

**New contribution to the Oriental species of *Anisobas* WESMAEL
and *Listrodromus* WESMAEL
(Hymenoptera, Ichneumonidae, Ichneumoninae)**

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A b s t r a c t : In this study, faunistical and taxonomical data of seven species of the genera *Anisobas* WESMAEL and *Listrodromus* WESMAEL (Hymenoptera, Ichneumonidae, Ichneumoninae) from the Oriental region are presented.

The subspecies *Listrodromus propodealis sabahensis* RIEDEL, 2011 is considered as a color variant and therefore synonymized with *Listrodromus propodealis* s.str. RIEDEL, 2011, and the unknown male of this species is described here.

Three species are new to science and described: *Anisobas himalayanus* nov.sp., *Anisobas vietnamensis* nov.sp., and *Listrodromus rufiventris* nov.sp. The new species are described in detail and illustrated, and keys for the Oriental members of these genera are given.

K e y w o r d s : Ichneumonidae, Ichneumoninae, Oriental, Listrodromini, new species

Introduction

The subfamily Ichneumoninae represents a very large group of Ichneumonidae (Hymenoptera) with at least 423 described genera and almost 4400 species distributed worldwide (YU et al. 2016). All known Ichneumoninae are endoparasitoids of Lepidoptera (BROAD et al. 2018).

Traditionally, members of the Ichneumoninae have been divided in several tribes and subtribes (HEINRICH 1967, TERESHKIN 2009, YU et al. 2016) usually relying on subjective definitions and small numbers of morphological features (SANTOS et al. 2021). An actual investigation using genomic ultraconserved elements has shown that many of these tribal definitions are artificial and do not reflect evolutionary relationships in this subfamily (SANTOS et al 2021).

Therefore, the traditional tribe Listrodromini FÖRSTER, 1868 containing the genera *Anisobas* WESMAEL, *Listrodromus* WESMAEL, *Dilopharius* TOWNES and *Neotypus* FÖRSTER is included into the tribe Ichneumonini now, but nevertheless represents a strictly monophyletic clade within this tribe (SANTOS et al. 2021). As supported by this study, all members of this clade are parasitoids of Lycaenidae (Lepidoptera). The amblypygous metasomas of these genera indicate that they might attack mature larvae or prepupae of Lycaenidae (SANTOS et al 2021).

The Oriental fauna of these genera has been studied in several publications in the past (HEINRICH 1934, HEINRICH 1975, RIEDEL 2011). Recently, I had the opportunity to sort new material of this clade in the Nationaal Natuurhistorisch Museum Naturalis in Leiden/Netherlands (RMNH). Additional material was studied from the Biologiezentrum Linz/Austria (Linz) and the Zoologische Staatssammlung Munich/Germany (ZSM). Here I present these new findings with the description of three new species.

Material and methods

Most of the material is housed in the RMNH, Linz or in the ZSM, some paratypes in the collection of the author. The distributional data were taken from YU et al. (2016).

For the descriptions, morphological terms follow BROAD et al. (2018). For the measurements the following relations were used: Length of 1st flagellomere (without anellus) was measured in lateral view; length of temple and eye was measured from dorsal view, and length and width of hind femur in lateral view. For the punctuation of body parts the following definitions were used: very sparse - distance of punctures $>2\times$ their diameter; sparse - distance $1-2\times$ their diameter; dense - diameter of punctures larger than their distance.

For the measurements an Olympus SZX 7 stereo microscope with dividing eyepiece was used. The figures were taken with an Olympus Olympus SC 50 CCD camera using the cellSensImaging software and processed with the Helicon Focus and the Microsoft picture manager softwares.

List of species

Anisobas himalayanus nov.sp. (figs 1, 3-7)

H o l o t y p e : (♂) Bhutan: Thimphu, Lungtenphu, Alt. 2300 m, 24-vi-1996, Leg. F.J. Feijen (Leiden).

D e s c r i p t i o n : ♂: Body length 8.4 mm. Flagellum with 28 flagellomeres; 1st flagellomere $2.8\times$ longer than wide. Tyloids on flagellomeres 6-17, long-oval, maximally $0.9\times$ as long as their flagellomere. Temple dorsally $0.9\times$ as wide as eye, parallel behind eye and moderately narrowed apically. Distance between lateral ocellus and eye $1.4\times$ and between lateral ocelli $1.6\times$ ocellar diameter. Frons smooth ventrally, with dense punctures dorsally. Face and clypeus not separated; face densely punctate, clypeus with sparse punctures apically. Clypeus almost flat; apical margin sharp and slightly concave, with very weak tubercle medially. Malar space $1.0\times$ as long as width of mandibular base. Mandible strong; lower tooth slightly smaller than upper one. Genal carina reaching mandibular base.

