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Contribution to the knowledge of Oriental *Syzeuctus* FÖRSTER (Hymenoptera, Ichneumonidae, Banchinae), with description of six new species

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A b s t r a c t : In a survey of the Oriental species of *Syzeuctus* FÖRSTER deposited in several European museums, new distributional records of nine different species are presented. Six of these species are new for science: *Syzeuctus achterbergi* nov.sp., *Syzeuctus genator* nov.sp., *Syzeuctus laoticus* nov.sp., *Syzeuctus floresiensis* nov.sp., *Syzeuctus orientalis* nov.sp., and *Syzeuctus siamensis* nov.sp. All new species are described and illustrated, and a key for the ♀♀ of the known Oriental species of *Syzeuctus* is given.

K e y w o r d s : Ichneumonidae, Banchinae, *Syzeuctus*, Oriental, new species

Introduction

The genus *Syzeuctus* FÖRSTER, 1868 is a rather large and worldwide distributed genus of the Ichneumonidae, subfamily Banchinae, tribe Lissonotini, usually found in tropical or subtropical areas with a supposed adaptation to relatively dry habitats (TOWNES 1969). 123 known species had been counted in a recent catalogue (Yu et al. 2016), but in the view of the recent revision of Palaearctic *Syzeuctus* with descriptions of several new species (RIEDEL 2021) it is suggestive that many species are undescribed yet.

In the Oriental region, 16 species of *Syzeuctus* are known to date (YU et al. 2016). A first comprehensive study of Oriental *Syzeuctus* had been published by CHANDRA & GUPTA (1977) focussing on the Indian fauna. NIKAM & KANHEKAR (1987) later added two more species from India.

Here, I present the results of a study of Oriental *Syzeuctus* from the Biologiezentrum (Linz/Austria), Naturalis Biodiversity Center (Leiden/Netherlands) and Natural History Museum (NHM, London/United Kingdom), with descriptions of six new species.

Material and methods

The morphological terms were adopted from BROAD et al. (2018). Body length was measured without ovipositor. In the descriptions below, the length of the ovipositors, but not of the ovipositor sheaths was measured. Length of 1st flagellomere was measured without anellus in lateral view and length of temples and eyes measured from dorsal view.

For the descriptions the following abbreviations were used: OED: distance from lateral ocellus to eye; OOD: distance between lateral ocelli; MI: malar index, e.g. relation of length of malar space to width of mandibular base. For the punctuation of body parts the following definitions were used: very scattered: distance of punctures $>2\times$ their diameter; scattered: distance $1-2\times$ their diameter; rather dense: distance about as their diameter; dense: diameter of punctures larger than their distance.

For the measurements an Olympus SZ \times 7 stereo microscope with dividing eyepiece was used. The figures were taken with an Olympus SC 30 CCD-camera using the AnalySIS getIT software and processed with the Helicon Focus and the Microsoft picture manager softwares.

Description of species

Syzeuctus achterbergi nov.sp. (figs 4, 10, 16, 22)

H o l o t y p e : (♀) Indonesia: C Sulawesi, nr Luwuk, Salodik, c 400 m, 21-31.X.1989, Mal. trap 14, C. v. Achterberg, RMNH '89 (Leiden).

P a r a 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 (coll. RIEDEL).

E t y m o l o g y : This species is dedicated to C. VAN ACHTERBERG who made important contributions to the knowledge of Oriental Hymenoptera.

D e s c r i p t i o n : ♀: Body length 9 mm. Length of fore wing 7 mm and of ovipositor 7 mm. Antenna with 39-40 flagellomeres; 1st flagellomere $4.2\times$ longer than wide and $0.49-0.51\times$ as long as eye; preapical flagellomere square. Temple very short, strongly and roundly narrowed behind eye, dorsally $0.2\times$ as long as eye. OED $1.2\times$ and OOD $1.5\times$ ocellar diameter. Vertex and frons coarsely and densely punctate. Frons moderately swollen laterally and strongly concavely impressed medially. Face densely punctate, inner eye margins slightly divergent ventrally. Clypeus $2.0\times$ wider than long, with rather dense punctures, apical margin rounded. MI $0.6-0.7$. Mandible with strong baso-ventral lamella, upper tooth larger than lower one.

