The genus Chaetopsylla Kohaut, 1903 is holarctic in distribution, with two previously described North American representatives, Chaetopsylla lotoris (Stewart, 1926) from the eastern and central United States, and Chaetopsylla floridensis (I. Fox, 1939) known only from the type specimens collected in Gainesville, Florida. A new western species is described below, considerably broadening the known range of this genus in North America.

Diagnoses, redescriptions (emphasizing characters differing from the new species) and figures of C. floridensis and C. lotoris are included.

Chaetopsylla stewardi Johnson, new species
(Figs. 1–4, 7, 11, 17, 23)

Male separable from Chaetopsylla lotoris (Stewart) in that the metepimere (fig. 3, MTM) possesses a median (first) row of four bristles, not one or two (fig. 15); distinguished from both C. lotoris and C. floridensis (I. Fox) in that the penis rods form a complete circle (fig. 4, P.R.) not merely curved (fig. 5, P.R.); sclerotized inner tube (fig. 7, S.I.T.) apically bent ventrad, not straight (fig. 6, S.I.T. (floridensis) or apically inclined dorsad (fig. 8, S.I.T. (lotoris)). Female separable from lotoris in that posterior margin of seventh sternum lacks a sinus (fig. 23, 7S.); not with deep rounded concavity (figs. 21 and 24). Female differing from C. floridensis in lacking bristles below spiracles of abdominal terga four to seven.

Head (fig. 1): A vertical row of three or four small bristles anterior to ocular row which consists of four long bristles. Lacking bristle on genal process just below eye which is present in certain other species of genus. The two postantennal rows (excluding complete apical row of bristles) of three and four (five in female) bristles respectively. Five-segmented labial palpi extending about two-thirds length of procoxa; in male length of ultimate segment about that of third and fourth segments combined; in female ulti-
mate segment somewhat longer than third and fourth combined. Thorax (fig. 3): Pronotum (fig. 1, PRN.) with one row of bristles; male dorsally with one or two large, and several smaller bristles anterior to row; female with but one large bristle in this area. Prosternosome with ventral margin quite sharply rounded medially; proepimeral flange (fig. 1, E.F.) distinct, small, triangular. Metepimere (MTM) with anterior row of bristles missing; median row of four bristles (four to six in female); posterior row with four or five (five or six in female). Metasternal furca (FU-II) with short, acute posterior arm. Legs: Procoxa (fig. 1) with fifteen or more obviously lateral bristles (in figure, procoxa is turned so that the “mesal” surface is actually the normal lateral surface). All tibiae with six dorsal notches, each with two bristles; laterally metatibia with subdorsal row of 11 bristles in male, 14 in female, plus a few apicoventral bristles. Metafemur with external horizontal row of 18–19 irregularly spaced bristles. Abdomen: Male with anterior of the two tergal rows of bristles reduced on terga four to seven, broadly interrupted laterally, dorsally this row with one or two bristles and with one or two bristles directly above spiracle, at times one below spiracle (one of bristles of posterior row may also be below spiracle). Female lacking bristles below spiracles of terga four to seven; anterior rows of but one or two bristles placed directly above spiracle, posterior rows ending well above level of spiracle on terga four to seven. Female intersegmental membranes not as obvious as in C. floridensis and lateral tergal margin more nearly vertical (compare figs. 23 (stewarti) and 22 (floridensis).