Mesosoma covered with greyish setae. Side of pronotum with dense punctures and some coarse rugae at caudal margin, collar with strong lamelliform median longitudinal keel. Notaulus indistinct. Mesoscutum with dense punctures, finely granulate but shining. Mesopleuron and metapleuron with dense coarse punctures; speculum partly smooth. Epicnemial carina low, its dorsal end reaching frontal margin of mesopleuron. Juxtacoxal carina present. Scutellum moderately elevated, $1.2\times$ wider than long, with sparse

punctures, without lateral carina. Propodeum completely carinate, without apophysis. Area basalis short, slightly bulging forward medially. Area superomedia reniform, 2.0× wider than long; anterior transverse carina in its middle. Area petiolaris with fine rugae and lateral carina. Hind femur 3.9× longer than wide, densely punctate; hind tibia with about eight denticular spurs externally. Claws not pectinate. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 5× their diameter; vein 2m-cu slightly distad its middle. Vein 1cu-a interstitial.

Petiolus as high as wide. Postpetiolus moderately widened, with latero-median carina in basal half; median field slightly elevated, with sparse punctures and microsculpture; lateral field densely punctate. Gastrocoelus strongly impressed, with oblique ridges. Thyridium almost transverse, 0.8× as wide as the interval between thyridia. 2nd tergite 1.3× wider than long; 3rd tergite 1.9× wider than long. 2nd to 4th tergites densely and coarsely punctate, shining.

Color: black. Antenna black, scape reddish ventrally. Mandible medially and some suffusion of clypeus reddish. Clypeus with two ivory spots basally. Inner orbit up to anterior ocellus and vertex with ivory stripes. Upper margin of pronotum, subtegular ridge and scutellum ivory. Postpetiolus, 2nd and 3rd tergites red. 5th to 7th tergites with wide apical ivory bands. Coxae and trochanters black; legs otherwise red; hind femur black in apical 0.1; hind tibia blackish in apical 0.3; hind tarsus black. Wings hyaline; pterostigma brown.

♀ unknown.

R e m a r k : This new species runs to *A. cornutus* HEINRICH in the key of Oriental *Anisobas* species (see HEINRICH 1975: 462-463). It differs by its red 3rd tergite, different color pattern of the mesosoma and lack of the frontal horn. The species *Anisobas cornutus* is only known from one ♀, and it is not impossible that this specimen from Bhutan represents the unknown ♂ of that species showing a sexually dimorphic absence of the frontal horn.

***Anisobas vietnamensis* nov.sp. (figs 2, 8-12)**

H o l o t y p e : (♀) Vietnam: Th.a Thiê-Hu., Bach Ma National Park, near station, 16.19944°N 107.85828°E, 1401 m a.s.l., 06-Jun-2018-14-Jun-2018, S. Schmidt & Vu Van Lien leg., ZSM-HYM-S2773 (ZSM).

D e s c r i p t i o n : ♀: Body length 9.5 mm. Flagellum with 27 flagellomeres, filiform, all flagellomeres longer than wide; 1st flagellomere 2.6× longer than wide. Temple short, parallel behind eye and distinctly narrowed apically. Distance between lateral ocellus and compound eye 1.2× ocellar diameter. Frons largely smooth, with fine punctures laterally. Face and clypeus not separated, both with dense punctures, shining; apical margin of clypeus blunt and straight. Malar space 0.8× as long as width of mandibular base. Mandible strong; lower tooth slightly smaller than upper one. Genal carina reaching mandibular base.

Mesosoma covered with whitish setae. Side of pronotum with superficial punctures and with some coarse rugae on caudal margin, collar with median longitudinal keel. Notaulus impressed in frontal 1/6 of mesoscutum. Mesoscutum with coarse dense punctures, shining. Mesopleuron and metapleuron with dense coarse punctures; speculum smooth and shining. Epicnemial carina low, reaching subtegular ridge dorsally. Juxtacoxal carina present. Scutellum moderately elevated, 1.3× wider than long, with rather dense

punctures, without lateral carina. Propodeum completely carinate, apophysis absent. Area basalis short, slightly bulging forward medially. Area superomedia hexagonal, c. 1.4× wider than long; anterior transverse carina in its middle. Area petiolaris with transverse rugae and lateral carina. Hind coxa densely punctate, without scopa. Hind femur stout, 2.9× longer than wide, densely punctate; hind tibia with 2-3 denticular spines externally. Claws not pectinate. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 3× their diameter; vein 2m-cu slightly distad its middle. Vein 1cu-a interstitial.

Metasoma strongly amblypygous. Petiolus as high as wide. Postpetiolus moderately widened, without latero-median carina; median field slightly elevated, with dense rugose punctures; lateral field punctate. Gastrocoelus strongly impressed, with longitudinal ridges. Thyridium almost transverse, 0.7× as wide as the interval. 2nd tergite 1.4× wider than long; 3rd tergite 1.7× wider than long. 2nd to 4th tergites densely and coarsely punctate, shining; 4th tergite ± smooth at apical margin. Ovipositor sheath not reaching behind metasomal apex.

