Pacific Insects 12(1): 133-156 20 May 1970

TRAPPING OF AIR-BORNE INSECTS IN THE ANTARCTIC AREA (PART 3)[1]

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Abstract: Screening of air was carried out from ships at sea as part of the natural dispersal studies conducted in the Antarctic area. Twenty cruises remain unreported from 1963 through 1966. Of the 679 specimens collected, 454 were Diptera and 86 were Homoptera.

Consolidated with the Antarctic ship collecting are the results of 5 cruises which were taken to and/or in the Southern Hemisphere from 1962 through 1966. Specimens trapped totaled 1,272 of which 505 were Diptera and 436 were Homoptera.

The Bishop Museum's study of the dispersal of insects was developed in 1957 and included a qualitative program of transoceanic transport. This preliminary survey was conducted aboard various vessels operating in the Pacific and relied largely upon the cooperation of the U. S. Navy and Coast Guard (Gressitt & Nakata, 1958; Yoshimoto & Gressitt, 1959 & 1960). Study of air-borne organisms in the Antarctic from 1959 through 1966 afforded an opportunity for the Museum to add new dimensions, both horizontally and vertically, in the desire to learn how insects traverse vast expanses of open ocean (Gressitt, Leech & O'Brien, 1960; Gressitt et al., 1961; Yoshimoto, Gressitt & Mitchell, 1962; and Yoshimoto & Gressitt, 1963).

Twenty cruises in the Antarctic area remain unreported, as well as 4 Antarctic-related cruises, and 1 taken entirely in the Southern Hemisphere (Indian Ocean Area). While final reports will depend upon taxonomic findings of the various groups, a summary of the 25 cruises listed below is included here. The 20 Antarctic cruises are listed first and with data enumerated in tables 1-16 (4 produced no specimens) and are followed by the miscellaneous cruises which are reported in tables 17-21.

ANTARCTIC CRUISES:

USS Durant	New Zealand – Campbell Island	Jan. 1963	K. A. J. Wise
USS Forester	Campbell Island – New Zealand	Mar. 1963	K. A. J. Wise

1. Partial results of a project "Entomological research in Antarctic Regions with emphasis on natural dispersal", which was basically supported by grants to Bishop Museum from the U. S. Antarctic Research Program, National Science Foundation. (GA-58; 131; and 208). Part 2 was published in this journal, 3(4): 559-62, 1961, and part 2 of a Pacific-Antarctic series in 5 (4): 873-83, 1963.

2. Bishop Museum, Honolulu, Hawaii. (Present address for Capt. John C. Harrell: 450 60 7986, C Co., 23rd Med. B. S., APO San Francisco 96256).

USNS Eltanin (Cruise #8)	Uruguay – Scotia Sea – Drake Passage – Chile	April – June 1963	T. T. Mather
USNS Chattahoochee	New Zealand – McMurdo – New Zealand	Nov. – Dec. 1963	R. S. Buchanan
AGS Yelcho	Chile–west & south	Oct. 1963 – Jan. 1964	Crew Members
USNS Chattahoochee	New Zealand – McMurdo – New Zealand	Dec. 1963 – Jan. 1964	R. S. Buchanan
USNS Eltanin (Cruise #11)	Chile – west & south	Dec. 1963 – Feb. 1964	S. W. Henderson
USNS Chattahoochee	New Zealand – McMurdo – New Zealand	Jan. – Feb. 1964	R. S. Buchanan
USNS Wyandot	McMurdo – New Zealand	Feb. 1964	A. V. Spain
USNS Chattahoochee & USS Burton Island	New Zealand – McMurdo – New Zealand	Feb. – Mar. 1964	R. S. Buchanan
USNS Eltanin (Cruise #15)	Chile – New Zealand	Oct. – Dec. 1964	R. McGinnis
USNS Lachlan	New Zealand – local waters	Nov. 1964	O. R. Wilkes
USNS Chattahoochee	New Zealand – McMurdo – New Zealand	Dec. 1964 – Jan. 1965	R. S. Buchanan
USNS Chattahoochee	New Zealand – McMurdo – New Zealand	Jan. – Feb. 1965	R. S. Buchanan
USNS Eltanin (Cruise #17)	New Zealand – McMurdo – New Zealand	Feb. – Mar. 1965	H. Durant
USS Balcaterra	New Zealand – Auckland Is.	Jan. 1966	K. A. J. Wise
USS Burton Island	Antarctica: Cape Adare – McMurdo	Jan. 1966	J. M. Fitzsimons
USCG Eastwind	Chile – Antarctica – S. Shetlands – S. Orkneys – Antarctica – Chile	Dec. 1965 – Feb. 1966	J. L. Gressitt V. Peckham
USS Atka	McMurdo – New Zealand	Feb. – Mar. 1966	U. J. Kinet
MISCELLANEOUS CRUISES:			
USNS Eltanin	New York City – Panama – Chile	May – June 1962	W. A. Steffan
B. E. Esmeralda	Chile – west & north	April– Sept. 1964	Crew Members
Patanela	S. Indian Ocean Expedition to Heard Island	Nov. 1964 – Mar. 1965	P. Temple
USNS Wyandot	Rhode Island – Anvers Island	Dec. 1964 – Jan. 1965	J. Strong & G. Lippert
RRS Shackleton	England – Uruguay	Oct. – Nov. 1965	D. C. Lindsay M. Palmer & M. G. White

Of the 1,934 identifiable specimens collected on the above 25 cruises, 959 belong to the Order Diptera, 522 to Homoptera, and the 3rd largest number was Hymenoptera with 86.

Methods: Nylon nets of 75 cm diameter suspended from ropes or lines (Yoshimoto & Gressitt, 1960) were used on all cruises and when available 1 m nets were also used. The number used and positions of the nets varied on each ship. But, in general as many

nets as possible were raised as high off the deck as possible, weather and space permitting. There have been no new modifications made to the nylon nets since previous reports.

The oceans in the sub-Antarctic are naturally rough and when regional storms add high winds, snow and ice, the nylon nets often prove inadequate. Each collector has reported periods when it was inadvisable, if not impossible, to raise the nets and on days when the weather was marginal and nets were raised, many became torn. Testing has shown that new nets will not last more than about 6 hours when the wind reaches 35 knots. Higher winds, with older nets and those exposed to snow and ice create even greater problems.

While it should be noted that reports of methods used in the collection of specimens from some cruises are lacking, enough data are available to indicate an approximate amount of screening that has been attained through this program.

Mather on the *Eltanin* #8 cruise flew up to 15 nets on 76 of his 80 days at sea. Suspended from the main mast arms, the nets were checked every 12 hours when near land and every 24 hours when farther out at sea. A note from his data reported that on one occasion during bad weather, 8 of the 13 nets being flown were damaged.

