Pacific Insects 8 (1): 33-42 May 10, 1966

# TRAPPING AIR-BORNE INSECTS ON SHIPS IN THE PACIFIC, PART 6[1]

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*Abstract*: Six cruises were made aboard ships in the Pacific for the purpose of collecting air-borne insects during 1963-64[2]. A total of 411 specimens was collected, the majority of which belong to the orders Diptera, Hymenoptera and Homoptera.

Five cruises were made aboard U.S. Military ships and on one cruise specimens were collected for the museum by members of the Chilean Naval vessel "Esmeralda." The itinerary and dates of the six cruises are as follows:

| | | |
|---|---|---|
| B. E. Esmeralda | San Diego, California—Valparaiso, Chile | May—June, 1963 |
| USNS Sultan | Honolulu—Yokohama—Inchon—Okinawa | Feb. 1964, J. C. Harrell |
| USNS Patrick | Honolulu—Yokohama—Okinawa—Taiwan—Yokohama—Honolulu | July—Aug. 1964, E. Holzapfel |
| USNS Gaffey | San Francisco—Honolulu—Guam—Okinawa—Philippines—Guam—Honolulu | Sept.—Oct. 1964, J. C. Harrell |
| USNS Shearwater | Kwajalein—Jaluit—Makin—Maiana—Kuria—Aranuka—Honolulu | Oct.—Nov. 1964, B. D. Perkins |
| USS Mann | Honolulu—San Diego | Dec. 1964, E. Holzapfel |

On the six cruises, 411 specimens were collected, the largest numbers of specimens collected belonged to the orders Diptera and Homoptera.

*Methods*: 75 cm diameter nylon nets suspended from ropes or lines were used on all six cruises. The number and position of nets varied on each ship. During normal weather collecting equipment was examined three times a day near land and twice a day when over 550 km from land. The electric suction trap[3] was used by Holzapfel aboard the USNS Patrick and USS Mann, and by Harrell aboard the USNS Gaffey.

Harrell operated 12 nets suspended from the King Post in front of the bridge on the USNS Sultan. On four of the eleven days at sea, the nets were not in use because of high winds. On the USNS Gaffey 10 nets were suspended from the signal halyards above the bridge and the suction trap was placed on top of a storage locker near the ship's bow.

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1. Results of a project supported by a grant to Bishop Museum by the Biology Branch, Office of Naval Research (through the Pacific Science Board, National Academy of Science). Previous reports of this series were by Gressitt and Nakata (1), Yoshimoto & Gressitt (2-4), and Harrell & Yoshimoto (5).

2. Three 1963 cruises previously reported (Part 5).

3. Yoshimoto, Gressitt, and Mitchell, 1962, Pacific Insects 4 (4): 847-58, 1 fig.

Holzapfel, on the USNS Patrick, placed the suction trap on the deck above the bridge and suspended 12 nets from the King Post in front of the bridge. On the USS Mann the suction trap was also placed above the bridge and four nets were suspended from the radar mast yardarms.

Perkins used 8 nylon nets suspended from the cargo loading booms on board the USNS Shearwater.

*Results*: Data from the six cruises are presented in Tables 1-6.

A total of 411 specimens representing 56 families was collected on the six cruises. Diptera with 170 specimens represented the most frequently collected order, and Chironomidae was the most abundant family found. The second largest order collected was Hymenoptera, 124 specimens, and the third largest was Homoptera with 59 specimens.

*Discussion*: The cruises of the USNS Patrick, Gaffey and the Shearwater in 1964 offered a unique opportunity for ship trapping research. For the first time data was obtained from the Central, Eastern Pacific, and Western Pacific areas within a five month period, July through November.

Table 7 compiles by family and area, the number of specimens collected under 60 km from land and those collected over 60 km from land on the three cruises. The division of specimens into these two categories was made because of the significant difference in the number collected over 60 km from land.

