d., Saipan CNMI 1979-1980, Tinian,
Rota n.d., Guam 1936
Holotrichia mindanaoana (Brenske) Saipan CNMI 1973, Guam 1936

Subfamily: Cetoniinae

Protaetia fusca (Herbst) Mango flower beetle Saipan CNMI 1970-1984, Tinian CNMI
1970-2002, Guam - First found in 1954,
Protaetia orientalis (Gory and Percheron) Oriental fruit beetle Saipan CNMI 1979-2000,
Tinian CNMI 2000-2002, Guam – apparently first noted during 1972.

Subfamily : ?

Popillia lewisi Arrow Found in Guam mid-1985, eradication commenced, some still found 1986 – confined
to docking bay, Anderson Air Force Base. Presumed ex Japan.

References

- Cartwright O.L. and R.D.Gordon 1971. Coleoptera: Scarabeidae. In: Insects of Micronesia 17(4): 257-296.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas college, Saipan. Updated February 16, 1999.
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Buprestidae

Diversity

Micronesia – 6 + species, Mariana Isl. – 6 species, CNMI – 3 species

Ecological and human significance

Buprestid beetles vary in size from small to large, and are often metallic – coppery, green, blue or black – especially on the underside. Most buprestid larvae bore under bark or in wood, attacking either living trees or newly cut or dying logs and branches. Some species can cause serious damage to fruit trees.

Conservation

For the very few indigenous species, conservation will entail maintenance of natural habitats (mainly forest) and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of buprestid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Agrilus occipitalis</i>			X	X										
<u><i>Cyphogastra auripennis</i></u> Saunders				X	X					x				
Species A (mauve with eyespots)				X										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

<i>Agrilus occipitalis</i> (Eschscholtz)	Saipan CNMI 1970, Tinian CNMI 1971, Guam 1936
<i>Buprestis aurulenta</i> L.	Guam n.d.
<i>Chrysobothris costata</i> Kerremans	Guam 1936
<i>Chrysodema ventralis</i> Waterhouse	Guam 1936
<i>Cyphogastra auripennis</i> Saunders	Saipan CNMI 1969-1974, Anatahan CNMI 2002, Agrihan 1992, Guam 1936
Species A (mauve with eyespots)	Saipan CNMI 1971

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Suborder: Polyphaga
Family: Elateridae

Diversity

Micronesia – 70 species, Mariana Isl. – 24 species, CNMI – 16 species

Ecological and human significance

Click beetles may reach 40 mm in length, most are smaller. Adults are plant feeders and occur on flowers, under bark, or on foliage. The larvae of many species are very destructive, feeding on newly planted seed and the roots of many plant crops. Some larvae live in rotting wood, and some of these feed on other insects.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of click beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Alaus guamensis</i>		x									
<u><i>Compsolacon cognatus</i></u>		x									
<u><i>Conoderus pallipes</i></u>	X		X	X	X			x	x	X	
<u><i>Lacon modestus</i></u>				x	X	x					
<u><i>Megapenthus brunniventris</i></u>			x	x							
<u><i>Megapenthus disjunctus</i></u>		x									
<u><i>Melanoxanthus dissitus</i></u>				x							
<i>Melanoxanthus</i>											
<i>melanocephalus</i>				X							
<i>Melanoxanthus</i> sp nov					X						
<i>Meristhus scobinula</i>				x							
<u><i>Prodorasterius</i> sp.</u>									x		
<i>Simodactylus exsul</i>				x							
<u><i>Simodactylus hesperius</i></u>											
<u><i>hesperius</i></u>				X							
<u><i>Simodactylus</i></u>											
<u><i>marianarum</i></u>	x		x								
<u><i>Simodactylus pallidus</i></u>	x	x	X	X	X				x	x	
<u><i>Tetrigus townesi</i></u>		x									

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Alaus guamensis Van Zwaluwenburg Rota 1946, Guam n.d.
Compsolacon cognatus Van Zwaluwenburg Rota 1946
Conoderus (= *Monocrepidius* ?) *pallipes* Eschscholtz Pagan 1949, Saipan 1951, CNMI 1970-1978, Rota 1952, CNMI 1970, Tinian CNMI 1971, Agrihan CNMI 1971, Anatahan CNMI 2002, Alamagan 1992, Guam 1952
Lacon modestus (Boisduval) Saipan 1945, Sarigan 1992, Anatahan CNMI 2002, Guam 1936-1945
Lanelater bifoveatus (candeze) Guam 1900 - 1936
Megapenthus bruniventris candeze Saipan 1945, Tinian 1949
Megapenthus disjunctus Van Zwaluwenburg Rota 1945
Melanoxanthus arcuatus Van Zwaluwenburg Guam 1945
Melanoxanthus comptus Van Zwaluwenburg Guam 1942
Melanoxanthus dissitus Van Zwaluwenburg Saipan 1945
Melanoxanthus guamensis Van Zwaluwenburg Guam 1945
Melanoxanthus melanocephalus (Fabricius) Saipan 1936, CNMI 1970, Guam 1936
Melanoxanthus palustris Van Zwaluwenburg Guam 1936
Melanoxanthus usingeri Van Zwaluwenburg Guam 1936
Melanoxanthus varians Van Zwaluwenburg Guam 1945
Melanoxanthus sp nov Anatahan CNMI 2002 (specimens sent to Bishop Museum)
Meristhus scobinula Candeze Saipan 1945
Prodorasterius sp. Pagan 1992
Simodactylus cinnamomeus (Boisduval) Guam 1936
Simodactylus exsul Van Zwaluwenburg Saipan 1945
Simodactylus hesperius hesperius Van Zwaluwenburg Saipan 1948, CNMI 1970-2000
Simodactylus marianarum Van Zwaluwenburg Tinian, Rota, Guam 1936
Simodactylus pallidus Fleutiaux Agrihan 1945, Pagan 1940, Saipan 1945, CNMI 1970-2001, Tinian 1952, CNMI 1971, Agiguan 1952, Rota 1946, Anatahan CNMI 2002.
Tetrigus townesi Van Zwaluwenburg Rota 1946

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
 Van Zwaluwenburg, R.H. 1957. Coleoptera: Elateridae. In: Insects of Micronesia 16(1): 1-66.
 Van Zwaluwenburg, R.H. 1942. Elaterid and Eucnemid beetles from Guam. In: Insects of Guam – I. Bernice P. Bishop Museum Bulletin 172. Pp. 53-55.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Families: Eucnemidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species .

Ecological and human significance

False click beetles usually inhabit wood that has just started to decay.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of false click beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Fornax coxalis

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Fornax coxalis Fleutiaux Anatahan CNMI 2002, Guam 1936

References

Van Zwaluwenburg, R.H. 1942. Elaterid and Eucnemid beetles from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 53-55.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Families: Cantharidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Adult cantharid beetles are usually found on flowers, their larvae are predatory on other insects.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of cantharid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Caccodes marquesanus

x x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Caccodes marquesanus (Blair) Saipan 1945, Tinian 1945

References

Wittmer, W. 1958. Coleoptera: Lampyridae, Cantharidae, Malachiidae, Prionoceridae. In: Insects of Micronesia 16(2): 67 – 74.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Lycidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 , CNMI – 1 species

Ecological and human significance

Net-winged beetles occur on foliage and tree-trunks, usually in wooded areas; they feed on the juices of decaying plant materials and occasionally on other insects. The larvae are predaceous on invertebrates.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Records of net-winged beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Species A

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Species A Saipan CNMI 2000 .

References

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Dermestidae

Diversity

Micronesia: - 13 species, Marianas - 10 species, CNMI – 7 species

Ecological and human significance

Dermestids are mostly scavengers and feed on a great variety of plant and animal products. A number of species are of great economic importance, most of the damage to materials being done by the larvae.

Conservation

All the dermestids in the region are introduced, and as such there are no conservation issues except that of trying to control or get rid of the populations.

Records of dermestid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Aethriostoma undulata			x	X										
Anthrenus verbasci				X										
Dermestes ater		x	x	x		X		X		x				
Dermestes maculatus			x	x										
Evorinea iota			x	X										
Thorictodes heydeni				x										
Trogoderma anthrenoides				x										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Aethriostoma undulata Motschulsky Saipan 1941, Saipan CNMI 1997, Tinian 1952
Anthrenus verbasci (L.) Saipan CNMI 1997
Dermestes ater De Geir Pagan n.d., Saipan 1945, Tinian 1952, Agiguan 1952, Alamagan CNMI 1970, Anatahan CNMI 2002, Guam 1945
Dermestes maculatus De Geir Saipan 1940, Tinian 1940, Guam 1945
Evorinea iota (Arrow) Saipan 1945, CNMI 2001, Tinian 1952, Guam 1957
Orthinus fulvipes (Guerin-Meneville) Guam n.d.
Orthinus nesioticus Beal Guam 1946
Orthinus terminale (Sharp) Guam 1945
Thorictodes heydeni Reitter Saipan 1945
Trogoderma anthrenoides (Sharp) Saipan 1945

References

Beal, R. S. 1961. Coleoptera: Dermestidae. In: Insects of Micronesia 16(3): 109 – 131.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Anobiidae

Diversity

Micronesia - 9 species, Marianas - 5 species, CNMI – 2 species

Ecological and human significance

Most anobids live in dry vegetable materials such as logs or branches, or under the bark of dead trees, others pass the larval stage in fungi or in seeds and stems of various plants. Some anobid species are destructive pests, such as of cereals, dried tobacco and wood.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Records of anobid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Lasioderma serricorne</i>			X											
<u><i>Mirosternus gressitti</i></u>				x										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Tribe: Xyletini

Caenocara mariana Ford Guam 1945

Lasioderma serricorne (Fabricius) Cigarette beetle Tinian CNMI 1981, Guam 1936-1957

Tribe: Dorcatomini

Mirosternus gressitti Ford Saipan 1945

Mirosternus guamensis (Blair) Guam 1952

Tribe: Anobini

Sitodrepa panicea (Linnaeus) Guam n.d.

References

- Ford, E.J. Jnr. 1958. Coleoptera: Anobiidae. In: Insects of Micronesia 16(2): 75 – 83.
 Swezey, O. 1942. Miscellaneous families of Guam Coleoptera. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 150-171.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Bostrichidae

Diversity

Micronesia – 7 + species, Mariana Isl. – 7 species, CNMI - 5 species

Ecological and human significance

Branch and twig borers are variously sized beetles, up to 55 mm long. Most species of this group are wood-boring and attack living trees, dead twigs or branches or seasoned lumber. Some species cause damage to orchards.

Conservation

All the known bostrichids in the region are introduced, and as such there are no conservation issues except that of trying to control or get rid of the populations.

Identification

There are keys for in house identification.

Records of branch and twig borers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Dinoderus bifoveolatus				x										
Dinoderus minutus				X										
Heterobostrychus														
aequalis			x	x										
Xylothrips capucinus		x	x	x										
Xylothrips flavipes			x	X										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Dinoderinae

Dinoderus bifoveolatus (Wollaston) Saipan 1947, Saipan CNMI 1970-2001

Dinoderus minutus (Fabricius) Saipan 1947, CNMI 1970-2001, Guam 1936-1953

Rhizopertha dominica (Fabricius) Guam 1945

Subfamily: Bostrychinae

Heterobostrychus aequalis (Waterhouse) Saipan 1954, Tinian 1945, Guam 1954

hXylothrips capucinus (Fabricius) Saipan 1945, Tinian 1945, Agiguan 1952, Guam 1936-1945

Xylothrips flavipes (Illiger) Saipan 1954, Saipan CNMI 1970, Tinian 1946, Guam 1911

Xylothrips religiosus (Boisduval) Guam 1936

References

- Chujo, Michio. 1958. Coleoptera: Bostrychidae. In: Insects of Micronesia 16(2): 85 – 104.
 Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Trogositidae

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI – 0 species

Ecological and human significance

Bark-gnawing beetles vary in length from 2.6-22 mm, and the majority are predatory. They are generally found under bark, in woody fungi and in dry vegetable matter.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Records of bark-gnawing beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species known.

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas college collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Melambia cordicollis Reitter Guam 1936

Tenebroides mauritanicus (L.) Guam 1936

References

Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Cleridae

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI - 1 species

Ecological and human significance

The majority of checkered beetles are predatory on invertebrates in both adult and larval stages. Many are common on or within tree-trunks or logs, where they prey on the larvae of woodboring Insects. Others occur on flowers or foliage. The red-legged ham beetle is a pest, feeding on stored meats.

Conservation

All the known species in the region are introduced, and as such there are no conservation issues except that of trying to control or get rid of the populations.

Identification

There are no keys for in house identification.

Records of checkered beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Necrobia rufipes</i>		X		X			X	X	X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Necrobia rufipes (De Geer) Red-legged ham beetle Saipan CNMI 1970, Alamagan CNMI 1970, Pagan CNMI 1970, Agrihan CNMI 1970, Anatahan CNMI 2002, Guam 1911-1936
Tillus notatus Klug Guam 1936

References

Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Superfamily Cleroidea
Family: Melyridae (=Malachidae)

Diversity

Micronesia - 5 species , Marianas - 3 species, CNMI – 3 species

Ecological and human significance

Melyrids are smallish beetles (10 mm long or less). Most adults and larvae are predatory on invertebrates, some live on flowers.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of melyrid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<u>Carphurus reductipennis</u>			x								
Laius marchei	x										
Laius sp. ?										x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Carphurus reductipennis Wittmer Tinian 1945

Laius marchei Pic Rota 1940

Laius sp. Agrihan 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Wittmer, W. 1958. Coleoptera: Lampyridae, cantharidae, Malachiidae, Prionoceridae. In: Insects of Micronesia 16(2): 67 – 74.
- Wittmer, W. 1970. Coleoptera: Malachiidae, Supplement. In: Insects of Micronesia 16(6): 279 – 280.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Nitidulidae

Diversity

Micronesia - 39 species, Marianas - 28 species, CNMI - 17 species

Ecological and human significance

Most species of sap beetles are small (12 mm or less), and all in the region are attracted to, and feed on, ripe or rotting fruit.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of sap beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands											
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun
Carpophilus contegens												
Carpophilus davidsoni	x	x	x	X		X						
Carpophilus dimidianus			x	x								
Carpophilus hemipterus			x	x								
Carpophilus maculatus	x		x	x								
Carpophilus mutilatus				x								
Carpophilus oculatus				x								
Carpophilus pilosellus	x		x	x								
Conotelus mexicanus						X	x					
<u>Haptognathus nitidus</u>	x											
<u>Haptognathus pacificus</u>			x	x								
<u>Haptognathus reticulatus</u>				x								
Haptoncus luteolus	x		x									
Haptoncus ocularis				x		X						
Prometopia quadrimaculata				X								
Urophorus humeralis	x		x	x								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Carpophilinae

Carpophilus contegens (Walker) Agrihan 1992

Carpophilus davidsoni Dobson Saipan 1945, CNMI 2001, Tinian 1945, Aguihan 1952, Rota 1946, Sarigan CNMI 2001, Guam 1957

Carpophilus dimidianus (Fabricius) Tinian 1946, Saipan 1945, Guam 1948
Carpophilus hemipterus (Linnaeus) Saipan 1945, Tinian 1946
Carpophilus maculatus Murray Saipan 1946, Tinian 1946, Rota 1945, Guam 1946
Carpophilus mutilatus Erichson Saipan 1946, Guam 1957
Carpophilus oculatus Gillogly Saipan 1940
Carpophilus pilosellus Motschulsky Saipan 1945, Tinian 1945, Rota 1946, Guam 1945
Cillaeopeplus gracilis Gillogly Guam 1945
Cillaeus rastrus Gillogly Guam 1945
Conotelus mexicanus Murray Guguan 1992, Sarigan CNMI 2001, Guam first found 1964,

Subfamily: Cybocephalinae

Cybocephalus nipponicus Endrody-Younga Saipan 1959

Subfamily: Meligethinae

Haptognathus minutus Gillogly Saipan 1945, Guam 1945
Haptognathus nitidus Gillogly Rota 1945, Guam 1945
Haptognathus pacificus Gillogly Saipan 1945, Tinian 1951, Guam 1952
Haptognathus reticulatus Gillogly Saipan 1945, Guam 1945

Subfamily: Nitidulinae

Haptoncus albertisi Reitter Guam 1945
Haptoncus attenuatus Gillogly Guam 1938
Haptoncus epuraeoides Grouvelle Guam 1945
Haptoncus barbatus Gillogly Guam 1957
Haptoncus luteolus (Erichson) Tinian 1945, Rota 1945, Guam 1946
Haptoncus minutus (Reitter) Guam 1945
Haptoncus murrayi Grouvelle Guam 1945
Haptoncus ocularis (Fairmaire) Saipan 1940, Sarigan CNMI 2002
Haptoncus sordidus Geouvelle Guam 1936
Haptoncus testaceus Murray Guam 1937
Haptoncus valgus Gillogly Guam 1945
Prometopia quadrimaculata Motschulsky Saipan CNMI 2002, Guam 1945
Stelidota alternata Gillogly Saipan 1949, Guam 1938
Urophorus humeralis (Fabricius) Saipan 1946, Tinian 1946, Rota 1946, Guam 1957

References

- Gillogly, Lorin R. 1962. Coleoptera: Nitidulidae. In: Insects of Micronesia 16(4): 133 – 188.
Endrody-Younga, S. 1971. Coleoptera: cybocephalidae. In: Insects of Micronesia 16(7): 281 – 285
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Rhizophagidae

Diversity

Micronesia - 1 species , Marianas - 1 species, CNMI – 1 species

Ecological and human significance

Root-eating beetles are small, slender beetles (3 mm long or less). They usually occur under bark or in rotten wood, some live in ant's nests. Those collected in the CNMI were caught with fermenting fruit.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of bark-eating beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Europs sp.							X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Europs sp. Sarigan CNMI 2001 (Specimens in Bishop Museum).

References

None

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Sphindidae

Diversity

Micronesia - 1 species, Marianas - 1 species, CNMI – 1 species

Ecological and human significance

Dry-fungus beetles occur in dry fungi such as bracket fungi on tree-trunks.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification.

Records of dry-fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Sphindidae sp

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Sphindidae sp Maug 1992

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Cucujidae

Diversity

Micronesia - 6 species, Marianas - 6 species, CNMI – 3 species

Ecological and human significance

Most flat bark beetles are predaceous on mites and small insects which they find under bark. A few species, such as the saw-toothed grain beetle, feed on stored grain or meal.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification.

Records of flat bark beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<u>Cryprolestes ferrugineus</u>								x		
<u>Manaus coccinulus</u>										x
Orzaephilus surinamensis							X			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Cryptamorpha desjardinsi (Guerin) Guam 1936
Cryprolestes ferrugineus (Stephens) Sarigan 1992
Inopeplus metallescens Fairmaire Guam 1936
Manaus coccinulus (Walker) Maug 1992
Orzaephilus surinamensis (L) Saw-toothed grain beetle Saipan CNMI 979, Guam 1936
Psammoecus insularis (Sharp) Guam 1936

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
 Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Cryptophagidae

Diversity

Micronesia - 3 species, Marianas - 3 species, CNMI – 1 species

Ecological and human significance

Silken fungus beetles are small (1-5 mm long) species feeding on fungi, decaying vegetation and similar materials, and usually occur in decaying vegetable matter. Some live in nests of wasps or bumble bees.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are keys for in house identification.

Records of silken fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Toramnus taprobanae

x x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Hapalips samoensis Arrow Guam 1947

Hapalips taprobanae Grouvelle Guam 1945

Toramnus taprobanae Grouvelle Saipan 1945, Tinian 1945

References

Chujo, Michitaka. 1970. Coleoptera: Cryptophagidae and Mycetophagidae. In: Insects of Micronesia 16(6): 271 -278.

Diversity

Ecological and human significance

Conservation

Identification

Records of cerylonid beetles from CNMI indicating areas (blank spaces) from which records are required.

[illegible]

Species list

Euxestus sp. Agrihan 1992
Euxestus erithacus (Chevrolat) Anatahan CNMI 2002, Saipan CNMI 2001-2002

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Phalacridae

Diversity

Micronesia - 1 species, Marianas - 1 species, CNMI – 1 species

Ecological and human significance

Shining flower beetles are often found in the flower-heads of composites, in which the larvae develop.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification.

Records of shining flower beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Phalacridae sp.								X						

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Phalacridae sp. Guguan 1992

References

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Propalticidae

Diversity

Micronesia - 8 species, Marianas - 4 species, CNMI - 3 species

Ecological and human significance

Propalticid beetles are usually found under the bark of standing trees or logs.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification.

Records of propalticid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Propalticus oculatus

x x

Propalticus insularis

x

Propalticus saipanensis

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Propalticus oculatus Sharp Saipan n.d., Guam 1937, Tinian 1945

Propalticus insularis John Saipan 1945

Propalticus scriptitatus John Guam 1945

Propalticus saipanensis John Saipan 1945

References

John, Hans. 1971. Coleoptera: Propalticidae. In: Insects of Micronesia 16(7): 287 – 294.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Corylophidae

Diversity

Micronesia – 3 species, Mariana Isl. – 3 species, CNMI – 2 species

Ecological and human significance

Minute fungus beetles are generally less than 1 mm long, and occur in decaying vegetable matter and in debris.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of minute fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Alloparmulus rugosus ?

x x

Parmulus sp. ?

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Alloparmulus rugosus (Matthews) ? Alamagan, Guguan 1992

Ocholissa humeralis (Fairmaire) Guam 1936

Parmulus sp. Guguan 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Coccinellidae

Diversity

Micronesia - 48 species, Marianas - 28 species, CNMI – 15 species

Ecological and human significance

Most ladybirds are predators, both in the adult and larval stages, feeding on aphids. They are thus considered to be beneficial to man in his attempts to grow crops. The larvae are elongate, somewhat flattened and covered with minute tubercles or spines. They are usually spotted or banded with bright colours. The exception to having the predatory feeding habits described above is the Phillipine ladybug (*Epilachna philippinensis*) which feeds on members of the cucurbit family (Cucurbitaceae) and is known as a crop pest.

Conservation

The only known endemic species (*Pharellus dyabasi*) appears to be spread on the larger islands of the Marianas, from Guam to Saipan. Its presence further north requires confirmation. Two species appear to have arrived in CNMI in the last 35 years, these being *Chilocorus nigrinus* and *Menochilus sexmaculatus* – it is not known if these species were introduced inadvertently (as were the Phillipine ladybug and *Harmonia arcuata*), or were introduced deliberately such as *Azya trinitatus* and *Cryptognathus nodiceps*. It does not appear as though the deliberate introductions have been successful, as no specimens appear to have been collected since the introductions in 1960.

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats. There do not appear to be any other special conservation requirements, except to check on the continued presence of the endemic species.