Buchanan used from 8 to 20 nets during Deep Freeze '64 aboard the *Chattahoochee* and from 12 to 16 nets on the same ship during Deep Freeze '65. He reported that collecting south of 65°S usually became impractical on all of his 6 round trips between New Zealand and McMurdo.

Spain's cruise on the *Wyandot* produced no specimens though he reported that both the 0.75 m and the 1m nets were used.

McGinnis flew from 6 to 13 nets whenever weather permitted on his 64 day cruise on *Eltanin* #15 between Chile and New Zealand. He reported that neither insects nor debris were collected along the Antarctic Convergence, but that SW winds from New Zealand carried insects to the ship when it was still 37 km (23 mi) from shore.

Durant included a note that indicated the use of 12 nets on his *Eltanin* #17 cruise.

Fitzsimons flew nets on 4 days of his 12 day cruise in the Antarctic area on the vessel *Burton Island*.

Information from some of the miscellaneous cruises is as brief as that of several Antarctic collections. Steffan flew 12 nets continuously while the *Eltanin* was at sea. These were checked twice daily and he reported that the largest collections were taken relatively close to land in the tropical regions in conjunction with moderate to high offshore winds.

On the *Esmeralda* cruise, several of the large lepidopterans were probably attracted to the ship's lights and were recovered from the decks and not from the nets.

Temple's log indicates that 4 nets were flown up to 9 m (30 ft.) off the deck on his cruise on the *Patanela*.

Lindsay, Palmer and White emptied the 8 nets they used aboard the *Shackelton* twice a day.

Results: Tables 1 through 21 summarize the unreported Antarctic ship trapping material as well as that from several other cruises to the Southern Hemisphere. A partial breakdown into orders from the Antarctic and the miscellaneous cruises together with their

totals will give some basis for comparison:

ORDER	ANTARCTIC	MISCELLANEOUS	TOTAL
DIPTERA	454	505	959
HOMOPTERA	86	436	522
HYMENOPTERA	21	65	86
LEPIDOPTERA	25	45	70
THYSANOPTERA	32	23	55
COLEOPTERA	18	15	33

Not all orders collected have been tabulated above and of those recorded some were fragments identifiable to order but impossible to key to species. Four of the 25 cruises proved to have no specimens at all.

The distance from land recorded in the tables is computed from the point where insects were actually removed from the nets. Since there normally is about 10 hours between examinations during the day and no examinations at night, the accuracy of this distance may be somewhat misleading.

The volume of air screened is impossible to calculate with any degree of accuracy due to the variability in the number of nets flown and the configuration of the various vessels on which sampling was conducted. Another variable was the weather which forced all nets to be lowered during stormy periods, and on days of moderately high relative wind when nets were flown, an unreported number became damaged and their contents were partially or totally lost. About 20 individuals were involved in ship trapping from 1962–1966. Though each was provided with standard data sheets, there was variation in the quantity of information recorded for each cruise.

On the *Shackleton* in mid-October of 1965, Lindsay, Palmer and White noted that insects at sea were associated with thunderstorms. They recorded observations of insects flying near the ship each time it passed within close proximity to the base of a cumulonimbus cloud. At certain times these were numerous enough to be caught from the decks.

Another observation taken from the notes of Lindsay, Palmer and White was that even when large insects such as lepidopterans, dipterans and orthopterans were present in high enough densities that they could easily be caught from the decks, none of these would be recovered from the nets. They speculated that it is probable that either these large specimens avoided the nets or are able to escape if temporarily captured. This led them to conclude that collection by nets at sea is likely to have a strong bias in favor of the smaller arthropods which find it difficult, if not impossible to escape.

Acknowledgments: Work reported in this paper was made possible by financial assistance from the U. S. Antarctic Research Program (National Science Foundation), and from the Biology Branch, Office of Naval Research (through the Pacific Science Board, National Academy of Sciences).

Logistic support was provided by the U. S. Naval Support Force, Antarctica (Task Force 43); the Antarctic Division of the Department of Scientific and Industrial Research, New Zealand; the Antarctic Research Program of Chile; and the Chilean Navy.

Table 1. *USS Durant* (Wise)

Date	Wind		Starting		Ending		Approx. Dist. Nearest Land	No.	Order	Family
1963	Dir.	Veloc.	Lat.	Long.	Lat.	Long.		Spec.		
30. I			45°46′S	170°43′E	46°30′S	170°39′E	50 km, Kaitangata Coast, N. Z.	3	Homoptera	Aphididae
								4	Homoptera	Fragment
								1	Diptera	Ephydridae
30. I			46°30′S	170°39′E	47°29′S	170°24′E	120 km, Kaitangata Coast, N. Z.	29	Homoptera	Aphididae
								1	Hymenoptera	Ichneumonoidea
								1	Araneida	Argiopidae
31. I			47°29′S	170°24′E	51°07′S	170°14′E	175 km, Campbell I. N. Z.	1	Homoptera	Fragment

Table 2. *USS Forester* (Wise)

Date	Wind		Starting		Ending		Approx. Dist. Nearest Land	No.	Order	Family
1963	Dir.	Veloc.	Lat.	Long.	Lat.	Long.		Spec.		
6. III			46°29′S	170°39′E	45°57′S	170°46′E	15 km Otago Hbr., N. Z.	1	Lepidoptera	Microlepidoptera
								1	Homoptera	Aphididae
								1	Coleoptera	Fragment-elytron
6. III			45°57′S	170°46′E	45°46′S	170°43′E	10 km, Otago Hbr., N. Z.	1	Homoptera	Aphididae

Table 3. *USNS Eltanin* (Mather)

Date	Wind		Starting		Ending		Approx. Dist. Nearest Land	No.	Order	Family
1963	Dir.	Veloc.	Lat.	Long.	Lat.	Long.		Spec.		
2. IV	W	3kn	33°05′S	55°49′W	36°35′S	54°08′W	200 km Cobo S. Antonio, Argentina Coast	1	Diptera	Bibionidae
								2	〃	Limoniidae
								21	〃	Chironomidae
								2	〃	Ceratopogonidae
								3	〃	Sciaridae
								2	〃	Cecidomyiidae
								2	〃	Drosophilidae
								6	〃	Chloropidae
								3	〃	Ephydridae
								2	〃	Trypetidae
								1	〃	Agromyzidae
								1	〃	Borboridae
								1	〃	Scatopsidae?
								54	〃	Culicidae
								3	〃	Tipuloidea
								2	Homoptera	Corixidae
								3	〃	Cicadellidae
								3	〃	Delphacidae
								1	Hemiptera	Miridae
								1	Hymenoptera	Braconidae
								1	〃	♂ Eulophidae Euderinae
								1	〃	Apoidea Andrenidae
								1	〃	〃 Andreninae
								1	〃	Cynipoidea Eucoilinae Hexacola
								1	Coleoptera	Carabidae
								1	〃	Hydrophilidae
								3	〃	Staphylinidae
								1	〃	Heteroceridae
								1	〃	Anthicidae
								1	〃	Colydiidae
								6	Lepidoptera	Pterophoridae
								4	〃	Geometridae
								2	〃	Pyralidae
								1	Thysanoptera	Aeolothripidae
								1	Fragment	