Color: black. Flagellum black, reddish-yellow ventrally. Spot on mandible, clypeus except black apical margin, face, frontal orbit, long outer orbit, scape ventrally, collar and upper margin of pronotum, spot on tegula, subtegular ridge, side of scutellum, upper division of metapleuron, narrow apical bands of all tergites, fore and mid coxae and trochanters (except small basal brown spots) and dorsal spot on hind coxa ivory. Fore and mid femora, tibiae and tarsi yellowish-red; hind femur reddish, black in apical 0.2; hind tibia red, black basally and in apical 0.25; hind tarsus black. Wings hyaline; pterostigma black.

♂ unknown.

R e m a r k : This new species runs to *A. celebensis* HEINRICH in the key of Oriental *Anisobas* species (HEINRICH 1975: 462-463). It differs from *A. celebensis* by its smaller size, higher number of flagellomeres, entirely yellow face and ventrally reddish flagellum.

Key for the known Oriental *Anisobas* species (adopted from HEINRICH 1975):

- 1 Basal tergites (1st to 2nd/3rd) red; following tergites black, with ± extended apical ivory bands (fig. 7).2
- All tergites black, with ± extended apical ivory bands (fig. 12).3
- 2 Frons with strong median horn. 1st and 2nd tergites red. Scutellum ivory apically, with black median stripe. Myanmar. *A. cornutus* HEINRICH, 1975
- Frons without median horn or tubercle. Postpetiolus, 2nd and 3rd tergites red (fig. 7). Scutellum entirely ivory. Bhutan. *A. himalayanus* nov.sp.
- 3 Scutellum with complete lateral carina. Mesoscutum with two paramedian yellow longitudinal stripes. 1st to 4th tergites with yellow apical bands, 5th and 6th tergites with weak pale hind margins, 7th tergite with yellow apical mark. Body length 11 mm. Sulawesi. *A. maros* HEINRICH, 1934
- Lateral carina of scutellum at most on basal half, lateral carina often absent. Mesoscutum entirely black, without yellow paramedian stripes4
- 4 Scutellum with ivory side and black longitudinal median stripe (fig. 10).5
- Scutellum entirely yellow or ivory (as fig. 5).6

- 5 Flagellum short, with 24 flagellomeres. Body length 12 mm. Flagellum black. Face ivory, with black median stripe. Sulawesi.....*A. celebensis* HEINRICH, 1934
- Flagellum longer, with 27 flagellomeres. Body length 9.5 mm. Flagellum red ventrally. Face entirely yellow (fig. 8). Vietnam.....*A. vietnamensis* nov.sp.
- 6 Propodeum, 1st tergite, hind coxa and clypeus without ivory marks. Myanmar.....*A. malaisei* HEINRICH, 1975
- Propodeum with ivory yellow spots; 1st tergite with ivory apical band. Clypeus ivory laterally, black medially. Laos, Myanmar and Taiwan.....*A. kankoensis* (UCHIDA, 1932)

***Listrodromus crassipes* (CAMERON, 1907) (figs 13, 19, 23, 25)**

Material examined: Malaysia: Kinabalu Park, on *Aporusa subcaudata*, 1♀ 2.iii.1992, leg. A. Floren (ZSM); Malaysia: SE Sabah, nr Danum Valley Field C, Mal. trap 5, c 150 m, 1♀ 20.vi.-12.vii.1987, 1♀ 12.vii.-2.viii.1987, 2♀♀ 2-23.viii.1987, leg. C. v. Achterberg & D. Kennedy (Leiden); Indonesia: Sula isl., Taliabu, near Tubang, Nal. trap 21, c 40 m, 1♀ 9-20.iii.1995, C. v. Achterberg & Y. Yasir, RMNH (Leiden); Thailand: Mae Hong Son pr., Kiwlompass near Suppong, 1400 m, N 84°19.26' E 98°19', 1♀ 23.vi.-2.vii.2001, leg. R. & H. Fouqué (Linz).

Remark: Flagellum with 20-23 flagellomeres; 1st flagellomere 2.2-2.5× and 2nd flagellomere 2.3-2.5× longer than wide. Median tooth on clypeal apex large. Hind femur 3.2-3.4× longer than wide. Hind claw ± pectinate, sometime only with small basal teeth. 2nd tergite 1.40-1.55× and 3rd tergite 1.65-2.0× wider than long.

Distribution: Widespread in Southern and Southeast Asia, new records for Thailand and the Moluccas.

***Listrodromus flavomaculatus* RIEDEL, 2011 (figs 14, 20, 26)**

Material examined: W-Malaysia: Ulu Gombak, 3°18'N 101°45'E, 2♂♂ ex *Jamides virgulatus* (DRUCE, 1895) (Lep. Lycaenidae) on *Lepisanthes tetraphylla*, coll. 4.vi.1994, pup. 11.vi.1994, em. 23. and 24.vi.1994, leg. P. Seufert (ZSM); Malaysia: SE Sabah, nr Danum Valley Field C, Mal. trap 5, c 150 m, 1♀ 26.v.-20.vi.1987, 1♀ 20.vi.-12.vii.1987, 1♀ 12.vii.-2.viii.1987, 2♀♀ 2-23.viii.1987, leg. C. v. Achterberg & D. Kennedy (Leiden).