Identification

There are keys for in house identification

Records of ladybugs from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Azya trinitatus				x										
<u>Catana spilota</u>			x											
Chilocorus nigritus	X			X			X							
Coccinella repanda	X		x	X			X				x			
Coelophora inaequalis	X		x	X			X							
Cryptognatha nodiceps				x										
<u>Cryptolaemus</u>														
<u>montouzieri</u>	x	x	x	X						x	x			
Epilachna phillipinensis	X			X	X									
<u>Harmonia arcuata</u>	x			X	x				X					
Menochilus sexmaculatus	X				X			X		X				
<u>Nephus roepki</u>	x			x	x							x		
Pharellus dybasi	x			x	X									

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u>Pseudoscymnus anomalus</u>				x	
<u>Rodolia pumila</u>	x		x	x	
<u>Scymnus nigrosuturalis</u>				x	
<u>Sticholotis ruficeps</u>				X	
<u>Telsima nitida</u>	x	x	x	X	x

Species list

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- Acarinus kraussi* Chapin Guam 1958
Anisolemnia mulsanti (Montrouzier) Guam 1936
Azya orbiger Mulsant Introduced to Guam, and has established: collected from 1936-46.
Azya trinitatus Marshall Introduced to Saipan 1960. No further records.
Ccatana spilota (Weise) Guam 1952, Tinian 1946
Chilocorus nigritus (F.) Saipan CNMI 1970-1980, Rota CNMI 1979, Guguan CNMI 2000
Chilocorus sp. nr *nigritus* (F.) Anatahan 1992
Coccinella repanda Thunberg Agrihan 1951, Saipan, Saipan CNMI 1970-1978, Tinian, Rota CNMI 2002, Sarigan CNMI 2001, Guam 1936-1952
Coccinella transversalis F. Alamagan, Anatahan, Maug 1992
Coelophora bouldardi (Mulsant) Guam 1940
Coelophora inaequalis var *inaequalis* (Fabricius) Agrihan 1992, Anatahan 1992, Guguan 1992, Pagan – 1940-54, Saipan CNMI 1946-1980, Tinian 1946, Rota 1946, CNMI 1970, Sarigan 1992, Sarigan CNMI 2001, Tinian, Guam – 1936-58
Cryptognatha nodiceps Marshall Introduced to Saipan 1960.
Cryptogonus orbiculus (Gyllenhal) Guam 1958
Cryptolaemus montouzieri (Mulsant) Agrihan, Pagan, Saipan, Saipan CNMI 1970-1980, Tinian, Agiguan, Rota, Guam 1940-51
Epilachna p. philippinensis Dieke Phillipine ladybug Saipan, Saipan CNMI 1970-1980, Tinian CNMI 2002, Rota CNMI 1970-1971, Guam – first introduced 1948
Exochomus sp. Saipan 1992
Harmonia arcuata (Fabricius) Agrihan 1951, Saipan 1946, Tinian 1946, Tinian CNMI 1970, Alamagan CNMI 1970, Rota 1946, Guam 1936-52
Harmonia octomaculata (F.) Sarigan 1992
Lindoris lophanthae (Blaisdell) Two attempts to establish the beetle in 1925 and 1926 apparently failed.
Menochilus (= *Cheilomenes*?) *sexmaculatus* (F.) Anatahan 1992, CNMI 2002, Alamagan, Guguan, 1992, Saipan CNMI 1970-1982, Pagan CNMI 1970, Sarigan CNMI 2001, Rota CNMI 2002.
Nephus roepki (Fluiter) Agrihan 1951-1992, Guguan 1992, Maug 1992, Sarigan 1992, Saipan, Tinian, Rota, Guam 1936-58
Olla abdominalis (Say) Guam 1952
Olla v-nigrum (Mulsant) Agrihan 1992
Ortalia tricolor Chapin Guam 1945
Pharellus dybasi Chapin Saipan 1945, Tinian 1945, Rota 1936, Guam 1952
Pharellus guamensis Chapin Guam 1957
Pseudoscymnus anomalus Chapin Saipan 1963, Guam 1963

Rodolia breviscula Weise 12 specimens from India released onto Guam during 1948. No further records

Rodolia cardinalis (Mulsant) Guam 1945

Rodolia pumila Weise Saipan, Tinian, Rota, Guam 1937-54

Scymnus nigrosuturalis H.Kamiya Maug 1992, Saipan, Guam 1952-58

Sticholotis ruficeps Weise Saipan 1956-1992, Saipan CNMI 1974-1980, Guam 1949

Sticholotis punctatus Crotch Guam n.d.

Telsima nitida Chapin Pagan 1940, Saipan 1946, Saipan CNMI 1970-1974, Tinian 1946, Rota 1946, Agiguan, Guam 1911-52

References

- Chapin, Edward A. 1965. Coleoptera: Coccinellidae. In: Insects of Micronesia 16(5): 189 – 254.
- Chiu, C.H. and A. Moore 1993. Biological control of the Phillipine lady beetle, *Epilachna philippinensis* (Coleoptera: Coccinellidae) on some solanaceous plants by the parasitoid *Pediobius foveolatus* Hymenoptera: Eulophidae) on Saipan. Micronesica, Suppl. 4 : 79-80.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Endomychidae

Diversity

Micronesia - 2 species, Marianas - 1 species, CNMI – 1 species

Ecological and human significance

Handsome fungus beetles are small (mostly 3-8 mm long), and most occur under bark, in rotting wood or fungi, or in decaying fruits. A few are found on flowers. The main foods appear to be fungi and moulds.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification

Records of handsome fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Trochoideus desjardinsii

x

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Trochoideus desjardinsii (Guerin-Meneville)

Saipan 1951, Pagan 1992, Guam 1936.

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Strohecker, H.F. 1958. Coleoptera: Endomychidae. In: Insects of Micronesia 16(2): 105 - 108.
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Lathridiidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Minute brown scavenger beetles are between 1-3 mm long, and are found in mouldy material and debris, and sometimes on flowers.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Records of minute brown scavenger beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species found yet.

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Metophtalmus albofasciatus Reitter Guam 1936

References

Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Mycetophagidae

Diversity

Micronesia: - 3 species, Marianas - 3 species, CNMI – 3 species

Ecological and human significance

These beetles are between 1.5-5.5 mm long and occur under bark, in bracket fungi and in mouldy vegetable material.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Records of hairy fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<u>Litargus T-litterata</u>		x	x								
<u>Litargus vestitus Sharp</u>	x	x	x		X	x	x				x
<u>Typhaea stercorea</u>			x								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Litargus T-litterata Grouvelle Saipan 1945, Tinian 1945, Guam 1945

Litargus vestitus Sharp Alamagan 1992, Guguan 1992, Maug 1992, Sarigan 1992, CNMI 2001, Agiguan 1952, Saipan 1945, Tinian 1945, Guam 1958

Typhaea stercorea Linnaeus Saipan 1945

References

Chujo, Michitaka. 1970. Coleoptera: Cryptophagidae and Mycetophagidae. In: Insects of Micronesia 16(6): 271 -278.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Ciidae

Diversity

Micronesia: - 7 species, Marianas - 7 species, CNMI – 3 species

Ecological and human significance

Minute tree-fungus beetles are between 0.5-6.0 mm long. They occur under bark, in rotting wood or in dry woody fungi. They feed on fungi.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of minute tree-fungus beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Ceracis sp.											
Cis sp.											
Orophini sp.											

Species list

Ceracis paliceps Zimmerman Guam 1937

Ceracis sp. Sarigan 1992

Cis agariconae Zimmerman Guam 1937

Cis guamae Zimmerman Guam 1936

Cis quadridentatus Zimmerman Guam 1938

Cis sp. Sarigan 1992

Orophini sp. Sarigan 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Zimmerman, E.c. 1942. Ciidae of Guam. In: Insects of Guam 1: 47-52. Bernice P. Bishop Museum Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Colydiidae

Diversity

Micronesia – 3 species, Mariana Isl. – 3 species ,CNMI– 1 species

Ecological and human significance

Cylindrical bark beetles range from 1-18 mm long, and occur under dead bark, in bracket fungi or in ant's nests. Many species are predaceous, some are plant feeders.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of cylindrical bark beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiquan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Colobicus parilis

X

Species list

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Bitoma sicca (Pascoe) Guam 1936

Colobicus parilis Pascoe Saipan CNMI 1970-1979, Guam 1936

Neotrichus latiusculus (Fairmaire) Guam 1936

References

Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Tenebrionidae

Diversity

Micronesia - 91 species, Marianas - 31 species, CNMI – 20 species

Ecological and human significance

Darkling beetles live under stones, rubbish and loose bark, some live in fungi. Most feed on plant materials of some kind and a few are common pests of stored grain and flour.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification

Records of darkling beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Gebieniella carinata			x								
Mesomorphus villiger	x										
Gonocephalum											
adpressiforme	X	X	X	X	X			X	x	X	
Gonocephalum incisum		x		x							
<u>Gonocephalum pottsi</u>			x								
<u>Gonocephalum</u> sp.											x
<u>Bradymerus acuticostis</u>											
Bradymerus oakleyi	x			x							
<u>Rhipidandrus dybasi</u>		x									
Rhipidandrus crenipennis	x										
Alphitobius diaperinus				x							
Alphitobius laevigatus	x		x	x							
Palorus subdepressus			x	x							
Palorus papuanus				x					x		
<u>Palorus saipanensis</u>				x							
Tribolium castaneum	x		X	X							
Uloma picicornis	x										
Derosphaerus											
rotundicollis	x	x	X	X			X			X	
Schizomma neckeri	x	x	x	x			x				
<u>Amarygmus</u> sp.	x										

Species list

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Tribe: Stenosini

Gebieniella carinata (Eschscholtz) Saipan 1945

Tribe: Pedini

Mesomorphus villiger (Blanchard) Rota 1945

Tribe: Opatrini

Gonocephalum adpressiforme Kaszab. Alamagan 1992, Anatahan 1992, CNMI 2002, Agrihan 1949, Pagan 1954-1992, Saipan 1949, Tinian 1946, Agiguan 1952, CNMI 2002, Rota 1952, CNMI 2002, Guam 1954.

Gonocephalum incisum (Blanchard) Saipan 1945, Agiguan 1952, Guam 1957

Gonocephalum pottsi Kulzer Tinian 1945

Gonocephalum seriatum (Boisduval) Guam 1911-1936

Gonocephalum sp. Maug 1992

Tribe: Crypticini

Microcrypticus scriptipennis (Fairmaire) Guam 1945

Tribe: Bolitophagini

Bradymerus acuticostis Gebien. Rota 1952, Guam 1936

Bradymerus oakleyi Kulzer Saipan 1941, Rota 1946, Guam 1937

Tribe: Rhipidandrini

Rhipidandrus dybasi Kulzer Guam 1948, Agiguan 1952

Rhipidandrus crenipennis (Motschultsky) Rota 1945

Rhipidandrus sodalis Kulzer Guam 1945

Tribe: Gnathidiini

Menimus clavatus (Kaszab) Guam 1945

Tribe: Ulomini

Alphitobius diaperinus (Panzer) Saipan 1949

Alphitobius laevigatus (Fabricius) Saipan 1945, Tinian 1940, Rota 1951, Guam 1936-1945

Eutochia lateralis (Boheman) Guam 1936-1945

Hypophloeus maehleri Kulzer Guam 1945

Palorus foveicollis Blair Guam 1937

Palorus subdepressus Wollaston Saipan 1945, Tinian 1945

Palorus ratzeburgi Wissmann Guam 1936

Palorus papuanus Kaszab. Pagan 1940, Saipan 1945, Guam 1945

Palorus saipanensis Kulzer Saipan 1945, Guam 1937

Scotochaes insularis Boheman Guam 1936

Tribolium castaneum (Herbst) Saipan 1942, Saipan CNMI 1970-1982, Tinian CNMI 1981
Rota 1945, Guam 1945

Tribolium confusum Jacquelin Guam 1945

Tribolium ferrugineum (F.) Guam 1936

Uloma cavicollis Fairmaire Guam n.d.

Uloma picicornis Fairmaire Rota 1992 ?, Guam 1936

Uloma ponapensis plana Kulzer Guam 1948

Uloma rufilabris Fairmaire Guam 1936-1945

Uloma tenebrioides White Guam 1924

Tribe: Tenebrionini

Derosphaerus rotundicollis (Castelnau) Saipan 1936, Saipan CNMI 1970, Tinian 1946, Tinian CNMI 1971, Agiguan 1954, Agrigan CNMI 1970, Rota 1946, Guguan CNMI 2000, Guam 1936-1947

Tribe: Cnodalonini

Ponapeida guamensis Kulzer Guam 1945

Schizomma neckeri Kulzer Rota 1949, Agiguan 1952, Tinian 1945, Saipan 1945, Sarigan 1992, Guam 1952

Tribe: Amarygymini

Amarygmus sp. Rota 1992

Tribe not known

Xyloborus nudus (Gebien) Guam 1936

References

- Kulzer, Hans. 1957. Coleoptera: Tenebrionidae. In: Insects of Micronesia 17(3): 185 - 256.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Salpingidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 , CNMI – 0 species

Ecological and human significance

Narrow-waisted bark beetles can grow to 30 mm long, most species are much shorter. The adults and larvae are predaceous, the adults occur under rocks and bark, in leaf litter and on vegetation.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of narrow-waisted bark beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species found

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Lissodema guamensis Blair Guam 1936

References

Blair, K. G. 1942. Coleoptera Heteromera from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 56-60.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Mordellidae

Diversity

Micronesia – 2(3?) species, Mariana Isl. – 2 (3?) species , CNMI – 1(2?) species

Ecological and human significance

These beetles are found on flowers, especially composites. The larvae live in decaying wood and plant pith and some are predaceous.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of tumbling flower beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Species A

X

Dellamora castanea

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Glipa guamensis Blair Guam 1936

Dellamora (Mordellistena) castanea (Boheman) Anatahan CNMI 2002, Guam 1936, and prior to 1858.

Species A Saipan CNMI 1971-2001

References

Blair, K. G. 1942. Coleoptera Heteromera from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 56-60.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Oedemeridae

Diversity

Micronesia – 3 species, Mariana Isl. – 3 , CNMI – 2 species

Ecological and human significance

The adults of false blister beetles (5-20 mm long) are usually found on flowers or foliage, the larvae live in moist decaying wood.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of false blister beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Eobia sp.							x			x				
Asclerini sp.												x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Sessinia livida (F) Guam 1936

Eobia sp. Agrihan, Guguan 1992

Asclerini sp. Asuncion 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Rhipiphoridae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Wedge-shaped beetles are found on flowers (usually composites), and the larvae are parasitic on various wasps.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats.

Identification

There are no keys for in house identification

Records of wedge-shaped beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Micropelecotoides fulvosericans (Fairmaire) Guam 1936

References

Blair, K. G. 1942. Coleoptera Heteromera from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 56-60.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Meloidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1, CNMI – 0 species

Ecological and human significance

The larvarvae of blister beetles feed on grasshopper eggs, the adults feed on plant material. Some are pests on potatoes, tomatoes and other plants.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of blister beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Zonitis oceanica Blair Guam 1936

References

Blair, K. G. 1942. Coleoptera Heteromera from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 56-60.

Diversity

Micronesia - 9 species, Marianas - 5 species, CNMI – 4 species

Antlike flower beetles generally occur on flowers and foliage, some occur under logs and debris, and a few occur on sand dunes.

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

There are keys for in house identification

Records of antlike flower beetles from CNMI indicating areas (blank spaces) from required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands								
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam Paga Agri Asun Maug Urac
<i>Anthicus confucii</i>			x						
<u><i>Anthicus dybasi</i></u>			X						
<u><i>Anthicus oceanicus</i></u>	x		x	x				x	
<i>Formicornus imperator</i>			x	x					

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Anthicus confucii Marseul Saipan 1945

Anthicus dybasi Werner Saipan 1945, CNMI 2002.

Anthicus oceanicus LaFerte Agrihan 1951, Saipan 1945, Rota 1945, Tinian 1945, Guam 1949

Anthicus tobias Marseul Guam 1952

Formicornus imperator (LaFerte) Saipan 1958, Tinian 1945, Guam 1957

References

Werner, F.G. 1965. Coleoptera: Anthicidae. In: Insects of Micronesia 16(5): 255-269.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Euglenidae

Diversity

Micronesia - 2 species, Marianas - 2 species, CNMI – 0 species

Ecological and human significance

Antlike flower beetles are found on foliage and flowers

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of antlike leaf beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguhan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Euglenes bifossicollis Blair Guam 1936

Euglenes guamensis Blair Guam 1936

References

Blair, K. G. 1942. Coleoptera Heteromera from Guam. In: Insects of Guam – 1. Bernice P. Bishop Museum Bulletin 172. Pp. 56-60.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Cerambycidae

Diversity

Micronesia – 105 species, Mariana Isl. – 24 species, CNMI - 23 species

Ecological and human significance

Most of the longhorns are wood-boring in the larval stages, and thus act as agents for the breakdown of dead wood. Some species can be very destructive to trees and to freshly cut logs. Most of the local species however, appear to lay their eggs on already dead wood, and thus cause no harm to the living parts of the trees. The adults lay their eggs in crevices in the bark, and the larvae bore into the wood. The larval tunnels in the wood are circular in cross-section and usually go straight for a short distance before turning.

Some adult longhorns feed on flowers. For example, the adults of *Chlorophus annularis* have been found feeding on corn tassles, while the larvae feed on dead bamboo.

Conservation

There are no conservation issues recognised at present, except one of maintaining as much of the remnant woody vegetation types as possible to provide habitats for the high number of endemic species (14 = 61%) of longhorns in the CNMI.

Identification

There are keys for in house identification.

Records of longhorn beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Ceresium usingeri	x		x	x						
Ceresium saipanicum										x
Ceresium guamum										
Ceresium rotanum	x									
Ceresium sublucidum										x
<u>Ceresium unicolor</u>										
<u>unicolor</u>	x	X	X	X					x	
<u>Gelonaetha hirta</u>										
Longipalpes guamensis	x									
Longipalpes saipanensis										x
<i>Chlorophorus annularis</i>										X
<i>Xylotrechus grayii</i>		x	x							
Dihammus marianarum	x		x	X						
<u>Olenecamptus bilobus</u>										
<u>lacteoguttata</u>	x	x		X						
<u>Pterolophia bigibbera</u>								x		x
<u>Pterolophia camura</u>	x		X	X	X					x
<u>Prosoplus bankii</u>	X		X	X						X
Prosoplus marianarum	x	x	x	X	x	x		x		x
<u>Ropica palauana</u>						x				
<u>Ropica squamulosa</u>	x	x	X	X						X

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Sybra alternans</u>	X			X										
Sybra anatahana					X	x								
Sybra chamorro			x	x										
Sybra emarginata	x			X ?										
Sciadella meridiana	x		x	x		X	X	X	x	x				
Sciadella boharti											X			
Sciadella mariana			x	X		X	x		x					

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000.

Subfamily : Cerambycinae

Tribe: Callidiopini:

Ceresium usingeri Gressitt Guam 1945, Saipan 1945, Tinian 1946, Rota 1945.

Ceresium saipanicum (Matsushita) Saipan 1949.

Ceresium guamum guamum Gressitt Guam 1945

Ceresium guamum rotanum Gressitt Rota 1946.

Ceresium sublucidum Gressitt Guam 1945, Saipan 1951.

Ceresium unicolor unicolor (Fabr.) Agiguan 1954, CNMI 2002, Rota 1952, Pagan 1949, Tinian 1952, CNMI 2000, Guam 1946; Saipan CNMI 1970-2001

Gelonaetha hirta (Fairmaire) Saipan 1945, Saipan CNMI 2001?, Guam 1945

Tribe: Obriini

Longipalpes guamensis (Gressitt) Rota 1946, Guam 1945.

Longipalpes saipanensis Gressitt Saipan 1945.

Tribe: clytini

Chlorophorus annularis (Fabr.) Saipan CNMI 1970; Guam 1945

Xylotrechus grayii (White) Tinian 1946, Agiguan 1954.

Subfamily: Lamiinae

Tribe: Lamiini

Dihammus marianarum (Aurivillius) Saipan 1949, Tinian 1945, Rota 1941, Guam 1952; Saipan CNMI 1973-2001

Tribe: Dorcaschematini

Olenecamptus bilobus lacteoguttata Fairmaire Saipan 1949, Agiguan 1954, Rota 1946, Guam 1952; Saipan CNMI 1973

Tribe: Nipponini

Pterolophia bigibbera (Newman) Alamagan, Agrihan 1992

Pterolophia camura (Newman) Saipan 1951, Tinian 1952, Rota 1952; Agrihan CNMI 1970, Tinian CNMI 1971-1985, Anatahan CNMI 2002

Prosoplos bankii (Fabr.) Saipan 1951, Tinian 1952, CNMI 2001, Rota 1946, Guam 1953; Agrihan CNMI 1970, Rota CNMI 1970, Saipan CNMI 1970

Prosoplos marianarum Aurivillius Agrihan 1945, Alamagan 1951, Anatahan 1951-1992,

Agiguan 1952, Tinian 1946, Rota 1949, Guam 1952; Saipan 1949, Saipan CNMI 2001, Sarigan 1992

Tribe: Apomecynini

Ropica palauana (Matsushita) Anatahan 1992

Ropica squamulosa Breuning Agiguan 1954, Saipan 1949, Tinian 1946, Rota 1949, Guam 1952; Tinian CNMI 1970, Agrigan CNMI 1971, Saipan CNMI 1970

Tribe: Ptericoptini

Sybra alternans (Wiedemann) Guam 1954, CNMI 1968; Rota CNMI 1970-2001, Saipan CNMI 1972-2001

Sybra anatahana Gressitt Anatahan 1951, CNMI 2002 Sarigan 1992

Sybra chamorro Gressitt Saipan 1946, Tinian 1946.

Sybra emarginata Gressitt Rota 1940, Guam 1946; Saipan CNMI 1970 ?

Tribe: Acanthocinini

Nonymoides swezeyi Blair Guam n.d.

Nonymoides minima Blair Guam n.d.

Sciadella(=*Phloeopsis* ?) *meridiana* (Ohbayashi) Saipan 1945, Pagan 1940, Tinian 1952, Rota 1946, Guam 1946, Anatahan 1992, CNMI 2002, Sarigan 1992, CNMI 2001, Alamagan, 1992, Guguan CNMI 2000

Sciadella(*Micronesiella*) *boharti* Gressitt Agrihan 1951; Agrihan CNMI 1970

Sciadella(*Micronesiella*) *mariana* Gressitt Saipan 1945, Tinian 1946, Guam 1947; Saipan CNMI 1970, Anatahan 1992, Anatahan CNMI 2002, Sarigan, Alamagan 1992

References

- Gressitt, J. Linsley. 1956. Coleoptera: Cerambycidae. In: Insects of Micronesia 17(2): 61-183.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Saito, A. 1994. Records of some Cerambycidae(Insecta: Coleoptera) from the northern Mariana islands, Micronesia. Nat. Hist. Res., Special Issue, No. 1: 227-228.
- Swezey, H. O. 1942. Miscellaneous families of Guam Coleoptera. Pp. 150-171. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.
- Gressitt, J. Linsley. 1942 New longicorn beetles from Guam (Cerambycidae). Pp. 61-64. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Bruchidae

Diversity

Micronesia - 1 species, Marianas – 1 species, CNMI – 1 species

Ecological and human significance

The only bruchid beetle known from the region is an alien pest on beans and peas.

Conservation

The only conservation matter is that of eliminating any populations of the alien.

Identification

There are no keys for in house identification

Records of bruchid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Acanthoscelides obtectus

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Acanthoscelides obtectus Say Saipan CNMI 1981

References

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Chrysomelidae

Diversity

Micronesia - 38 species, Marianas - 14 species, CNMI – 11 species

Ecological and human significance

Leaf beetles are of moderate to small size (up to 15 mm long) are all feed on plants, mostly on flowers and foliage. Some are leaf miners, some bore in stems and some feed on roots. Many of the leaf beetles are serious pests of cultivated plants.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification

Records of leaf beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Colasposoma metallica</i>											
<i>rugiceps</i>	X		X	X							
<i>Phytorus lineolatus</i>	X	x	x	X	X						
<i>Aulacophora hayashi</i>	x			x							
<i>Aulacophora mariana</i>	x										
<i>Aulacophora</i>											
<i>quadrimaculata</i>	x		X	x							
<i>Aulacophora similis</i>	X		X	X				X			
<i>Aphthona bicolorata</i>			x	X					X		
<u><i>Aphthona nanyoensis</i></u>			x	x				x			
<i>Chaetonacme confinis</i>				X		X					
<u><i>Brontispa mariana</i></u>			x	X							
<i>Cassida circumdata</i>	X		X	X							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Eumolpinae

Colasposoma metallica rugiceps Lefevre Saipan CNMI 1970-2000, Rota CNMI 1970, Tinian CNMI 1971-2002, Guam 1952

Pagria signata (Motschulsky) Guam 1951

Phytorus lineolatus Weise Phytorus leaf beetle Saipan CNMI 1970-1980, Rota CNMI 1970-1980, Tinian 1952, Aguihan 1952, Anatahan CNMI 2002, Guam 1936-1952

Subfamily: Galerucinae

Aulacophora hayashi Gressitt Saipan n.d., Rota 1939

Aulacophora mariana Chujo Rota 1937, Guam 1948

Aulacophora quadrimaculata (Fabricius) Spotted cucumber beetle Saipan 1942, Tinian 1946, Tinian CNMI 2000, Rota 1937, Guam 1945

Aulacophora similis (Olivier) Orange cucumber beetle Saipan n.d., Saipan CNMI 1970-1997, Tinian 1952, Tinian CNMI 1970-2002, Rota CNMI 1970, Alamagan CNMI 1970, Guam 1952

Subfamily: Alticinae

Aphthona bicolorata Jacoby Saipan 1951, Saipan CNMI 1970-1980, Tinian 1952, Pagan CNMI 1971, Guam 1954

Aphthona nanyoensis Chujo Alamagan 1949, Saipan 1945, Tinian 1946, Guam 1952

Chaetocnema confinis crotch Sweetpotato flea beetle Sarigan CNMI 2001, Saipan CNMI 2002, Guam n.d.