2. IV	246°	11	36°35′S	54°08′W	38°19′S	52°09′W	400 km Mar del Plata, Argentina	3	Homoptera	Aphididae
								2	〃	Delphacidae
								2	〃	Cicadellidae
								28	Diptera	Culicidae
								1	〃	Ceratopogonidae
								2	〃	Chironomidae
								1	〃	Limoniidae
								1	〃	Drosophilidae
								1	Lepidoptera	Pterophoridae
								1	〃	Geometridae
								1	〃	Microlepidoptera
2. IV	246°	11	37°10′S	53°28′W	38°19′S	52°09′W	400 km Mar del Plata, Argentina	1	Coleoptera	Carabidae
								1	Hymenoptera	Braconidae
								1	Hemiptera	Reduviidae Emesinae
								2	Diptera	Trypetidae
								1	〃	Ephydridae
								1	〃	Chironomidae
								5	〃	Agromyzidae
								4	Homoptera	Aphididae
								3	〃	Delphacidae
								1	〃	Cicadellidae
3. IV	273°	8	38°19′S	52°09′W	40°04′S	50°08′W	700 km Mar del Plata, Argentina	3	Fragments	
								2	Hemiptera	Miridae
								1	〃	Reduviidae Emesinae
								2	Diptera	Chironomidae
								1	〃	Culicidae
								1	〃	Ephydridae
								3	Homoptera	Aphididae
4. IV	341°	18	40°04′S	50°08′W	41°47′S	48°09′W	900 km Mar del Plata, Argentina	1	Diptera	Culicidae
4. IV	340°	20	41°47′S	48°09′W	43°28′S	46°08′W	1100 km Mar del Plata, Argentina	2	Homoptera	Aphidídae
4. IV	300°	31	43°28′S	46°08′W	45°16′S	43°52′W	1300 km Mar del Plata, Argentina	1	Diptera	Culicidae
5. IV	190°	13	45°16′S	43°52′W	46°47′S	41°29′W	1500 km Mar del Plata, Argentina	1	Homoptera	Aphididae
								1	〃	Cicadellidae
								1	Fragment	

Table 4. *USNS Chattahoochee* (Buchanan)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1963	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
30. XI	10°	15kn	47°24′S	173°52′E	49°34′S	174°11′E	280 km Antipodes Is.	1	Thysanoptera	Aeolothripidae

Table 5. *AGS Yelcho* (Crew members)

Date	Wind		Starting		Ending		Approx. Dist.	No	Order	Family
1963–64.	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1963 13. X	SSW	12 kn	*?	?	42°12′S	73°10′W	15 km Chayques I., Chile	1	Hemiptera	Pentatomidae**
14. X	SSW	15			45°42′S	74°15′W	10 km James I., Chile	1	Diptera	Phoridae
〃	〃	〃			〃	〃	〃	1	Diptera	Ceratopogonidae
16. XI	SW	30			54°54′S	68°03′W	8 km Navarino I., Chile	2	Hymenoptera	Braconidae
〃	〃	〃			〃	〃	〃	2	Diptera	Tachinidae
〃	〃	〃			〃	〃	〃	1	〃	Ceratopogonidae
〃	〃	〃			〃	〃	〃	2	〃	Mycetophilidae
〃	〃	〃			〃	〃	〃	3	〃	Sciaridae
1964 2. I	NNW	15			54°54′S	70°20′W	10 km Londonderry I., Chile	1	Diptera	Helomyzidae
5. I	NNW	25			58°57′S	62°30′W	370 km Hermite I.	1	Diptera	Mycetophilidae
〃	〃	〃			〃	〃	〃	2	〃	Chironomidae
8. I	N	5			55°15′S	68°00′W	10 km Navarino I.	1	Hymenoptera	Encyrtidae
〃	〃	〃			〃	〃	〃	1	Ephemeroptera	
9. I	NNE	25			55°00′S	64°30′W	12 km Staten I., Chile	1	Diptera	Calliphoridae

Observations:

* Nets were checked only on dates listed, therefore the ending localities would be the starting localities for the next sample.

** All insects alive when caught.

Table 6. *USNS Chattahoochee* (Buchanan)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1963-64	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1963										
29. XII	SW	20kn	43°03′S	173°09′E	49°09′S	173°57′E	310 km Antipodes Is.	1	Lepidoptera	damaged spec.
								1	Diptera	Mycetophilidae
								1	insect frag.	
29. XII	W	20	49°09′S	173°57′E	49°56′S	174°03′E	290 km Antipodes Is.	1	Thysanoptera	Thripidae
30. XII	W	15	52°38′S	174°22′E	53°32′S	174°31′E	320 km Campbell I.	1	Thysanoptera	Thripidae
31. XII	W	05	57°27′S	174°44′E	58°27′S	174°50′E	640 km Campbell I.	1	Araneida	
1964										
7. I	NW	05	75°58′S	171°40′E	75°03′S	175°37′E	290km Coulman I., Antarctica	1	Mallophaga	Fragment