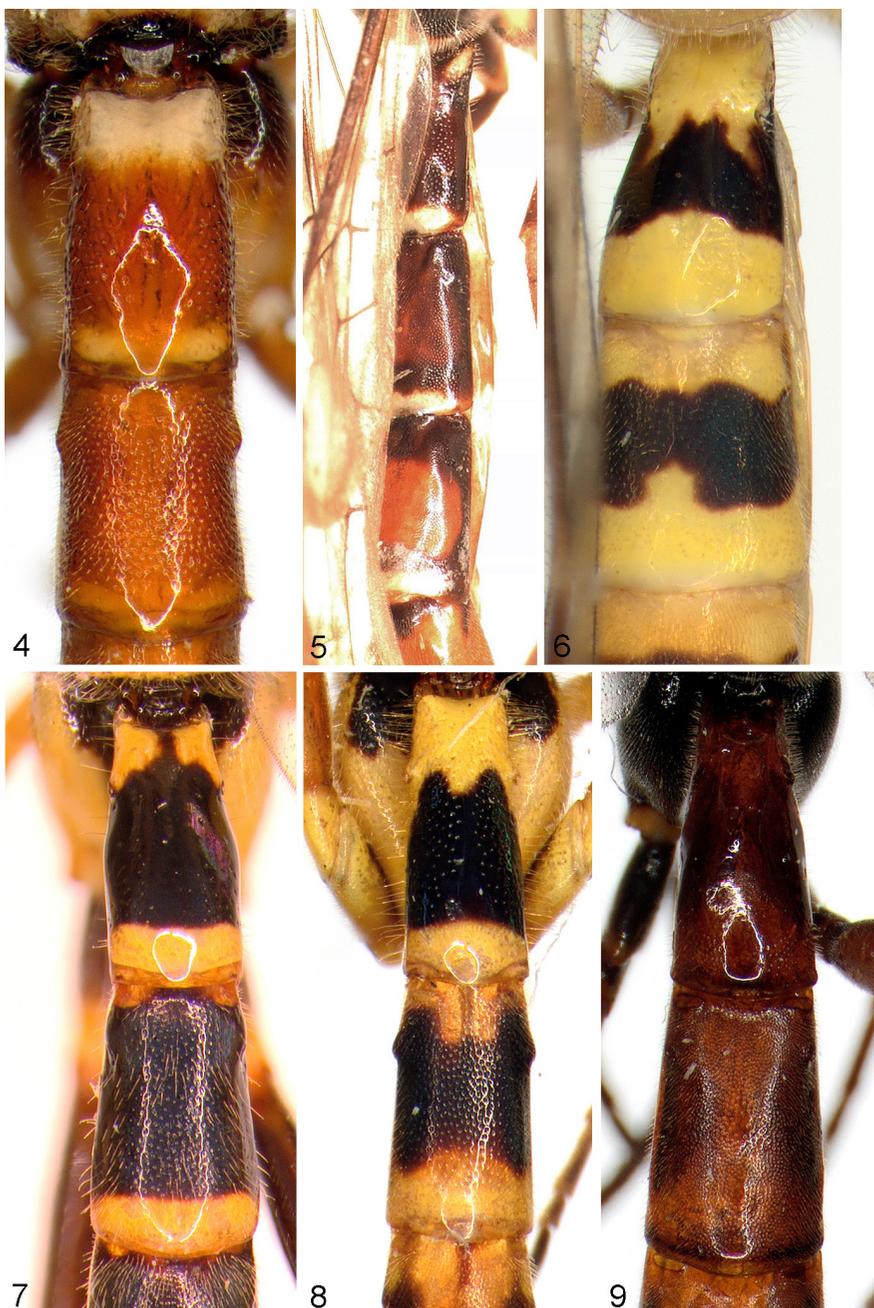
Mesosoma coarsely and densely punctate, $1.45\times$ longer than high. Frontoventral edge of pronotum moderately curved. Side of pronotum densely punctate dorsally, with fine longitudinal striae ventro-posteriorly, pronotal groove partly smooth. Epicnemial carina low, pleural part present, transversal part weak. Mesopleuron partly with dense punctures, medially and posteriorly with scattered punctures; speculum large, smooth. Propodeum with coarse transversal rugose-punctuation. Pleural carina present. Apical transverse carina of propodeum strong and complete. Hind femur $5.0-5.2\times$ longer than wide. Hind metatarsus $0.54\times$ as long as hind femur. 2nd hind tarsomere $1.35-1.45\times$ as long as 3rd one. Hind claw with c. 4 long teeth, strongly bent apically.

Areolet with long stalk; vein 2mc-u reaching areolet in its distal 0.8. Vein 1cu-a slightly postfurcal by $1-2\times$ its width. Postnervulus intercepted in its middle. Nervellus of hind wing slightly reclivous, intercepted in its apical 0.75-0.80. Hind wing with 7-9 distal hamuli.

Metasoma rather slender, tergites with narrow spiracles, spiracles not or slightly bulged. 1st tergite $1.85-1.95\times$ longer than wide, smooth medially, with rather dense and coarse lateral punctures. 2nd tergite $1.4\times$ and 3rd tergite $1.3-1.4\times$ longer than wide, both densely punctate but smooth in apical 0.2. Ovipositor $1.0\times$ as long as fore wing, $1.25\times$ longer than metasoma and $2.5\times$ longer than hind tibia.



Figs 1-3: Habitus from dorsal: (1) *Syzeuctus laoticus* nov.sp. ♀ holotype (HT); (2) *S. siamensis* nov.sp. ♀ HT; (3) *S. orientalis* nov.sp. ♂ paratype (PT).

