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Species of *Reticulipeurus* Kéler, 1958 (Phthiraptera, Ischnocera, *Oxylipeurus*-complex) parasitic on species of *Arborophila*, with description of a new subgenus and three new species

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Abstract

A new subgenus and three new species of parasitic lice (Phthiraptera: Ischnocera) in the *Oxylipeurus*-complex are described and illustrated. *Forcipurellus* **new subgenus** is part of the genus *Reticulipeurus* Kéler, 1958, and only includes species parasitic on partridges of the genus *Arborophila* Hodgson, 1837. The new species are: *Reticulipeurus* (*Forcipurellus*) *diki* **new species** ex *Arborophila rubrirostris* (Salvadori, 1879); *Reticulipeurus* (*Forcipurellus*) *bracatus* **new species** ex *Arborophila atrogularis* (Blyth, 1849); *Reticulipeurus* (*Forcipurellus*) *longistylus* **new species** ex *Arborophila rufogularis guttata* Delacour & Jabouille, 1928 and two other host subspecies. In addition, we redescribe the species *Reticulipeurus* (*Forcipurellus*) *formosanus* (Uchida, 1917) ex *Arborophila crudigularis* (Swinhoe, 1864) and *Reticulipeurus* (*Forcipurellus*) *nitzschi* Kéler, 1958 ex *Arborophila torqueola torqueola* (Valenciennes, 1825) and *Arborophila torqueola millardi* (Baker, 1921). Also, we briefly discuss four additional species that could not be described based on the specimens examined. A key to identify all species in the subgenus *Forcipurellus* is provided, as well as an emendation to include *Forcipurellus* in a previously published key to the *Oxylipeurus*-complex.

Key words: Phthiraptera, Ischnocera, *Oxylipeurus*-complex, *Reticulipeurus, Forcipurellus*, *Arborophila*, new subgenus, new species, new host record

Introduction

The *Oxylipeurus*-complex comprises a group of at least fifteen genera of chewing lice primarily parasitising game birds (Galliformes) (Gustafsson *et al.* 2020a). Members of this complex can be recognised by the presence of a distal elongation ("stylus") of the median section of the male subgenital plate, which may extend beyond the distal margin of the abdomen. Most of the slender-bodied specimens in this complex were placed in the polytypic genus *Oxylipeurus* Mjöberg, 1910 during most of the 20th century, following the conservative taxonomy of Clay (1938). However, several authors realised that the morphology of many species was sufficiently distinct from *Oxylipeurus* sensu stricto to place them in other genera (Carriker 1945; Kéler 1958; Mey 1982, 1990, 2010; Gustafsson *et al*. 2020a,b; Gustafsson & Zou 2020a,b).

Gustafsson *et al*. (2020b) reviewed the species of this complex known from China and resurrected the genus *Reticulipeurus* Kéler, 1958, noting that two different groups of the *Oxylipeurus*-complex occurred on hosts in the genus *Arborophila* Hodgson, 1837: the genus *Megalipeurus* Kéler, 1958, which includes the species *Lipeurus unicolor* Piaget, 1880, and some members of the genus *Reticulipeurus*. *Megalipeurus* is known from several genera of Southeast Asian galliform hosts (Clay 1938; Emerson & Ward 1958; Elbel & Price 1970; Gustafsson *et al*. 2020b), many of which are not closely related (Kimball *et al.* 2021). However, the group of *Reticulipeurus* species found on *Arborophila* spp. appear to be limited to this host genus; Gustafsson *et al*. (2020b) noted that this group was so morphologically distinct that its separation into a different subgenus was warranted. In this paper, we describe this

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new taxon—*Forcipurellus* **new subgenus—**and redescribe the two known species belonging to this subgenus. In addition, we describe three new species of *Reticulipeurus* (*Forcipurellus*) from other *Arborophila* partridges from Southeast Asia. Also: we emendate the key to identify the genera of the *Oxylipeurus*-complex in Gustafsson *et al*. (2020a) to include *Forcipurellus*; we present a key to the species of *Forcipurellus*; and we briefly discuss four additional species that could not be described because of insufficient number of specimens or the poor quality of some of the specimens examined.

Material and methods

All specimens examined are deposited at the Natural History Museum, London (NHML) as permanent slide-mounts. Drawings of these were prepared by hand using a drawing tube attached to a Nikon Eclipse N*i* microscope (Nikon Corporation, Tokyo, Japan), then collated and edited in GIMP (www.gimp.org). Measurements (all in mm) were made from images in NIS-Elements (Nikon Corporation, Tokyo, Japan) for the following dimensions: TL = total length (along midline); HL = head length (along midline); POW = preocular width (at preantennal nodi); HW = head width (at temples); PRW = prothoracic width; PTW = pterothoracic width; AW = abdominal width (at segment V). All measurements are summarised in Table 1.

Host taxonomy and nomenclature follow Clements *et al*. (2021) and Madge & McGowan (2002). Terminology for louse morphology and setal characters, and abbreviations thereof, follow Clay (1951), Mey (1994), Gustafsson & Bush (2017) and Gustafsson *et al*. (2019, 2020b). Setae are fully named, defined and given an abbreviated code, only when first mentioned in the descriptions.

Reticulation, pigmentation and sternal plates:

In most of the specimens we have examined, both reticulation patterns and pigmentation are faint; however, this feature does not appear to be an artifact of specimen preparation. Moreover, sternal and subgenital plates are poorly sclerotised and the outlines of these are difficult to see in all specimens examined. Therefore, here we have illustrated these plates tentatively, based on the visible extent of reticulation, which is only illustrated partially. For all species, reticulation extends to part or all of the tergopleurites median to the spiracle openings, sternal and subgenital plates, and femurs. More faint reticulation may be present on: pronotum, pteronotum, mesometasternum, metepisternum, dorsal head, and ventral head anterior to the ventral carina. The reticulation on these body parts is illustrated only when it is clearly visible. However, the illustrated reticulation patterns should not be interpreted as exact representations, rather as indications of the approximate size and shape of the cells in the reticulation.

Systematics

PHTHIRAPTERA Haeckel, 1896
Phthiraptera Haeckel 1896: 703.

Ischnocera Kellogg, 1896
Ischnocera Kellogg, 1896: 63.

Philopteridae Burmeister, 1838
Philopteridae Burmeister, 1838: 422.

***Oxylipeurus*-complex**
***Reticulipeurus* Kéler, 1958**

***Forcipurellus* new subgenus**
Type species: *Lipeurus formosanus* Uchida, 1917.

Diagnosis. Members of the subgenus *Forcipurellus* can be separated from members of the nominate subgenus by

the following combination of characters [see Gustafsson *et al*. (2020b) for illustrations of the nominate subgenus]: male stylus subterminal in *R.* (*Reticulipeurus*), but terminal in *R.* (*Forcipurellus*) (*e.g.* Fig. 43); distal end of female abdomen with prominent, typically medianly curved, "claspers" in *R.* (*Forcipurellus*) (*e.g.* Figs 8, 16, 23), but without such structures in *R.* (*Reticulipeurus*); female vulval margin in *R.* (*Forcipurellus*) with distinct lateral lobes and more or less convex median section (*e.g.* Figs 8, 16, 23), whereas in the nominate subgenus the vulval margin is either gently concave without distinct lateral lobes and median convex section, or if lateral sections are lobe-like, then median section is not convex. In general, reticulation patterns in *R.* (*Forcipurellus*) are not as extensive as in some species of the nominate subgenus, but this varies among species in *R.* (*Reticulipeurus*).

Description. ***Both sexes*.** Generally small, slender species with oblong heads (Fig. 3). Frons rounded, marginal carina uninterrupted. Internal sinuous thickenings present near frons. Dorsal preantennal suture present, reaching *anterior dorsal seta*. Head chaetotaxy as in nominate subgenus, except that head sensilla *s1–4, s6–8* all present, and *s2* is farther anterior to *s1* than in nominate subgenus; *mandibular seta* as mesosetae. Coni small. Antennae sexually dimorphic: male scape, pedicel and flagellomere I enlarged, not in female, but degree of male modification variable among species.

Pronotum with 1 *pronotal marginal-lateral seta* (*pmls*) and 1 *pronotal post-spiracular seta* (*ppss*) on each side; *pronotal dorsal anterior seta* (*pdas*) may be present as in nominate subgenus, but if present too small to see in examined specimens. Pteronotum with 1 *anterior* and 1 *posterior submarginal meso-metanotal* seta (*asmns* and *psmns*, respectively), 1 *pterothoracic trichoid seta* (*ptrs*) and 1 *pterothoracic thorn-like seta* (*pths*) on each side. *Marginal mesometathoracic setae* (*mms*) in single group of four setae on each side, widely separated medianly (Figs 1–2). Leg chaetotaxy largely as in nominate subgenus, but setae *fII-d1, fII-a3, fIII-d1,* and *fIII-a3* more marginal, and *tbII-p3* and *tbIII-p3* hyaline; *tI-v3* not clearly visible in examined specimens, but may be present.

Abdomen slender, with tergopleurites II–VIII medianly divided and tergopleurites IX–XI fused (Figs 1–2). Central sternal plates present on segments II–VI or II–VII (males of some species), but poorly sclerotised. Abdominal chaetotaxy sparse, identical in all species.

Male. Antennal scape swollen, about twice as long as female and much wider in some species, with basal modifications (*e.g*. Fig. 11); pedicel may be modified in shape compared to that of female (*e.g*. Fig. 12), but roughly similar in size; flagellomere I may be swollen or extended distally (*e.g*. Fig. 3), but not in all species (Fig. 19); flagellomere I may also be elongated and slightly curved (Fig, 11). Distal end of abdomen concave (*e.g*. Figs 40–44). Subgenital plate with terminal stylus that reaches beyond distal margin of abdomen (*e.g*. Figs 40–44); fusion of subgenital plate and sternal plate VII not clearly visible, and may be variable between species as illustrated here (*e.g.* Figs 40–44). Genitalia: Basal apodeme slender; mesosome with hooked antero-lateral extensions overlapping with basal apodeme; distal margin of mesosome rugose; ventral sclerite proportionately larger than is normal in nominate subgenus, but structurally similar, with lateral extensions bearing 1–2 *gonoporal posterior mesosomal setae* (*gpmes*) visible at sensilla on each side; gonopore elongate, not fused distally; parameres slender, with blunt or somewhat elongated heads with *parameral seta 1* (*pst1*) as sensillus and *parameral seta 2* (*pst2*) as microseta near apical end of paramere (*e.g.* Figs 5–7, 13–15).

Female. Abdominal segments IX–XI fused, with distal end forming medianly curved "claspers" (*e.g*. Figs 8, 16, 23). *Anal setae* divided into 1 dorsal and 2 ventro-marginal on each side. Sternal plate VII generally rectangular but may bulge distally in median section (Fig. 2); however, sternal and subgenital plates are generally poorly sclerotised and outlines are illustrated approximately. Subgenital plate with medianly divided cross-pieces on each side, following the vulval margin laterally. Vulval margin medianly convex (*e.g*. Figs 8, 16, 23), with small number of slender *vulval submarginal setae* (*vss*); laterally; the vulval margin forms a distinct rounded lobe on each side, with numerous slender *vulval marginal setae* (*vms*) on each side. One, rarely two, short setae on each side situated between subgenital plate and vulval margin may represent the *vulval oblique setae* (*vos*). Vulval margin laterally with sclerotised cross-piece, which is not fused medianly, and may be reticulated partially. Subvulval plates not visible, but may be poorly sclerotised.

Host distribution. All known species of *Forcipurellus* parasitise species of the genus *Arborophila* Hodgson, 1837 (Galliformes: Phasianidae).

Geographical range. Most of the known species of *Forcipurellus* span the range of the host genus, from Taiwan and Sumatra to Sikkim in India.