Table 7. *USNS Eltanin* (Cruise 11) (Henderson)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1963-64	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1963										
17. XII			55°00′S	115°00′W	33°17′S	72°21′W	Caught on Ship	1	Lepidoptera	Noctuidae
〃			55°00′S	116°00′W	33°00′S	72°00′W	40 km off Valparaiso	1	Coleoptera	Chrysomelidae
18. XII			33°34′S	72°56′W	33°57′S	73°27′W	60 km off Valparaiso	1	Diptera	Muscidae
1964										
6.II.			53°08′S	75°00′W	53°54′S	71°12′W	3 km in Str. of Mag.	9	Hymenoptera	Braconidae
〃			〃	〃	〃	〃	〃	1	Diptera	Ephydridae
〃			〃	〃	〃	〃	〃	1	〃	Ceratopogonidae
〃			〃	〃	〃	〃	〃	3	〃	Chironomidae
7. II			53°54′S	71°12′W	53°19′S	70°48′W	In Str. of Mag.	1	Lepidoptera	Micro
〃			〃	〃	〃	〃	〃	6	Diptera	Chironomidae
〃			〃	〃	〃	〃	〃	1	〃	Ceratopogonidae
〃			Caught aboard ship in Straits of Magellan					1	Lepidoptera	Pyralidae
〃			〃	〃	〃	〃	〃	1	Diptera	Helomyzidae
10. II			53°08′S	70°45′W	52°58′S	67°30′W	In Str. of Mag.	1	Lepidoptera	Micro
〃			〃	〃	〃	〃	〃	1	Diptera	Muscidae
11. II			53°06′S	67°17′W	54°44′S	64°59′W	25 km Staten Is.	1	〃	Chironomidae
12. II			54°59′S	65°05′W	55°15′S	65°05′W	15 km Staten Is.	1	Diptera	Ephydridae
〃			〃	〃	〃	〃	〃	1	Fragment	
15. II			52°50′S	68°00′W	52°36′S	69°44′W	15 km Punta Arenas	1	Diptera	Chironomidae
16. II			53°47′S	71°49′W	52°30′S	75°02′W	In Str. of Mag.	1	〃	〃
〃			〃	〃	〃	〃	〃	1	〃	Clusiidae?

Data sheets not available - information taken from specimen labels.

Table 8. *USNS Chattahoochee* (Buchanan)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1964	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
19. I	SSW	15kn	43°34′S	172°58′E	43°48′S	173°14′E	10 km coast of N. Z.	1	Neuroptera	Hemerobiidae
								2	Thysanoptera	
								2	Homoptera	Aphididae
								7	Diptera	Agromyzidae
								1	〃	Chironomidae
								4	〃	Dolichopodidae
								2	〃	Drosophilidae
								6	〃	Ephydridae
								1	〃	Lonchopteridae
								1	〃	Mycetophilidae
								7	〃	Sphaeroceridae
								3	〃	damaged spec.
19. I	NW	10	43°48′S	173°14′E	45°55′S	173°30′E	175 km coast of N. Z.	1	Coleoptera	Aglycyderidae
								2	Diptera	Agromyzidae
								24	〃	Dolichopodidae
								1	〃	Drosophilidae
								1	〃	Ephydridae
								1	〃	Helomyzidae
								1	〃	Lauxanidae
								1	〃	Phoridae
								6	〃	damaged spec.
20. I	NW	08	45°55′S	173°30′E	47°11′S	173°38′E	215 km of N. Z. coast	1	Thysanoptera	
								1	Diptera	Dolichopodidae
								1	Diptera	Drosophilidae
								3	〃	Ephydridae
								2	〃	Sphaeroceridae
20. I	NW	10	47°11′S	173°38′E	48°16′S	173°47′E	250 km Nugget Pt., N.Z.	2	Diptera	Dolichopodidae
								1	〃	Lonchopteridae
								1	〃	Sphaeroceridae
								1	Thysanoptera	
20. I	N	18	48°16′S	173°47′E	50°47′S	174°04′E	310 km Campbell I.	1	Diptera	Dolichopodidae
21. I	N	18	50°47′S	176°04′E	51°51′S	174°13′E	250 km Campbell I.	1	Diptera	Ephydridae
21. I	NW	05	51°51′S	174°13′E	53°15′S	174°22′E	315 km Campbell I.	1	Diptera	Sphaeroceridae
22. I	SW	10	56°39′S	175°03′E	57°52′S	175°10′E	600 km Campbell I.	1	body frag.	wing
22. I	NxW	12	57°52′S	175°10′E	60°28′S	175°25′E	700 km Scott I.	1	Coleoptera	Aglycideridae
22. I	NNW	10	61°31′S	175°35′E	62°44′S	175°43′E	480 km Scott I.	1	Diptera	Ephydridae
25. I	SE	15	70°14′S	176°12′E	72°13′S	176°18′E	145 km Possession I.	1	Coleoptera	body frag.
4.II	WSW	8	47°06′S	173°12′E	46°08′S	173°09′E	150 km coast of N.Z.	1	Diptera	Ephydridae
4.II	NE	05	46°08′S	173°09′E	45°02′S	173°09′E	120 km coast of N.Z.	1	Diptera	Ephydridae

Table 9. *USNS Chattahoochee* (Buchanan)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1964	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
15. II	SxE	10kn	44°33′S	173°18′E	45°07′S	173°20′E	130 km Pen. Banks, N.Z.	2	Homoptera	Aphididae
								2	Thysanoptera	Thripidae
								1	Diptera	Ceratopogonidae
								10	〃	Ephydridae
								2	〃	Sphaeroceridae
								3	〃	damaged spec.
								2	Coleoptera	Lathridiidae
								1	Hymenoptera	Braconidae
								1	Araneida	Theridiidae
15. II	SW	10	45°07′S	173°20′E	47°51′S	173°42′E	370 km Antipodes Is.	1	Thysanoptera	Thripidae
								1	Coleoptera	Curculionidae
16. II	SSE	15	47°51′S	173°42′E	48°50′S	173°48′E	440 km Campbell I.	1	Hemiptera	Lygaeidae
16. II	NNE	15	49°50′S	173°54′E	52°24′S	174°30′E	320 km Campbell I.	1	Thysanoptera	Thripidae
17. II	N	25	52°24′S	174°30′E	53°24′S	176°38′E	400 km Campbell I.	1	Araneida	Fragment
18. II	NW	10	58°54′S	175°25′E	59°46′S	175°25′E	800 km Campbell I.	1	Psocoptera	Fragment
								2	Thysanoptera	
								1	Diptera	Sciaridae
								3	wing frag.	

