Two new fleas of the genus *Peromyscopsylla* (Siphonaptera)

BY

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These two new species both belong in the *hamifer* group as defined by Johnson and Traub (1954), and like other species in this group, they are parasites of voles. Both of these new species occur on Honshu, and are distinct from the third Honshu member of the *hamifer* group which will be described by Nakagawa and Sakaguti.

Peromyscopsylla segregata new species

MALE

Head and prothorax: As in the *hamifer* group (Fig. I, 1). Antenna with at least one long seta on the second segment extending about four-fifths toward the tip of the antennal club. Pronotal comb with 13 teeth per side; the dorsalmost teeth are directed slightly upward.

Thorax and abdomen: Two or three pseudosetae beneath mesonotal collar. Metanotum with three or four apical spinelets per side. Abdominal terga with apical spinelets as follows (per side): I, 4 (or 5); II, 5 (4-6); III, 4 (3-5); IV, 3 (or 4); V, 3 (or 2); and VI, 2 (1-3). Three antepygial setae, the middle seta being about twice the length of the upper and the lower.

Modified segments: Process of the clasper with a few fine setae on the inside of the dorsal margin (Fig. I, 2). Movable finger strongly concave anteriorly and evenly convex on the caudal margin. Eighth sternite (Fig. I, 5) truncate and with ventral margin only slightly undulate. Distal arm of sternite nine (Fig. I, 6) as drawn. There are several distinct features in the

terminal parts of the aedeagus (Fig. I, 4). In *P. segregata* the central thickening of the distolateral lobe is not circular but about three times as high as wide. The lateral lobes in *segregata* are very well developed and extend ventrally; the small spicules extend to near the ventral margin. The lateral sclerite of the inner tube is less expanded than in the subspecies of *P. hamifer* and in *P. ostsibirica longiloba*, but more closely resemble the illustration of *P. bidentata* by Johnson and Traub (*op. cit.*: 59). The crochet is rather long, of a more or less even width throughout, and rounded at the apex.

FEMALE

Head and prothorax essentially as in male. Antenna with one or several setae on second segment extending beyond the apex of the antennal club. Usually five (sometimes six or seven) antepygial setae. Sternite VII with a slender lobe and ventral sinus (Fig. I, 3). Spermatheca and bursa copulatrix as drawn. Anal stylet with one long apical seta and two short ventral setae.

Types: Holotype male and allotype female ex *Microtus montebelli* (Milne-Edwards, 1874), 6 November 1957, Tokusawa, Kamikochi, Nagano-ken, 1500 meters elevation, coll. Kôhei Sakaguti. Paratypes: 12 males and 9 females with same data as types; 5 males and 6 females ex type host, Yokoo (near Kamikochi), Nagano-ken, 8 November 1957; 4 females ex *Microtus montebelli*, 9 November 1957, Yokoo, Nagano-ken; 1 male and 1 female ex *Antelomys smithii*, 10 November 1957, Myojin-ike, Kamikochi, Nagano-ken; 2 females ex *Rattus norvegicus*, 8 & 9 November 1957, Yokoo, Nagano-ken; 1

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Figure I

female ex *Sorex shinto*, 9 November 1957, Yokoo, Nagano-ken; 1 male ex *Apodemus speciosus*, 8 November 1953, Tokusawa, Kamikochi, Nagano-ken; 2 females ex *A. speciosus*, 6 & 9 November 1953, Yokoo, Kamikochi, Nagano-ken; 2 males and 1 female ex *Antelionomys smithii*, 6 November 1953, Kamikochi, Nagano-ken; 1 female ex

A. smithii, 10 November 1953, Tokusawa, Kamikochi, Nagano-ken; 1 female ex *Rattus rattus*, 12 November 1953, Kamikochi, Nagano-ken; 1 male ex *Martes melampus*, 22 November 1953, Kamikochi, Nagano-ken, coll. Fukuta Kobayashi. Above specimens collected by Kôhei Sakaguti unless otherwise noted.

Diagnosis: The morphology of the head indicates a relationship to other members of the *hamifer* group. The movable finger of the male resembles, in a very general way, that of *P. bidentata*, but the aedeagus of *bidentata* and *segregata* are very different. The movable finger differs from that of all other members of the *hamifer* group. Although the chaetotaxy of the eighth sternite of the male is subject to some individual variation (and the various species of the *hamifer* group are really very similar in this respect), the shape of this sclerite seems to vary among the several species; in *segregata* the ventral margin of the eighth sternite is only slightly undulate and in several other species of the *hamifer* group there is a distinct indentation.

Peromyscopsylla udagawai new species

MALE

Head and prothorax essentially as in *segregata*. Antenna with long setae on second segment extending to four-fifths the length of the antennal club. Pronotal comb with 12 teeth per side. Abdominal terga with apical spinelets as follows (per side): I, 5 (3-6); II, 5 (4-8); III, 4 (3-6); IV, 3, or 2; V, 3 (1-3); and VI, 2 (1-4).

Modified segments: Process of clasper (Fig. I, 7) more slender at the base than in *segregata*; and the movable finger deltoid or triangular, rather straight on the anterior margin and almost angular on the posterior margin. Sternite eight (Fig. I, 9) with a rather conspicuous ventral indentation. Sternite nine (Fig. I, 11) as drawn, and with a small, anteriorly directed apical projection. The aedeagus (Fig. I, 10) is similar to that of *segregata* but there are several important differences. In *udagawai* the crochet is long and sharply pointed; the small spicules on the lateral lobes are dorsal. The lateral sclerite of the inner tube are small, as in *segregata*.