Etymology. The name *Forcipurellus* is constructed by "*forcipatus*" Latin for "pincer", "*ourá*" Greek from "tail", and *ellus*" Latin for "small". The first two words refer to the prominent claspers of the distal female abdo-

men, which separate all members of this subgenus from other species of *Reticulipeurus*, with the addition of "*ellus*" referring to the size of *Forcipurellus* species, generally smaller than those of the nominate subgenus.

Species included in *Forcipurellus*
Reticulipeurus (*Forcipurellus*) *formosanus* (Uchida, 1917)
Type host: *Arborophila crudigularis* (Swinhoe, 1864).

Reticulipeurus (*Forcipurellus*) *nitzschi* Kéler, 1958
Type host: *Arborophila torqueola* (Valenciennes, 1825).

Reticulipeurus (*Forcipurellus*) *bracatus* **new species**
Type host: *Arborophila atrogularis* (Blyth, 1849).

Reticulipeurus (*Forcipurellus*) *diki* **new species**
Type host: *Arborophila rubrirostris* (Salvadori, 1879)

Reticulipeurus (*Forcipurellus*) *longistylus* **new species**
Type host: *Arborophila rufogularis guttata* Delacour & Jabouille, 1928.

All other species of known *Reticulipeurus* are placed in the nominate subgenus.

Reticulipeurus (*Forcipurellus*) *formosanus* (Uchida, 1917)
(Figs 1–8, 42)

Lipeurus formosanus Uchida, 1917: 179, fig. 1.
Oxylipeurus formosanus (Uchida), 1917; Clay 1938: 181.
Reticulipeurus formosanus [(Uchida, 1917)]; Kéler 1958: 327, figs 15, 33.

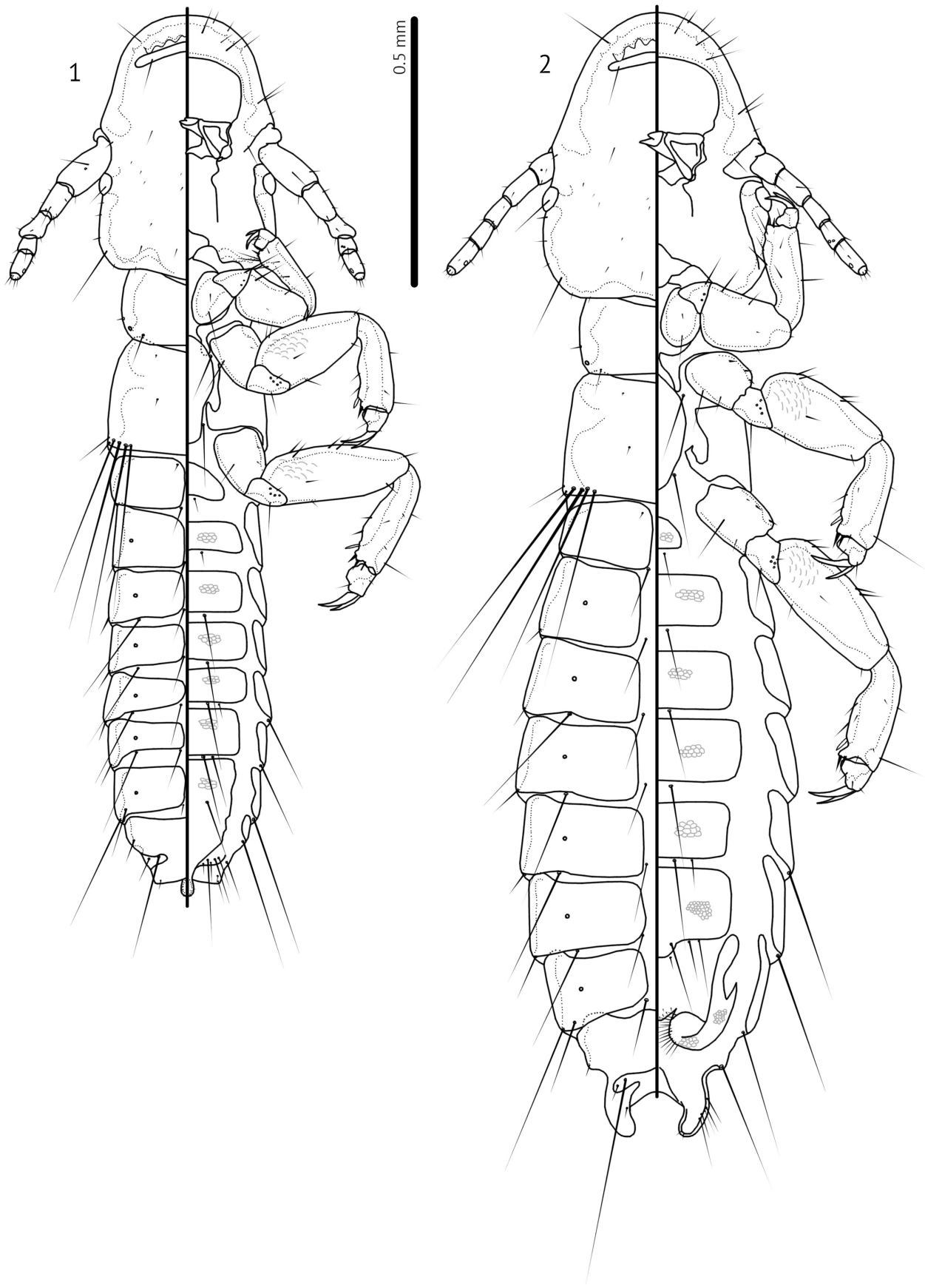
Type host. *Arborophila crudigularis* (Swinhoe, 1864)—Taiwan partridge.

Type locality. Mount Arisan, Nantou County, Taiwan.

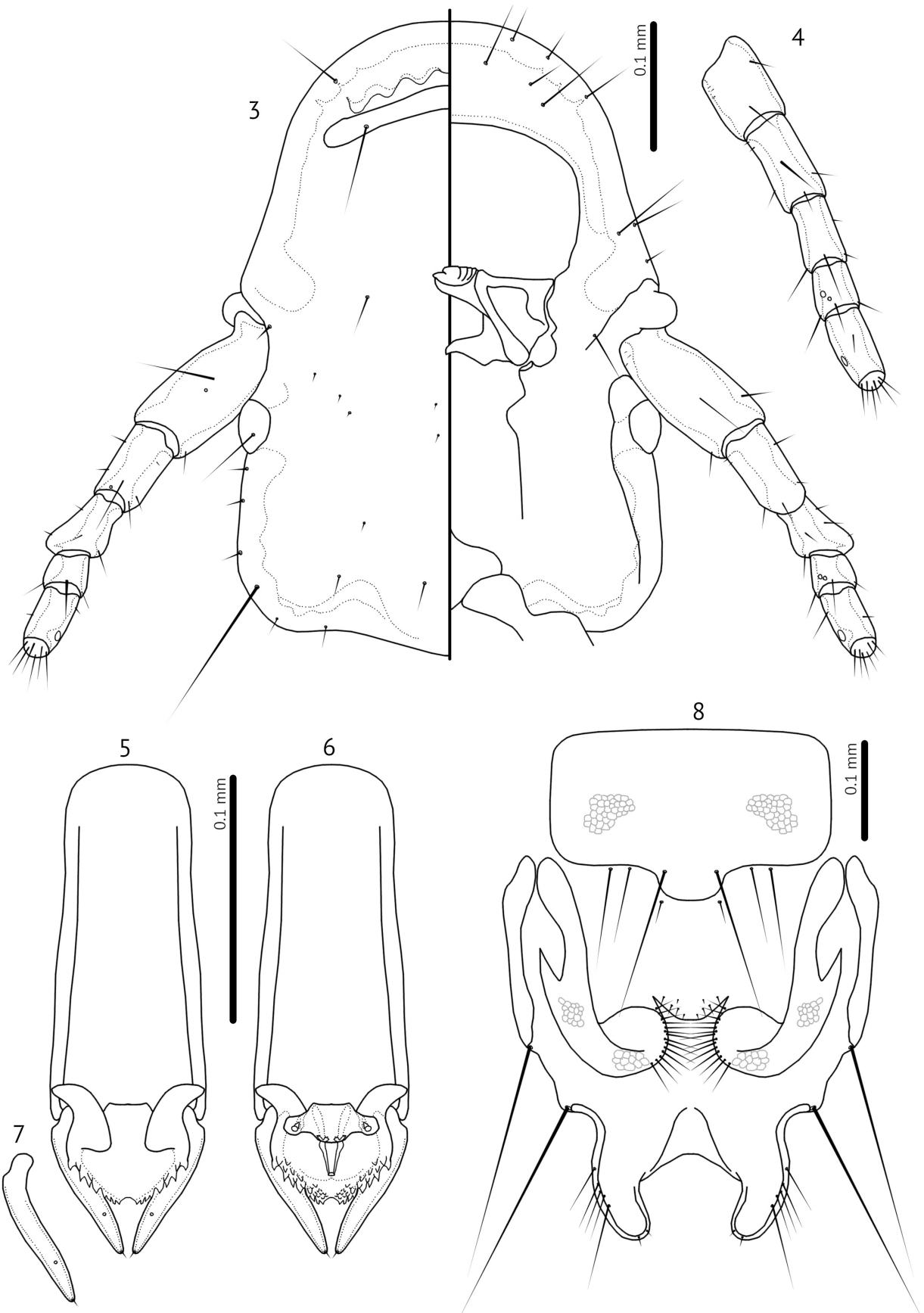
Description. Preantennal head broadly rounded (Fig. 3). Male scape longer than female (Fig. 4), but not much wider and not otherwise modified; male flagellomere I with distal extension. Head chaetotaxy as in Fig. 3. Lateral margins of temples more or less parallel in male. Thoracic and abdominal segments and chaetotaxy as in Figs 1–2. Distal abdomen of male as in Fig. 42; sternal plate VII apparently separate from subgenital plate; stylus short, spatulate; distal margin of segment XI only barely concave, lateral corners not extended distally. Male genitalia as in Figs 5–7. Distal rugosity of mesosome somewhat coarse. Ventral sclerite with slightly concave anterior margin and only one visible *gpmes* on each side. Gonopore does not approach distal margin of mesosome. Parameres slender, convergent, with slightly bulging heads; *pst1* in distal fourth of paramere. Female sternal plate VII may have median bulge on distal margin (Fig. 8), but this is not clear due to poor sclerotisation. Median bulge of vulval margin pronounced, with 4–6 *vss* on each side; lateral lobes with 15–20 long, slender *vms* on each side. Lateral margin of claspers with 5–7 lateral setae on each side. Measurements as in Table 1.

Non-type material examined: Ex *Arborophila crudigularis*: 5♀, Taiwan [as Formosa], Nov. 1898, coll. R. Meinertzhagen, 3595, NHMUK010682415 (NHML). 1♂, 1♀, Taiwan [as Formosa], Apr. 1912, no collector, 16, NHMUK010682414 (NHML).

Remarks. Price *et al*. (2003: 203) listed *Arborophila brunneopectus* (Blyth, 1855) and *Arborophila cambodiana* Delacour & Jabouille, 1928 as hosts of "*Oxylipeurus formosanus*", citing Emerson & Elbel (1957) as a source for *A. brunneopectus*, but none for *A. cambodiana*. We have not examined any specimen from *A. cambodiana*, but our specimens examined from *A. brunneopectus* are not conspecific with *R.* (*F.*) *formosanus* (see below under ***Reticulipeurus* (*Forcipurellus*) species 1**). Therefore, these two hosts are not included here.



FIGURES 1–2. *Reticulipeurus* (*Forcipurellus*) *formosanus* (Uchida, 1917). **1,** male habitus, dorsal and ventral views. **2,** female habitus, dorsal and ventral views.