Modified segments, male (fig. 2): Eighth tergum (8T.) with two scattered rows of small bristles above and anterior to spiracle, consisting in unique male of nine or ten bristles in all; below and posterior to spiracle with three bristles, the dorsal one small, others rather large. Eighth sternum (8S.) with three ventral bristles on a side. Immovable process of clasper (P. and fig. 17) somewhat higher than broad; with approximately 10 bristles (other than marginals) scattered over lateral surface from apex to lowest level of insertion of movable finger; below insertion of finger with mesal patch of several light thin bristles. Movable finger (F. and fig. 17) almost straight, inserted medially on process, gradually tapering to sharply rounded apex which does not extend beyond margin of process (in normal position); finger five times as long as broad basally; with a few minute bristles on posterior margin. Proximal arm of ninth sternum (P.A.9) narrowed apically, joined to manubrium of process; distal arm (D.A.9) very short, subtriangular, with a few small apical and subapical bristles. Aedeagal apodeme (fig. 4, AE.A.) long and narrow, more than five times as long as broad; apex acute. Crescent sclerite (fig. 7, C.S.) straight and longer than dorsal sclerite of apodemal strut (D.S.). Sclerotized inner tube (S.I.T.) about five times as long as broad, apically bent ventrad, gradually narrowing from base to apex, armature (A.I.T.) diffuse. Median dorsal lobe (M.D.L.) with dorsal margin merged with dorsal margin of distolateral lobes, apicoventrally merely a diffuse spiculated semimembranous structure. Distolateral lobes (D.L.L.) with apicodorsal angle of about 90°; posteroapical margin unevenly convex; ventroapically sharply rounded. Lateral lobes (L.L.) angulate but with angles rounded; extending ventrally almost to lower level of crochets and
pouch wall (P.W.). Crochets (CR.) arising ventrad to inner tube and about at midportion of tube, not extending to apex of tube, same width throughout; apically rounded (actually, apparently flexed dorsally so that the apex points cephalad); entire margin much more heavily sclerotized than remainder of crochet. Pouch wall (P.W.) insensibly joined with base of crochets. Penis rods (fig. 4, P.R.) long and forming a complete circle.¹

Modified segments, female (fig. 23): Posterior margin of seventh sternum (7.S.) lacking sinus, though ventrolaterally the margin is somewhat concave. Eighth tergum (8T.) with group of about seven bristles above spiracle; row of large bristles extending from just below spiracle to venter of segment, interrupted lateromedially. Spermatheca (SP. and fig. 11) with oval body, tail almost two times as long as body and about half as broad; curved back over body. Bursa copulatrix (B.C.) short, sinuate, very lightly sclerotized.

Holotype male, allotype female ex weasel, SARDINE CAÑON, CACHE COUNTY, UTAH, 28 December 1937, Deming collector. Types deposited in the collections of the United States National Museum.

This species is named for Dr. M. A. Stewart of the University of California, Berkeley, who described the first American representative of the genus.

**CHAETOPSyllA lotoris (Stewart)
(Figs. 5, 8, 12–15, 18, 21, 24)**

*Trichopsylla lotoris* Stewart, 1926. Insecutor Inscitiae Menstruus XIV(7–9): 122, one fig.


*Trichopsylla lotoris*, I. Fox, 1940, Fleas Eastern U. S.: 33, pl. VIII, figs. 35–37; pl. IX, fig. 42.


Generally with fewer bristles than the other two North American species. Female separable from *C. stewarti* sp. nov. and *C. floridensis* (I. Fox, 1939) in possessing a large rounded ventral sinus in posterior margin of seventh sternum (figs. 21 and 24); not lacking such a sinus (figs. 23 and 22, 7S.); further distinct from *C. floridensis* in lacking bristles below the spiracles on terga five to seven (compare figs. 18 (lotoris) and 20 (floridensis). Male differing from *stewarti* sp. nov. in that the penis rods do not form a complete circle (figs. 5 (lotoris) and 4 (stewarti), P.R.).

¹ The homologies of the median dorsal lobe, distolateral lobes and the crochets are more clearly seen in *Chaetopsylla homoeus* ss.p. (from Asia and Europe). In this species the median dorsal lobe (fig. 9, M.D.L.) is mesal and more obviously a structure separate from the distolateral lobes (D.L.L.). The crochets (CR.), rather than being flexed upon themselves, are directed caudad in the more typical manner.
the sclerotized inner tube (fig. 8, S.I.T.) apically upturned, not bent ventrad (fig. 7, S.I.T.); and from floridensis in that the median row on the metepimere contains only one or two bristles (fig. 15), not four to six (fig. 16); male and female separable from floridensis in that the procoxa lacks lateral bristles, not with 30 or more such bristles.

**Head:** Preocular row of four short bristles in male, three or four in female; ocular row of four longer, stout bristles. Labial palpi extending about two-thirds length of procoxa in both male and female, apical segment obviously longer than segments two to four combined in male, ultimate segment only somewhat longer than segments three and four combined in female. Postantennal area with first of the two rows containing three or four (usually three) bristles in both sexes; second row of three bristles in all specimens examined. **Thorax:** Metepimere (fig. 15) usually with two rows of bristles; an occasional specimen with a single bristle anterior to the rows; ranges as follows: anterior: 0-1; median: 1–4; posterior: 5–8. The holotype female has 1(0); 2;8(7) bristles on metepimere; cotype male with 0;1;6 bristles. **Legs:** procoxa with all bristles marginal or submarginal. **Abdomen:** Terga 5–7 (usually 4–7) of female lacking bristles below spiracles (fig. 18) anterior of the two rows reduced, consisting of 1–3 bristles on a side placed just above the spiracle. In female, posterior margin of terga not markedly oblique, and intersegmental membranes mostly covered by the terga.

