

TRAPPING OF AIR-BORNE INSECTS ON SHIPS ON THE PACIFIC (PART 4)¹

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Abstract: Trapping was done on a round trip of a military transport from San Francisco to Guam, Japan, Okinawa, Korea, Japan, and Honolulu. Of 165 specimens trapped, one was a bivalve and the rest arthropods, and 87 were taken more than 400 km down wind from a continent or island. The majority of those trapped were Homoptera, Coleoptera, Diptera and Hymenoptera.

Introduction: This fourth report of the series² presents preliminary data on results of a single round trip by Yoshimoto on the transport U.S.N.S. Barrett from San Francisco to Guam, Japan, Okinawa, S. Korea, Japan, and return to Honolulu. A more comprehensive report must be presented later when the specimens are more precisely identified.

Methods: Trapping in 1960 was done almost entirely with nylon nets of 75 cm ring diameter. The metal funnel trap (described in Yoshimoto & Gressitt, 1960) was used on the first part of the cruise, but was then rendered unusable by a storm. Sixteen nets (1960, fig. 1a-b) were in constant use at sea except when weather conditions interfered with operations. Steel net-rings were substituted for the galvanized rings used earlier. Some of the nets had detachable terminal nylon cones attached with snaps, but some were simple nets without detachable cones. Nets were checked as frequently as possible, but generally twice a day.

Results: One hundred and sixty-five specimens were trapped, of which one was a mollusk and the rest arthropods. Eighty-seven were taken more than 400 km to leeward of a continent or island. Many of these were trapped off the SW coast of Korea with the wind coming from mainland China. These results will offer greater interest when the material can all be identified to species, and their probable origins determined. The catches, arranged by orders, number: Diptera, 99 specimens; Homoptera, 44; Hymenoptera, 8; Coleoptera, 3; Orthoptera, 3; Lepidoptera, 2; Neuroptera, 2; Thysanoptera, 1; Ephemeroptera, 1; Araneida, 1; (Pelecypoda), 1. Collection data is presented in Table 1. Volume

1. Partial results of the project "Studies of air-borne insects in the Pacific area" supported in part by a grant from the Biology Branch, Office of Naval Research, through the Pacific Science Board (National Research Council). This forms part of the program "Zoogeography and evolution of Pacific insects."
2. Part 1: Gressitt & Nakata, 1958, *Hawaiian Ent. Soc., Proc.* 16: 363-65; Part 2: Yoshimoto & Gressitt, 1959, *op. cit.* 17: 150-55, 1 fig.; Part 3: Yoshimoto & Gressitt, 1960, *Pac. Ins.* 2(2): 239-43, 1 fig.

of air sampled was 0.014 cubic kilometer.

Acknowledgements: We are greatly indebted to the U. S. Office of Naval Research, the Pacific Science Board (National Research Council), and the Military Sea Transport Service for making this study possible. We are particularly grateful to Dr. S. R. Galler, Dr. H. J. Coolidge, Mrs. Lenore Smith and Dr. H. L. Hayes, and Captain John Harrington and Mssrs. Shaw, Herbst and Garrett of the U.S.N.S. Barrett.

Table 1. Trapping on U.S.N.S. Barrett: San Francisco-Guam-Japan-Okinawa-Korea-Japan-Honolulu.

