

# Taxonomy of the *Strigiphilus cursitans* Group (Ischnocera: Philopteridae), Parasites of Owls (Strigiformes)

DALE H. CLAYTON<sup>1,2</sup> AND ROGER D. PRICE<sup>1</sup>

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**ABSTRACT** The *Strigiphilus cursitans* group of chewing lice is analyzed, including a thorough review of group characters, reconsideration of the group's composition, redescription of its constituent taxa, and a key for identification of those taxa. Twenty-one species are redescribed, one of which is divided into three subspecies. Thirteen synonymies are given, seven of which are new. A neotype is designated for *S. sylvii* (Packard).

THREE GENERA of chewing lice (Ischnocera) parasitize owls of the world: *Colpocephalum* Nitzsch, *Kurodata* Uchida, and *Strigiphilus* Mjöberg. Of these, only the members of *Strigiphilus* are restricted to the owls, being found on no other avian order. Clay (1966) recognized 29 species of *Strigiphilus* and subdivided them into nine species groups, for which she provided a useful key. In a subsequent paper, Clay (1977) redefined and commented on the largest of these species groups, the "cursitans" group, named for its oldest member, *Strigiphilus cursitans* (Nitzsch). No thorough analysis of the composition and characters of the *cursitans* group, such as that provided by Clay (1974) for the smaller *macrogenitalis* group, has been published. This paper provides such an analysis, including a thorough review of the characters of the *cursitans* group, reconsideration of the group's composition, redescription of its constituent species, and a key for identification of those species. Because the members of the *cursitans* species group represent roughly one-half of the known species of the genus, this study should substantially improve our understanding of *Strigiphilus* and help to fill a major gap summarized by Ledger (1970): "The real problem in *Strigiphilus* is that we do not yet know which characters indicate relationships."

Material examined in this study consisted of approximately 1,050 slide-mounted specimens borrowed from several museum collections and additional unmounted dried specimens collected from museum skins of owls. Specimen listings preceded by \* in the *Material Examined* sections include those that were examined in detail (i.e., specimens from which quantitative data were collected or of which illustrations were made). Dimensions, setal counts, and other morphological features considered in this study are illustrated in Fig. 3, which serves as a key to the abbreviations used in the *Dimensions* sections. All measurements are in millimeters. Sample sizes for each measurement are

provided; when sample sizes fluctuate for different measurements in a single taxon, it is usually because some characters were not visible in all specimens examined. Host names are according to Peters (1940) and host species ranges are from Clark et al. (1978). Host subspecies ranges, when provided, are from Peters (1940).

We have divided the 23 taxa redescribed in this paper into the "cursitans," "ceblebrachys," and "elutus" subgroups. These subgroups contain 13, 3, and 7 taxa, respectively. The nominate species of each subgroup has been completely redescribed and other species of the subgroup have been compared to this description. Thus, each species description includes only those data separating that taxon from the nominate species of the subgroup. Taxa comprising a subgroup are those described immediately after the nominate species description. A list of the hosts and their associated *cursitans* group taxa is given as *Appendix A*.

Several types of illustrations were prepared for this paper as follows. Figures 1 through 3 were drawn freehand from slide-mounted specimens viewed through a phase-contrast compound microscope. Figures 4 through 9 were taken with a scanning electron microscope using specimens recently collected from museum skins. Figures 71 through 78 were made from slide-mounted specimens using a phase-contrast compound microscope coupled to a 35-mm SLR camera. Most of Fig. 10 through 70 are composite diagrams prepared by combining direct tracings of several slide-mounted specimens into a single drawing. For example, we prepared Fig. 10 by first tracing the head outlines of five male specimens of *S. bramae* (Qadri). These tracings were made to the same scale from enlarged images cast by an overhead projector. Subsequently, the tracings were overlaid and aligned on a light table, permitting us to draw a composite diagram of the extreme outer and inner head margins of the five tracings viewed collectively. The region between the margins, indicated by stippling in Fig. 10 and other composite diagrams, is taken to represent intraspecific variation. In most cases herein, increasing the number of specimens used to prepare a composite diagram

<sup>1</sup> Dept. of Entomology, Univ. of Minnesota, St. Paul, 55108.

<sup>2</sup> Present address: Committee on Evolutionary Biology, Univ. of Chicago, Chicago, IL 60637.

increased the width of the stippled region of the diagram. This technique is not a perfect one; overlapping, aligning, and redrawing all leave room for subjectivity. Nevertheless, composite diagrams provide a good approximation of intraspecific variation in size, which is far more than any single tracing can provide.

The number of specimens used in the preparation of diagrams was often limited by the small number of good quality specimens available for study. Figures 26, 30, 47, 51, 69, and 70 are single specimen tracings because we had only one male specimen of each of these taxa. Figures 20 and 41 are of female *S. chilensis* Carriker because no male specimens of this species have been collected to date. Special circumstances regarding Fig. 60 are discussed in the remarks section of the *S. acadicus* Emerson and Price description. Tracings for Fig. 10 through 51 were made from images cast by an overhead projector; tracings for Fig. 52 through 70 were prepared using a phase-contrast microscope with a camera lucida attachment.

The small number and poor quality of specimens for some taxa made it difficult to evaluate quantitative characters, especially in the case of *elutus* subgroup species. Hence, in the species descriptions that follow, we have used quantitative data to separate species only in those cases where ranges overlap slightly or fail to overlap. A thorough statistical analysis of characters for the *cursitans* group must await the collection of more specimens; use of the term "significant" herein does not imply statistical significance.

In the species redescrptions that follow, we have avoided certain morphological characters used by other authors to delineate species; these characters were deemed too variable to use. For example, though the conia are highly visible (Fig. 3 and 9) and easily measured, they do not facilitate reliable species separation, contrary to the opinion of Carriker (1966). "Variable" in this case need not imply intraspecific variation; rather, variability may be attributed to distortion during the preparation of specimens. Clay has repeatedly warned against the use in taxonomic descriptions of various parts of the male genitalia, such as the mesosome (Fig. 52, c), which is liable to distortion during slide preparation. An exception to this rule is the dorsal genitalic plate (Fig. 52, a), which resists distortion and is usually highly visible (Fig. 71). The forked prolongation of the genitalic apodeme (Fig. 52, b) is also usually visible, but is subject to distortion. Nevertheless, we have provided photographs illustrating species that are obviously distinct with regard to this character (Fig. 76-78), as well as species having prolongations that grade together in shape (Fig. 71-75). See species descriptions for further remarks on male genitalia.

Taxonomic decisions for lice were made in absence of a working knowledge of host relationships, which were examined after the classification of their lice was completed.

### *Strigiphilus cursitans* Group

Of the 14 species originally included in the *cursitans* group by Clay (1966), 11 are redescribed herein and 3 are placed in synonymy. Although Clay (1977) subsequently supported the removal of 2 of the 11 species by Ledger (1970), we have reinstated them and added a third species described by Ledger (1970) to the group. Ledger's rationale in separating these three species from the *cursitans* group was that: "Particularly with regard to head shape and size, *ceblebrachys*, *oculatus*, and *zumpti* [= *ceblebrachys* subgroup of present paper] stand apart from the rest of the *cursitans* group. The remaining . . . species comprise a compact group of populations, which should be considered as the true *cursitans* group." Ledger's first point is well taken (compare Fig. 21-23 with other head diagrams in the present paper). However, *S. pallidus* (Giebel) (Fig. 16) is intermediate in several respects between *ceblebrachys* subgroup species and other *cursitans* group species. Ledger's second point overemphasizes the similarity of "the remaining species" of the *cursitans* group. For example, *S. virgo* Carriker (Fig. 4, 25, 46, and 67), placed in the *cursitans* group by Clay (1966), differs considerably from most other *cursitans* group species. In fact, the *cursitans* group is better thought of as an eclectic assemblage of species, especially considering the diversity of additional species placed in the group by Clay (1977) or by us in this paper. These additional species—seven in the *elutus* subgroup and two in the *cursitans* subgroup—all clearly belong in the *cursitans* group according to the key given by Clay (1966). Considering the diversity of species in the group, the following comment by Clay (1966) is very likely accurate: "It is possible that . . . the *cursitans* group . . . does not form a [mono]phyletic assemblage."

Although Clay (1966) originally included *S. speotyti* in the *cursitans* group, she subsequently dropped it, but with no explanation as to why (Clay 1977). Because *S. speotyti* (Fig. 19, 40, 62, and 74) is extremely similar morphologically to several *cursitans* group members, we have reinstated it as a member of the group.

*S. crenulatus* (Giebel), which Clay (1966) suggested might be a member of the *cursitans* group, is best not included. Although this species is similar in many respects to *cursitans* group species, it is dissimilar in possessing postspiracular setae on segment III. The absence of postspiracular setae on III is an important character common to all members of the *cursitans* group.

Members of the *cursitans* group are defined by the following characters shared in common and identified in Fig. 3: tergum III (=apparent second) without postspiracular setae; male tergites not continuous across abdomen (Fig. 4), female with only fused tergite IX-X continuous (=apparent eighth); ocular setae quite variable in length, but always longer than 0.01; basal apodeme of male genitalia

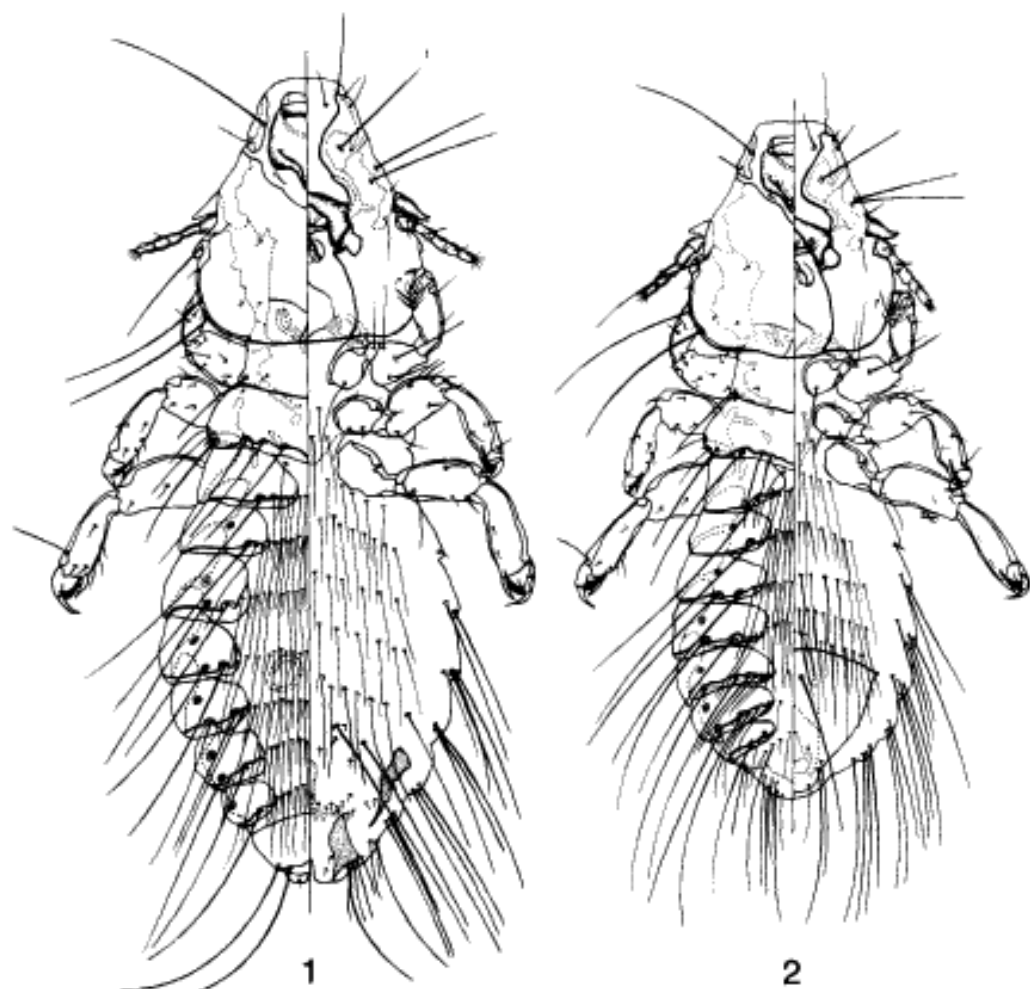


Fig. 1 and 2. *Strigiphilus cursitans*. Fig. 1. Female dorsal-ventral view. Fig. 2. Male dorsal-ventral view.

with central forked prolongation not fused to penis (Fig. 27 versus Fig. 25; Clay 1966); female without well pigmented semicircular sclerite anterior to opening of spermathecal tube. Regarding the last character, Clay (1977) noted: "The sclerotization and pigmentation associated with the opening of the spermathecal duct is slight, difficult to see and shows individual variation depending perhaps on preparation techniques." We agree completely; having been unable to analyze this feature, we have not considered it further.

Other characters shared by all members of the *cursitans* group, if not all members of *Strigiphilus*, are illustrated for *S. cursitans* (Fig. 1 and 2) and are described as follows. Head with prominent dorsal anterior plate (Fig. 5), varying in shape considerably among species (Fig. 4-8 and 31-51). Placement of head setae relatively constant in both

sexes and among species. Tergum II with pair of medium length anterior setae, these not present on other terga. Terga II-III and VIII with very long thick "outer" seta (Fig. 3) on each side (rarely two on a side), these joined by median row of medium length tergo-central setae, variable in number. Outer setae usually laterally displaced from row of tergo-centrals and often with larger alveoli. Terga IV-VII similar, but with very long thick postspiracular seta on each side, lateral to outer seta. (Note: outer and postspiracular setae are not included in counts of tergo-centrals in species descriptions.) Sternal setae variable in number, close to tergo-centrals in length, but more slender and more widely spaced. Segment IX of male with long dorsal seta on each side, flanked by 1-4 short to medium length setae. Fused tergites IX-X of female with long prominent seta on each side. Ter-

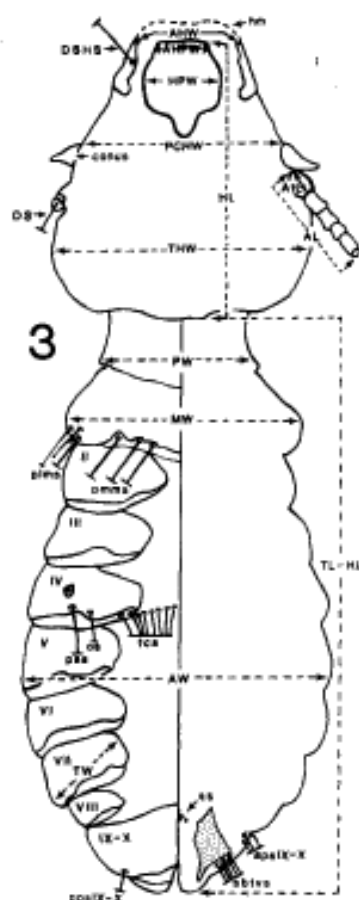


Fig. 3. *Strigiphilus* female dorsal-ventral view showing body measurements (uppercase letters) and setal counts and other features (lowercase letters): AHPW, anterior head plate width; AHW, anterior head width; AL, antennal length; AIL, antennal segment I length; aps IX-X, anterior pleural setae of fused segments IX-X; AW, abdominal width at segment V; DSHS, dorsal submarginal seta length; HL, head length; hm, hyaline margin (excluded from all measurements); HPW, head plate width at widest part; MW, metathoracic width; os, "outer" tergal seta of segment IV (not always laterally removed from tergocentrals as illustrated); OS, ocular seta length; PCHW, preconal head width; pmms, posterolateral metanotal setae; pms, posteromedial metanotal setae; pps IX-X, posterior pleural seta of fused segments IX-X; pss, postspracular seta of segment IV; PW, prothoracic width; sbs, setae bordering posterior margin of terminal ventral sclerite; ss, semicircular sclerite anterior to opening of spermathecal tube; tcs, tergocentral setae of segment IV (of 8 tergocentrals shown, 3 "border" tergite IV); THW, temporal head width; TL-HL, total length minus head length; TW, tergal width (shown for segment VII).