Table 7 shows a high number of specimens collected under 60 km from land in each area. There are several possible reasons for this high number. Some specimens will be blown short distances out to sea if the weather is favorable, and some specimens may have boarded the ship in port. When the ships left the harbor and air was circulated through the ventilation system, specimens were forced out of the air vents on the various deck levels and collected in the trapping equipment. Most of these insects would have probably been blown out within two to three hours after leaving port, usually a distance of 60 to 100 km from land if the ship is not cruising parallel to the coast line. Other insects may have been attracted to the ships as they cruised within sight of the coast line, either by the ships' color during the day or at night by the ships' light. With the present data it is imposible to determine by which method insect specimens reached the vessels when close to land.

In the future, the problem of shipboard contamination can be checked by placing traps at the air vent openings, and collecting specimens from inside the ship. Then by comparing these specimens with those collected in the nets above the decks, it will be possible to determine to what extent material is coming from within the ship. To compile more data on specimens collected close to land, the equipment should be checked for specimens as soon as the vessel is out of sight of land. Separate records should be kept on these specimens and later compared with data from specimens collected further out at sea. When approaching land fall the same procedure should be applied. Using these techniques, the problem of specimens being attracted to the ship, and ship board infestation can be confined to one section of the data obtained and more accurate long distance dispersal information gained.

Table 7 also shows that of the 41 families represented by specimens collected in the four areas, no families had specimens collected in all areas. However, both the orders

Table 1. B.E. Esmeralda[4].

| 1963 | Wind Velocity-knots | Starting Lat. | Starting Long. | Ending Lat. | Ending Long. | Approx. dist., nearest land, in km | No. specimens | Order | Family |
|---|---|---|---|---|---|---|---|---|---|
| 17.V | 5 | | | 31°06′N | 117°20′W | 50 km Baja Coast, Mexico | +6 | Homoptera | Aphididae |
| | | | | | | | +4 | Hemiptera | Miridae |
| | | | | | | | +1 | 〃 | Lygaeidae *Nysius* |
| | | | | | | | +1 | Thysanoptera | Thripidae |
| 14.VI | 5 | | | 13°03′N | 88°26′W | 15 km El Salvador Coast | +6 | Hymenoptera | Agaontidae |
| | | | | | | | +2 | Diptera | Cecidomyiidae |
| | | | | | | | +1 | 〃 | Chironomidae |
| | | | | | | | +1 | 〃 | Ceratopogonidae |
| | | | | | | | +3 | Homoptera | Psyllidae |
| | | | | | | | +1 | 〃 | Aleyrodidae |
| | | | | | | | +3 | Lepidoptera | Microlepidoptera |
| 21.VI | 6 | | | 11°03′N | 86°31′W | 60 km San Juan del sur, Nicaragua | +6 | Hymenoptera | Agaontidae |
| | | | | | | | +4 | Homoptera | Psyllidae |
| | | | | | | | +1 | Diptera | Phoridae |
| | | | | | | | +4 | Psocoptera | Ectopsocidae |
| | | | | | | | +1 | Thysanoptera | Thripidae |
| 21.VI | 6 | 11°03′N | 86°31′W | 11°00′N | 86°12′W | 20 km Coast of Costa Rica | 1 | Hymenoptera | Agaontidae |
| | | | | | | | 6 | Homoptera | Cicadellidae |
| | | | | | | | 2 | 〃 | Delphacidae |
| | | | | | | | 1 | Lepidoptera | Microlepidoptera |
| | | | | | | | 4 | Diptera | Chironomidae |
| | | | | | | | 2 | 〃 | Tipuloidea? |
| | | | | | | | 1 | 〃 | Cecidomyiidae |
| | | | | | | | 1 | 〃 | Ceratopogonidae |
| | | | | | | | 1 | Hemiptera | Miridae |
| | | | | | | | 1 | 〃 | Lygaeidae: *Pacmybracesus* |
| | | | | | | | 1 | Coleoptera | Hydrophilidae |
| | | | | | | | 1 | 〃 | Tenebrionidae |
| | | | | | | | 1 | 〃 | Orthoperidae: nr *Sericoderus* |
| | | | | | | | 1 | 〃 | Chrysomelidae: Alticinae: *Crepidodera* |
| 22.VI | 5 | 11°00′N | 86°12′W | 09°48′N | 84°53′W | 25 km Cabo Blanco, Costa Rica | +2 | Hymenoptera | Agaontidae |
| | | | | | | | +2 | Diptera | Cecidomyiidae |
| | | | | | | | +1 | 〃 | Ceratopogonidae |
| | | | | | | | +14 | Homoptera | Aleyrodidae |
| | | | | | | | +4 | 〃 | Psyllidae |
| | | | | | | | +1 | Lepidoptera | Tineoidea |