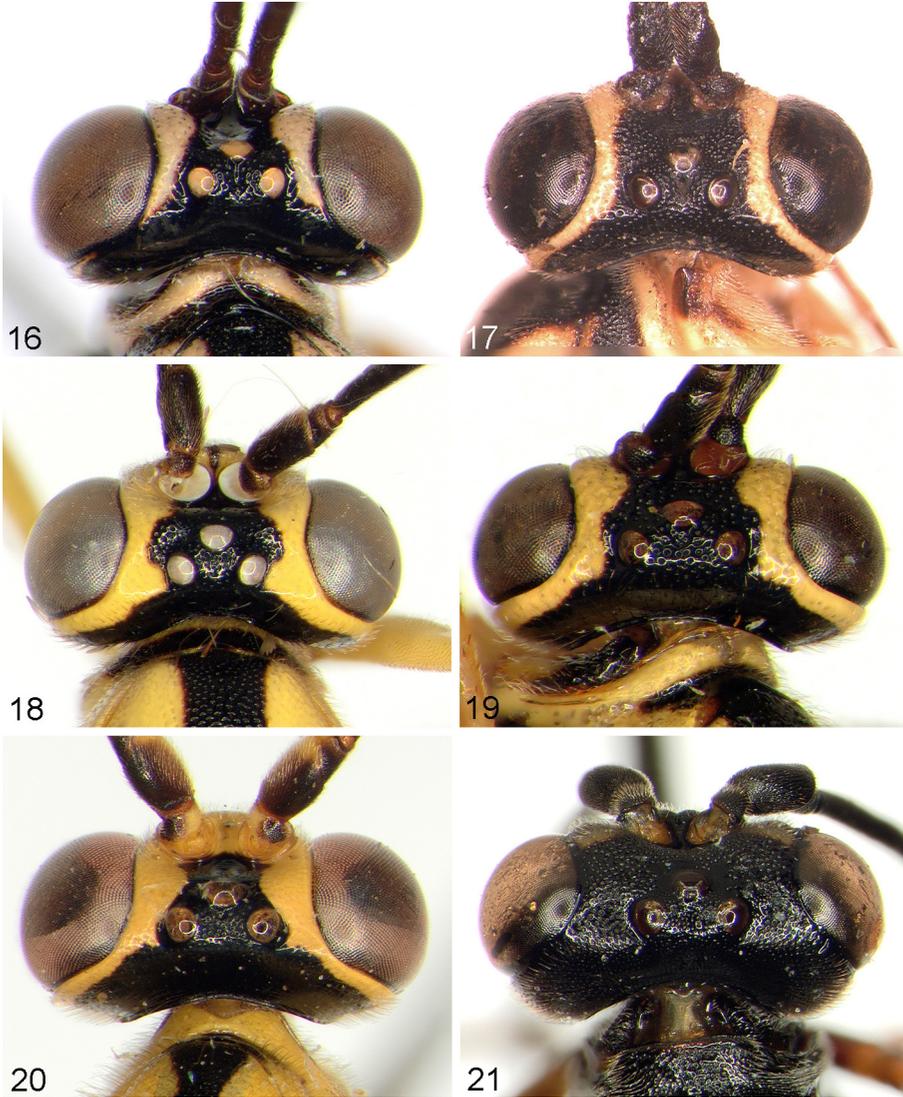


Figs 4-9: Basal tergites from dorsal: (4) *Syzeuctus achterbergi* nov.sp. ♀ HT; (5) *S. floresiensis* nov.sp. ♀ HT; (6) *S. genator* nov.sp. ♀ HT; (7) *S. laoticus* nov.sp. ♀ HT; (8) *S. orientalis* nov.sp. ♂ PT; (9) *S. siamensis* nov.sp. ♀ HT.



Figs 10-15: Faces from frontal: (10) *Syzeuctus achterbergi* nov.sp. ♀ HT; (11) *S. floresiensis* nov.sp. ♀ HT; (12) *S. genator* nov.sp. ♀ HT; (13) *S. laoticus* nov.sp. ♀ HT; (14) *S. orientalis* nov.sp. ♂ HT; (15) *S. siamensis* nov.sp. ♀ HT.

Color: head and mesosoma black, with extensive cream-yellow coloration. Flagellum brown. Palps, mandible except teeth, clypeus, face except dorso-medial black spot, wide frontal orbit, malar space and outer orbit, ventral spot on pedicel, frontal and upper margins of pronotum, spot on tegula, subtegular ridge, hook-shaped anterolateral spots and roundish central spot on mesoscutum, dumb-bell shaped stripe on mesopleuron, upper division and posterior spot on metapleuron, sides and apex of scutellum, postscutellum



Figs 16-21: Heads from frontal: (16) *Syzeuctus achterbergi* nov.sp. ♀ HT; (17) *S. floresiensis* nov.sp. ♀ HT; (18) *S. genator* nov.sp. ♀ HT; (19) *S. laoticus* nov.sp. ♀ HT; (20) *S. orientalis* nov.sp. ♂ HT; (21) *S. siamensis* nov.sp. ♀ HT.

and transverse stripe on apical propodeum yellow. Metasoma reddish; 1st tergite cream-yellow basally and with yellow apical band. Legs red; fore and mid coxae and trochanters cream-yellow, hind coxa ± black in basal half. Fore wing with brown apical stripe; pterostigma brown.

♂ unknown.



Figs 22-23: Mesosoma from lateral: (22) *Syzeuctus achterbergi* nov.sp. ♀ HT; (23) *S. genator* nov.sp. ♀ HT.

Remark: This new species belongs to the *villosus* group sensu CHANDRA & GUPTA (1977) and runs to *S. villosus* (CAMERON, 1899) in their key of Oriental *Syzeuctus* (CHANDRA & GUPTA 1977: 138-139). It differs by its longer ovipositor and different coloration of legs and 1st tergite.

***Syzeuctus floresiensis* nov.sp. (figs 5, 11, 17)**

H o l o t y p e : (♀) Kelimoetoe, Flores 1400, Dez. 1931, Handschin (NHM, London).

Description: ♀: Body length 13 mm. Length of fore wing 9 mm and of ovipositor 14 mm. Antenna with 48 flagellomeres; 1st flagellomere 5.5× longer than wide and 0.66× as long as eye; preapical flagellomere about square. Temple very short, strongly and roundly narrowed behind eye, dorsally 0.2× as long as eye. OED 1.0× and

OOD 1.4× ocellar diameter. Vertex and frons coarsely and densely punctate. Frons strongly and concavely impressed medially. Face densely but finely punctate. Clypeus 2.0× wider than long, with scattered punctures, apical margin rounded. MI 0.5. Mandible with strong baso-ventral lamella.

Mesosoma very coarsely and densely punctate, 1.53× longer than high. Fronto-ventral edge of pronotum strongly curved. Side of pronotum densely punctate, pronotal groove partly smooth. Epicnemial carina low, pleural part present, transversal part absent. Apical transverse carina of propodeum shortly present laterally, widely absent medially. Hind femur 5.9× longer than wide. Hind metatarsus 0.75× as long as hind femur. 2nd hind tarsomere 1.53× as long as 3rd one. Hind claw with short teeth, strongly bent apically.

Areolet with long stalk (stalk as long as areolet); vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a slightly postfurcal by 1× its width. Postnervulus intercepted in middle. Nervellus of hind wing slightly reclivous, intercepted in its apical 0.75.

Metasoma slender, tergites with narrow spiracles, spiracles not bulged. 1st tergite 2.35× longer than wide, with rather dense and coarse lateral punctures. 2nd tergite 1.8× longer than wide, with dense but fine punctures, ± shining. 3rd tergite 1.4× as long as wide, with dense fine punctures. Ovipositor 1.55× longer than fore wing, 1.7× longer than metasoma and 3.6× longer than hind tibia.

Color: Black. Flagellum black, dark reddish-brown in apical half. Palps, mandible except teeth, clypeus, wide complete orbits, malar space and paramedian spots on face yellow. Mesosoma black, with yellow color pattern: frontal and upper margins of pronotum, spots on tegula and on subtegular ridge, hook-shaped antero-lateral spot on mesoscutum (confluent apico-medially), wide stripe on mesopleuron, spot on mesosternum, upper division and central spot on metapleuron, sides and apex of scutellum, postscutellum, wide triangular median spot and lateral spots on propodeum yellow. 1st to 3rd tergite black, 2nd and 3rd tergites with central red spots; following tergites and hypopygium reddish. 1st tergite with basolateral yellow spot; 1st to 3rd tergite with apical yellow bands. Fore and mid coxae and trochanters yellow frontally, blackish caudally; hind coxa with ventral and dorsal yellow spots; all trochantelli yellow; femora tibiae and fore tarsus reddish, femora and tibiae with ± distinct dorsal brownish stripes; mid and hind tarsi brown. Wings with brown apical stripes; pterostigma brown.