Epitrix hirtipennis (Melsheimer) Tobacco flea beetle Guam n.d.

Subfamily: Hispinae

Brontispa mariana Spaeth Mariana coconut leaf beetle Saipan 1941, Saipan CNMI 1970-1979, Tinian 1946

Brontispa palauensis Eseki & Chujo Koror, Belau CNMI 1960, Guam - first found 1973.

Subfamily: Cassidinae

Cassida circumdata Herbst Saipan CNMI 1970-1982, Tinian 1952, Tinian CNMI 1970, Rota CNMI 1970, Guam 1952

Cassida obtustata Boheman Guam 1952

Subfamily: ?

Rhyparidia sp. Guam – first collected 1985.

Extralimital:

Brontispa chalybeipennis (Zacher) Marshal Islands CNMI 1970

References

Gressitt, J. Linsley. 1955. Coleoptera: Chrysomelidae. In: Insects of Micronesia 17(1): 1 – 60

Moore, A. and A. Tudela. 1999. [http://WWW.CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Anthribidae

Diversity

Micronesia – 11+ species, Mariana Isl. – 11 species, CNMI - 5 species

Ecological and human significance

Fungus weevils vary in size from 0.5-30 mm long and are usually found on dead twigs or under loose bark. The larvae vary in habits, some being in woody fungi, some in the fungi of certain crops, some in seeds and a few bore in dead wood.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Records of fungus weevils from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Araecerus levipennis</i>	X		X	X										
<u><i>Araecerus vieillardii</i></u>				X	X	x	x	x			x	x		
<u><i>Jordanithribus</i> sp.</u>							x						x	
<u><i>Mauia subnotatus</i></u>					X						x			
<i>Notioxenus nitidus</i>						x	x			x			x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Araecerus fasciculatus (De Geer) Guam 1936

Araecerus levipennis Jordan Saipan CNMI 1970, Tinian CNMI 1970-1977, Rota CNMI 1970

Araecerus vieillardii (Montrouzier) Saipan CNMI 2002, Anatahan 1992, CNMI 2002, Alamagan, Asuncion, Guguan, Maug, Sarigan 1992, Guam 1936

Araecocorynus cumingi Jekel Guam 1936

Jordanothribus conspersus Zimmerman Guam 1936

Jordanothribus planifacietus Zimmerman Guam 1936

Jordanithribus sp. Guguan, Maug 1992

Mauia subnotatus (Boheman) Anatahan CNMI 2002, Asuncion 1992, Guam 1936-1938

Melanopsacus parvulus Zimmerman Guam 1936

Notioxenus fulgidus Zimmerman Guam 1936

Notioxenus nitidus Morimoto Agrihan, Guguan, Maug, Sarigan 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Zimmerman, Elwood c. 1942. Anthribidae of Guam. In: Insects of Guam – 1, Bernice P. Bishop Museum Bulletin 172. Pp. 65-73.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Curculionidae

Diversity

Micronesia – 65 + species, Mariana Isl. – 65 species, CNMI - 30 species

Ecological and human significance

Weevils show considerable variation in size and shape, and (except those dwelling in ants' nests) are plant feeders. Almost every part of the plant may be eaten, from the roots upwards: the larvae usually feed inside the tissues of the plants, and the adults drill holes in fruits, nuts and other plant parts. Many weevil species are serious agricultural pests.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification.

Records of weevils from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands											
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun
Trigonops sp.												
<u>Trigonops vulgaris</u>												
Cyclas formicarius		X	X							X		
<u>Anaballus amplicollis</u>									x			
Camptorhinus dorsalis					X			x				
Daelus tuberosus						x	x	x		x		x
Daelus sp.					X							
Euscepes postfasciatus			X		X							
Menectetorus setulosus					x							
Microcryptorhynchus sp. 1						x						x
Microcryptorhynchus sp. 2					x	x		x	x			x
Choerorhinodes marshalli												
Cylindrotrypetes suffusus							x					
Eutornis sp.			X									
Stenotrupis tenuis							x					
Cosmopolites sordidus			X									
Polytus mellerborgi												
Rhabdoscelus obscurus								x		x		
Sitophilus oryzae			X									
Sitophilus granarius			X									
Sternochetus mangiferae			X									
Lophothetes sp. 1					x							
Lophothetes sp. 2							x	x				
Lophothetes sp. 3										x		
Lophothetes sp. 4											x	
Lophothetes sp. 5												x
Species												

Lophothetes sp. 4				x	
Lophothetes sp. 5					x
Lophothetes sp. 6					x
Lophothetes sp.	X	X			
<u>Hypurus bertrandi</u>					x
Amorphoidea lata	x				
Isodryotribus sp.					x
Cossonus sp.				x	
Miocalles sp.	X				

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Viticis guamae Zimmerman Guguan 1992, Guam 1936

Trigonops sp. "weevil" Marianas

Trigonops convexa Zimmerman Guam 1937

<i>Trigonops hirsuta</i>	Zimmerman	Croton weevil	Guam 1937
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Trigonops incrinata Zimmerman Guam 1937

Trigonops impura (Boheman) Guam 1937

Trigonops inaequalis Zimmerman Guam 1936

Trigonops inusitata Zimmerman Croton weevil Guam 1936

Trigonops subfasciata Zimmerman Guam 1936

<i>Trigonops vulgaris</i> Zimmerman	Weevil	Marianas
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Amblycnemis dentipes Zimmerman Guam 1936

Usonian maculatus Zimmerman Guam 1936

Anthesapeuta ulvae Zimmerman Guam 1936

Acalles samoanus Marshall Guam 1936

<i>Anaballus amplicollis</i> (Fairmaire)	Pagan 1992, Guam 1936
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Camptorhinus dorsalis (Boisduval) Pagan 1992, Anatahan CNMI 2002, Guam 1937

Daealus tuberosus Zimmerman Agrihan, Alamagan, Guguan, Maug, Sarigan 1992, Guam 1936

Daealus tibialis Zimmerman Guam 1936

Daealus sp. Weevil Anatahan CNMI 2002,

Deretiosus ficæ Zimmerman Guam 1936

<i>Euscepes postfasciatus</i> (Fairmaire)	West Indian sweetpotato beetle	Saipan CNMI 2002, Anatahan CNMI 2002
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Menectetorus setulosus (Boheman) Anatahan 1992, Guam 1937

Microcryptorhynchus guamae Zimmerman Guam 1936

Microcryptorhynchus premnae Zimmerman Guam 1937

Microcryptorhynchus spinifer Zimmerman Guam 1936

Microcryptorhynchus basipennis Zimmerman Guam 1936

Microcryptorhynchus sp. 1 Maug, Sarigan 1992

Microcryptorhynchus sp. 2 Alamagan, Anatahan, Pagan, Sarigan 1992

Neoampagia imitator Zimmerman Guam 1936

Oreda maculata Zimmerman Guam 1936

<i>Sternochaetus mangiferae</i> (F.)	Mango seed weevil	Saipan CNMI 1978-2001, Guam n.d.
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Aphanocorynes humeralis Marshall Guam 1936
Choerorhinodes constricticeps Zimmerman Guam 1939
Choerorhinodes marshalli Zimmerman Maug 1992, Guam 1936
Choerorhinodes flavisetosus Zimmerman Guam 1936
Cossonus sp. Agrihan 1992
Cylindrotrypetes suffusus Zimmerman Guguan 1992, Guam 1936
Dryotribodes obscurus Zimmerman Guam 1936
Dryotribodes angularis Zimmerman Guam 1936
Eutornus nigriceps Zimmerman Guam 1936
Eutornis sp. Saipan CNMI 2001 (specimen in Bishop Museum)
Himatinum bisetosum Zimmerman Guam 1936
Macrancyclus niger Zimmerman Guam 1936
Oxydema fusiforme Wollaston Guam 1937
Oxydema longulum (Boheman) Guam 1936
Phloeophagosoma sulcirostre Zimmerman Guam n.d.
Rhinanisodes planicollis Zimmerman Guam 1936
Stenotrupis tenuis Zimmerman Guguan 1992, Guam 1936
Tytthoxydema exilis Zimmerman Guam 1936
Subfamily: Cycladinae (Now family Brentidae ?)
Cyclas formicarius (F.) Sweetpotato weevil Saipan CNMI 1970-2002, Tinian CNMI 1970-2000, Asuncion 1992, Guam 1936
Subfamily: Ithyporinae
Swezeyella muscosa Zimmerman Guam 1936
Subfamily: Rhyncophorinae
Cosmopolites sordidus (Germar) Banana root borer Saipan CNMI 1984-2001, Guam 1936
Diocalandra frumenti (F.) Coconut weevil Guam 1938
Polytus mellerborgi (Boheman) Banana corm weevil Guam 1936
Rhabdoscelus obscurus (Boisduval) New Guinea sugar cane weevil Agrihan 1992, Alamagan 1992, CNMI 2000, Saipan CNMI 1979-1999, Rota CNMI 1980, Guam 1936
Sitophilus(calandra) oryzae (L.) Rice weevil Saipan CNMI 1971-2001, Guam 1936
Sitophilus granarius (L.) Saipan CNMI 1973
Subfamily: ?
Lophothetes sp. 1 Anatahan 1992
Lophothetes sp. 2 Alamagan, Guguan 1992
Lophothetes sp. 3 Agrihan 1992
Lophothetes sp. 4 Asuncion 1992
Lophothetes sp. 5 Maug 1992
Lophothetes sp. 6 Uracas 1992
Lophothetes sp Anatahan CNMI 2002, Sarigan CNMI 2001
Hypurus bertrandi (Perris) Uracas 1992
Amorphoidea lata Motschulsky Anatahan 1992
Isodryotribus sp. Maug 1992
Miocalles sp. Anatahan CNMI 2002

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.
Zimmerman, E.C. 1942. curculionidae of Guam. In: Insects of Guam – I : pp. 73-146. Bernice P. Bishop Museum, Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Coleoptera Superfamily: Cucurlionidea
Family: Platypodidae

Diversity

Micronesia - 5 species, Marianas - 1 species, CNMI– 0 species

Ecological and human significance

Pin-hole borers are usually 4-6 mm long, and bore into living trees, but they seldom attack a healthy tree, and they generally occur on deciduous trees. The larvae feed on fungi that are cultivated in the galleries.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification

Records of pin-hole borers from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Platypus solidus Walker Guam 1945

References

Wood, S.L. 1960. Coleoptera: Platypodidae and Scolytidae. In: Insects of Micronesia 18(1): 1-73

Phylum: Arthropoda Class: Insecta Order: Coleoptera Family: Scolytidae

Diversity

Micronesia - 53 species, Marianas - 26 species, CNMI - 24 species

Ecological and human significance

Bark beetles are small, rarely over 8 mm long, and they feed on the inner bark or wood of trees. Different species of bark beetles attack different species of trees; some attack only recently cut, or dead, logs or branches, while others attack living trees.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are keys for in house identification.

Records of scolytid beetles from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Carposinus brevior			x							
Coccotrypes carpophagus			x							
Cryphalus sp.						x	x			x Cryphalomorphus pumilus
x										
Cryphalomorphus nanulus			x	x						
Cryphalomorphus granulatus				x						
Eidaphelus argutus				x						
<u>Ericryphalus sylvicola</u>		x	x					x		
Hypothenemus areccae		x	x							
Hypothenemus eruditus		x	x							
Hypothenemus hampei										
<u>Hypothenemus mangarevanus</u>			x							
<u>Pocilips advena</u>										x
<u>Ptilopodius pacificus</u>			x	x						
Stephanoderes birmanus	x		x	x						
Stephanoderes hampei				x						
Stephanoderes hivaoea			x	x						
Stephanoderes georgiae				x						
Xyleborus affinis										x
Xyleborus ferrugineus	x									
<u>Xyleborus morigerus</u>										x
Xyleborus perforans	x	x	x	x						
Xyleborus similis		x		X						
Xyleborus volvulus							x			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Carposinus brevior (Eggers) Saipan 1945
Coccotrypes carpophagus (Hornung) Saipan 1945, Guam 1945
Cryphalus sp. Guguan, Maug, Sarigan 1992
Cryphalomorphus Pacificus (Schedl) Guam 1946
Cryphalomorphus pumilus Wood Tinian 1945
Cryphalomorphus nanulus Wood Saipan 1945, Tinian 1945
Cryphalomorphus granulatus Wood Saipan 1945
Eidaphelus argutus Wood Saipan 1945
Ericryphalus sylvicola (Perkins) Pagan 1940, Saipan 1945, Tinian 1945, Guam 1952
Hylesinus subcostatus Eggers Guam 1958
Hypothenemus arecae (Hornung) Saipan 1945, Tinian 1945
Hypothenemus eruditus Westwood Saipan 1945, Tinian 1946, Guam 1947
Hypothenemus hampei (Ferrari) Coffeeberry borer Marianas
Hypothenemus mangarevanus Beeson Saipan 1945
Pocilips advena Blandford Agrihan 1992
Ptilopodius Pacificus Schedl. Saipan 1945, Tinian 1945
Stephanoderes birmanus (Eichhoff) Saipan 1945, Tinian 1945, Rota 1945, Guam 1945
Stephanoderes hampei (Ferrari) Saipan 1945,
Stephanoderes hivaoea Beeson Saipan 1945, Tinian 1946
Stephanoderes georgiae Hopkins Saipan 1944, Guam 1947
Xyleborus affinis Eichhoff Agrihan 1992
Xyleborus ferrugineus (Fabricius) Black twig borer Rota 1945, Guam 1946
Xyleborus morigerus Blandford Black twig borer Saipan 1945, Guam 1958
Xyleborus perforans (Wollaston) Cnoconut shothole borer Saipan 1945, Tinian 1945,
Agiguan 1952, Rota 1952, Guam 1952
Xyleborus similis Ferrari Shothole borer Saipan 1941, CNMI 1970, Agiguan 1952, Guam
1945
Xyleborus volvulus (F) Sarigan 1992

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
Wood, S.L. 1960. Coleoptera: Platypodidae and Scolytidae. In: Insects of Micronesia 18(1): 1-73

Phylum: Arthropoda Class: Insecta Order: Strepsiptera

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 0 species

Ecological and human significance

Twisted-winged parasites are minute Insects most of which are parasitic on other Insects, such as Thysanurans, bees, plant-hoppers, leaf-hoppers tree-hoppers and pygmy grasshoppers.

Conservation

Conservation will entail maintenance of natural habitats and as little use of pesticides as possible in those habitats

Identification

There are no keys for in house identification

Records of twisted winged parasites from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Elenchoides perkinsi Pierce ? Guam 1936

References

Swezey, H. O. 1942. Strepsiptera – Stylopidae of Guam. Pp. 173. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Diversity

Ecological and human significance

Conservation

Identification

Records of crane flies from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u>Gonomyia pietatis</u>					X
Limonia edgari			X		X
<u>Limonia fullawayi</u>					
<u>fullawayi</u>	X				
Limonia nesopieta	X				X
<u>Limonia pectinunguis</u>	X				
<u>Limonia pontophila</u>	X	X	X		X
Limonia sordida					X
Limonia tinianensis			X		
<u>Styringomyia didyma</u>			X		X
<u>Trentepohlia guamensis</u>	X		X		X
Trentepohlia saipanensis					X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Gonomyia pietatis Alexander Guam 1936, Saipan 1945

Limonia edgari Alexander Saipan 1945, Tinian 1945, Guam 1945

Limonia jocularis Alexander Guam 1936

Limonia fullawayi fullawayi Alexander Guam 1911, Rota 1937

Limonia guamicola Alexander Guam 1936

Limonia guttula Alexander Guam 1956

Limonia nesopicta Alexander Guam 1936, Rota 1937, Saipan 1944
Limonia obesula (Edwards) Guam 1936
Limonia pectinunguis Tokunaga Rota 1937, Guam 1956
Limonia pontophila Tokunaga Agiguan 1952, Rota 1937, Guam 1945, Saipan 1944, Tinian 1945
Limonia sordida (Brunetti) Guam 1956, Saipan 1945
Limonia strigivena (Walker) Guam 1936
Limonia swezeyana Alexander Guam 1936
Limonia tinianensis Alexander Tinian 1945

Styringomyia didyma Grimshaw Guam 1936, Saipan 1945, Tinian 1952

Trentepohlia guamensis (Alexander) Rota 1937, Guam 1936, Tinian 1945, Saipan 1945
Trentepohlia saipanensis Alexander Saipan 1945

References

Alexander, C.P. 1972. Diptera: Tipulidae. In: Insects of Micronesia 12(8): 733-863

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Psychodidae

Diversity

Micronesia – 34 species, Mariana Isl. – 7 species, CNMI - 2 species

Ecological and human significance

These flies are small to minute occurring in moist shady places and are sometimes extremely abundant in drains and sewers. The larvae occur in decaying vegetable matter, mud, moss or water. Most are harmless to man, but sandflies (not found in CNMI) are blood suckers and can be vectors of several diseases.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of psychodids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Psychoda acanthostyla								x			
Clogmia albipunctatus								x			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Brunettia biformis Edwards Guam 1945

Clogmia (=Telmatoscopus) albipunctatus (Williston) Saipan 1944

Philosepedon tineiformis (Edwards)(=*Telmatoscopus squamatulus* Quate) Guam 1957

Psychoda acanthostyla Takunaga Saipan 1944

Psychoda albangensis del Rosario (= *ichthyocerca* Quate) Guam 1946

Psychoda alternata Say Guam 1956

Psychoda (quadrifilis) guamensis Quate Guam 1945

References

Quate, L.W. 1959. Diptera: Psychodidae. In: Insects of Micronesia 12(4): 435-484

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Culicidae

Diversity

Micronesia – 47 species, Mariana Isl. – 15 species, CNMI – 14 species

Ecological and human significance

Mosquitoes are small fly species which live in damp or sheltered areas. The larvae are aquatic, and some species can breed in small volumes of water caught in treeholes or containers. Female mosquitoes are blood-suckers and some species are vectors of important human diseases. Mosquitoes are preyed upon by many invertebrates and vertebrates.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification

Records of mosquitoes from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Aedes aegypti</u>	x		x	x										
Aedes agrihanensis										x				
Aedes albopictus			x	x			x		x	x				
Aedes guamensis	x			x										
Aedes neopandani				X										
Aedes oakleyi				x		x								
Aedes pandani								x						
Aedes rotanus	x													
Aedes saipanensis				X				x	x					
<u>Aedes vexans nocturnus</u>			x	X		x								
Culex annulirostris														
 marianae	x	x	x	x		x				x				
Culex litoralis	x		x	x		x								
Culex quinquefasciatus				X			“most of the island groups”							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Aedes aegypti (Linnaeus) Saipan 1939, Tinian 1944, Rota 1945, Guam 1945

Aedes agrihanensis Bohart Agrihan 1945

Aedes albopictus (Skuse) Pagan 1951, Saipan 1952, Tinian 1945, Agrihan, Guguan 1992, Guam 1952

Aedes guamensis Farner and Bohart Saipan 1945, Rota 1945, Guam 1952

Aedes neopandani Bohart Saipan 1951, CNMI 1979-1997, Tinian 1945
Aedes oakleyi Stone Saipan 1945, Anatahan 1951, Guam 1948
Aedes pandani Stone Alamagan 1992 ?, Guam 1952
Aedes rotanus Bohart and Ingram Rota 1951
Aedes saipanensis Stone Pagan 1951, Alamagan 1951, Saipan 1951, CNMI 1997, Tinian n.d.
Aedes vexans nocturnus (Theobald) Saipan 1951, CNMI 1997, Tinian 1945, Anatahan 1992, Guam 1948
Anopheles subpictus indefinitus (Ludlow) Guam 1948, 1966
Culex annulirostris marianae Bohart and Ingram Rota 1945, Agiguan 1952, Tinian 1945, Saipan 1951, Anatahan 1951, Pagan 1951, Guam 1967
Culex litoralis Bohart Guam (n.d.), Rota 1945, Tinian 1945, Saipan 1945, Anatahan 1951
Culex quinquefasciatus Say Saipan CNMI 1997, “most of the island groups”
Culex sitiens Wiedemann Guam 1945

References

- Bohart, Richard M. 1956. Diptera: culicidae. In: Insects of Micronesia 12(1): 1-85.
 Holway, Captain. 1968. Malaria in Guam. Notes and exhibitions. Proc. Hawaii. Ento. Soc. XX(1): 2
 Holway, Captain. 1968. *Culex annulirostris marinae* and *Aedomyia catastica*. Notes and exhibitions. Proc. Hawaii. Ento. Soc. XX(1): 2
 Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Ceratopogonidae

Diversity

Micronesia – 147 species, Mariana Isl. – 41 species, CNMI – 26 species

Ecological and human significance

Biting midges are very small but are often serious pests because of their blood-sucking habits, particularly along the sea-shore or along rivers and lakes. Many species attack other insects and suck blood from the insect host. The larvae are aquatic or semiaquatic, occurring in mud, sand, decaying vegetation and water in tree holes.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of biting midges from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Dasyhelea flavescens</u>	x													
<u>Dasyhelea insularis</u>				x										
<u>Dasyhelea palauensis</u>			x	x										
Dasyhelea palloris	x													
<u>Dasyhelea pelilionensis</u>			x	x										
<u>Dasyhelea perfida</u>						x								
<u>Dasyhelea</u> <u>quaternihamata</u>				x										
<u>Dasyhelea sagittifera</u>				x										
<u>Dasyhelea subperfida</u>			x											
<u>Dasyhelea subscutellata</u>				x										
<u>Dasyhelea townesi</u>	x													
<u>Dasyhelea vittula</u>								x						
Dasyhelea sp. No 4				x										
Dasyhelea sp. No 5	x													
<u>Dasyhelea</u> sp. No 6	x													
<u>Dasyhelea</u> sp. No 9				x										
Dasyhelea sp. No 11			x											
<u>Forcipomyia carolinensis</u>						x								
<u>Forcipomyia edgari</u>				x										
<u>Forcipomyia esakii</u>				x										
<u>Forcipomyia fascicauda</u>				x										
<u>Forcipomyia fuscimanus</u>	x													
<u>Forcipomyia pectinunguis</u>														

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguang, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u>Forcipomyia penniornata</u>		x	
<u>Forcipomyia sauteri</u>	x		x
<u>Forcipomyia swezeyana</u>		x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Atrichopogon jacobsoni (de Meijere) Guam 1945
Atrichopogon armaticaudalis Tokunaga & Murachi Guam 1952
Culicoides guttifer (de Meijere) Guam (Johannsen 1946)
Dasyhelea flavescens Tokunaga & Murachi Rota 1946
Dasyhelea fumala Tokunaga Guam 1957
Dasyhelea insularis Tokunaga Saipan 1946
Dasyhelea nigroris Tokunaga & Murachi Guam 1945
Dasyhelea palauensis Tokunaga Saipan 1946, Tinian 1945, Guam 1959
Dasyhelea palloris Tokunaga & Murachi Rota 1946
Dasyhelea pelilionensis Tokunaga Saipan 1949, Tinian 1943, Guam 1957
Dasyhelea perfida Johannsen Anatahan 1951
Dasyhelea quarternihamata Tokunaga & Murachi Saipan 1946
Dasyhelea sagittifera Tokunaga & Murachi Saipan 1946
Dasyhelea subperfida Tokunaga Tinian 1945, Guam 1948
Dasyhelea subscutellata Tokunaga Saipan 1949, Guam 1947
Dasyhelea townesi Tokunaga & Murachi Rota 1946
Dasyhelea vittula Tokunaga Alamagan 1951, Guam 1945
Dasyhelea sp. No 4 Saipan 1946
Dasyhelea sp. No 5 Rota 1946
Dasyhelea sp. No 6 Rota 1946
Dasyhelea sp. No 9 Saipan 1945
Dasyhelea sp. No 11 Tinian 1945, Guam 1957
Forcipomyia carolinensis Tokunaga Anatahan 1951
Forcipomyia edgari Tokunaga & Murachi Saipan 1944
Forcipomyia esakia (Tokunaga) Guam 1948
Forcipomyia esakii (Tokunaga) Saipan 1945
Forcipomyia fascicauda Tokunaga Saipan 1949, Guam 1952
Forcipomyia flavitibialis Tokunaga & Murachi Guam 1936
Forcipomyia fuscimanus (Kieffer) Rota 1946
Forcipomyia guamensis Tokunaga and Murachi Guam 1952
Forcipomyia ornata Tokunaga Saipan 1944, Guam 1957
Forcipomyia pectinunguis (de Meijere) Agrihan 1951
Forcipomyia penniornata Tokunaga & Murachi Tinian 1945, Guam 1945
Forcipomyia sauteri Kieffer Saipan 1951, Rota 1946, Guam 1957
Forcipomyia swezeyana Tokunaga & Murachi Tinian 1945, Guam 1945
Sphaeromias kraussi Tokunaga Guam 1957
Stilobezzia esakiana Tokunaga Guam 1945

References

Tokunaga, Masaaki and E. K. Murachi. 1959. Diptera: Ceratopogonidae. In: Insects of Micronesia 12(3): 103-434.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Chironomidae

Diversity

Micronesia – 101 species, Mariana Isl. – 30 species, CNMI – 13 species

Ecological and human significance

Midges are small to very small insects which often occur in huge swarms. Their larvae are mostly aquatic, a few occur in decaying matter, under bark or in moist ground. Most of them are scavengers. Midge larvae are an important food item for many freshwater fish and other aquatic animals.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of midges from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Chironomis crassicaudus</u>		x		x										
<u>Chironomis crassiforceps</u>	x					x								
<u>Kiefferulus longilobus</u>		x	x	x										
<u>Chironomis samoensis</u>		x												
Chironomis sp. No. 3	x													
<u>Clunis pacificus</u>	x													
<u>Macropelopia elongata</u>							Northern Marianas							
<u>Polypedilum nodosum</u>				x										
<u>Pseudosmittia insulsa</u>			x	x										
<u>Smittia zonata</u>	x													
<u>Tanytarsus dybasi</u>	x			x										
<u>Tanytarsus halophilae</u>				x										
<u>Telmatogeton pusillum</u>				x										
Thalassomyia maritima			x											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Macropelopia (=Anatopynia) *elongata* (Tokunaga) Guam 1936, Northern Marianas n.d.