4. Key to Tables 1–6. + Caught alive, ¢ Caught in net, : Caught in suction trap.

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|---|---|---|---|---|---|---|---|---|---|---|
| 25.VI | 5 | | | 09°45′N | 84°45′W | 20 km Coast of Costa Rica | +1 | Araneida | Argiopidae |
| | | | | | | | +1 | Hymenoptera | Agaontidae |
| | | | | | | | +2 | 〃 | Proctotrypoidea Platyastridae (2 gen.) |
| | | | | | | | +1 | 〃 | Braconidae |
| | | | | | | | +10 | Homoptera | Psyllidae |
| | | | | | | | +5 | Diptera | Ceratopogonidae |
| | | | | | | | +2 | 〃 | Chloropidae |
| | | | | | | | +1 | 〃 | Stratiomyiidae |
| | | | | | | | +1 | 〃 | Milichiidae |
| 26.VI | 5 | 09°45′N | 84°45′W | 08°18′N | 83°39′W | 75 km PTA Burica, Costa Rica | 1 | Homoptera | Aleyrodidae |
| | | | | | | | 1 | 〃 | Aphididae |
| | | | | | | | 1 | 〃 | Psyllidae |

Table 2. USNS Sultan (Harrell).

| Date 1964 | Direction/Velocity (Degrees) | (Knots) | Starting Lat. | Long. | Ending Lat. | Long. | Approx dist., nearest land, in km | No. specimens | Order | Family |
|---|---|---|---|---|---|---|---|---|---|---|
| 10.II | 070° | 10 | 22°31′N | 165°37′W | 22°51′N | 167°22′W | 280 km French Frigate Shoal 312 km Necker I. | 1 | Psocoptera | Ectopsocidae |

Table 3. USNS Patrick (Holzapfel).