♂ unknown.

R e m a r k : This new species belongs to the *villosus* group sensu CHANDRA & GUPTA (1977) and runs to *S. baluchistanensis* (CAMERON, 1906) in their key. It differs by the less extended yellow color pattern of meso- and metasoma.

***Syzeuctus genator* nov.sp. (figs 6, 12, 18, 23)**

H o l o t y p e : (♀) N Vietnam: Viet Try, nr Thanh Son, Thuong Cuu, 20°59'N 105°8'E, 350-400 m, 11-16.x.1999, Malaise trap, R. de Vries, RMNH '99 (Leiden).

D e s c r i p t i o n : ♀: Body length 12 mm. Length of fore wing 9 mm. Length of ovipositor 7.5 mm. Antenna with 42 flagellomeres; 1st flagellomere 5.2× longer than wide and 0.66× as long as eye; preapical flagellomere about square. Temple short, strongly and roundly narrowed behind eye, dorsally 0.25× as long as eye. OED 1.4× and OOD 1.4× ocellar diameter. Vertex densely punctate. Frons with scattered to rather dense punctures, moderately swollen laterally and impressed medially. Face densely

punctate, inner eye margins parallel. Clypeus $1.6\times$ wider than long, with fine dense punctures, apical margin rounded. MI 1.0. Mandible with baso-ventral lamella, upper tooth about as large as lower one.

Mesosoma coarsely and densely punctate, covered with short pale setae, $1.75\times$ longer than high. Fronto-ventral edge of pronotum strongly curved. Side of pronotum densely punctate, pronotal groove finely rugulose. Epicnemial carina low, pleural part present, transversal part absent. Mesopleuron densely punctate; speculum partly smooth. Propodeum coarsely rugose-punctate, laterally with oblique striae. Pleural carina weak and incomplete. Apical transverse carina of propodeum strong and complete. Hind femur $5.3\times$ longer than wide. Hind metatarsus slender, $0.75\times$ as long as hind femur. 2nd hind tarsomere $1.38\times$ as long as 3rd tarsomere. Hind claw with 4 long teeth, strongly bent apically.

Areolet with long stalk; vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a postfurcal by $2\times$ its width. Postnervulus intercepted behind its middle. Nervellus of hind wing reclivous, intercepted in its apical 0.8. Hind wing with 10 distal hamuli.

Metasoma rather stout, tergites with narrow spiracles, spiracles not bulged. 1st tergite $1.6\times$ longer than wide, smooth medially, with scattered lateral punctures. 2nd tergite $1.1\times$ longer than wide, with fine rather dense punctures. 3rd tergite $1.1\times$ longer than wide, with fine superficial dense punctures. Ovipositor $0.8\times$ as long as fore wing, $1.0\times$ as long as metasoma and $2.3\times$ longer than hind tibia.

Color: head and mesosoma mainly yellow. Antenna black. Dorso-median spot on face, frons medially, stemmaticum and occiput, pronotum medially, mesoscutum except large yellow hook-shaped antero-lateral stripes and central rectangular spot, epicnemium and postero-dorsal stripe on mesopleuron and two oblique lateral stripes on propodeum black. Tergites with blackish median transversal bands; 1st to 3rd tergites otherwise yellow, 4th to 7th tergites otherwise cream-yellow. Sternites yellowish; hypopygium with brown postero-median spot. Legs yellow; hind coxa basally and hind trochanter entirely black; tibiae ochreous; fore and mid tarsi brownish; hind tarsus black. Fore wing weakly infuscate apically; pterostigma reddish-brown.

♂ unknown.

Remark: This new species belongs to the *zanthorius* group sensu CHANDRA & GUPTA (1977) and runs to *S. zanthorius* (CAMERON, 1902) in their key. It differs by its stouter basal tergites, yellow femora and more extensive yellow coloration of head, mesosoma and metasoma.

***Syzeuctus immedicatus* CHANDRA & GUPTA, 1977**

Material examined: Laos: 35 km NE Vientiane, Lao Pako env, 50 m, 18°10'N 102°52'E, 4♀ 1♂ 1-4.VI.2004, leg. Jendek & Sausa (Linz); Indonesia: W Sumatra, Mt. Sanggul, ~1400 m, 30 km N Paykumbuh, 1♀ 1.2007, leg. Jakl (Linz); Indonesia: N Sumatra, Ketambe, near N.P. Gn. Leuser, c 400 m, 1♂ IV.1994, Mal. Trap, leg. Y. v. Nierop & C. v. Achterberg (Leiden); S Vietnam: Đông Nai, Cát Tiên N.P., Dong trail, Mal. traps, c 100 m, 1♀ 2♂♂ 13-19.V.2007, leg. C. v. Achterberg & R. de Vries (Leiden); S Vietnam: Dak Lak, Chu Yang Sin N.P., Krong, K'Mar, Mal. traps 13-23, 590-810 m, 1♂ 22-26.X.2005, leg. C. v. Achterberg & R. de Vries (Leiden); S Vietnam: Đông Nai, Cát Tiên N.P., Botanical garden, Mal. traps, c 100 m, 1♀ 1♂ 13-20.V.2005, leg. C. v. Achterberg & R. de Vries (Leiden); S Vietnam: Đông Nai, Cát Tiên N.P., Crocodile tr., Mal. traps, c. 100 m, 1♂ 13-19.V.2007, leg. C. v. Achterberg & R. de Vries (Leiden).

Description: ♀: Body length 13.0-13.5 mm. Length of fore wing 8.5-9.0 mm and of ovipositor 8.0-9.0 mm. Antenna with 46-49 flagellomeres; 1st flagellomere 5.3× longer than wide and 0.66× as long as eye; preapical flagellomere square or slightly longer than wide. Temple very short, strongly and roundly narrowed behind eye, dorsally 0.2× as long as eye. OED 1.2× and OOD 1.2-1.3× ocellar diameter. Vertex with scattered punctures. Frons with fine dense punctures, slightly swollen laterally and slightly impressed medially. Face densely punctate, finely granulate, ± dull. Clypeus convex, 1.9× wider than long, apical margin rounded. MI 0.3-0.5. Mandible with baso-ventral lamella, lower tooth slightly shorter than upper tooth.