Table 10. *USNS Eltanin* (Cruise 15) (McGinnis)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1964	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
2. X	ESE	15kn	33°32′S	72°12′W	36°54′S	74°23′W	68.4 km coast of Chile	2	Diptera	Chironomidae
〃	〃	〃	〃	〃	〃	〃	〃	1	〃	Sciaridae
〃	〃	〃	〃	〃	〃	〃	〃	2	〃	Tipulidae
〃	〃	〃	〃	〃	〃	〃	〃	4	〃	Ephydridae
〃	〃	〃	〃	〃	〃	〃	〃	1	〃	Sphaeroceridae
〃	〃	〃	〃	〃	〃	〃	〃	2	Homoptera	Aphididae
〃	〃	〃	〃	〃	〃	〃	〃	9	Thysanoptera	
〃	〃	〃	〃	〃	〃	〃	〃		Fragments	
4. X—1. XII	Negative results due to (in some cases) torn nets or no samples in net.									
2. XII	WSW	14	38°47′S	179°25′W	36°45′S	177°08′W	176.4 km coast of New Zealand	104	Diptera	Ephydridae
〃	〃	〃	〃	〃	〃	〃		2	〃	Tethimidae
〃	〃	〃	〃	〃	〃	〃	〃	1	〃	Tipulidae
〃	〃	〃	〃	〃	〃	〃	〃	1	Homoptera	(Exoskeleton)
3. XII	SWxS	18	36°45′S	177°08′W	36°42′S	174°52′W	405 km coast of New Zealand	1	Diptera	Tipulidae

Table 11. *USNS Lachlan* (Wilkes)

Date 1964	Wind Dir.	Wind Veloc.	Starting Lat.	Starting Long.	Ending Lat.	Ending Long.	Approx. Dist. Nearest Land	No. Spec.	Order	Family
17. XI	No Data Sheets				35°05′S	175°50′E	108 km islet off coast of New Zealand	4	Thysanoptera	
〃					〃	〃	〃	1	Homoptera	Aphididae
〃					〃	〃	〃	2	Diptera	Sciaridae
〃					35°10′S	175°50′E	〃	2	Diptera	Ephydridae
18. XI	Found on bridge of ship				32°46′S	177°45′E	405 km off coast of New Zealand	1	Diptera	Syrphidae
〃					〃	〃	〃	1	Diptera	Chironomidae
〃					〃	〃	〃	1	Homoptera	Aphididae
〃					〃	〃	〃	2	Thysanoptera	
〃					〃	〃	〃	1	Acarina	
24. XI					33°13′S	177°58′E	405 km off coast of New Zealand	1	Homoptera	Aphididae

Data sheets not available - information taken from specimen labels.

Table 12. *USNS Chattahoochee* (Buchanan)

Date 1964–1965	Wind Dir.	Wind Veloc.	Starting Lat.	Starting Long.	Ending Lat.	Ending Long.	Approx. Dist. Nearest Land	No. Spec.	Order	Family
1964 31. XII	SxW	7-12kn	Lyttleton		46°30′S	173°33′E	225 km coast of N.Z.	1	Thysanoptera	
1965 1.I.	W	10	46°30′S	173°33′E	51°07′S	174°28′E	315 km coast of N.Z.	1	Coleoptera	Fragment

Table 13. *USNS Chattahoochee* (Buchanan)

Date 1965	Wind Dir.	Wind Veloc.	Starting Lat.	Starting Long.	Ending Lat.	Ending Long.	Approx. Dist. Nearest Land	No. Spec.	Order	Family
23. I	SSE	9-23kn	46°43′S	173°24′E	48°16′S	173°23′E	414 km Antipodes Is.	1	Homoptera	Cicadellidae
28. I	SE	9–20	65°03′S	173°44′E	68°08′S	174°14′E	252 km Scott I.	1	Thysanoptera	
6. II	NExN	8–15	61°46′S	173°50′E	59°52′S	173°56′E	675 km Scott I.	1	Homoptera	Cicadellidae

7.II–9.II.1965 - Negative specimens.

Table 14. *USNS Eltanin* (Cruise 17) (Durant)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1965	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1. II	E	20kn	Ships course - West		41°00′S	170°42′E	113.4 km coast of New Zealand	5	Diptera	(Fragments)
〃	〃	〃	〃	〃	〃	〃	〃	1	Thysanoptera	
〃	〃	〃	〃	〃	〃	〃	〃	1	Araneida	
3. II	W	15	41°00′S	170°42′E	43°30′S	164°06′E	113.4 km coast of New Zealand	1	(Fragment)	
4. II	W		Caught aboard ship		45°32′S	163°50′E	225 km coast of New Zealand	1	Lepidoptera	Psychidae
6. II	WSW	24	45°32′S	163°50′E	48°36′S	162°00′E	351 km off Auckland Is.	1	Lepidoptera	Micro (Frag.)
11. II–13. II		65	Negative							
18. II	SW	17	58°30′S	163°00′E	51°06′S	166°06′E	10 km off Auckland I.	1	Lepidoptera	(Frag.)
22. II	NxE	10	51°06′S	166°06′E	45°05′S	171°08′E	10 km off N. Z. coast Is.	?	Lepidoptera	Thorax & Leg frag.
〃	〃	〃	〃	〃	〃	〃	〃	1	Araneida	Cephalothorax frag.
12. III–16. III			Wellington, N.Z.		43°05′S	164°05′E	320 km coast of N.Z.	1	Crustacea	(Fragment)

Data sheets not available - information taken from specimen labels.

Table 15. *USS Balcaterra* (Wise)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1966	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
13. I	NExN	10kn	45°52′S	170°30′E	45°42′S	170°50′E	8 km Dunedin, N. Z.	2	Diptera*	

* Specimens not available - information taken from data sheets.

Table 16. *USCG Eastwind* (Gressitt & Peckham)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1966	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1. I	N	3kn	In Straits of Magellan					1	Siphonaptera	
								1	Homoptera	Aphididae
								1	Lepidoptera	micro
								1	Diptera	Agromyzidae
								9	〃	Ephydridae
								3	〃	Phoridae
								7	〃	Mycetophilidae
								1	Hymenoptera	Braconidae
			Caught inside window on bridge					6	Diptera	Ephydridae
2. I	W	3	In strait of Tierra del Fuego					1	Diptera	Chironomidae
5. I			At anchor in Arthur Harbor, Anvers I. approx. 1 km off ice cliff					3	Acarina	*Cryptolaelaps*
23. I–25. I			In Marguerite Bay nr SW Adelaide I.					1	Acarina	Oribatidae
6. II	SSE	3			62°00′S	54°30′W	70 km Gibbs I., S. Shetland Is.	1	Acarina	(*Alaskozetes* sp.) 〃
7. II	S	5			60°52′S	47°20′W	30 km Inaccessible Is., S. Orkney Is.	1	Acarina	Oribatidae
15. II	SSW	5			64°26′S	56°56′W	200 km Joinville I.	2	Collembola	*Cryptopygus* sp.
								1	Acarina	Oribatidae
22. II	NNW	4			63°38′S	64°45′W	100 km Anvers I.	1	Diptera	Chironomidae
24. II			Caught inside of ship					1	Diptera	Drosophilidae
25. II					54°20′S	66°30′W	5 km coast of T.d.F.	2	Diptera	?
26. II					54°10′S	67°00′W	Tierra del Fuego	1	Diptera	Mycetophilidae
								1	〃	Sphaeroceridae
								4	Homoptera	Aphididae

