

## New species of *Isomira* from Nepal and China (Insecta: Coleoptera: Tenebrionidae: Alleculinae)

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### Abstract

*Isomira* (*Asiomira*) *murzini* sp. nov. from China (Yunnan), *I. (A.) nepalica* sp. nov. and *I. (A.) pizurae* sp. nov., both from Nepal and *I. (A.) sichuanica* sp. nov. from China (Sichuan) are described, illustrated and compared with the species *I. (A.) stoetzneri* Muche, 1981. Species *Isomira eustrophoides* Pic, 1930 is transferred from subgenus *Isomira* to subgenus *Asiomira* based on the original description. All subhimalayan species are keyed. New distributional data (China – Hubei, Jiangxi, Yunnan and Zhejiang) for *Isomira* (*Asiomira*) *stoetzneri* Muche, 1981 are added.

### Zusammenfassung

Die Arten *Isomira* (*Asiomira*) *murzini* sp. nov. aus China (Yunnan), *I. (A.) nepalica* sp. nov. und *I. (A.) pizurae* sp. nov., beide aus Nepal, und *I. (A.) sichuanica* sp. nov. aus China (Sichuan) werden beschrieben, abgebildet und mit *I. (A.) stoetzneri* Muche, 1981 verglichen. Die Art *Isomira eustrophoides* Pic, 1930 wird anhand der Originalbeschreibung aus dem Subgenus *Isomira* in das Subgenus *Asiomira* transferiert. Ein Bestimmungsschlüssel für alle subhimalayanischen Arten wird gegeben. Neue Verbreitungsdaten (China – Hubei, Jiangxi, Yunnan und Zhejiang) von *Isomira* (*Asiomira*) *stoetzneri* Muche, 1981 werden mitgeteilt.

**Key words:** Taxonomy, new species, description, key, Coleoptera, Tenebrionidae, Alleculinae, *Isomira*, *Asiomira*, Palaearctic region

### Introduction

MULSANT (1856) described the genus *Isomira* in 1856. This genus belongs to the subtribe *Gonoderina* Seidlitz, 1896. MADER (1928) knew 35 species and NOVÁK & PETTERSSON (2008) listed 73 species in 6 subgenera of the genus *Isomira* from Palaearctic region. The subgenus *Asiomira* was established by DUBROVINA

(1973) with *I. (A.) ophthalmica* Seidlitz, 1896 as the type species; known from Iran, Kyrgyzstan, Turkmenistan and Uzbekistan. Species of the subgenus *Asiomira* s. str. differ from similar species of the other subgenera mainly by narrow space between eyes of males. In other *Isomira* species the space between eyes of males broad, as broad as it is in females. DUBROVINA (1973) described the species *I. (A.) firjusana* from Tajikistan and Turkmenistan, *I. (A.) kabadiana* and *I. (A.) keleinikovae* from Tajikistan. The same author later, DUBROVINA (1982) described another species *I. (A.) rufescens* again from Tajikistan and established nomen novum *I. (A.) muchei* for *I. (A.) monticola* Muche, 1972 (nec *Isomira monticola* Casey, 1891) and transferred this species to subgenus *Asiomira*. MUCHE (1982) added species *I. (A.) bicolorata* from Saudi Arabia. First subhimalayan species of this subgenus *I. (A.) stoetzneri* known from China (Guangxi and Sichuan) was described by MUCHE (1981). Four new species, *Isomira* (*Asiomira*) *murzini* sp. nov. from China (Yunnan), *I. (A.) nepalica* sp. nov. and *I. (A.) pizurae* sp. nov., both from Nepal and *I. (A.) sichuanica* sp. nov. from China (Sichuan) are described, illustrated and compared with the species *I. (A.) stoetzneri* Muche, 1981. Species *Isomira eustrophoides* Pic, 1930 is transferred from subgenus *Isomira* to subgenus *Asiomira* based on the original description. All subhimalayan species are keyed. New distributional data (China – Hubei, Jiangxi, Yunnan and Zhejiang) for *Isomira* (*Asiomira*) *stoetzneri* Muche, 1981 are added.

### Material and methods

Two important morphometric characteristics used for the descriptions of species of the subfamily Alleculinae, the ‘ocular index’ dorsally (CAMPBELL & MARSHALL 1964) is calculated by measuring the minimum distance between the eyes and dividing this value by the maximum dorsal width across eyes, the quotient resulting from this division is converted into an index by multiplying by 100 and ‘pronotal index’ (CAMPBELL

1965) expresses the ratio of the length of the pronotum along the midline to the width at the basal angles, this ratio is multiplied by 100 for convenience in handling, are used in this paper as well.

The abbreviations of the following collections and institutes are used in this paper:

APEG Andreas Pütz private collection,  
Eisenhüttenstadt, Germany;

NME Naturkundemuseum Erfurt, Germany;  
SMTD Staatliches Museum für Tierkunde, Dresden,  
Germany;  
VNPC Vladimír Novák private collection, Prague,  
Czech Republic.

Moreover, a double slash (//) separates data on different labels and a slash (/) data in different rows.

Measurements were made with Olympus SZ 40 stereoscopic microscope with continual magnification.

## Results

### Key to the males of the subhimalayan species of the subgenus *Asiomira*

- |        |  |  |
|--------|--|--|
| A (B)  | Space between eyes broad in both sexes .....   | subgenus <i>Isomira</i> s. str.              |
| B (A)  | Males with narrow space between eyes, distinctly narrower than space between eyes of females, subgenus <i>Asiomira</i> Dubrovina, 1973 .....   | 1  |
| 1 (2)  | Large species, body length longer than 7 mm .....  | 3  |
| 2 (1)  | Small species, body length 4–6.5 mm .....  | 5  |
| 3 (4)  | Pronotum more transverse, semi-circular, apical half regularly rounded, male antennae reaching 0.75 of body length, antennomere 2 distinctly longer than length of antennomere 3 ..... | <i>I. (Asiomira) murzini</i> sp. nov.        |
| 4 (3)  | Pronotum finely semi-elliptic, slightly roundly dilated apically, male antennae reaching only 0.70 of body length, antennomere 2 as long as length of antennomere 3 .....              | <i>I. (Asiomira) stoetznerei</i> Muche, 1981 |
| 5 (6)  | Antennae bicolour, partly black .....  | <i>I. (Asiomira) eustrophoides</i> Pic, 1930 |
| 6 (5)  | Antennae unicoloured brown, or antennomeres 1-3 slightly paler than antennomeres 4–11 .....  | 7  |
| 7 (8)  | Space between eyes approximately as long as length of antennomere 2 ...  | <i>I. (Asiomira) sichuanica</i> sp. nov.     |
| 8 (7)  | Space between eyes distinctly broader than length of antennomere 2 .....   | 9  |
| 9 (10) | Antennomere 2 the shortest .....   | <i>I. (Asiomira) nepalica</i> sp. nov.       |
| 10 (9) | Antennomere 3 the shortest .....   | <i>I. (Asiomira) pizurae</i> sp. nov.        |

### *Isomira (Asiomira) eustrophoides* Pic, 1930

*Isomira eustrophoides* Pic, 1930: 30

PIC (1930): ‘*Oblongo-subovatus, nitidus, luteo pubescens, rufus, antennis pro parte elytrisque nigris, oculis approximatis ♂, aut distantibus ♀; thorace antice arcuato, minute et dense punctato; elytris parum elongatis, postice valde attenuatis, fere instriatis, minute et dense punctatis. Long. 5 mill. Chine. – Voisin de marginata* Pic.’