Mesosoma densely punctate, covered with grey setae, 1.45× longer than high. Frontoventral edge of pronotum moderately curved. Side of pronotum densely punctate, posterior margin with some coarse longitudinal rugae, pronotal groove partly smooth. Epicnemial carina low, pleural part short, ending in ventral third of mesopleuron, transversal part present as short lamella. Pleural carina present. Apical transverse carina of propodeum complete and distinct. Legs slender; hind femur 5.6-5.8×. Hind metatarsus 0.58-0.65× as long as hind femur. 2nd hind tarsomere 1.5× as long as 3rd one. Hind claw with c. 5 teeth, strongly bent apically (c.90°).

Areolet with long stalk (stalk longer than areolet); vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a postfurcal by 2-3× its width. Postnervulus intercepted behind its middle. Hind wing with 9-10 distal hamuli.

Metasoma slender, tergites with narrow spiracles, spiracles of 1st and 2nd tergites slightly bulging. 1st tergite 2.0-2.6× longer than wide, with rather coarse dense punctures, almost smooth medially, shining. 2nd tergite 1.30-1.45× longer than wide, with dense punctures and fine granulation, ± dull. 3rd tergite 1.30-1.40× as long as wide, with dense punctures, ± dull. Ovipositor 0.9-1.0× as long as fore wing, 1.0-1.2× as long as metasoma and 2.0-2.3× longer than hind tibia.

Color: Black. Flagellum black. Palps, mandible, clypeus, face, gena, complete orbits (widened on frontal orbit), scape and pedicel, frontal and upper margins of pronotum, tegula, subtegular ridge, anterolateral and central spots on mesoscutum, two spots on mesopleuron, upper division and apical spot of metapleuron, scutellum except black median stripe, postscutellum, area spiracularis frontally and wide triangular spot on posterior propodeum yellow. 1st to 4th tergites with basal red or reddish-yellow bands, 1st to 5th tergites with apical yellow bands. Sternites yellow, with ± distinct brown lateral spots; hypopygium black with yellow hind margin. Fore and mid coxae and trochanters and all trochantelli yellow. Hind coxa black, yellow in apical third. Fore and mid legs yellow, its femora with reddish dorsal stripes. Hind femur red, sometimes narrowly infusate basally; hind tibia red, ± infusate apically; hind tarsus black. Wings hyaline; fore wing with subapical brown spot. Pterostigma brown.

♂: Body length 14 mm. Antenna with 49-50 flagellomeres; 1st flagellomere 5.0× longer than wide, preapical flagellomeres longer than wide. Hind femur 5.6× longer than wide. Hind metatarsus 0.75× as long as hind femur. 2nd hind tarsomere 1.45× as long as 3rd hind tarsomere. 1st tergite 2.35× longer than wide. 2nd tergite 1.53× longer than wide and 3rd tergite 1.45× longer than wide. Structure otherwise as described for the ♀.

Color: Black, yellow coloration more extendend than in the ♀: in addition flagellum yellowish ventrally; propleuron and mesosternum yellow; 1st to 4th tergites with basal

yellow bands and all tergites with apical yellow bands; hind tibia ochreous, infusate in apical 0.1.

In ♂♂ from Vietnam, hind femur yellowish with internal and external brownish stripes. Color pattern otherwise as described for the ♀.

Distribution: Apparently widespread in the Oriental region, known from China, India and Myanmar, new records for Indonesia, Laos and Vietnam.

***Syzeuctus laoticus* nov.sp. (figs 1, 7, 13, 19)**

H o l o t y p e: (♀) Laos: Prov. Hua Phan Prov., Phon-Pan, Umg. Ort Ban Saleui, 20°13'30''N 103°59'26''E, 1350-1900 m, 20.06.2013 KJa, leg. C. Holzschuh & natives (Linz).

D e s c r i p t i o n: ♀: Body length 10.0 mm. Length of fore wing 7.5 mm and of ovipositor 9.5 mm. Antenna with 44 flagellomeres, filiform; 1st flagellomere 3.7× longer than wide and 0.60× as long as eye; preapical flagellomere square. Temple short, strongly and roundly narrowed behind eye, dorsally 0.3× as long as eye. OED 1.3× and OOD 1.7× ocellar diameter. Vertex with scattered punctures. Frons with dense punctures, moderately swollen laterally and slightly impressed medially. Face densely punctate. Clypeus almost flat, 2.3× wider than long, apical margin rounded. MI 0.6. Mandible with baso-ventral lamella, lower tooth slightly shorter than upper tooth. Genal carina reaching mandibular base.

Mesosoma densely punctate, covered with grey setae, 1.50× longer than high. Fronto-ventral edge of pronotum moderately curved. Side of pronotum densely punctate, pronotal groove partly smooth. Epicnemial carina slightly elevated behind fore coxae, pleural part short, ending in ventral third of mesopleuron, transversal part present as short dentiform lamella. Pleural carina absent. Posterior transverse carina of propodeum shortly indicated laterally, widely absent medially. Legs slender; hind femur 5.8× longer than wide. Hind metatarsus 0.7× as long as hind femur. 2nd hind tarsomere 1.5× as long as 3rd one. Hind claw without teeth, strongly bent apically (c. 90°). Areolet with long stalk; vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a postfurcal by 2× its width. Postnervulus intercepted behind its middle. Hind wing with 7 distal hamuli.

Metasoma slender, tergites with narrow spiracles, spiracles not bulged. 1st tergite 2.6× longer than wide, with scattered punctures laterally, almost smooth medially, shining. 2nd tergite 1.55× longer than wide, with dense punctures and long setae, ± shining. 3rd tergite 1.25× as long as wide, with dense punctures and long setae, ± shining. Ovipositor 1.25× as long as fore wing, 1.6× as long as metasoma and 3.5× longer than hind tibia.