Remark: Flagellum with 18, rarely with 19 flagellomeres; 1st flagellomere 1.5-1.7× and 2nd flagellomere 1.7-2.3× longer than wide. Median tooth on clypeal apex rather small. Hind femur 2.6-2.9× longer than wide. 2nd tergite 1.20-1.25× and 3rd tergite 1.55× wider than long.

Distribution: Known from Malaysia peninsula (RIEDEL 2011), new for Sabah.

***Listrodromus propodealis* RIEDEL, 2011 (figs 16, 21, 28), new ♂**

Material examined: W-Malaysia: Ulu Gombak, 3°18'N 101°45'E: 1♀ ex *Jamides alecto* (FELDER, 1860) (Lep. Lycaenidae) on *Zingiber spectabile*, pup. 5.x.1995, em. 20.x.1995, leg. A. Wecker; 1♀ ex *Jamides alecto* (FELDER, 1860) (Lep. Lycaenidae) on *Saraca thaipingensis*, coll. 2.x.1993, pup. 6.x.1993, em. 21.x.1993, leg. P. Seufert (ZSM); 1♀ ex *Jamides purapura* (MOORE, 1886) (Lep. Lycaenidae), leg. viii.1995, emerged 7.ix.1995, leg. P. Seufert; 1♀ ex *Plautella cossaea sonchus* (DRUCE, 1896) (Lep. Lycaenidae), leg. 23.viii.1995, emerged 13.ix.1995, leg. K. Fiedler (ZSM); 3♂♂ ex *Jamides purapura* (MOORE, 1886) (Lep. Lycaenidae), leg. 12.viii.1995, emerged 8.ix.1995, leg. P. Seufert (ZSM); 1♂ 19.ii.1993 emerged 12.iii.1993, leg. J. Moog (ZSM); Malaysia: SE Sabah, nr Danum Valley Field C, Mal. trap 5, c 150 m, 4♀♀ 26.v.-20.vi.1987, 1♀ 12.vii.-2.viii.1987, 2♀♀ 2-23.viii.1987, 1♀ 23.viii.-13.xi.1987, leg. C. v. Achterberg & D. Kennedy (Leiden); Laos: Hua Phan Prov., Phon-Pan, Umg. Ort Ban Saleui, 20°13'30"N 103°59'26"E, 1350-1900 m, 1♀ 13.vi.2013, 1♀ 27.vi.2013, 1♀ 4.vii.2013, leg. C.

Holzschuh & natives (Linz); Indonesia: N Sumatra, Ketambe, c 400 m, near N.P. Gn. Leuser, Mal. trap, 1 ♀ iv.1994, leg. Y. v. Nierop & C. v. Achterberg, RMNH'95 (Leiden).

R e m a r k : The propodeum of the Malaysian specimens varies from reddish to blackish in the reared material mentioned above. Therefore, *Listrodromus propodealis sabahensis* RIEDEL, 2011 represents a colour variety and not a distinct subspecies of *L. propodealis*.

The ♂♂ are characterized by: Flagellum with 20-22 flagellomeres. Tyloids on flagellomeres 3/4-15/18. Flagellum yellowish ventrally. Paramedian spots on mesoscutum usually confluent medially. 1st and 2nd tergites with yellowish posterolateral spots; 4th to 6th tergites entirely black; 3rd and 7th tergites with yellowish apical bands. The structure and coloration of the ♂ is otherwise similar to the ♀.

D i s t r i b u t i o n : Known from Malaysia, new records for Laos and Sumatra.

***Listrodromus rufiventris* nov.sp. (figs 17, 22, 24, 29)**

H o l o t y p e : (♀) Indonesia: C Sulawesi, nr Luwuk, Bunga, c 300 m, 1-14.xi.1989, Mal. trap 16, C. v. Achterberg, RMNH'89 (Leiden).

D e s c r i p t i o n : ♀. Body length 7.2 mm. Length of fore wing 6.8 mm. Flagellum short, filiform, with 22 flagellomeres; 1st flagellomere (without anellus) 2.2× as long as wide and 0.8× as long as 2nd flagellomere; 2nd flagellomere 2.6× longer than wide; all flagellomeres longer than wide. Temple shortly parallel behind eye, moderately narrowed apically. Distance between lateral ocellus and compound eye 1.5× ocellar diameter. Vertex, occiput and temple almost smooth. Frons, malar space and gena with sparse punctures. Face densely punctate, covered with whitish setae. Clypeus with sparse punctures, apical margin with large median tooth. Mandible with two large teeth, lower tooth smaller and slightly curved inwards. Malar space 1.3× longer than width of mandibular base. Genal carina reaching mandibular base.