**Distribution.** China.

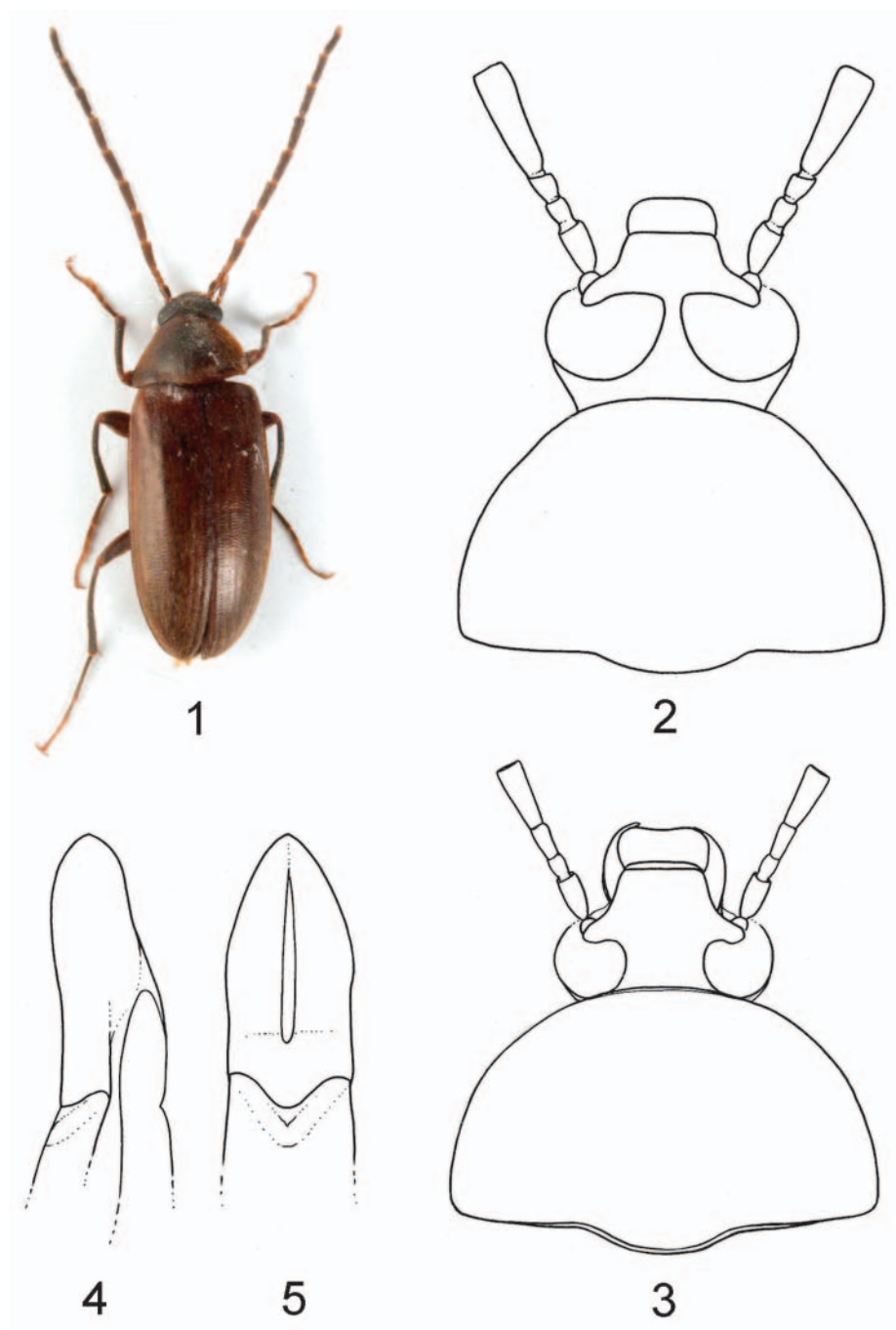
### *Isomira (Asiomira) murzini* sp. nov. (Figs 1–5)

**Type material.** **Holotype** (♂) labelled: CHINA W YUNNAN prov. / mts. 60 km E Tengchong / 2300 m, 14.–19.v.2006, S. / Murzin & I. Shokhin leg. (VNPC); Paratypes: (2 ♀ ♀): same data as holotype, (VNPC); (1

♂): CHINA W YUNNAN / prov. 54 km E Tengchong / 2150 m, 4.–9.xi.2004, / S. Murzin lgt., (VNPC); (1 ♂, 5 ♀ ♀): CHINA NW Yunnan prov., / Baishuitai (San Ba terrasses) / 2600 m, 4.–6.vi.2006 / S. Murzin & I. Shokhin lgt., (VNPC). The types are provided with a printed red label: ‘*Isomira (Asiomira) murzini* sp. nov. / HOLOTYPE [or PARATYPE] / V. Novák det. 2008’.

**Description of holotype.** Body elongately oval, dark brown with pale brown setation, habitus as in Fig. 1. Length 7.56 mm, 2.78 times longer than wide.

Head (Fig. 2). Unicoloured, dark brown with pale brown setation, posterior part with dense large and shallow punctures, anterior part with middle and shallow punctures. Eyes large, dark, transverse, excised, space between eyes very narrow, as broad as length of



Figs 1–5: *Isomira murzini* sp. nov.:

1 – Habitus of male holotype; 2 – Head and pronotum of male holotype; 3 – Head and pronotum of female; 4 – Aedeagus, lateral view; 5 – Aedeagus, dorsal view.

antennomere 2. Head widest across eyes 1.22 mm; width (across eyes) approximately 0.57 of pronotal base width. Length of head (visible part) 1.05 mm. Ocular index equal to 9.02. Surface with microgranulation, slightly shiny. Clypeus not excised, transverse.

Antennae. Unicoloured brown, long (reaching 0.75 of body length) 5.64 mm, with short and relatively dense light setation and microgranulation. Antennomeres 1–3 slightly shiny, antennomeres 4–11 dull with dense and small punctures. Antennomere 3 the shortest; antennomeres 4–10 long and narrow, slightly serrate. Ratios of relative lengths of antennomeres 1–11 equal to 1.64 : 1.36 : 1.00 : 4.07 : 4.07 : 4.32 : 4.54 : 4.43 : 4.22 : 4.25 : 4.50. Length / maximum width ratios of antennomeres 1–11 equal to 1.49 : 1.65 : 1.22 : 3.56 : 3.56 : 3.56 : 3.97 : 4.00 : 3.69 : 3.96 : 4.67.

Maxillary palpus. Brown, its colour identical to that of antenna, with sparse, short pale brown setation. Ultimate palpomere knife-shaped with microgranulation, broadest at base. Second and penultimate palpomere broadest at apex, penultimate palpomere shorter than second or ultimate palpomeres. Ratios of relative lengths of palpomeres 2–4 equal to 1.50 : 1.00 : 2.63. Length / maximum width of palpomeres 2–4 equal to 2.45 : 1.86 : 2.58.

Pronotum (Fig. 2). Unicoloured brown, almost semi-circular, slightly shiny with pale brown setation; 1.76 times as wide as head with eyes together, longest in the middle 1.22 mm and widest near base 2.15 mm. Pronotal index equal to 56.83. Borders complete; posterior margin bisinuate, on ante-scutellar area straight. Posterior angles roundly obtuse-angled, lateral margins regularly rounded. Anterior angles not conspicuous, anterior margin rounded. Surface densely and shallowly punctured, punctures medium-sized, interspaces very narrow, shiny. Ventral side of body dark blackish-brown with short and sparse pale brown setation. Abdomen five-segmented, dark brown with pale brown setation, dense, small and shallow punctation and with microgranulation.

Elytron. Unicoloured brown with pale brown setation, shiny, 5.29 mm long and 2.72 mm wide, widest near half. Length / maximum width ratio equal to 1.95. Surface punctured with microgranulation, punctation dense, punctures medium-sized, separated by less than their own diameter, elytral striae indistinct. Elytral epipleura well developed, brown with sparse, pale brown setation, evenly narrowing on posterior half, on anterior half parallel, then narrowing to rounded apex.

