

A NEW SPECIES OF *LISTROPHORUS* FROM *MUS MUSCULUS*
IN HAWAII (ASTIGMATA : LISTROPHORIDAE)

BY

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Abstract.

Listrophorus musculus n. sp. is described from *Mus musculus* in Hawaii.

The new species of *Listrophorus* described herein has been collected frequently from *Mus musculus* in Hawaii and is the first species of this genus to be specifically identified in the state.

Measurements are the mean of five specimens unless noted otherwise ; those for the holotype are in parentheses. The holotype and paratypes are deposited in the Bernice P. Bishop Museum, Honolulu, Hawaii ; paratypes in the Natal Museum, Pietermaritzburg, South Africa ; United States National Museum, Washington, D. C. ; Institute of Acarology, Wooster, Ohio ; Department of Entomology, University of Hawaii, Honolulu and Department of Entomology, Hawaiian Sugar Planters Association, Honolulu.

***Listrophorus museulus* n. sp. (Figs. 1-2).**

Male (Figs. 1 B-D, 2 E, G).

Body : elongated, laterally compressed, narrowing anteriorly and posteriorly ; gnathosoma and idiosoma including caudal hyaline membrane 414 (400) μ long, maximum width at posterolateral margin of propodosomal plate 100 (106) μ , closely set annulations between propodosomal and opisthosomal plates ; legs well developed, I longer and thinner than II, III and IV.

Dorsum : with well developed, evenly punctate head, propodosomal and opisthosomal plates ; head plate without setae, extending anteriorly over mouthparts,

1. This investigation was supported in part by U. S. Public Health Service Research Grant AI 01723 from the National Institutes of Allergy and Infectious Disease.

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anterior margin bisinuate, anterolateral corners rounded, in profile lateral margins concave, posterior margin convex and with posteromedian hyaline membranous area, posterolateral margins emarginated around legs I and joined to propodosomal plate; propodosomal plate with 3 pairs of simple setae, 1 pair on anterodorsal submargin, 1 pair on anterolateral margin, 1 pair bordering coxae II, median area of plate with several short, wavy ridge-like areas, becoming scale-like in appearance