Mesosoma shining, with whitish setae. Pronotum largely smooth, with some fine setiferous punctures; upper margin thickened and with sparse larger punctures. Notaulus weakly impressed on frontal margin of mesoscutum. Mesoscutum with dense punctures in frontal half, almost smooth in posterior third. Mesopleuron densely punctate; speculum very large and smooth. Metapleuron with rather dense punctures dorsally but almost smooth ventrally; juxtacoxal carina strong. Scutellum moderately elevated, transverse, with complete lateral carina and sparse fine punctures. Propodeum completely carinate, spiracle oval. Area externa and area superomedia almost smooth, area petiolaris with transverse rugae. Area superomedia heart-shaped, 1.25× wider than long; anterior transverse carina reaching at 7/10 of its length. Coxae densely punctate; hind coxa without scopa. Hind femur club-shaped, 3.4× longer than wide. All claws strongly pectinate. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 4-5× their width; vein 2m-cu reaching its middle. Vein 1cu-a interstitial.

Metasoma strongly amblypygous. Petiolus with latero-median carina. Postpetiolus moderately widened, without latero-median carina, almost smooth with fine longitudinal rugae. Gastrocoelus strongly impressed, with longitudinal ridges laterally and oblique ridges medially. Thyridium oblique, c. 0.8× as long as the interval between thyridia. 2nd tergite about as long as wide; 3rd tergite 1.4× wider than long. 2nd and 3rd tergites coarsely and densely punctate; 2nd tergite with longitudinal rugose-punctuation medially; 3rd tergite with reduced punctuation at apical margin. 4th tergite with coarse but superficial

punctures; following tergites almost smooth. Ovipositor sheath short, not reaching behind metasoma apex.

Color: Flagellum reddish-yellow. Head brownish. Palps ochreous. Mandible medially, face except short black dorso-median stripe, frontal orbit, scape, pedicel and spot on outer orbit ivory. Mesosoma brown. Upper margin of pronotum, tegula, subtegular ridge and scutellum ivory. Metasoma red; 2nd and 3rd tergites with weak posterolateral ivory spots. Fore and mid coxae and trochanters ivory; hind coxa with ivory dorsal spot; legs otherwise yellow. Wings hyaline; pterostigma ochreous.

♂ unknown.

D i s t r i b u t i o n : Only known from Sulawesi.

***Listrodromus simplex* HEINRICH, 1934 (figs 18, 30)**

M a t e r i a l e x a m i n e d : Indonesia: C Sulawesi, nr Luwuk, Salodik, c 400 m, 1 ♀ 21-31.x.1989, Mal. trap 14, C. v. Achterberg, RMNH'89 (Leiden).

D e s c r i p t i o n : Body length 6.8 mm. Length of fore wing 4.9 mm. Flagellum short, filiform, with 20 flagellomeres; 1st flagellomere (without anellus) 2.2× as long as wide and 1.0× as long as 2nd flagellomere; 2nd flagellomere 2.1× longer than wide; preapical flagellomere square. Temple slightly and roundly narrowed behind eye. Vertex, occiput and temple almost smooth. Frons, malar space and gena with sparse punctures. Face densely punctate, covered with whitish setae. Clypeus with sparse punctures, apical margin with large median tooth. Mandible with two large teeth, lower tooth smaller and slightly curved inwards. Malar space 1.5× longer than width of mandibular base. Genal carina reaching mandibular base.

Mesosoma shining, with whitish setae. Pronotum largely smooth, with fine setiferous punctures on upper margin and ventrally, with some coarse rugae on posterior margin. Notaulus impressed on frontal fifth of mesoscutum. Mesoscutum with dense punctures in frontal half, almost smooth in posterior third. Mesopleuron densely rugose-punctate; speculum very large and smooth. Metapleuron densely coarsely rugose-punctate but almost smooth ventrally; juxtacoxal carina strong. Scutellum moderately elevated, almost square, with complete lateral carina and sparse fine punctures. Propodeum completely carinate, spiracle oval. Area superomedia partly smooth, area petiolaris with transverse rugae. Area superomedia hexagonal, 1.1× wider than long; anterior transverse carina reaching at 4/10 of its length. Coxae densely punctate; hind coxa without scopa. Hind femur club-shaped, 3.4× longer than wide. Fore and mid claws strongly pectinate; hind claw simple. Areolet pentagonal, frontal distance between veins 2rs-m and 3rs-m 5× their width; vein 2m-cu reaching its middle. Vein 1cu-a slightly antefurcal.

Metasoma amblypygous. Petiolus without latero-median carina. Postpetiolus moderately widened, without latero-median carina, almost smooth with fine longitudinal rugae medially and punctate laterally. Gastrocoelus strongly impressed, with longitudinal ridges. Thyridium almost transverse, c. 0.9× as long as the interval between thyridia. 2nd tergite 1.4× wider than long; 3rd tergite 1.6× wider than long. 2nd and 3rd tergites coarsely and densely rugose-punctate, with almost smooth apical margins. 4th tergite with fine sparse punctures; following tergites almost smooth. Ovipositor sheath rather short, slightly reaching behind metasoma apex.

Color: Flagellum reddish-brown; scape reddish, yellow laterally. Head brownish. Palps ochreous. Mandible basally, lateral spots on clypeus apically, wide facial and frontal orbits spot on outer orbit ivory. Mesosoma brown. Tegula brown. Upper margin of pronotum, subtegular ridge and scutellum ivory. Metasoma reddish-brown; petiolus yellow, with brownish apical spot; postpetiolus ivory. Posterolateral spots on 2nd and 3rd tergites and apical spots on 4th to 7th tergites ivory. Coxae reddish-brown basally, reddish-yellow apically; hind coxa with yellow dorsal spot. Legs otherwise reddish; hind tarsus brown. Wings hyaline; pterostigma brown.