Color: Black. Flagellum black. Palps, mandible except teeth, clypeus, face except short median black stripe below antennae, gena, complete orbits, ventral spots of scape and pedicel, propleuron, frontal margin and large triangular spot on upper margins of pronotum, tegula, subtegular ridge, anterolateral and central spots on mesoscutum, longitudinal band on mesopleuron, upper division and apical spot of metapleuron, scutellum except black median stripe, postscutellum, area spiracularis frontally and wide posterior band of propodeum confluent with spot on metapleuron yellow. 1st tergite yellow in basal 1/4, 1st to 4th tergites with apical yellow bands. 7th tergite ± reddish. Sternites including hypopygium yellowish. Fore and mid legs entirely yellow. Hind coxa yellow, with black spots internally and laterally; hind trochanter black, hind trochantellus yellow; hind femur black, with yellow band in apical 0.1; hind tibia yellow, infusate in

apical 0.25. Hind tarsus black, bases of 1st to 3rd tarsomeres and 4th hind tarsomere entirely yellow. Wings hyaline; fore wing with weak apical brownish spot. Pterostigma brown.

♂ unknown.

R e m a r k : This new species belongs to the *zanthorius* group sensu CHANDRA & GUPTA (1977) and runs to *S. torrevillasi* MOMOI, 1971 due its largely absent posterior transversal carina of propodeum. It differs from *S. torrevillasi* by its completely and densely punctate metapleuron and propodeum, postfurcal vein 1cu-a of fore wing and black 5th and 6th tergite without yellow bands.

Its color pattern also resembles *S. flavofacialis* KANG & LEE, 2020 (in KANG et al. 2020), but differs by its slenderer basal tergites, and slightly different coloration of hind coxa and hind tarsus.

***Syzeuctus nagzirae* NIKAM & KANHEKAR, 1987**

M a t e r i a l e x a m i n e d : India: Kerala, Pooparai, 10°02,2'N 77°07,3'E, 1700 m, 1♂ 2.V.2005, leg. M. Halada (Linz).

D e s c r i p t i o n (in addition to original description): ♂. Body length 12.2 mm. Antenna with 49 flagellomeres, 1st flagellomere 5.5× longer than wide and 0.73× as long as eye; preapical flagellomere slightly longer than wide. OED 1.7× and OOD 1.9× ocellar diameter. Genal carina distinctly and lamelliform elevated ventrally. Mandible with strong ventral lamella. Clypeus 1.7× wider than long. MI 0.65.

Side of pronotum densely punctate dorsally, pronotal groove smooth. Mesopleuron densely punctate, speculum large and smooth. Epicnemial carina low, pleural part present, reaching the ventral third of mesopleuron, transversal part absent. Pleural and posterior transversal carinae of propodeum distinct. Hind femur 6.5× longer than wide. Hind metatarsus 0.70× as long as hind femur. 2nd hind tarsomere 1.67× longer than 3rd hind tarsomere. Hind claw completely pectinate, strongly bent apically (90°).

Areolet with long stalk (stalk about as long as areolet); vein 2m-cu reaching areolet proximad its middle. Vein 1cu-a postfurcal by 2× its width. Postnervulus intercepted behind middle. Hind wing with 11 distal hamuli.

Metasoma slender; 1st tergite 2.4× longer than wide. 2nd tergite 1.45× and 3rd tergite 1.43× longer than wide, both with bulging but normally shaped spiracles laterally.

Color: Face with central black spot, otherwise typical.

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

***Syzeuctus orientalis* nov.sp. (figs 3, 8, 14, 20)**

H o l o t y p e : (♂) Lao: Prov. Hua Phan Prov., Phon-Pan, Umg. Ort Ban Saleui, 20°13'30"N/103°59'26"E, 1350-1900 m, 03-05.04.2014 KJa, leg. C. Holzschuh & natives (Linz). **P a r a t y p e :** (♂) Lao: Prov. Hua Phan Prov., Phon-Pan, Umg. Ort Ban Saleui, 20°13'30"N/103°59'26"E, 1350-1900 m, 27-28.04.2014 KJa, leg. C. Holzschuh & natives (Linz).

D e s c r i p t i o n : ♂: Body length 13.5-14.0 mm. Length of fore wing 10 mm. Antenna with 51 flagellomeres, filiform; 1st flagellomere 5.0× longer than wide and 0.64× as long as eye; preapical flagellomere square. Temple very short, strongly and

roundly narrowed behind eye, dorsally $0.2\times$ as long as eye. OED $1.1\times$ and OOD $1.5\times$ ocellar diameter. Vertex with scattered punctures. Frons moderately swollen and densely punctate laterally, slightly impressed and partly smooth medially. Face densely punctate, inner eye margins moderately divergent ventrally. Clypeus moderately convex, $1.9\times$ wider than long, almost smooth and with long erected setae; apical margin rounded. MI 0.4-0.5. Mandible with baso-ventral lamella, lower tooth shorter than upper tooth. Genal carina reaching mandibular base.

Mesosoma densely punctate, covered with grey setae, $1.40\times$ longer than high. Fronto-ventral edge of pronotum moderately curved. Side of pronotum densely punctate dorsally, with short longitudinal rugae at posterior margin, pronotal groove partly smooth. Mesopleuron densely punctate; speculum large, smooth. Epicnemial carina low, pleural part short, ending at ventral third of mesopleuron. Propodeum densely punctate, centrally with some transverse rugae. Pleural carina and apical transverse carina present. Legs slender; hind femur $6.0-6.1\times$ longer than wide. Hind metatarsus $0.73\times$ as long as hind femur. 2nd hind tarsomere $1.35\times$ as long as 3rd one. Hind claw without teeth, strongly bent apically (c. 90°). Areolet with long stalk, stalk as long as areolet; vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a postfurcal by $2\times$ its width. Postnervulus intercepted behind its middle. Hind wing with 9-10 distal hamuli.

Metasoma slender; 1st tergite $2.4-2.6\times$ longer than wide, with fine scattered setiferous punctures laterally, almost smooth medially and apically, shining. 2nd tergite $1.70-1.75\times$ longer than wide, with dense coarse punctures. 3rd tergite $1.48\times$ as long as wide, with dense but superficial punctures.