FEMALE

Head and body essentially as in male. Antenna with longest seta on second seg-

ment extending to tip of antennal club. Sternite VII (Fig. I, 8) with lobe and ventral sinus usually smaller than in *segregata*.

Types: Holotype male and allotype female ex *Microtus montebelli* (Milne-Edwards, 1874). Mt. Fuji (near Narusawa-mura), 1200 meters elevation, Yamanashi-ken, 22 November 1958, coll. Tatsuo Udagawa and E. W. Jameson, Jr.. Paratypes: 12 males and 11 females with same data as the types; 1 male and 1 female ex *Clethrionomys rufocanus*, Oku-Shibu, Yatsugatake, 2000 meters elevation, Nagano-ken, 9 November 1958, coll. Kôhei Sakaguti and E. W. Jameson, Jr.; 2 males and 1 female with same data, 10 November 1958; 3 males and 6 females with same data, 11 November 1958; 2 males and 1 female ex *Anteliomys smithii*, Meiji Hot Spring, 1600 meters elevation, Yatsugatake, Nagano-ken, 12 November, 1958, coll. Kôhei Sakaguti and E. W. Jameson, Jr.; 1 female, same data, 13 November 1958; 3 females ex *Microtus montebelli*, same data, 12 November 1958; 1 female ex *Anteliomys smithii*, Mt. Fuji (Camp Fuji), Shizuoka-ken, 19 December 1952, coll. T. C. Sicay; 1 female, same data, 19 October 1953.

Diagnosis: *Peromyscopsylla udagawai* is distinct in the triangular shape of the movable finger, the long pointed crochet of the aedeagus, and the shape of the aedeagal sclerites. It is most closely allied to *Peromyscopsylla ostsibirica*, *P. hamifer* and *P. segregata*.

This handsome flea is named for our good friend and colleague, Dr. Tatsuo Udagawa, who has assisted our field work on many occasions and who aided in the collection of the type series from Mt. Fuji.

LITERATURE CITED

Johnson, Phyllis T. and Robert Traub (1954.) Revision of the flea genus *Peromyscopsylla*. Smithsonian Miscellaneous Collections, 123, (4) 68 pp.

LEGEND FOR FIGURE

Figure I. 1. *Peromyscopsylla segregata*, new species, head and prothorax of male; 2. *P. segregata*, clasper and movable finger; 3. *P. segregata*, sternite VII of female; 4. *P. segregata*, aedeagus; 5. *P. segregata*, sternite VIII of male; 6. *P. segregata*, ster-

nite IX of male; 7. *Peromyscopsylla udagawai*, new species, clasper and movable finger; 8. *P. udagawai*, sternite VII, female; 9. *P. udagawai*, sternite VIII, male; 10. *P. udagawai*, aedeagus; and 11. *P. udagawai*, sternite IX, male.

Two new fleas of the genus *Rhadinopsylla* (Siphonaptera)

BY

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These two new species bring to four the number of kinds of this genus that are parasites of voles in Japan. *Rhadinopsylla attenuata* Jameson and Sakaguti occurs on the red-backed vole, *Antelionys smithii* at lower elevations on Honshu and Shikoku. *Rhadinopsylla ohnoi* Nakagawa occurs on voles at intermediate elevations on Honshu. One of the new species named below parasitizes *A. smithii* and *Microtus montebelli* in Kyushu, and the other was collected from *Clethrionomys rufocanus* at high elevations in Nagano-ken and also in Hokkaido.

Rhadinopsylla (*Actenophthalmus*)
alphabetica new species

MALE

Head and prothorax: Frons with a rather acute angle above the level of the fifth genal tooth. Genal teeth five; the last (uppermost) is the widest and reaches about half-way to the tip of the fourth tooth. All genal teeth rather straight and bluntly ended. Labial palpus five-segmented, extending about four-fifths to the tip of coxa I. Pronotal comb of twenty teeth. Pronotum with a single vertical row of alter-

nating long and short setae. Chaetotaxy as drawn (Fig. I, 1).

Meso- and metathorax: Mesonotum with about three rows of setae (the anterior-most row is staggered). Vertical sclerotized ridge of metanotum extending ventrally to level of second (from top) long seta (Fig. I, 3). Metanotum with one apical spinelet per side. Pale suture of metanotum relatively long. Metepimeron relatively long and produced.

Abdomen: Abdominal terga with apical spinelets as follows (number of spinelets per side): I, 2 or 3; II, 3 (rarely 2); III, 2 or 3; IV, 2 (1-3); V, 1 or 2; and VI, 1 or 2. There is a single long seta below the spiracle on tergum VII.

Modified segments: Process of clasper sculptured as drawn (Fig. I, 2); fovea at the mid-level near the edge of the vertical margin. Movable finger gradually narrowed apically. Acetabular seta low and short. Sternite VIII (Fig. II, 6) with a lobe and five long setae. Sternite IX with ventral arm slightly expanded and rounded apically; with setae as drawn.

FEMALE

Characters of head and thorax essentially as in male. From the type locality we have only a single female (the allotype); in this specimen there are six teeth in the genal comb, but in the paratype females

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