| Date 1964 | Direction/Velocity (Degrees) | (Knots) | Starting Lat. | Long. | Ending Lat. | Long. | Approx. dist., nearest land, in km | No. specimens | Order | Family |
|---|---|---|---|---|---|---|---|---|---|---|
| 14.VII 1300* | 001° | 22 | Barbers Pt. Oahu | | 21°16′N | 158°40′W | 32 km Oahu | +♀12 | Hymenoptera | Agaontidae |
| | | | | | | | | +♀1 | Coleoptera | Nitidulidae |
| | | | | | | | | +♀1 | Homoptera | Aleyrodidae |
| | | | | | | | | ♀1 | Fragment | ? |
| 14.VII 1400 | 001° | 22 | 21°16′N | 158°40′W | 21°17′N | 159°00′W | 55 km Oahu | +:71 | Hymenoptera | Agaontidae |
| | | | | | | | | +:1 | Diptera | Milichiidae |
| | | | | | | | | +:1 | Thysanoptera | Thripidae |
| | | | | | | | | +:1 | Acarina | Uropodidae (Nymph) |
| 14.VII 1800 | 075° | 16 | 21°17′N | 159°00′W | 21°30′N | 160°30′W | 16 km Kaula Rock | +:1 | Hymenoptera | Pteromalidae *Scutellista cyanea* Motsch. |
| | | | | | | | | +♀11 | 〃 | Agaontidae |
| | | | | | | | | +♀1 | Coleoptera | Bruchidae |
| | | | | | | | | +♀1 | Diptera | Ceratopogonidae |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ♀2 | Fragments | |
| 15.VII 0800 | 065° | 15 | 21°30′N | 160°30′W | 22°58′N | 165°20′W | 99 km French Frigate Shoal | : 1 | Araneida | Oocobiidae |
| | | | | | | | | : 1 | 〃 | Fragment (leg) |
| | | | | | | | | ♀1 | Coleoptera | Bruchidae |
| | | | | | | | | ♀1 | Hymenoptera | Agaontidae |
| | | | | | | | | ♀1 | Diptera | Chloropidae |
| 18.VII 1800 | 037° | 8 | 28°49′N | 176°04′E | 29°24′N | 173°51′E | 720 km Kure Isl. | : 1 | Hymenoptera | Wing fragment |
| 19.VII 1800 | 223° | 9 | 31°00′N | 168°24′E | 31°56′N | 164°45′E | 1254 km Marcus Isl. | ♀1 | Diptera | Sciaridae |
| 20.VII 0800 | | 0 | 31°56′N | 164°45′E | 33°00′N | 159°12′E | 941 km Marcus Isl. | ♀1 | Fragment | |
| 21.VII 1200 | 165° | 10 | 34°18′N | 149°48′E | 34°19′N | 148°04′E | 576 km Nagasaki Hana (Pt.) | : 1 | Acarina | Bdellidae |
| 22.VII 0800 | 075° | 7 | 34°30′N | 145°52′E | 34°41′N | 140°42′E | 62 km Nojima Saki | : 1 | Hymenoptera | Formicidae |
| 22.VII 1300 | Var. | | 34°41′N | 140°42′E | Nr Hommoku Misaki | | 8 km Hommoku Misaki | : 1 | Psocoptera | Ectopsocidae |
| 25.VII 0900 | Light airs | | 29°13′N | 131°50′E | Nr Okinawa Coast | | 8 km Ara Saki Okinawa | ♀1 | Coleoptera | Fragment |
| 27.VII 0645 | 180° | 15 | 25°46′N | 125°32′E | Nr Taiwan Coast | | 3 km Kuruu To | : 1 | Diptera | Ceratopogonidae |
| | | | | | | | | : 1 | Hemiptera | Miridae |
| 28.VII 0800 | 160° | 20 | 25°18′N | 122°05′E | 27°17′N | 126°33′E | 9.4 km Kobi Sho | ♀2 | Coleoptera | Fragments |
| 28.VII 1200 | 130° | 20 | 27°17′N | 126°33′E | 28°00′N | 128°00′E | 24 km Tori Shima | ♀12 | 〃 | 〃 |
| 28.VII 1800 | 078° | 13 | 28°00′N | 128°00′E | 28°55′N | 129°51′E | 14 km Amami Oshima | ♀1 | Thysanoptera | Thripidae |
| | | | | | | | | ♀1 | Diptera | Borboridae |
| | | | | | | | | ♀1 | Hymenoptera | Eucoilinae, *Kleiditoma* sp. |
| | | | | | | | | ♀1 | 〃 | Formicidae (thorax) |
| 29.VII 1800 | 200° | 7 | 32°19′N | 135°00′E | 33°24′N | 137°00′E | 80 km Nigi-shima Wan | : 1 | Fragment | |
| 30.VII 1800 | Var. | | 33°24′N | 137°00′E | Nr Yokohama Hbr. | | 1.6 km Yoko-hama Hbr. | + : 4 | Diptera | Chironomidae |
| | | | | | | | | + : 1 | 〃 | Ephydridae |
| | | | | | | | | + : 1 | 〃 | Ceratopogonidae |
| | | | | | | | | + : 1 | 〃 | Culicidae |
| | | | | | | | | + : 2 | Hymenoptera | Agaontidae |
| 1.VIII 1200 | 265° | 10 | 34°28′N | 146°15′E | 34°24′N | 147°46′E | 576 km Naga-saki Hana | ♀1 | Acarina | Eupodidae |
| | | | | | | | | ♀1 | 〃 | Acaridae |
| | | | | | | | | ♀1 | Psocoptera | Liposcelidae |
| 3.VIII 1800 | 134° | 14 | 31°50′N | 165°05′E | 31°19′N | 167°12′E | 1152 km Wake Isl. | ♀1 | Diptera | Fragment |

* Local time.