FIGURES 3–8. *Reticulipeurus* (*Forcipurellus*) *formosanus* (Uchida, 1917). **3,** male head, dorsal and ventral view. **4,** female antenna, ventral view. **5,** male genitalia, dorsal view. **6,** male genitalia, ventral view. **7,** male paramere, dorsal view. **8,** female subgenital plate, vulval margin, and terminalia, ventral view.

TABLE 1. Measurements of the species of *Reticulipeurus* (*Forcipurellus*).

Measurements (all in mm) were made from live images in NIS-Elements (Nikon Corporation, Tokyo, Japan) for the following dimensions: TL = total length (along midline); HL = head length (along midline); POW = preocular width (at preantennal nodi); HW = head width (at temples); PRW = prothoracic width; PTW = pterothoracic width; AW = abdominal width (at segment V).

Louse species	Host species	Sex	N	TL	HL	HW	PRW	PTW	AW
Reticulipeurus (*F.*) *bracatus*	*Arborophila*	M	1	1.73	0.49	0.33	0.24	0.27	0.34
	atrogularis	F	1	2.09	0.55	0.40	0.29	0.34	0.51
Reticulipeurus (*F.*) *diki*	*Arborophila*	M	3	1.63–1.65	0.47–0.49	0.31	0.32–0.34	0.23–0.24	0.26–0.29
	rubrirostris	F	4	1.92–1.99	0.53–0.54	0.35–0.36	0.39	0.27–0.28	0.31–0.33
Reticulipeurus (*F.*) *formosanus*	*Arborophila*	M	1	1.66	0.47	0.32	0.34	0.24	0.29
	crudigularis	F	6	1.98–2.15	0.53–0.56	0.35–0.38	0.39–0.44	0.27–0.28	0.33–0.38
Reticulipeurus (*F.*) *longistylus*	*Arborophila rufogularis guttata*	M	2	2.11–2.13	0.56–0.59	0.34–0.38	0.36–0.38	0.26–0.29	0.36–037
	Arborophila	M	2	2.09–2.19	0.59	0.36–0.38	0.36–0.37	0.28	0.36–0.37
	rufogularis intermedia	F	3	2.15–2.42	0.60–0.63	0.40	0.42–0.43	0.30	0.37–0.42
	Arborophila rufogularis tickelli	F	4	2.19–2.41	0.58–0.60	0.40–0.43	0.31–0.32	0.40–0.42	0.49–0.55
Reticulipeurus (*F.*) *nitzschi*	*Arborophila torqueola millardi*	F	2	2.35–2.42	0.59–0.62	0.38–0.39	0.44–0.45	0.29–0.33	0.35–0.37
	Arborophila	M	2	2.08–2.13	0.56–0.58	0.34–0.39	0.35–0.38	0.26–0.27	0.32–0.34
	torqueola torqueola	F	1	2.21	0.59	0.39	0.43	0.27	0.34

Reticulipeurus (*Forcipurellus*) *nitzschi* Kéler, 1958
(Figs 9–16, 44)

Reticulipeurus nitzschi Kéler, 1958: 333, figs 14, 16, 43, 52.
Oxylipeurus nitzschi (Kéler, 1958); Price *et al*. 2003: 204.

Type host. *Arborophila torqueola torqueola* (Valenciennes, 1825)—hill partridge.

Type locality. Sikkim, India.

Other host. *Arborophila torqueola millardi* (Baker, 1921), **new host record.**

Description. Preantennal head broadly rounded (Fig. 11). Male scape longer than female (Fig. 12), much wider and with basal section bulging; male pedicel slightly curved; male flagellomere I with distal extension. Head chaetotaxy as in Fig. 11. Lateral margins of temples more or less parallel in male. Thoracic and abdominal segments and chaetotaxy as in Figs 9–10. Distal abdomen of male as in Fig. 44; sternal plate VII apparently completely fused to subgenital plate; stylus short, spatulate; distal margin of segment XI slightly concave, lateral corners not extended distally. Male genitalia as in Figs 13–15. Distal rugosity of mesosome fine, extensive. Ventral sclerite with concave anterior margin and two visible *gpmes* on each side. Gonopore does not approach distal margin of mesosome. Parameres slender, slightly divergent distally, with somewhat rectangular heads; *pst1* in distal third of paramere. Female sternal plate VII without median bulge on distal margin (Fig. 16). Median bulge of vulval margin slight, with 3–6 *vss* on each side (3 in specimen from type host subspecies, 4–6 in specimens from *A. t. millardi*); lateral lobes with 17–25 long, slender *vms* on each side (apparently 17–20 in single specimen from type host subspecies, but partially obscured by gut content; 22–25 in specimens from *A. t. millardi*). Lateral margin of claspers with 7–9 lateral setae on each side (no difference in specimens from different host subspecies). Measurements as in Table 1.

Type material examined. Ex *Arborophila torqueola torqueola*. **Paratypes:** 2♂, Sikkim [India], May 1896, R. Meinertzhagen, 3611, NHMUK010682524 (NHMUK). 1♀, Assam [India], Nov. 1896, R. Meinertzhagen, 3608, NHMUK010682523 (NHML).

Non-type material examined. Ex *A. torqueola millardi*: 2♀, Central Himalayas [= India?], Nov. 1900, R. Meinertzhagen, 3606, NHMUK010682718 (NHML).

Remarks. Specimens from both host subspecies are very similar, but many measurements of females from the different host subspecies do not overlap; moreover, there are differences in the female genital chaetotaxy. More specimens need to be examined to establish whether these size differences fall within the range of intraspecific variation, or if populations from different host subspecies should be regarded as different species. We here tentatively include lice from both host subspecies in the same species. All illustrations are based on specimens from the type host.

Reticulipeurus (*Forcipurellus*) *bracatus* new species
(Figs 17–23, 40)

Type host. *Arborophila atrogularis* (Blyth, 1849)—white-cheeked partridge.

Type locality. Myanmar.

Diagnosis. *Reticulipeurus* (*Forcipurellus*) *bracatus* is most similar to *R.* (*F.*) *formosanus*, with which it shares the following characters: frons broadly rounded (Figs 3, 19); male scape not modified except length and width compared from female (Figs 3–4, 19–20); ventral sclerite of mesosome of similar shape (Figs 6, 22); male stylus short, spatulate and distal margin of male abdomen shallowly concave (Figs 40, 42). However, these two species can be separated by the following characters: male flagellomere I expanded distally in *R.* (*F.*) *formosanus* (Fig. 3), but not in *R.* (*F.*) *bracatus* (Fig. 19); male mesosome proportionately larger and with coarser rugosity in *R.* (*F.*) *formosanus* (Fig. 6) than in *R.* (*F.*) *bracatus* (Fig. 22); lateral ends of ventral sclerite of male mesosome of different shape (Figs 6, 22); basal apodeme proportionately longer in *R.* (*F.*) *bracatus* (Fig. 21) than in *R.* (*F.*) *formosanus* (Fig, 5); lateral lobes of female vulval margin generally with more *vms* in *R.* (*F.*) *bracatus* (19–22; Fig. 23) than in *R.* (*F.*) *formosanus* (15–20; Fig. 8), but there is some overlap between species in this character, and females may be best separated by the shape of the lateral lobes and claspers (Figs 8, 23), as well as by head shape (Figs 2, 18).

Description. Preantennal head broadly rounded (Fig. 19). Male scape longer than female (Fig. 20), slightly wider but otherwise not modified; male flagellomere I without distal extension. Head chaetotaxy as in Fig. 19.

Lateral margins of temples rounded in male. Thoracic and abdominal segments and chaetotaxy as in Figs 17–18. Holotype male with pterothoracic chaetotaxy aberrant: left side with only 2 *mms* macrosetae on posterior margin, but right side with 4 *mms* macrosetae; we have here illustrated 4 setae; as these are broken in holotype, they are here illustrated tentatively based on comparisons with other species in the group. Paratype female with abdominal segment III aberrant on one side: much reduced in length, distal margin displaced proximally in lateral section, and spiracle opening absent. Female leg II broken off at femur on both sides, and not illustrated. Distal abdomen of male as in Fig. 40; sternal plate VII apparently separate from to subgenital plate; stylus short, spatulate; distal margin of segment XI distinctly concave, lateral corners not extended distally. Male genitalia as in Figs 21–22. Distal rugosity of mesosome fine, limited to near margin. Ventral sclerite with flat anterior margin and two visible *gpmes* on each side. Gonopore approaches distal margin of mesosome. Parameres broken in single examined male, and not illustrated. Female sternal plate VII without median bulge on distal margin (Fig. 23). Median bulge of vulval margin moderate, with 3–5 *vss* on each side; lateral lobes with 19–22 long, slender *vms* on each side. Lateral margin of claspers with 7–8 lateral setae on each side. Measurements as in Table 1.

Type material examined. Holotype 1♂, Burma [= Myanmar], no date, coll. R. Meinertzhagen, 13341, NHMUK010682695 (NHML). **Paratype** 1♀, same data as holotype (NHML).

Etymology. The species epithet is derived from "*bracatus*", Latin for "wearing trousers". This refers to the reticulation patterns of femurs II and III, which can be clearly seen in this species, more than in the other species treated here.

Reticulipeurus (*Forcipurellus*) *diki* new species

(Figs 24–31, 41)

Type host. *Arborophila rubrirostris* (Salvadori, 1879)—red-billed partridge.

Type locality. Sumatra, Indonesia.

Diagnosis. *Reticulipeurus* (*Forcipurellus*) *diki* can be separated from all other species in the subgenus by the following combination of characters: preantennal head more narrowly pointed (Fig. 26); male flagellomere I not expanded distally (Fig. 26); ventral sclerite of male genitalia with broadly rounded anterior margin (Fig. 29); male temples rounded (Fig. 26); male stylus spatulate (Fig. 41).

Description. Preantennal head somewhat pointed (Fig. 26). Male scape longer than female (Fig. 27), slightly wider but not otherwise modified; male pedicel slightly curved; male flagellomere I without distal extension. Head chaetotaxy as in Fig. 26. Lateral margins of temples rounded in male. Thoracic and abdominal segments and chaetotaxy as in Figs 24–25. Distal abdomen of male as in Fig. 41; sternal plate VII apparently separate from subgenital plate; stylus short, spatulate; distal margin of segment XI clearly concave, lateral corners not extended distally. Male genitalia as in Figs 28–30. Distal rugosity of mesosome somewhat coarse, extensive. Ventral sclerite with broadly convex anterior margin and two visible *gpmes* on each side. Gonopore does not approach distal margin of mesosome. Parameres slender, convergent, with slightly bulging heads; *pst1* in distal third of paramere. Female sternal plate VII without median bulge on distal margin (Fig. 31). Median bulge of vulval margin moderate, with 4–6 *vss* on each side; lateral lobes with 19–21 long, slender *vms* on each side. Lateral margin of claspers with 6–9 lateral setae on each side. Measurements as in Table 1.