Additional measurements not illustrated above: GPAL, dorsal male genitalic plate anterior "arms" length (Fig. 53e); GW, male genitalic width (Fig. 52 x's); HPL, head plate length; ITV, intertergite width of segment V

terminal segment of male with 3-9 + 3-9 medium length dorsal submarginal setae; genitalia with 2-6 + 2-6 associated ventral setae, medium to long. Terminal segment of female with 1 + 1 tiny dorsal setae; 2 + 2 tiny ventral setae between ventral terminal sclerites, posterior margin of each sclerite with long heavy seta, flanked by variable number of medium to short setae.

#### *cursitans* Subgroup

This subgroup has the most taxa and is the most geographically widespread and morphologically diverse of the three subgroups. It contains 11 species, with one of these divided into 3 subspecies. Four of these 13 taxa are known only from North America, 5 only from the Old World, one from North America and Europe, and 3 from South America.

#### *Strigiphilus cursitans* (Nitzsch)

(Fig. 1, 2, 7, 11, 32, 52, and 54)

*Docophorus cursitans* Nitzsch, 1861: 529. Type-Host: *Strix passertina* = *Athene noctua noctua* (Scopoli).

*Docophorus brevimaculatus* Piaget, 1880: 119 (nec *Docophorus brevimaculatus* Giebel). Type-Host: *Bernicla brenta*—error. New synonymy.

*Docophorus athene* Mjöberg, 1910: 115. Type-Host: *Carte meridionalis* = *Athene noctua glaux* (Savigny).

*Phlopterus castaneus* Fresca, 1923: 246. Type-Host: *Noctua minor* (misdetermination) = *Athene noctua vidalii* A. E. Brehm.

Range of *A. noctua*: Europe, C. Asia including Mongolia and N. Africa, N. China, Arabia.

**Male.** As in Fig. 2. Preconal head margins more or less concave (Fig. 7 and 11); dorsal anterior head plate approximately one-third length of head, with short blunt posterior projection (Fig. 7 and 32). Dorsal submarginal head setae long, ocular setae medium to long. Pronotum with long posterolateral seta on each side; metanotum with 2 long, 1 medium, 1 very short posterolateral setae clumped together on each side, 3-4 + 3-4 long thick posteromedial setae, these variably spaced laterally; mesosternum with 2 (rarely 3) medium length setae, metasternum with 3 (rarely 2 or 4). Tergocentral setae medium length, with relatively constant lateral spacing: II, 9-13; III, 9-17; IV, 12-18; V, 11-16; VI, 11-13; VII, 8-13; VIII, 4-8 (those on VI-VIII shorter medially). Tergocentral setae bordering tergites V-VIII (Fig. 3): V-VII, 1-5; VIII, 0-2. Sternal setae of medium length, with relatively constant lateral spacing: II, 7-10; III, 8-15; IV, 12-17; V, 13-17; VI, 10-13; VII, 1 + 1;

— (shortest distance between 2 tergites of segment); TL, total length.

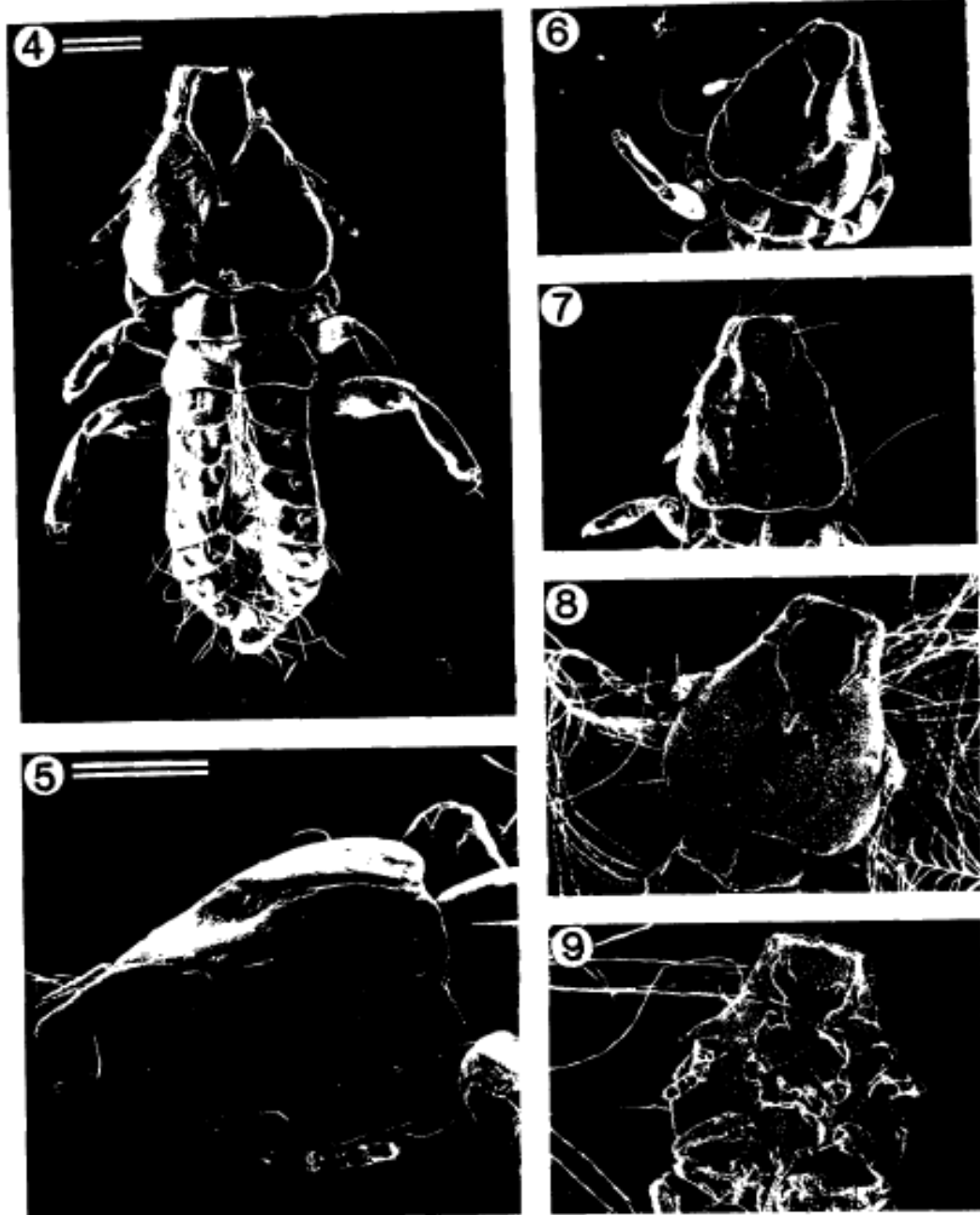


Fig. 4. *Strigiphilus virgo*, dorsal view of male with partially extruded genitalia. Scale bar = 0.25 mm.

Fig. 5. *S. capensis*, dorsal view of head. Scale bar = 0.25 mm.

Fig. 6-8. Dorsal views of heads, to same scale as Fig. 4. Fig. 6. *S. bramae*. Fig. 7. *S. cursitans*. Fig. 8. *S. acadicus* (white filamentous structures are portions of feather).

Fig. 9. *S. acadicus*, ventral view of head, to same scale as Fig. 4.

VIII, 0. Pleural setae on each side of abdomen (often asymmetrical in number): II, 0; III, 1 very small, rarely quite long; IV, 1-4 long; V, 2-4 long; VI-VII, 3-4 long; VIII, 2-3 long, 1 medium; IX, 1 long, 1-2 short to medium. Forked prolongation of male genitalic apodeme as in Fig. 72; genitalic dorsal plate as in Fig. 54. (For all setal counts,  $n = 10$ .)

**Female.** As in Fig. 1. As for male, except as follows. Tergocentral setae: II, 10-13; III, 14-23; IV, 19-22; V, 17-21; VI, 16-20; VII, 11-17; VIII, 8-11. Tergocentral setae bordering tergites V-VIII: V, 0-2; VI-VIII, 0-1. Sternal setae: II, 7-12; III, 11-18; IV, 13-21; V, 11-19; VI, 12-16; VII, 2 + 2; VIII, numerous very small scattered setae. Posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta, flanked by 3-5 medium to short setae. Pleura of fused IX-X with 1 long, 1-2 short to medium anterior setae, and 1 very long posterior seta (Fig. 3). (For all setal counts,  $n = 10$ .)

**Dimensions.** Male ( $n = 10$ ): TL 1.565-1.780; HL 0.515-0.580; HL/TL 0.26-0.34; AHW 0.165-0.210; PCHW 0.360-0.410; THW 0.470-0.525; THW/HL 0.89-0.92; HPL 0.190-0.230; HPW 0.150-0.180; AHPW 0.090-0.120; HPL/HL 0.36-0.41; AL 0.200-0.220; AIL 0.050-0.060; OSL 0.140-0.200; DSHSL 0.280-0.310; PW 0.280-0.320; MW 0.430-0.480; AW 0.600-0.730; AW/TL 0.37-0.43; TVW 0.230-0.300; TVIW 0.220-0.330; TVIHW 0.220-0.290; TVIIHW 0.175-0.230; ITV/AW 0.16-0.35; GW 0.120-0.140; GPAL 0.015-0.020. Female ( $n = 10$ ): TL 1.895-2.200; HL 0.580-0.630; HL/TL 0.27-0.32; AHW 0.185-0.220; PCHW 0.400-0.450; THW 0.515-0.580; THW/HL 0.89-0.97; HPL 0.210-0.240; HPW 0.170-0.200; AHPW 0.100-0.130; HPL/HL 0.36-0.40; AL 0.200-0.260; AIL 0.040-0.060; OSL 0.140-0.240; DSHSL 0.300-0.330; PW 0.290-0.350; MW 0.440-0.530; AW 0.710-0.870; AW/TL 0.36-0.42; TVW 0.175-0.230; TVIW 0.165-0.220; TVIHW 0.140-0.210; TVIIHW 0.120-0.155; ITV/AW 0.42-0.53.

**Remarks.** This species forms a basis for comparisons of the species comprising the *cursitans* species group. *S. cursitans* is distinguished largely by its head shape, size and shape of the dorsal anterior head plate, length of the dorsal submarginal head setae, and details of the male genitalia. The latter are illustrated in Fig. 52. A good photograph of the forked prolongation of the male genitalic apodeme appears in Clay (1966, fig. 27). For comparisons within this paper, we refer the reader to our photograph of this structure of *S. bramae* (Qadri) (Fig. 72), which is nearly identical to that of *S. cursitans*, especially when intraspecific variation is taken into account.

We have examined a female specimen of *D. breviculatus* and find its head shape, dorsal anterior head plate, chaetotaxy, and other characteristics to fall within the range of *S. cursitans*.

Therefore, *D. breviculatus* is considered a synonym of *S. cursitans*.

**Material Examined.** ex *A. noctua*: England (3 localities), \*4 male, \*3 female; Wales, \*1 male, \*1 female; Egypt, \*4 female; Cyprus, \*1 male, \*1 female; Morocco, \*1 male, \*1 female; New Zealand (2 localities), 1 male, 4 female. ex *A. n. vidalit*: England (4 localities), \*2 male, \*6 female; Wales (2 localities), \*3 female. ex *A. n. glauc*: Morocco, \*12 male, 9 female. ex *A. n. saharae* (Kleinschmidt): Jerusalem, \*4 male, 1 female; Syria, \*2 male, 5 female. ex *A. n. bactriana* Blyth: Afghanistan, 16 male, 17 female. ex *A. n. somaliensis* Reichenow: Somaliland, 5 male, 5 female. ex "*Bernicla brenta*," 1 female (holotype of *D. breviculatus*), Piaget Coll., Brit. Mus. 1928-325.

### *Strigiphilus vapidus* Clay

(Fig. 12, 33, and 55)

*Strigiphilus vapidus* Clay, 1977: 1. Type-Host: *Ninox novaeseelandiae ocellata* (Bonaparte).

Range of *N. novaeseelandiae*: S.E. Asia, islands of E. Indies, Australia, New Zealand.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Dorsal anterior head plate longer overall, with more prominent posterior projection (Fig. 33). Anterior margin of dorsal genitalic plate with deeper concavity, overall size somewhat smaller (Fig. 55).

**Female.** As for male.

**Dimensions.** Male ( $n = 7$ ): HPL 0.235-0.260; HPL/HL 0.42-0.46. Female ( $n = 6$ ): HPL 0.240-0.270; HPL/HL 0.390-0.435.

**Remarks.** This species is extremely similar morphologically to *S. cursitans* (Fig. 11 and 12). It can be distinguished from the latter by close examination of the posterior projection of the dorsal anterior head plate and the anterior margin of the male dorsal genitalic plate. In her original description, Clay (1977) provided several useful comparative illustrations of *S. vapidus* and *S. cursitans*; however, figures 3 and 4 of her paper overemphasize the interspecific differences between male dorsal genitalic plates (compare our Fig. 54 and 55).

**Material Examined.** ex *N. novaeseelandiae* (Gmelin): Australia (3 localities), \*6 male, \*7 female (5 paratypes). ex *N. n. novaeseelandiae*: New Zealand, \*1 male, \*1 female.

### *Strigiphilus bramae* (Qadri)

(Fig. 6, 10, 31, 53, 71, and 72)

*Eustrigiphilus bramae* Qadri, 1935: 236. Type-Host: *Athene brama (indica)* [Franklin].