Chironomis claggi Tokunaga Guam 1956

Chironomis crassicaudus Tokunaga Agiguan 1952, Saipan 1945, Guam 1956

Chironomis crassiforceps Kieffer Saipan 1946, Rota 1945, Guam 1958
Chironomis plumatisetigerus Tokunaga Guam 1952
Chironomis samoensis Edwards Agiguan 1952, Guam 1945
Chironomis sexipunctatus Tokunaga Guam 1938
Chironomis sp. No. 2 Guam 1937
Chironomis sp. No. 3 Rota 1958
Clinotanytus guamensis Tokunaga Guam 1939
Cluno pacificus Edwards Rota 1946
Comptosmittia (= *Smittia*) *tuberculifera* (Tokunaga) Guam 1952

Kiefferulus (= *Chironomis*) *longilobus* (Kieffer) Saipan 1951, Tinian 1945, Agiguan 1952, Guam 1954

Pentaneura carolinensis Tokunaga Guam 1952
Phaenopsectra gressitti (Tokunaga) Guam 1945
Polypedilum esakii (Tokunaga) Guam 1952
Polypedilum medivittatum Tokunaga Guam 1956
Polypedilum nodosum (Johannsen) Saipan 1949
Polypedilum perturbans (Johannsen) Guam 1938
Pseudosmittia (= *Smittia*) *insulsa* (Johannsen) Saipan 1949, Tinian 1945, Guam 1952

Smittia guamensis Tokunaga Guam 1952
Smittia zonata Tokunaga Rota 1953

Tanytarsus boninensis Tokunaga Guam 1956
Tanytarsus dybasi Tokunaga Saipan 1949, Rota 1946
Tanytarsus halophilae Edwards Saipan 1949
Tanytarsus insulicola Tokunaga Guam 1945
Tanytarsus magnihamatus Tokunaga Guam 1945
Telmatogeton pusillum Edwards Saipan 1949
Thalassomyia maritima Wirth Tinian 1945, Guam 1945

References

- Tokunaga, Masaaki. 1964. Diptera: Chironomidae. In: Insects of Micronesia 12(5): 485-628.
 Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Simuliidae

Diversity

Micronesia – 4 species, Mariana Isl. – 2 species, CNMI – 0 species

Ecological and human significance

Black-flies are small dark coloured flies, the females of which are blood-sucking. The bites often cause considerable swelling and sometimes bleeding. Blackfly larvae are aquatic. No species have yet been found in the CNMI.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of black flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species records

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Simulium guamense Stone Guam 1958

Simulium trukensis Stone Guam n.d.

References

Stone, Alan. 1964. Diptera: Simuliidae. In: Insects of Micronesia 12(5): 629-635.

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Keroplastidae

Diversity

Micronesia – 8 species, Mariana Isl. – 1 species, CNMI– 0 species

Ecological and human significance

Keroplastid fungus gnats are usually found in forest or well-wooded habitats. The larvae of most species live in damp, dark places, sometimes caves, but most often under bracket fungi, where the ensnare small invertebrate prey using hygroscopic webs. Some species feed on fungi.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of keroplastid fungus gnats from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species known

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Neoplatyura (= *Orfelia*) *petiolata* Colless Guam 1945

References

Colless, Donald H. 1966. Diptera: Mycetophilidae. In: Insects of Micronesia 12(6): 637-667.

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Sciaridae

Diversity

Micronesia – 22 species, Mariana Isl. – 6 species, CNMI – 3 species

Ecological and human significance

Dark-winged fungus gnats generally live in moist shady places. The larvae of most species live in fungi.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of dark-winged fungus gnats from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Bradysia radicum</i>											x
<u><i>Corynoptera latistylata</i></u>											x
<i>Lobosciara spinipennis</i>			x	x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Bradysia kraussi Steffan Guam 1952

Bradysia radicum (Brunetti) Guam 1956, Saipan 1965

Bradysia tritici (coquillett) Guam 1956

Corynoptera latistylata (Hardy) Saipan 1945

Lobosciara spinipennis (Sasakawa) Guam 1956, Saipan 1949, Tinian 1945

Scythropochroa gressitti Steffan Guam 1945

References

Steffan, Wallace A. 1969. Diptera: Sciaridae. In: Insects of Micronesia 12(7): 669-732.

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Cecidomyiidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Gall midges are small flies whose larvae, in some species, cause galls on plants, some feed on plants without causing galls, some live in decaying organic matter, under bark or in fungi; and some feed on other insects. In this group are a few of economic importance as insect pests, and some as insect pest controllers.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the

Identification

There are no keys for in house identification.

Records of fungus gnats from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species known

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Procontrarinia schreineri Harris Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Scatopsidae

Diversity

Micronesia – 6 species, Mariana Isl. – 3 species, CNMI - 2 species

Ecological and human significance

These flies are usually less than 3 mm long and their larvae breed in decaying material and excrement.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of minute black scavenger flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Holoplagia guamensis

x

Psectosciara brevicornis

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Holoplagia guamensis (Johannsen) Guam 1922, Saipan 1945

Psectosciara brevicornis Johannsen Guam 1945, Saipan 1945

Scatopse fuscipes Meigen Status questionable

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Hardy, D. Elmo. 1956b Diptera: Scatopsidae. In: Insects of Micronesia 12(2): 89-102

Diversity

Ecological and human significance

Conservation

Identification

Records of soldier flies from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Brachycara ventralis				x										
<u>Cephalochrysa infuscata</u>	x			x						x				
Hermetia illucens	x		x	X										
Hermetia sp.										x				
<u>Lophoteles plumula</u>				x										
Microchrysa flaviventris			x	x										
Paracechorismenus														
guamae			x	x										
Wallacea albisetia borealis									x					

Species list

Brachycara ventralis Thomson Saipan 1939, Guam 1957

Cephalochrysa infuscata James Agrihan 1951, Saipan 1945, Rota 1937, Guam 1936

Hermetia illucens (Linnaeus) Saipan 1951, CNMI 1970-2001, Tinian 1958, Rota 1951, Guam 1952

Hermetia sp. Agrihan 1992

Lophoteles plumula Loew Tinian 1945

Microchrysa flaviventris (Wiedemann) Saipan 1946, Tinian 1944, Guam 1957

Paracechorismenus guamae James Saipan 1945, Tinian 1945, Agiguan 1952, Guam 1958

Rosapha bicolor (Bigot) Guam 1958

Wallacea albiseta borealis James Pagan 1940

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)
- James, Maurice T. 1962. Diptera: Stratiomyidae. In: *Insects of Micronesia* 13(4): 75 – 107.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Tabanidae

Diversity

Micronesia – 2 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Horse-flies are medium to large, the females are blood-sucking and are often serious pests of livestock and man, while the males feed on pollen and nectar. The larvae of most species are aquatic and predaceous.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of horse flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species found

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Tabanus partitus Walker (was called *T. striatus* F.) Guam 1956, CNMI 1968

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat

Stone, Alan. 1960. Diptera: Tabanidae. In: Insects of Micronesia 13(8): 51 – 54.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Asilidae

Diversity

Micronesia – 2 (?) species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Robber flies prey on variety of other Insects usually captured on the wing. Larvae live in the soil, in decaying wood and similar places and prey on the larvae of other Insects.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of robber flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Asilidae sp							X	x		x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Asilidae sp. Agrihan, Guguan 1992, Anatahan CNMI 2002 (Asilinae).

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Scenopinidae (=Omphralidae)

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI 1 species

Ecological and human significance

Window flies are small to medium sized flies whose larvae occur in decaying wood or fungus. The larvae are predaceous on a number of insects.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of window flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Scenopinus papuana		x												

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Scenopinus (=Omphrale) papuana KrLber Agiguan 1952, Guam 1952

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Hardy, D. Elmo. 1958. Diptera: Omphralidae. In: Insects of Micronesia 13(2): 11 – 13.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Bombyliidae

Diversity

Micronesia – 5 species, Mariana Isl. – 1 species, CNMI– 0 species

Ecological and human significance

Bee flies range in size from very small (1.2 mm long) to large. Adults are usually found in open places, often hovering over flowers. The larvae are parasitic on caterpillars, bee and wasp larvae and the eggs of grasshoppers.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of bee flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species yet found

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Anthrax koshunensis Matsumura Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Empididae

Diversity

Micronesia – 13 species, Mariana Isl. – 3 (4 ?) species, CNMI - 2 (3?) species

Ecological and human significance

Dance flies are small to minute insects usually found in moist places where there is an abundance of vegetation. They are predaceous on other insects, but occasionally frequent flowers. The larvae occur in soil, in decaying vegetation, under bark or in water, and are believed to be predators on invertebrates.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of dance flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Crossopalpis brevicula</u>			x											
Empididae sp.												x		
Hybos dnopheros				X										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Crossopalpis(=*Drapetis*) *breviculus* (Melander) Tinian 1945, Guam 1945

Elaphropeza semibadia Quate Guam 1946

Hybos dnopheros Quate Saipan CNMI 1979

Empididae sp. Maug 1992

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Quate, L.W. 1960. Diptera: Empididae. In: Insects of Micronesia 13(8): 55 –73.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Dolichopodidae

Diversity

Micronesia – 30 species, Mariana Isl. – 13 (14 ?) species, CNMI– 8 (9 ?) species

Ecological and human significance

Long-legged flies are small to minute, usually metallic in colour. The adults are predaceous on smaller insects. The larvae occur in water or mud, decaying wood, grass stems or under bark. At least some are predators.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of long-legged flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Chrysosoma agrihan

x

Chrysosoma mariana

x

Chrysosomatinae sp.

x

x

x

x

x

Plagiozopelma flavipodex

x

Krakatauia evulgatum

x

Krakatauia Micronesiana

x

x

Amblypsilopus austerus

x

Medetera grisea

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Sciapodinae

Amblypsilopus pallidicornis (Grimshaw) Guam 1945

Amblypsilopus austerus (Parent) Guam 1952, Saipan 1945

Chrysosoma agrihan Bickel Agrihan 1951

Chrysosoma arrogans Parent Guam n. d.

Chrysosoma guamense Bickel Guam 1957

Chrysosoma mariana Bickel Saipan 1946, Pagan 1940

Chrysosoma patelliferum (Thomson) Guam 1957

Chrysosoma pelagica Bickel Guam 1957

Chrysosomatinae sp. Agrihan, Anatahan, Asuncion, Guguan, Maug 1992

Krakatauia evulgata (Becker) Agrihan 1951

Krakatauia Micronesiana Bickel Saipan 1945, Rota 1967, Guam 1952

Plagiozopelma flavipodex (Becker) Saipan 1945, Guam 1945

Subfamily: Medeterinae

Medetera salomonis Parent Guam 1945

Medetera grisescens de Meijere Saipan 1946

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Bickel D. J. 1994. Diptera: Dolichopodidae Part !. Sciapodinae, Medeterinae and Sympycninae (part). In: *Micronesica* 27(1/2): 361-406

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. *Nat. Hist. Res.*, Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Phoridae

Diversity

Micronesia – 25 species, Mariana Isl. – 12 species, CNMI – 3 species

Ecological and human significance

Humpbacked flies are small to minute, and are most abundant around decaying vegetation. The larvae occur in decaying vegetation and animal matter, some in fungi, and some as internal parasites of other insects, or as commensals or parasites in the nests of termites or ants.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of humpbacked flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Diploneura cornuta										
<u>Megaselia setaria</u>										
Megaselia scalaris										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

- Chonocephalus hirsutus* Bohart Guam 1947
Chonocephalus subglaber Bohart Guam 1947
Diploneura cornuta (Bigot) Saipan 1945, Guam 1956
Gymnoptera molluscovora (Bohart) Guam 1945
Megaselia setaria (Malloch) Saipan 1945, Guam 1956
Megaselia parabasiseta Bohart Guam 1947
Megaselia Micronesiae Beyer Guam 1946
Megaselia setifemur Bohart Guam 1956
Megaselia scalaris (Loew) Saipan 1945, Guam 1945
Megaselia suis Bohart Guam 1956
Puliciphora lucifera Dahl Guam 1945 (= *P. wymani* Bohart)
Puliciphora pulex Dahl (= *nigriventris* Bohart) Guam n.d.

References

- Beyer, E. M. 1967. Diptera: Phoridae. In: Insects of Micronesia 13(7): 329 – 360.
 Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Pipunculidae (= Dorilaidae)

Diversity

Micronesia – 5 species, Mariana Isl. – 4 species, CNMI– 3 species

Ecological and human significance

These are small flies whose larvae are parasites of various hoppers, chiefly leaf- and plant-hoppers.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of big-headed flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Tomosvaryella</u>														
<u>Micronesiae</u>	x	x	x											
Tomosvaryella														
subvirescens	x													
Pipunculidae sp.													x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Dorilas gressitti Hardy Guam 1945

Tomosvaryella Micronesiae Hardy Guam 1952, Aguihan 1954, Tinian 1946, Rota 1951

Tomosvaryella subvirescens (Loew) Rota 1946, Guam 1936

Pipunculidae sp. Maug 1992

References

Hardy, D. Elmo. 1956c. Diptera: Dorilaidae(Pipunculidae). In: Insects of Micronesia 13(1):

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Diversity

Ecological and human significance

Conservation

Identification

Records of syrphid flies from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Allographa neofasciata		x												
Allograpta septemvittata		x	x											
Ischiodon scutellaris	x	x		X		X				x				
Eristalinus arvorum				x										
Eristalinus sp A				X										
Eristalinus sp B				X										
Syritta “orientalis”	X		x											
Syrphid spp (2 ?)	x					x	x			x		x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Allographa neofasciata (= *Epistrophe fasciata*) (Shiraki) Agiguan 1952

Allographa longula (= *Epistrophe longulus*) (Shiraki) Guam 1948

Allograpta (= *Epistrophe*) *septemvittata* Shiraki Tinian 1945, Agiguan 1952

Eumerus guamensis Shiraki Guam 1945

Ischiodon scutellaris (Fabricius) Agrihan 1952, Saipan 1944, CNMI 1970-2001, Rota 1925, Agiguan 1952, Anatahan CNMI 2002, Guam 1957

Eristalinus (Lathyrophthalmus) arvorum (Fabricius) Saipan 1951, Guam 1958

Eristalinus (Lathyrophthalmus) sp. A Saipan CNMI 1979

Eristalinus (Lathyrophthalmus) sp B Saipan CNMI 1971

Syritta “*orientalis*” Macquart Tinian 1946, Rota CNMI 2002, Guam 1958. This species is not *orientalis* and will probably be described during 2003 as a new species.

Syrphid spp (2 ?) Agrihan, Guguan, Maug, Sarigan, Rota 1992

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Shiraki, T. 1963. Diptera: Syrphidae. In: Insects of Micronesia 13(5): 129-188.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Micropezidae

Diversity

Micronesia – 6 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

The adults are found in or near moist places, and the larvae live in excrement.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of stilt-legged flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Mimegralla albimana

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Mimegralla albimana (Doleschall) Saipan 1945, Guam 1952

References

Azel, Martin L. 1959. Diptera: Neriidae and Micropezidae. In: Insects of Micronesia 14(3): 47-90

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Neriidae

Diversity

Micronesia – 6 species, Mariana Isl. – 2 species ,CNMI – 1 species

Ecological and human significance

Medium sized to small flies whose larvae are found in decaying vegetable matter.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of cactus flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Telostylinus longicoxa

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Telostylinus longicoxa (Thomson) Saipan 1951

Telostylinus lineolatus Wiedeman Guam n.d.

References

Aczel, Martin L. 1959. Diptera: Neriidae and Micropezidae. In: Insects of Micronesia 14(3): 47-90

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Otitidae

Diversity

Micronesia – 6(7-8?) species, Mariana Isl.- 6 (7-8?) species, CNMI – 4(5-6?) species

Ecological and human significance

Otitid picture-winged flies are small to medium-sized flies usually found in moist places. Little is known of their larval stages but some are plant-feeding and occasionally damage cultivated plants, and some occur in decaying materials and excrement.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of picture-wing flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Acrosticta apicalis</i>														
<i>Notogramma camiciforme</i>														
Otitidae sp. 1						x								
Otitidae sp. 2						x				x		x		
<i>Physiphora clausa</i>														
<i>Pseudeuxesta prima</i>														

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection. Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Acrosticta apicalis Williston Guam, Northern Marianas n.d.

Euxesta annonae (F.) Guam n.d.

Neoeuxesta guamana Steyskal Guam n.d.

Notogramma camiciforme Loew Guam, Northern Marianas n.d.

Otitidae sp. 1 Anatahan 1992

Otitidae sp. 2 Agrihan, Anatahan, Pagan 1992

Physiphora (chrysomyza) clausa Macquart Guam, Northern Marianas n.d.

Pseudeuxesta prima Osten-Sacken Guam, Northern Marianas n.d.

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Platystomatidae

Diversity

Micronesia – 4 ? species, Mariana Isl. 3 – species, CNMI - 3 species

Ecological and human significance

Picture-winged flies are small to medium-sized flies usually found in moist places. Little is known of their larval stages but some are plant-feeding and occasionally damage cultivated plants, and some occur in decaying materials.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of picture-wing flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Scholastes bimaculatus		X		X	X
Scholastes hirtiventris				X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Dichatomyea rufa No locality or date.

Pogonortalis fulvofemoralis Malloch Guam 1936

Scholastes aitapennis Malloch Guam 1936

Scholastes bimaculatus Hendel Saipan CNMI 1971-1997, Sarigan CNMI 2001, Anatahan CNMI 2002

Scholastes hirtipennis Loew Guam n.d.

Scholastes hirtiventris Malloch Guam 1936, Anatahan CNMI 2002.

References

Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Tephritidae

Diversity

Micronesia – 17 species, Mariana Isl. – 13(14?) species, CNMI - 9(10?)

Ecological and human significance

Fruit flies are small to medium sized Insects found on flowers or vegetation. The larvae of most tephritids feed on plants, and some are serious pests. In the CNMI the melon fly and the oriental fruit fly have caused considerable damage to various crops.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of fruit flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Bactrocera cucurbitae	X	x	x	X										
Bactrocera dorsalis	x		x	x										
Bactrocera n. sp.?				x										
Bactrocera frauenfeldi				x										
Bactrocera ochrosiae	X	x	x	X		X	X	x	x	X	x			
Euphranta lemniscata			x	x		X				x				
Philophylla														
nigroscutellata				x										
Platensina amblypennis						Northern Mariannas								
Spathulina acroleuca				x		X		x	x					
Tephritidae sp.						x		x						

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Trypetinae

Ornithoschema mallochi Hardy (formerly recorded as *Cycasia oculata* Malloch) Guam 1942

Subfamily: Dacinae

Bactrocera (= *Dacus*) *cucurbitae* (Coquillett) Melon fly Saipan 1946, CNMI 1971- 2002, Rota CNMI 1971-1981, Tinian 1946-1952, CNMI 2002, Guam 1952, none trapped in 1992 on Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug, Uracas, but found on Aguiguan

Bactrocera (= *Dacus*) *dorsalis* (Hendel) Oriental fruit fly Saipan 1946-1951, Tinian 1946, Rota 1946, Guam 1952. Appeared on Saipan during the 1930's, found in Guam during 1947 - appears to have been eradicated during the 1960's.

Bactrocera (= *Dacus*) n. sp.? Related to *dorsalis* Saipan 1945

Bactrocera (= *Dacus*) *frauenfeldi* Schiner Saipan 1946

Bactrocera (= *Dacus*) *ochrosiae* Malloch Saipan 1949, Saipan CNMI 1970-2002, Rota CNMI 2000, Tinian 1946, CNMI 2002, Agiguan 1952, Sarigan 1992, CNMI 2001, Pagan CNMI 1991; Anatahan 1992, CNMI 2002, Guguan, Alamagan, Pagan, Agrihan, Aguiguan, none were found on Asuncion or Maug - all 1992, Guam 1948.

Subfamily: Trypetinae

Dioxyana (= *Stylia*) *sorocula* (Wiedemann) Guam 1952

Ephranta lemniscata (Enderlein) Pagan 1940, Saipan 1951, Tinian 1945, Sarigan CNMI 2000

Philophylla nigroscutellata Hering (formerly recorded as *Hendelina bisecta* Hardy & Adachi) Saipan 1939, Guam 1952

Subfamily: Tephritinae

Stylia sorocula (Wiedemann) Saipan CNMI 1997, Guam 1946-1952

Platensina amplypennis (= *platyptera*) Walker Guam 1945, Northern Marianas n.d.

Rhabdochaeta guamae Malloch Guam 1942

Spathulina acroleuca Schiner Pagan 1940, Alamagan 1951, Saipan 1944, Sarigan CNMI 2001, Guam 1952

Scedella (= *Tephritis*) *formosella* (Hendel) Guam 1945

Tephritidae sp. Anatahan, Guguan 1992

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat
- Hardy, D. Elmo and W. Adachi. 1956. Diptera: Tephritidae. In: Insects of Micronesia 14(1): 1 – 28.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Moore, A. 1992. Status of fruit fly populations on Aguigan. In: The Aguigan Expedition, R.J. Craig (Ed). Proceedings Marianas Research Symposium, Vol. 1: 48-50.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Lonchaeidae

Diversity

Micronesia – 11 species, Mariana Isl. – 5(6?) species, CNMI – 4(5?) species

Ecological and human significance

Lonchaeid flies are small shining insects occurring chiefly in moist or shady places. The larvae are mostly secondary in vaders of diseased or injured plant tissues – a few feed on fruits or vegetables.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of lonchaeid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Lamprolonchaea badiceps											
Lamprolonchaea ustulata											
Lonchaeidae sp							x		x	x	x
Silba excisa											
Silba perplexa											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Lamprolonchaea badiceps McAlpine Guam, Northern Marianas n.d.