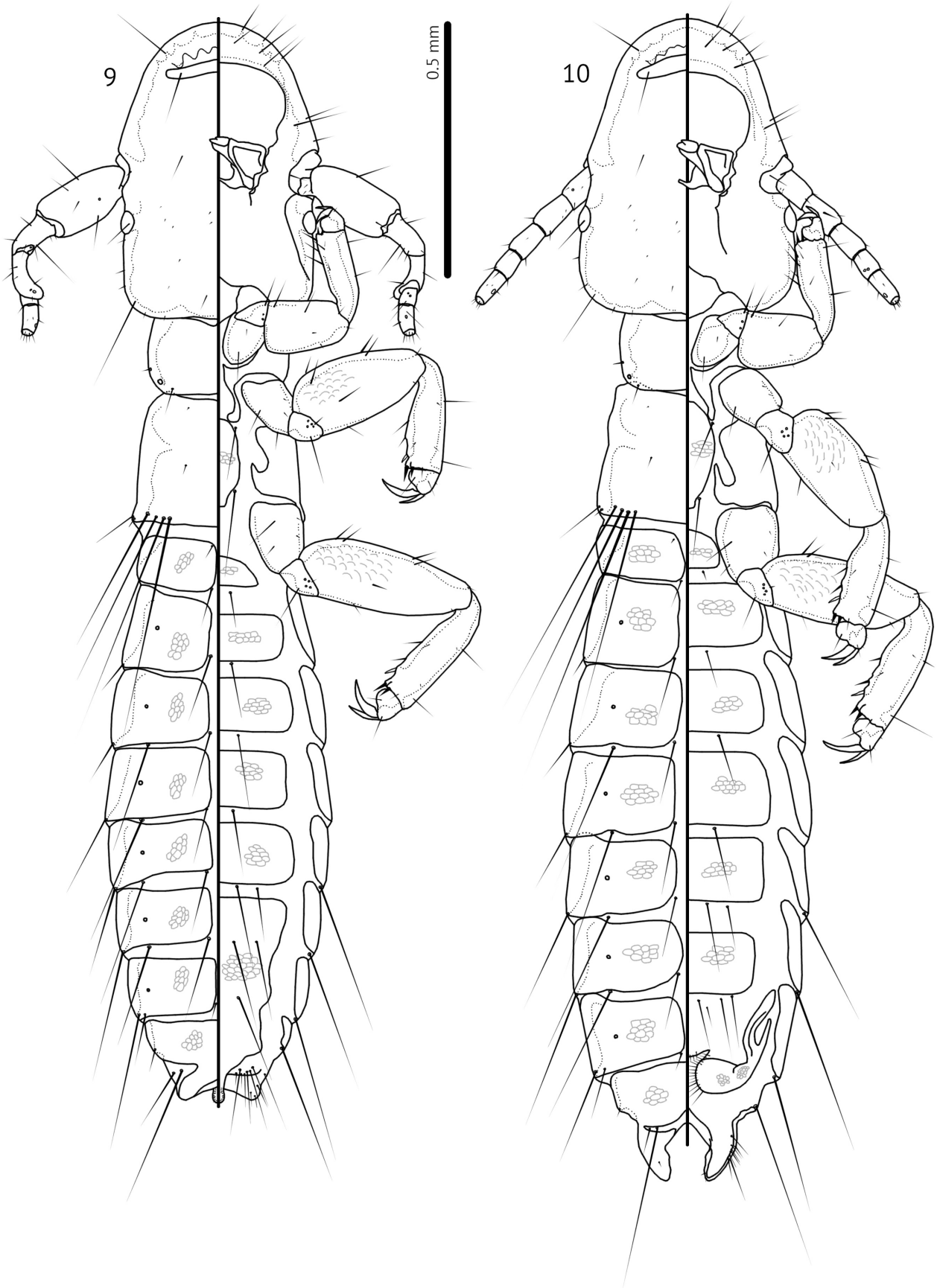
Type material examined. Holotype 1♂, Sumatra, [Indonesia], Dec. 1900, no collector, 22, NHMUK010682701 (NHML). **Paratypes** 1♂, 3♀, same data as holotype, NHMUK010682701–2 (NHML). 1♂, 1♀, Sumatra, no date, coll. R. Meinertzhagen, 8344, NHMUK010682703 (NHML).

Etymology. The species epithet honours our friend and colleague Bilal Dik (Veterinary Faculty, Selçuk University, Konya, Turkey), who has systematically and meticulously examined the chewing louse fauna of Turkey for many decades, making it one of the best known of the Mediterranean and Middle East regions.

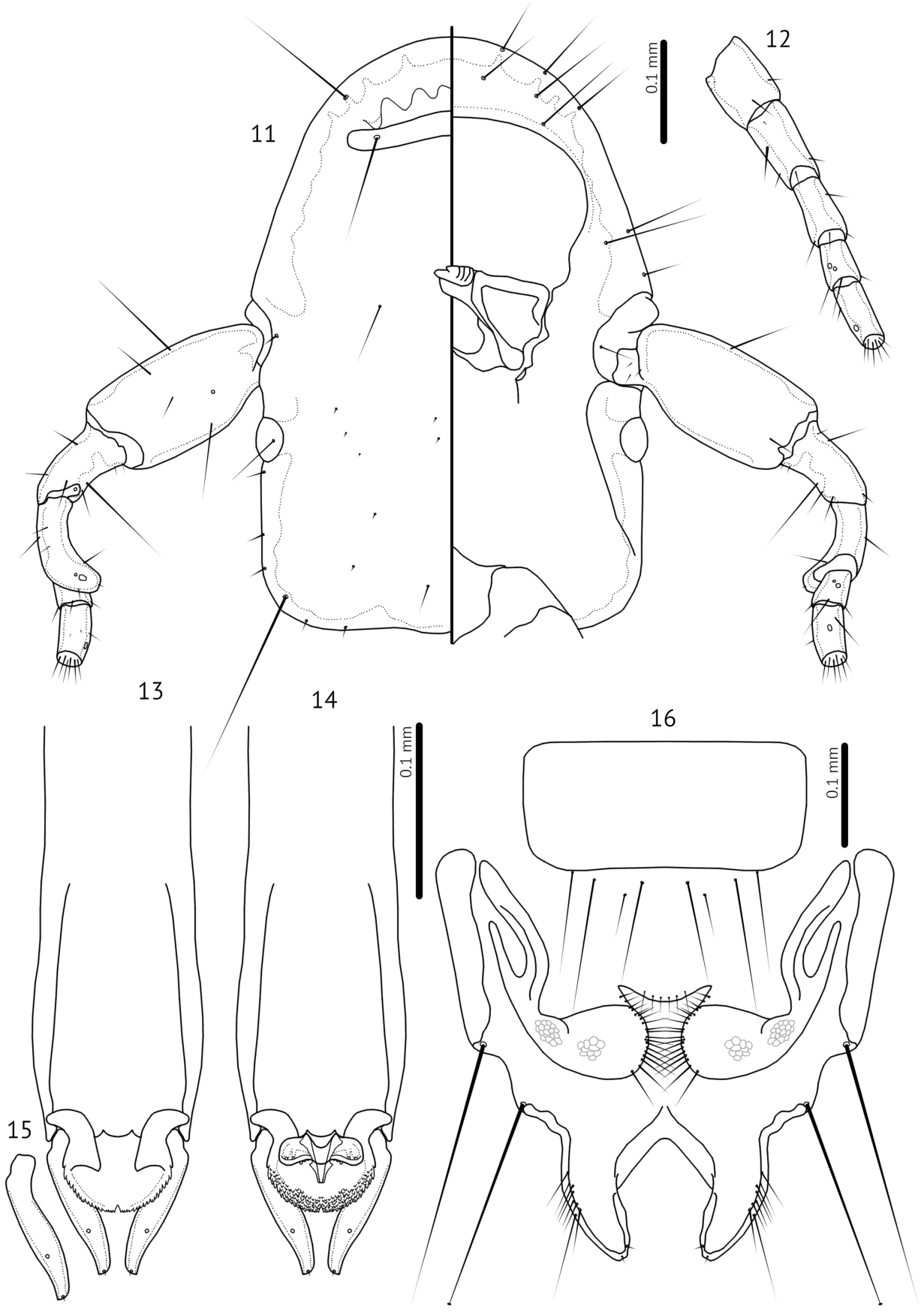
Reticulipeurus (*Forcipurellus*) *longistylus* new species

(Figs 32–39, 43)

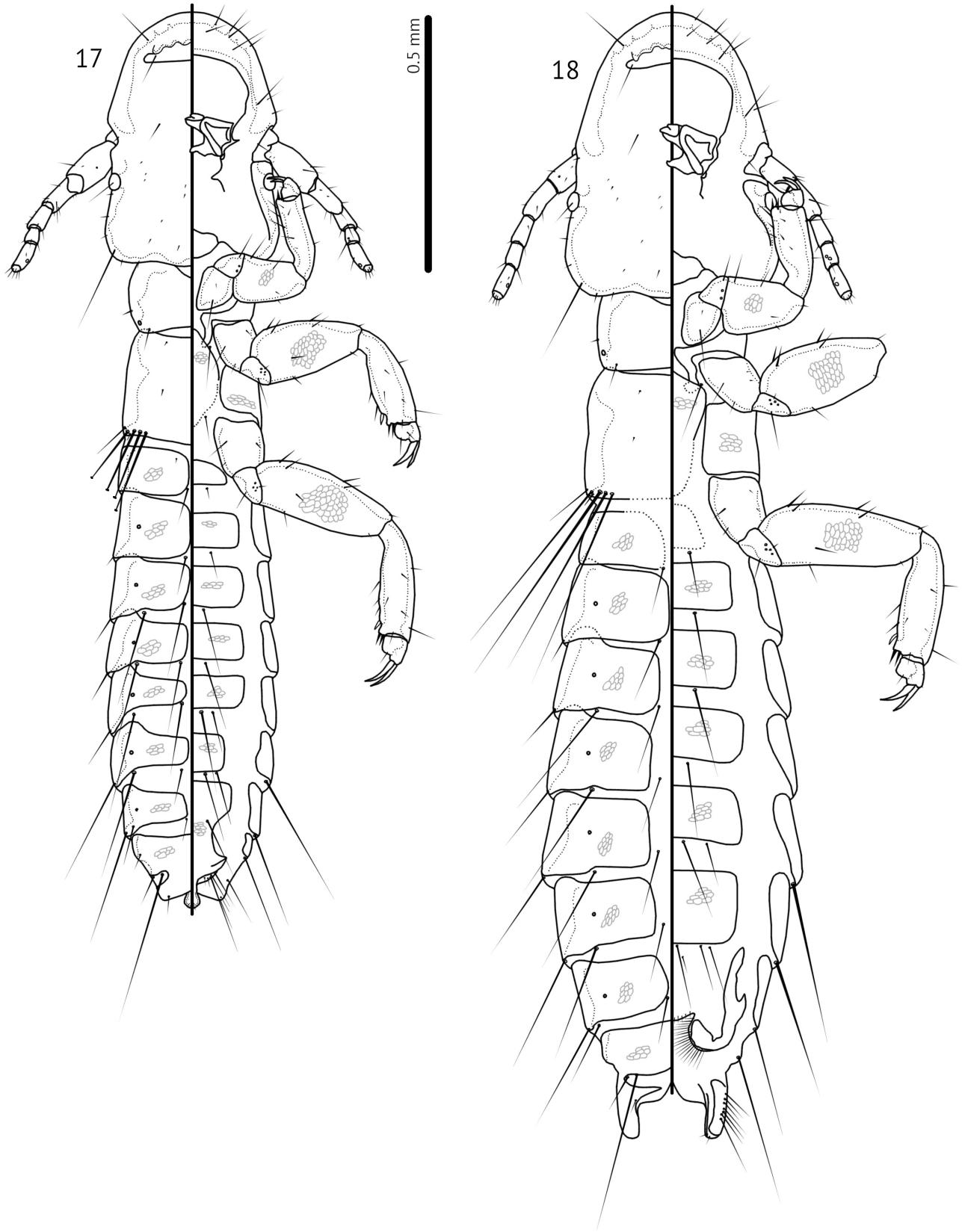
Type host. *Arborophila rufogularis guttata* Delacour & Jabouille, 1928—rufous-throated partridge.