Range of *A. brama*: S. Iran, India, S.W. China, S.E. Asia.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Head

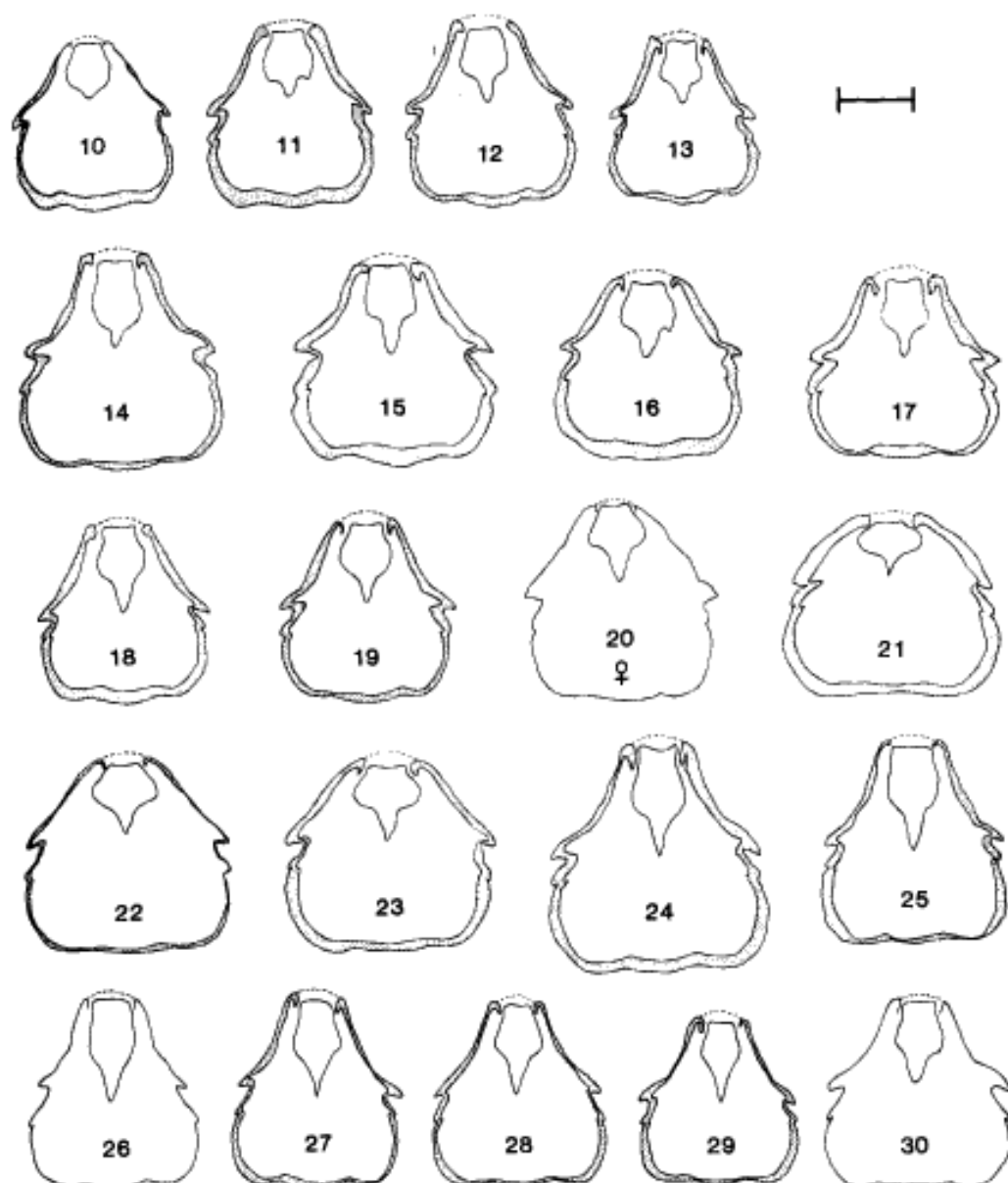


Fig. 10-30. Direct tracings of male *Strigiphilus* heads drawn to same scale (Fig. 20 is female). Scale bar = 0.25 mm. Number of specimens used for each diagram (see *Methods*) follows species name. Hyaline margins, indicated by dashed lines, are too variable to be useful in delineating species. Fig. 10. *S. bramae*-5. Fig. 11. *S. cursitans*-7. Fig. 12. *S. capidus*-4. Fig. 13. *S. tuleskovi*-6. Fig. 14. *S. capensis*-4. Fig. 15. *S. syrnti*-12. Fig. 16. *S. pallidus*-4. Fig. 17. *S. acadicus*-5. Fig. 18. *S. otus*-3. Fig. 19. *S. speotyti*-5. Fig. 20. *S. chilensis*-1. Fig. 21. *S. coblebrachys*-4. Fig. 22. *S. zumpti*-2. Fig. 23. *S. ocellatus*-5. Fig. 24. *S. elutus*-9. Fig. 25. *S. virgo*-3. Fig. 26. *S. transversifrons*-1. Fig. 27. *S. lophotrix*-4. Fig. 28. *S. crucigerus*-3. Fig. 29. *S. microgenitalis*-3. Fig. 30. *S. heterurus*-1.

shorter and more tapered anteriorly (Fig. 6 and 10); dorsal anterior head plate shorter and narrower, with virtually no posterior projection (Fig. 6 and 31). Chaetotaxy of posterior tergites ( $n = 3$ ): VI, 15-18; VII, 16-17; VIII, 10-15.

**Female.** As for male, except for differences in chaetotaxy.

**Dimensions.** Male ( $n = 3$ ): HL 0.505-0.540; AHW 0.090-0.155; HPL 0.170-0.190; HPW 0.130-0.140; HPL/HL 0.34-0.36. Female ( $n = 3$ ): HL 0.550; AHW 0.130-0.155; HPL 0.170-0.180; HPW 0.140; HPL/HL 0.31-0.33.

**Remarks.** This species is easily distinguished from others treated herein by its anteriorly tapered head and small dorsal anterior head plate, with little or no posterior projection. Details of the male genitalia (Fig. 53, 71, and 72) are extremely similar to those of *S. cursitans* and cannot be reliably distinguished from the latter.

**Material Examined.** ex *A. brama* (Temminck): Thailand, \*1 male, \*1 female. ex *A. b. indica*: India (3 localities), 6 male, 8 female. ex *A. b. brama*: India (2 localities), 11 male, 6 female. ex *A. b. mayri* Deignan: Thailand (3 localities), \*5 male, \*3 female.

#### *Strigiphilus tuleskovi* Balát

(Fig. 13, 34, and 56)

*Strigiphilus tuleskovi* Balát, 1958: 418. Type-Host: *Otus scops scops* (Linnaeus).

*Strigiphilus senegalensis* Tendeiro, 1963: 75. Type-Host: *Otus senegalensis senegalensis* (Swainson). New synonymy.

Range of *O. scops*: Africa, Eurasia, India, China, Indonesia, Philippines; of *O. senegalensis*: included in above.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Head (Fig. 13), dorsal anterior head plate (Fig. 34), and dorsal genitalic plate (Fig. 56) all similar in shape to those of *S. cursitans*, but with various smaller dimensions. Dorsal submarginal head setae shorter.

**Female.** As for male, but not with narrower dorsal anterior head plate. Tergocentral setae ( $n = 6$ ): II, 9-11; III, 12-15; IV, 13-17; V, 11-17; VI-VII, 7-10; VIII, 6-7.

**Dimensions.** Male ( $n = 6$ , unless otherwise indicated): HL 0.505-0.525; PCHW 0.320-0.350; THW 0.420-0.460; THW/HL 0.83-0.89; HPW 0.130-0.160; HPL/HL 0.42-0.46; DSHSL 0.190-0.220 ( $n = 2$ ); MW 0.400-0.430; AW 0.515-0.650; GW 0.110-0.120; GPAL 0.010. Female ( $n = 6$ ): HL 0.560-0.600; PCHW 0.360-0.410; THW 0.490-0.525; THW/HL 0.84-0.89; HPL/HL 0.42-0.43; DSHSL 0.180-0.230; AW 0.660-0.750.

**Remarks.** In many respects, this species is a morphological miniature of *S. cursitans*; exceptions include a somewhat more anteriorly tapered head, a proportionately longer posterior projection

of the dorsal head plate, and differences in female chaetotaxy.

We have carefully examined several specimens of each sex of *S. senegalensis*, as well as the photographs and data provided by Tendeiro (1963) in his original description of this species. We are unable to find any significant morphological differences between *S. senegalensis* and *S. tuleskovi*; thus, the former becomes a junior synonym of the latter.

**Material Examined.** ex *O. scops*: Thailand (2 localities), \*4 male, \*4 female; Israel, 1 male, 1 female; Morocco, 1 male, 1 female. ex *O. senegalensis senegalensis*: Somaliland, \*2 male, \*4 female (paratypes of *S. senegalensis*). ex *O. senegalensis*: N. Cameroon, \*1 male. ex *O. scops stictonotus* (Sharpe): Thailand, 3 male, 7 female.

#### *Strigiphilus capensis* Tendeiro

(Fig. 5, 14, 35, and 57)

*Strigiphilus capensis* Tendeiro, 1963: 80. Type-

Host: *Asio capensis capensis* (A. Smith).

Range of *A. capensis*: Sudan, Ethiopia to S. Africa.

**Male.** Grossly like *S. cursitans*, except as follows. Most dimensions considerably larger. Dorsal anterior head plate proportionately longer, with more prominent posterior projection (Fig. 14 and 35). Dorsal submarginal head setae medium, ocular setae long; mesosternum with 4-6 setae ( $n = 4$ ), metasternum with 4-7. Sternites and subgenital plate (Fig. 2) unusually apparent in most specimens.

**Female.** As for male, but mesosternum with 2-5 setae, metasternum with 5-8. Tergocentral setae: IV, 15-19; V, 16-17; VI, 12-14; VII, 9; VIII, 4-6. Long seta bordering each terminal ventral sclerite flanked by 6-8 medium to short setae. (For all setal counts,  $n = 4$ .)

**Dimensions.** Male ( $n = 3$ , unless indicated otherwise): TL 2.000-2.110; HL 0.680-0.700; AHW 0.185-0.220; PCHW 0.420-0.450; THW 0.620-0.650; HPL 0.300-0.310; HPL/HL 0.43-0.46; AL 0.260-0.270; OS� 0.200-0.260 ( $n = 5$ ); DSHSL 0.170-0.220; PW 0.360-0.410; MW 0.570-0.600; AW 0.780-0.880; TVW 0.310-0.360; TVIW 0.330-0.390; TVIIV 0.310-0.360; TVIIV 0.155-0.270; GW 0.140-0.150. Female ( $n = 3$ , unless indicated otherwise): TL 2.430-2.630; HL 0.730-0.770; AHW 0.200-0.230; PCHW 0.450-0.515; THW 0.680-0.720; HPL 0.320-0.330; HPL/HL 0.42-0.44; AL 0.290-0.310; AIL 0.060-0.070; OS� 0.290-0.340; DSHSL 0.220-0.230 ( $n = 2$ ); PW 0.400-0.450; MW 0.620-0.690; AW 0.845-1.030; TVW 0.270-0.340; TVIW 0.260-0.340; TVIIV 0.240-0.320; TVIIV 0.200-0.270; ITV/AW 0.35-0.42.

**Remarks.** This species is best distinguished by its overall large size and chaetotaxy. The shape of the head (Fig. 14) and details of the male genitalia,



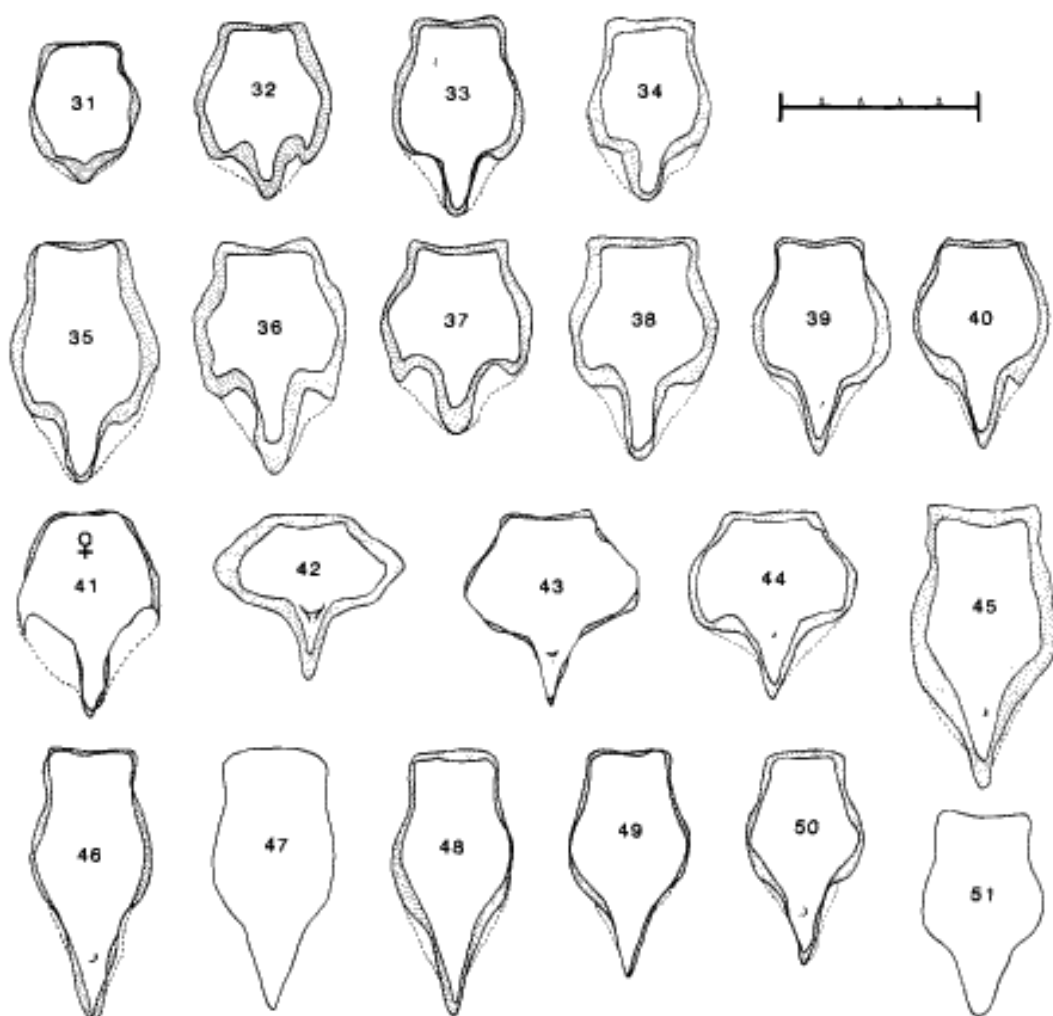


Fig. 31-51. Direct tracings of male *Strigiphilus* dorsal anterior head plates drawn to same scale (Fig. 41 is female). Scale bar = 0.25 mm. Number of specimens used for each diagram (see *Methods*) follows species name. Solid lines indicate regions of head plates highly visible in slide-mounted specimens; dashed lines indicate those regions difficult to interpret. (Note: Fig. 39, 42-46, and 50 show furrows or depressions seen in some specimens; since visibility of these features is variable, they are not always reliable for species separation.) Fig. 31. *S. bramae*—4. Fig. 32. *S. cursitans*—7. Fig. 33. *S. vapidus*—4. Fig. 34. *S. tuleskovi*—6. Fig. 35. *S. capensis*—4. Fig. 36. *S. syrnii*—12. Fig. 37. *S. pallidus*—4. Fig. 38. *S. acadicus*—5. Fig. 39. *S. otus*—3. Fig. 40. *S. speotyti*—5. Fig. 41. *S. chilensis*—2. Fig. 42. *S. ceblebrachys*—4. Fig. 43. *S. zumpti*—2. Fig. 44. *S. oculatus*—5. Fig. 45. *S. elutus*—9. Fig. 46. *S. virgo*—3. Fig. 47. *S. transversifrons*—1. Fig. 48. *S. lophotrix*—4. Fig. 49. *S. crucigerus*—3. Fig. 50. *S. microgenitalis*—3. Fig. 51. *S. heterurus*—1.

including the dorsal plate (Fig. 57), are similar to those of *S. cursitans*.

In most male specimens, the sternites and subgenital plate are large and heavily pigmented. They are, in fact, obvious enough to be apparent in photographs 65 and 68 of the original description of *S. capensis* (Tendeiro 1963). Because these structures are all but invisible in most specimens

of the other taxa examined in this study, we feel unable to accurately compare the sternites and subgenital plate of *S. capensis* with those of other species.

**Material Examined.** ex *A. capensis*: Natal, \*1 male, \*1 female (paratypes); Zambia, \*3 male; S. Tanganyika, 2 male, 5 female; Madagascar, \*1 male, \*2 female. ex *A. c. capensis*: Natal, \*1 male,

\*2 female (paratypes). ex *A. c. hoca* Stresemann: Madagascar, \*1 male. ex *Otus senegalensis senegalensis* (erroneous host record?): N. Rhodesia, 2 male, 2 female.

***Strigiphilus syrni* (Packard)**

(Fig. 15, 36, and 58)

*Docophorus syrni* Packard, 1873: 733. Type-Host: *Syrnium nebulosum* = *Strix nebulosa nebulosa* J. R. Forster.

*Strigiphilus varius* Carriker, 1958: 169. Type-Host: *Strix varia varia* Barton. New synonymy.

*Strigiphilus acutifrons* Emerson, 1961: 189. Type-Host: *Bubo virginianus* (Gmelin). New synonymy.

Range of *S. nebulosa*: Circumboreal—Eurasia and N. America; of *B. virginianus*: N. America south of tundra, C. America and S. America to Straits of Magellan; of *S. varia*: N. America—S. Canada, U.S.A., C. America into Honduras.