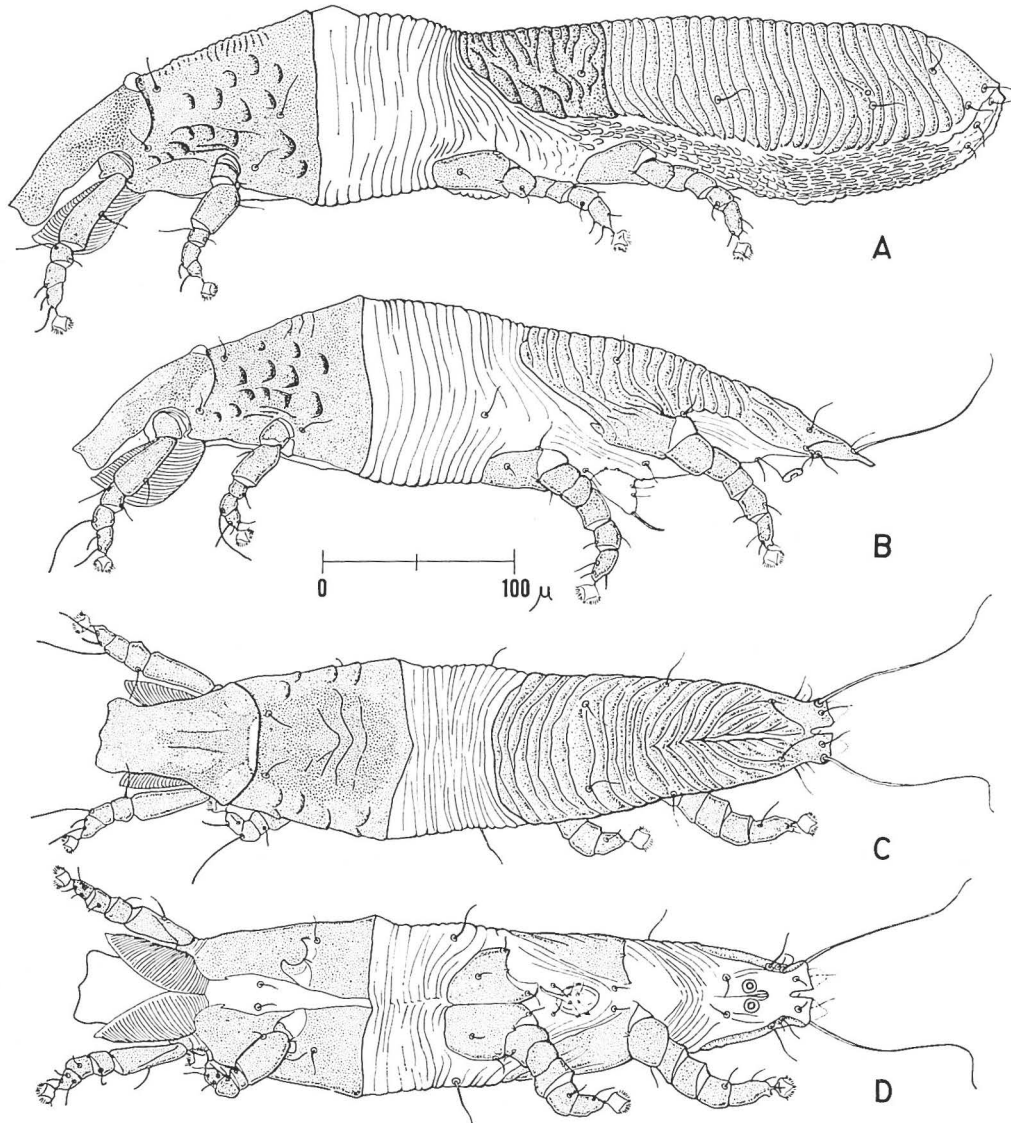


FIG. 1, A-D. — *Listrophorus musculus* n. sp.

A : Female paratype, lateral view ; B : Male paratype, lateral view ;
C : Male, dorsal view ; D : Male, ventral view.

laterally; opisthosomal plate extending laterally and slightly ventrally, with 8 pairs of simple setae, 1 pair anterodorsal over coxae IV, 1 pair on lateral margin above trochanters IV, 1 pair posterodorsal over anal suckers, 3 pairs in row on posteroventral margin, 2 pairs on caudal lobes, outer pair longest on body, 100 (105) μ long.

Venter: propodosomal plate anteromedian margins with barb-shaped extensions, extending posteriorly almost one-half distance between coxae II and III, surrounding coxae I and II and converging posteromedially, 1 pair of setae between margins of plate and anteromedian to coxae II; opisthosomal plate joins lateral edge of coxae IV; median, transparent annulated area between propodosomal and opisthosomal plates with 1 pair of setae anterolateral to coxae III, genital area between coxae IV slightly raised, with 2 pairs of setae and small suckers on rim of area, 1 pair of setae anterior and posterior to area, penis stylet-like; a pair of slightly raised anal suckers on posterior portion of opisthosoma, 1 pair of setae anterior to suckers, anal pore between and extending slightly posterior to anal suckers, posterior margin with notch 15 (15) μ long, flanked by 1 pair of short setae, caudal margin on each side of notch with short hyaline membrane.

Legs: femora I and II subequal, more elongate than III and IV, inner margins of coxae III contiguous, chaetotaxy of legs I and II, 0, 0, 1, 2, 2, 5, III, 3, 1, 0, 0, 2, 3 and IV, 0, 0, 0, 0, 2, 5; tibia I and tibia-tarsus II with 1 long sensory seta, tarsus I with 1 long and 1 short sensory seta, sensory seta on tibiae I and II longer than length of tibia-tarsus, tarsus III with lateral claw-like extension, tarsus IV with 2 small terminal setae on tubercles.

Female (Figs. 1 A, 2 A-C).

Body: gnathosoma and idiosoma 502 μ long, maximum width (2 specimens) 97 μ , rounded posteriorly, lacking anal suckers, and caudal notch and hyaline membrane, other features similar to male.

Dorsum: head and propodosomal plate similar to male except propodosomal plate with additional pair of posterolateral setae dorsal to setae bordering coxae II; opisthosomal plate with 6 pairs of simple lateral setae, 4 pairs lateral, 2 pairs posterolateral, a pair of pores above 3rd pair, anterior one-fourth more strongly sclerotized than rest, caudal portion only faintly sclerotized, not extending ventrally or joining coxae IV as in male.

Venter: similar to male except pair of setae on annulated area between propodosomal and opisthosomal plates absent, genital area between coxae III, with 2 pairs of suckers and 1 pair of setae on lateral margin, without pair of setae anterior and posterior to pore, 1 pair of contiguous setae behind coxae IV; opisthosoma with elongate tubercles in longitudinal rows, anal pore terminal, flanked by 3 pairs of setae, bursa copulatrix and spermatheca as illustrated, located dorso-caudally.