**Modified segments, male:** Eighth tergum with single row of seven bristles above spiracle. Immovable process of clasper (fig. 14 P.) obviously higher than broad, apex sharply rounded in some specimens (including cotype); lateral bristles sparse and confined to area above insertion of movable finger. Movable finger (fig. 14, F.) curved, tapering to sharply rounded apex, about four times as long as broad; inserted above middle of immovable process. Aedeagal apodeme (fig. 5, AE.A.) three times as long as broad, apically rounded. Crescent sclerite (fig. 8, C.S.) straight, somewhat longer than dorsal sclerite of apodomal strut (D.S.). Sclerotized inner tube (S.I.T.) about six and one-half times as long as broad, straight, gradually narrowing apically and with apex upturned; its armature (A.I.T.) vaguely indicated as a large diffuse lateral sclerite overlying most of apical half of tube. Median dorsal lobe (M.D.L.) extending well above and beyond distolateral lobes (D.L.L.); with convex, well-sclerotized dorsal margin; ventral margin pale, rounded apically. Distolateral lobes with heavily sclerotized convex posterior margin, acute ventrally; anterior margin straight, apex of endchamber thus with triangular notch at juncture of D.L.L. and M.D.L. Lateral lobes (L.L.) small, ending ventrally at level of dorsal margin of crochets. Crochets (CR.) about as broad as long; marginally sclerotized, apically rounded (as in C. steivarti sp. nov. they are apparently directed cephalad). Penis rods (fig. 5, P.R.) extending past apex of apodeme but uncoiled.

**Modified segments, female:** Seventh sternum (figs. 21 and 24) with posterior margin deeply excised ventrolaterally. Spermatheca (fig. 12) indistinguishable from stewartii sp. nov. In holotype, spermatheca is distorted


*Remarks.*—Fox (1940) records this flea from Clayton County, Iowa; Lucerne-in-Maine, Maine; and Pisgah National Forest, North Carolina. All records were from raccoons. Fuller (1943) gives additional records of Findleyville, Pennsylvania ex *Procyon lotor*, and East Greenville, New York ex gray fox. Fuller remarks that *Procyon* appears to be the normal host, but that the collections are too sparse to present an adequate sample.

**CHAETOPSYLLA FLORIDENSIS** (I. Fox)

(Figs 6, 10, 16, 19, 20, 22)


Generally with more bristles than the other two North American species. Female separable from *Chaetopsylla stewarti* sp. nov. and *C. lotoris* (Stewart, 1926) by having at least two bristles below spiracles on terga 5-7 (fig. 20), not completely lacking bristles in this area (fig. 18); and with partially double row of bristles on eighth tergum (Fig. 22, 8T.) not with but one row (fig. 23, 8T). Male differing from *C. lotoris* in that median row on metepimere contains 4–6 bristles (fig. 16), not 1–2 (fig. 15); and by the configuration of the distolateral lobes of the aedeagus (compare figs. 6 (*floridensis*) and 8 (*lotoris*), DL.L.); separable from *C. stewarti* sp. nov. in that the penis rods do not form a complete circle and the movable finger (fig. 19, F.) obviously set nearer posterior margin of immovable process of clasper (*P.*), not median in position on process (fig. 17, F. and *P.*).

*Head:* Preocular row of 4–6 short bristles; ocular row of four long, stout bristles. Labial palpi extending approximately to apex of procoxa in female; the apical segment almost as long as segments 2–4 combined; in
male, labial palpi about two-thirds length of procoxa, apical segment about equal in length to segments three and four combined. In both sexes the anterior two postantennal rows consist of 2–4 and 4–5 bristles respectively. Thorax: Metepimere (fig. 16) with two or three rows of bristles (if three rows, the first is scattered and merged with the median or second row); the posterior row consisting of 5–6 bristles; the median row of 4–7 bristles except when anterior row is present, in which case there are 8 bristles in the two rows together (in the two cotype females examined). Legs: Procoxa with 30 or more lateral bristles, excluding marginal bristles. Metatibia with 11–19 irregularly placed bristles on dorsal half of lateral surface. Metafemur with external horizontal row of 14–15 bristles in female; 11–14 in male. Abdomen: Female with tergal and sternal sclerites distinctly separated laterally by