Table 17. *USNS Eltanin* (Steffan)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1962	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
25. V	S		36°17′N	73°53′W	32°59′N	74°22′W	150 km coast of North Carolina	1	Hymenoptera	Formicidae
27. V	E		24°02′N	74°22′W	21°31′N	74°12′W	75 km Acklins I.	2	Thysanoptera	
								5	Homoptera	Aphididae
								3	〃	Psyllidae
								1	Diptera	Cecidomyiidae
								43	〃	Ceratopogonidae
								3	〃	Ephydridae
								1	〃	Simuliidae
								1	Hymenoptera	Ceraphronidae
28. V	E		21°31′N	74°12′W	19°18′N	74°26′W	75 km Grande Cayman I.	2	Homoptera	Delphacidae
								2	〃	Aphididae
								2	〃	Cicadellidae
								20	〃	Psyllidae
								3	Diptera	Ceratopogonidae
								6	〃	Heleidae
								1	Araneida	
28. V	SE		19°18′N	74°26′W	17°09′N	75°35′W	48 km Morant Cays, Jamaica	1	Thysanoptera	
								10	Homoptera	Aphididae
								54	〃	Psyllidae
								1	Hemiptera	Veliidae
								1	Lepidoptera	(micro)
								5	Diptera	Ceratopogonidae
								2	〃	Sciaridae
								1	Coleoptera	Cucujidae
								1	Hymenoptera	Formicidae
29. V	E		17°09′N	75°35′W	15°53′N	76°14′W	90 km Morant Cays, Jamaica	12	Homoptera	Psyllidae
								2	Diptera	Ceratopogonidae
								1	〃	Chironomidae
								1	Hymenoptera	Eulophidae *Tetrastichus* sp.
29. V	E		15°53′N	76°14′W	14°16′N	77°08′W	140 km Bajo Nuevo, Colombia	3	Homoptera	Psyllidae
25. V			Collected in lab. on ship.					1	Coleoptera	Oedemeridae

Table 17 (continuation).

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1962	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
2. VI	W		08°50′N	79°35′W	06°24′N	80°13′W	80 km Punta Mariato, Panama	4	Psocoptera	
								7	Thysanoptera	
								1	Homoptera	Cicadellidae
								2	〃	Aphididae
								2	〃	Psyllidae
								1	Lepidoptera	Pyralidae
								3	Diptera	Agromyzidae
								5	〃	Cecidomyiidae
								3	〃	Ceratopogonidae
								2	〃	Empididae
								4	〃	Ephydridae
								12	〃	Phoridae
								2	〃	Sciaridae
								1	〃	Tephritidae
								1	Coleoptera	Carabidae
								1	〃	Cucujidae
								1	〃	Platypodidae
								5	Hymenoptera	Agaontidae
								1	〃	Ceraphronidae
								1	〃	Encyrtidae
								2	〃	Eucoilidae
								1	〃	Eulophidae *Tetrastichus* sp.
								1	〃	Formicidae
								1	〃	Ichneumonidae
								1	〃	Scelionidae
								14	Araneida	
2. VI	W		6°24′N	80°13′W	4°51′N	80°27′W	130 km Islas de Malpelo, Colombia	7	Araneida	Argiopidae (immature)
								5	〃	Erigonidae
								1	〃	Lycosidae (immature)
								1	〃	Theridiidae (〃)
								2	Insect	Fragments
3. VI	SW-S		4°51′N	80°27′W	3°11′N	80°54′W	90 km Islas de Malpelo, Colombia	1	Thysanoptera	
								3	Araneida	
〃	〃		3°11′N	80°54′W	2°02′N	81°18′W	145 km coast of Ecuador	1	Homoptera	Delphacidae
4. VI	〃		2°02′N	81°18′W	0°01′N	81°44′W	100 km coast of Ecuador	3	Homoptera	Delphacidae

4. VI	SWS		0°01′N	81°44′W	1°26′S	82°03′W	90 km coast of Ecuador	1	Homoptera	Cicadellidae
5. VI	SW-S		2°32′S	82°15′W	3°35′S	82°49′W	75 km coast of Peru	1	Diptera	Drosophilidae
6. VI	SE-S		3°35′S	82°49′W	5°45′S	81°48′W	75 km Punta Aguja, Peru	1	Homoptera	Aphididae
								2	〃	Delphacidae
6. VI	SE		5°45′S	81°48′W	7°23′S	81°02′W	45 km Islas Lobos de Afuera, Peru	1	Homoptera	Aphididae
								3	Diptera	Chironomidae
								1	〃	Lauxaniidae
9. VI	SE		8°03′S	81°03′W	9°29′S	80°50′W	195 km coast of Peru	1	Homoptera	Delphacidae
17. VI	SE-S		18°33′S	70°45′W	18°59′S	71°13′W	90 km coast of Chile	1	Diptera	Agromyzidae
			Collected on deck.					1	Coleoptera	

Table 18. *B. E. "Esmeralda"* (Crew members under Capt. G. Barros)

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1964	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
24. IV	SE	9kn			32°23′S	74°08′W	210 km Valparaiso, Chile	1	Lepidoptera	Sphingidae +
26. IV	NE	7			33°35′S	78°47′W	35 km Isla Robinson Crusoe	1	Diptera	Sciaridae —
27. IV	NNE	23			33°42′S	80°53′W	40 km Isla Alejandro Selkirk	1	Diptera	Sciaridae —
17. V	NW	9			24°16′S	107°30′W	300 km Isla Sala Y Gomez	1	Neuroptera	Hemerobiidae +
30. V	NW	3			00°54′S	89°36′W	Anchored off Isla San Cristobal	1	Homoptera	Aphididae —
								1	Homoptera	Delphacidae —
10. VI	NE	3			00°54′S	89°36′W	〃	1	Diptera	Tachinidae +
8. VII	NE	7			33°45′N	66°06′W	175 km Bermuda Is.	1	Hymenoptera	Vespidae +
12. VII	SE	12			40°35′N	74°02′W	in New York Harbor	1	Lepidoptera	Noctuidae +
29. VII	SW	30			40°35′N	74°02′W	〃	1	Homoptera	Aphididae —
1. VIII	SW	10			48°19′N	69°23′W	Near mouth of St. Lawrence River	1	Lepidoptera	Geometridae +
2. VIII	SW	8			48°53′N	67°45′W	〃	105	Homoptera	Aphididae +
								1	Hemiptera	Anthocoridae +
								5	Neuroptera	Hemerobiidae +
								1	Coleoptera	Lyctidae +
								1	〃	Nitidulidae +
								2	〃	Orthoperidae +

Table 18 (continuation).