**Male.** Grossly like *S. cursitans*, except as follows. Most dimensions larger. Head width proportionately greater throughout its length (Fig. 15); dorsal anterior head plate as much as one-half head length, with prominent posterior projection (Fig. 36). Dorsal submarginal head setae medium length.

**Female.** As for male, but with wider tergites V–VIII than *S. cursitans*. Mesosternum with 2–4 setae, metasternum with 3–6; pleural setae on each side of abdomen: V, 3–5; VI–VII, 4–5; long seta bordering each terminal ventral sclerite flanked by 5–7 medium to short setae. (For all setal counts,  $n = 12$ .)

**Dimensions.** Male ( $n = 9$ ): TL 1.690–1.910; HL 0.580–0.650; AHW 0.200–0.220; PCHW 0.410–0.460; THW 0.570–0.620; THW/HL 0.95–1.03; HPL 0.230–0.290; AHPW 0.110–0.130; HPL/HL 0.40–0.46; AL 0.230–0.260; DSHSL 0.140–0.240; PW 0.320–0.360; MW 0.490–0.540; AW 0.750–0.845; ITV/AW 0.33–0.39; GW 0.140–0.150; GPAL 0.005–0.020. Female ( $n = 9$ ): TL 2.030–2.400; HL 0.640–0.700; AHW 0.210–0.240; PCHW 0.460–0.525; THW 0.630–0.710; THW/HL 0.95–1.01; HPL 0.280–0.370; AHPW 0.130–0.160; HPL/HL 0.43–0.53; AL 0.230–0.280; AIL 0.060–0.070; DSHSL 0.170–0.220; PW 0.370–0.410; MW 0.570–0.650; AW 0.820–1.000; TVW 0.220–0.290; TVIW 0.230–0.280; TVIIW 0.185–0.250; TVIIIW 0.120–0.220.

**Remarks.** This species is distinguished by its large size, shape of the dorsal anterior head plate, and medium length dorsal submarginal head setae. Details of the male genitalia, including the dorsal plate (Fig. 58), are similar to those of *S. cursitans*.

In his original description of *S. varius*, Carriker (1958) noted quantitative and qualitative differences in a direct comparison with 1 male and 2 female specimens of *S. syrni*. We have carefully compared specimens of these two taxa and find them to be morphologically identical in virtually

every respect, including head and body measurements, details of the male genitalia, form of the mandibles, and other characters used by Carriker in his description. Hence, *S. varius* is considered a junior synonym of *S. syrni*.

In his original description of *S. acutifrons*, Emerson (1961) compared specimens of this species to specimens of *S. ocellatus* from the same host, but he did not compare *S. acutifrons* to *S. syrni*. Upon examination of the holotype, several paratypes, and other specimens of *S. acutifrons*, we find no significant morphological differences from *S. syrni*. Therefore, *S. acutifrons* is also considered a junior synonym of *S. syrni*.

Because 2 *Strigiphilus* names have been applied to lice from *Strix n. nebulosa*, with *S. syrni* a member of the *cursitans* group and the other lying outside of this group (see *Miscellanea*), and because the type-series of *S. syrni* no longer exists (K. C. Emerson, personal communication), we here designate a neotype for *S. syrni* to stabilize the identity of this louse taxon.

**Material Examined.** ex *S. n. nebulosa*: U.S.A.: Connecticut, November 1894, Meinertzhagen 450, \*neotype male, \*1 male and \*2 female neoparatypes; in British Museum (Natural History). ex *S. occidentalis* (Xantus): U.S.A.: California, 4 male, 4 female; Canada: British Columbia, \*1 male, \*1 female. ex *S. varia*: U.S.A.: Minnesota (5 localities), \*32 male, \*35 female; Wisconsin, 1 male, 4 female; Mississippi, \*1 male; Georgia, 4 female; Florida (2 localities), \*7 male, \*6 female; Virginia, 1 male, 2 female; Maryland, 4 female; Pennsylvania, 2 male, 2 female; no locality, 4 male, 3 female. ex *S. v. varia*: U.S.A.: Minnesota, 1 male; Pennsylvania, \*2 male, \*2 female. ex *S. varia* "?": U.S.A.: Minnesota, 5 male, 11 female. ex *B. virginianus*: Canada: Quebec, \*2 male, \*1 female (holotype male, paratypes of *S. acutifrons*); U.S.A.: Montana, 1 male, 3 female (paratypes of *S. acutifrons*); Washington, D.C., \*1 female; Maryland, 1 female. ex *B. v. wapacuthu* (Gmelin): Canada: Saskatchewan, \*1 female. ex *B. v. occidentalis* Stone: U.S.A.: Nebraska, \*3 female. ex *B. v. pallidus* Stone: U.S.A.: California, \*5 male, 2 female (paratypes of *S. acutifrons*); ex *B. v. virginianus*: U.S.A.: Texas, 1 male, 1 female (paratypes of *S. acutifrons*); ex "Dusky Horned Owl": U.S.A.: Oregon (2 localities), \*1 male, 9 female (paratypes of *S. acutifrons*). No host data: \*5 male, \*5 female, no locality.

***Strigiphilus pallidus* (Giebel)**

(Fig. 16, 37, and 59)

*Docophorus pallidus* Giebel, 1874: 78. Type-Host: *Strix tengmalmi* = *Aegolius funereus* (Linnaeus).

Range of *A. funereus*: Circumboreal in coniferous forests of N. America and Eurasia.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Head similar, but wider (Fig. 16), with dorsal anterior

head plate slightly longer and wider (Fig. 37); antennae longer. Prothorax slightly wider; tergites V-VIII narrower. Tergocentral setae bordering tergites V-VIII usually 0; pleural setae each side of III long ( $n = 3$ ). Forked prolongation of male genitalic apodeme similar to that of *S. crucigerus* Carriker (Fig. 75); dorsal genitalic plate small, anterior margin with shallow concavity (Fig. 59).

**Female.** As for male, but with antennae and tergites V-VIII as for *S. cursitans*.

**Dimensions.** Male ( $n = 3$ ): PCHW 0.390-0.440; THW 0.550-0.610; THW/HL 1.02-1.06; HPL 0.200-0.250; HPW 0.180-0.210; AHPW 0.115-0.140; AL 0.220-0.250; PW 0.310-0.340; TVW 0.185-0.210; TVIIW 0.200-0.210; TVIIIW 0.140-0.165; GPAL 0.005-0.010. Female ( $n = 3$ ): PCHW 0.470-0.525; THW 0.620-0.640; THW/HL 1.07-1.10; HPL 0.230-0.250; HPW 0.190-0.200; AHPW 0.140; PW 0.370-0.410.

**Remarks.** The head and especially the dorsal anterior head plate of this species are similar to those of *S. cursitans* and *S. rapidus*; however, the head has a much rounder appearance. This was noted, in passing, by Ledger (1970): "In *S. pallidus* . . . the shape of the preantennal region shows a departure from the typical *cursitans* narrow form . . ." This fact, coupled with its greater head width at the temples, gives *S. pallidus* a head shape similar to that in the *ceblebrachys* subgroup (Fig. 21-23). For example, these four are the only species with THW/HL ratios consistently greater than 1.02. Despite its similar head shape, however, *S. pallidus* differs from these other 3 species in most other respects. Much of its chaetotaxy and many of its dimensions are like those of *S. cursitans*. The forked prolongation of the male genitalic apodeme is similar to those of the *elutus* subgroup (Fig. 75), and the size and shape of the dorsal genitalic plate resembles that of *S. microgenitalis* Carriker (Fig. 59 and 69). In summary, *S. pallidus* is morphologically eclectic, possessing features of each of the 3 subgroups discussed in this paper.

**Material Examined.** ex *A. funereus*: U.S.A.: Alaska, \*2 female; Norway, \*1 male; Sweden (3 localities), \*7 male, \*14 female.

#### *Strigiphilus acadicus* Emerson and Price

(Fig. 8, 9, 17, 38, 60, and 78)

*Strigiphilus acadicus* Emerson and Price, 1973: 45.

Type-Host: *Aegolius acadicus* (Gmelin).

Range of *A. acadicus*: N. America—S. Canada, U.S.A., south into Mexico highlands.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Head proportionately broader throughout its length (Fig. 8 and 17); dorsal anterior head plate almost one-half head length, with prominent posterior projection (Fig. 8 and 38). Dorsal submarginal head setae of medium length. Forked prolongation of male genitalic apodeme not widely separated (Fig. 78); dorsal genitalic plate possibly as in Fig. 60. Ter-

gocentral setae: VI, 5-8; VII, 5-6; tergo-central setae bordering tergites V-VII usually 0. Sternal setae on VII: 2 + 2. (For all setal counts,  $n = 3$ .)

**Female.** As for male, but tergo-central setae: IV, 15-18; V, 12-16; VI, 9-13; VII, 5-8; VIII, 6-7 ( $n = 3$ ).

**Dimensions.** Male ( $n = 3$ ): AHW 0.220-0.240; PCHW 0.400-0.430; THW 0.560-0.600; THW/HL 0.98-1.03; HPL 0.270-0.280; HPW 0.180-0.200; AHPW 0.140-0.150; HPL/HL 0.46-0.48; DSHSL 0.160-0.250; PW 0.330-0.350; MW 0.490-0.505; AW 0.740-0.830; ITV/AW 0.38-0.45. Female ( $n = 3$ ): AHW 0.230-0.250; PCHW 0.410-0.490; THW 0.600-0.660; THW/HL 0.97-1.05; HPL 0.280-0.300; HPW 0.190-0.220; AHPW 0.150-0.160; HPL/HL 0.45-0.48; DSHSL 0.160-0.260; PW 0.350-0.360; MW 0.540-0.560; AW 0.880-0.980.

**Remarks.** This species shows a number of distinguishing characteristics, including size and shape of the head and dorsal anterior head plate, tergo-central setae of some segments, and, for males, tergo-central setae bordering V-VII, sternal setae on VII, and details of the genitalia. We are unable to interpret the male dorsal genitalic plate with confidence, as it is either absent, much reduced, or obscured in the specimens we have examined. However, in figure 4 of the original description of *S. acadicus* (Emerson and Price 1973), what appears to be the dorsal genitalic plate is illustrated. Although we have modified this diagram herein (Fig. 60), we are not certain of its accuracy. The forked prolongation of the genitalic apodeme (Fig. 78) is also somewhat difficult to interpret, being quite different from those of other species in the *cursitans* group (Fig. 72-77). Additional figures provided in the original description are accurate depictions of other morphological traits described above.

**Material Examined.** ex *A. acadicus*: Canada: Ontario (2 localities), \*4 male, \*4 female (paratypes); Nova Scotia, 5 female; no locality, 1 male, 8 female. ex *A. a. brooksi* (Fleming): Canada: British Columbia, \*2 male, \*8 female.

#### *Strigiphilus otus* Emerson

(Fig. 18, 39, 61, and 73)

*Strigiphilus otus* Emerson, 1955: 241. Type-Host: *Otus asio gilmani* Swarth.

Range of *O. asio*: N. America—S.E. Alaska, S. Canada to C. Mexico.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Dorsal anterior head plate as much as one-half head length, with long thick posterior projection tapering to pointed end (Fig. 18 and 39). Dorsal genitalic plate with deep concavity of anterior margin (Fig. 61). Dorsal submarginal head setae of medium length. Tergocentral setae bordering tergites V-VII: 0, rarely 1 ( $n = 8$ ).

**Female.** As for male.

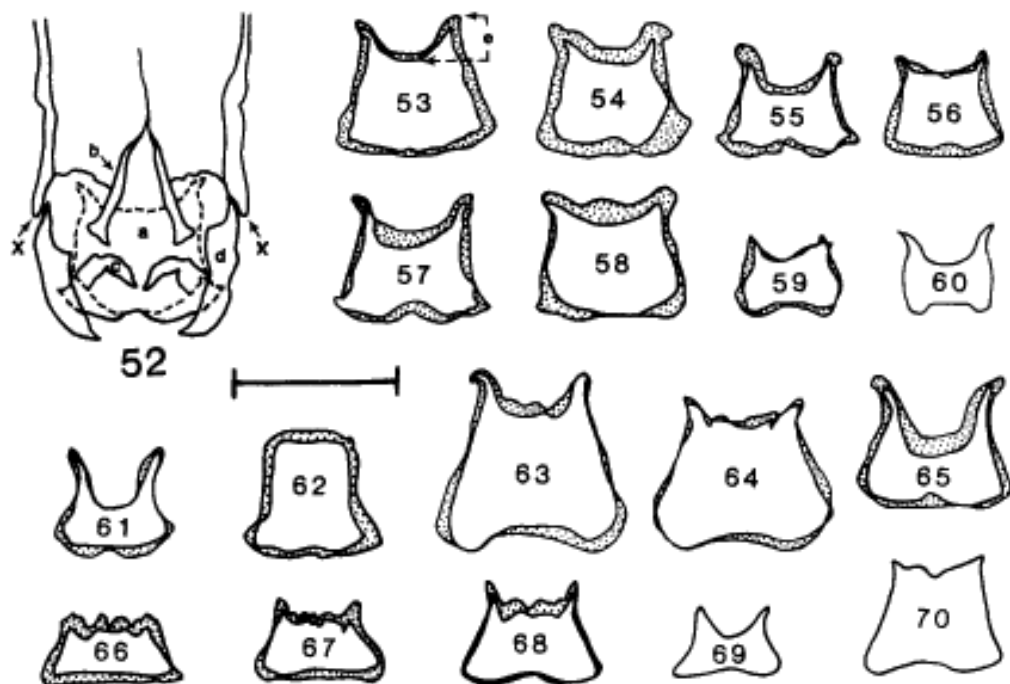


Fig. 52. *Strigiphilus curstians* male genitalia (a, dorsal genitalic plate; b, forked prolongation of genitalic apodeme; c, mesosome; d, paramere; x's, endpoints of genitalic width measurement).

Fig. 53-70. Direct tracings of male *Strigiphilus* dorsal genitalic plates drawn to same scale. Scale bar = 0.10 mm. Number of specimens used for each diagram (see *Methods*) follows species name. Fig. 53. *S. bramae*-5 (e, anterior "arms" length measurement). Fig. 54. *S. curstians*-7. Fig. 55. *S. capidus*-6. Fig. 56. *S. tuleskovi*-6. Fig. 57. *S. capensis*-4. Fig. 58. *S. syrntis*-9. Fig. 59. *S. pallidus*-2. Fig. 60. *S. acadicus*-? (see species description). Fig. 61. *S. otus*-3. Fig. 62. *S. speotyti*-4. Fig. 63. *S. ceblebrachys*-3. Fig. 64. *S. zumpti*-2. Fig. 65. *S. oculatus*-5. Fig. 66. *S. elutus*-5. Fig. 67. *S. virgo*-3. Fig. 68. *S. crucigerus*-3. Fig. 69. *S. microgenitalis*-1. Fig. 70. *S. heterurus*-1.

**Dimensions.** Male ( $n = 3$ , unless otherwise indicated): HPL 0.235-0.290 ( $n = 7$ ); HPL/HL 0.43-0.51 ( $n = 6$ ); DSHSL 0.170-0.230; TVW 0.175-0.230; TVIW 0.175-0.230; TVIHW 0.165-0.220; TVIIIW 0.140-0.210; GPAL 0.030-0.050 ( $n = 4$ ). Female: HPL 0.210-0.310 ( $n = 10$ ); HPL/HL 0.42-0.51 ( $n = 11$ ); DSHSL 0.130-0.250 ( $n = 9$ ).