Lamprolonchaea nigratarsata McAlpine Guam n.d.

Lamprolonchaea ustulata McAlpine N. Marianas

Lonchaeidae sp. Agrihan, Anatahan, Asuncion, Guguan, Maug, Pagan, Uracas 1992

Silba excisa Kertész Northern Marianas, Guam n.d.

Silba perplexa Walker Northern Marianas, Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Piophilidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Cheese flies adults are found on decaying proteinaceous food – larvae live in cheese, preserved meats and old carrion.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of cheese flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species found

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Piophila casei (L.) Guam n.d.

References

Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Sepsidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 0 species

Ecological and human significance

Sepsids are found mainly on human and animal excrement, and the eggs are laid on this and on nearby vegetation, carrion and fermenting tree sap. Many species are important decomposers of faecal waste.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of sepsid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Dicranosepsis bicolor Wiedemann Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Lauxanidae

Diversity

Micronesia – 7 species, Mariana Isl. – 5(6? 7?) species, CNMI – 1 (2? 3?)species

Ecological and human significance

Lauxanids are usually small flies living in moist shady places, their larvae occur in decaying vegetation.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of lauxanid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Homoneura acrostichalis														
Homoneura sp.													X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Homoneura acrostichalis de Meijere Northern Marianas, Guam n.d.

Homoneura anuda Curran Guam n.d.

Homoneura sp. Agrihan CNMI 1971

Panurgopsis setosa (Knab) Guam n.d.

Prochaetops setosus Knab Guam n.d.

Steganopsis nigropunctata Thomson Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Sphaeroceridae (Borbonidae).

Diversity

Micronesia – 20(21 ?) species, Mariana Isl. – 13(14 ?) species, CNMI – 5(6 ?) species

Ecological and human significance

Small dung flies are very small flies found in swampy places near excrement. The larvae live in excrement and refuse.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of small dung flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<i>Leptocera nigra</i>				x							
<i>Pterogramma conica</i>				x							
<i>Spelobia bifrons</i>				x							
<i>Sphaeroceridae</i> sp.										x	
<i>Trachyopella atomus</i>				x							
<i>Trachyopella collinella</i>				x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

- Acumisetia (Leptocera) longiventris* (Duda) Guam 1938
Coproica (Leptocera) ferruginata (Stenhammar) Guam n.d.
Coproica (Leptocera) hirtula (Haliday) Guam 1939
Coproica (Leptocera) vagans (Haliday) Guam 1939
Leptocera downesi Richards Guam 1939
Leptocera nigra Olivier (was called *L. curvinervis* (Stenhammar)) Saipan 1945, Guam 1945
Pachytarsella (Leptocera) boharti (Richards) Guam 1945
Poecilosomella (Leptocera) punctipennis (Wiedemann) Guam 1957
Pterogramma conivum (= *Leptocera conica*) (Richards) Saipan 1945, Guam 1948
Spelobia bifrons (Stenhammar) (was called *Leptocera femorina* Richards) Saipan 1940, Guam 1957
Sphaeroceridae sp. Agrihan 1992
Trachyopella (Leptocera) atomus (Rondani) Guam n.d., Saipan 1944
Trachyopella (Leptocera) collinella (Richards) (was also referred to as *Leptocera obliqua* Richards) Guam 1945, Saipan 1945

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
- Richards, O.W. 1963. Diptera – Spaeoceridae (Borboridae). In: Insects of Micronesia 15(5): 109-134

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Tethinidae.

Diversity

Micronesia – 9 species, Mariana Isl. – 9 species, CNMI - 4 species

Ecological and human significance

Most tethinids are seashore species occurring in beach grass, salt marshes or seaweed washed up on the shore – inland species mostly inhabit alkaline areas.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of tethinid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Dasyrhicnoessa ferruginea</i>				x										
<u><i>Dasyrhicnoessa insularis</i></u>			x	x										
<u><i>Dasyrhicnoessa vockerothi</i></u>			x	x										
<u><i>Pseudorhicnoessa spinipes</i></u>				x										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Tethina orientalis (Hendel) Guam 1945
Dasyrhicnoessa asymbasia Sasakawa Guam 1939
Dasyrhicnoessa sexseriata Hendel (was *asymbasia* Sasakawa) Guam 1939
Dasyrhicnoessa ferruginea (Lamb) Saipan 1977, Guam 1939
Dasyrhicnoessa insularis (Aldrich) Saipan 1940, Tinian 1945
Dasyrhicnoessa phyllodes Sasakawa Guam 1956
Dasyrhicnoessa tripunctata (= *phyllodes*) Sasakawa Guam 1956
Dasyrhicnoessa vockerothi Hardy and Delfinado Saipan 1977, Tinian 1945, Guam 1945
Pseudorhicnoessa spinipes Malloch Saipan 1949-1977, Guam 1945

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat
 Sasakawa M. 1994. Diptera: Tethinidae. Insects of Micronesia 14(8): 281-302. In: Micronesica 27(1/2): 51-72

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Milichiidae.

Diversity

Micronesia – 8 species, Mariana Isl. – 5 (6?)species, CNMI – 2(3?) species

Ecological and human significance

Milichiids are small flies mostly occurring in open areas. The larvae generally live in decaying plant or animal matter, some are commensals of predaceous Insects (riding with them and feeding on exudates of their victims).

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of milichiid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac
<i>Desmometopa tarsalis</i>	Northern Marianas
<u><i>Milichia orientalis</i></u>	Northern Marianas
<i>Milichiidae</i> sp.	x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Desmometopa microps Lamb Guam n.d.
Desmometopa tarsalis Loew Northern Marianas n.d., Guam n.d.

Milichia orientalis Malloch Northern Marianas, Guam n.d.
Milichiella lacteiventris Malloch Guam n.d.
Milichiella lacteipennis Loew Guam n.d.
Milichiidae sp. Agrihan 1992

References

- Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.
 Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat
 Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Ephydriidae.

Diversity

Micronesia – 9 species, Mariana Isl. – 9 species, CNMI – 2 species

Ecological and human significance

Shore flies are small (up to 6 mm long) to very small and are found in moist places – marshes, the shores of ponds and streams and the seashore. The larvae are aquatic, and many species occur in brackish or even strongly saline or alkaline water.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of shore flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguhan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Actocetor solitarius</u>			x											
<u>Psilopa</u> sp ?			x											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Actocetor solitarius Cresson Saipan, Guam n.d.
Allotrichoma sp. Guam n.d.
Brachydentera longipes Hendel Guam n.d.
Chlorichaeta tuberculosa Becker Guam 1945
Discomyza maculipennis (Wiedemann) Guam n.d.
Hecamede persimilis Hendel Guam n.d.
Paralimna aequalis cresson Guam n.d.
Parydra sp. Guam n.d.
Psilopa sp. Saipan 1992

References

Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Drosophilidae

Diversity

Micronesia – 69 species, Mariana Isl. – 16(17 ?) species, CNMI – 9 (10 ?) species

Ecological and human significance

Vinegar flies are 3-4 mm long and are usually yellowish in colour. They are generally found around decaying vegetation and fruit, and can often be household pests. The larvae of most species occur in decaying fruit and fungi. A few species are ectoparasites or parasites on other Insects.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of vinegar flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<u>Baeodrosophila pallens</u>				x							
Drosophila quadrilineata										x	
Drosophila ananassae				x						x	
Drosophila polychaeta				x							
<u>Drosophila sulfurigaster</u>											
<u>bilimbata</u>											
Leucophenga boninensis											
Microdrosophila											
pleurolineata				x							
Scaptodrosophila bryani				x							
Scaptodrosophila											
scaptomyzoidea				x					x		
Drysophilidae sp.						x	x			x	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Baeodrosophila pallens Wheeler & Takada Guam 1952, Saipan 1946
Drosophila (= *chaetodrosophilella*) *quadrilineata* (de Meijere) Agrihan 1941, Guam 1946
Drosophila melanogaster Meigen Guam 1951
Drosophila takahashii Sturtevant Guam 1951
Drosophila ananassae Doleschall Agrihan 1945, Saipan 1945, Guam n.d.
Drosophila kikkawai Burla Guam 1952

Drosophila polychaeta Patterson and Wheeler Saipan 1944, Guam 1939
Drosophila sulfurigaster bilimbata Bezzi (was *D. nasuta* Lamb) Northern Marianas n.d., Guam 1957
Scatopdrosophila (= *Drosophila*) *bryani* (Malloch) Saipan 1944, Guam 1957
Scatopdrosophila (= *Drosophila*) *scaptomyzoidea* (Duda) Pagan 1940, Saipan 1940, Guam 1957
Leucophenga bellula (= *nigriventris*) Bergroth Guam 1952
Leucophenga boninensis Wheeler and Takada Northern Marianas n.d., Guam 1956
Leucophenga sp. A. cf. *albiceps* de Meijere Guam 1945
Lissocephala mettalescens (de Meijere) Guam 1957
Microdrosophila pleurolineata Wheeler & Takada Saipan 1945, Guam 1945
Mycodrosophila gratiosa (de Meijere) Guam 1946

Drysophilidae sp. Agrihan, Guguan, Sarigan 1992

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Wheeler, M. R. and H. Takada. 1964. Diptera – Drosophilidae. In: Insects of Micronesia 14(6): 163 – 242.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Chloropidae

Diversity

Micronesia – 4 species, Mariana Isl. – 3(4?) species, CNMI - 1 species

Ecological and human significance

Chloropid flies are small flies living mostly in grassy areas, though they may be found in variety of habitats. The larvae of most species feed on grass stems, but some are scavengers, predators or parasites.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Records of chloropid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Cadrema pallida bilineata								X						
Rhodesiella boharti ?								X						
Chloropidae sp						x				x	x			x x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Cadrema pallida bilineata (de Meijere) Anatahan CNMI 2002, Guam n.d.

Chloropidae sp. Saipan, Guguan, Maug, Sarigan, Uracas 1992

Lasiopleura virilis Malloch Guam n.d.

Rhodesiella boharti Sabrosky Guam n.d., ?Anatahan CNMI 2002

References

Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Diversity

Ecological and human significance

Conservation

Identification

There are keys for in house identification.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Liriomyza brassicae

X

X

Liriomyza trifolii

Marianas

Melanagromyza metallica

X

Tropicomyia atomella

X

Ophiomyia cornuta

X

Ophiomyia phaseoli

Marianas

Agromyzidae sp.

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Japanagromyza eucalypti paganensis Pagan 1940

<i>Liriomyza brassicae</i> (Riley)	Cabbage serpentine leafminer	Guam 1955 – first recorded there
1951, Saipan CNMI	1971-1972	

<i>Liriomyza sativae</i> Blanchard	Vegetable leafminer	Guam 1969-1971 – believed introduced between 1963-1969
------------------------------------	---------------------	--

Liriomyza trifolii (Burgess) Serpentine leafminer Probably became established in Guam by 1978, not identified till 1981. Northern Marianas n.d.

Tropicomyia (= *Melanagromyza*) *atomella* (Malloch) Pagan 1940, Guam 1958

Melanagromyza ipomoeavora Spencer Guam 1936

Melanagromyza metallica (Thomson) Saipan 1940

Melanagromyza proclinata Spencer Guam 1957

Ophiomyia cornuta (de Meijere) Saipan 1945, Guam 1958
Ophiomyia (Melanagromyza) phaseoli (Tryon) Bean fly Guam 1951 (first record), Marianas
Icteromyza (=Phytobia) piliseta (Becker) Guam 1952
Pseudonapomyza spicata (Malloch) Guam 1952

Agromyzidae sp. Saipan 1992

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.
Spencer, Kenneth, A. 1963. Diptera – Agromyzidae. In: Insects of Micronesia 14(5): 135-162

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Clusiidae

Diversity

Micronesia – 4 species, Mariana Isl. – 3 species, CNMI -1 species

Ecological and human significance

Clusiid flies are mostly 3-4 mm long, and the larvae occur in decaying wood and under bark.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of clusiid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Tonnoira nigripalpis

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Czernyola(=*Tonnoira*) *atrifrons* (Malloch) Guam 1936

Sobarocephala sp. Guam n.d.

Tonnoira nigripalpis Steyskal & Sasakawa Saipan 1948

References

- Bohart, G.E. and J Linsley Gressitt. 1951. Filth inhabiting flies of Guam. Bernice P. Bishop Museum Bulletin 204. 152 pp, 17 plates.
- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat
- Malloch, J.R. 1942. Trypetidae, Otitidae, Helomyzidae and Clusiidae of Guam (Diptera), pp 201-210. In: Insects of Guam-1, Bernice P. Bishop Museum Bulletin No. 172. Honolulu, Hawaii.
- Steyskal, George and M. Sasakawa. 1966. Diptera : Clusiidae. In: Insects of Micronesia 14(7): 243 – 250.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Anthomyiidae

Diversity

Micronesia – 3 species, Mariana Isl. – 1 species, CNMI -1 species

Ecological and human significance

Anthomyiid flies occur in wooded or moist places, some species being agricultural pests, others being phytophagous or scavengers in decaying organic matter.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of anthomyiid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Anthomyia vicarians

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Anthomyia vicarians Schiner Agrihan 1971

Extralimital

Anthomyia illocatus Bonin Island CNMI 1958

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Perisceledidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 0 species

Ecological and human significance

Periscelidid flies are small flies attracted to bleeding sap from tree wounds. The larvae of some species are aquatic or semi-aquatic in water trapped in leaf axils.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of periscelidid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Stenomicra (Podocera) fascipennis Malloch Guam 1936

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Asteiidae

Diversity

Micronesia – 3 species, Mariana Isl. – 2 species, CNMI – 1 species

Ecological and human significance

Asteiid flies are usually less than 2 mm long – little is known of their habits.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of asteid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced, **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Asteia atrifacies

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Asteia atrifacies Sabrosky Guam 1948, Saipan 1945

Asteia kraussi Sabrosky Guam 1945

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)

Sabrosky, Curtis W. 1956. Diptera: Asteiidae. In: Insects of Micronesia 14(2): 29-40

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Xenasteiidae

Diversity

Micronesia – 2 species, Mariana Isl. – 1 species, CNMI -1 species

Ecological and human significance

Xenasteiid flies are minute (1.2-2.0 mm) insects, all of which seem to inhabit the sea shore.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of xenasteiid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Xenasteia divergens

x x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Xenasteia divergens Hardy Saipan 1944, Anatahan 1951, Guam 1945

References

- Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www.bishopmuseum.org/bishop/ento/aocat
- Hardy, D. Elmo. 1980. Xenasteiidae, a new family of Schizophora (Diptera) from the Pacific and Indian Oceans. Proc. Hawaiian Ento. Soc for 1977, XXIII(2): 205-226.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Muscidae

Diversity

Micronesia – 84 species, Mariana Isl. – 28 species, CNMI – 18 species

Ecological and human significance

Muscid flies are widely spread and many are household pests and vectors of human diseases. The larvae may be found in decaying plant or animal matter.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of muscid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
<u>Antherigona excisa</u>	x		x	X	x			x			
Antherigona sp.				x							x
Antherigona orientalis				X							
<u>Orchisia costata</u>								x			
Pygophora edgari		x		x							
Pygophora lobata			x	x							
Pygophora mariana			x	X							
Coenossinae sp.					x						
Dichaetomyia mariana	x	x		x					x		
Dichaetomyia rota	x										
<u>Dichaetomyia rufa</u>			x	X							
Dichaetomyia saperoi		x			X						
Limnophora plumiseta	X			X	x						
<u>Ophyra chalcogaster</u>		x		x					x		
Bdellolarynx carabao				x							
Haematobia exigua			x	X							
Musca vicina	X	x		X				x			
Musca sorbens	X	x	X	X	X			X	X	X	
Stomoxys calcitrans								x			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Coenossiniinae

Antherigona excisa (Thomson) Pagan 1940, Anatahan 1952, Rota 1951, Tinian 1952, Saipan 1958, CNMI 1970, Guam 1952

Antherigona longipalpis Malloch Guam 1946

Antherigona orientalis Scheiner Saipan CNMI 1970

Antherigona sp. Maug, Saipan 1992

Limosia bimorpha Snyder Guam 1957

Orchisia costata (Meigen.) Pagan 1940

Parvisquama mariana Snyder Guam 1957

Pectinaseta prominens (Stein) Guam 1952

Pygophora edgari Snyder Saipan 1944, Agiguan 1954

Pygophora lobata Stein Guam 1958, Tinian 1952, Saipan 1949

Pygophora mariana Snyder Guam 1952, Tinian 1952, Saipan 1949, CNMI 1979

Coenossinae sp. Anatahan 1992

Subfamily Phaoniinae

Dichaetomyia mariana Snyder Agiguan 1952, Agrihan 1951, Saipan 1945, Rota 1925, Guam 1946

Dichaetomyia nigroscuta Bohart and Gressitt Guam 1938

Dichaetomyia rota Snyder Rota 1925

Dichaetomyia rufa (Stein) Tinian 1952, Saipan CNMI 1970

Dichaetomyia saperoi Bohart and Gressitt Agiguan 1955, Anatahan CNMI 2002, Guam 1952

Gymnodia tonitruui (Wiedemann) Guam 1937 (On Pan-Am flight, and no other specimen found in Micronesia – probably just a passenger.

Limnophora extincta Snyder Guam 1936

Limnophora plumiseta Stein Anatahan 1951, Saipan 1944, CNMI 1994, Rota CNMI 1970, Guam CNMI 1957,

Ophyra chalcogaster (Wiedemann) Agrihan 1951, Saipan 1944, Agiguan 1952, Guam 1952

Ophyra nigra (Wiedemann) Guam 1952

Subfamily: Stomoxydiinae

Bdellolarynx carabao (Bohart and Gressitt) Saipan 1944, Guam 1958

Haematobia exigua de Meijere Tinian 1954, Saipan CNMI 1970, Guam 1958

Musca vicina Macquart (previously identified as House fly, *M. domestica*). Pagan 1954, Saipan 1945, NMI 1970-73, Agiguan 1952, Rota 1958, CNMI 1970, Guam 1958, 1968 CNMI, Extralimital: Truk 1971 CNMI, Mayora – Lanes islands CNMI 1971

Musca sorbens Wiedemann Agrihan 1951-1992, CNMI 1971, Alamagan 1992, CNMI 1971, Anatahan 1992, CNMI 2002, Pagan 1951-1992, CNMI 1971-1999, Saipan 1951, CNMI 1970-1980, Tinian 1945, CNMI 1970-1985, Agiguan 1952, Rota 1952, CNMI 1925-1970, Guam 1958. Extralimital: Palau CNMI 1971.

Stomoxys calcitrans (Linnaeus) Stable fly Pagan 1940, Guam 1945. Extralimital: Bonin Isl CNMI 1958.

Synthesiomyia nudiseta (van der Wulp) Guam 1945

Antherigona oryzae Extralimital Bonin Island CNMI 1958

Dichaetomyia rufa (Stein) Extralimital Truk CNMI 1949

References

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
- Snyder, Fred M. 1965. Diptera – Muscidae. In: Insects of Micronesia 13(6): 191-327.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Fanniidae

Diversity

Micronesia – 3 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Fanniid flies occur in wooded or moist habitats. Some species are agricultural pests, others are phytophagous or are scavengers in decaying organic matter.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of muscid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Fannia pusio

X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Fannia pusio Weidemann Saipan CNMI 1970, Guam 1952

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.Bishopmuseum.org/bishop/ento/aocat)

Snyder, Fred M. 1965. Diptera – Muscidae. In: Insects of Micronesia 13(6): 191-327.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Hippoboscidae

Diversity

Micronesia – 6 species, Mariana Isl. – 4 species, CNMI – 4 species

Ecological and human significance

Louse flies are winged or wingless parasites of birds and mammals.

Conservation

Conservation will entail maintenance of habitats, that is the habitats of their host species and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of louse flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan , Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Ardmoeca ardeae

x

Olfersia aenescens

x

x

Ornithoica exilis

x

x

x

Ornithoica pusilla

Northern Marianas

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Ardmoeca ardeae (= *Icosta albipennis ardeae*) (Macquart) Saipan (no date)

Olfersia aenescens Thomson Saipan 1945, Agiguan 1952, Guam 1938

Ornithoica exilis (Walker) Saipan 1945, Tinian 1945, Rota 1945, Guam 1945

Ornithoica pusilla Schiner Northern Marianas

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

Maa, T. c. 1966. Diptera: Hippoboscidae. In: Insects of Micronesia 14(7): 251 – 271.

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Calliphoridae

Diversity

Micronesia – 14 species, Mariana Isl. – 11 species , CNMI – 9 species

Ecological and human significance

Blow flies are widely distributed and many species are of considerable economic importance. Most are scavengers, the larvae living in carrion, excrement and similar materials. While many of the flies act as mechanical vectors for a number of human diseases (such as dysentery), the species act as decomposers of dead animals from the landscape. Some blowflies lay their eggs in open sores of livestock and man, some species' larvae feed only on dead tissue, others will attack live tissue.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of blow flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguhan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Chrysomya megacephala	x	X	X		X			x	x		
Chrysomya rufifacies	x		X		X				x	X	
Chrysomya sp. 1			x			x					
Chrysomya sp. 2											x
Hemipyrellia tagaliana		x	X								
Lucilia sp. 1			x				x				
Lucilia sp. 2											x
Phaenicia cuprina					X						
Rhinia apicalis			x								
Stomorphina discolor	x	x	x								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Chrysomya megacephala (Fabricius) Pagan 1954, Alamagan 1951, Saipan 1951, CNMI 2000, Tinian 1946, CNMI 1996, Aguihan 1952, Anatahan CNMI 2002, Guam 1952, CNMI 1945

Chrysomya rufifacies (Macquart) Agrihan 1951, CNMI 1971, Pagan 1951, Saipan 1951, CNMI 1970, Aguihan 1954, Anatahan CNMI 2002, Guam 1961, CNMI 1945-46

Chrysomya nigripes Aubertin Guam 1945

Chrysomya sp. 1 Sarigan, Saipan 1992

Chrysomya sp. 2 Maug 1992
Hemipyrellia tagaliana (Bigot) Guam 1958, Saipan 1951 ,CNMI 1970, Tinian 1952
Lucilia sp. 1 Saipan, Guguan 1992
Lucilia sp. 2 Maug 1992
Phaenicia(=*Lucilia*) *cuprina* (Wiedemann) Anatahan CNMI 2002, Guam 1946
Rhinia apicalis (Wiedemann) Saipan 1951, Guam 1946, Gilbert Islands CNMI 1957
Stomorphina discolor (Fabricius) Saipan 1951, Tinian 1952, Agiguan 1952, Guam 1952

References

- James, Maurice T. 1962. Diptera: Calliphoridae. In: Insects of Micronesia 13(4): 108 – 127.
- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Sarcophagidae

Diversity

Micronesia – 14 species, Mariana Isl. – 7(8?9?) species, CNMI – 6 (7?8?) species

Ecological and human significance

Adult flesh flies feed on various sugar-containing materials such as nectar, fruit-sap and honey-dew. The larvae vary considerably in habits but nearly all feed on some sort of animal material. Many are scavengers feeding on dead animals, some are parasites of other Insects and a few are parasites of vertebrates.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of flesh flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Sarcophaga stricklandi				X						x				
<i>Sarcophaga peregrina</i>				x										
<u><i>Sarcophaga karnyi</i></u>	x		x						x	x				
<i>Sarcophaga dux</i>	x	x	x	X		x	X		x	x				
Sarcophaga sp.	x													
<i>Sarcophaga ruficornis</i>				x										
<u><i>Sarcophaga gressetti</i></u>	x	x		X					x					
<i>Sarcophagidae</i> sp.						x			x	x	x	x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Sarcophaga (= *Bezziola*) *stricklandi* Hall & Bohart Agrihan 1945, Saipan 1944, CNMI 1970, Guam 1944

Sarcophaga (= *Boettcherisca*) *peregrina* Robineau-Desvoidy Saipan 1944

Sarcophaga (= *Boettcherisca*) *karnyi* Hardy Agrihan 1951, Pagan 1951, Tinian 1952, Rota 1925, Guam 1956

Sarcophaga (*Parasarcophaga*) sp. Rota 1945, Guam 1952

Sarcophaga dux Thomson (previously called *S. misera* Walker, *Parasarcophaga knabi* (Parker) and *Parasarcophaga orchidea* (Boettcher)) Agrihan 1951, Pagan 1951, Anatahan 1951, Saipan 1951, CNMI 1979-1984, Tinian 1952, Agiguan 1952, Rota 1951, CNMI 1970, Sarigan CNMI 2001, Guam

1952, Bonin Island CNMI 1958

Sarcophaga (= *Parasarcophaga*) *ruficornis* Fabricius Saipan 1940, Guam 1946, CNMI 1945

Sarcophaga (= *Phytosarcophaga*) *gressetti* (Hall & Bohart) Pagan 1951, Saipan 1951, CNMI 1945-1980, Agiguan 1952, Rota 1951, Guam 1957, Extralimital: Wake Island CNMI 1963.