Scutellum triangular, brown, its colour identical to that of elytra, with pale brown setation and microgranulation. Legs. Brown, with pale brown setation, anterior and middle tarsomeres 2–5 and posterior tarsomeres 3 and 4 paler than tibia. Femora thicker than tibia. Tibia very narrow, slightly dilated at apex, mesotibia slightly rounded on posterior half. Tarsomeres narrow, anterior tarsomeres 2 and 3 finely broadened. Penultimate tarsomere of each tarsus without membranous lobes. Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.59 : 0.60 : 0.47 : 1.36 (protarsus), 1.00 : 0.53 : 0.42 : 0.32 : 0.79 (mesotarsus), and 1.00 : 0.45 : 0.23 : 0.51 (metatarsus). Both anterior tarsal claws with 6 visible teeth.

Aedeagus (Figs 4 and 5). **Pale yellowish-brown**, slightly shiny. Basal piece 5.05 times as long as apical piece, relatively broad, regularly rounded laterally, on apical half slightly narrowing dorsally. Basal half of apical piece parallel, apical half triangular dorsally.

**Female.** Body more oval, antennae shorter, reaching only 0.52 of body length. Antennomere 2 the shortest, antennomere 3 distinctly longer as length of antennomere 2. Space between eyes distinctly broader, ocular index approximately 30.77. Head and pronotum as in Fig. 3. Both anterior tarsal claws with 6 visible teeth. Ratios of relative lengths of antennomeres 1–11 equal to 1.00 : 0.49 : 1.00 : 1.94 : 1.75 : 1.86 : 1.92 : 2.08 : 1.91 : 1.82 : 2.12.

Length / maximum width ratios of antennomeres 1–11 equal to 1.97 : 1.23 : 2.32 : 3.41 : 3.45 : 3.67 : 3.38 : 3.55 : 3.10 : 2.95 : 3.63.

Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.63 : 0.60 : 0.42 : 1.36 (protarsus), 1.00 : 0.47 : 0.42 : 0.25 : 0.90 (mesotarsus), and 1.00 : 0.47 : 0.18 : 0.52 (metatarsus).

**Variability.** The type specimens vary somewhat in size; each character is given as its mean value, with full range in parentheses.

**Males** ( $n = 3$ ). Length 7.65 mm (7.56–7.77 mm); head length 1.08 mm (1.05–1.10 mm); head width 1.21 mm (1.19–1.22 mm); ocular index 11.71 (9.02–14.25). Pronotal length (along mid-line) 1.17 mm (1.15–1.22 mm); pronotal width at base 2.17 mm (2.11–2.26 mm). Pronotal index 54.21 (51.04–56.83). Elytral length 5.39 mm (5.29–5.52 mm); elytral width 2.77 mm (2.72–2.82 mm).

**Females** ( $n = 7$ ). Length 7.49 mm (6.91–8.26 mm); head length 0.94 mm (0.88–1.01 mm); head width 1.11 mm (1.02–1.24 mm). Ocular index 30.77 (26.39–

33.55). Pronotal length (along midline) 1.27 mm (1.15–1.45 mm); pronotal width at base 2.24 mm (2.03–2.54 mm). Pronotal index 57.02 (52.11–61.59). Elytral length 5.28 mm (4.88–5.88 mm); elytral width 2.83 mm (2.62–3.15 mm).

**Differential diagnosis.** *Isomira (Asiomira) murzini* sp. nov. differs from the similar species *I. (A.) eustrophoides* Pic, 1930, *I. (A.) nepalica* sp. nov., *I. (A.) pizurae* sp. nov. and *I. (A.) sichuanica* sp. nov. mainly by large body with length longer than 7 mm, while *I. (A.) eustrophoides*, *I. (A.) nepalica*, *I. (A.) pizurae* and *I. (A.) sichuanica* with body small, distinctly shorter than 6.5 mm. *Isomira (A.) murzini* sp. nov. differs from the similar species *I. (A.) stoetzneri* Muehe, 1981 mainly by antennomere 2 of male distinctly longer than length of antennomere 3, while male of *I. (A.) stoetzneri* with antennomere 2 as long as length of antennomere 3. For further details see the key above.

**Name derivation.** Name of the species is dedicated to one of its-collectors Sergei Murzin.

**Distribution.** China: Yunnan.

#### *Isomira nepalica* sp. nov. (Figs 6–10)

**Type material. Holotype** (♂) labelled: NEPAL-HIMALAYA / Annapurna Mts. / 1993, lg. Schmidt // Shika, ca 2000 m / zw. Tatopani & / Ghorepani, 14.6., (NMEG); Paratypes: (4 ♂♂, 7 ♀♀): NEPAL Manaslu Mts. NE- / slope, Bhudi Gandaki vall. / Deng to Ghap, 2000–2350m / 26.5.2006, leg. Schmidt, (NMEG, VNPC); (2 ♂♂, 1 ♀): NEPAL-HIMALAYA / Annapurna Mts. 1993 lg. Schmidt // Sikles 2000m / NO Pokhara / 15.5., (NMEG, VNPC); (1 ♀): NEPAL, Prov. Karnali / Distr. Kalikot, Dilikot, S / Marbu-La, 2100–3200 / m NN, 28.V.1995 / leg. M. Hartmann, (NMEG); (1 ♀): NEPAL, Dhaulagiri '98 / Myagdi Khola vall. / Dhurkosh Khola 2100m / 22.6., BERNDT / SCHMIDT, (NMEG); (1 ♂): NEPAL Dhaulagiri-Himal / Rahughat Khola-valley, e- / slope, Jhi, 1500–1750 m / N28°25', E83°30' / 16.VI.1998, O. Jäger lgt., (SMTD); (1 ♀): NEPAL, Prov. Karnali / Nagma W Jumla / 1800–2000 m NN / 26.V.1995, leg.: J. Weipert, (NMEG); (1 ♂): NEPAL, Prov. Karnali / Distr. Kalikot, 5 km N / Dilikot, 2000 m NN, leg. / M. Hartmann, 27.V.1995, (NMEG); (1 ♂): NEPAL Annapurna Himal / Jhinu vill. env., 1700m / 15.6.00, leg. J. Schmidt // NEP: Narayani/Chitwan //13km W Sauraha / Kasara, Chitwan-NP, (VNPC). The types are provided with a printed red label: 'Isomira (Asi-

omira) / nepalica sp. nov. / HOLOTYPUS [or PARATYPUS] / V. Novák det. 2008'.

**Description of holotype.** Body elongate oval, unicoloured brown with dense, pale brown setation, habitus as in Fig. 6. Length 6.19 mm, 2.54 times longer than wide.