**Remarks.** The head of this species (Fig. 18) is extremely similar in shape to that of *S. curstians*; however, the shapes of the dorsal anterior head plate and male dorsal genitalic plate, together with other features described above, readily separate *S. otus* from *S. curstians*. The forked prolongation of the male genitalic apodeme (Fig. 73) is somewhat different from that of *S. curstians*, but is not distinct enough for reliable separation. *S. otus* is quite similar in appearance to *S. speotyti*, from which it differs in having shorter dorsal submarginal head setae, narrower tergites, and a dramatically different male dorsal genitalic plate. Emerson (1955) provides a useful diagram of a male *S. otus*.

**Material Examined.** ex *O. a. gilmani*: U.S.A.: Arizona (2 localities), \*1 male, \*2 female (holotype male, paratype females). ex *O. asio* (Linnaeus): U.S.A.: Maryland, 1 male, \*2 female (paratypes); Minnesota (2 localities), 1 male, 5 female; Arizona, 1 male, 1 female; Georgia, \*3 female; Canada: British Columbia, \*1 male, \*1 female (paratypes). ex *O. a. kennicottii* (Elliot): U.S.A.: Oregon, 2 male, 1 female (paratypes). ex *O. a. asio*: U.S.A.: Indiana, \*1 male, \*1 female. ex *O. a. naevius* (Gmelin): U.S.A.: New York, \*1 male, 3 female (paratypes).

*Strigiphilus speotyti speotyti* (Osborn)  
(Fig. 19, 40, 62, and 74)

*Docophorus speotyti* Osborn, 1896: 222. Type-Host: *Speotyto cunicularia hypugaea* (Bonaparte).

Range of *S. cunicularia*: N. America—W. Canada and U.S.A., S. Florida, Mexico, Bahamas, Hispaniola, C. and S. America.

**Male.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Dorsal anterior head plate almost one-half length of head, with long thick posterior projection tapering to pointed end (Fig. 19 and 40). Dorsal plate of male genitalia with little or no indentation anteriorly (Fig. 62).

**Female.** As for male, but with tergites V-VIII broader than for *S. cursitans*.

**Dimensions.** Only values marked \* differ significantly from *S. cursitans*; others are provided for comparison with the additional *S. speotyti* subspecies described below. Male ( $n = 3$ ): \*TL 1.770-1.840; HL 0.560-0.580; AHW 0.200; PCHW 0.380-0.410; THW 0.505-0.540; \*HPL 0.240-0.270; HPW 0.170-0.180; \*HPL/HL 0.42-0.48; MW 0.470-0.505; \*ITV/AW 0.13-0.17; \*CW 0.115-0.120; \*CPAL 0.000. Female ( $n = 2$ ): \*TL 2.020-2.140; HL 0.590; AHW 0.200-0.220; PCHW 0.430-0.440; THW 0.560-0.580; THW/HL 0.92; \*HPL 0.270-0.280; HPW 0.190-0.200; \*HPL/HL 0.43-0.46; PW 0.320-0.330; MW 0.515-0.540; AW 0.710-0.845; AW/TL 0.35-0.40; \*TVW 0.220-0.240; \*TVIW 0.230-0.250; \*TVIHW 0.210-0.230; \*TVIIHW 0.210; \*ITV/AW 0.39-0.41.

**Remarks.** The head of this species (Fig. 19) is similar to that of *S. cursitans*; however, the size and shape of the dorsal anterior head plate and the male dorsal genitalic plate readily distinguish it from the latter. *S. speotyti* most closely resembles *S. otus*, from which it differs in having somewhat shorter dorsal submarginal head setae, more tergo-central setae bordering tergites V-VIII, and a radically different male dorsal genitalic plate. As for *S. otus* (Fig. 73), the forked prolongation of the male genitalic apodeme (Fig. 74) is somewhat different from that of *S. cursitans*, but is not distinct enough for reliable separation.

**Material Examined.** ex *S. cucicularia* (Molina): Canada: Saskatchewan, \*1 male, \*1 female; U.S.A.: Texas (2 localities), \*6 male, \*6 female; South Dakota, 1 male, 3 female; California, 1 male, 3 female. ex *S. c. hypugaea*: U.S.A.: Arizona, \*12 male, 10 female.

#### *Strigiphilus speotyti desertae* Carriker

*Strigiphilus speotyti desertae* Carriker, 1966: 97. Type-Host: *Speotyto cucicularia nanodes* Berlepsch and Stolzmann.

*Strigiphilus speotyti magdalenae* Carriker, 1966: 98. Type-Host: *Speotyto cucicularia tolimae* Stone. New synonymy.

Range of *S. c. nanodes*: Littoral of W. Peru; of *S. c. tolimae*: W. Colombia.

**Male.** Dimensions and other characters like those of *S. speotyti speotyti*, except as follows. Head similar in shape, but shorter and somewhat narrower; dorsal anterior head plate narrower and slightly shorter; metathorax narrower.

**Female.** As for male, with dimensional differ-

ences more pronounced. Tergites V-VIII narrower.

**Dimensions.** Male ( $n = 4$ ): TL 1.650-1.750; HL 0.525-0.540; AHW 0.175-0.185; PCHW 0.350-0.370; THW 0.470-0.490; HPL 0.235-0.240; HPW 0.150; MW 0.440-0.450. Female ( $n = 5$ ): TL 1.740-2.070; HL 0.560-0.580; AHW 0.185-0.200; PCHW 0.390-0.400; THW 0.515-0.550; HPL 0.240-0.250; HPW 0.170; MW 0.480-0.505; TVW 0.175-0.220; TVIW 0.185-0.220; TVIHW 0.155-0.210; TVIIHW 0.120-0.185.

**Remarks.** *S. speotyti desertae* is best distinguished from other subspecies by the smaller dimensions of its head and dorsal anterior head plate. In his paper describing this subspecies, Carriker (1966) described another subspecies, *S. speotyti magdalenae*, distinguished by its head dimensions and details of the male genitalia. Upon careful examination of the holotype and several paratypes of *S. s. magdalenae*, we find no significant morphological differences from *S. s. desertae*. Hence, these 2 taxa are considered to be synonyms.

**Material Examined.** ex *S. c. nanodes*: Peru (2 localities), \*3 male, \*2 female (holotype female, paratype male of *S. s. desertae*); ex *S. c. tolimae*: Colombia, \*1 male, \*2 female (holotype female, paratypes of *S. s. magdalenae*); ex *S. c. minor* Cory: Colombia, \*2 female (paratypes of *S. s. magdalenae*); ex *S. cucicularia*: Colombia, \*2 male (paratypes of *S. s. magdalenae*).

#### *Strigiphilus speotyti altiplanus* Carriker

*Eustrigiphilus speotyto* Eichler, 1954: 38 (nec *Dacophorus speotyti* Osborn). Type-Host: *Speotyto cucicularia juninensis* Berlepsch and Stolzmann.

*Strigiphilus speotyti altiplanus* Carriker, 1966: 96. Type-Host: *Speotyto cucicularia juninensis*. Nomen novum for *Eustrigiphilus speotyto* Eichler.

Range of *S. c. juninensis*: Andes of C. Peru and W. Bolivia.

**Male.** Dimensions and other characters much like those of *S. speotyti speotyti*, except as follows. Head slightly narrower anteriorly, with shorter dorsal anterior head plate. Metathoracic width slightly less.

**Female.** As for male, but not with narrower head.

**Dimensions.** Male ( $n = 2$ ): HL 0.560; AHW 0.155-0.175; THW 0.505; HPL 0.220-0.230; HPL/HL 0.39-0.41; MW 0.450. Female ( $n = 2$ ): HL 0.590-0.600; THW 0.525-0.560; THW/HL 0.88; HPL 0.230-0.235; HPL/HL 0.39; PW 0.310; MW 0.440-0.460; AW 0.610; AW/TL 0.30; TVIW 0.220; TVIHW 0.200; TVIIHW 0.165-0.175.

**Remarks.** We agree with the decision by Carriker (1966) to consider Eichler's name for *S. s. altiplanus* a homonym of Osborn's name (i.e.,

*Eustrigiphilus speotyto* Eichler = *Docophorus speotyti* Osborn, based on insufficiently distinct specific names). Because the specimens examined by Osborn belong to the nominate subspecies, and those examined by Eichler belong to the subspecies considered here, Carriker acted properly in designating the latter by a new name, *S. speotyti altiplanus*.

This subspecies is probably best distinguished from others described to date by its combination of intermediate head length, shorter dorsal anterior head plate, and narrower metathorax. The other differences outlined above are probably artifacts of the small number and poor quality of specimens available for study. The abdominal chaetotaxy of these specimens is all but impossible to evaluate; hence, we have refrained from employing it in our analysis. Furthermore, we are unable, after careful examination of paratypes of *S. s. altiplanus*, to substantiate the differences claimed by Carriker (1966) to distinguish this subspecies from the others he described. We strongly suspect, therefore, that additional collecting may show *S. s. altiplanus* to be a synonym of the nominate subspecies.

**Material Examined.** ex *S. c. juntenensis*: Peru (2 localities), \*2 male, \*2 female (paratypes).

#### *Strigiphilus chilensis* Carriker

(Fig. 20 and 41)

*Strigiphilus chilensis* Carriker, 1966: 95. Type-Host: *Bubo virginianus nacurutu* (Vieillot). Range of *B. v. nacurutu*: S. America from Peru and Brazil to Straits of Magellan.

**Male.** Unknown.

**Female.** Dimensions and other characters much like those of *S. cursitans*, except as follows. Head similar in size, but wider anteriorly, with slightly convex preconal margins (Fig. 20); dorsal anterior head plate slightly longer, with proportionately longer posterior projection (Fig. 41).

**Dimensions.** Female ( $n = 2$ ): AHW 0.155–0.165; PCHW 0.450–0.480; HPL 0.250–0.260.

**Remarks.** The absence of male specimens and the extremely poor condition of the holotype and only paratype collected make evaluation of this taxon difficult. Three other species of *cursitans* group lice have been described from the same host species: *S. synii*, discussed earlier in this paper, and *S. oculatus* and *S. elutus* Carriker, discussed below. *S. chilensis* is clearly distinct from *S. synii* and *S. elutus*, but resembles *S. oculatus* in having convex, or nearly convex, preconal head margins. However, the head of *S. chilensis* is not as round as that of *S. oculatus* or of the other 2 species of the *ceblebrachys* subgroup, all of which have THW/HL ratios greater than 1.00. The THW/HL ratio for *S. chilensis* falls within the range of that for *S. cursitans*. In fact, *S. chilensis* is similar in nearly all respects to *S. cursitans*, from which

it is distinguished by its convex preconal head margins and greater anterior head width.

In his original description of this species, Carriker (1966) employed features of the cerebral and prothoracic carinae, tergites, and pleurites to distinguish *S. chilensis* from congeners. We have examined these features, but find them unreliable for species separation.

**Material Examined.** ex *B. v. nacurutu*: Chile, \*2 female (holotype, paratype).

#### *ceblebrachys* Subgroup

This is the smallest of the three subgroups recognized herein, containing only three species. The members of this subgroup have rounded heads, with preconal margins more or less convex (Fig. 21–23). One species is found only from North America, one from North America and Eurasia, and one from Africa.

#### *Strigiphilus ceblebrachys* (Denny)

(Fig. 21, 42, and 63)

*Docophorus ceblebrachys* Denny, 1842: 45, 92. Type-Host: *Surnia nyctea* = *Nyctea scandiaca* (Linnaeus).

*Pediculus strigis* O. Fabricius, 1780: 216 (nec *Pediculus strigis* Pontoppidan). Type-Host: *Strige nyctea* = *Nyctea scandiaca*.

Range of *N. scandiaca*: Circumpolar in Arctic tundras of N. America and Eurasia.

**Male.** Preconal head margins convex (Fig. 21); dorsal anterior head plate wider than long and approximately one-third length of head, with long pointed posterior projection (Fig. 42). Dorsal submarginal head setae long, ocular setae quite long. Pronotum with long posterolateral seta on each side; metanotum with 2 long, 1 medium, 1 very short posterolateral setae clumped together on each side, 6–8 + 6–8 long thick posteromedial setae, these variably spaced laterally, often merging with posterolaterals; mesosternum with 2 medium length setae, metasternum with 2–4. Tergocentral setae medium length, with relatively constant lateral spacing: II, 13; III, 15–19; IV, 15–23; V, 14–18; VI, 14–15; VII, 10–11; VIII, 8–11. Tergocentral setae bordering tergites V–VIII: V, 1–3; VI, 0–4; VII, 2–3; VIII, 2–4. Sternal setae medium length, with relatively constant lateral spacing: II, 9–11; III, 13–15; IV, 13–18; V, 13–16; VI, 13–14; VII, 1 + 1; VIII, 0. Pleural setae on each side of segments III–VIII long (often asymmetrical in number): II, 0; III, 1; IV, 1–3; V, 3–4; VI, 4–5; VII, 3–4; VIII, 4; IX with 2 long, 1 medium. Forked prolongation of male genitalic apodeme as in Clay (1966; figure 28), dorsal genitalic plate as in Fig. 63. (For all setal counts,  $n = 3$ .)

**Female.** Much as for male, except as follows. Tergocentral setae: II, 12–18; III, 17–24; IV, 19–24; V, 18–23; VI, 19–23; VII, 15–19; VIII, 10–15.

Tergocentral setae bordering tergites V-VIII: 0. Sternal setae: II, 10-11; III, 15-19; IV, 18-20; V, 20-22; VI, 16-19; VII, 2 + 2; VIII, numerous very small scattered setae. Posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta, flanked by 4-6 medium to short setae. Pleural setae: III, 1-2; VIII, 3-5; fused IX-X with 2-3 long, 1 medium anterior setae and 1 very long posterior seta. (For all setal counts,  $n = 3$ .)

**Dimensions.** Male ( $n = 3$ , unless otherwise indicated): TL 1.830-2.000; HL 0.540-0.570; HL/TL 0.28-0.31; AHW 0.130-0.155; PCHW 0.460-0.525; THW 0.610-0.690; THW/HL 1.07-1.21; HPL 0.170-0.190; HPW 0.210-0.250; AHPW 0.090-0.120; HPW/HPL 1.10-1.32 ( $n = 10$ ); HPL/HL 0.31-0.33; AL 0.230-0.250; AIL 0.070; OSL 0.240-0.340; DSHSL 0.300-0.350; PW 0.350-0.390; MW 0.480-0.550; AW 0.830-0.940; AW/TL 0.45-0.47; TVW 0.260-0.310; TVIW 0.270-0.330; TVIHW 0.270-0.320; TVIIHW 0.240-0.260; ITV/AW 0.22-0.37; GW 0.170-0.180; GPAL 0.010-0.030. Female ( $n = 3$ , unless otherwise indicated): TL 2.110-2.430; HL 0.600-0.650; HL/TL 0.26-0.30; AHW 0.155-0.175; PCHW 0.505-0.570; THW 0.690-0.770; THW/HL 1.11-1.19; HPL 0.180-0.220; HPW 0.240-0.280; AHPW 0.115-0.130; HPW/HPL 1.05-1.47 ( $n = 12$ ); HPL/HL 0.30-0.34; AL 0.240-0.260; AIL 0.070; OSL 0.290-0.350; DSHSL 0.290-0.380; PW 0.380-0.430; MW 0.550-0.640; AW 0.970-1.205; AW/TL 0.42-0.50; TVW 0.220-0.260; TVIW 0.220-0.250; TVIHW 0.210-0.240; TVIIHW 0.175-0.210; ITV/AW 0.50-0.56.

**Remarks.** This species is easily distinguished by its rounded head, form of the dorsal anterior head plate, chaetotaxy, and other characteristics. The forked prolongation of the male genitalic apodeme is distinctive, as is the dorsal genitalic plate.