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1964	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
2. VIII	continuation							1	Coleoptera	Scaphidiidae +
								1	〃	Tenebrionidae +
								6	Lepidoptera	(micro) +
								25	Diptera	Cecidomyiidae +
								4	〃	Ceratopogonidae +
								15	〃	Chironomidae +
								2	〃	Chloropidae +
								1	〃	Empididae +
								15	〃	Mycetophilidae +
								1	〃	Phoridae +
								2	〃	Psychodidae +
								1	〃	Sciaridae +
								1	〃	Sphaeroceridae +
								2	〃	Tipulidae +
								5	Hymenoptera	Braconidae +
								4	〃	Ichneumonidae +
								1	〃	Proctotrupidae +
11. VIII	W	17kn			43°52′N	63°35′W	15 km Anticosti I., Quebec	5	Homoptera	Aphididae +
								2	Diptera	Cecidomyiidae +
								1	〃	Ceratopogonidae+
								2	〃	Chironomidae +
								1	Hymenoptera	Braconidae +
								1	Araneida	
12. VIII	S	12			48°21′N	62°01′W	55 km Anticosti I., Quebec	15	Homoptera	Aphididae +
								1	Diptera	Cecidomyiidae +
								12	〃	Chironomidae +
								3	〃	Chloropidae +
								1	〃	Empididae +
								1	〃	Ephydridae +
								1	〃	Muscidae +
								1	〃	Mycetophagidae+
								1	Hymenoptera	Encyrtidae +
18. VIII	SW				38°15′N	58°11′W	395 km Bermuda Is.	1	Diptera	Milichiidae
7. IX	NE				12°17′N	73°30′W	70 km Riohacha, Venezuela	1	Lepidoptera	Hesperiidae +
8. IX	NE				11°48′N	75°07′W	60 km Barranquilla, Venezuela	2	Lepidoptera	Noctuidae +
8. IX	N				11°45′N	75°53′W	90 km Barranquilla, Venezuela	1	Lepidoptera	Geometridae +

12. IX	S				05°26′N	79°58′W	170 km Cape Corrientes, Colombia	8	Homoptera	Delphacidae +
13. IX	SW				03°19′N	80°21′W	100 km Islas de Malpelo	1	Homoptera	Cicadellidae —
								1	〃	Delphacidae —
14. IX	SW				00°33′S	80°56′W	70 km Cabo de San Francisco, Ecuador	1	Homoptera	Aphididae —

Note: + Alive — Dead

Table 19. *Patanela* (Temple)

Date 1964–65	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
1964										
27. XI	WSW	15kn	Albany, W. Australia		35°20′S	118°00′E	25 km Albany, Australia	1	Hymenoptera	Ichneumonidae
28. XI	NW	10	35°20′S	118°00′E	35°05′S	116°35′E	2 km Chatham Is.	1	Psocoptera	
								4	Neuroptera	Hemerobiidae
								1	Homoptera	Aphididae
								1	Lepidoptera	Pyralidae
								3	Diptera	Ceratopogonidae
								1	〃	Muscidae
								1	〃	Otitidae
								10	〃	Psychodidae
								1	〃	Tipulidae
								1	Coleoptera	Carabidae
								1	Araneida	
29. XI	Found in tape recorder box (dead). Not previously seen in box.							1	Coleoptera	Cerambycidae
12.XII	Caught at light aboard ship.				33°50′S	85°50′E	500 km Amsterdam I.	1	Lepidoptera	(micro)
24.XII	Caught in bunk aboard ship.				37°23′S	60°30′E	800 km Iles Crozet	1	Araneida	
1965										
28. II	NE	6	36°31′S	115°55′E	35°15′S	117°50′E	20 km Albany, Australia	1	Lepidoptera	(micro)
10. III	ENE	15	38°15′S	141°00′E	39°02′S	144°02′E	40 km Cape Otway, Australia	1	Psocoptera	
								6	Thysanoptera	
								4	Homoptera	Psyllidae
								1	Hemiptera	Lygaeidae

Table 19 (continuation).

Date	Wind		Starting		Ending		Approx. Dist.	No.	Order	Family
1965	Dir.	Veloc.	Lat.	Long.	Lat.	Long.	Nearest Land	Spec.		
10. III	continuation							2	Diptera	Agromyzidae
								1	〃	Ceratopogonidae
								2	〃	Lauxaniidae
								1	〃	Sphaeroceridae
								2	Hymenoptera	Braconidae
								2	〃	Eulophidae
								2	〃	Platygasteridae
								1	〃	Pteromalidae
								1	〃	Torymidae
10. III	ENE	15kn	39°02′S	144°02′E	39°00′S	145°02′E	40 km Philippine Is.	3	Thysanoptera	
								20	Homoptera	Psyllidae
								5	〃	Aphididae
								5	Hemiptera	Lygaeidae
								1	Coleoptera	Staphylinidae
								104	Diptera	Agromyzidae
								2	〃	Drosophilidae
								4	〃	Ephydridae
								2	〃	Phoridae
								17	〃	Sciaridae
								47	〃	Sepsidae
								7	〃	Sphaeroceridae
								1	Hymenoptera	Braconidae
								1	〃	Encyrtidae
								3	〃	Formicidae
								1	〃	Halictidae
								3	〃	Ichneumonidae
								1	〃	Platygasteridae
								3	〃	Pteromalidae
								1	〃	Torymidae
								7	Araneida	
10. III	NE	10	39°00′S	145°02′E	39°06′S	146°35′E	25 km Wilson's Promontory, Australia	1	Thysanoptera	
								4	Homoptera	Psyllidae
								1	Hemiptera	Nabidae
								2	Lepidoptera	Noctuidae
								1	Diptera	Agromyzidae
								5	〃	Ephydridae
								1	〃	Chloropidae
								1	〃	Muscidae
								1	〃	Sepsidae
								1	〃	Tachinidae
								2	Hymenoptera	Encyrtidae