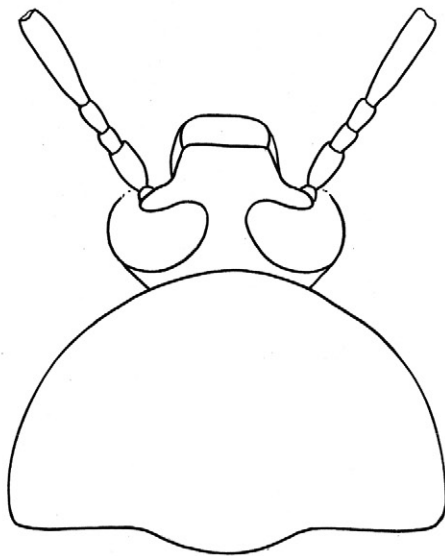
Head (Fig. 7). Unicoloured brown, with pale brown setation. Eyes large, dark, transverse, excised, space between eyes very narrow, distinctly broader than length of antennomere 2, as long as length of antennomere 3. Head widest across eyes 1.02 mm; width (across eyes) approximately 0.54 of pronotal base width. Length of head (visible part) 0.73 mm. Ocular index equal to 16.93. Surface with microgranulation, posterior half with shallow punctures, punctation of anterior half inconspicuous. Clypeus not excised, longest through the middle. Antennae. Unicoloured brown, long (reaching 0.74 of body length) 4.56 mm, with short and dense pale brown setation, microgranulation and small punctures. Antennomeres 1–3 slightly shiny, antennomeres 4–11 more matt. Antennomeres 2 and 3 short, antennomere 2 the shortest, antennomeres 4–10 distinctly broadest at apex. Ratios of relative lengths of antennomeres 1–11 equal to 1.71: 0.71: 1.00: 3.50: 3.25: 3.25: 3.44: 3.57: 3.64: 3.59: 3.47. Length / maximum width ratios of antennomeres 1–11 equal to 1.99: 1.25: 1.33: 3.50: 3.73: 4.33: 4.57: 4.76: 5.37: 3.92: 3.47.

Maxillary palpus. Pale brown, slightly shiny with pale brown setation, apex of penultimate and second palpomere with long setae. Ultimate palpomere triangular, axe-shaped, broadest at base. Second and penultimate palpomere broadest at apex, penultimate palpomere shorter than second or ultimate palpomeres. Ratios of relative lengths of palpomeres 2–4 equal to 1.71 : 1.00 : 2.67. Length / maximum width of palpomeres 2–4 equal to 2.67 : 1.46 : 1.97.

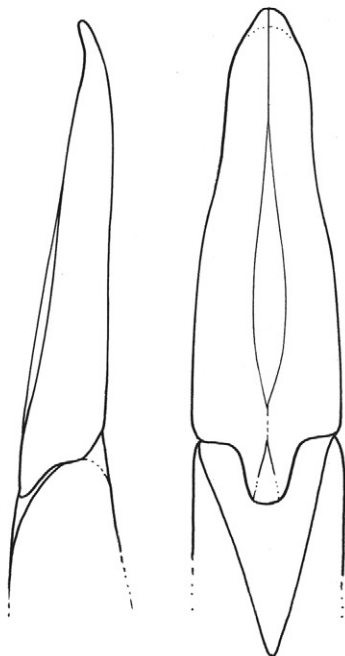
Pronotum (Fig. 7). Unicoloured brown, almost semi-circular, slightly shiny with dense and long pale brown setation; 1.86 times as wide as head with eyes together, longest in the middle 1.15 mm and widest near base 1.91 mm. Pronotal index equal to 60.33. Posterior margin bisinuate, in ante-scutellar area straight. Posterior angles rounded, slightly obtuse-angled, lateral margins regularly rounded. Anterior angles not conspicuous, anterior margin rounded. Surface shallowly punctured, punctures small, interspaces very narrow with microgranulation, slightly shiny.



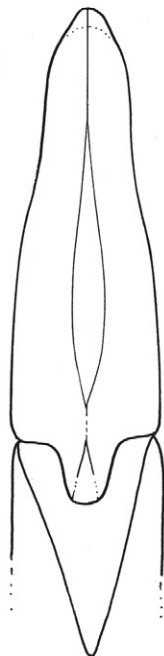
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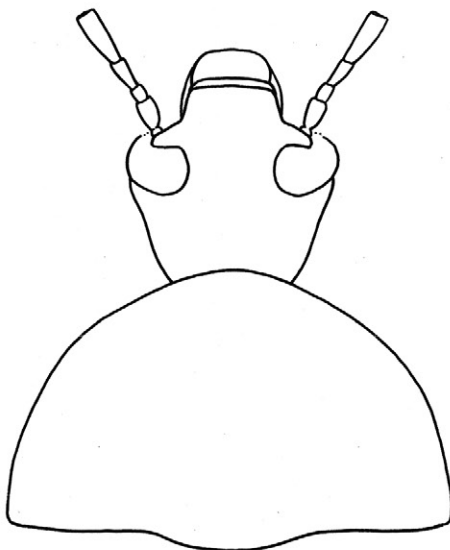
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9



10



8

Figs 6–10:

*Isomira nepalica* sp. nov.: 6 – Habitus of male holotype; 7 – Head and pronotum of male holotype; 8 – Head and pronotum of female; 9 – Aedeagus, lateral view; 10 – Aedeagus, dorsal view.



Ventral side of body brown, paler than dorsal side with pale brown setation. Abdomen five-segmented, slightly shiny.

Elytron. Unicoloured brown with dense, pale brown setation, slightly shiny, 4.31 mm long and 2.44 mm wide, slightly broader than pronotum, widest approximately at two thirds from base. Length / maximum width ratio equal to 1.77. Surface densely punctured with microgranulation, elytral striae indistinct, punctures small. Elytral epipleura well developed, paler than elytra with short pale brown setation, evenly narrowing on posterior half, on anterior half from abdominal sternite 1 before abdominal sternite 5 parallel, then narrowing to rounded apex.

Scutellum brown pentagon-shaped, slightly paler than elytra with dark margins, pale brown setation, slightly shiny.

Legs with pale brown setation, slightly shiny. Tibia and femora unicoloured brown, tarsi distinctly paler than tibia. Femora thicker than tibia. Tibia very narrow, slightly dilated at apex. Tarsomeres narrow, anterior tarsomeres 1–3 slightly broadened. Penultimate tarsomere of each tarsus without membranous lobes. Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.42 : 0.49 : 0.40 : 1.51 (protarsus), 1.00 : 0.41 : 0.34 : 0.20 : 0.88 (mesotarsus), and 1.00 : 0.41 : 0.17 : 0.62 (metatarsus). Both anterior tarsal claws with 5 visible teeth.

Aedeagus (Figs 9 and 10). Pale yellowish-brown, slightly shiny. Basal piece 3.64 times as long as apical piece, very finely rounded laterally, regularly narrowing dorsally. Apical piece longitudinally triangular with apex rounded dorsally.

**Female.** Antennae short, reaching only 0.47 of body length. Antennomere 2 the shortest, antennomere 3 distinctly longer than antennomere 2. Space between eyes distinctly broader than in male, ocular index approximately 39.64. Head and pronotum as in Fig. 8. Both anterior tarsal claws with 5 visible teeth.

Ratios of relative lengths of antennomeres 1–11 equal to 1.67 : 0.52 : 1.00 : 1.78 : 1.82 : 2.19 : 2.08 : 2.00 : 1.93 : 2.04 : 2.52.

Length / maximum width ratios of antennomeres 1–11 equal to 1.96 : 0.74 : 1.50 : 2.28 : 2.23 : 2.57 : 2.21 : 2.35 : 2.26 : 2.39 : 3.40.

Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.43 : 0.50 : 0.34 : 1.07 (protarsus), 1.00 : 0.38 : 0.28 : 0.27 : 0.84 (mesotarsus), and 1.00 : 0.37 : 0.12 : 0.46 (metatarsus).

**Variability.** The type specimens vary somewhat in size; each character is given as its mean value, with full range in parentheses.

**Males** (n = 10). Length 5.77 mm (5.28–6.17 mm); head length 0.56 mm (0.41–0.78 mm); head width 0.97 mm (0.85–1.10 mm); ocular index 19.38 (15.31–22.01). Pronotal length (along mid-line) 1.02 mm (0.89–1.15 mm); pronotal width at base 1.92 mm (1.74–2.08 mm). Pronotal index 53.55 (46.80–60.33). Elytral length 4.20 mm (3.85–4.40 mm); elytral width 2.41 mm (2.21–2.66 mm).