**Material Examined.** ex *N. scandiaca*: Canada: British Columbia, \*1 male, \*2 female; Quebec, 1 male; Northwest Territories, 1 male; Greenland (2 localities), \*17 male, \*9 female; U.S.A.: Washington, \*26 male, \*22 female; North Dakota, \*47 male, \*39 female; Minnesota (5 localities), 28 male, 38 female; Wisconsin, 5 male, 6 female; Indiana, 1 male, 1 female; New York, 14 male, 13 female; S. Wales, \*5 male, \*4 female; Norway, 1 male; Russia, 1 male. ex *Falco sparverius* Linnaeus (erroneous host record?): Canada, Quebec (2 localities), 5 male, 2 female.

#### *Strigiphilus sumpti* Ledger

(Fig. 22, 43, 64, and 76)

*Strigiphilus sumpti* Ledger, 1970: 119. Type-Host: *Bubo lacteus* (Temminck).

Range of *B. lacteus*: Africa south of Sahara.

**Male.** Dimensions and other characters much like those of *S. ceblebrachys*, except as follows. Head less round, with less convex preconal margins (Fig. 22); head and dorsal anterior head plate

longer, with latter being also longer than wide (Fig. 43). Metanotum with 2-3 long, 1 medium, 1 very short posterolateral setae clumped together on each side, and 4-6 + 4-6 long thick posteromedial setae, these variably spaced laterally. Forked prolongation of male genitalic apodeme as in Fig. 76; dorsal genitalic plate as in Fig. 64. (For setal counts,  $n = 2$ .)

**Female.** As for male, but with tergites V-VI wider, VIII narrower.

**Dimensions.** Male ( $n = 2$ ): HL 0.610-0.620; THW/HL 1.05; HPL 0.230-0.250; HPW/HPL 0.94-1.00; HPL/HL 0.38-0.40; AL 0.260-0.280; AIL 0.060; GW 0.160-0.170. Female ( $n = 2$ ): HL 0.650-0.690; THW/HL 1.03-1.08; HPL 0.240-0.280; HPW/HPL 0.89-0.96; HPL/HL 0.37-0.41; AL 0.290; TVW 0.270-0.280; TVIW 0.260-0.270; TVIHW 0.220-0.230; TVIIHW 0.165.

**Remarks.** This species is recognized by the shapes of its head and dorsal anterior head plate, chaetotaxy, and details of the male genitalia. The forked prolongation of the male genitalic apodeme is distinctive, whereas the dorsal genitalic plate is quite similar, though somewhat shorter, to that of *S. ceblebrachys*. The extreme variation in the widths of female tergites V-VI, as compared to VIII, is unusual and may be a reflection of our having examined only 2 female specimens.

The diagrams provided by Ledger (1970) in his original description of this species are excellent. The limited number of measurements he provides fully support the above redescription, and represent much larger sample sizes than our data. We remain skeptical about the use, as a reliable character, of "... the shape of the tergal plates in relation to the post-spiracular setae" (Ledger 1970; p. 125 and figures 22 and 23). The intraspecific variation of this character for several species in our study was as great as, or greater than, the interspecific variation shown in Ledger's illustrations.

**Material Examined.** ex *B. lacteus*: Bechuanaland, \*2 male, \*2 female (paratypes).

#### *Strigiphilus oculatus* (Rudow)

(Fig. 23, 44, 65, and 77)

*Nirmus oculatus* Rudow, 1870: 465. Type-Host: *Bubo virginianus* (Gmelin).

*Docophorus bubonis* Osborn, 1896: 219. Type-Host: *B. virginianus*.

Range of *B. virginianus*: N. America south of tundra, C. America and S. America to Straits of Magellan.

**Male.** Dimensions and other characters much like those of *S. ceblebrachys*, except as follows. Head less round, with slightly less convex preconal margins, wider anteriorly (Fig. 23); head and dorsal anterior head plate slightly longer, latter being also longer than wide (Fig. 44). Metanotum with 4 + 4 long thick posteromedial setae, these varia-

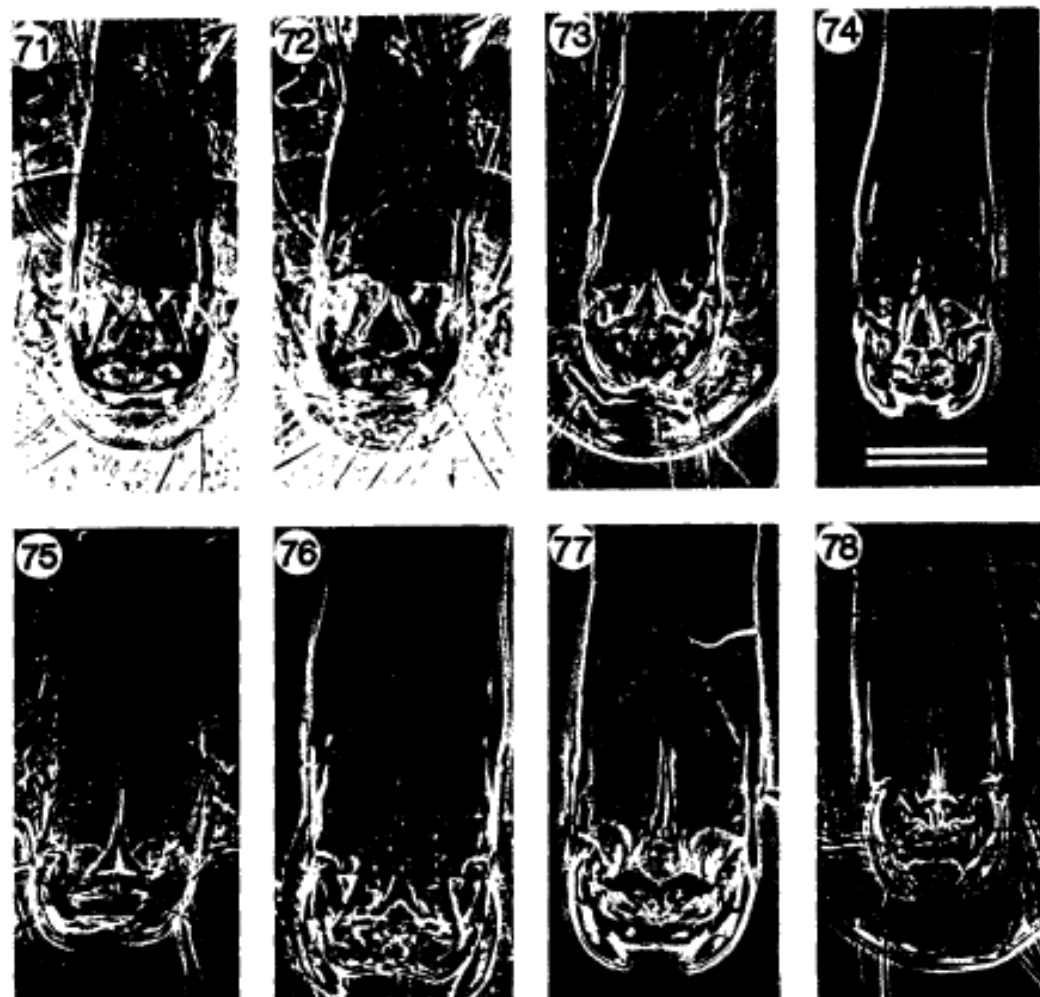


Fig. 71-78. Selected details of *Strigiphilus* male genitalia (see Fig. 52). All photos to same scale, with Fig. 74 scale bar = 0.10 mm. Figure 71 highlights dorsal genitalic plate and Fig. 72-78 the forked prolongation of genitalic apodeme (see *S. cursitans* description and descriptions of other species for interpretation of this feature). Fig. 71. *S. bramae*. Fig. 72. *S. bramae*. Fig. 73. *S. otus*. Fig. 74. *S. spoutyiti*. Fig. 75. *S. crucigerus*. Fig. 76. *S. zumpti*. Fig. 77. *S. oculatus*. Fig. 78. *S. acadicus*.

bly spaced laterally. Tergites V-VIII narrower, with 0-1 tergo-central setae bordering each. Forked prolongation of male genitalic apodeme as in Fig. 77; dorsal genitalic plate as in Fig. 65. Tergo-central setae: II, 8-10; III, 12; IV, 14-15; V, 12-13; VI, 8-10; VII, 7-10; VIII, 5-6. Sternal setae: II, 4-7; III, 10-12; IV, 11-14. (For all setal counts,  $n = 3$ .)

**Female.** As for male, but not with differences in tergal widths and tergo-central setae bordering tergites. Tergo-central setae: II, 10-11; III, 12-15; IV, 14-17; V, 14-15; VI, 9-11; VII, 8-9; VIII, 6-

8. Sternal setae: II, 5-8; III, 12-14; IV, 12-15; V, 11-13; VI, 11-12. (For all setal counts,  $n = 3$ .)

**Dimensions.** Male ( $n = 3$ , unless otherwise indicated): HL 0.580-0.600; AHW 0.200; THW/HL 1.05-1.07; HPL 0.220-0.250; HPW/HPL 0.88-1.00 ( $n = 9$ ); HPL/HL 0.36-0.42; TVW 0.230-0.250; TVIW 0.240-0.250; TVIHW 0.230-0.250; TVIIHW 0.185-0.210; GW 0.150-0.160; GPAL 0.040-0.050. Female ( $n = 3$ , unless otherwise indicated): HL 0.640-0.670; AHW 0.200-0.230; THW/HL 1.03-1.06; HPL 0.250-0.270; HPW/HPL 0.88-0.96 ( $n = 7$ ); HPL/HL 0.39-0.40.



**Remarks.** This species is distinguished by the shapes of its head and dorsal anterior head plate, chaetotaxy, and details of the male genitalia. The forked prolongation of the male genitalic apodeme is unique in being discontinuous, as shown in Fig. 77 and illustrated by Ledger (1970; fig. 6). The dorsal genitalic plate is easily distinguished by its large size and the extreme concavity of its anterior margin, similar to that of *S. otus* (Fig. 61).

**Material Examined.** ex *B. virginianus*: U.S.A.: Tennessee, \*1 male, \*1 female; New York (2 localities), \*2 male, \*1 female; Pennsylvania, 2 male; Michigan, \*1 male, \*2 female; Minnesota (3 localities), 29 male, 54 female; Utah, 1 male, 1 female; Oregon, 2 male, 2 female; Washington, 2 male, 3 female; Alaska, 11 male, 25 female; Canada: British Columbia (2 localities), \*3 male, \*3 female. ex *B. v. wapacuthu*: Canada: Saskatchewan, 2 male, 2 female. ex *B. v. occidentalis*: U.S.A.: Wyoming, \*1 male, \*1 female; Oregon, 1 male, 1 female. ex *B. v. pallescens*: U.S.A.: California, 3 male, 2 female.

#### *elutus* Subgroup

The seven species of this subgroup are Neotropical, with one species ranging as far north as Mexico. The members of this subgroup have dorsal anterior head plates each with a long posterior projection that tapers gradually to a pointed end (Fig. 45-51).

#### *Strigiphilus elutus* Carriker

(Fig. 24, 45, and 66)

*Strigiphilus elutus* Carriker, 1966: 87. Type-Host: *Bubo virginianus elutus* Todd.

*Strigiphilus perspicillatus* Carriker, 1966: 87. Type-Host: *Pulsatrix perspicillata* (Latham). New synonymy.

Range of *B. v. elutus*: E. Colombia; of *P. perspicillata*: C. America—S. Mexico to N.W. Argentina and S.E. Brazil.

**Male.** Preconal head margins concave (Fig. 4 and 24); dorsal anterior head plate approximately one-half length of head, with long posterior projection gradually tapering to pointed end (Fig. 45). Dorsal submarginal head setae short, ocular setae short to medium. Pronotum with long postero-medial seta on each side; metanotum with 1 long, 2 medium, 1 very short posterolateral setae clumped together on each side, 2 + 2 long thick posteromedial setae; mesosternum and metasternum each with 2-4 medium length setae. Tergo-central setae medium length, with relatively constant lateral spacing: II, 7-9; III, 13-18; IV, 14-20; V, 12-15; VI, 8-11; VII, 6-8; VIII, 5-6. Tergo-central setae bordering tergites V-VIII: V-VII, 0-1; VIII, 0. Sternal setae medium length, with relatively constant lateral spacing: II, 6-8; III, 8-

17; IV, 12-19; V, 12-15; VI, 10-12; VII, 1 + 1; VIII, 0. Pleural setae on each side of abdomen (often asymmetrical in number): II, 0; III, 1 very small; IV, 1-2 long; V, 3-4 long; VI, 4-6 long; VII, 3-4 long; VIII, 3-4 long, 1 medium; IX, 2 long, 1-2 short to medium. Forked prolongation of male genitalic apodeme similar to that of *S. crucigerus* Carriker described below (Fig. 75); dorsal genitalic plate as in Fig. 66. (For all setal counts,  $n = 6$ .)

**Female.** Much as for male, except as follows. Metasternum with 3-5 medium length setae. Tergo-central setae: II, 8-11; III, 13-16; IV, 14-18; V, 12-18; VI, 10-15; VII, 6-11; VIII, 5-6. Sternal setae: II, 4-9; III, 11-19; IV, 13-19; V, 13-18; VI, 11-15; VII, 2 + 2; VIII, numerous small scattered setae. Posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta, flanked by 7-11 medium to short setae. Pleural setae: V, 2-4 long; VII, 3-5 long; fused IX-X with 2 long, 1-2 short to medium anterior setae and 1 very long posterior seta. (For all setal counts,  $n = 6$ .)

**Dimensions.** Male ( $n = 8$ , unless otherwise indicated): TL 2.040-2.200; HL 0.700-0.720; HL/TL 0.32-0.35; AHW 0.200-0.230; PCHW 0.410-0.470; THW 0.620-0.690; THW/HL 0.94-0.97; HPL 0.340-0.370; HPW 0.160-0.180; AHPW 0.140-0.150; HPW/HPL 0.46-0.53; HPL/HL 0.49-0.52; AL 0.260-0.290; AIL 0.050-0.070; OSL 0.120-0.180 ( $n = 3$ ); DSHSL 0.070-0.140 ( $n = 6$ ); PW 0.390-0.430; MW 0.525-0.630; AW 0.660-0.900; AW/TL 0.33-0.41; TVW 0.250-0.290; TVIW 0.240-0.280; TVIHW 0.230-0.280; TVIIHW 0.200-0.230; ITV/AW 0.32-0.42; GW 0.130-0.140; GPAL 0.01 ( $n = 5$ ). Female ( $n = 8$ , unless otherwise indicated): TL 2.180-2.450; HL 0.700-0.750; HL/TL 0.30-0.36; AHW 0.210-0.230; PCHW 0.430-0.490; THW 0.650-0.720; THW/HL 0.89-0.97; HPL 0.340-0.370; HPW 0.180-0.200; AHPW 0.150-0.160; HPW/HPL 0.50-0.54; HPL/HL 0.48-0.50; AL 0.270-0.310; AIL 0.060-0.070; OSL 0.100-0.130 ( $n = 4$ ); DSHSL 0.070-0.120 ( $n = 4$ ); PW 0.400-0.450; MW 0.550-0.710; AW 0.790-0.950; AW/TL 0.33-0.40; TVW 0.220-0.290; TVIW 0.220-0.290; TVIHW 0.210-0.270; TVIIHW 0.185-0.230; ITV/AW 0.36-0.48.

**Remarks.** This species is distinguished primarily by its large size, form of the dorsal anterior head plate, chaetotaxy, and details of the male genitalia. *S. elutus* is quite similar in appearance to *S. virgo*, from which it differs by several larger dimensions. Three other species of *curstans* group lice have been described from the host of *S. elutus*: *S. syrni*, *S. chilensis*, and *S. oculus*; all are easily distinguished from the former using characters discussed earlier in this paper.