Key for the known ♀♀ of Oriental *Listrodromus* species
(adopted from RIEDEL 2011):

- 1 Malar space very long, about 2× longer than width of mandibular base (fig.15). 2nd tergite 1.2-1.3× longer than wide. 1st and 2nd tergites with reddish ground color, following tergites ± black (fig. 27). Java, Laos. *L. javae* HEINRICH, 1975
- Malar space shorter, not more than 1.6× longer than width of mandibular base (figs 13-14, 16-18). 2nd tergite about as long as wide or transverse. 2nd tergite with black or brown ground colour OR 2nd and metasoma entirely red (figs 25-26, 28-30).2
- 2 Tergites red; only 2nd and 3rd tergites with weak and small posterolateral ivory spots (fig. 29). Sulawesi. *L. rufiventris* nov.sp.
- Tergites black or brown, often with ivory or yellow spots.3
- 3 Mesosoma with extended yellow coloration: metapleuron and propodeum with yellowish spots (fig. 20). Flagellum with 18-19 flagellomeres, basal flagellomeres very short, 1st flagellomere 1.5-1.7× longer than wide. Malaysia (Pahang, Sabah). *L. flavomaculatus* RIEDEL, 2011
- Mesosoma with less extended ivory spots: metapleuron and propodeum black (figs 19, 21-22). Flagellum with 19-23 flagellomeres, 1st flagellomere at least 1.7× longer than wide, usually longer.4
- 4 Mesoscutum with two paramedian ivory or yellowish spots which are sometimes confluent apically. Mesopleuron usually with ivory or yellowish spot on epicnemium. 5th tergite, often also 4th tergite without ivory coloration (fig. 28). Malaysia (Padang, Sabah). *L. propodealis* RIEDEL, 2011
- Mesoscutum and mesopleuron entirely black. 4th and 5th tergites with ivory or yellow spots (figs 25-27, 30).5
- 5 Hind femur and tibia red, not darkened. Hind claw simple, not pectinate. Sulawesi. *L. simplex* HEINRICH, 1934
- Hind femur and tibia basally and apically ± darkened; hind tibia with pale yellow subbasal band. Hind claw ± pectinate, at least basally. Widespread in Southern and Southeast Asia. *L. crassipes* (CAMERON, 1907)

Zusammenfassung

In dieser Arbeit werden neue Funde von sieben Arten der Gattungen *Anisobas* WESMAEL und *Listrodromus* WESMAEL (Hymenoptera, Ichneumonidae, Ichneumoninae) aus der orientalischen Region vorgestellt.

Die Unterart *Listrodromus propodealis sabahensis* RIEDEL, 2011 wird hier als Farbvariante betrachtet und daher mit *Listrodromus propodealis s.str.* RIEDEL, 2011 synonymisiert, außerdem wird das unbekannte Männchen dieser Art beschrieben.

Drei Arten sind bisher unbekannt und werden hier neu beschrieben: *Anisobas himalayanus* nov.sp., *Anisobas vietnamensis* nov.sp. und *Listrodromus rufiventris* nov.sp.. Die neuen Arten werden

ausführlich beschrieben und illustriert, außerdem werden Bestimmungsschlüssel für die orientalischen Arten dieser Gattungen gegeben.