**Females** (n = 11). Length 5.93 mm (5.56–6.43 mm); head length 0.51 mm (0.40–0.71 mm); head width 0.95 mm (0.77–1.14 mm). Ocular index 39.64 (33.16–44.38). Pronotal length (along mid-line) 1.08 mm (0.85–1.25 mm); pronotal width at base 2.09 mm (1.96–2.31 mm). Pronotal index 52.47 (44.93–58.68). Elytral length 4.34 mm (3.88–4.92 mm); elytral width 2.59 mm (2.38–2.97 mm).

**Differential diagnosis.** *Isomira (Asiomira) nepalica* sp. nov. differs from the similar species *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Mucbe, 1981 mainly by small body, shorter than 6.5 mm, while *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Mucbe, 1981 have their bodies distinctly longer than 7 mm. *I. (A.) nepalica* differs from the similar species *I. (A.) eustrophoides* Pic, 1930 mainly by unicoloured brown antennae or antennomeres 1–3 slightly paler than antennomeres 4–11, while *I. (A.) eustrophoides* has its antennae bicolour, partly black. *I. (A.) nepalica* differs from the similar species *I. (A.) sichuanica* sp. nov. mainly by space between eyes distinctly broader than length of antennomere 2, while *I. (A.) sichuanica* has the space between eyes as long as length of antennomere 2. *I. (A.) nepalica* differs from the similar species *I. (A.) pizurae* sp. nov. mainly by male with antennomere 2 the shortest, while in male of *I. (A.) pizurae* with antennomere 3 the shortest. For further details see the key above.

**Name derivation.** Named after the country of distribution – Nepal.

**Distribution.** Nepal.

#### *Isomira (Asiomira) pizurae* sp. nov. (Figs 11–15)

**Type material.** **Holotype** (♂) labelled: NEPAL, Prov. Bagmati / Kathmandu valley, S / Mt. Phulchoki, 2300–/ 2700 m NN, 25.VI.1997 / KLS, leg. M. Hartmann, (NMEG); **Paratypes** labelled (1 ♀): same data as

holotype, (VNPC); (1 ♂): NEPAL, Prov. Bagmati / 27°34,40'N 85°23,15'E / Kathmandu, / Mt. Phulchoki / 18.VII.2001 / 1800–2200 m NM / leg.: J. Weipert, (VNPC); (2 ♂ ♂ 1 ♀): NEPAL 15 km S Kath- / man- du, Godawari-Phul- / choki 1800–2200 m 25.VI. / 1997 leg. A. Weigel KL, (NMEG, VNPC); (1 ♂): NEPAL Lapchi Kang / range, Ting Sang La - / E-slope 2200m. / 5.9.99 leg. Schmidt, (NMEG); (1 ♂): NEPAL, Janak- pur / Dolakha, Tama / Koshi valley / Biganthi, 900m NN / 13.V.2000 / leg. J. Schmidt, (NMEG); (1 ♂ 2 ♀ ♀): NEPAL centr.Prov.Bagmati / 15 km S Kathmandu, Phul- / choki, 27°35'N, 85°22'E / 1800–2200m, deciduous / forest leg. A. Kopetz KL (NMEG, VNPC); (2 ♀ ♀): NEPAL, Langtang / Syabru, Bamboo Lodge / 2160–1960 m, 28°09'N / 85°24'E, 14.IX. 1997 / leg. Fabrizi & Ahrens, (NMEG); (2 ♀ ♀): NEPAL Prov.Bagmati / 15 km S Kathmandu / Phulchoki N slope // (16–1800) 27°35'09''N / 85°22'50''E 18.VII.2001 / deciduous forest KL/HF, (NMEG). The types are provided with a printed red label: 'Isomira (Asiomira) / pizurae sp. nov. / HOLOTYPE [or PARATYPE] / V. Novák det. 2008'.

**Description of holotype.** Body elongate, slightly oval, brown with dense pale brown setation, habitus as in Fig. 11. Length 4.62 mm, 1.75 times longer than wide. Head (Fig. 12). Unicoloured brown with pale brown setation. Eyes large, dark, transverse, excised, space between eyes very narrow, distinctly broader than length of antennomere 2 or antennomere 3, as broad as length of antennomere 1. Head widest across eyes 0.80 mm; width (across eyes) approximately 0.55 of pronotal base width. Length of head (visible part) 0.65 mm. Ocular index equal to 21.72. Posterior half with medium-sized punctures, surface with microgranulation. Anterior half with shallow medium-sized punctures, surface with microgranulation. Clypeus not excised, longest through the middle. Antennae unicoloured pale brown, narrow and long (reaching 0.76 of body length) 3.50 mm, with short and dense pale brown setation, matt. Antennomeres 1–3 short and slightly shiny, antennomeres 4–11 with large punctures and microgranulation, matt. Antennomere 3 the shortest; antennomeres 4–10 long and narrow. Ratios of relative lengths of antennomeres 1–11 equal to 2.06 : 1.25 : 1.00 : 3.63 : 4.69 : 4.81 : 4.81 : 4.94 : 5.06 : 4.48 : 4.94. Legth / maximum width ratios of antennomeres 1–11 equal to 1.44 : 1.43 : 1.60 : 2.76 : 3.95 : 3.35 : 3.08 : 3.76 : 3.53 : 3.98 : 4.64.

Maxillary palpus. Brown, slightly shiny with pale brown setation, apex of penultimate and second palpomere with long pale brown setae. Ultimate palpomere with microgranulation, shiny, broadest at base, axe-shaped. Second and penultimate palpomere broadest at apex, penultimate palpomere shorter than second or ultimate palpomeres. Ratios of relative lengths of palpomeres 2–4 equal to 1.55 : 1.00 : 2.36. Length / maximum width of palpomeres 2–4 equal to 2.43 : 1.33 : 2.04.

Pronotum (Fig. 12). Unicoloured brown, slightly semi-elliptic, slightly shiny with long and dense pale brown setation; 1.81 times as wide as head with eyes together, longest in the middle 0.87 mm and widest near base 1.44 mm. Pronotal index equal to 60.01. Posterior margin bisinuate, in ante-scutellar area straight. Posterior angles rounded, slightly obtuse-angled, lateral margins rounded. Anterior angles indistinct, anterior margin rounded. Surface punctured, punctures small, inter-spaces relatively broad, shiny.

Ventral side of body brown, its colour identical to that of dorsal side. Abdomen five-segmented, distinctly shiny, with microgranulation, punctation and pale brown setation.

Elytron. Unicoloured brown with dense, long, pale brown setation, slightly shiny, 3.10 mm long and 1.77 mm wide, widest near half. Length / maximum width ratio equal to 1.75. Surface densely punctured, elytral striae indistinct, punctures large. Elytral epipleura well developed, pale brown with short pale brown setation, evenly narrowing on posterior half, on anterior half before abdominal sternite 5 parallel, then narrowing to rounded apex.

Scutellum pale brown pentagon-shaped, slightly lighter than elytra with dark brown margins and pale brown setation.

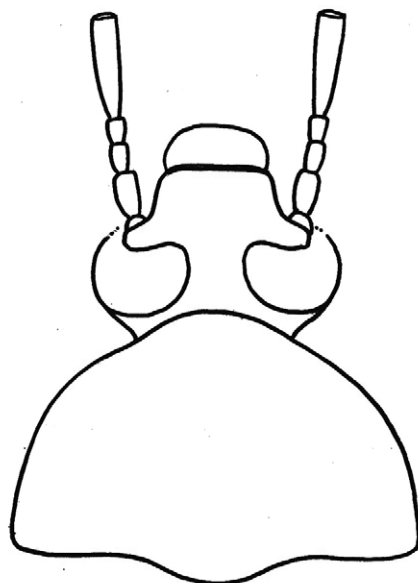
Legs brown, with dense, pale brown setation, anterior femora pale brown. Femora thicker than tibia. Tibia very narrow, slightly dilated at apex. Tarsomeres of all tarsi narrow, anterior tarsomeres slightly broadened. Penultimate tarsomere of each tarsus without membranous lobes. Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.56 : 0.60 : 0.34 : 1.39 (protarsus), 1.00 : 0.37 : 0.34 : 0.15 : 0.79 (mesotarsus), and 1.00 : 0.37 : 0.21 : 0.58 (metatarsus). Both anterior tarsal claws with 4 visible teeth.