Table 4. USNS Gaffey (Harrell).

| Date 1964 | Wind Direction/Velocity (Degrees) | (Knots) | Starting Lat. | Long. | Ending Lat. | Long. | Approx. dist., nearest land, in km | No. specimens | Order | Family |
|---|---|---|---|---|---|---|---|---|---|---|
| 22.IX 1300* | 030° | 7 | 35°09′N | 128°46′W | 34°18′N | 130°40′W | 800 km Calif. Coast | +♀1 | Diptera | Borboridae |
| 24.IX 0900 | 060° | 7 | 29°37′N | 140°43′W | 27°09′N | 145°30′W | 1440 km Hawaii | ♀1 | 〃 | Drosophilidae |
| 28.IX 1800 | 070° | 20 | 21°14′N | 168°34′W | 21°15′N | 170°00′W | 368 km Necker Isl. 320 French Frigate Shoal | +♀1 | Psocoptera | Lachesillidae |
| 6-8.X | | | Apra, Guam | | Naha, Okinawa | | | +9 | Hemiptera | Coreidae |
| 7.X 0900 | 105° | 10 | 14°55′N | 142°40′E | 18°05′N | 138°28′E | 400 km Guam | 1 | Diptera | Chloropidae |
| 10.X 1700 | 075° | 35 | Naha, Okinawa | | 24°06′N | 125°47′E | 240 km Naha | : 1 | Hymenoptera | Eulophidae ♂ *Hemiptarsenus* |
| 11.X 1800 | 170° | 22 | 18°06′N | 120°00′E | 17°24′N | 120°04′E | 3.5 km Luzon Coast | : 2<br>: 1 | Homopter<br>Diptera | Aphididae<br>Ephydridae |
| 12.X 0800 | 170° | 20 | 17°24′N | 120°04′E | Manila Hbr. | | 3.5 km Manila Hbr. | : 1<br>: 1<br>: 1<br>: 1 | 〃<br>〃<br>Hemiptera<br>Fragment | Dolicopodidae<br>Chironomidae<br>Miridae |
| 14.X 0900 | 010°-045° | 6 | San Bernardino Sts. | | Nr Samar Isl. | | 4 km Samar Isl. | : 1<br>: 2<br>: 1 | Coleoptera<br>Homoptera<br>〃 | Scarabaeidae Aphodiinae<br>Cicadellidae<br>Aphididae |
| 15.X 1200 | 020° | 12 | 13°08′N | 131°25′E | 13°08′N | 132°24′E | 480 km Palau Is. 640 km Parece Vela | ♀1<br>+1 | Psocoptera<br>Orthoptera | Liposcelidae<br>Tettigoniidae |
| 17.X 0700 | 310° | 8 | 13°16′N | 140°55′E | Apra, Guam | | 5 km Apra, Guam | 1 | Diptera | Limoniidae |
| 18.X 1800 | 075° | 15 | Apra, Guam | | 14°18′N | 146°55′E | 95 km Guam | : 1 | 〃 | Drosophilidae |
| 19.X 1800 | 025° | 25 | 15°37′N | 151°10′E | 16°16′N | 154°25′E | 1120 km Guam | +1 | Coleoptera | Coccinellidae: *Coccinella transversogutta* Fold. |
| 23.X 1800 | 080° | 15 | 20°41′N | 178°54′W | 20°53′N | 175°46′W | 1120 km French Frigate Shoal, 1200 km Necker I. | : 3 | Psocoptera | Liposcelidae |

Table 5. USNS Shearwater (Perkins).