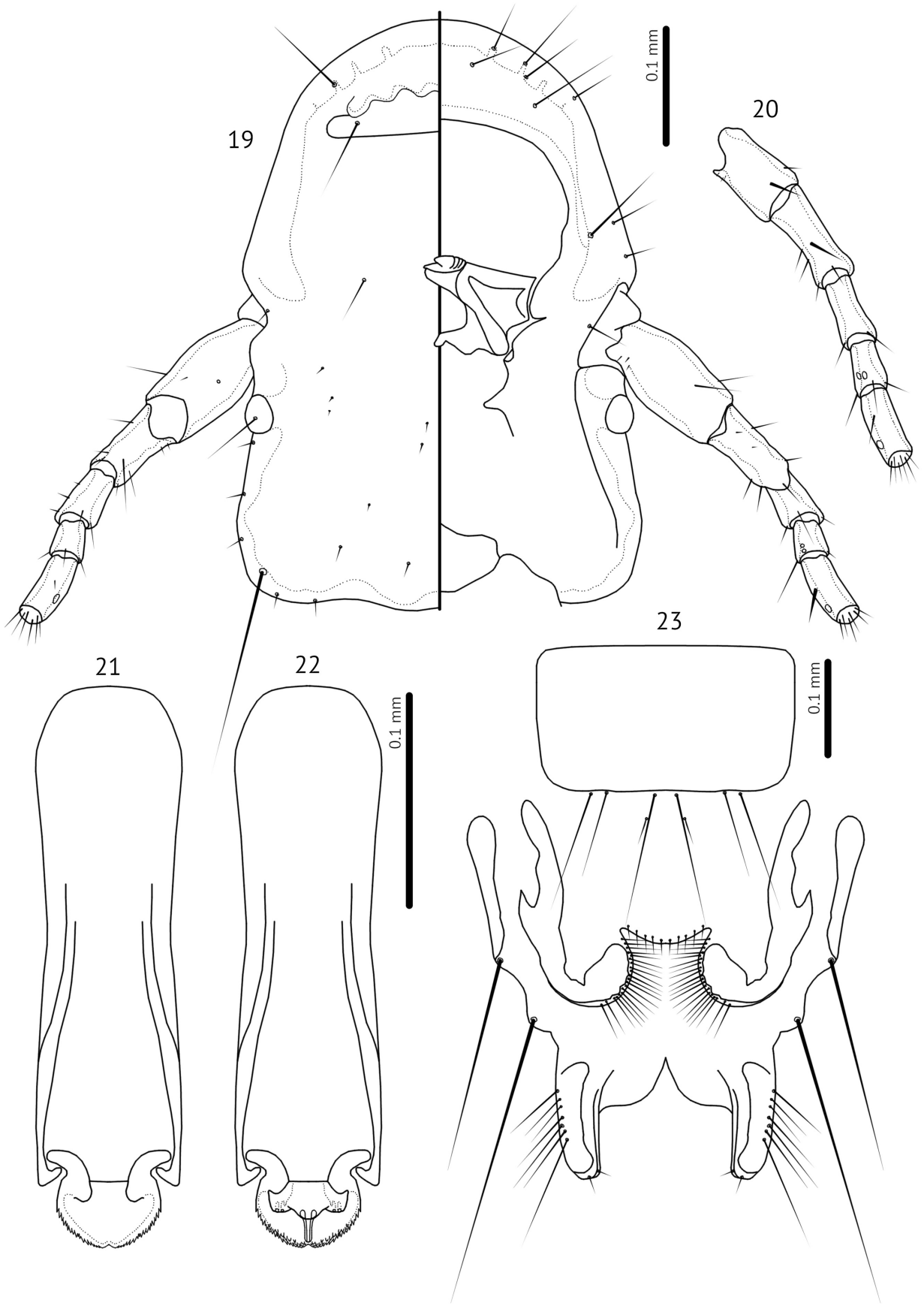
FIGURES 9–10. *Reticulipeurus* (*Forcipurellus*) *nitzschi* Kéler, 1958. **9,** male habitus, dorsal and ventral views. **10,** female habitus, dorsal and ventral views.



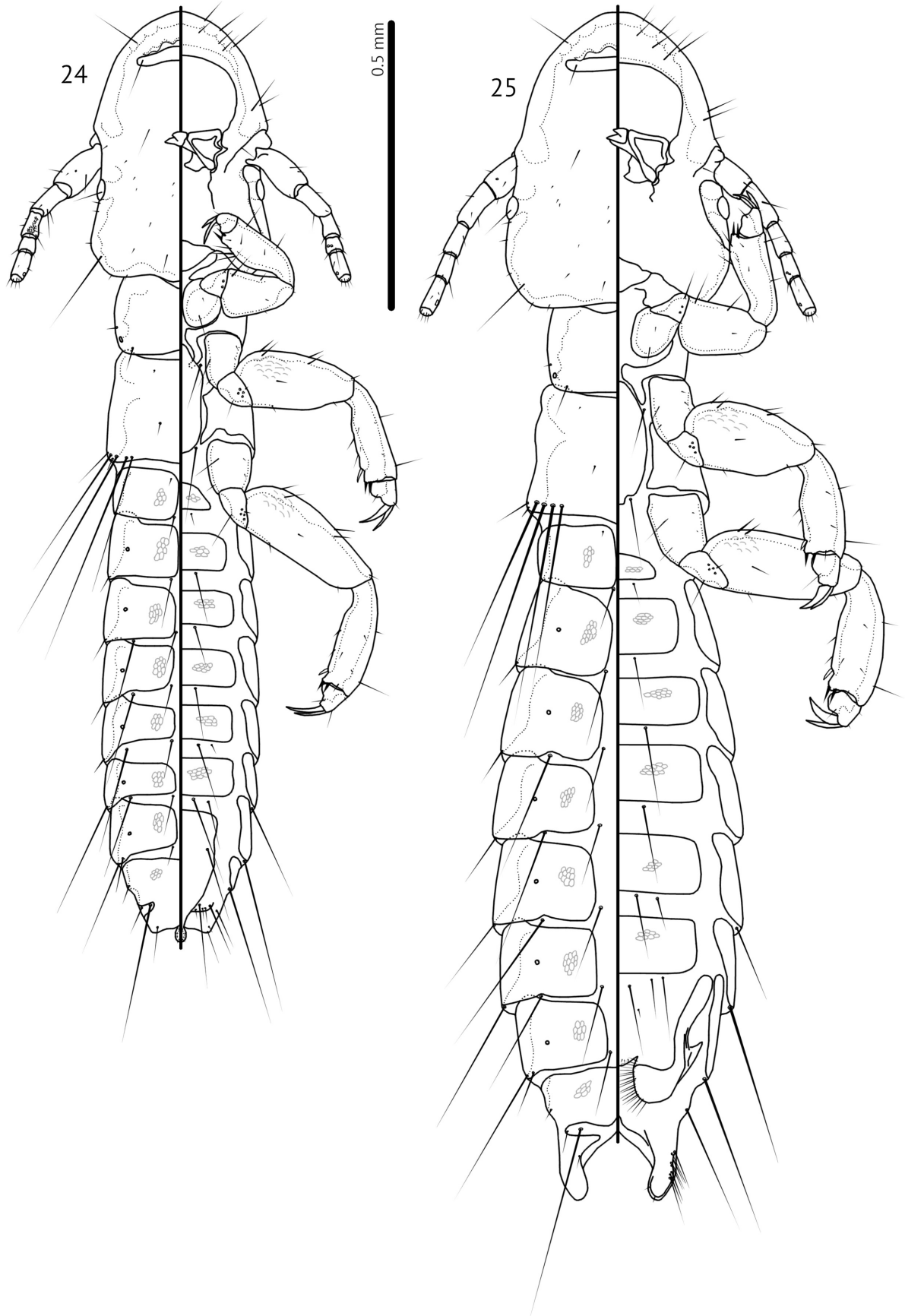
FIGURES 11–16. *Reticulipeurus* (*Forcipurellus*) *nitzschi* Kéler, 1958. **11,** male head, dorsal and ventral view. **12,** female antenna, ventral view. **13,** male genitalia, dorsal view. **14,** male genitalia, ventral view. **15,** male paramere, dorsal view. **16,** female subgenital plate, vulval margin, and terminalia, ventral view.



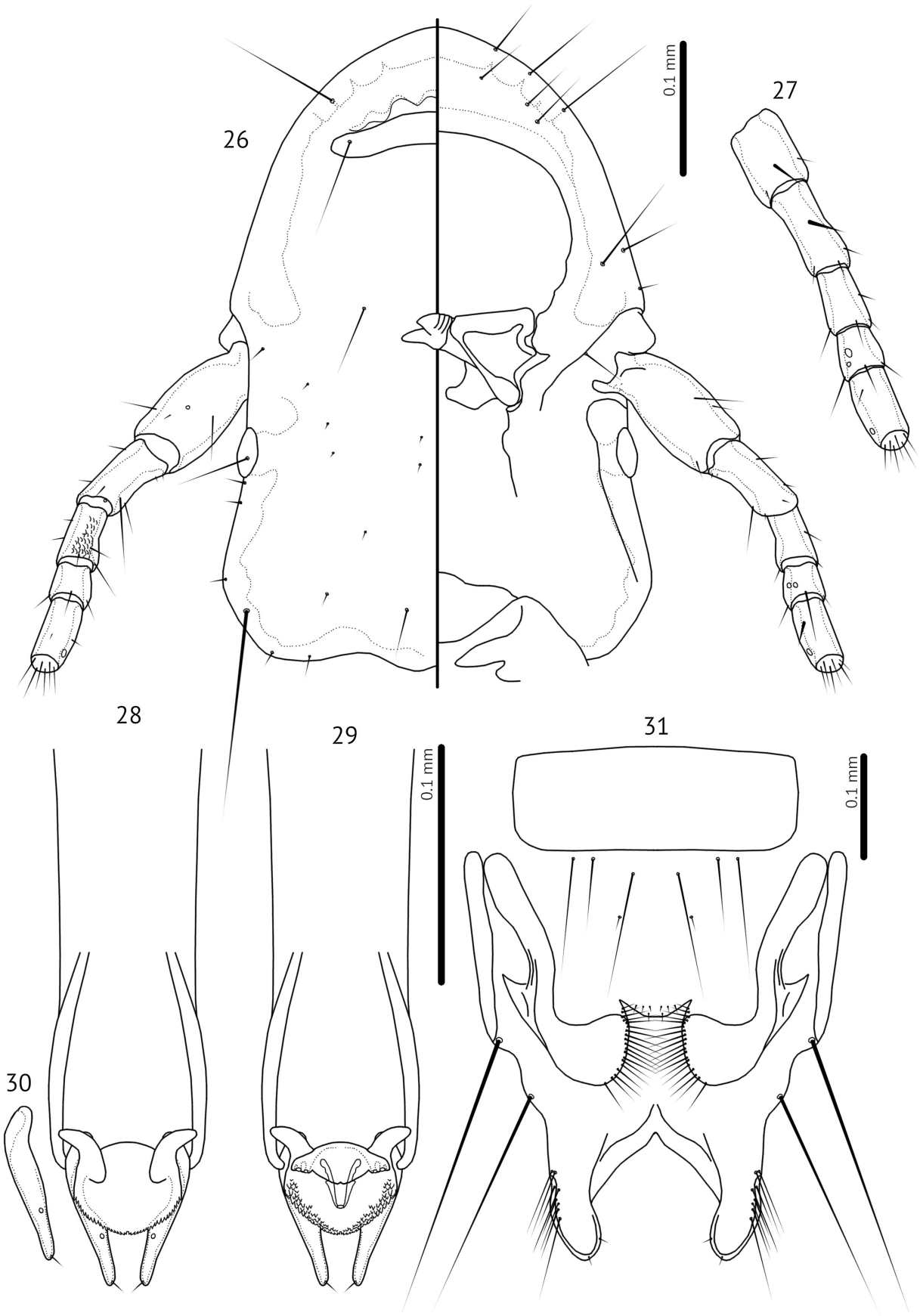
FIGURES 17–18. *Reticulipeurus* (*Forcipurellus*) *bracatus* **new species. 17,** male habitus, dorsal and ventral views. **18,** female habitus, dorsal and ventral views.