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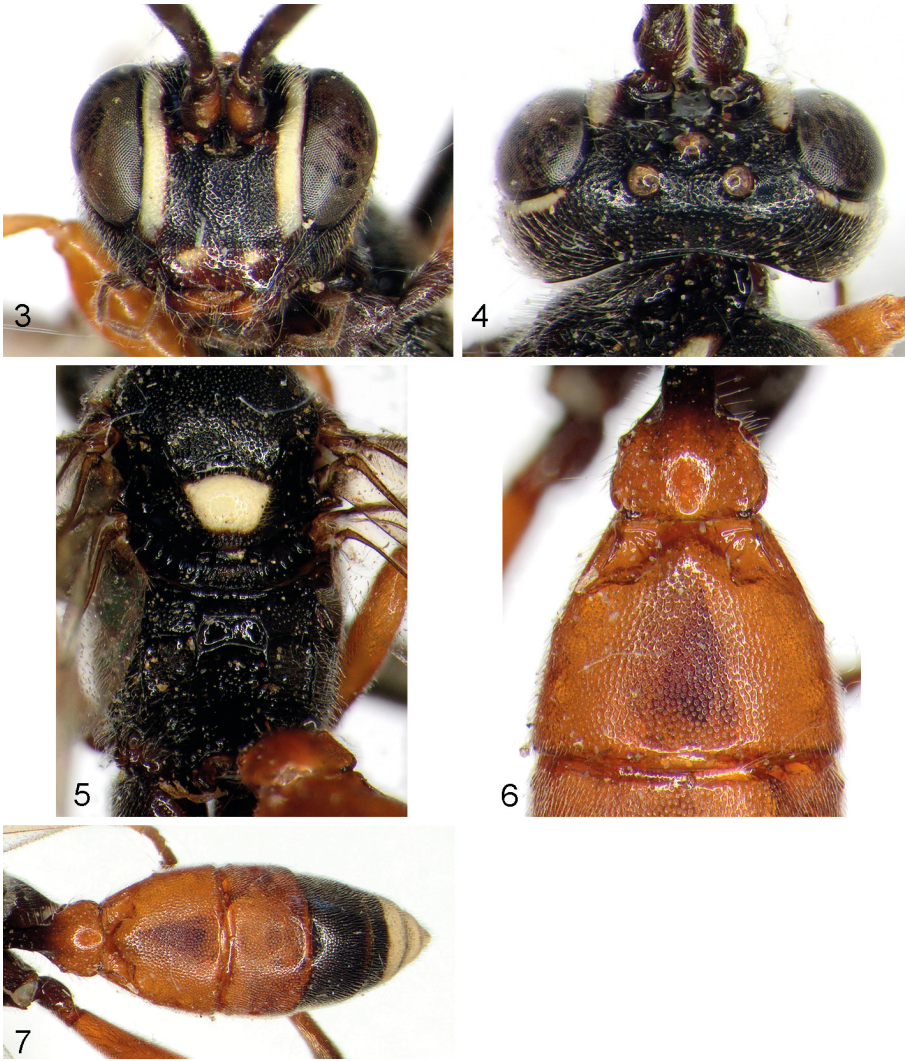
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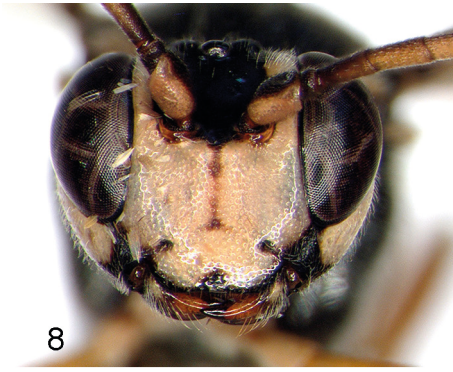
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Figs 1-2: Habitus from lateral: (1) *Anisobas himalayanus* nov.sp. ♂; (2) *Anisobas vietnamensis* nov.sp. ♀.



Figs 3-7: *Anisobas himalayanus* nov.sp. ♂: (3) face, (4) head from dorsal, (5) propodeum, (6) basal tergites, (7) metasoma.



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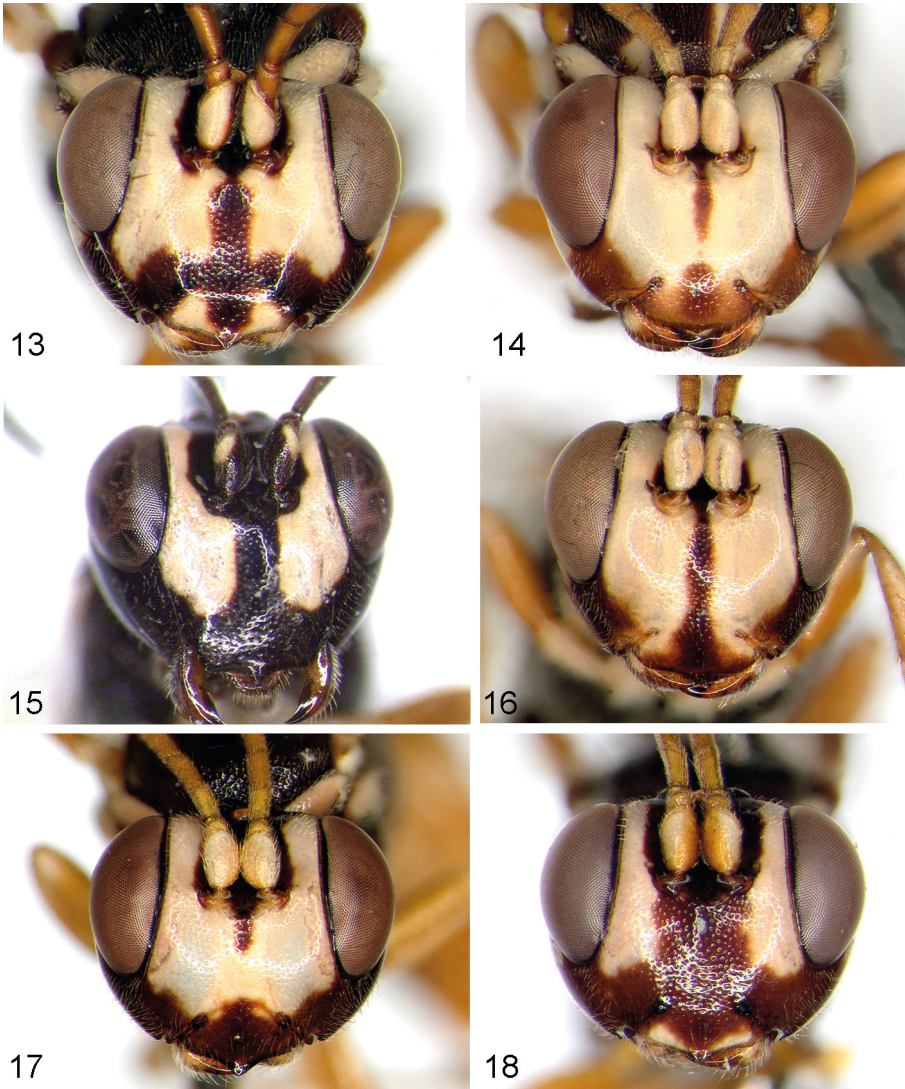