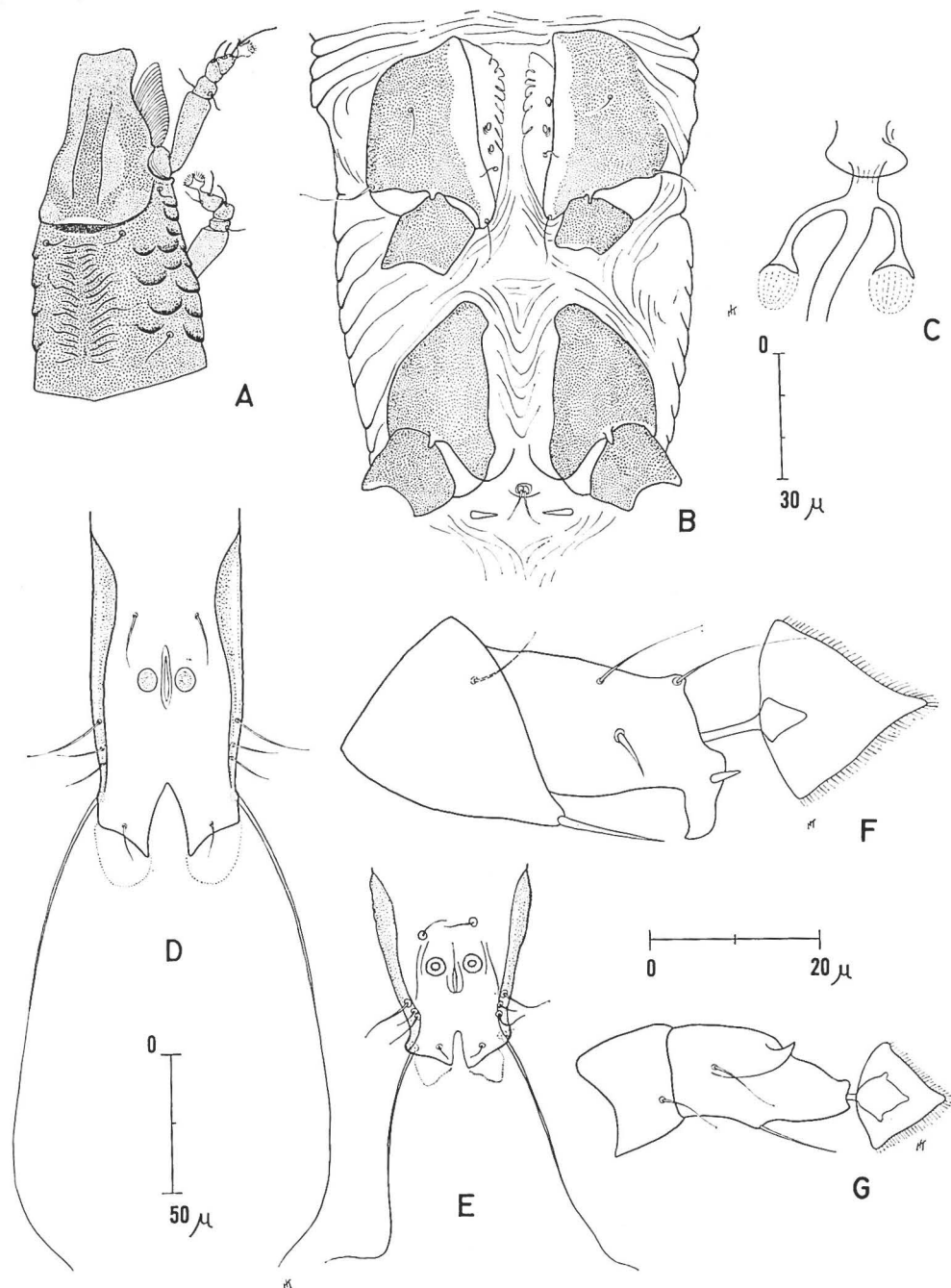


FIG. 2, A, B, C, E, G. — *Listrophorus musculus* n. sp.

A : Female paratype, dorsolateral view of head and propodosomal plates ; B : Female paratype, ventral view of genital area ; C : Female paratype, bursa copulatrix and spermatheca ; E : Male, ventral view of posterior of opisthosoma ; G : Male, lateral view of tibia-tarsus III.

D, F. — *Listrophorus lophuromys* Radford.

D : Male, ventral view of posterior of opisthosoma ; F : Male, lateral view of tibia-tarsus III.

Legs : as in male except tarsus III unmodified and with 5 setae, sensory seta on tibiae I and II shorter than length of tibia-tarsus, terminal setae on tarsus IV not on tubercles.

Subadult female nymph.

Body : similar to adult female, gnathosoma and idiosoma 414 μ long.