| Date 1964 | Wind Direction/Velocity (Degrees) (Knots) | | Starting Lat. Long. | Ending Lat. Long. | Approx. dist., nearest land, in km | No. specimens | Order | Family |
|---|---|---|---|---|---|---|---|---|
| 9-11.XI | | | 5°03′N 170°34′E | Jaluit Atoll | 1.6 km Jaluit Atoll | 1 | Diptera | Tipulidae |
| | | | | | | 1 | 〃 | Chloropidae |
| | | | | | | 4 | 〃 | Chironomidae |
| | | | | | | 1 | Isoptera | Wing of Rhinotermitidae |
| 12.XI 1200 | 150° | 10 | 3°34′N 172°24′E | Makin Isl. | 2 km Makin Is. | +1 | Diptera | Ephydridae |
| | | | | | nr Butaritari Vill. | +1 | 〃 | Ceratopogonidae |
| 12-14.XI | | | In Harbor Makin Isl. nr Butaritari Vill | | 2 km | 1 | Coleoptera | Staphylinidae |
| | | | | | | 1 | Araneida | Argiopidae (immature) |
| | | | | | | 1 | Hymenoptera | Formicidae |
| | | | | | | 41 | Diptera | Chironomidae |
| | | | | | | 3 | 〃 | Ceratopogonidae |
| | | | | | | 1 | 〃 | Cecidomyiidae |
| 16-17.XI | 120° | 12 | Makin Isl. | Maiana Isl. | 40 km N. Maiana Isl. | 22 | 〃 | Chironomidae |
| | | | | | | 1 | 〃 | Cecidomyiidae |
| | | | | | | 1 | 〃 | Ceratopogonidae |
| 17-18.XI | | | At Anchor | Maiana Isl. | 10 km Maiana | 2 | 〃 | Chironomidae |
| | | | | | | 2 | 〃 | Ceratopogonidae |
| 18.XI 1400 | 125° | 10 | 10 km Maiana Isl. | 0°21′N 176°16′E | 48 km S. Maiana Isl. | 3 | 〃 | Chironomidae |
| 19.XI 1800 | | | 0°21′N 173°16′E | Nr Kuria Isl. | 8 km Kuria Isl. | 2 | Hymenoptera | Formicidae |
| | | | | | 5 km Aronuka Isl. | 1 | Diptera | Trixoscelidae |
| | | | | | | 23 | 〃 | Chironomidae |
| | | | | | | 2 | 〃 | Ceratopogonidae |
| | | | | | | 1 | Hymenoptera | Wing |
| 20.XI 0800 | 050° | 1 | Nr Kuria Isl. | 1°13′N 175°12′E | 220 km Aronuka | 7 | Diptera | Chironomidae |
| | | | | | | 3 | 〃 | Ceratopogonidae |
| | | | | | | 1 | 〃 | Fragment |
| 20.XI 1330 | | | 1°13′N 175°12′E | 1°52′N 175°48′E | 300 km Aronuka | 2 | 〃 | Chironomidae |
| | | | | | | 1 | 〃 | Psychodidae (wing) |

Table 6. USS Mann (Holzapfel).

| Date 1964 | Wind Direction/Velocity (Degrees) | (Knots) | Starting Lat. | Long. | Ending Lat. | Long. | Approx. dist., nearest land, in km | No. speci-mens | Order | Family |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.XII 1800 | 074 | 11 | Honolulu | | 21°17′N | 157°26′W | 30 km Oahu | : 1 | Diptera | Drosophilidae |
| 8.XII 1800 | 130 | 20 | 24°30′N | 150°11′W | 25°13′N | 148°14′W | 800 km Oahu | : 1 | Thysanoptera | Thripidae |
| 10.XII 0800 | 140 | 10 | 28°02′N | 139°47′W | 29°01′N | 135°56′W | 1400 km Calif. Coast | : 1 | Diptera | Wing fragment |

Table 7. Specimens from three cruises compiled by area and distance from land when collected.