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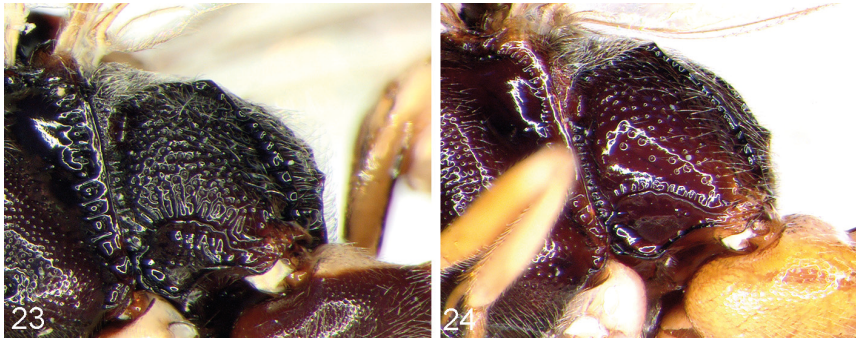
Figs 8-12: *Anisobas vietnamensis* nov.sp.
 ♀: (8) face, (9) head from dorsal, (10) pro-
 podeum, (11) basal tergites, (12) metasoma.



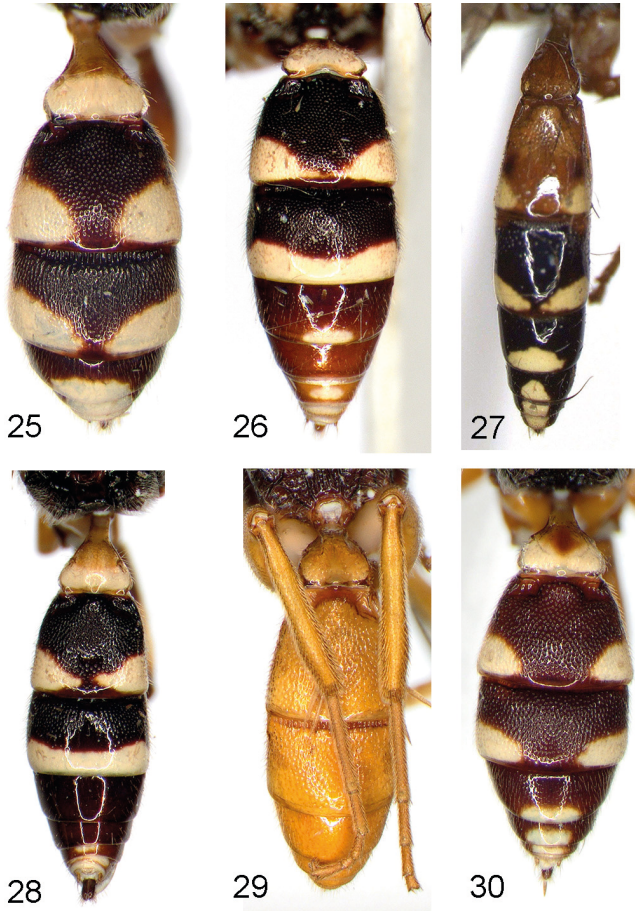
Figs 13-18: Head of ♀♀ from frontal: (13) *Listrodromus crassipes* (CAMERON), (14) *L. flavomaculatus* RIEDEL, (15) *L. javae* HEINRICH, (16) *L. propodealis* RIEDEL, (17) *L. rufiventris* nov.sp. (18) *L. simplex* HEINRICH.



Figs 19-22: Propodeum of ♀♀ from dorsal: (19) *Listrodromus crassipes* (CAMERON), (20) *L. flavomaculatus* RIEDEL, (21) *L. propodealis* RIEDEL, (22) *L. rufiventris* nov.sp.



Figs 23-24: Metapleuron of ♀♀ from lateral: (23) *Listrodromus crassipes* (CAMERON), (24) *L. rufiventris* nov.sp.



Figs 25-30: Metasoma of ♀♀ from dorsal: (25) *Listrodromus crassipes* (CAMERON), (26) *L. flavomaculatus* RIEDEL, (27) *L. javae* HEINRICH, (28) *L. propodealis* RIEDEL, (29) *L. rufiventris* nov.sp., (30) *L. simplex* HEINRICH.

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