Sarcophagidae sp. Agrihan, Anatahan, Asuncion, Maug, Pagan - all 1992

Seniorwhitea sp. cf. *S. princeps* Weideman Guam n.d.

Extralimital

Goniophytes boninensis Bonin Island CNMI 1958

References

De Souza Lopes, H. 1958. Diptera: Sarcophagidae In: Insects of Micronesia 13(2): 15 – 49.

De Souza Lopes, H. 1965. Diptera: Sarcophagidae supplement. In: Insects of Micronesia 13(5): 189-190

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. [www. Bishopmuseum.org/bishop/ento/aocat](http://www.bishopmuseum.org/bishop/ento/aocat)

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Diptera Family: Tachiniidae

Diversity

Micronesia – 11(13?) species, Mariana Isl. – 9(11?) species, CNMI – 3(4?) species

Ecological and human significance

Tachinid flies are useful allies to humans as their larvae are parasites of other Insects, and some species are introduced to areas to assist in controlling insect pests.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification

Records of tachinid flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguihan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Lixophaga sphenophori											
Lydella parasitica											
Siphonina sp.											
Tachinidae sp.											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

- Aplomyiopsis epilachnae* Aldrich Guam n.d.
Blepharella lateralis Macquart Guam ca. 1990.
Chaetogadia monticola Bigot Guam n.d.
Exorista civiloides (Bar.) Guam 1993
Lespesia archippivora Riley Guam n.d.
Lixophaga sphenophori Villeneuve Northern Marianas n.d., Guam n.d.
Lydella parasitica Mesnil Northern Marianas
Lydella thompsonii Herting Guam n.d.
Peribaea orbata Wiedemann Guam n.d.
Siphonina sp. Agrihan 1992
Tachinidae sp. Agrihan, Guguan 1992
Therobia abdominalis Wiedemann Guam n.d.

References

Evenhuis, N.L. (Ed). 1989, and as updated. Catalog of the Diptera of the Australasian and Oceanian Region. www. Bishopmuseum.org/bishop/ento/aocat

- Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215.
- Muniappen R., Denton G.W.R., Marutani M., Lali T. S. and C.A. Kimmons. 1993. Fruit piercing moths in Micronesia and their natural enemies. Micronesica, Suppl. 4: 33-39.

Phylum: Arthropoda Class: Insecta Order: Siphonaptera

Diversity

Micronesia – 4 species, Mariana Isl. – 4 species, CNMI - 2 species

Ecological and human significance

Fleas are small wingless insects which feed on the blood of mammals and birds. Some fleas are the vectors of human diseases – the most important of these being plague (black death). They also act as intermediate hosts for two species of tapeworms which can occasionally infect man.

Conservation

Conservation will entail maintenance of habitats of the hosts and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification

Records of fleas from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

kAgri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Ctenocephalides felis felis			X					x						
Ctenocephalides felis orientis			x											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Pulicidae

Ctenocephalides canis (Curtis) Guam 1945

Ctenocephalides felis felis (Bouche) Pagan 1940, Saipan 1954, Guam 1938

Ctenocephalides felis orientis (Jordan) Saipan 1945, Guam 1945

Xenopsylla cheopis (Rothschild) Guam 1945

Family: Ischnopsyllidae

Ischnopsyllus indicus Jordan Guam n.d. Recorded from a bat (*Pipistrellus javanicus abramus*), which has not been recorded since in Micronesia.

References

Hopkins, G.H.E. 1961. Siphonaptera. In: Insects of Micronesia 14(4): 91 – 107.

Phylum: Arthropoda Class: Insecta Order: Trichoptera

Diversity

Micronesia – 10 species (estimated), Mariana Isl. – 1 species, CNMI– 0 ? species

Ecological and human significance

Caddisflies are small to medium sized Insects whose larvae live in streams, ponds and lakes. The larvae are plant feeders or are predaceous. They form the food of fish and other aquatic animals.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification

Records of caddis flies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Oecetina punctata Banks Guam 1936

References

Gressitt, J. Linsley. 1954. Insects of Micronesia Introduction. In: Insects of Micronesia 1: 1 – 257.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Pyralidoidea Family: Pyralidae

Diversity

Micronesia – 19 + species, Mariana Isl. – 19 species, CNMI -12 species

Ecological and human significance

Most pyralids are small and rather delicate moths. There is a great deal of variation in the habits of the various species. The larvae of many are agricultural pests, attacking crops such as corn, cucurbits and sugarcane. The larvae of one species feed on cereals, flour and meal; another feeds on beeswax while yet another has been used to control the spread of prickly pear. Many vertebrates and invertebrates prey on both larvae and adults.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification

Records of pyralid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Crocidolomia binotalis											
Diaphania hyalinata											
Diaphania indica	X		X	X							
Etiella zinckenella				X							
Hellula rogatalis				X							
Hymenia recurvalis	X		X	X					X		X
Marasmia trapezalis											
Margaronia sp.				X							
Maruca testulalis	X		X	X							
Nacoleia diemenalis				X							
Ostrinia furnacalis				X							X
Susumia exigua											

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Agathoides ostentalis (Geyer) Moth Guam
Crocidolomia binotalis Zeller Cabbage cluster worm Marianas
Diaphania hyalinata (L.) Melonworm Marianas
Diaphania indica (Saunders) Cucurbit leafroller Saipan CNMI 1970-1982, Tinian CNMI 1972-2001, Rota CNMI 1970

***Diaphania samoana* Fig leaf-roller Southern Maraianas (Townes 1946)**
***Diaphania multilinealis* Fig leaf-roller Southern Maraianas (Townes 1946)**
Margaronia sp. Saipan CNMI 1970-2001, Rota CNMI 2002 (= DIAPHANIA ?)??????
Etiella zinckenella (Treitschke) Lima-bean pod borer Guam (townes 1946), Saipan CNMI 1973
Hellula undalis (F.) Oriental cabbage webworm Southern Marianas (Townes 1946)
Hellula rogatalis (Hulst) Saipan CNMI 1970
Herpetograntha licarsisalis (Walker) Guam CNMI 1968
Hymenia recurvalis (F.) Saipan CNMI 1970, Tinian CNMI 1971, Rota CNMI 1970, Agrigan CNMI 1971, Alamagan CNMI 1971
Lamprosema diemenalis (Guenee) Bean leaf roller Guam
Marasmia trapezalis (Guenee) Maize leafroller Southern Marianas (Townes 1946)
Marasamia venialis (Walker) Grass leaf folder Southern Marianas (Townes 1946)
Maruca testulalis (Geyer) Bean pod borer Marianas, Saipan CNMI 1970-1973, Rota CNMI 1971, Tinian CNMI 2001
Nacoleia diemenalis (Guen'ee) Saipan CNMI 1972, Southern Marianas (Townes 1946)
Nymphula fluctuosalis Zeller Rice caseworm Guam
Pachyzancla licarsisalis (Walker) Guam 1968.
Ostrinia furnacalis (Guenee) Asian corn borer Marianas, Saipan CNMI 1970-1981, Agrigan CNMI 1971
Susumia exigua (Butler) Rice leafroller Guam (Townes 1946).

References

- Au, S.A. 1968 *Pachyzancla licarsisalis* (Walker) in: Notes and exhibitions. Proc. Hawaii. Ento. XX(1): 17
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Pyralidoidea Family: Pterophoridae

Diversity

Micronesia – 11 species, Mariana Isl. – 7 species, CNMI - 2 species

Ecological and human significance

The larvae of plume moths are leaf-rollers and stem-borers, and some may occasionally do serious damage to crops. One species has been successfully used to control the alien invader weed *Lantana camara*.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are keys for in house identification.

Records of plume moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Lantanophaga														
pusillidactyla	x		x	x										
Megalorhipida defectalis	x			x										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Platyptilinae

Platyptilia farfarella (Zeller) Guam 1949,
Lantanophaga pusillidactyla (Walker) Saipan, Tinian, Rota, Guam (no dates)
Sphenarches anisodactylus Walker (= *Sphenarches caffer* Zeller) Guam 1939
Exelastis pumilio (Zeller) Guam 1959
Megalorhipida defectalis (Walker) Rota 1937, Saipan 1944, Guam 1949

Subfamily: Pterophorinae

Oidaematophorus hirosakianus (Matsumura) Guam 1949
Pterophorus suffiata (Yano) Guam 1971

References

Yano, K., J.F Gates-Clarke and Y. Yoshiyasu. 1996. Lepidoptera: Pterophoridae. Insects of Micronesia 9(3): 157-177): In: Micronesica 28(2): 131-152.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Tortricoidea Family: Chlidanotidae

Diversity

Micronesia – 2 species, Mariana Isl. – 1 species, CNMI -0 species

Ecological and human significance

No information found.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are keys for in house identification

Records of tortricoid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Chlidanotidae

Trymalitis escharia Clarke Guam 1945

References

Gates Clarke, J. F. 1976. Microlepidoptera:Tortricoidea. In: Insects of Micronesia 9(1): 1 – 144.
Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Tortricoidea Family: Olethreutidae

Diversity

Micronesia – 58 species, Mariana Isl. – 26 species, CNMI – 10 species

Ecological and human significance

These moths are small, and the larvae feed on foliage, fruits and nuts. Some can be serious pests on various fruits, and on crops such as clover.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification.

Records of oriental fruit moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Bactra angulata</i>				x						
<i>Bactra minima</i>	x			x						
<i>Bactra venosana</i>				x						
<i>Crociosema plebejana</i>	x									
<i>Cryptophlebia ombrodelta</i>	x			x						
<i>Dudua aprobola aprobola</i>				x						
<i>Duessa atriplaga</i>	x									
<i>Duessa phaeostropha</i>	x									
<i>Heleana physalodes</i>										
<i>physalodes</i>	x			x						
<i>Strepsicrates ejectana</i>				x						

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Alcina stenotes Clarke Guam 1936
Bactra angulata Diakonoff Saipan 1947
Bactra minima Meyrick Rota 1946, Guam 1936, Saipan (n.d.)
Bactra optanias Meyrick Guam 1936

Bactra venosana (Zeller) Saipan 1945
Crocidosema plebejana Zeller Rota 1946
Cryptaspasma achyloptera Clarke Guam 1945
Cryptaspasma triops Diakonoff Guam 1949
Cryptophlebia callosoma Clarke Guam 1945
Cryptophlebia isomalla (Meyrick) Guam 1946
Cryptophlebia ombrodelta (Lower) Saipan 1947, Rota 1946, Guam 1946
Cryptophlebia peltastica (Meyrick) "Guam" (n.d.)
Cryptophlebia rhynchias (Meyrick) Guam 1949
Dudua anisoptera Clarke Guam 1945
Dudua aprobola aprobola (Meyrick) Tortricid moth Guam 1949, Saipan (n.d.)
Duessa atriplaga Clarke Rota 1946, Guam 1945
Duessa phaeostropha Clarke Rota 1946
Eumarissa leucognoma Clarke Guam 1936
Heleana physalodes physalodes (Meyrick) Guam 1939, Saipan 1945, Rota 1946
Icelita monela Clarke Guam 1939
Icelita tatarana coppelia Clarke Guam 1945
Lobesia cathedra Clarke Guam 1945
Lobesia reprobata Clarke Guam 1945
Nenomoshia poetica (Meyrick) Guam 1945
Ruthita argillacea Clarke Guam 1936
Strepsicrates ejectana (Walker) Guam 1949, Saipan 1946

References

- Gates Clarke, J. F. 1976. Microlepidoptera: Tortricidae. In: Insects of Micronesia 9(1): 1 – 144.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas
 College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Tortricoidea Family: Tortricidae

Diversity

Micronesia – 7 species, Mariana Isl. – 4 species, CNMI - 3 species

Ecological and human significance

Leaf-rollers are small moths, with larvae varying in their habits – but many are leaf-rollers or leaf-tyers: and they may pupate in these leaf nests, or they may spin cocoons under bark or in debris. Most species feed on perennial plants.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are keys for in house identification.

Records of tortricid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Adoxophyes melia						x								
Cryptophlebia ombrodelta														Marianas
Polylopha oachranta						x								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Adoxophyes melia Clarke Melia tortricid Saipan 1949, Guam 1945
Cryptophlebia ombrodelta (Lower) Litchi fruit moth Marianas OLETHREUTIDAE ??????
Cryptophlebia peltastica (Meyrick) tortricid moth Guam “
Polylopha oachranta Diakonoff Saipan 1945

References

Gates Clarke, J. F. 1976. Microlepidoptera:Tortricoidea. In: Insects of Micronesia 9(1): 1 – 144.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Microlepidoptera Superfamily: Gelechioidea Family: Cosmopterigidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Most of these moths are small leaf miners, but are not implicated in any serious crop damage.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification.

Records of cosmopterygid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Trissodoris guamensis	Marianas
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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family Cosmopterigidae

<i>Trissodoris guamensis</i> Busk	Marianas
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References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Gelechioidea Family: Agonoxenidae

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI – 1 species

Ecological and human significance

Agonoxenid moths are very small moths whose larvae appear to feed on various palm trees.

Conservation

Conservation will entail maintenance of natural habitats and as little pollution as possible in those habitats.

Identification

There are keys for in house identification

Records of agonoxenid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Agonoxena pyrogramma	Marianas
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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Agonoxena argaula Meyrick Guam 1936
Agonoxena pyrogramma Meyrick Coconut flat moth Marianas

References

Gates Clarke, J. F. 1984. Microlepidoptera: Gelechioidea. In: Insects of Micronesia 9(2): 145 – 155.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Gelechioidea Family: Oecophoridae

Diversity

Micronesia – 3 species, Mariana Isl. – 1 species, CNMI - 0 species

Ecological and human significance

Oecophorid moths are small species whose larvae feed on foliage and flowers, some species causing crop damage.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats.

Identification

There are keys for in house identification

Records of oecophorid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Elaeonomus swezeyi Clarke Guam 1936

References

- Gates Clarke, J. F. 1984. Microlepidoptera: Gelechioidea. In: Insects of Micronesia 9(2): 145 – 155.
 Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Yponomeutoidea Family: Yponomeutidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI -1 species

Ecological and human significance

Ermine moths are generally small species whose larvae feed on foliage, some being minor pests of fruit-trees.

Conservation

The only species presently known is alien and the only conservation issue is one of controlling or eliminating the populations.

Identification

There are no keys for in house identification

Records of ermine moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac
Prays citri	Marianas

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Prays citri Mill Citrus flower moth Marianas, CNMI

References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Yponomeutoidea Family: Plutellidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI -1 species

Ecological and human significance

Diamond back moths are small moths whose larvae feed on foliage, some being pests on crops.

Conservation

The only species presently known is alien, and is a pest on cabbage and other cruciferous plants, and the only conservation issue is one of controlling or eliminating the populations.

Identification

There are no keys for in house identification

Records of diamond back moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Plutella xylostella						X								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Plutella xylostella (L.) Diamondback moth Saipan CNMI 1972-1980

References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Tineoidea Family: Psychidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Bagworms are small moths, the males being winged but the female being wingless and confined to the woven bag in which she pupates. The larvae are foliage feeders.

Conservation

It is not known if the species is alien or indigenous, and so no remarks concerning conservation issues can be made at this stage.

Identification

There are no keys for in house identification .

Records of bagworms from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Batrachedra sp								X		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Batrachedra sp. Guam n.d. , Saipan CMNI 2001

References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Microlepidoptera Superfamily: Tineoidea Family: Gracilariidae

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

Leaf blotch miners are small to minute moths whose larvae bore into leaf tissue.

Conservation

The only species presently known from the region are alien, and the only conservation issue is one of controlling or eliminating the populations.

Identification

There are no keys for in house identification .

Records of leaf blotch miners from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac
Acrocercops sp.	Southern Marianas
Phyllocnistis citrella	Marianas

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Family: Gracilariidae

Acrocercops sp. Leaf blotch miner moth Southern Marianas (Townes 1946)
Phyllocnistis citrella Stainton Citrus leaf miner Marianas

References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Macrolepidoptera Superfamily: Noctuoidea Family: Arctiidae

Diversity

Micronesia – 2 species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

Tiger moths are small to medium sized species whose larvae feed on vegetation, including lichen, weeds, shrubs and trees. Some may cause serious damage to the food-plants. One species was introduced to the Marianas to defoliate, and help control, the alien invasive weed *Chromolaena odorata*.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification

Records of arctid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands							
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu Alam Paga Agri Asun Maug Urac
<i>Pareuchaetes pseudoinsulata</i>								X
<i>Utetheisa pulchelloides</i>								X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Argina cribaria Guam 1946.

Pareuchaetes pseudoinsulata Rego Barros Saipan CNMI 1987-2001, Guam – introduced ca. 1985

Utetheisa pulchelloides Hampson Saipan CNMI 1970-1972, Rota 1946, Tinian 1946, Guam 1946.

References

Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant protection). Northern Marianas College, Saipan. Updated February 16, 1999.

Waterhouse, D.F. 1993. Biological control in the Oceanic West Pacific: An overview. *Micronesica*, Suppl. 4(1-9).

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Macrolepidoptera Superfamily: Noctuoidea Family: Hyblaeidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification

Records of hyblaea moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Hyblaea puera		X							X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Hyblaea puera Cramer Rota CNMI 2002, Anatahan CNMI 2002, Guam CNMI 1968

References

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
Division: Macrolepidoptera Superfamily: Noctuoidea Family: Noctuidae

Diversity

Micronesia – 36 + species, Mariana Isl. – 35 species, CNMI – 33 species

Ecological and human significance

Mostly nocturnal, and mostly with a wing spread of 25-50 mm. The caterpillars are smooth and usually dull-coloured, and many are problems to man – especially the cut-worms, armyworms, bollworms and corn-earworms. The cutworms are so-called because they feed on the roots and shoots of herbaceous plants, and the plant is often cut off at the surface of the ground. Other problem species include fruit-piercing moths (especially *Eudocima fullonia*) and the falme-tree looper (*Pericyma cruegeri*). The caterpillars and adults are the prey of numbers of vertebrate and invertebrate predators including birds, lizards, spiders, large wasps and small parasitic wasps.

Conservation

Many of the noctuids appear to have been introduced, and it is very difficult to ascertain which are indigenous, endemic or introduced. Work is required to establish this, especially in terms of endemic species, and conservation needs can then be established. control of problem species should be done with as little chemical insecticides as possible, since these will affect many of the predators as well.

Identification

There are no keys for in house identification.

Records of noctuid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Chasmina tibialis		X		X							
Platycenta (Perigea)											
illecta		X		X							
Pseudaletia (Leucania)											
loreyi				X							
Tiracola plagiata											
Spodoptera litura				X							
Spodoptera mauritia				X							
Helicoverpa (Heliopsis)											
armigera			X	X					X		
Stictoptera subobliqua				X							
Plusia chalcites			X	X							
Anomis erosa				X							
Anomis flava											
Polydesma umbricola ?				X							
Polydesma boarmoides											

Simplicia lautokiensis ?			X	
Erchia dubia	x	x	X	
Eudocima fullonia	x	X	X	x
Lacera alope			X	
Othreis cajeta			X	X

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands							
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu
Achaea argilla ?				X				
Achaea janata	x		x	X				
Achaea serva			x					
Anua tongaensis			x	X				
Ericeia inangulata			x	X				
Grammodes geometrica			x	X				
Hulodes caranea			x	X				
Mocis frugalis			x	X				
Mocis undata			X	X				
Ophiusa coronata				x				
Pericyma cruegeri	X			X				
Thyas regia	x		x	X			X	
Earias fabia				X				
Earias vitella								Marianas ?

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Acronictinae

Chasmina tibialis(F.) Snowy noctuid Saipan CNMI 1973, Aguiguan CNMI 2000

Chasmina sericea Rota 1946, Guam 1946

Platycenta (= *Perigea*) *illecta* Walker Saipan CNMI 1973, Tinian CNMI 2002, Guam CNMI 1968, Rota CNMI 2002

Subfamily: Amphipyrinae

Spodoptera litura (F.) Rice cutworm Saipan CNMI 1970-2001, Rota 1946, Tinian 1946, Guam 1946.

Spodoptera mauritia Guenee Lawn armyworm Saipan CNMI 1973-2001, Rota, Tinian, (n.d.) Guam 1946.

Spodoptera exigua (F.) ?

Subfamily: Heliothinae

Helicoverpa (*Heliothis*) *armigera* (Hubner) Old world bollworm Saipan CNMI 1970-1998, Tinian CNMI 1971, Alamagan CNMI 1971, Extralimital: Thailand CNMI 1997.

Subfamily: Hadeninae

Pseudaletia (*Leucania*) *loreyi* (Duponchel) Rice armyworm Saipan CNMI 1973, Guam (also = *Mythimna*)

Tiracola plagiata (Walker) Cacao armyworm “Marianas”

Subfamily: Stictopterinae

Stictoptera subobliqua (Walker) Saipan CNMI 2001

Subfamily: Plusiinae

Plusia chalcites (Esper) ? Green garden looper Saipan CNMI 1970-1980, Tinian CNMI 1970-1980 “....seen on practically every island visited” Townes (1946).

Subfamily: Hypocalinae

Anomis erosa (Hubner) Okra caterpillar Saipan CNMI 1973-1977

Anomis flava (F.) Hibiscus caterpillar Marianas

Polydesma umbricola Boisduval ? Saipan CNMI 1989-2001, Guam 1946.

Polydesma boarmoides (Guenee) Tinian, Guam n.d.

Simplicia lautokiensis Prout ? Saipan CNMI 1973

Subfamily: Ophiderinae

Erchia dubia (Butl.) Guam, Rota, Tinian, Saipan CNMI 2001 (introduced during last 5-10 years)

Eudocima (Othreis) fullonia (Clerck) Fruit-piercing moth Saipan CNMI 1970- 1984, Tinian CNMI 2000, Anatahan CNMI 2000, Rota, Guam n.d.

Lacera alope Stoll Saipan CNMI 1970-1973

Othreis cajeta (cramer) Saipan CNMI 1973-1978, Tinian CNMI 2002, Pagan CNMI 1998-1999

Subfamily: Catocalinae

Achaea argilla Swinhoe ? Saipan CNMI 1973-2001

Achaea serva (F.) Tinian, Guam n.d. Southern Mariannas (Townes 1946)

Achaea janata (L.) Castor semilooper Saipan CNMI 1970-1981, Tinian CNMI 2002, Rota n.d., Guam 1946.

Anomis flava (F.) Saipan, Tinian, Rota, Guam n.d.

Anua tongaensis Hampson Saipan CNMI 1970-1979, Tinian, Guam

***Anua coronata* Saipan (Townes 1946)**

Ericeia inangulata (Guenee) Saipan CNMI 2001, Tinian, Guam n.d.

Grammodes geometrica (F.) Geometric noctuid Saipan CNMI 1970-1980, Tinian, Guam n.d.

Hulodes caranea (cramer) Saipan CNMI 2001, Tinian, Guam n.d.

Mocis frugalis F. Sugarcane looper Saipan CNMI 2001, Tinian, Guam n.d.

Mocis undata (F.) Saipan CNMI 1970-2001, Tinian CNMI 2001-2002, Guam (Townes 1946).

Ophiusa (Anua) coronata (F.) Guam, Tinian n.d.

Pericyma cruegeri Butler Flame-tree looper Saipan CNMI 1973-1974, Rota CNMI 1973, Guam n.d.

Platyja umminae (Cram.) Guam 1993

Thyas regia Lucas Saipan CNMI 1972-2000, Sarigan CNMI 2000, Rota, Tinian, Guam n.d.

