# New genera of Alleculinae (Coleoptera: Tenebrionidae: Alleculinae: Gonoderina) from Palaearctic and Oriental Regions. Part II - *Kralia* gen. nov.

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**Abstract.** New genus *Kralia* gen. nov. of the subtribe Gonoderina Seidlitz, 1896 (Coleoptera: Tenebrionidae: Alleculinae) with type species *Kralia minshanica* sp. nov. from China (Gansu) and *Kralia phoupaneica* sp. nov. from Laos are described and illustrated.

## INTRODUCTION

The new genus *Kralia* gen. nov. and two new species *Kralia minshanica* sp. nov. from China (Gansu) as type species and *Kralia phoupaneica* sp. nov. from Laos distinctly belong to the subtribe Gonoderina Seidlitz, 1896. We know 9 genera of this subtribe in the Palaeartic Region (Novák & Pettersson 2008, Novák 2008), species of further 2 genera living in the Philippines and Indonesia. Only species of the genera *Isomira* Mulsant, 1856 (mainly subgenus *Asiomira* Dubrovina, 1973), *Paracistela* Borchmann, 1942, *Pseudocistela* Crotch, 1873 and *Pseudohymenalia* Novák, 2008 are known from Palaearctic China and Oriental Laos. Species of the new genus are different from the species of other genera mainly by body narrowly elongate and only slightly oval, by eyes strongly close together (OI of males less than 10; OI of females less than 20), by antenna filiform with very short antennomeres 2 and 3, by ultimate palpomere very long and knife-shaped and tarsomeres simple and narrow.

The new genus is compared with other genera belonging to the subtribe Gonoderina, which are present in the territory of China and Laos. New species are described and illustrated.

### MATERIAL AND METHODS

Two important morphometric characteristics used for the descriptions of species of the subfamily Alleculinae are employed: the 'ocular index' dorsally (Campbell & Marshall, 1964), 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 being converted into an index by multiplying by 100, and the 'pronotal index' dorsally (Campbell, 1965), the ratio of the length of the pronotum along the midline to the width at the posterior angles, this ratio being multiplied by 100 for convenience.

The following codens are used in the paper:

NMBS Naturhistorische museum, Basel, Switzerland;

NMPC National Museum, Praha, Czech Republic;

VNPC private collection of Vladimír Novák, Praha, Czech Republic.

Measurements of body parts and corresponding abbreviations used in text are as follows:

AL total antennae length
BL maximum body length
EL maximum elytral length
EW maximum elytral width

HL maximum length of head (visible part)

HW maximum width of head
OI ocular index dorsally
PI pronotal index dorsally
PL maximum pronotal length
PW pronotal width at base

RLA ratios of relative lengths of antennomeres 1-11 from base to apex (3=1.00)
RL/WA ratios of length / maximum width of antennomeres 1-11 from base to apex
RLT ratios of relative lengths of tarsomeres 1-5 respectively 1-4 from base to apex

(1=1.00).

Measurements were made with Olympus SZ 40 stereoscopic microscope with continuous magnification and with Soft Imaging System AnalySIS.

Slash (/) separates data in different rows on locality labels, double slash (//) separates data on different labels.

#### **TAXONOMY**

## Kralia gen. nov.

Type species: Kralia minshanica sp. nov.

**Description.** General shape as in Fig. 1, body elongate, parallel, narrow, *mycetocharina*-shaped, rather matte, dorsal side with short and dense setation. Head (as in Fig. 2) broadest through the eyes, distinctly narrower than base of pronotum, posterior part with punctuation and transverse rugosities, anterior part paler, with shallow punctuation, rugosities and microgranulation. Pale brown setation of anterior part distinctly denser than that of posterior half. Eyes very large, transverse, deeply excised, space between eyes very narrow, distinctly narrower than length of antennomere 3. Maxillary palpus (as in Fig. 6) slightly shiny, with microgranulation and short pale brown setation. Palpomeres 2 and penultimate palpomere distinctly broadest on apex, penultimate palpomere relatively short, palpomere 2 long and narrow, ultimate palpomere very long and narrow, knife-shaped. Antenna (as in Fig. 4) long, filiform, distinctly longer than half body length. Antennomeres narrow, with short and dense pale brown setation, fine microgranulation and small punctures. Antennomeres 2 and 3 very short, antennomere 3 shortest. Pronotum (as in Fig. 2) semicircular, slightly narrower than elytra, with microgranulation, dense and shallow punctuation and dense, pale brown setation, matte. Margins distinct in their entire length, dorsal margins broadest near middle. Posterior

angles very finely obtuse or rectangular, anterior angles rounded, indistinct. Anterior margin rounded, base very finely bisinuate. Elytra long, parallel, narrow, with short and dense, pale brown setation, matte. Elytral striae with distinct rows of small, closed punctures, elytral interspaces flat with microgranulation and very small punctures. Elytral epipleura well-developed, regularly narrowing to abdominal ventrite 1, then leads parallel, with short, pale brown setation. Legs with microgranulation, punctuation and short and dense, pale brown setation. Tibia and tarsi very narrow. Aedeagus (as in Figs 7, 8) pale brown, slightly shiny.