11. III	NE	10	39°06′S	146°35′E	38°25′S	148°30′E	65 km coast of Australia	2	Homoptera	Cicadellidae
								4	〃	Psyllidae
								4	Hemiptera	Lygaeidae
								3	〃	Miridae
								2	Lepidoptera	(micro)
								1	〃	Geometridae
								1	Diptera	Agromyzidae
								1	〃	Cecidomyiidae
								4	〃	Chironomidae
								1	〃	Culicidae
								4	〃	Sepsidae
								2	〃	Sphaeroceridae
								1	Hymenoptera	Braconidae
								1	〃	Ichneumonidae
11. III	NE	10	38°25′S	148°30′E	37°55′S	149°25′E	15 km Cape Howe, Australia	2	Thysanoptera	
								2	Lepidoptera	Noctuidae
								1	Diptera	Ceratopogonidae
								1	〃	Chironomidae
								1	〃	Sciaridae
								1	Hymenoptera	Encyrtidae
12. III	SW	15	37°55′S	149°25′E	37°00′S	149°55′E	2 km Eden, Australia	1	Homoptera	Cicadellidae
								4	〃	Psyllidae
								1	Lepidoptera	(micro)
								4	Diptera	Chironomidae
								1	〃	Chloropidae
								1	〃	Coelopidae
								1	〃	Drosophilidae
								1	〃	Empididae
								3	Hymenoptera	Encyrtidae
								1	〃	Eulophidae
1964	Caught on deck of ship before arrival at Albany.									
12. XI					39°20S′	142°00′E	144 km Cape Otway	1	Lepidoptera	Gelechiidae
								25	Diptera	Chironomidae
								1	〃	Coelopidae
								8	〃	Ephydridae
								1	〃	Lauxaniidae
								1	〃	Muscidae
								1	Hymenoptera	Ichneumonidae

Table 20. *USNS Wyandot* (Strong & Lippert)

Date 1964–1965	Wind Dir.	Wind Veloc.	Starting Lat.	Starting Long.	Ending Lat.	Ending Long.	Approx. Dist. Nearest Land	No. Spec.	Order	Family
1964 28.XII	Var.	Var.	Start		16°25′N	76°05′W	70 km Morant Cays, Jamaica	14	Homoptera	Aphididae
								1	Araneida	
1965 29.XII	NE	16kn	16°25′N	76°05′W	12°25′N	78°03′W	200 km Roncador Cay	1	Homoptera	Aphididae (frag.)
1. I	N	19	10°03′N	79°34′W	05°36′N	80°01′W	190 km coast of Panama	1	Homoptera	Delphacidae
1. I	WSW	14	03°28′N	80°30′W	01°17′N	80°50′W	85 km coast of Ecuador	1	Homoptera	Aphididae
								1	Diptera	Ceratopogonidae
								1	Araneida	
2. I	SxW	15	01°17′N	80°50′W	00°55′S	81°09′W	25 km coast of Ecuador	1	Hemiptera	Lygaeidae (frag.)
								1	Lepidoptera	Pyralidae
2. I	SSW	18	00°55′S	81°09′W	02°47′S	81°20′W	80 km coast of Ecuador	1	Lepidoptera	(micro)
								1	thoracic seg.	
2. I	SSE	08	02°47′S	81°20′W	04°53′S	81°29′W	10 km Pta. Parinas, Peru	1	Hemiptera	Anthocoridae
12. I	W	08	50°51′S	75°49′W	53°55′S	71°18′W	In Strait of Magellan	2	Diptera	Chironomidae
								1	〃	Sciaridae
								1	Hymenoptera	Encyrtidae

Table 21. *RRS Shackleton* (Lindsay, Palmer& White)

Date 1965	Wind Dir.	Wind Veloc.	Starting Lat.	Starting Long.	Ending Lat.	Ending Long.	Approx. Dist. Nearest Land	No. Spec.	Order	Family
8. X	NE	05kn	42°13′N	10°50′W	40°40′N	11°53′W	200 km coast of Spain	1	Homoptera	Aphididae +
								15	Diptera	Drosophilidae +
10. X	W	15	36°45′N	15°07′W	34°27′N	16°30′W	25km off Madeira, Spain	1	Diptera	Body frag.
11. X	WxS	15	30°30′N	18°30′W	28°52′N	19°23′W	90 km La Palma, Canary Is.	1	Diptera	Body frag.
13. X	NW	05	25°00′N	21°12′W	22°27′N	22°20′W	175 km coast of Spanish Sahara	1	Acarina	Oribatidae
15. X	ENE	10	16°30′N	25°10′W	13°45′N	26°06′W	250 km Cape Verde Is., Portugal	1	Homoptera	Aphididae +
								3	〃	Cicadellidae +
								2	Araneida	+

15. X	E	10	13°45′N	26°06′W	11°56′N	26°38′W	320 km Cape Verde Is., Portugal	20	Homoptera	Aphididae +
								14	〃	Cicadellidae +
								1	Diptera	Cecidomyiidae +
								3	Araneida	+
16. X	E	10	11°56′N	26°38′W	09°35′N	27°15′W	640 km Cape Verde Is., Portugal	14	Homoptera	Aphididae +
								13	〃	Cicadellidae +
								2	〃	Delphacidae +
								1	Hemiptera	Nabidae +
								1	Lepidoptera	Pterophoridae +
								27	Araneida	
16. X	ExS	7	09°35′N	27°15′W	07°55′N	27°45′W	1100 km Cape Verde Is., Portugal	3	Homoptera	Aphididae +
								6	〃	Cicadellidae +
								1	Hemiptera	Nabidae +
								11	Lepidoptera	Pterophoridae +
								47	Araneida	
17. X	SE	10	05°22′N	28°07′W	04°20′N	28°30′W	400 km St. Paul's Rocks, Brazil	2	Homoptera	Aphididae +
								1	〃	Cicadellidae +
								1	Hemiptera	Miridae +
								3	Lepidoptera	Pterophoridae +
								14	Araneida	
24. X	NNE	20	21°37′S	39°40′W	24°12′S	41°15′W	160 km coast of Brazil	1	Homoptera	Aphididae +
24. X	N	05	24°12′S	41°15′W	25°30′S	42°43′W	310 km coast of Brazil	1	Homoptera	Aphididae +
								2	Diptera	Drosophilidae +
25. X	NNE	15	25°30′S	42°43′W	27°40′S	45°03′W	320 km coast of Brazil	1	Homoptera	Aphididae +
								1	〃	Cicadellidae +
								2	〃	Delphacidae +
								1	〃	Psyllidae +
27. X	NE	15	31°35′S	49°28′W	32°50′S	50°23′W	80km coast of Brazil	2	Lepidoptera	Pterophoridae −
								1	Diptera	Chironomidae −
								1	Decapoda	(Shrimp) +
30. X	NNE	15	36°28′S	56°22′W	38°00′S	56°32′W	65 km coast of Argentina	1	Hymenoptera	Formicidae (Head frag.)
								1	Araneida	Body frag.
31. X	NxW	20	40°56′S	56°43′W	42°37′S	56°52′W	450 km coast of Argentina	2	insect	Fragments
2. XI	SExE	20	49°15′S	57°32′W	51°25′S	57°45′W	20 km Port Stanley, Falkland I.	20	Homoptera	Aphididae
								1	Diptera	Ephydridae
								1	〃	Body frag.

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