Subfamily: Chloephorinae (=Westermanninae)

Earias fabia (Stoll) Bollworm Saipan CNMI 1971-1974, Rota 1946, Guam 1946.

Earias vitella (F.) Cotton bollworm Marianas ?

Subfamily: Eutelinae

Penicillaria jocosatrix Guenee Mango shoot caterpillar Guam 1936-1990

References

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- Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.
- Muniappen R., Denton G.W.R., Marutani M., Lali T. S. and c.A. Kimmons. 1993. Fruit piercing moths in Micronesia and their natural enemies. Micronesica, Suppl. 4: 33-39
- Schreiner, I. H. and D.M. Nafus. 1993. Population increases of native moths following biological control of an introduced pest moth. Micronesica, Suppl. 4 : 49-56.
- Zimmerman, E.C. 1958. Macrolepidoptera. Insects of Hawaii 7: 542 pp.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Suborder: Frenatae
 Division: Macrolepidoptera Superfamily: Geometroidea Family: Geometridae

Diversity

Micronesia – 4(5?) species, Mariana Isl. – 4(5?) species, CNMI –2(3?) species

Ecological and human significance

Geometrid moths are mostly small, delicate species whose larvae feed on foliage of herbs, shrubs and trees. Some can cause heavy defoliation of the host plant.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats.

Identification

There are no keys for in house identification.

Records of geometrid moths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Thallasodes sp.						X								
Thallasodes pilaria		x												
Pyrrhorachis sp.		x												

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Sterrhinae

Anisodes illepidaria Guenee Mango shoot looper Guam 1911, 1990

Subfamily: Hemitheinae

Thallasodes sp. Saipan CNMI 2001, Guam 1989.

Thallasodes pilaria Rota 1946, Guam 1946. (Townes 1946)

Pyrrhorachis sp. Rota (Townes 1946).

Chloroclystis sp. Guam 1989.

References

- Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant protection). Northern Marianas College, Saipan. Updated February 16, 1999.
- Schreiner, I. H. and D.M. Nafus. 1993. Population increases of native moths following biological control of an introduced pest moth. *Micronesica*, Suppl. 4 : 49-56.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera Superfamily: Sphingoidea

Family: Sphingidae

Diversity

Micronesia – 10 + species, Mariana Isl. –10 species, CNMI - 7 species

Ecological and human significance

Hawkmoths are medium to large sized , heavy bodied moths. The larvae feed foliage, and many are considered pests of plants such as tomatoes, tobacco, taro and garden ornamentals.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of hawkmoths from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature or sight record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Agrius convolvuli			X	X										
Cephonodes armatus														
ssp. mariana	x													
Cephanodes picus?			X											
Gnathothlibus erotus			x	X										
Hippotion celerio			x	X										
Psilogramma menephron	X		x	X										
Thereetra silhetensis				X										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Sphinginae

Agrius convolvuli (L.) Sweet-potato hawk moth, convolvulus hawk moth. Saipan CNMI 1970 – 2001, Tinian CNMI 2002, Guam 1936, Rota 1946, Rota collection 2002, Guam 1936

Psilogramma menephron menephron(Cramer) Saipan CNMI 1971–2001, Rota CNMI 2002, Tinian (Tinian coll 2001), Guam (Guam coll).

Subfamily: Macroglossinae

Cephonodes armatus ssp. mariana Rothschild & Jordan Rota (prior to 1903), Guam 1936

? *Cephanodes picus* (Cramer) Tinian CNMI 2002 (= *C. woodfordi* ?)
Daphnis(=*Deilephila*) *placida placida* (Walker) Guam 1936
Gnathothlibus erotus (Cramer) Saipan CNMI 1970-2002, Tinian (Tinian coll 2001), Guam 1911-1936, Rota 1946.
Hippotion celerio (L.) Taro sphinx moth Saipan CNMI 2002, Tinian (Tinian coll 2001), Extra limital: Belau CNMI 1968.
Hippotion velox (Fabricius) (= *swinhoei* (Moore)) Hawk moth Guam (Guam coll)
Macroglossum insipida insipida Butler Guam (Guam coll) Extra limital: Belau CNMI 1969
Theretra silhetensis silhetensis (Walker) (= *pinastrina*) Narrow-winged hawk moth Saipan CNMI 1993-2001, Guam 1936

References

- Moore, A. and A. Tudela. 1999. [http:// WWW. CREES.org/plant protection](http://WWW.CREES.org/plant%20protection). Northern Marianas College, Saipan. Updated February 16, 1999.
- Pittaway, A.R. & I.J. Kitching 2002. Sphingidae of China (and adjacent regions). www.chinamoth.org/china . The Natural History Museum, London.

Phylum: Arthropoda Class: Insecta Order: Lepidoptera

Diversity

Micronesia – 51 species, Mariana Isl. – 22 species, CNMI - 17 species

Ecological and human significance

Adult butterflies serve as pollinators, while larvae (caterpillars) are herbivorous, feeding on a wide variety of plants, usually the none-woody parts. Some species have specific food plants (eg. Plains cupid on *Cycas revoluta*, monarch on milkweeds – Asclepiadaceae). The larva of the black citrus swallowtail has caused damage to citrus trees, while the bean butterfly larvae can cause damage to leguminaceous climbers or scramblers – including cultivated beans.

Conservation

Both the forest flicker and the Mariannas rusty are candidates for the Endangered Species list – Micronesian Invertebrates (Ref. 2). Surveys need to be undertaken to see if the species still occur in the c. Maintenance of natural habitats in an unpolluted condition, and of the known food plants, is probably the key for conservation of these animals as for a host of other species.

Identification

There are colour illustrations available for identifying these butterflies in house.

Records of butterflies from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Badamia exclamationis</u>				X		X	X		x	x	x			
Erionota thrax	x		x	X										
Papilio polytes	x		x	X		X	X		x	x		x		
<u>Catopsilia pomona</u>	x		X	X									x	
<u>Eurema blanda</u>	X		x	X			X						x	
Chilades pandava				X										
<u>Lampides boeticus</u>	x		x	X			X							
<u>Zizina otis</u>				X										
<u>Zizula hylax</u>				X			X							
<u>Danaus plexippus</u>	X		x	X										
Euploea eleutho	x					X			X					
<u>Euploea eunice</u>			x	X		X	X		x	x		x		
<u>Hypolimnias anomala</u>	x			X		X	X		x			x		
<u>Hypolimnias bolina</u>	x		x	X		X		x	x			x		
Hypolimnias octocula				x										
Vagrans egistina	x													

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000.

Superfamily: Hesperoidea

Family: Hesperidae

Badamia exclamationis (F.) Brown skipper Agrihan, Alamagan, Pagan 1992, Saipan CNMI 1971-1978; Sarigan 1992, Sarigan CNMI 2001, Anatahan 1992, CNMI 2002, Guam n.d.
Not recorded from the Marianas by Townes (1946).

Erionota thrax (L.) Banana skipper or banana leafroller Guam, Tinian, Rota n.d.; Saipan CNMI 1970-1979

{*Hasora chromus* (Cramer) Common banded awl Guam n.d.}

{*Taractrocera ziclea* (Plotz) Grassdart Guam n.d.}

Superfamily: Papilionoidea

Family: Papilionidae

Papilio polytes L. Black citrus swallowtail Agrihan, Alamagan, Pagan 1992, Tinian CNMI 2001 (Tinian collection), Guam n.d, Rota sight 2002; Saipan CNMI 2001; Sarigan 1992, Sarigan CNMI 2001, Anatahan CNMI 2000. Recorded only from Yap in 1946 by Townes (1946).

Apparently a relatively recent arrival in the Marianas (first record during 1950's, in Guam).

Papilio xuthus L. Citrus swallowtail Guam 1911-1968, Saipan 1946, Tinian 1946, Rota 1946, "Marianas...is to be seen everywhere" Townes 1946. Introduced prior to 1925 from Japan (Gressitt 1954). It is probably now extinct in Marianas, the last known specimen being caught in 1968 (Guam), it is believed to have been replaced by *P. polytes*.

Family: Pieridae

{*Appias paulina* (Cramer) Common albatross Guam 1936}

Pieris rapae (L.) Cabbage white. One partial specimen in CNMI collection, labelled "Saipan 10.iii.1978, Host: cabbage, E.C.Villagomez". There is no mention of this species for Micronesia in Ref. 1, and no further specimens seem to be available. It is probable that the butterfly is no longer present in CNMI.

Catopsilia pomona (F.) Lemon migrant Guam 1936, Rota sight 2002 ; Saipan CNMI 1979-1980; Saipan 1992, Tinian CNMI 1971-2002.

Eurema blanda (Boisduval) Large grass yellow Guam 1936, Tinian n.d., Rota CNMI 2000 ; Saipan CNMI 1979-2001; Sarigan CNMI 2001, Agrihan 1992

Family: Lycaenidae

Chilades pandava (Horsfield) Plains cupid Saipan CNMI 2000-2002.

Lampides boeticus (L.) Bean butterfly Guam 1911-1936; Saipan CNMI 1970-2001; Sarigan CNMI 2001, Tinian 1946, Rota 1946 (Townes, 1946).

Zizina otis (F.) Lesser grass blue Guam (1950's), common everywhere (in Marianas) during the 1980's; Saipan CNMI 1980-2001

Zizula hylax F. Tiny grass blue Guam 1911-1936, Saipan 1950's, but found only on Yap during the 1980's; Saipan CNMI 2001, Sarigan CNMI 2001.

Family: Danaidae

Danaus plexippus (L.) Monarch Guam 1936, Saipan CNMI 1979-2001; Tinian (Tinian coll. 2000), Rota 1970-1979, sight 2002.

Euploea eleutho (Latreille and Godart) Marianas brown crow Guam 1911-1936, 1946, Rota

1946; Anatahan CNMI 1971; Alamagan CNMI 1971

Euploea eunice Godart Blue-branded king crow Agrihan 1992, Alamagan 1992, Pagan 1992; Saipan CNMI 1979-2001; Sarigan CNMI 2001, Anatahan CNMI 2000-2002, Tinian (Tinian coll. 2000), Guam 1936

Family: Nymphalidae

Hypolimnna anomala (Wallace) Guardian eggfly Agrihan, 1992 Alamagan 1992; Saipan CNMI 1979- 2001, Sarigan CNMI 2000 , Anatahan CNMI 2002, Rota 1946, sight record 2002, Guam 1936

Hypolimnna bolina (L.) Blue moon eggfly Agrihan 1992, Alamagan 1992, Anatahan 1992, CNMI 2002, Guguan 1992; Saipan CNMI 1979-2001, Tinian CNMI 2002, Rota 1946, sight record 2002, Guam 1936

Hypolimnna octocula (Butler) Forest flicker Guam 1936, Saipan n.d.; *H. o. mariannensis*, Mariana eight-spot butterfly, a candidate for the Endangered Species list – Micronesian Invertebrates.

Vagrans egistina (Quoy) Marianas rusty Guam 1911-1936, Rota 1946, a candidate for the Endangered Species list – Micronesian Invertebrates.

{*Neptis hylas guamensis* Swinhoe Common sailor One specimen collected in Guam in 1895, but later thought to be mislabeled – probably not in the Marianas (Schreiner & Nafus 1997.) Townes(1946) says it “was described from Guam in 1916, and has not been seen since.” }

Family: Satyridae

Melanitis leda (L.) Evening brown Agrihan 1992, Alamagan 1992, Pagan 1992; Saipan CNMI 1979-2001, Anatahan CNMI 2002 , Tinian (Sight record 2002), Rota 1946, sight record 2002, Guam 1911-1936.

References

- Anon. 1997. Federal Register Vol. 62 No. 182, September 19,1997.
Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215
Schreiner, I. H. and D. M. Nafus. 1997. Butterflies of Micronesia. College of Agriculture and Life Sciences, University of Guam. 30 pp.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Ichneumonoidea Family: Braconidae

Diversity

Micronesia – 2+ species, Mariana Isl. – 2 species, CNMI - 2 species

Ecological and human significance

Braconids are relatively small wasps (usually under 15 mm long) , and are parasites of other invertebrates. They are of considerable value in the control of insect pests.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of braconids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, **Other** = introduced , **x** = literature record, **X** = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Apanteles erionotae										X
Diachasmimorpha hageni										X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Microgasterinae

Apanteles(= *cotesia*) *erionotae* Wilkinson Saipan CNMI

Subfamily: Opiinae

Diachasmimorpha hageni (Fullaway) Saipan CNMI 1997

References

Beardsley 1993 Micronesica Supplement 1 No. 4

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Ichneumonoidea Family: Ichneumonidae

Diversity

Micronesia – 33 species, Mariana Isl. – 10 species, CNMI - 5 species

Ecological and human significance

Ichneumons are parasitic on a great variety of invertebrate hosts, including insects and spiders. Some of the species are of value in the control of insect pests.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of ichneumons from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Echthromorpha														
agrestoria conopleura	x		x	x								x		
<u>Netelia latro</u>	x		x	x										
<u>Diplazon laetatorius</u>				x										
<u>Dicamptus triangularis</u>			x											
Trathala flavo-orbitalus			x	x								x		

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Ephialtinae

Echthromorpha agrestoria conopleura Krieger Agrihan 1945, Saipan 1952, Tinian 1946, Rota 1946, Guam 1945

Lissopimpla nigricans Fullaway Guam 1945

Subfamily: Typhoninae

Netelia latro (Holmgren) Saipan 1945, Rota 1946, Tinian 1952, Guam 1948

Subfamily : Gelinae

Diatora lissonota (Viereck) Guam 1956

Paraphylax hiatus Townes Guam 1948

Subfamily: Diplazoninae

Diplazon laetatorius (Fabricius) Saipan 1945, Guam 1945

Subfamily: Ophioninae

Dicamptus triangularis (Morley) Tinian 1946, Guam 1936

Encospilus salomonis Cameron Guam 1936

Trathala flavo-orbitalus (Cameron) Pagan 1940, Saipan 1945, Tinian 1946, Guam 1946

Subfamily: Mesochorinae

Stictopisthus guamensis Townes Guam 1936

References

Townes, Henry. 1958. Hymenoptera: Ichneumonidae, Stephanidae and Evaniidae. In: Insects of Micronesia 19(2): 35 – 87.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Chalcidoidea Family: Mymaridae

Diversity

Micronesia – 11 species, Mariana Isl. – 7 species, CNMI - 2 species

Ecological and human significance

Mymarids are tiny insects usually less than 1 mm long (with one species being 0.21 mm long – less than a hundredth of an inch. All are parasitic on insect eggs.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of fairyflies from CNMI indicating areas (blank spaces) from which records are required.

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Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<i>Lymaenon saipanensis</i>				x										
<i>Stephanodes similis</i>				x										

Species list

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Alaptis caecilia Girault Guam 1936
Anagrus flaveolus Waterhouse Guam 1948

Lymaenon saipanensis Doutt Saipan 1948
Lymaenon sp. Guam 1945

Mymarilla tyndalli (Girault) Guam 1936

Paranagrus optabilis Perkins Guam 1936

Stephanodes similis (Foerster) Saipan 1948

References

Doutt, R. L. 1955. Hymenoptera: Mymaridae. In: Insects of Micronesia 19(1): 11 – 17.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita

Family: Trichogrammatidae

Diversity

Micronesia – 14 species, Mariana Isl. – 12 species, CNMI - 8 species

Ecological and human significance

Trichogrammids are tiny insects (0.3-1.0 mm long) and parasitises insect eggs. Some species have been used in the control of insect pests.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of trichogrammids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Aphelinoidea oceanica</u>				x										
Aphelinoidea mariana									x					
Haekeliana brontispae	x ?			x?										
Lathromeris pacifica				x										
<u>Oligosita hilaris</u>				x										
Oligosita oceanica				x										
Trichogramma chilonis				x										
Trichogramma tortrices				x					x					

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Aphelinoidea oceanica Timberlake Saipan 1948

Aphelinoidea mariana Doutt Alamagan 1948

Haekeliana brontispae Ferriere Saipan 1950 ?, Rota 1950 ?

Lathromeris pacifica Doutt Saipan 1948

Oligosita hilaris (Perkins) Saipan 1948
Oligosita oceanica Doutt Saipan 1948
Oligosita utilis Kowalski Guam no date
Trichogramma chilonis Ishii Saipan 1948, Guam 1989
Trichogramma minutum Riley Guam 1946
Trichogramma sp. Guam 1945, Saipan n.d. (CSIRO Coll. LPL 645)
Trichogramma nanum (Zhentner) Guam 1945
Trichogramma tortrices Girault Alamagan 1948, Saipan 1948

References

- Doutt, R. L. 1955. Hymenoptera: Trichogrammatidae. In: Insects of Micronesia 19(1): 1 – 11.
 Nafus, D.M. 1993. Biological control agents and native parasitoids in the population system of the butterfly *Hypolimnas bolina* (L) (Lepidoptera: Nymphalidae). Micronesica, Suppl. 4 (17-23).
 Sands, D.P.A. , W.J.J.M. Liebrechts and R.J. Broe. 1993. Biological control of the fruit-piercing moth, *Othreis fullonia* (Clerck) (Lepidoptera: Noctuidae) in the Pacific. Micronesica, Suppl. 4 (25-32).

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Chalcidoidea Family: Eulophidae

Diversity

Micronesia – 35 species, Mariana Isl. – 24 species, CNMI - 4 species

Ecological and human significance

Eulophids are small wasps (1-3 mm long) and are parasites on a wide variety of hosts, including a number of major insect pest species.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of eulophids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac

Melittobiopsis

<u>ereunetiphila</u>	x
<u>Ootetrastichus beatus</u>	x
<u>Pediobius foveolatus</u>	x
<u>Tetrastichus brontispae</u>	x
<u>Derostenus fullawayi</u>	X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Eulophinae

Asympiesiella india Girault Guam 1936
Hemiptarsenus semialbiclavus (Girault) Guam 1936
Sympiesis swezeyi Yoshimoto & Ishii Guam 1936

Subfamily: Tetrastichinae

Melittobia hawaiiensis Perkins Guam 1936
Melittobiopsis ereunetiphila Timberlake Guam 1936, Saipan 1948
Ootetrastichus beatus Perkins Guam 1936, Saipan 1958
Ootetrastichus formosanus Timberlake Guam 1952

Pediobius foveolatus (Crawford) Saipan, introduced 1985, 1989.
Tetrastichus hagenowii (Ratzeburg) Guam 1936
Tetrastichus guamensis Yoshimoto & Ishii Guam 1958
Tetrastichus brontispae (Ferriere) Saipan 1948

Subfamily: Elachertinae

Cirrospiloideus kraussii Yoshimoto & Ishii Guam 1958
Cirrospiloideus guamensis Fullaway Guam 1936
Cirrospiloideus japonica (Ashmead) Guam 1936
Euplectrus xanthocephalus Girault Guam 1945
Euplectrus leucostomus Rohwer Guam 1936
Euplectrus sp. nr. *circumscriptus* Guam, introduced 1990 ?.
Elachertus advena Timberlake Guam 1945
Entedonomorpha guamensis Yoshimoto & Ishii Guam 1945

Subfamily: Entedontinae

Burksia viridimaculata Fullaway Guam 1952
Derostenus fullawayi Crawford Guam 1911, Saipan CNMI 1970-1972
Euderus metallicus (Ashmead) Guam 1936

Subfamilies ?

Chrysonotomyia formosa (Westwood) Guam ca. 1986
Trichospilus diatraea Cherian and Marganbandhu Guam, reported 1993

References

- Chiu, C.H. and A. Moore 1993. Biological control of the Phillipine lady beetle, *Epilachna philippinensis* (Coleoptera: Coccinellidae) on some solanaceous plants by the parasitoid *Pediobius foveolatus* (Hymenoptera: Eulophidae) on Saipan. *Micronesica*, Suppl. 4 : 79-80.
- Johnson, M.W. 1993. Biological control of *Liriomyza* leafminers in the Pacific Basin. *Micronesica*, Suppl. 4: 81-92.
- Schreiner, I. H. and D.M. Nafus. 1993. Population increases of native moths following biological control of an introduced pest moth. *Micronesica*, Suppl. 4 : 49-56.
- Yoshimoto C.M. and Tei Ishi. 1965. Hymenoptera Chalcidoidea: Eulophidae, Encyrtidae(part), Pteromalidae.). In: *Insects of Micronesia* 19(4): 109-178

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Chalcidoidea Family: Encyrtidae

Diversity

Micronesia – 19 species, Mariana Isl. – 12 species, CNMI – 1 species

Ecological and human significance

Encyrtids are small (1-2 mm long) Insects which parasitize other insects, including insect pests such as whiteflies, aphids and scale insects.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of encyrtids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Eupelmus boharti										x		x		
Anagyrus dactylopii														
Ooencyrtus sp.	x			x	x									
Prochiloneurus rex														
Zaischnopsis usingeri														southern Marianas

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Eupelminae

Anastatus kraussi Yoshimoto & Ishii Guam 1952

Anastatus picticornis (Cameron) Guam 1936

Eupelmus popa Girault Saipan 1958, Guam 1957

Eupelmus aeneus Yoshimoto & Ishii Guam 1945

Eupelmus nigricoxus Yoshimoto & Ishii Guam 1945

Eupelmus microreticulatus Yoshimoto & Ishii Guam 1957

Eupelmus guamensis Yoshimoto & Ishii Guam 1945

Eupelmus boharti Yoshimoto & Ishii Alamagan 1951, Agrihan 1951

Eusandalum usingeri Yoshimoto & Ishii Guam 1936

Merostenus guamensis Yoshimoto & Ishii Guam 1948

Merostenus ferruginaeus Yoshimoto & Ishii Guam 1945

Ooencyrtus sp. Guam 1989, Saipan, Tinian, Rota n.d. (CSIRO Coll. LPL 646-7)

Zaischnopsis usingeri Fullaway S. Mariana Is, no date

Anagyrus dactylopii

Prochiloneurus (Achrysophagus) rex

References

- Nafus, D.M. 1993. Biological control agents and native parasitoids in the population sysytem of the butterfly *Hypolimnas bolina* (L) (Lepidoptera: Nymphalidae). Micronesica, Suppl. 4 (17-23).
- Sands, D.P.A. , W.J.J.M. Liebrechts and R.J. Broe. 1993. Biological control of the fruit-piercing moth, *Othreis fullonia* (Clerck) (Lepidoptera: Noctuidae) in the Pacific. Micronesica, Suppl. 4 (25-32).
- Yoshimoto C.M. and Tei Ishi. 1965. Hymenoptera Chalcidoidea: Eulophidae, Encyrtidae(part), Pteromalidae.). In: Insects of Micronesia 19(4): 109-178

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Chalcidoidea Family: Eucharitidae

Diversity

Micronesia – 9 species, Mariana Isl. – 2 species, CNMI – 1 species

Ecological and human significance

Eucharitids are fair-sized wasps and the larvae are parasitic on ant larvae once these have pupated.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of eucharitids from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Schizaspidia chamorro				x			x							

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Chalcura upeensis Fullaway Guam 1952

Schizaspidia chamorro Yasumatsu Saipan n.d., Sarigan 1992, Guam 1945

References

Watanabe, Chihisa. 1958. Hymenoptera – Eucharidae. In: Insects of Micronesia 19(2): 19-34.

Diversity

Ecological and human significance

Conservation

Identification

There are keys for in house identification.

Records of pteromalids from CNMI indicating areas (blank spaces) from which records are required.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguhan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Rota	Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac
<u>Spalangia cameroni</u>		southern Mariana Islands
<u>Moranila californica</u>	x	x
<u>Pteromalus puparum</u>		Northern Mariana Islands
Anysis alcocki		Northern Mariana Islands

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Spalangiinae

Spalangia cameroni Perkins S. Mariana Is, no date

Spalangia endius Walker Guam 1936

Spalangia nigra Latreille Guam 1945

Subfamily: Pteromalinae

Eupteromalus americanus Gahon Guam 1946

Habrocytus medicaginis Gahon Guam 1946

Moranila californica (Howard) Saipan 1945, Tinian 1946, Guam 1952

Merisus sp. Guam 1963

Parupiella sp. Guam 1958

Pteromalus puparum (Linnaeus) N. Mariana Is., no date.