| Order | Family | No. Specimens | Area | Collected under 60 km from land | Collected over 60 km from land |
|---|---|---|---|---|---|
| Coleoptera | Nitidulidae | 1 | A | 1 | |
| | Bruchidae | 2 | A | 1 | 1 |
| | Scarabaeidae | 1 | B | 1 | |
| | Coccinellidae | 1 | A | | 1 |
| | Staphylinidae | 1 | D | 1 | |
| Psocoptera | Ectopsocidae | 1 | C | 1 | |
| | Liposcelidae | 1 | C | | 1 |
| | | 4 | A | | 4 |
| | | 1 | B | | 1 |
| Thysanoptera | Thripidae | 1 | A | 1 | |
| | | 1 | C | 1 | |
| Diptera | Milichiidae | 1 | A | 1 | |
| | Ceratopogonidae | 1 | A | 1 | |
| | | 2 | C | 2 | |
| | | 12 | D | 9 | 3 |
| | Chloropidae | 1 | A | | 1 |
| | | 1 | B | | 1 |
| | | 1 | D | 1 | |
| | Sciaridae | 1 | A | | 1 |
| | Borboridae | 1 | C | 1 | |
| | | 1 | A | | 1 |
| | Chironomidae | 4 | C | 4 | |
| | | 1 | B | 1 | |
| | | 102 | D | 93 | 9 |
| | Ephydridae | 1 | C | 1 | |
| | | 1 | B | 1 | |
| | | 1 | D | 1 | |
| | Culicidae | 1 | C | 1 | |
| | Drosophilidae | 1 | A | | 1 |
| | | 1 | B | | 1 |
| | Dolichopodidae | 1 | B | 1 | |
| | Limoniidae | 1 | B | 1 | |
| | Tipulidae | 1 | D | 1 | |
| | Cecidomyiidae | 2 | D | 2 | |
| | Trixoscelidae | 1 | D | 1 | |
| | Psychodidae | 1 | D | | 1 |
| Hymenoptera | Agaontidae | 2 | C | 2 | |
| | | 95 | A | 94 | 1 |
| | Pteromalidae | 1 | A | 1 | |
| | Eucoilinae | 1 | C | 1 | |
| | Formicidae | 2 | C | 1 | 1 |
| | | 3 | D | 3 | |
| | Eulophidae | 1 | C | | 1 |
| Homoptera | Aleyrodidae | 1 | A | 1 | |
| | Aphididae | 3 | B | 3 | |
| | Cicadellidae | 2 | B | 2 | |
| Hemiptera | Miridae | 1 | C | 1 | |
| | | 1 | B | 1 | |
| | Coreidae | 9 | C | | 9 |
| Orthoptera | Tettigoniidae | 1 | B | | 1 |
| Isoptera | Rhinotermitidae | 1 | D | 1 | |

| | | | | | |
|---|---|---|---|---|---|
| Araneida | Oecobiidae | 1 | A | | 1 |
| | Argiopidae | 1 | D | 1 | |
| Acarina | Uropodidae | 1 | A | 1 | |
| | Bdellidae | 1 | C | | 1 |
| | Eupodidae | 1 | C | | 1 |
| | Acaridae | 1 | C | | 1 |
| Fragments | | 7 | A | 3 | 4 |
| | | 1 | B | 1 | |
| | | 18 | C | 17 | 1 |
| | | 2 | D | 1 | 1 |

Key to Area
A—Central Pacific
B—Guam—Philippines
C—Japan—Okinawa
D—Marshalls—Gilberts

Total no. specimens 315
Total no. families 41
No. specimens collected under 60 km 265
No. specimens collected over 60 km 50

Psocoptera and Diptera are represented by specimens of the same families which were collected in three areas of the Pacific during the cruises. Three other orders have families that were collected in two areas. A more detailed identification of specimens is necessary before a more comprehensive report of specimens collected in each area can be made.

*Acknowledgements*: We are indebted to the Biology Branch Office of Naval Research and the Pacific Science Board (Nat'l. Acad. Sci.) and the U. S. Antarctic Research Program (Nat'l. Sci. Foundation) for their financial support. We are also grateful to Drs S. R. Galler and H. L. Hayes (Office of Naval Research), Dr H. J. Coolidge and Mrs L. Smith (Pacific Science Board), Capt. R. T. Holway, Preventive Medicine Unit #6, Pearl Harbor, and to the officers and men of the B. E. Esmeralda, USNS Sultan, USNS Patrick, USNS Gaffey, USNS Shearwater and USS Mann; especially Capt. Harrington of the USNS Sultan, Capt. Anderson, Mssrs. Gibson, Christiansen and Stuven of the USNS Gaffey, and Capt. G. C. Krull and Mr. Ashton of the USNS Shearwater.

We are also grateful to the following for help in sorting specimens to families: I. W. Thornton, D. Tsuda, W. Voss, P. Ashlock, G. A. Samuelson, C. M. Yoshimoto, G. Nakahashi, J. Tenorio and T. Suman.