In his original description, Carriker (1966) employed details of the pleurites and cerebral and prothoracic carinae to help distinguish *S. elutus* from congeners. We have considered these characters in our study, but find them to be unreliable for species separation. Likewise, we are unable to

separate another of Carriker's new species, *S. perspicillatus*, from *S. elutus* using either the characters he outlined or numerous additional ones examined by us. Therefore, *S. perspicillatus* becomes a junior synonym of *S. elutus*.

**Material Examined.** ex *B. v. elutus*: Colombia (2 localities), \*9 male, \*18 female (holotype female, 20 paratypes). ex *B. v. nacurutu*: Venezuela, \*2 male, \*2 female. ex *P. perspicillata*: Colombia (2 localities), \*6 male, \*4 female (holotype female, 6 paratypes of *S. perspicillatus*).

*Strigiphilus virgo* (Giebel)

(Fig. 4, 25, 46, and 67)

*Docophorus virgo* Giebel, 1874: 79. Type-Host: *Strix supercilialis* = *Ciccaba virgata supercilialis* (Pelzeln).

*Strigiphilus viridicus* Carriker, 1954: 195. Type-Host: *Ciccaba virgata centralis* Griscom.

Range of *C. virgata*: C. America into S. America—Mexico to Bolivia, Paraguay, and N.E. Argentina.

**Male.** Dimensions and other characters much like those of *S. elutus*, except as follows. Tergo-central setae ( $n = 3$ ): III, 10–12; IV, 10–11; V, 7–9; VI, 5–6; VII, 4–5; VIII, 2–4.

**Female.** Dimensions and other characters much like those of *S. elutus*, except as follows. Tergo-central setae: II, 6–9; III, 9–13; IV, 11–13; V, 10–11; VI, 6–10; VII, 3–6; VIII, 4. Sternal setae: IV, 10–11; V, 9–12; VI, 9–12. (For all setal counts,  $n = 3$ .)

**Dimensions.** Male ( $n$  values in parentheses): HL 0.630–0.690 (5); HPW 0.150–0.170 (5); AHPW 0.115 (1); AHW 0.185 (1); PCHW 0.380 (1); THW 0.550–0.650 (5); AL 0.240–0.260 (3); TVW 0.230–0.250 (2); TVIIIW 0.175–0.200 (2); GW 0.120 (3). Female: HL 0.650–0.740 (5); HPW 0.150–0.180 (6); AHPW 0.115 (1); AL 0.250 (1); TVW 0.200–0.260 (4); TVIW 0.210–0.260 (4); TVIIW 0.210–0.240 (4); TVIIIW 0.170–0.220 (4).

**Remarks.** The shapes of the head (Fig. 4 and 25) and dorsal anterior head plate (Fig. 46), details of the male genitalia (Fig. 67), and other features are similar to those of *S. elutus*. As far as we can tell, *S. virgo* can be separated from *S. elutus* only on the basis of its different dimensions.

**Material Examined.** ex *C. virgata*: Colombia (2 localities), \*5 male, \*8 female. ex *C. v. virgata*: Panama, \*1 male, \*1 female; El Salvador, 2 male, 1 female; Trinidad, \*3 male, \*5 female.

*Strigiphilus transversifrons* (Carriker)

(Fig. 26 and 47)

*Docophorus transversifrons* Carriker, 1903: 127. Type-Host: *Micrastur guerilla* Cassin = *M. ruficollis interstes* Bangs (error?). Perhaps *Lophostrix cristata stricklandi* Sclater and Salvin (see Emerson 1981).

Range of *L. c. stricklandi*: S. Mexico to W. Panama and W. Colombia.

**Male.** Dimensions and other characters, where visible, similar to those of *S. elutus*, except as follows. Metanotum with 5 + 5 long thick postero-medial setae, much other chaetotaxy not visible ( $n = 1$ ).

**Female.** Dimensions and other characters, where visible, similar to *S. elutus*, except as follows. Metanotum probably with 3 + 3 long thick postero-medial setae; posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta flanked by 5–6 medium to short setae; nearly all other chaetotaxy not visible ( $n = 1$ ).

**Dimensions.** Values marked \* do not differ significantly from *S. elutus*, but are provided for comparison with subsequent species descriptions. Male ( $n = 1$ ): TL 1.600; HL 0.620; HL/TL 0.39; \*AHW 0.20; PCHW 0.360; THW 0.540; THW/HL 0.87; HPL 0.330; \*HPW 0.180; AHPW 0.120; HPW/HPL 0.54; HPL/HL 0.53; AL 0.220; OSL 0.100; PW 0.340; MW 0.450; AW 0.590. Female ( $n = 1$ ): TL 1.770; HL 0.640; \*THW/HL 0.91; \*AHW 0.220; PCHW 0.380; THW 0.580; \*HPW 0.180; AHPW 0.130; HPL/HL 0.52; \*HPW/HPL 0.54; AL 0.210; AIL 0.050; PW 0.380; MW 0.470; AW 0.670.

**Remarks.** The sole pair of specimens of this taxon is in extremely poor condition. Many features are difficult or impossible to see, such as much of the chaetotaxy of both sexes and details of the male genital apparatus. Hence, the absence of a character from the above description does not automatically imply congruence between *S. transversifrons* and *S. elutus* with respect to that character.

The shapes of the head (Fig. 26) and dorsal anterior head plate (Fig. 47) in *S. transversifrons* are similar to those of *S. virgo*, *S. lophostrix*, and most other members of the *elutus* subgroup. *S. transversifrons* is most similar in overall appearance to *S. lophostrix*. It is so similar that Emerson (1981) designated the latter a junior synonym of the former and considered the original host record to be erroneous. However, a careful comparison of these taxa reveals subtle differences in the following dimensions for both sexes: AHW, HPW, HPW/HPL, and PW. Also, females of the 2 taxa differ in the following dimensions: THW/HL, AL, and AIL; and males differ in MW and AW. The most striking difference between *S. transversifrons* and *S. lophostrix* is the larger number of postero-medial setae of the metanotum in *S. transversifrons*: 5 + 5 for males and 3 + 3 for females. This many setae in the male is not characteristic of the *elutus* subgroup; rather, it is characteristic of members of *Craspedorrhynchus* Keler, a genus very likely represented on *Micrastur guerilla*, which is the original host recorded by Carriker (1903) for *S. transversifrons*. Other similarities between *S. transversifrons* and *Craspedorrhynchus* species exist. The differences between *S. transversifrons*

and *S. lophostrix* cited above lead us to reject the synonymy of these taxa. Furthermore, these differences, coupled with the extremely poor condition of the *S. transversifrons* specimens and the unavailability of specimens from *Micrastur guerrilla* for comparison, raise the possibility that the original host record given by Carriker (1903) for this taxon is actually correct. Until more specimens become available for study, however, the proper host record for *S. transversifrons* should best be left open to question.

**Material Examined.** ex *M. ruficollis interstes* (error?): Costa Rica, \*1 male, \*1 female (holotype male, paratype).

#### *Strigiphilus lophostrix* Carriker

(Fig. 27 and 48)

*Strigiphilus lophostrix* Carriker, 1966: 89. Type-Host: *Lophostrix cristata weddellii* Griscom.

*Strigiphilus minimus* Carriker, 1966: 91. Type-Host: *Otus minimus* (Carriker). New synonymy.

Range of *L. cristata*: S. Mexico to Bolivia and N.W. Argentina; of *O. minimus*: only known from Santa Ana, Bolivia.

**Male.** Qualitative characters similar to those of *S. elutus*; most dimensions considerably smaller.

**Female.** As for male, but with abdominal setae probably fewer in number than in *S. elutus* (see remarks); posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta flanked by 4-7 medium to short setae ( $n = 7$ ).

**Dimensions.** Those falling in range of *S. elutus* are not given here. Male ( $n$  values in parentheses): TL 1.600-1.780 (3); HL 0.590-0.620 (4); HL/TL 0.35-0.37 (3); AHW 0.175-0.185 (3); PCHW 0.350-0.370 (4); THW 0.505-0.540 (4); THW/HL 0.86-0.87 (4); HPL 0.310-0.330 (4); HPW 0.120-0.150 (4); AHPW 0.115-0.120 (3); HPW/HPL 0.39-0.47 (4); HPL/HL 0.52-0.54 (4); AL 0.210-0.230 (2); AIL 0.030-0.050 (2); PW 0.330 (2); MW 0.460-0.470 (2); AW 0.550 (1); AW/TL 0.32-0.34 (2); TVW 0.175-0.185 (3); TVIW 0.185-0.200 (3); TVIHW 0.175-0.210 (3); TVIIHW 0.155 (1); GW 0.110-0.120 (4). Female ( $n$  values in parentheses): TL 1.690-1.910 (7); HL 0.630-0.680 (8); AHW 0.155-0.185 (5); PCHW 0.360-0.390 (7); THW 0.550-0.580 (7); THW/HL 0.84-0.88 (7); HPW 0.150-0.170 (7); AHPW 0.115-0.120 (2); HPW/HPL 0.43-0.47 (6); HPL/HL 0.51-0.55 (5); AL 0.230-0.240 (2); AIL 0.040-0.050 (2); PW 0.330-0.340 (4); MW 0.460-0.470 (4); AW 0.600-0.680 (7); TVW 0.165-0.200 (3); TVIW 0.175-0.200 (3); TVIHW 0.140-0.175 (3); TVIIHW 0.120-0.140 (2).

**Remarks.** The shapes of the head (Fig. 27) and dorsal anterior head plate (Fig. 48) are similar to those of *S. elutus*, albeit noticeably smaller. The male tergoventral setae and genital details are too obscure to evaluate because all specimens available for study are in poor condition. Likewise, the poor condition of all female specimens pre-

vents accurate counting of most abdominal setae; nevertheless, tergoventral setae appear to be fewer in number for female *S. lophostrix* than for female *S. elutus*. *S. lophostrix* is most similar morphologically to *S. transversifrons*; these similarities are considered in detail under the *S. transversifrons* description.

We are unable to differentiate *S. lophostrix* from *S. minimus* employing the characters cited in the original description of these species (Carriker 1966). And, since we cannot find other significant morphological differences between these, *S. minimus* becomes a junior synonym of *S. lophostrix*.

**Material Examined.** ex *L. c. weddellii*: Colombia, \*2 male, \*4 female (holotype female, paratypes). ex *O. minimus*: Bolivia, \*2 male, \*7 female (holotype female, paratypes of *S. minimus*).

#### *Strigiphilus crucigerus* Carriker

(Fig. 28, 49, 68, and 75)

*Strigiphilus crucigerus* Carriker, 1966: 88. Type-Host: *Otus choliba crucigerus* (Spix).

Range of *O. choliba*: C. America—Costa Rica south into Bolivia, Argentina, S.E. Brazil.

**Male.** Much like *S. elutus*, with the exception of the dimensions recorded below.

**Female.** As for male.

**Dimensions.** Male ( $n$  values in parentheses): TL 1.620-1.970 (2); HL 0.560-0.620 (10); THW 0.525-0.600 (6); HPL 0.280-0.320 (7); AHPW 0.110-0.130 (2); HPW/HPL 0.50-0.59 (7); AL 0.220 (1); PW 0.340-0.370 (2); TVW 0.240 (1); TVIW 0.240 (1); TVIHW 0.220 (1); TVIIHW 0.185 (1); GW 0.130-0.140 (2). Female ( $n$  values in parentheses): HL 0.610-0.660 (3); THW 0.580-0.660 (3); HPL 0.280-0.330 (2); HPW 0.160-0.180 (3); AHPW 0.130-0.140 (2); HPW/HPL 0.54-0.57 (2); AL 0.250 (2); PW 0.340-0.390 (3); TVW 0.210-0.230 (3); TVIW 0.220 (3); TVIHW 0.200-0.220 (3); TVIIHW 0.165-0.200 (3).

**Remarks.** As with most other members of the *elutus* subgroup, this species is identified best on the basis of its dimensions, particularly male HL, THW, and HPL and female THW, PW, and TVW-TVIHW. The shapes of the head (Fig. 28) and dorsal anterior head plate (Fig. 49) are similar to those of *S. elutus*, though they are considerably smaller. The male dorsal genital plate (Fig. 68) differs from that of *S. elutus* and *S. virgo*, but this difference is difficult to see, especially if these taxa are not simultaneously present for direct comparison. Furthermore, the shapes of the dorsal genital plates of *S. transversifrons* and *S. lophostrix* remain completely unknown, due to the poor quality of existing specimens of these taxa. The forked prolongation of the male genitalia for *S. crucigerus* is pictured in Fig. 75. This character is occasionally useful in distinguishing specimens of one taxon of the *elutus* subgroup, such as *S. crucigerus*, from specimens of other *elutus* subgroup taxa. As a general rule, however, the forked pro-

longation is too variable intraspecifically and is often too difficult to see in any particular specimen to be useful.

The other characters employed by Carriker (1966) in his original description of *S. crucigerus* are not useful for reliable identification of this species.

**Material Examined.** ex *O. choliba crucigerus*: Colombia (2 localities), \*11 male, \*3 female (holotype female, 5 paratypes).

#### *Strigiphilus microgenitalis* Carriker

(Fig. 29, 50, and 69)

*Strigiphilus microgenitalis* Carriker, 1966: 92.

Type-Host: *Glaucidium brasilianum ridgwayi* Sharpe.

Range of *G. brasilianum*: S.W. U.S.A. south to tip of S. America.

**Male.** In many respects, a morphological miniature of *S. elutus*, except for shape of dorsal genitalic plate (Fig. 69).

**Female.** As for male, but further differing from *S. elutus* in having posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta flanked by 5 medium to short setae ( $n = 1$ ).

**Dimensions.** Male ( $n$  values in parentheses): TL 1.380–1.665 (2); HL 0.515–0.550 (10); AHW 0.155–0.175 (3); PCHW 0.320–0.360 (3); THW 0.440–0.505 (8); HPL 0.260–0.270 (6); HPW 0.130–0.150 (6); AHPW 0.090–0.100 (2); HPW/HPL 0.540–0.580 (6); AL 0.175–0.210 (2); AIL 0.040 (1); PW 0.280–0.320 (2); MW 0.390–0.450 (2); AW 0.505–0.660 (3); TVW 0.155–0.210 (3); TVIW 0.155–0.200 (3); TVIHW 0.155–0.185 (3); TVIIHW 0.100–0.140 (3); GW 0.100–0.115 (3). Female ( $n$  values in parentheses): TL 1.600–1.840 (3); HL 0.460–0.600 (16); AHW 0.140–0.165 (3); PCHW 0.320–0.370 (2); THW 0.480–0.525 (7); HPL 0.250–0.300 (7); HPW 0.140–0.170 (7); AHPW 0.100–0.110 (3); HPW/HPL 0.52–0.64 (7); AL 0.155–0.200 (3); AIL 0.040 (2); PW 0.300–0.320 (3); MW 0.430–0.480 (3); AW 0.540–0.700 (3); TVW 0.165–0.175 (2); TVIW 0.165 (2); TVIHW 0.155–0.165 (2); TVIIHW 0.130–0.155 (2).

**Remarks.** The qualitative features of this species, such as the shapes of the head (Fig. 29) and dorsal anterior head plate (Fig. 50), are similar to those of *S. elutus* and most other members of the *elutus* subgroup. *S. microgenitalis* is distinguished best from other species by its small size, particularly with regard to HL, THW, HPL, and PW. The dorsal genitalic plate of the male genitalia (Fig. 69) also appears unique in the few specimens where it is visible. Other morphological features used by Carriker (1966) in his original description of this species are not reliable for species separation.

**Material Examined.** ex *G. brasilianum* (Gmelin): Trinidad, 1 female; Mexico, 1 male, 1 female. ex *G. b. brasilianum*: Brazil, \*2 male. ex *G. b. ridgwayi*: Mexico, \*6 male, \*8 female (holotype

female, paratypes). ex *G. b. medianum* Todd: Colombia, 1 male, 5 female. ex *G. b. phalaenoides* (Daudin): Trinidad, \*1 male, \*1 female.