Ptinobius swezeyi Yoshimoto & Ishii Guam 1936

Subfamily: Eunotinae ?

Anysis alcocki (Ashmead) CNMI 1970.

References

Yoshimoto C.M. and Tei Ishi. 1965. Hymenoptera Chalcidoidea: Eulophidae, Encyrtidae(part), Pteromalidae.). In: Insects of Micronesia 19(4): 109-178

Diversity

Ecological and human significance

Conservation

Identification

Records of chalcid wasps from CNMI indicating areas (blank spaces) from which records are required.

[illegible]

Species list

Brachymeria fonscolombei Saipan CNMI 1970

Brachtmeria lasus (Walker) Guam 1989.

References

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Diversity

Ecological and human significance

Conservation

Identification

Micronesica, Suppl. 4: 81-92.

Yoshimoto, C. M. 1962. Hymenoptera - Eucoilinae (Cynipoidea). In: Insects of Micronesia
19(3): 89-107

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Evanioidea Family: Evanidae

Diversity

Micronesia – 3 species, Mariana Isl. – 2 species, CNMI – 2 species

Ecological and human significance

Scelionid wasps are 10-15 mm in length and are parasites on the egg capsules of cockroaches.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of ensign wasps from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<u>Evania appendigaster</u>										
<u>Prosevania variiceps</u>										

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Evania appendigaster (L) Saipan 1951, CNMI 1970, Rota 1951, Guam 1952

Prosevania variiceps (Kieffer) Saipan 1951

References

Townes, Henry. 1958. Hymenoptera: Ichneumonidae, Stephanidae and Evanidae. In: Insects of Micronesia 19(2): 35 – 87.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Evanioidea Family: Scelionidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Scelionid wasps are small Insects that are parasites of insect or spider eggs, some have been successfully used to control crop pests.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of scelionid wasps from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

No species recorded.

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Telenomus sp Guam 1989

References

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Bethyloidea Family: Chrysididae

Diversity

Micronesia – 1+ species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

These wasps are small insects, rarely over 12 mm long, and most are external parasites on full-grown bee or wasp larvae.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of cuckoo wasps from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguihan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands
	Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

<u>Chrysis fuscipennis</u>	X
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Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Chrysis fuscipennis Brulle Saipan CNMI 1970-1971, Guam n.d.

References

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Bethyloidea Family: Bethylidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI – 1 species

Ecological and human significance

Bethylid wasps are small to medium sized and are parasites on the larvae of Lepidoptera and Coleoptera, including some moth and beetle larvae which infest grain or flour. A few species will sting man.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of bethylid wasps from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species

Islands

Rota Agui Tini Saip Fara Anat Sari Gugu Alam Paga Agri Asun Maug Urac

Goniozus marianensis

x

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Goniozus marianensis Terayama Guguan 1992

References

Terayama, M. 1994. *Goniozus marianensis*, a new species (Insecta: Hymenoptera: Bethylidae) from the Mariana islands, Micronesia. Nat. Hist. Res., Special Issue No. I: 229-230.

Diversity

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Scoliioidea Family: Formicidae

THIS TAXON IS BEING COMPLETELY REVISED, REVISION TO BE COMPLETED 2003

Diversity

Micronesia – 49 + species, Mariana Isl. – 49 (to 51?) species ,CNMI – 40 ? species

Ecological and human significance

Ants are social insects, and are wide-spread and common. Their feeding habits are varied – some are carnivorous, some feed on fungi or plants and many feed on sap, nectar, honeydew and similar substances. Many ants are serious pests in houses, greenhouses and other places because of their feeding on foodstuffs, plants and other materials. A number of species have been inadvertently introduced to many parts of the world (“tramp species”) and are implicated in the decimation of indigenous species of invertebrates and other life forms.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are keys for in house identification.

Records of ants from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced , x = literature record, X = specimen in CNMI collection.

Agri = Agrihan , Agui = Aguiguan, Alam = Alamagan , Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
<u>Anochetus graeffei</u>		X		X		x								
<u>Hypoponera punctatissima</u>				X								x		
<u>Leptogenys maxillosa</u>				x										
<u>Odontomachus simillimus</u>	x	X		X		X	X	X	X	x	x		x	x
<u>Platythyrea parallela</u>						X	X			x				
<u>Ponera loi</u>				X								x		
<u>Ponera tenuis</u>												x		
<u>Cardiocondyla emeryi</u>				x		X	X							x
<u>Cardiocondyla nuda</u>				x										
<u>Cardiocondyla wroughtonii</u>							x	x				x		
<u>Cardiocondyla obscurior</u>						X								
<u>Cardiocondyla tjibodana</u>						X								
<u>Crematogaster sp.</u>				X										
<u>Monomorium chinense</u>				X						x				
<u>Monomorium destructor</u>				x						x				
<u>Monomordium floricola</u>				X		X	X	x	x			x		x
<u>Monomorium sechellense</u>				X ?			x			x	x	x		x

<i>Pheidole fervens</i>	X ?	X?						x
<i>Pheidole megacephala</i>	X?	X?						
<u><i>Pheidole umbonata</i></u>	X	x	X	x	x	x	x	
<i>Pheidole</i> sp. near <i>finae</i> <i>tipuna</i>	x							

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
<i>Pheidole</i> sp.				X		X				
<i>Pheidole</i> new species near <i>P. vatu</i>							x	x		x
<i>Solenopsis geminata</i>				X						
<i>Strumigenys emmae</i>				X						x
<i>Strumigenys godeffroyi</i>					X	X				
<i>Strumigenys rogeri</i>				X	X					
<u><i>Tetramorium bicarinatum</i></u>	X			X	X	x	x		x	x
<u><i>Tetramorium lanuginosum</i></u>				X	X	x	x		x	x
<i>Tetramorium simillium</i>					X?				x	x
<u><i>Tetramorium tonganum</i></u>				X?	X				x	
<i>Vollenhovia oblongata pedestris</i>				x						
<u><i>Iridomyrmex anceps</i></u>				X	X			x		x
<i>Tapinoma melanocephalum</i>				X	X	X	x	x	x	x
<i>Tapinoma minutum</i>				X				x?	x?	x?
<i>Technomyrmex albipes</i>	X			X						
<i>Anoplolepis gracilipes</i>		X		X				x	X	
<i>Camponotus chloroticus</i>	X			X	X	x	x	x	x	x
<i>Camponotus</i> sp. near <i>reticulatus</i>				X		x	x	x		x
<i>Camponotus</i> sp.					X					
<i>Paratrechina bourbonica</i>		X		X	X			x	x	x
<i>Paratrechina longicornis</i>	x			X	X				x	
<i>Paratrechina vaga</i>				X	X	X				
<i>Romblonella townesi</i>		x								

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Ponerinae

Anochetus graeffei Mayr Saipan 1992, CNMI 2000-2002, Anatahan 1992, CNMI 2002, Aguiguan CNMI 2002, Tinian CNMI 2002, Guam 1936

Cerapachys biroii Forel Guam 1936

Hypoponera punctatissima (Roger) Asuncion 1992, Saipan CNMI 2000-2001, Guam 1911-1936

Leptogenys maxillosa (Smith) Saipan 1949

Odontomachus simillimus Smith Guam 1911-1936, Rota 1992, CNMI 2002, Tinian CNMI 2002; Saipan 1949, CNMI 1997-200; Sarigan 1992, CNMI 2000-2001, Aguiguan CNMI 2002,

Alamagan 1992, CNMI 2000, Guguan 1992, Agrihan 1992, Anatahan 1992, CNMI 2002,
 Pagan 1992, Maug 1992, Uracas 1992
Platythyrea parallela (Smith) Pagan 1992, Sarigan CNMI 2001, Anatahan CNMI 2002, Guam n.d.
Ponera loi Taylor Agrihan 1992, Saipan CNMI 2002
Ponera tenuis (Emery) Agrihan 1992

Subfamily: Myrmicinae

Trichoscapa membranifera Emery Guam 1945
Cardiocondyla emeryi Forel Guam 1911-1936, Saipan 1949, Anatahan 1992, CNMI 2002, Sarigan
 CNMI 2001, Uracas 1992
Cardiocondyla wroughtonii (Forel) Guam 1936, Agrihan 1992, Guguan 1992, Sarigan 1992
Cardiocondyla obscurior Wheeler Anatahan CNMI 2002
Cardiocondyla tjibodana Karavajev Anatahan CNMI 2002
Cardiocondyla nuda Mayr Saipan 1946, Guam 1945-1958
Crematogaster biroi Mayr Guam 1911 - 1936
Crematogaster sp. ? Saipan CNMI 2001
Monomorium chinense Santschi Saipan CNMI 2001, Pagan 1992
Monomorium destructor (Jerdon) Guam 1911-1936, Saipan 1949, Pagan 1992
Monomordium floricola (Jerdon) Guam 1911-1936, 1989, Saipan 1949, CNMI 2001-02, Sarigan
 CNMI 2001, Agrihan 1992, Alamagan 1992, Anatahan CNMI 2002, Guguan 1992, Maug
 1992
Monomorium liliuokalanii Guam 1936
Monomorium pharaonis (Linnaeus) Guam 1936
Monomorium sechellense Emery Saipan CNMI 2001?, Agrihan 1992, Sarigan 1992, Pagan
 1992, Asuncion 1992, Uracas 1992
Pheidole fervens Smith Saipan CNMI 2001, Sarigan CNMI 2001, Asuncion 1992, Guam 1911
Pheidole megacephala (Fabricius) Saipan CNMI 2001?, Anatahan CNMI 2002 ?, Guam n.d.
Pheidole oceanica Mayr Guam 1945
Pheidole umbonata Mayr Saipan CNMI 2001, Sarigan CNMI 2001, Agrihan 1992, Alamagan
 2001, Anatahan 1992, Guguan 1992, Pagan 1992, Guam 1936
Pheidole sp. near *philemon* Guam 1936
Pheidole sp. near *finae tipuna* Saipan 1949
Pheidole sp. Saipan 1949
Pheidole new sp. near *P. vatu* Agrihan 1992, Alamagan 1992, Anatahan 1992, Sarigan 1992
Pheidole sp. Saipan CNMI 2001, Anatahan CNMI 2002.
Romblonella townesi Tinian 1946
Solenopsis geminata (Fabricius) Guam 1911-1936, 1989, Saipan 1949, CNMI 2000-2001, Tinian
 1946, CNMI 2002, Rota 1946, CNMI 2002
Solenopsis sp. Guam 1936
Strumigenys emmae (Emery) Pagan 1992, Saipan CNMI 2002, Rota CNMI 2002
Strumigenys godeffroyi Mayr Sarigan CNMI 2001, Anatahan CNMI 2002, Guam 1936
Strumigenys rogeri Emery Saipan CNMI 2000 - 1, Anatahan 1992, CNMI 2002, Rota CNMI 2002
Tetramorium bicarinatum (Nylander) Guam 1911-1936, Saipan 1949, CNMI 2000-2001,
 Sarigan 1992, CNMI 2001, Agrihan 1992, Anatahan 1992, CNMI 2002, Aguiguan CNMI
 2002, Alamagan 1992, Guguan 1992, Maug 1992, Uracas 1992.
Tetramorium lanuginosum Mayr Guam 1911-1936, Saipan CNMI 2002, Agrihan 1992, Anatahan
 1992, CNMI 2002, Guguan 1992, Sarigan 1992, CNMI 2001, Pagan 1992, Maug 1992,
 Uracas 1992
Tetramorium simillium (Smith) Agrihan 1992, Asuncion 1992, Maug 1992, Anatahan CNMI 2002 ?
Tetramorium tonganum Mayr Agrihan 1992, Saipan CNMI 2002 ?, Anatahan CNMI 2002 ?
Vollenhovia oblonga pedestris (Smith) Guam 1936, Saipan 1949

Subfamily: Dolichoderinae

Iridomyrmex anceps (Roger) Saipan 1992, CNMI 2000 -2001, Anatahan CNMI 2002, Guguan

1992, Uracas 1992
Tapinoma indicum Forel Guam 1936
Tapinoma melanocephalum (Fabricius) Guam 1911-1936, Tinian CNMI 2002, Rota CNMI 2002, Saipan 1949, CNMI 2000-2001, Sarigan CNMI 2001, Agrihan 1992, Alamagan 1992, Anatahan CNMI 2002, Guguan 1992, Pagan 1992, Uracas 1992
Tapinoma minutum Mayr Guam 1911-1936, 1989, Saipan CNMI 2001, Agrihan 1992 ?, Pagan 1992 ?, Maug 1992 ?
Technomyrmex albipes (Smith) Guam 1936, Saipan CNMI 2000-2002, Rota CNMI 2001

Subfamily: Formicinae

Anoplolepis gracilipes (Smith) Guam 1911-1936, Tinian CNMI 2002, Saipan 1949-1992, CNMI 2000-2001, Aguiguan CNMI 2000-02, Guguan CNMI 2000, Pagan 1992, CNMI 1999
Camponotus chloroticus Emery Guam 1911-1936, Saipan CNMI 2001, Sarigan 1992, CNMI 2001, Agrihan 1992, Alamagan 2001, Anatahan 1992, CNMI 2002 Asuncion 1992, Guguan 1992, Pagan 1992, Maug 1992
Camponotus sp. - *reticulatus* species group ? Saipan CNMI 2001, Agrihan 1992, Alamagan 1992, Anatahan 1992, Guguan 1992, Sarigan 1992, Guam n.d.
Camponotus sp. Anatahan CNMI 2002. Polymorphic, yellow to yellow-brown legs and antennae, dark red-brown prothorax, rest of body black-very dark brown. In dead tree trunks, hollow branches.
Paratrechina bourbonica (Forel) Guam 1911-1936, Saipan 1949, 1992, CNMI 2001, Sarigan 1992, CNMI 2001, Aguiguan CNMI 2002, Agrihan 1992, Anatahan 1992, CNMI 2002, Alamagan 1992, Pagan 1992, Maug 1992
Paratrechina longicornis Latreille Guam 1911-1936, Rota 1992, Tinian 1946, Saipan CNMI 2000-2001, Anatahan CNMI 2002, Agrihan 1992.
Paratrechina vaga (Forel) Saipan CNMI 2000-2001, Sarigan CNMI 2001, Anatahan CNMI 2002
Paratrechina minutula (Forel) Guam 1911-1936

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- Wetterer, J.K. Pers. comm. September 2002.
- Wilson, E.O. and R.W. Taylor. 1967. The ants of Polynesia (Hymenoptera: Formicidae). Pacific Insects Monograph 14, Entomology Dept., Bernice P. Bishop Museum, Hawaii. 109 pp.

Diversity

Ecological and human significance

Conservation

Identification

Records of from CNMI indicating areas (blank spaces) from which records are required.

[illegible]

Species list

reference.

Subfamily: Polistinae Paper wasps

Polistes macaensis (F.) Saipan CNMI 1970-1973, Pagan CNMI 1970-1999, Agrigan CNMI 1971, Guam 1936

Polistes olivaceus (de Geer) Agrihan, Pagan 1992, Guam

Polistes semiflavus Holmgren Guam 1911-1936, Rota (Townes 1946).

Polistes stigma (F.) Saipan CNMI 1970-1979, Saipan 1992, Tinian CNMI 2002, Anatahan 1992, CNMI 2002, Guam n.d.

Ropalidia marginata sundaica Vecht Rota 1992, Tinian 1970-1972, CNMI 2002, Saipan CNMI 1970-2001, Agrihan CNMI 1971, Alamagan CNMI 1971, 1992, Anatahan 1992, CNMI 2002, Asuncion 1992, Guguan 1992, Maug 1992, Pagan CNMI 1971-1992, Sarigan 1992, Guam 1936

Subfamily: Eumeninae Mason or Potter wasps.

Delta pyriforme (F.) Saipan CNMI 1979-2001, Rota 1992, CNMI 2002, Guam introduced early 1970's.

Delta circinalis (F.) Saipan CNMI 2000, Sarigan CNMI 2001, Guam

Delta esuriens (F.) Rota, Saipan 1992

Delta campaniformis gracilis (Sassure) Saipan CNMI 1998-2001, Tinian CNMI 2002, Sarigan CNMI 2001, Guam

Rynchium haemorrhoidale Saipan CNMI 1970-2001, Sarigan CNMI 2001, Anatahan CNMI 2002

Rynchium quinquecinctum brunneum (F.) ?Saipan CNMI 1970, Rota 1992, Anatahan CNMI 2002, Guam 1911-1936

Subancistrocerus domesticus W. Saipan CNMI 1970, Pagan CNMI 1971

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Swezey, O.H. 1942. Wasps of Guam. Pp.184-187. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Sphecoidea Family: Sphecidae

Diversity

Micronesia – 18 + species, Mariana Isl. – 18 species, CNMI - 10 species

Ecological and human significance

Sphecid wasps vary in size from under 10 mm to over 25 mm, and are solitary wasps which hunt a variety of invertebrates with which to feed their larvae.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of sphecid wasps indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Chalybion bengelensis		X	X	X							x			
Pison punctifrons										x		x		
Pison sp.	x													
Sceliphron latum				X										
Liris aurulentus											x			
Liris sp. 1							x		x				x	
Liris sp. 2														x
Tachysphex sp.				X						x		x		
Trypoxylon thaianum				x								x		
Dicranorhina ritsemae							x		x		x			

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Sphecinae

Chalybion bengelensis Dahlbom Saipan CNMI 1970-2000, Aguiguan CNMI 2002, Tinian CNMI 2002, Pagan 1992, Guam

Pison argentatum (Shuckard) Guam 1936

Pison iridipenne Smith Guam

Pison lagunae Ashmead Guam 1911-1936
Pison punctifrons Shuckard Agrihan, Alamagan 1992, Guam (Guam coll)
Pison sp. Rota 1992
Sceliphron latum (Smith) Saipan CNMI 1970-1979, Guam 1936
Sceliphron caementarium Tinian, Saipan (Townes, 1946). (= *S. latum* ?)
 Subfamily: Crabroninae
Lestica constricta Guam (Guam coll)

Subfamily: Larrinae

Liris aurulentus (= *aurata* ?) (F) Pagan 1992, Guam 1936
Liris samurensis William Guam (Guam coll)
Liris sp. 1 Agrihan, Anatahan, Guguan, Maug 1992
Liris sp. 2 Maug 1992
Notogonidea manilae (Ashmead) Guam 1936
Tachysphex bengalensis Cameron Guam (Guam coll)
Tachysphex sp. Agrihan, Alamagan, Saipan 1992
Trypoxylon thaianum Tsuneki Pagan, Saipan 1992

Subfamily: Ampulicinae

Ampula compressa (F.) Guam (Guam coll.)

Subfamilies not known

Dicranorhina ritsemae Ritsema ssp. Alamagan, Anatahan, Guguan 1992
Motes manilae (Ashmead) Guam (Guam coll) Townes(1946),

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- Swezey, O.H. 1942 . Wasps of Guam. Pp.184-187. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172.

Micronesia – 1+ species, Mariana Isl. 1 – species, CNMI - 0 species

There are no keys for in house identification.

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
 Superfamily: Apoidea Family: Halictidae

Diversity

Micronesia – 5+ species, Mariana Isl. – 5 species, CNMI - 4 species

Ecological and human significance

Halictid bees are small to moderately sized bees, mostly nesting in burrows in the ground. Some species are important pollinators, a few are parasites of other bees.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of halictid bees from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands													
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri	Asun	Maug	Urac
Halictus rotaensis var														
hornbosteli	x													
Halictus swezeyi	x													
<u>Homalictus vextor</u>								x			x		x	
Lasioglossum sp	x													
Halictus sp.														X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Halictus rotaensis var. *hornbosteli* Cockerell Rota 1925
Halictus saffordi Cockerell Guam 1936
Halictus swezeyi Cockerell Rota 1925, Guam 1936
Halictus sp. Saipan CNMI 2002
Homalictus vextor (Krombein) Agrihan 1992, Guguan 1992, Pagan 1992
Lasioglossum sp (new) Rota 1992

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Cockerell, T. D. A. 1942. Halictine bees from Rota Island. Pp. 191-194 In: Insects of Guam I, Bulletin 172, Bernice P. Bishop Museum, Honolulu, Hawaii. 218 pp.
 Cockerell, T.D.A. 1942. Bees of Guam. Pp.188-190. In: Insects of Guam – I, Bernice P. Bishop Museum – Bulletin 172. Honolulu, Hawaii.. 218 pp.

Miyano, S. 1994. Insects of the Northern Mariana Islands, Micronesia, collected during the expedition. Nat. Hist. Res., Special Issue No. 1: 199-215

Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Apoidea Family: Megachilidae

Diversity

Micronesia – 7+ species, Mariana Isl. – 7 species, CNMI - 5 species

Ecological and human significance

Leafcutting bees make nests either in holes in the ground, or more commonly in some natural cavity, frequently in wood. Many species line their nests with pieces cut from leaves. Some of the species are pollen gatherers, others are parasitic.

Conservation

Conservation will entail maintenance of habitats and as little pollution as possible in those habitats, and the elimination or control of alien species.

Identification

There are no keys for in house identification.

Records of leafcutting bees from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.
Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands										
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga	Agri
Lithurge scabrous								X			
Megachile fullawayi						x				x	
Megachile laticeps		X		X		X	X		x	x	X
Megachile schawinslandi				X							
Pachodynerus nasidens				X		X				X	

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Lithurge guamensis Cockerell Guam

Lithurge scabrous (Smith) Guguan, Maug 1992

Megachile fullawayi Cockerell Agrihan, Anatahan, Maug 1992

Megachile laticeps Smith Saipan CNMI 1968, Agrigan 1992, CNMI 1971, Sarigan CNMI 2001, Tinian CNMI 2000, Anatahan CNMI 2002, Alamagan, Pagan 1992, Aguiguan CNMI 2002, Guam (Guam coll)

Megachile schawinslandi Alfken Saipan CNMI 1971-1979, Guam (Guam coll)

Megachile scabrosus (Smith) Guam (Guam coll)

Megachile sp. Ahatahan CNMI 2002

Pachodynerus nasidens Latr. Saipan CNMI 1970-1971, Anatahan CNMI 2002, Pagan CNMI 1971, Guam 1936

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Swezey, O.H. 1942. Wasps of Guam. Pp.184-187. In: Insects of Guam – I, Bernice P. Bishop

Diversity

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Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita
Superfamily: Apoidea Family: Apidae

Diversity

Micronesia – 1 species, Mariana Isl. – 1 species, CNMI - 1 species

Ecological and human significance

Honey bees are social insects which are extremely important as pollinators, and as producers of honey.

Conservation

Conservation will entail maintenance of habitats containing pollen and nectar-bearing flowers, and as little pollution as possible in those habitats. Although these insects were introduced to the CNMI, their usefulness both ecologically and to man is such as to encourage their continued existence.

Identification

There are no keys for in house identification.

Records of from CNMI indicating areas (blank spaces) from which records are required.

Bold = endemic to Mariana Islands, Underlined = indigenous to Mariana Islands, Other = introduced, x = literature record, X = specimen in CNMI collection.

Agri = Agrihan, Agui = Aguiguan, Alam = Alamagan, Asun = Asuncion, Urac = Farallon de Pajaros or Uracas, Fara = Farallon de Medinilla, Gugu = Guguan, Paga = Pagan, Rota = Rota, Sari = Sarigan, Saip = Saipan, Tini = Tinian

Species	Islands									
	Rota	Agui	Tini	Saip	Fara	Anat	Sari	Gugu	Alam	Paga
Agri										
Asun										
Urac										
Fara										
Gugu										
Alam										
Paga										
Agri										
Asun										
Maug										
Urac										
Apis mellifera	X		X	X						X

Species list

Saipan 1945 = literature record for Saipan, seen/found 1945, CNMI 2000 = in Commonwealth of Northern Mariana Islands, housed at the Northern Marianas College collection, Saipan, collected during 2000, or CNMI 1971-2000 where the dates indicate earliest and latest years of specimens collected. n.d. = no date given in reference.

Subfamily: Apinae

Apis mellifera L. Honey bee Saipan CNMI 1970-2000, Pagan CNMI 1971-1999, Rota 1992, CNMI 1971, Tinian CNMI 2002, Guam 1936 (introduced to Guam in 1907)

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