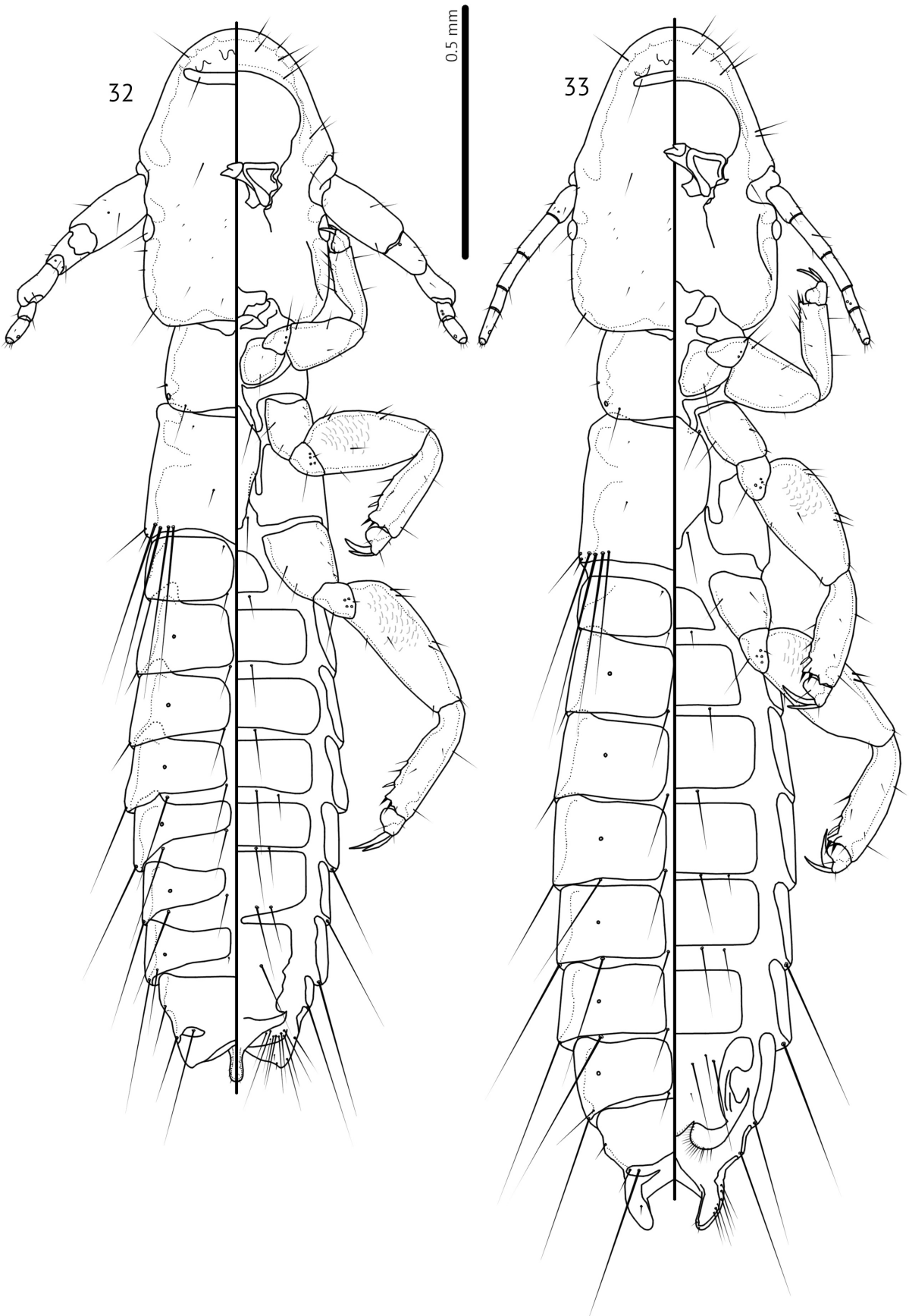
FIGURES 19–23. *Reticulipeurus* (*Forcipurellus*) *bracatus* **new species. 19,** male head, dorsal and ventral view. **20,** female antenna, ventral view. **21,** male genitalia, dorsal view. **22,** male genitalia, ventral view. **23,** female subgenital plate, vulval margin, and terminalia, ventral view.



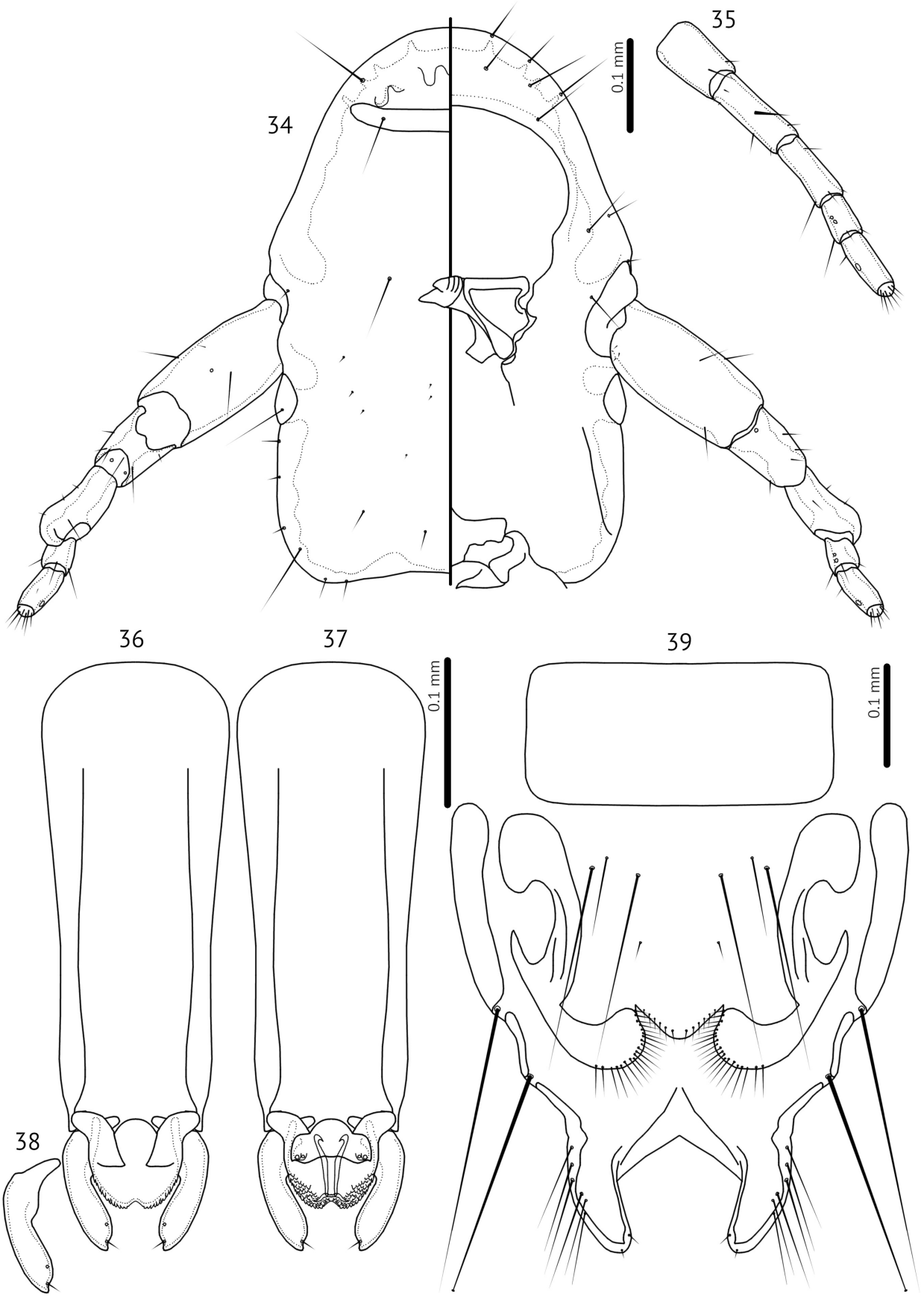
FIGURES 24–25. *Reticulipeurus* (*Forcipurellus*) *diki* **new species. 24,** male habitus, dorsal and ventral views. **25,** female habitus, dorsal and ventral views.



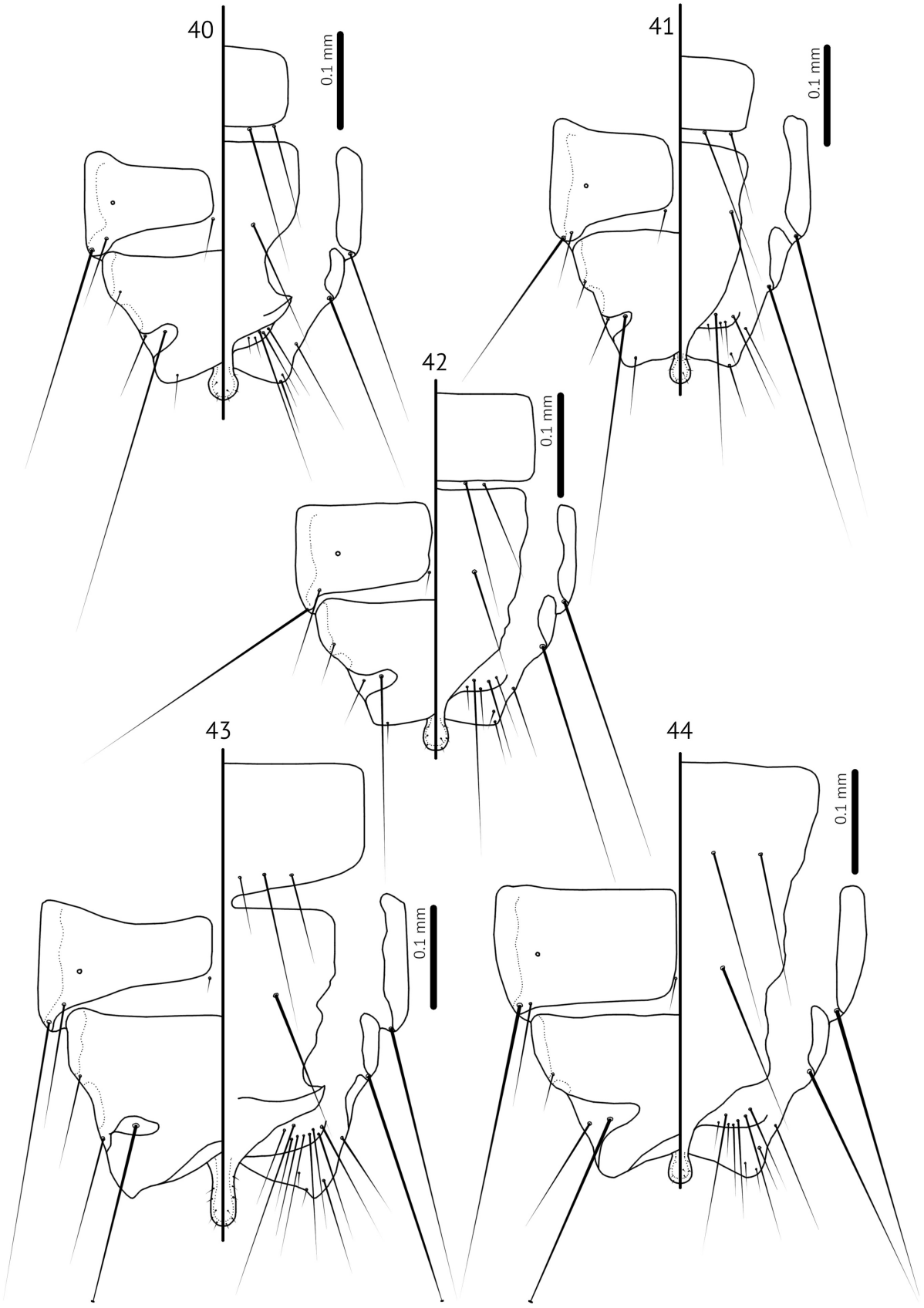
FIGURES 26–31. *Reticulipeurus* (*Forcipurellus*) *diki* **new species. 26,** male head, dorsal and ventral view. **27,** female antenna, ventral view. **28,** male genitalia, dorsal view. **29,** male genitalia, ventral view. **30,** male paramere, dorsal view. **31,** female subgenital plate, vulval margin, and terminalia, ventral view.



