

## AIR-BORNE PSOCOPTERA TRAPPED ON SHIPS AND AIRCRAFT, 2—PACIFIC SHIP TRAPPINGS, 1963-64

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*Abstract:* Data is presented on the trapping of 12 psocopterans at sea in the Bishop Museum air-borne insects trapping study. Some of the trapped specimens represent undescribed species, others suggest trappings far from known distribution of certain species.

Trappings of air-borne psocids on the world cruise of the *Galathea*, and on ships and aircraft in the Pacific were reported upon earlier (Thornton 1964). The present paper deals with a few subsequent Pacific trappings, made as part of the general program of insect trapping conducted by Bishop Museum.

The captures are listed below, and remarks on the captures are made immediately after the trapping data.

### LIPOSCELIDAE

#### *Liposcelis* sp. 1

#58. U. S. N. S. Patrick; 1. VIII. 1964; 34°24'N, 147°46'E; 576 km from Nagasaki Hana, Japan; Wind 2.65°, 10 knots; Nets; E. Holzapfel; 1 specimen.

#### *Liposcelis* sp. 2

#37. U. S. N. S. Gaffey; Philippines to Guam leg; 15.X.1964; 13°08'N, 132°24'E; 640 km from Parece Vela, 480 km from Palau Is.; Wind 020°, 12 knots; Nets on lines above bridge; J. C. Harrell; 1 specimen.

#45. U. S. N. S. Gaffey; Guam to Honolulu leg; 23. X. 1964; 20°53'N, 175°46'W; 1200 km from Necker I., 1120 km from French Frigate Shoal; Wind 080°, 15 knots; Suction trap on bow; Harrell; 3 specimens.

Although the wind at the time of capture #37 indicates a possible origin as Parece Vela, the wind for 16 hours preceding this collection was from the direction of the Palau Is. (140°, 10 knots; 125°, 7 knots). Capture #45 was made in the same general area as those of *Ectopsocopsis cryptomeriae* on 25. IX. 1963 and *Lachesilla* sp. on 23. IX. 1963 (Thornton 1964), and that of the *Lachesilla* capture, #14 (below), which was made about a month later. The wind for 5 days preceding collection #45 was from 065° to 095°, indicating a Leeward Is. origin, and the 2 collections were made in different traps, in different loca-

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tions on the ship, with an 8-days interval; moreover, a homopteran was taken from the suction trap 5 days before the *Liposcelis* specimens. It seems likely therefore that this species of *Liposcelis* has quite a wide Pacific distribution, and that these are genuine air captures.

#### PERIPSOCIDAE

##### *Ectopsocopsis cryptomeriae* (End.)

#31. U.S.N.S. Patrick; 22.VII.1964; 8 km from Hommoku-misaki, Japan; No wind data; Suction trap; Holzapfel; 1♂.

This specimen was in very good condition, the abdomen not shrivelled, and was very probably alive when caught. This is the 3rd specimen of this species to be captured on ships' traps in the Pacific area. The species has also been captured (5 specimens) at heights of from 30 to 90 m in the U. S. A. (Glick 1939 & 1957), and its distribution includes S. China, Taiwan, Japan and the United States E of the Rocky Mountains. The suspected synonymy with the species described by Chapman as *Ectopsocus pumilis* (Banks), (Thornton 1962), has now been confirmed (Mockford, 1965). In view of the lack of records of this species W of the Rocky Mountains where numbers of related species have been collected, its frequency in the aerial plankton is unexpected. The species has been collected on trees, in houses, and in ephemeral habitats (dead leaves, etc.).

##### *Ectopsocus briggsi* McL.

#3. U.S.N.S. Sultan, Honolulu to Yokohama leg; 10.II.1964; 22°51'N, 167°23'W; 280 km from French Frigate Shoal, 312 km from Necker I.; Wind 070°, 10 knots; Nets; Harrell; 1♂, damaged.

This species has been captured at sea previously, close to the coast of California (Thornton 1964). Data indicate that the origin of this specimen was perhaps the Leeward Is. of the Hawaiian Chain. However, the species has not yet been recorded from the Hawaiian Is., or indeed any oceanic islands, nor does it appear to be present in the Oriental Region. Its known range includes Europe, Africa, California, parts of Mexico, and Chile (Mockford 1959). The ship on which the specimen was trapped was in San Francisco 7 days before the capture.

##### *Ectopsocus cinctus* Thornton

#3. B. E. Esmeralda; 21.VI.1963; 11°03'N, 86°31'W; 80 km from San Juan del Sur, Nicaragua; Wind 080°; 6 knots; 3♀♀, 1♂, damaged. Data label states "alive in nets."

This species has been recorded previously only from Hong Kong, whence the ♀ was described (Thornton 1962). However, it is known to occur in Malaya (Miss S. K. Wong, personal communication) and the ♂ is now known in Hong Kong, though yet to be described. In both Hong Kong and Malaya the species is associated with dead and dying vegetation. The data in this case suggest an origin in Central America, giving a highly discontinuous distribution for the species, which is inexplicable in the present state of knowledge. Related species are known from the Pacific, but there is no doubt about the conspecificity of the Hong Kong and air-borne specimens.

## LACHESILLIDAE

*Lachesilla* sp.

#14. U.S.N.S. Gaffey; Honolulu to Guam leg; 28. IX. 1964; 21°15'N, 170°00'W; 320 km from French Frigate Shoal, 368 km from Necker I.; Wind 070°, 20 knots; Nets on lines above bridge; Harrell; 1 ♀, alive.

This specimen is of a species which occurs in Hawaii, 4 ♀♀ of which were previously captured at sea near the Hawaiian island of Niihau (Thornton 1964). The ship's position and wind direction suggest an origin in the Hawaiian Is. This is probably a case of a genuine air capture of a live ♀ some 320 km from the nearest land.

The specimens recorded above appear to have been carried by regular winds. The 3 families represented are those which have been taken furthest from land since trapping began, and all are widespread, possessing cosmopolitan species often found in ephemeral habitats. Species of the Lachesillidae in England are known to have the habit of swarming (McLachlan 1899) "on calm hot days in the autumn", precisely the conditions which are most conducive to aerial drift. It seems likely that these families owe their widespread distribution at least partly to the facility with which their species become air-borne. In none of them is any considerable endemic island complex yet known; island speciation will of course be less likely when immigrants from source areas are of fairly frequent occurrence.

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