#### *Strigiphilus heterurus* Carriker

(Fig. 30, 51, and 70)

*Strigiphilus heterurus* Carriker, 1966: 92. Type-

Host: *Rhinoptynx clamator* (Vieillot).

Range of *R. clamator*: C. America into S. America—S.E. Mexico to Bolivia, Paraguay, N. Argentina, Brazil.

**Male.** Dimensions and other characters similar to those of *S. elutus*, except as follows. Dorsal anterior head plate with blunt posterior projection (Fig. 51); dorsal genitalic plate as in Fig. 70. Metanotum with 4 + 4 posteromedial setae. Tergocentral setae: II, 12; VIII, 7; tergoventral setae bordering tergites V–VIII: V, 2; VI, 2; VII, 2–3; VIII, 1–2. Sternal setae on II: 10. (For all setal counts,  $n = 1$ .)

**Female.** As for male, but with same number of tergoventral setae bordering tergites as in *S. elutus*; tergoventral setae: II, 14; VIII, 8. Sternal setae on II: 12 ( $n = 1$ ). Posterior margin of terminal ventral sclerite on each side of abdomen with long heavy seta flanked by 5–7 medium to short setae ( $n = 4$ ).

**Dimensions.** Male ( $n = 1$ ): TL 1.810; HL 0.600; AHW 0.185; PCHW 0.410; THW 0.600; HPL 0.260; HPW 0.150; AHPW 0.120; HPW/HPL 0.58; HPL/HL 0.43; AL 0.230; PW 0.360. Female ( $n = 3$ ): TL 1.760–2.070; HL 0.600–0.650; AHW 0.140–0.200; PCHW 0.380–0.430; THW 0.525–0.630; HPL 0.260–0.290; HPW 0.150–0.160; AHPW 0.100–0.130; HPW/HPL 0.55–0.58; HPL/HL 0.43–0.45; AL 0.200–0.230; AIL 0.040–0.050; PW 0.330–0.370; MW 0.440–0.560.

**Remarks.** *S. heterurus* is distinguished from other species treated herein by its combination of dimensions, chaetotaxy, and the shapes of the dorsal anterior head plate and male dorsal genitalic plate. Its head shape (Fig. 30) is much like that of *S. elutus*. As with other species of the *elutus* subgroup, the small number and poor quality of specimens available for study make evaluation of much of the chaetotaxy of both sexes difficult. Hence, possibly unique morphological features of *S. heterurus* may remain as yet undiscovered. Additional characters cited in the original description of *S. heterurus* (Carriker 1966), but not mentioned in the above description, were found to be unreliable for species separation.

**Material Examined.** ex *R. c. clamator*: Bolivia, \*4 female (holotype, paratypes). ex *R. c. midas* (Schlegel): Bolivia, \*1 male, \*1 female.

#### Miscellanea

Like Clay (1966), we have been unable to obtain specimens allowing us to place the following names: *Strigiphilus splendens* (Giebel 1874: 79) (Type-

Host: *Glaucidium passerinum* [Linnaeus] and *S. boamae* (Ansari 1959: 88) (Type-Host: *Otus bakamoena* Pennant). Clay (1977) further discussed *S. splendens*, designating *Strigiphilus* (*Eichlerius*) *glaucidii* Zlotorzycska 1974: 337 (Type-Host: *Glaucidium passerinum passerinum* [Linnaeus]) as a junior synonym of it.

Similarly, we are unable to act on *Strigiphilus jardini* Carriker, 1966: 93 (Type-Host: *Glaucidium jardini* [Bonaparte]). The only specimen of this taxon collected to date is the holotype male, which is in exceedingly poor condition.

Clay (1966) indicates that *Strigiphilus remotus* (Kellogg and Chapman 1899: 107) (Type-Host: *Strix nebulosa nebulosa* J. R. Forster) is probably synonymous with *S. syrni* treated herein. However, upon examination of specimens of both taxa, this is not the case; in fact, *S. remotus* is clearly not a member of the *cursitans* species group.

Likewise, *Strigiphilus clypeatus* (Mjöberg 1910: 113) (Type-Host: *Aegolius funereus* [Linnaeus]) is probably not synonymous with *S. pallidus* treated herein, though Clay (1966) suspected this to be the case. A comparison of the *S. clypeatus* head outline in Mjöberg (1910) with our composite diagram of *S. pallidus* shows the heads of these taxa to differ significantly in shape. As pointed out by Qadri (1935), *S. clypeatus* is similar in appearance to *S. bramae*; however, because we have seen no specimens of the former, we are reluctant to act on this name.

#### Key to Species in the *Strigiphilus cursitans* Group

(Structures and measurements as in  
Fig. 3, 52, and 53)

1. Dorsal anterior head plate less than 0.220 long and without well defined posterior projection (Fig. 6 and 31) ..... *bramae*  
Dorsal anterior head plate at least 0.220 long or with well defined posterior projection (Fig. 7, 32, and 34) ..... 2
2. Head longer than 0.680, with long dorsal anterior head plate having proportionately short blunt posterior projection (Fig. 5 and 35) ..... *capensis*  
Head shorter than 0.680 or with dorsal anterior head plate having proportionately longer posterior projection (Fig. 4, 36, and 46) ..... 3
3. Dorsal anterior head plate with long posterior projection gradually tapering to blunt or pointed end (Fig. 4 and 45-51); HPW/HPL usually less than 0.60; dorsal submarginal head setae shorter than 0.180 (*elutus* subgroup + *otus*) ..... 4  
Dorsal anterior head plate not as above (Fig. 7, 8, and 32-44); HPW/HPL often greater than 0.60; dorsal submarginal head setae often longer than 0.180 ..... 11
4. Posteromedial setae on male metanotum 5 + 5, on female 3 + 3, and dorsal anterior head plate longer than 0.320 ..... *transversifrons*  
Posteromedial setae on male metanotum less than 5 + 5, on female less than 3 + 3, or dorsal anterior head plate usually shorter than 0.320 ..... 5
5. HPW/HPL less than 0.50 and width of head at temples less than 0.550; antennae shorter than 0.240 for males, 0.250 for females ..... *lophotrix*  
HPW/HPL greater than 0.50 or width of head at temples greater than 0.550; antennae at least 0.240 long for males, 0.250 for females ..... 6
6. Male head shorter than 0.630, dorsal anterior head plate shorter than 0.320; female prothorax narrower than 0.390, width of tergites V-VI less than 0.240 ..... 7  
Male head at least 0.630 long, dorsal anterior head plate at least 0.320 long; female prothorax at least 0.390 wide, width of tergites V-VI at least 0.240 ..... 10
7. Ocular setae longer than 0.160 and dorsal anterior head plate over one-half as wide as long (HPW/HPL at least 0.55), with pointed posterior projection (Fig. 39); male dorsal genitalic plate with deep concavity of anterior margin (Fig. 61) ..... *otus*  
Not as above ..... 8
8. Head plate with blunt projection (Fig. 51); tergo-central setae on II at least 11 for male, at least 13 for female ..... *heterurus*  
Head plate with pointed projection (Fig. 49, 50); tergo-central setae on II less than 11 for male, less than 13 for female ..... 9
9. Head width at temples greater than 0.515 for males, 0.550 for females; male dorsal genitalic plate as in Fig. 68 ..... *crucigerus*  
Head width at temples less than 0.515 for males, 0.550 for females; male dorsal genitalic plate as in Fig. 69 ..... *microgenitalis*
10. Male head shorter than 0.700, antennae 0.260 long or less; female dorsal head plate not over 0.180 wide, antennae not over 0.260 long ..... *virgo*  
Male head at least 0.700 long, antennae 0.260 long or more; female dorsal head plate at least 0.180 wide, antennae longer than 0.260 ..... *elutus*
11. Head roundish, pre-conal margins more or less convex, THW/HL greater than 1.00, and with sharply pointed posterior projection of dorsal anterior head plate (Fig. 21-23 and 42-44) (*ceblebrachys* subgroup) ..... 12  
Head not roundish, THW/HL less than 1.00, or without pointed posterior projection of dorsal anterior head plate (Fig. 10-20 and 37) (remainder of *cursitans* subgroup) ..... 14
12. Dorsal anterior head plate wider than long, HPW/HPL greater than 1.00; posteromedial setae of metanotum at least 12;

- male dorsal genitalic plate as in Fig. 63  
*ceblebrachys*
- Dorsal anterior head plate not wider than long, HPL/HPL 1.00 or less; postero-medial setae of metanotum usually less than 12; male dorsal genitalic plate as in Fig. 64 or 65 ..... 13
13. Anterior head width 0.190 or less; male antennae longer than 0.245, female longer than 0.270; male dorsal genitalic plate as in Fig. 64 ..... *zumpti*  
 Anterior head wider than 0.190; male antennae shorter than 0.245, female shorter than 0.270; male dorsal genitalic plate as in Fig. 65 ..... *oculatus*
14. THW/HL greater than 0.93 and posterior projection of dorsal anterior head plate blunt (Fig. 36-38) ..... 15  
 THW/HL less than 0.93 or posterior projection of dorsal anterior head plate pointed (Fig. 39 and 40) ..... 21
15. Preconal head margins more or less convex (Fig. 20); female anterior head narrower than 0.180; dorsal anterior head plate as in Fig. 41 ..... *chilenis*  
 Preconal head margins more or less concave (Fig. 15-17); female anterior head wider than 0.180; dorsal anterior head plate not as above (Fig. 36-38) ..... 16
16. Female head usually longer than 0.635 with posterior projection of dorsal anterior head plate unusually long (Fig. 36), metathorax usually wider than 0.560; male genitalic width 0.140 or more, dorsal genitalic plate as in Fig. 58 ..... *synnisi*  
 Female head usually shorter than 0.635 with shorter posterior projection of dorsal anterior head plate (Fig. 37 and 38), metathorax usually narrower than 0.560; male genitalic width usually less than 0.140, dorsal genitalic plate not as in Fig. 58 ..... 17
17. Pleural seta on each side of segment III long and obvious; THW/HL usually greater than 1.00 ..... 18  
 Pleural seta on each side of segment III very small, often difficult to see; THW/HL usually less than 1.00 ..... 19
18. Dorsal head plate slightly less than one-half head length, male HPL/HL greater than 0.41, female HPL/HL greater than 0.43 ..... *acadicus*  
 Dorsal head plate slightly more than one-third head length, male HPL/HL less than 0.41, female HPL/HL less than 0.43 ..... *pallidus*
19. Male head width at temples greater than 0.540, female greater than 0.590; THW/HL usually greater than 0.95 ..... *acadicus*  
 Male head width at temples 0.540 or less, female less than 0.590; THW/HL usually less than 0.95 ..... 20
20. Dorsal anterior head plate shorter than 0.240; HPL/HL 0.41 or less; anterior margin of male dorsal genitalic plate slightly concave (Fig. 54) ..... *cursitans*  
 Dorsal anterior head plate at least 0.240 long; HPL/HL usually greater than 0.41; anterior margin of male dorsal genitalic plate deeply concave (Fig. 55) ..... *capidus*
21. Preconal head margins more or less convex (Fig. 20); female anterior head narrower than 0.170, dorsal anterior head plate as in Fig. 41 ..... *chilenis*  
 Preconal head margins more or less concave (Fig. 11-13, 18, 19); female anterior head wider than 0.170, dorsal anterior head plate not as above (Fig. 32-34, 39, and 40) ..... 22
22. Dorsal anterior head plate with blunt posterior projection (Fig. 34) and dorsal submarginal head setae usually shorter than 0.240; male head width at temples usually less than 0.470, female less than 0.525 ..... *tuleskovi*  
 Dorsal anterior head plate with pointed posterior projection (Fig. 39 and 40) or dorsal submarginal head setae usually longer than 0.240; male head width at temples usually greater than 0.470, female greater than 0.525 ..... 23
23. Dorsal anterior head plate with pointed posterior projection (Fig. 39) and with 0-1 tergo-central setae bordering male tergites VI-VII, usually 0 in female; dorsal submarginal head setae usually shorter than 0.260; male dorsal genitalic plate as in Fig. 61, with anterior "arms" 0.030 or longer ..... *otus*  
 Dorsal anterior head plate with blunt posterior projection (Fig. 32, 33) and usually at least 2 tergo-central setae bordering male tergites VI-VII, usually at least 1 in female; dorsal submarginal head setae often longer than 0.260; male dorsal genitalic plate as in Fig. 54, 55, or 62, with anterior "arms" shorter than 0.030 ..... 24
24. Dorsal anterior head plate shorter than 0.240, with blunt posterior projection (Fig. 32); HPL/HL 0.41 or less; anterior margin of male dorsal genitalic plate as in Fig. 54 ..... *cursitans*  
 Dorsal anterior head plate at least 0.240 long or with pointed posterior projection (Fig. 40); HPL/HL often greater than 0.41; anterior margin of male dorsal genitalic plate as in Fig. 55 or 62 ..... 25
25. Posterior projection of dorsal anterior head plate blunt (Fig. 33); male dorsal genitalic plate as in Fig. 55 ..... *capidus*  
 Posterior projection of dorsal anterior head plate more or less pointed (Fig. 40); male dorsal genitalic plate as in Fig. 62 ..... 26
26. Male head shorter than 0.550, female shorter than 0.590; male preconal head width

less than 0.380, female less than 0.415; male dorsal head plate narrower than 0.160, female narrower than 0.180

..... *speotyti desertae*

Male head longer than 0.550, female 0.590 long or more; male preconal head width at least 0.380, female at least 0.420; male dorsal head plate wider than 0.160, female wider than 0.180

27

27. Male dorsal anterior head plate shorter than 0.240, female shorter than 0.250; male metathorax narrower than 0.460, female narrower than 0.490

..... *speotyti altiplanus*

Male dorsal anterior head plate 0.240 or longer, female longer than 0.250; male metathorax wider than 0.460, female wider than 0.490

..... *speotyti speotyti*

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### Appendix A

#### Host-Parasite List for the *Strigiphilus cursitans* Group (Hosts according to Peters 1940)

Host Taxa	<i>Strigiphilus</i> Taxa
<i>Otus scops</i>	<i>tuleskoei</i>
<i>Otus senegalensis</i>	<i>tuleskoei</i>
<i>Otus asio</i>	<i>otus</i>
<i>Otus choliba</i>	<i>crucigerus</i>
<i>Otus minimus</i>	<i>lophostrix</i>
<i>Lophostrix cristata</i>	<i>transversifrons</i>
	<i>lophostrix</i>
<i>Bubo virginianus</i>	<i>synnii</i>
	<i>chilensis</i>
	<i>oculatus</i>
	<i>elutus</i>
<i>Bubo lacteus</i>	<i>zumpti</i>
<i>Pulsatrix perspicillata</i>	<i>elutus</i>
<i>Nyctea scandiaca</i>	<i>ceblebrachys</i>
<i>Glaucidium brasilianum</i>	<i>microgenitalis</i>
<i>Ninox novaeseelandiae</i>	<i>capidus</i>
<i>Athene noctua</i>	<i>cursitans</i>
<i>Athene brama</i>	<i>bramae</i>
<i>Speotyto cunicularia</i>	<i>speotyti speotyti</i>
	<i>speotyti desertae</i>
	<i>speotyti altiplanus</i>
<i>Ciccaba virgata</i>	<i>virgo</i>
<i>Strix occidentalis</i>	<i>synnii</i>
<i>Strix varia</i>	<i>synnii</i>
<i>Strix nebulosa</i>	<i>synnii</i>
<i>Rhinoptynx clamator</i>	<i>heterurus</i>
<i>Asio capensis</i>	<i>capensis</i>
<i>Aegolius funereus</i>	<i>pallidus</i>
<i>Aegolius acadicus</i>	<i>acadicus</i>