Color: Black, head and mesosoma with extended yellow coloration. Antenna black, ventral spots on scape and pedicel and basal half of flagellum yellowish ventrally. Head mainly yellowish; median frons, stemmaticum and occiput black. Propleuron, wide frontal and upper margins of pronotum, tegula, subtegular ridge, large and central spot of mesopleuron confluent with yellow ventral third of mesopleuron and entire mesosternum, large spots on upper division and central metapleuron, scutellum and postscutellum, area spiracularis frontally and wide posterior triangular band of propodeum confluent with yellow spots on metapleuron yellow. 1st to 2nd or 3rd tergite black medially, following tergites \pm reddish; 1st tergite yellow in basal 2/5, 2nd to 4th tergites reddish-yellow basally; 1st to 4th tergites with apical yellow bands, following tergites with narrow yellow hind margins. Sternites yellowish. Coxae and trochanters yellow; hind coxa and trochanter with dorsal black spots. Fore and mid legs yellowish; fore femur with reddish stripe dorsally; mid tarsus ochreous. Hind femur and tibia red; hind tibia \pm infuscate apically; hind tarsus black. Wings hyaline, without apical infuscation. Pterostigma brown.

♀ unknown.

R e m a r k : This new species resembles the ♂ of *Syzeuctus immediatus* CHANDRA & GUPTA, but differs by more extended yellow body coloration and hyaline wings without dark apical spot. Since the corresponding ♀ is unknown yet, this species is not included in the key of Oriental *Syzeuctus* below.

***Syzeuctus siamensis* nov.sp. (figs 2, 9, 15, 21)**

H o l o t y p e : (♀) Thailand: N. Pai, 24.V.2018, leg. M. Snizek (Linz). **P a r a t y p e :** (♀) labeled as the holotype (coll. RIEDEL).

Description: ♀: Body length 16-17 mm. Length of fore wing 10 mm and of ovipositor 10.5 mm. Antenna with 50-52 flagellomeres, filiform; 1st flagellomere 5.3× longer than wide and 0.77× as long as eye; preapical flagellomere 1.1× longer than wide. Temple short, strongly and roundly narrowed behind eye, dorsally 0.3× as long as eye. OED 1.5× and OOD 1.4× ocellar diameter. Vertex and frons coarsely and densely punctate. Frons swollen laterally and concavely impressed medially. Face densely punctate, inner eye margins parallel. Clypeus 2.0× wider than long, apical margin rounded. MI 0.8. Mandible with baso-ventral lamella, mandibular teeth equally sized.

Mesosoma coarsely and densely punctate, covered with brownish setae, 1.65× longer than high. Frontoventral edge of pronotum moderately curved. Side of pronotum densely punctate, pronotal groove smooth. Epicnemial carina low, pleural part reaching center of mesopleuron, transversal part absent. Mesopleuron densely and coarsely punctate, speculum punctate. Pleural carina absent. Apical transverse carina of propodeum entirely absent. Legs slender; hind femur 5.6× longer than wide. Hind metatarsus 0.87× as long as hind femur. 2nd hind tarsomere 1.65× as long as 3rd one. Hind claw with c. 7 short teeth, moderately bent apically (c. 45°).

Areolet with long stalk (stalk about as long as areolet); vein 2m-cu reaching areolet in its distal 0.8. Vein 1cu-a slightly postfurcal by 1× its width. Postnervulus intercepted behind its middle. Hind wing with 9 distal hamuli.

Metasoma slender, tergites with narrow spiracles, spiracles not bulging. 1st tergite 2.1× longer than wide, largely smooth, with fine punctures laterally and fine dense punctures in apical 0.1-0.2, strongly shining. 2nd tergite 1.5-1.6× longer than wide, with dense rather coarse punctures, ± shining. 3rd tergite 1.2-1.3× as long as wide, with very dense and fine punctures and ± dull. Ovipositor 1.05× as long as fore wing, 1.05× longer than metasoma and 2.0× longer than hind tibia.

Color: Black. Flagellum black. Palps, spot of mandible and apical 2/3 of clypeus reddish. Small spot on frontal orbit and spot on upper outer orbit yellow. Mesosoma black. 1st to 6th tergites dark red, 7th tergite and hypopygium blackish. Sternites ochreous. Coxae and trochanters black, fore coxa entirely and large spot on mid coxa yellow. Femora and tibiae reddish, tarsi brownish. Wings hyaline, fore wing with large brown apical spot. Pterostigma dark brown.

♂ unknown.

Remark: This new species belongs to the *villosus* group sensu CHANDRA & GUPTA (1977) and runs to *S. villosus* (CAMERON, 1899) in their key. It differs by the longer ovipositor, absent posterior transversal carina of propodeum and entirely red 1st and 2nd metasomal tergites.

***Syzeuctus zanthorius* (CAMERON, 1802)**

Material examined: India: Karnataka, 20 km SE Sogar, 600 m, 14°36,37'N 75°08.93'E, 1♀ 12.V.2005, leg. M. Halada (Linz); India: Karnataka, Sulya, Medikeri, 150 m, 12°31,8'N 75°29,0'E, 1♀ 8.V.2005, leg. M. Halada (Linz).

Description (in addition to description of CHANDRA & GUPTA (1977)): ♀. Antenna with 37-40 flagellomeres; 1st flagellomere 4.0× longer than wide and 0.50× as long as eye, preapical flagellomere slightly transverse. OED 0.9-1.0× and OOD 1.3-1.7× ocellar diameter. Inner eye margin slightly convergent ventrally. Clypeus moderately convex, 2.0× wider than long. MI 0.5-0.6. Hind femur 5.2× longer than wide; hind

metatarsus 0.67× as long as hind femur. 2nd hind tarsomere 1.5× longer than 3rd hind tarsomere. Hind wing with 9 distal hamuli.

D i s t r i b u t i o n : Known from India and Myanmar.