Date	Wind Direction	Wind Speed (knots)	N. Lat.	Long.	Approx. Dist. in Km to Nearest Land	Specimens	Order	Family
13. III.	E by N	22	33° 42'–32° 20'	138° 27'–146° 58' W.	1500–2300 San Francisco	1	Diptera	Phoridae
15. "	WSW	18	32° 23'–31° 11'	164° 50'–173° 20' W.	500–600 Laysan I. Midway I.	1	Mollusca: bivalve (marine)	
20. "	N by W	25	23° 22'–20° 00'	163° 02'–156° 27' E.	600 Wake I.	1	Diptera	Drosophilidae?
24. "	S	12	19° 28'–26° 48'	143° 10'–141° 21' E.	250–300 Japan (Honshu)	1	Homoptera	Aphididae
27. "	N by W	18	34° 00'–33° 00'	139° 00'–136° 00' E.	300 Japan (Shikoku)	3 1 1*	Diptera " "	Cecidomyiidae Simuliidae Dolichopodidae
						9*	Homoptera	Aphididae (2 spp.)
						1	Hymenopt.	Ichneumonidae
						1	Araneida	(spiderling)
28. "	W	15	33° 00'–29° 05'	136° 30'–129° 55' E.	200 Amami- Oshima	1 7 3 2 1 1 1 1 1	Coleoptera Homoptera " Diptera " " " " "	Staphylinidae Aphididae (nymphs & adults) Fulgoridae (2 spp.) Phoridae (2 spp.) Dolichopodidae Sphaeroceridae Milichiidae Ephydriidae
						1	Hymenopt.	Eulophidae
29. "	W	10–15	29° 00'–33° 00'	129° 55' E.	500 China Coast 100 S. Korea	1 1 1 1 1 7 1 1 1 2 1	Thysanopt. Coleoptera Homoptera " Diptera " Hymenopt. " " " " "	Thripidae Staphylinidae Fulgoridae Aphididae Phoridae Milichiidae Ichneumonidae Agaontidae Eurytomidae Eulophidae Platygasteridae
30. "	W	15	33° 00'–53° 57'	126° 00'–125° 41' E.	100 S. Korea 500 China Coast	1 1 1 1 1 54* 1** 1** 4** 1**	Neuroptera Homoptera Diptera " " " Ephemeropt. Lepidoptera Diptera "	Berothidae Aphididae Dolichopodidae Drosophilidae Sphaeroceridae Milichiidae Palingenidae? Gelechiidae Milichiidae Muscidae

(Table 1, continued)

Date	Wind Direction	Wind Speed (knots)	N. Lat.	Long.	Approx. Dist. in Km to Nearest Land	Specimens	Order	Family
						1***Lepidoptera (Microlepidoptera)		
31. III.	W	15	33° 57'-37° 00'	125° 41'-126° 00'E.	50-100 S. Korea	1	Homoptera	Fulgoridae
						4	"	Aphididae (2 spp.)
						3	Diptera	Dolichopodidae
						1	"	Sphaeroceridae
						4	"	Milichiidae
1. IV.	NE	20	37° 00'-33° 50'	126° 00'-125° 50'E.	200 S. Korea Coast, Cheju Do	1	Orthoptera	Acridiidae (recently hatched nymph)
						1	Homoptera	Aphididae
						1	Diptera	Sciaridae—wing
						1	"	Dolichopodidae
2. "	ENE	18	33° 50'-31° 44'	125° 50'-132° 38'E.	90 Japan (Kyushu)	2	Orthoptera	Acridiidae (recently hatched nymph)
						1	Homoptera	Aphididae
						1	Diptera	Ceratopogonidae
3. "	NE	30	31° 44'-35° 05'	132° 38'-139° 45'E.	200 Japan (Honshu)	1	Homoptera	Aphididae
						1	Diptera	Dolichopodidae
5. "	NE	30-40	35° 05'-34° 10'	139° 45'-144° 20'E.	50-100 Bonin I. Iwo Jima	1	Coleoptera	Staphylinidae? (part of abdomen)
11. "	NE	20	24° 07'-22° 04'	169° 23'-162° 31'W.	150 Niihau	2	Diptera	(mangled)
						1	Neuroptera	Berothidae?
						2	Homoptera	Jassidae
11. "	NE	15	22° 04'-21° 27'	162° 31'-159° 48'W.	100 Kauai 50 Niihau	5	Homoptera	Jassidae
						6	"	Aphididae
						1	Diptera	Milichiidae
						1	"	Chloropidae

* Alive ** Alive on ship's bridge *** Alive in stateroom

PACIFIC INSECTS MONOGRAPHS

The following issues of this new series have appeared:

- 1A. The Chrysomelidae (Coleopt.) of China and Korea, Part 1. By J. L. Gressitt and S. Kimoto. March 1961. 299 pages, 77 figures. Price \$4.00 in papers. Bound copies of 1A and 1B together will be available after appearance of 1B (Part 2).
2. Problems in the zoogeography of Pacific and Antarctic insects. By J. L. Gressitt; with appendices by T. C. Maa, I. M. Mackerras, S. Nakata and L. W. Quate. August 1961. 127 pages, 45 figures. Price \$2.50 bound; \$2.00 in papers.