FIGURES 32–33. *Reticulipeurus* (*Forcipurellus*) *longistylus* **new species. 32,** male habitus, dorsal and ventral views. **33,** female habitus, dorsal and ventral views.



FIGURES 34–39. *Reticulipeurus* (*Forcipurellus*) *longistylus* **new species. 34,** male head, dorsal and ventral view. **35,** female antenna, ventral view. **36,** male genitalia, dorsal view. **37,** male genitalia, ventral view. **38,** male paramere, dorsal view. **39,** female subgenital plate, vulval margin, and terminalia, ventral view.



FIGURES 40–44. Distal ends of male abdomens, dorsal and ventral views. **40,** *Reticulipeurus* (*Forcipurellus*) *bracatus* **new species. 41,** *Reticulipeurus* (*Forcipurellus*) *diki* **new species. 42,** *Reticulipeurus* (*Forcipurellus*) *formosanus* (Uchida, 1917). **43,** *Reticulipeurus* (*Forcipurellus*) *longistylus* **new species. 44,** *Reticulipeurus* (*Forcipurellus*) *nitzschi* Kéler, 1958. All drawings are to the same scale.

Type locality. "Indochina".

Other hosts. *Arborophila rufogularis* subspecies (Blyth, 1849). *Arborophila rufogularis intermedia* (Blyth, 1855). *Arborophila rufogularis tickelli* (Hume, 1880).

Diagnosis. *Reticulipeurus* (*Forcipurellus*) *longistylus* can be separated from the other species in the subgenus by the following combination of characters: head somewhat slender (Fig. 34); Male pedicel swollen and shortened compared to female (Figs 34–35); male flagellomere I expanded distally (Fig. 34); male mesosome narrow (Fig. 36); ventral sclerite of male genitalia with narrowly rounded anterior margin (Fig. 37); male gonopore almost reaching distal margin of mesosome (Fig. 37); male parameres of distinct shape (Fig. 38); central section of female vulval margin more prominently bulging (Fig. 39); male stylus elongated and slender, not spatulate, and postero-lateral corners of male abdominal segment XI extended slightly posteriorly (Fig. 43).

Description. Preantennal head somewhat narrowed (Fig. 34). Male scape longer than female (Fig. 35), much wider but not otherwise modified; male pedicel short and stout; male flagellomere I with distal extension. Head chaetotaxy as in Fig. 24. Lateral margins of temples more or less parallel in male. Thoracic and abdominal segments and chaetotaxy as in Figs 32–33. Distal abdomen of male as in Fig. 43; sternal plate VII apparently fused to from subgenital plate medianly, but this is not clear in examined specimens and plates may be separate; stylus long, elongated; distal margin of segment XI sinuously concave, lateral corners slightly extended distally. Male genitalia as in Figs 36–38. Distal rugosity of mesosome somewhat coarse, extensive. Ventral sclerite with narrowly convex anterior margin and two visible *gpmes* on each side. Gonopore almost reaching distal margin of mesosome. Parameres broad, curved, with elongated heads; *pst1* near distal end of paramere. Female sternal plate VII without median bulge on distal margin (Fig. 39). Median bulge of vulval margin narrow, prominent, with 5–7 *vss* on each side; lateral lobes with 19–25 long, slender *vms* on each side. Lateral margin of claspers with 5–8 lateral setae on each side. Specimens from different host subspecies overlap extensively in vulval chaetotaxy. Measurements as in Table 1.

Type material examined. Ex *Arborophila rufogularis guttata* [as *A. rufogularis laotiana* or *A. rufogularis laotianae*]: **Holotype** 1♂, "Indochina", 16 Jul. 1930, no collector, Brit. Mus. 1970-558, NHMUK010682710 (NHML). **Paratypes.** 1♂, skin, locality unknown, no date, coll. R.S. Balter, Brit. Mus. 1971-493, NHMUK010682705 (NHML). Ex *Arborophila rufogularis* subspecies: 1♀, "Indochina", 16 Jul. 1930, "spirit mat.", no collector, NHMUK010682704 (NHML).

Non-type material examined. Ex *Arborophila rufogularis intermedia*: 2♂, 3♀, Burma [= Myanmar], 1898, coll. R. Meinertzhagen, 3605, NHMUK010682712 (NHML).

Ex *Arborophila rufogularis tickelli*: 4♀, Tenasserim, Myanmar, Oct. 1897, coll. R. Meinertzhagen, 3601, NHMUK010682716 (NHML).

Etymology. The species epithet is formed by "*longus*", Latin for "long, and "*stylus*", Latin for "stake", referring to the relatively long stylus of this species compared to those of other members of the subgenus.

Remarks. The type host subspecies has been selected based on the best preserved males, despite the lack of females from this host subspecies. The specimen on slide NHMUK010682704 has the same collection data as those of the holotype and may represent a female from the type host subspecies, but the subspecies is not explicit on the slide label. Specimens from the other two host subspecies are considered conspecific with the type series, as no significant differences have been found among them. Females are illustrated based on specimens from *A. rufogularis intermedia*.

Unidentified species of *Reticulipeurus* (*Forcipurellus*)

Material from four additional host species has been examined but could not be described due to the poor condition of the specimens or because single females were only available. Here, we give some remarks on this material, to compare it with the known species.

Reticulipeurus (*Forcipurellus*) species 1

Hosts

Arborophila brunneopectus brunneopectus (Blyth, 1855)—bar-backed partridge.

Arborophila brunneopectus albigula (Robinson & Kloss, 1919).
Arborophila brunneopectus henrici (Oustalet, 1896).

Remarks. We examined a single male and eight females from three different host subspecies. The male has a partially distorted head, and the female from the same host subspecies has a distorted abdomen. The head outline of the female from *A. b. brunneopectus* is similar to those of the females from the other host subspecies, indicating that they are likely conspecific. However, as the only male is poorly preserved, we prefer not to describe this species until more specimens become available. These specimens are similar to *R.* (*F.*) *formosanus*, but they have a more pointed preantennal head, different male genitalia shape, and larger vulval lobes with generally more setae on each side (19–23 *vms*). Price *et al*. (2003: 324) listed two species of *Oxylipeurus* under *Arborophila brunneopectus* (Blyth), *i.e*. "*Oxylipeurus formosanus*" and "*Oxylipeurus unicolor*" (Piaget, 1880) [now in *Megalipeurus*], but our material does not appear to belong to either of these species.

Specimens examined. Ex *Arborophila brunneopectus brunneopectus.* 1♂, 1♀, Bam Maea, Lomlo Mountain, Kok Sathon, Dansai, Loei Province, Thailand, 16 Feb. 1955, coll. R.E. Elbel, RE4664, B-31204, Brit. Mus. 1960-104, NHMUK010682412 (NHMUK).

Ex *Arborophila brunneopectus albigula.* 2♀, South Annam [Vietnam], Aug. 1902, coll. R. Meinertzhagen, 3666, NHMUK010682697 (NHMUK).

Ex *Arborophila brunneopectus henrici*: 5♀, Laos, May 1901, coll. R. Meinertzhagen, 3665, NHMUK010682696 (NHMUK).

Reticulipeurus (*Forcipurellus*) species 2

Host. *Arborophila campbelli* (Robinson, 1904)—Malaysian partridge.

Remarks. We examined only a single male from this host species. Its genitalia are obscured by gut contents, and therefore we cannot identify this specimen with certainty. Head shape and other characters are similar to those of *R.* (*F.*) *diki*, with clearly convex temples and a slightly narrowed frons, but it has proportionately wider temples, shorter preantennal area, and a more rhombic stylus. Considering the small number of males of *R.* (*F.*) *diki* examined, we cannot ascertain if those differences fall within a range of intraspecific variation, placing the specimen from *A. campbelli* as conspecific with *R.* (*F.*) *diki*, or if it should be regarded as a separate taxon. More specimens are needed to identify with the species of *Reticulipeurus* parasitising *A. campbelli*.

Specimens examined. 1♂, Malaya [= Peninsular Malaysia], Nov. 1911, coll. R. Meinertzhagen, 3667, NHMUK010682700.

Reticulipeurus (*Forcipurellus*) species 3

Host. *Arborophila javanica* (Gmelin, 1789)—chestnut-bellied partridge.

Remarks. We examined a single female, which appears to be most similar to that of *R.* (*F.*) *formosanus*. However, the preantennal head of this female is more broadly rounded, and the shape of the vulval margin (including the shape of the lateral lobes) appears to be different. More specimens, in particular males, are needed to elucidate the identity of the *Reticulipeurus* from *Arborophila javanica*. *Lipeurus unicolor* Piaget, 1880—described from *Arborophila javanica*—has been placed in the genus *Oxylipeurus* by Clay (1938) and followed by Price *et al*. (2003). However, we regard it as a species of *Megalipeurus* following Gustafsson *et al.* (2020b) (see Table 2).

Specimen examined. 1♀, Java [Indonesia], May 1904, coll. R. Meinertzhagen, 3599, NHMUK010682699 (NHML).

Reticulipeurus (*Forcipurellus*) species 4

Host. *Arborophila gingica* (Gmelin, 1789)—white-necklaced partridge.

Remarks. We examined a single female, which appears intermediate in head shape between *R.* (*F.*) *formosanus*

and *R.* (*F.*) *bracatus*, but it is more similar to *R.* (*F.*) *bracatus* in the shape of the vulval margin, including the lateral lobes, which have 23–25 *vms* on each side, *i.e*. more than any specimen of *R.* (*F.*) *bracatus* examined. More specimens, in particular males, are needed to elucidate the identity of the *Reticulipeurus* from *Arborophila gingica*.

Specimen examined. 1♀, Southeast China, Nov. 1897, coll. R. Meinertzhagen, 3598, NHMUK010682698 (NHML).

TABLE 2. Species of *Oxylipeurus*-complex parasitic on hosts of the "Phasianidae III" group [*sensu* Kimball *et al.* (2021)].

Two genus-groups are known: *Reticulipeurus* (*Forcipurellus*) and *Megalipeurus*-group, with some overlap in their host associations, which are listed separately. Dashes ("---") denote that no louse species belonging to this group is known from this host. Host taxonomy follows Clements *et al*. (2021). Host subspecies are given only when they are known to be parasitised by at least one species of the *Oxylipeurus*-complex. Undescribed species discussed here or listed by Price *et al*. (2003) are included for completeness. Price *et al.* (2003: 204) also listed several hosts for *Megalipeurus unicolor* (Piaget, 1880) [under *Oxylipeurus*]; specimens from some of these hosts have been examined and found not conspecific with *M. unicolor*; hence, these are here listed as unidentified species. Species included in *Megalipeurus* by Gustafsson *et al.* (2020b) are also found on hosts that do not belong to the Phasianidae III group.