Key to the ♀♀ of the Oriental species of *Syzeuctus* FÖRSTER

adopted from CHANDRA & GUPTA (1977) and NIKAM & KANHEKAR (1987)

- 1 Metasomal spiracles strongly enlarged and specialized. Propodeum yellow, with long black mark below spiracle and a pair of submedian basal black marks.*claripennis* group: 2
- Metasomal spiracles not enlarged and specialized. Propodeum various.3
- 2 Specialized spiracles roundish, located on the 3rd and following tergites. Fore and mid trochanters and femora blackish dorsally. Hind tarsus ochreous. India, Sri Lanka.*S. claripennis* (CAMERON, 1902)
- Specialized spiracles elliptic and located on the 1st to 4th tergites. Fore and mid trochanters and femora entirely yellow. Hind tarsus blackish-brown. Philippines.*S. macrospiracularis* MOMOI, 1971
- 3 Metasoma reddish or red with black markings (fig. 2). Fore and mid femora often with black dorsal lines.*villosus* group: 4
- Metasoma black, apical margins and sometimes also basal bands yellow (figs 1, 3). Fore and mid femora usually without black lines, rarely mid femur black dorsally.*zanthorius* group: 9
- 4 Apical transverse carina of propodeum complete.5
- Apical transverse carina of propodeum medially or completely absent.6
- 5 Ovipositor shorter than metasoma, 1.2× longer than hind tibia. Mesosoma covered with long setae. Fore and mid coxae and trochanters black; fore coxa and trochanter frontally yellow. Metasoma red; 1st tergite apically and 2nd tergite basally blackish. India.*S. villosus* (CAMERON, 1899)
- Ovipositor longer than metasoma, 2.5× longer than hind tibia. Mesosoma covered with shorter setae. Fore and mid coxae and trochanters cream-yellow. Metasoma red; 1st tergite yellow basally and apically (fig. 4). Indonesia: Sulawesi.*S. achterbergi* nov.sp.
- 6 Ovipositor about as long as metasoma (fig. 2). Mesosoma entirely black. Coxae and trochanters black, fore coxa entirely and spot on mid coxa yellow. Basal tergites dark reddish (fig. 9). Thailand.*S. siamensis* nov.sp.
- Ovipositor distinctly longer than metasoma. Mesosoma with ± extended yellow coloration (figs 1, 3). Coxae and trochanters yellow, with black markings.7
- 7 4th to 7th tergites entirely red; 1st to 3rd tergites black, with apical yellow bands; 2nd and 3rd tergites reddish centrally (fig. 5). Flores.*S. floresiensis* nov.sp.
- Metasoma red, all tergites apically and 1st tergite basally yellowish.8
- 8 Mesoscutum, mesopleuron and propodeum entirely black. Vein 1cu-a interstitial. Body small and slender. India.*S. apicipennis* (CAMERON, 1902)
- Mesoscutum black, with large median yellow spot confluent with antero-lateral yellow marks. Mesopleuron and propodeum largely yellow. Vein 1cu-a postfurcal. Body larger and stouter. Pakistan.*S. baluchistanensis* (CAMERON, 1906)
- 9 Apical transverse carina of propodeum incomplete medially or absent.10
- Apical transverse carina of propodeum complete. Mesopleuron and propodeum entirely punctate.12
- 10 Apical transverse carina of propodeum absent, indicated by an obtuse ridge. MI 1.0. Dorsal half of mesopleuron and dorso-median part of propodeum unsculptured. Fore wing not infuscate apically. Hind claw simple. Philippines.*S. torrevillasi* MOMOI, 1971

- Apical transverse carina of propodeum present laterally, absent medially. MI 0.6-0.8. Propodeum and mesopleuron densely punctate. Fore wing \pm infusate apically. Hind claw sometimes pectinate.11
- 11 Ovipositor 1.25 \times longer than fore wing. Hind femur black, with narrow yellow apical band (fig. 1). Hind claw simple. Laos.*S. laoticus* nov.sp.
- Ovipositor 0.7-0.9 \times as long as fore wing. Hind femur red, \pm yellowish medially. Hind claw with basal teeth. India.*S. indicus* NIKAM & KANHEKAR, 1987
- 12 Ovipositor shorter than metasoma. Hind claw simple. Java.*S. incompletus* SZÉPLIGETI, 1908
- Ovipositor at least as long as metasoma. Hind claw pectinate.13
- 13 Propodeum with distinct pleural carina. 2nd and 3rd tergites black medially, red or ochreous basally, yellowish apically. Flagellum with 44-48 flagellomeres.14
- Propodeum without pleural carina. 2nd and 3rd tergites black, yellow basally and/or apically. Flagellum with 27-48 flagellomeres.15
- 14 Clypeus smooth apically. Epicnemial carina ending near lower hind corner of pronotum. Speculum smooth. Fore wing with brown spot apically. 1st tergite basally and apically yellow. Widespread in Oriental region.*S. immedicatus* CHANDRA & GUPTA, 1977
- Clypeus finely punctate. Epicnemial carina ending at center of mesopleuron. Speculum punctate. Fore wing hyaline, not distinctly infusate apically. 1st tergite subbasally with lateral cream-yellow marks and apical cream-yellow band. India.*S. nagzira* NIKAM & KANHEKAR, 1987
- 15 Ovipositor 1.7 \times longer than fore wing and 4.0 \times longer than hind tibia. All tergites smooth and shining, with small scattered punctures. 6th to 8th tergites without yellow apical margins. Hind coxa and trochanter entirely reddish. India.*S. leptopunctatus* CHANDRA & GUPTA, 1977
- Ovipositor at most as long as fore wing. Hind coxa black, yellowish apically. Hind trochanter black. Tergites except 1st tergite densely punctate, all tergites with yellow apical bands.16
- 16 Malar space long, 1.0 \times as long as width of mandibular base (fig. 12). Flagellum with 42 flagellomeres. Hind femur yellow. 1st tergite 1.6 \times longer than wide. Ovipositor 2.3 \times longer than hind tibia. Vietnam.*S. genator* nov.sp.
- Malar space shorter, 0.4-0.6 \times as long as width of mandibular base (as fig. 14). Flagellum with 37-40 flagellomeres. Hind femur red. 1st tergite 1.7-2.3 \times longer than wide. Ovipositor 2.6-2.8 \times longer than hind tibia. India, Myanmar.*S. zanthorius* (CAMERON, 1902)

Zusammenfassung

In dieser Arbeit werden neun orientalische Arten der Gattung *Syzeuctus* FÖRSTER aus verschiedenen europäischen Museen besprochen. Sechs Arten sind werden als neu beschrieben: *Syzeuctus achterbergi* nov.sp., *Syzeuctus genator* nov.sp., *Syzeuctus laoticus* nov.sp., *Syzeuctus floresiensis* nov.sp., *Syzeuctus orientalis* nov.sp. und *Syzeuctus siamensis* nov.sp. Die neuen Arten werden detailliert beschrieben und illustriert, außerdem ist ein Bestimmungsschlüssel für die Weibchen der bisher bekannten orientalischen *Syzeuctus*-Arten angefügt.

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