Aedeagus (Figs 14 and 15). Pale yellowish-brown, slightly shiny. Basal piece 3.49 times as long as apical

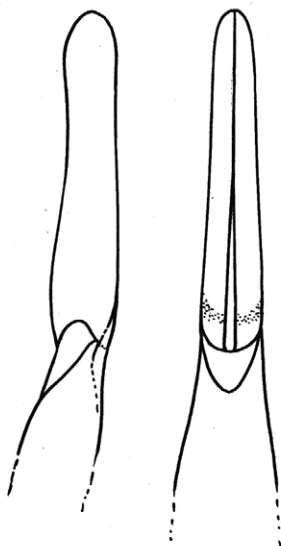




11

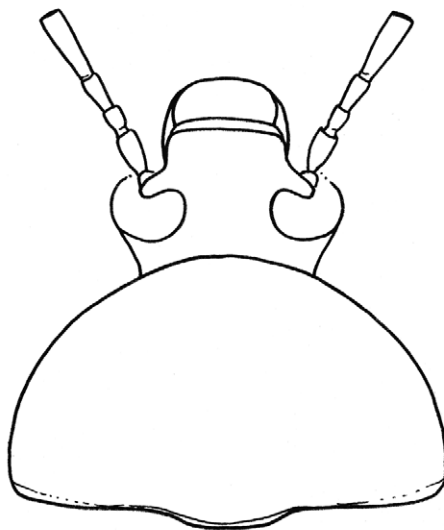


12



14

15



13

Figs 11–15: *Isomira pizurae* sp. nov.:

11 – Habitus of male holotype; 12 – Head and pronotum of male holotype; 13 – Head and pronotum of female; 14 – Aedeagus, lateral view; 15 – Aedeagus, dorsal view.

piece, rounded laterally, regularly narrowing dorsally on apical half. Apical piece narrow with parallel sides and apex rounded dorsally.

**Female.** Body more oval, antennae shorter, reaching 0.60 of body length. Antennomere 2 the shortest, antennomere 3 distinctly longer than antennomere 2. Space between eyes distinctly broader than in male, ocular index approximately 35.92. Head and pronotum as in Fig. 13. Both anterior tarsal claws with 4 visible teeth. Ratios of relative lengths of antennomeres 1–11 equal to 0.94 : 0.45 : 1.00 : 1.52 : 1.62 : 1.85 : 1.65 : 1.94 : 1.72 : 1.68 : 2.07.

Length / maximum width ratios of antennomeres 1–11 equal to 1.71 : 0.78 : 1.93 : 2.76 : 2.36 : 2.59 : 2.43 : 2.49 : 2.31 : 2.60 : 3.05.

Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.47 : 0.51 : 0.37 : 1.31 (protarsus), 1.00 : 0.34 : 0.27 : 0.27 : 0.86 (mesotarsus), and 1.00 : 0.40 : 0.17 : 0.54 (metatarsus).

**Variability.** The type specimens vary somewhat in size; each character is given as its mean value, with full range in parentheses.

**Males** (n = 7). Length 4.49 mm (4.23–4.73 mm); head length 0.50 mm (0.38–0.65 mm); head width 0.77 mm (0.69–0.82 mm); ocular index 17.27 (14.10–21.72). Pronotal length (along mid-line) 0.79 mm (0.73–0.89 mm); pronotal width at base 1.45 mm (1.23–1.62 mm). Pronotal index 54.53 (49.82–60.01). Elytral length 3.21 mm (2.94–3.39 mm); elytral width 1.85 mm (1.58–2.01 mm).

**Females** (n = 8). Length 4.57 mm (4.40–4.84 mm); head length 0.44 mm (0.38–0.55 mm); head width 0.81 mm (0.73–0.87 mm). Ocular index 35.92 (31.16–40.96). Pronotal length (along mid-line) 0.83 mm (0.72–0.93 mm); pronotal width at base 1.60 mm (1.50–1.78 mm). Pronotal index 51.39 (46.86–54.20). Elytral length 3.29 mm (3.09–3.53 mm); elytral width 2.01 mm (1.82–2.12 mm).

**Differential diagnosis.** *Isomira (Asiomira) pizurae* sp. nov. differs from the similar species *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Muche, 1981 mainly by small body, shorter than 5 mm, while *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Muche, 1981 have their bodies distinctly longer than 7 mm. *I. (A.) pizurae* differs from the similar species *I. (A.) eustrophoides* Pic, 1930 mainly by unicoloured antennae, while *I. (A.) eustrophoides* has its antennae bicolour, partly black. *I. (A.) pizurae* differs from the similar species *I. (A.) sichuanica* sp. nov. mainly by space between eyes of male distinctly broader than length

of antennomere 2, while *I. (A.) sichuanica* has its space between eyes of male as long as length of antennomere 2. *I. (A.) pizurae* differs from the similar species *I. (A.) nepalica* sp. nov. mainly with antennomere 3 being the shortest in male, while male of *I. (A.) nepalica* has its antennomere 2 the shortest. For further details see the key above.

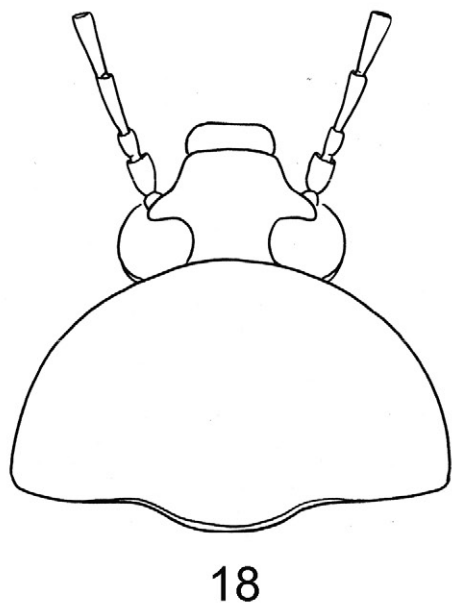
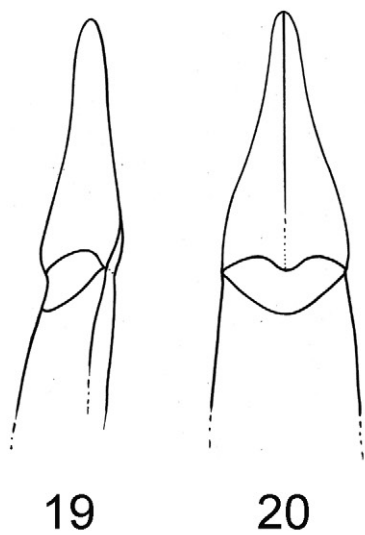
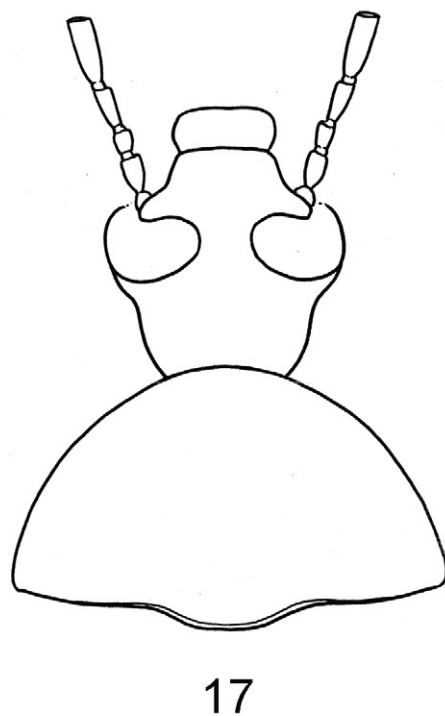
**Name derivation.** New species is named in honour of my four-legged friend cat Pizura.