Dorsum : head plate as in adult female, propodosomal plate represented by narrow fragment enclosing and extending between anterodorsal and anterolateral pair of setae, opisthosomal plate absent, hysterosoma with annulations, setae as in adult female except pair of posterolateral propodosomal setae and pair of pores above 3rd pair of lateral opisthosomal setae absent, pair of lateral setae between propodosomal and opisthosomal plates in male present.

Venter : similar to adult female except genital pore between coxae IV.

Legs : similar to adult female, chaetotaxy as in adult female.

Subadult male (?) nymph.

Four specimens. Body similar to adult female, gnathosoma and idiosoma 346 μ long. Dorsum with only head plate, remainder of body as in subadult female nymph. Venter similar to subadult female nymph except genital pore with only 1 pair of suckers and setae. Legs similar to adult female but all setae not easily seen, tarsi I, II, III and IV with 4 setae, tarsus I lacking long anterior sensory seta present in adults and subadult female nymph.

Egg. Three specimens in females, 221 μ long, 45 μ wide.

Types. Holotype : male (Bishop 6924). Hawaii, Hawaii Co., Kukuihaele, 225 m, *Mus musculus*, 12.X.1961, N. WILSON. Paratypes : 4 males, 9 females, 8 nymphs, Hawaii, Hawaii Co., Honokaa, 300 m, *Mus musculus*, 20.XI.1922, C. E. PEMBERTON. The preceding record is a specific identification of the 2(sic) specimens reported by JOYCE (1959) ; 2 males, 11 females, 1 nymph, Hawaii, Honolulu Co., Honolulu, 10 m, *Mus musculus*, 20.IX.1959, F. H. HARAMOTO ; 7 males, 6 females, 3 nymphs, with same data as holotype ; 1 male, 2 females, Hawaii, Hawaii Co., Honokaa, 300 m, *Mus musculus*, 13.X.1961, N. WILSON ; 3 males, 10 females, 1 nymph, Hawaii, Honolulu Co., Manana Island, 12 m, *Mus musculus*, 1.III.1964, N. WILSON.

The head and propodosomal plates were sometimes separated by a faint suture instead of joined on their lateroventral margins. In most females, the posterior three-fourths of the opisthosomal plate was indistinct, with punctations the only clearly distinguishing feature.

There were two immature stages distinguished among the material. Both were similar to the adult female but with differences in the number of plates, leg chaetotaxy and genital area. One of these stages was the subadult female, determined on the basis of a specimen containing an adult female. The other stage

may have been the subadult male although conclusive evidence is lacking at this time. DOMROW (1958) and LAWRENCE (1958) have described similar immature stages in *Listrophorides*.

The new species is similar to *L. lophuromys* Radford described from *Lophuromys sikapusi* from Sierra Leone and reported here for the first time from *L. flavopunctatus* from Uganda. Both species have similar shaped dorsal plates, and the caudal margin divided, with a hyaline membrane and identical chaetotaxy. The size is smaller, opisthosomal area broader and caudal notch shallower in the male of *L. musculus* (Figs. 2 D, E). The male of *L. lophuromys* possesses a distal, stout spine-like seta on tibia III and a terminal hook-like extension with short spine on tarsus III. Both of these characters are absent in *L. musculus* which has instead a claw-like lateral extension of tarsus III (Figs. 2 F, G).

It is surprising that an animal as ubiquitous as *Mus musculus* and probably examined as frequently as any rodent for ectoparasites would still have a new species of fur mite. This is especially so in view of the fact that *Myobia musculi* (Schrank) 1781 and *Myocoptes musculinus* (Koch) 1844, the two oldest described species of fur mites, are found commonly on *Mus musculus* throughout the world. In Hawaii, both the above mites and *L. musculus* have been collected on the same individual mouse.

The senior author has examined about 75 *Mus musculus* and *Mus* sp. from the midwestern United States, New Guinea and Hong Kong without finding *L. musculus*. MCDANIEL (1965) has pointed out that species of this genus are not necessarily found throughout the range of their host, citing as an example *L. bakeri* Radford and *L. klebergi* McDaniel found on *Sigmodon hispidus texanus* in different parts of its range. *L. musculus* would appear to have this sort of distribution except that an alternate species of *Listrophorus* has not been found on *Mus* in other parts of its range.

This type of distribution is also found in the Anoplura of *Mus* and is discussed in detail by JOHNSON (1960). She points out the many problems involved in trying to interpret the geographical distribution and host relationships of lice of *Mus* and their bearing on the question of the place of origin of *M. musculus*.

We feel it is premature to conclude that *L. musculus* is restricted to Hawaii even though present evidence indicates this. Until more information is available on the distribution and host relationships of the species of *Listrophorus*, it would be unwise to speculate as to the origin of *L. musculus* (or *M. musculus*) in Hawaii.

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