EXPLANATION OF FIGURES

Fig. 1. Chaetopsylla stewardi Johnson: head and prothorax, holotype. Fig. 2. Ibid: modified abdominal segments, holotype.
spiculated intersegmental membranes, the terga strongly produced ventro-
caudally (fig. 20). Terga 2–7 in female with at least two bristles of anterior 
row below spiracle (fig. 20); anterior row on terga 1–3 complete dorsally.
Fig. 6. Chaetopsylla floridensis (I. Fox): apex of aedeagus, cotype. Fig. 7. C. stewardi Johnson: apex of aedeagus, holotype. Fig. 8. C. lotoris (Stewart): apex of aedeagus, cotype. Fig. 9. C. homoeus ssp.: apex of aedeagus. Fig. 10. C. floridensis: spermatheca, cotype. Fig. 11. C. stewardi Johnson: spermatheca, allotype. Fig. 12. C. lotoris: spermatheca. Fig. 13. Ibid: spermatheca, holotype.
EXPLANATION OF FIGURES

Fig. 14. Chaetopsylla lotoris (Stewart): clasper, cotype. Fig. 15. Ibid: posterior portion of metepimere, cotype. Fig. 16. C. floridensis (I. Fox): posterior portion of metepimere, cotype male. Fig. 17. C. stewarti Johnson: clasper, holotype. Fig. 18. C. lotoris: sixth abdominal tergum, holotype. Fig. 19. C. floridensis: clasper, cotype. Fig. 20. Ibid: sixth abdominal tergum, cotype female.
EXPLANATION OF FIGURES

Fig. 21. Chaetopsylla lotoris (Stewart): posterior margin of seventh sternum, holotype. Fig. 22. C. floridensis (I. Fox): modified abdominal segments, cotype female. Fig. 23. C. stewarti Johnson: modified abdominal segments, allotype. Fig. 24. C. lotoris: posterior margin of seventh sternum, variations.

*Modified segments, male:* Immovable process of clasper (fig. 19, P.) almost as broad as high; movable finger (F.) inserted on process about halfway between most dorsal and most ventral points, and much nearer posterior than anterior margin, measured from insertion on P., finger about three times as long as broad, not strongly curved. Eighth and ninth sterna non-diagnostic. Aedeagal apodeme three times as long as broad anteriorly, apex blunt (as
in *C. lotoris*). Crescent sclerite (fig. 6, C.S.) gently convex, about as long as dorsal margin of dorsal sclerite of apodemal strut (D.S.). Sclerotized inner tube (S.I.T.) about five and one-half times as long as broad; straight, gradually narrowing to apex; its armature (A.I.T.) consisting of one ovate diffuse sclerite lying over middle of tube, and two large dark sclerites apically. Distolateral lobes (D.L.L.) joined insensibly with median dorsal lobe (M.D.L.); apicoventrally these lobes acute, somewhat hooked; dorsally almost angled at juncture with M.D.L. Median dorsal lobe extending ventrally between distolateral lobes as heavily spiculated, diffuse structure. Lateral lobes (L.L.) almost rectangular. Crochets of same general structure as in *C. lotoris* and *C. stewarti* sp. nov. Penis rods extending well beyond apex of apodeme but not coiled.

Modified segments, female (fig. 22): Posterior margin of seventh sternum (7S.) concave, though not deeply excised; its exact contour impossible to ascertain since in both specimens it has been somewhat broken or otherwise disturbed. Eighth tergum (8T.) with lateral bristles in a double row from level of spiracle to level of lower margin of ventral anal lobe (V.A.L.). Eighth sternum (8S.) almost entirely semimembranous and spiculated, save for ventral margin where several large bristles are inserted. Spermatheca (SP. and fig. 10) with width of tail much less than half that of body, and only one and one-half times as long as body. Bursa copulatrix (B.C.) well sclerotized, slightly sinuate.

**Cotypes:** two males, two females ex "garden truck leaf mold", Gainesville, Florida, 30 September 1935. Deposited in United States National Museum.

**Specimens examined.**—Two male and two female cotypes.

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