**Distribution.** Nepal.

### *Isomira (Asiomira) sichuanica* sp. nov. (Figs 16–20)

**Type material.** Holotype (♂): CHINA S SICHUAN pr. / mts. Lingshan, 2600 m 20 / km E Mianning 17.viii. / 2007; S. Murzin leg., (VNPC); Paratypes: (1 ♂ 1 ♀): “same data as holotype”, (VNPC); (1 ♂ 1 ♀): CHINA, S.SICHUAN pr. / pass 30 km SW Mianning / 3000–3400 m / 11.–13.vii.2007, S.Murzin leg., (VNPC); (12 ♂ 3 ♀ ♀): CHINA: W-Sichuan / Ganzi Tibetan Auton. Pref. / Daxue Shan, River valley / 5 km E Kangding, 2500– / 2600m, 30.03.N, 102.00.E / 24.VI.1999, leg.A.Pütz, (APEG, VNPC); (2 ♂ ♂): CHINA: W-Sichuan / Ganzi Tibetan Auton. Pref. / Daxue Shan, River valley / 15 km S Kangding, 2800m / 29.56N, 101.58E / 26.VI.1999, leg.A.Pütz, (APEG, VNPC). The types are provided with a printed red label: ‘*Isomira (Asiomira) / sichuanica* sp. nov. / HOLO-TYPUS [or PARATYPUS] / V. Novák det. 2008’.

**Description of holotype.** Body elongately oval, dark brown with dense, pale brown setation, habitus as in Fig. 16. Length 5.24 mm, 2.45 times longer than wide. Head (Fig. 17). Small with pale brown setation, shallow, dense, middle-sized punctures and microgranulation, posterior part dark brown, anterior part and clypeus brown. Eyes large, dark, transverse, excised, space between eyes narrow, as broad as the length of antennomere 2. Head widest across eyes 0.88 mm; width (across eyes) approximately 0.53 of pronotal base width. Length of head (visible part) 0.62 mm. Ocular index equal to 11.57. Clypeus not excised, longest through the middle. Antennae. Relatively short (reaching 0.56 of body length) 2.91 mm, with short and relatively dense brown setation. Antennomeres 1–3 slightly shiny, antennomeres 4–11 with punctures and microgranulation, more matt. Antennomeres 2 and 3 short; antennomeres 4–10 distinctly broadest at apex, slightly serrate. Ratios of relative lengths of antennomeres 1–11 equal to 1.07 : 0.82 : 1.00 : 1.93 : 1.70 : 1.93 : 2.00 : 2.25 : 1.93 : 2.18 : 2.47. Length / maxi-



Figs 16–20: *Isomira sichuanica* sp. nov.:

16 – Habitus of male holotype; 17 – Head and pronotum of male holotype; 18 – Head and pronotum of female; 19 – Aedeagus, lateral view; 20 – Aedeagus, dorsal view.

maximum width ratios of antennomeres 1–11 equal to 1.50: 1.64: 2.00: 2.76: 2.22: 3.06: 2.44: 2.74: 3.06: 2.77: 3.28. Maxillary palpus. Pale brown, slightly shiny with pale brown setation, apex of penultimate and second palpomere with longer light setae. Ultimate palpomere with microgranulation, broadest at base, broadly axe-shaped. Second and penultimate palpomere broadest at apex, penultimate palpomere shorter than second or ultimate palpomeres. Ratios of relative lengths of palpomeres 2–4 equal to 2.05 : 1.00 : 2.80. Length / maximum width of palpomeres 2–4 equal to 2.41 : 1.08 : 1.47.

Pronotum (Fig. 17). Unicoloured brown, almost semi-circular, slightly shiny with long and dense pale brown setation; 1.88 times as wide as head with eyes together, longest in middle 0.91 mm and widest near base 1.65 mm. Pronotal index equal to 55.10. Posterior margin bisinuate, finely excised before scutellum. Posterior angles rounded, slightly obtuse-angled, lateral margins rounded. Anterior angles indistinct, anterior margin rounded. Surface punctured, punctures very small, interspaces with rugosities, slightly shiny.

Ventral side of body brown, concolorous with dorsal side. Abdomen five-segmented, distinctly shiny, with microgranulation, shallow punctures and pale brown setation. Abdominal segments 1, 3 and 4 with shallow flat depression near side margins.

Elytron. Unicoloured brown with pale brown setation, slightly shiny, 3.71 mm long and 2.14 mm wide, widest approximately at two thirds from base. Length / maximum width ratio equal to 1.73. Surface punctured with microgranulation, elytral striae indistinct, punctures medium-sized. Elytral epipleura well developed, brown, concolorous with elytra, with short pale brown setation, evenly narrowing on posterior part, in the level of metasternum parallel, narrowing on abdominal sternite 1, on anterior half before abdominal sternite 5 parallel, then narrowing to rounded apex.

Scutellum brown pentagon-shaped, concolorous with elytra with dark margins, pale brown setation, slightly shiny.

Legs brown, tarsi distinctly paler than tibia and femora, with pale brown setation, slightly shiny. Femora thicker than tibia. Tibia very narrow, slightly dilated at apex. Tarsomeres of all tarsi narrow. Penultimate tarsomere of each tarsus without membranous lobes. Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.59 : 0.65 : 0.37 : 1.76 (protarsus), 1.00 : 0.43 : 0.35 : 0.25 :

0.82 (mesotarsus), and 1.00 : 0.33 : 0.22 : 0.53 (metatarsus). Both anterior tarsal claws with 7 visible teeth.

Aedeagus (Figs 19 and 20). Pale yellowish-brown, slightly shiny. Basal piece 2.85 times as long as apical piece, apical half of basal piece and apical piece narrowed laterally, slightly narrowing dorsally on apical half. Apical piece longitudinally triangular dorsally.

**Female.** Body more oval, antennae shorter, reaching only 0.54 of body length. Antennomere 2 the shortest, antennomere 3 distinctly longer than antennomere 2. Space between eyes distinctly broader than in males, ocular index approximately 31.89. Head and pronotum as in Fig. 18. Both anterior tarsal claws with 6 visible teeth. Ratios of relative lengths of antennomeres 1–11 equal to 0.84 : 0.55 : 1.00 : 1.39 : 1.32 : 1.25 : 1.34 : 1.46 : 1.23 : 1.43 : 1.48.

Length / maximum width ratios of antennomeres 1–11 equal to 1.54 : 1.71 : 2.59 : 3.81 : 4.14 : 3.44 : 3.47 : 3.55 : 3.00 : 2.08 : 3.44.

Ratios of relative lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.42 : 0.56 : 0.42 : 1.60 (protarsus), 1.00 : 0.32 : 0.35 : 0.29 : 0.92 (mesotarsus), and 1.00 : 0.31 : 0.22 : 0.59 (metatarsus).

**Variability.** The type specimens vary somewhat in size; each character is given as its mean value, with full range in parentheses.

