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TRAPPING OF AIR-BORNE INSECTS ON SHIPS IN THE INDIAN OCEAN—ANTARCTIC AREAS[1]

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This report is submitted as a contribution to the research project associated with the study of air-borne organisms in Antarctic areas which is being conducted by Gressitt and co-workers at Bishop Museum, Honolulu. Data presented here were collected in the austral summer of 1963 and are summaries of observations made during the voyages of two ships in the southern areas of the Indian Ocean. One series of data was collected by members of the Seventh Soviet Antarctic Expedition during a single voyage of the Russian ship "Estonia" from Mirny Observatory, Antarctica to a point near the Cape Of Good Hope, South Africa. The second series of data was collected by me during a single voyage of the Danish ship "Nella Dan" from an area near Wilkes Station, Antarctica to Heard Island. A proposed plan to continue observations from Heard Island to Kerguelen Island, and finally to Hobart, Tasmania was abandoned because of destruction and loss of collecting equipment during a prolonged period of high winds.

Observations on the "Estonia" were taken between January 20 and 31, 1963. On the voyage of the "Nella Dan" data were collected between March 3 and 10, 1963. The tracks of both ships are shown in fig. 1. In addition to showing points where observations were made, correlative meteorological data associated with wind speed and direction have been plotted graphically.

Methods: Trapping methods used aboard both ships were similar to those previously described by Yoshimoto & Gressitt (1960, Pacific Insects **2**: 239–43). Free wind sock nylon nets, 75 cm in diameter and 1.5 m in length, were hung in series from the masts of ships. Ten nets were employed during the observation period on the "Nella Dan" and 8 during the voyage of the "Estonia." In an attempt to facilitate collecting procedures, cotton batting was inserted in the apex of nets used on the "Nella Dan." The nets were lowered and carefully examined three times each day. The cotton batting was removed and the inside areas near the apex of the nets were gently swabbed with lengths of white adhesive tape to assure the removal of all debris. The nets were returned to their original positions near the top of the mast and materials collected were examined microscopically. Observational procedures used by colleagues on the "Estonia" were similar to those employed on the "Nella Dan"; however, materials collected were preserved in 80% alcohol

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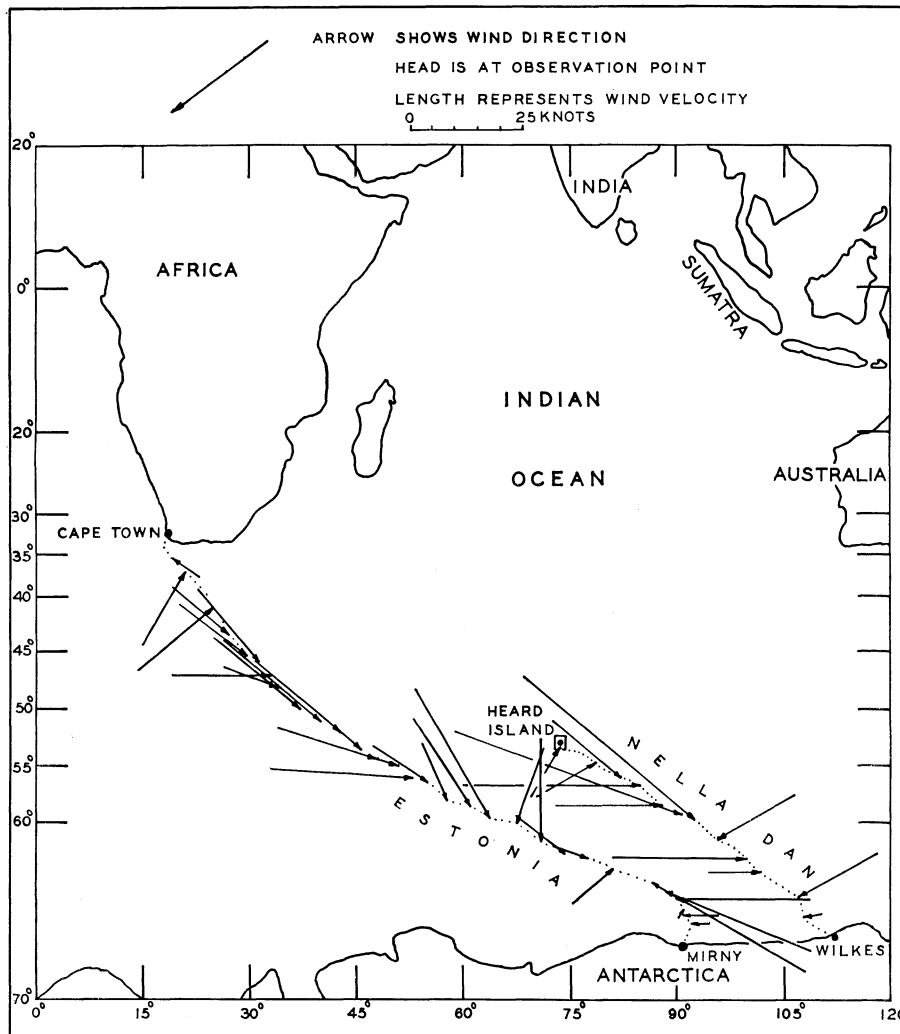

FIGURE 1. TRACKS OF "ESTONIA" AND "NELLA DAN" AUSTRAL SUMMER 1963.

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and prepared for examination at a later date.

Results: During this study, 51 individual observations were made. Insects, or parts of insects, were collected on 2 occasions only. One fly (Ephydridae) was trapped by observers on the "Estonia" at 34°05′ S, 18°11′ E near the Cape Of Good Hope. Elytra and legs of a beetle were trapped at 53°10′ S, 73°06′ E near Heard Island. Minerals and plant debris were collected as the ships approached continents or subantarctic islands. Near Heard I., one small piece of pumice was blown into a net rigged on the mast of the "Nella Dan."

An analysis of data presented in fig. 1 shows that wind directions during the early part

of each voyage were from the the Antarctic continent or from offshore areas near the continent. Only in later stages of the voyages were directions of surface winds from areas supporting a more diversified flora and fauna. General observations made in areas near Heard I. showed that a considerable amount of debris was transported from the island during periods of high winds and storms.

Discussion: Although the number of organisms trapped was small, observations did show that passive dispersal by winds does occur in areas near land masses. Negative results for observations made in mid-ocean must be reviewed with respect to both the minute volume of air sampled and the probability of trapping air-borne insects at such low elevations. Just how far organisms could be transported by winds in expansive ocean areas remains to be determined. Certainly, conclusions cannot be drawn from data collected during two single voyages, but these areas are frequented by polar ships each year and the opportunity to continue such studies should be exploited.

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AIR-BORNE PSOCOPTERA TRAPPED ON SHIPS AND AIRCRAFT

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Abstract: Psocoptera captured in air traps carried on the Galathea during its world cruise and on ships in the Pacific are reported upon, and their possible origins discussed. The predominant families in these trappings, Ectoposidae and Lachesillidae, are represented by small-sized, often cosmopolitan species. A live male elipsocid captured in an aircraft trap above New Zealand is referred to *Propsocus pulchripennis*; it is, however, aberrant in several venational respects. The significance of this capture is discussed in relation to the known distribution of the species and its possible relationship to the endemic Hawaiian elipsocid genera.