Host	***Reticulipeurus*-group taxa**	***Megalipeurus*-group taxa**
Arborophila ardens (Styan, 1892)	---	---
Arborophila atrogularis (Blyth, 1849)	*Reticulipeurus* (*Forcipurellus*) *bracatus*	*Megalipeurus* sp.
Arborophila brunneopectus (Blyth, 1855)	---	*Megalipeurus* sp.
Arborophila brunneopectus albigula (Robinson & Kloss, 1919)	*Reticulipeurus* (*Forcipurellus*) sp. 1	---
Arborophila brunneopectus brunneopectus (Blyth, 1855)	*Reticulipeurus* (*Forcipurellus*) sp. 1	---
Arborophila brunneopectus henrici (Oustalet, 1896)	*Reticulipeurus* (*Forcipurellus*) sp. 1	---
Arborophila cambodiana Delacour & Jabouille, 1928	*Reticulipeurus* (*Forcipurellus*) sp.	---
Arborophila campbelli (Robinson, 1904)	*Reticulipeurus* (*Forcipurellus*) sp. 2	---
Arborophila crudigularis (Swinhoe, 1864)	*Reticulipeurus* (*Forcipurellus*) *formosanus* (Uchida, 1917)	*Megalipeurus* sp.
Arborophila davidi Delacour, 1927	---	---
Arborophila diversa Riley, 1930	---	---
Arborophila gingica (Gmelin, 1789)	*Reticulipeurus* (*Forcipurellus*) sp. 4	*Megalipeurus sinensis* Gustafsson *et al*., 2020b)
Arborophila hyperythra (Sharpe, 1879)	---	---
Arborophila javanica (Gmelin, 1789)	*Reticulipeurus* (*Forcipurellus*) sp. 3	*Megalipeurus unicolor* (Piaget, 1880)
Arborophila mandellii Hume, 1874	---	---
Arborophila orientalis (Horsfield, 1821)	---	---
Arborophila rolli (Rothschild, 1909)	---	---
Arborophila rubrirostris (Salvadori, 1879)	*Reticulipeurus* (*Forcipurellus*) *diki*	*Megalipeurus* sp.
Arborophila rufipectus Boulton, 1932	---	---
Arborophila rufogularis (Blyth, 1849)	*Reticulipeurus* (*Forcipurellus*) *longistylus*	*Megalipeurus* sp.
Arborophila rufogularis guttata Delacour & Jabouille, 1928	*Reticulipeurus* (*Forcipurellus*) *longistylus*	---
Arborophila rufogularis intermedia (Blyth, 1855)	*Reticulipeurus* (*Forcipurellus*) *longistylus*	---

.....continued on the next page

TABLE 2. (Continued)

Host	*Reticulipeurus*-group taxa	*Megalipeurus*-group taxa
Arborophila rufogularis tickelli (Hume, 1880)	*Reticulipeurus* (*Forcipurellus*) *longistylus*	---
Arborophila sumatrana Ogilvie-Grant, 1891	---	---
Arborophila torqueola (Valenciennes, 1825)	---	*Megalipeurus* sp.
Arborophila torqueola millardi (Baker, 1921)	*Reticulipeurus* (*Forcipurellus*) *nitzschi*	---
Arborophila torqueola torqueola (Valenciennes, 1825)	*Reticulipeurus* (*Forcipurellus*) *nitzschi*	---
Caloperdix oculeus (Temminck, 1815)	---	*Megalipeurus songprakobi* (Elbel & Price, 1970)
Melanoperdix niger (Vigors, 1829)	---	---
Rollulus roulroul (Scopoli, 1786)	---	*Calidolipeurus megalops* (Piaget, 1880)
Xenoperdix obscuratus Fjeldså & Kiure, 2003	---	---
Xenoperdix udzungwensis Dinesen *et al*., 1994	---	---

Discussion

Relationships among lice in the *Oxylipeurus*-complex have long been obscured by the conservative stance of treating all the slender-bodied species as a single genus, following Clay (1938). Notwithstanding early papers by Carriker (1945) and Kéler (1958), only in recent decades there have been greater changes at the genus-level classification of this complex that have become more refined due to detailed morphological studies by Mey (1982, 1990, 2010), Gustafsson *et al*. (2020a,b) and Gustafsson & Zou (2020a,b). It is now clear that several groups of lice within this complex are more host-group specific than interpreted by Clay (1938). For example, species in the genus *Afrilipeurus* Mey, 2010 are only known from guineafowl (Numididae) (Mey 2010), the genera *Cataphractomimus* Gustafsson *et al*., 2020b and *Sinolipeurus* Gustafsson *et al.,* 2020b are known from a clade of closely related hosts only [*Lophophorus* Temminck, 1813, *Tragopan* Cuvier, 1829 and *Tetraophasis* Elliot, 1871; see Kimball *et al.* 2021], and the species from the turkey have been placed in a separate genus, *Valimia* Gustafsson & Zou, 2020a.

Species of *Arborophila* and related birds [*i.e.* "Phasianidae III" *sensu* Kimball *et al.* 2021] appear to be a closely related host group parasitised by a distinct louse fauna comprising three lineages within the *Oxylipeurus*-complex: *Reticulipeurus* (*Forcipurellus*), *Calidolipeurus* Gustafsson *et al*., 2020a and *Megalipeurus* Kéler, 1958 (Table 2). Among them, *Calidolipeurus* and *Megalipeurus* are likely closely related, based on similarities in the conus structure and the male and female genitalia (Gustafsson *et al*. 2020a,b). Together, these two genera form the *Megalipeurus*-group within the *Oxylipeurus*-complex.

In some cases, species of *Reticulipeurus* (*Forcipurellus*) and of *Megalipeurus* parasitise the same host species (Table 2), but the distribution of lice from many galliform species is still poorly known, and co-infestations may be more common than suggested in Table 2. Currently, species of *R.* (*Forcipurellus*) are known from only ten of the 24 host species in the Phasianidae III group, hence, little can be said about distribution patterns. Presumably, *R.* (*Forcipurellus*) parasitise all hosts of the genus *Arborophila*, and possibly on other Asian members of the Phasianidae III group. The genus *Xenoperdix* Dinesen *et al*., 1994 is limited to East Africa, and considered a relict lineage related to the otherwise Indo-Malayan Phasianidae III species (Dinesen *et al*. 1994), but no lice are known from these birds. Notably, species of the *Oxylipeurus*-complex are generally absent from other African hosts (*e.g.* African francolins; Price *et al*. 2003; Gustafsson *et al.* 2020b) and may therefore be absent from *Xenoperdix* as well.

The lice in the *Oxylipeurus*-complex from small-bodied Southeast Asian galliforms are poorly known, with most species not recorded again after the original description. Whereas species of *Reticulipeurus* (*Forcipurellus*) are known only from hosts placed in the Phasianidae III group, species of *Megalipeurus* are probably more widely distributed (Gustafsson *et al.* 2020b). However, species of *Megalipeurus* from hosts in Phasianidae III group are

morphologically distinct, with a pointed frons and in general more compact mesosomes [compare Gustafsson *et al*. (2020b) with Emerson & Ward (1958)]. As more species of *Megalipeurus* are examined and described, the distribution of the pointed-frons and rounded-frons species of this genus will become clearer. Whether a species of *R.* (*Forcipurellus*) will ever be found on a host outside the Phasianidae III group is currently an open question.

The function of the female "claspers" in species of *Reticulipeurus* (*Forcipurellus*) is unknown, but presumably has to do with mating and/or egg laying. Notably, similar structures have evolved independently in other species within this complex, including in males of some species of *Splendoroffula* Clay & Meinertzhagen, 1941 (see Kéler 1958: figs 54c–d). Moreover, similar structures are found in some species of *Goniodes*, particularly *Goniodes processus* Kellogg & Paine, 1914, which is also found on hosts of the genus *Arborophila*. Little is known about the mating methods of *Oxylipeurus*-complex lice beyond the fact that they use the subfeminal (male-ventral) position common among Ischnocera (Oniki 1999). However, neither the male antennae and genitalia, nor the overall structure of the abdominal plates of either sex are very different in species of *R.* (*Forcipurellus*) compared to *e.g.* those of the nominate subgenus. Oniki (1999) noted that the male genitalia, when dislodged from the female genitalia, made an audible clicking sound. This may suggest that the claspers, and maybe the stylus, are used in mate guarding. The role of the female claspers may be better understood when the mating habits of more species in the *Oxylipeurus*-complex are studied.

Emendation of the key to identify the genera and subgenera in the *Oxylipeurus*-complex

The key to the *Oxylipeurus*-complex in Gustafsson *et al.* (2020a) can be emended to include *Forcipurellus* in couplet 9, as follows:

9. Male abdominal segments IX+X and XI[1] with prominent postero-lateral extensions ["claspers" sensu Carriker (1945)] . . . . . *Eiconolipeurus* Carriker, 1945
- Male abdomen without such structures 9A
9A. Female with prominent "claspers" formed by extensions of abdominal segment XI (Fig. 8); female vulval margin deeply emarginated, with lateral sections forming rounded lobes that have subparallel median margins and median section convex (Fig. 8); male stylus terminal (Fig. 40). . . . . *Reticulipeurus* (*Forcipurellus*) **new subgenus**
- Female without such claspers; female vulval margin variably concave, but either with no section of the margin forming lobes, or without median section being convex; male stylus subterminal . . . . . *Reticulipeurus* (*Reticulipeurus*) Kéler, 1958

[1] Note that the segment numbers were incorrectly given as "IX and IX+X" by Gustafsson *et al.* (2020a).

Key to the species of the subgenus *Reticulipeurus* (*Forcipurellus*)

Females are difficult to separate, as genital chaetotaxy overlaps broadly among species. Some general guidelines are given below, which may not work for all specimens. A large sample is preferred to achieve a species identification of females using this key, because comparisons of head shapes, morphology of the vulval margin, and shape of the claspers are necessary.

1. Males . . . . . 2.
- Females. . . . . 6.
2. Flagellomere I expanded distally (Fig. 3); temples flat, with margins more or less parallel (Fig. 3) . . . . . 3.
- Flagellomere I not expanded distally (Fig. 19); temples bulging (Fig. 19) . . . . . 5.
3. Stylus short, with dorsally visible section no more than 1.5 times as long as wide (Fig. 42); proximal margin of ventral sclerite of mesosome concave (Fig. 6) . . . . . 4.
- Stylus long, with dorsally visible section at least 2.5 times as long as wide, in some specimens tapering slightly distally (Fig. 43); proximal margin of ventral sclerite of mesosome convex (Fig. 37) . . . . . *Reticulipeurus* (*Forcipurellus*) *longistylus*
4. Rugosity of distal mesosome coarse (Fig. 6); lateral extensions of ventral sclerite of mesosome narrowed medianly (Fig. 6); scape not wider than pedicel, not modified basally (Fig. 3). . . . . *Reticulipeurus* (*Forcipurellus*) *formosanus*
- Rugosity of mesosome fine (Fig. 14); lateral extensions of ventral sclerite of mesosome not narrowed medianly (Fig. 14); scape much wider than pedicel, and with anterior bulge near base (Fig. 11). . . . . *Reticulipeurus* (*Forcipurellus*) *nitzschi*
5. Frons somewhat narrowly pointed (Fig. 26); proximal margin of ventral sclerite of mesosome convex (Fig. 29) . . . . . *Reticulipeurus* (*Forcipurellus*) *diki*
- Frons broadly rounded (Fig. 19); proximal margin of ventral sclerite of mesosome flat (Fig. 22) . . . . . .

. . . . . *Reticulipeurus* (*Forcipurellus*) *bracatus*
6. Median bulge of vulval margin slightly convex (Fig. 16) . . . . . 7.
- Median bulge of vulval margin markedly convex (Fig. 8). . . . . 9.
7. Preantennal head somewhat pointed (Fig. 25) . . . . . *Reticulipeurus* (*Forcipurellus*) *diki*
- Preantennal head broadly rounded (Fig. 2) . . . . . 8.
8. Lateral lobes of vulval margin usually with less than 20 vulval marginal setae on each side . . . . . *Reticulipeurus* (*Forcipurellus*) *formosanus*
- Lateral lobes of vulval margin usually with more than 20 *vulval marginal setae* on each side. . . . . .*Reticulipeurus* (*Forcipurellus*) *longistylus*
9. Claspers slender, subparallel (Fig. 23) . . . . . *Reticulipeurus* (*Forcipurellus*) *bracatus*
- Claspers wide, curved medianly (Fig. 16) . . . . . *Reticulipeurus* (*Forcipurellus*) *nitzschi*

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