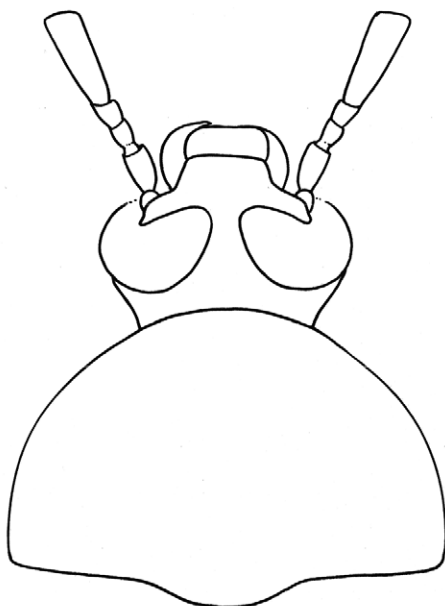
**Males** (n = 17). Length 5.77 mm (5.20–6.27 mm); head length 0.63 mm (0.44–0.83 mm); head width 0.96 mm (0.88–1.05 mm); ocular index 13.18 (10.58–17.66). Pronotal length (along mid-line) 0.91 mm (0.72–1.06 mm); pronotal width at base 1.89 mm (1.59–2.00 mm). Pronotal index 51.23 (45.27–55.10). Elytral length 4.25 mm (3.71–4.76 mm); elytral width 2.23 mm (2.09–2.60 mm).

**Females** (n = 5). Length 5.97 mm (5.80–6.13 mm); head length 0.64 mm (0.56–0.71 mm); head width 0.99 mm (0.95–1.03 mm). Ocular index 31.89 (30.82–32.96). Pronotal length (along mid-line) 1.02 mm (0.98–1.08 mm); pronotal width at base 2.09 mm (2.01–2.16 mm). Pronotal index 49.17 (48.45–49.88). Elytral length 4.45 mm (4.26–4.64 mm); elytral width 2.67 mm (2.55–2.79 mm).

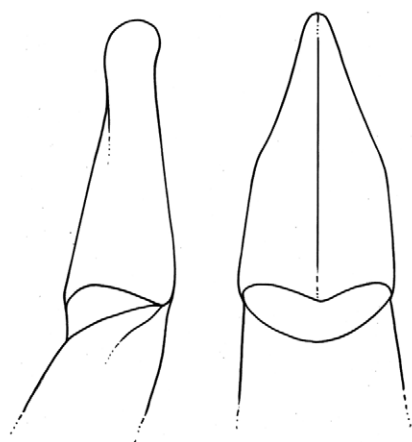
**Differential diagnosis.** *Isomira* (*Asiomira*) *sichuanica* sp. nov. differs from the similar species *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Muehe, 1981 mainly by small body, shorter than 6.5 mm, while *I. (A.) murzini* sp. nov. and *I. (A.) stoetznerei* Muehe, 1981 have their bodies distinctly longer than 7 mm. *I. (A.) sichuanica* differs from the similar species *I. (A.) eustrophoides*



21

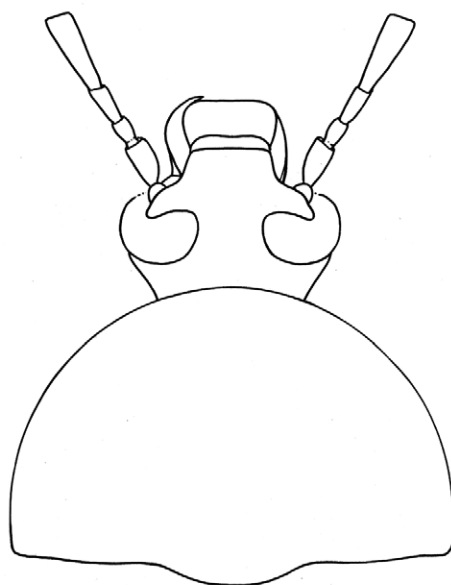


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23

Figs 21–25: *Isomira stoetzneri* sp. n.:

21– Habitus of male holotype; 22 – Head and pronotum of male holotype; 23 – Head and pronotum of female; 24 – Aedeagus, lateral view; 25 – Aedeagus, dorsal view.

Pic, 1930 mainly by unicoloured antennae, while *I. (A.) eustrophoides* has its antennae bicoloured, partly black. *I. (A.) sichuanica* differs from the similar species *I. (A.) pizurae* sp. nov. and *I. (A.) nepalica* sp. nov. mainly by space between eyes of male that is as long as length of antennomere 2, while in *I. (A.) pizurae* the space between eyes of male is distinctly broader than length of antennomere 2. For further details see the key above.

**Name derivation.** Named after the name of province of distribution – Sichuan (China).

**Distribution.** China: Sichuan.

### *Isomira stoetznerei* Mucbe, 1981 (Figs 21–25)

**Type locality.** China, Sichuan, Kwanhsien.

**Type material studied.** *Isomira (Asiomira) stoetznerei* Mucbe, 1981: Holotype (♂): white label 'Szetschwan' / 'Kwanhsien' / 'Exp. Stötzner' [printed in black] // white label '1989' [printed in black] '27' [black handwritten] // white label 'Staat Museum für' [printed in black] / 'Tierkunde Dresden' [printed in black] // red label 'Holotypus' [black handwritten] / 'Isomira' [black handwritten] / '(Asiomira)' [black handwritten] / 'stötzneri m' [black handwritten] / 'det. Mucbe 19' [printed in black] '81' [black handwritten], (SMTD); Paratypes (1 ♂ 1 ♀) same labels but red label with 'Paratypus' [black handwritten], (SMTD).

**Other material studied.** (4 ♂ 12 ♀): China, N Jiangxi, 29.v. / Lushan mts. GULING / 29.6N 116.0E / Jaroslav Turna leg., 2004, (VNPC); (1 ♂): China, SE Hubei, Mufu Shan / JIUGONGSHAN, 5.–6.V / 29.4N 114.7E / Jaroslav Turna leg., 2004, (VNPC); (1 ♂ 1 ♀): CHINA: Zhejiang [CH07–37], / Tianmu Shan, pass 25 km NNW / Linan, 620–820 m, 30°25'40''N, / 119°35'30''E, creek valley with / bamboo and mixed forest, litter / sifted, 16.VI.2007, leg. A. Pütz (APEG); (1 ♂ 1 ♀): CHINA: Zhejiang / Tianmu Shan, pass 25 km / NNW Linan, 620–820 m / 30°25'40''N, 119°35'30''E / (creek valley bamboo, mixed / forest, beaten from vegetation) / 16.VI.2007, D.W.Wrase [37A], (NME); (1 ♀): CHINA: Yunnan [CH07–35], / Dali Bai Auton. Pref., Wuliang / Shan, 9 km SW Weishan, 2450– / 2500 m, 25°10'14''N, W slope, / 100°14'22''E, oaks and pines, / sifted, 13.VI.2007, leg. A. Pütz (APEG).

**Remarks.** Ocular index equal to 9.00; pronotal index equal to 58.22. AL/L 0.70. Ratios of relative lengths of antennomeres 1–11 equal to 2.08: 1.00: 1.00: 3.89: 3.63: 3.63: 4.04: 3.97: 4.04: 4.04: 3.85.

**Distribution.** China – Guangxi and Sichuan, new for the territory of Hubei, Jiangxi, Yunnan and Zhejiang provinces.

### Acknowledgements

Sincere thanks are due to Matthias Hartmann (NME) and Olaf Jäger (SMTD) for the loan of material under their care. Special thanks due to Luboš Dembický (Brno, Czech Republic) for making the digital photography and Zuzana Čadová (Liberec, Czech Republic) for the excellent drawings that are part of this paper. Tomáš Lackner (Sapporo, Japan) is being thanked for the grammatical revision as well as comments on the earlier drafts of this manuscript.

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Band/Volume: [28](#)

Autor(en)/Author(s): Novak Vladimir

Artikel/Article: [New species of Isomira from Nepal and China \(Insecta: Coleoptera: Tenebrionidae: Alleculinae\) 363-376](#)