**Female.** Body slightly but distinctly broader than in male, antennae (as in Fig. 5) slightly shorter than in male. Space between eyes (as in Fig. 3) finely broader, approximately as broad as length of antennomere 2. Antennomere 3 slightly longer than antennomere 2.

**Differential diagnosis.** (For further differences see Table 1). Species of *Kralia* gen. nov. differ from species of other genera of the subtribe Gonoderina Mulsant from China and Laos mainly by shape of body, which is elongate and narrowly oval, long filiform antennae with very short antennomere 2 and 3, antennomere 3 is in males shortest, very long knife-shaped ultimate palpomere and very narrow space between eyes.

Table 1. Differences between genera of the subtribe Gonoderina Mulsant from China and Laos.

genus	Body shape	Space between eyes	Antenna	3 <sup>rd</sup> antennomere	Ultimate palpomere	Protarso- mere lobed	Distinct sexual dimor- phism	RLA 4 <sup>th</sup> /3 <sup>rd</sup> antennomere
Isomira (subg. Asiomira)	oval	OI of males 9-22 OI of females more than 30	filiform	Slightly shorter or slightly longer than 2 <sup>nd</sup>	Shorter, axe- shaped or shortly knife- shaped	0	Yes	Males less than 4 females less than 2
Paracistela	oval	OI near 30	filiform	More than twice longer than 2 <sup>nd</sup>	Knife-shaped	0	No	Approxim. 0.8-1.1
Pseudocistela	oval	OI more than 25	serrate	Longer than 2 <sup>nd</sup>	Triangular, axe-shaped	0	Yes	Males less than 3 females less than 2
Pseudohyme- nalia	oval	OI of males 6-22 OI of females near 40	filiform	Males shorter than 2 <sup>nd</sup> Females longer than 2 <sup>nd</sup>	Longly triangular	3 <sup>rd</sup>	Yes	Males less than 5 females less than 2.1
Kralia gen. nov.	Elongate, narrowly oval	OI of males less than 10 OI of females less than 20	filiform	Males distinctly shorter than 2 <sup>nd</sup> Females slightly longer than 2 <sup>nd</sup>	Long, longly knife-shaped	0	Yes	Males more than 5 females more than 2.5

**Etymology.** Dedicated to my friend David Král - world known specialist in Scarabaeidae. Gender feminine.

**Distribution.** China (Gansu), Laos.

# Kralia minshanica sp. nov.

(Figs 1-8)

Type locality. China, Gansu prov., Min Shan Mts., 2350-2700m, 50 km W from Wudu, 33°30'N, 104°35'E.

**Type material.** Holotype ( $\circlearrowleft$ ): CHINA, GANSU, MIN / SHAN Mts., 2350-2700 m. / 50 km to W from WUDU / 33°30′N-104°35′E; 27.vii-14.viii.2000, A. Plutenko leg., (VNPC). Paratypes: (16  $\circlearrowleft$  $\circlearrowleft$ , 4  $\circlearrowleft$  $\circlearrowleft$ ): same data as holotype, (VNPC). The types are provided with a printed red label: Kralia minshanica sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2012.

**Description of holotype.** Habitus of male holotype as in Fig. 1. Body narrow, elongate, parallel, BL 7.64 mm, brown, rather matte, dorsal surface with setation, maximum width near elytral half 2.62 mm. BL/EW 2.92.

Head (Fig. 2) small, brown, distinctly narrower than base of pronotum, posterior part with punctuation and transverse rugosities, anterior part with microgranulation, shallow punctures and pale brown setation, distinctly paler than posterior part of head. Eyes large, transverse, deeply excised, space between eyes very narrow, distinctly narrower than length of antennomere 3. OI equal to 5.54. Head widest across eyes, HW 1.08 mm, approximately 0.59 times as wide as width of pronotal base. HL (visible part) 0.91 mm.

Antenna (Fig. 4). Filiform, relatively long and narrow, brown, distinctly paler than dorsal surface, with short and dense pale brown setation, small punctures and microgranulation, matte. AL 5.82 mm, AL/BL 0.76, antennomeres 2 and 3 very short, antennomere 3 shortest. Antennomeres 4-10 slightly widened at apex.

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RLA (1-11): 4.36: 1.73: 1.00: 6.91: 5.82: 6.18: 7.27: 7.55: 7.00: 6.73: 7.68. RL/WA (1-11): 3.20: 1.36: 1.00: 4.47: 3.56: 4.53: 4.10: 5.53: 5.13: 4.93: 6.50.
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Maxillary palpus (Fig. 6) unicolored pale brown with short pale brown setation, shallow punctures and microgranulation, matte. Palpomere 2 and penultimate palpomere slightly broadest on apex. Penultimate palpomere shorter than palpomere 2 and ultimate palpomere. Ultimate palpomere long and narrow, longitudinally knife-shaped.

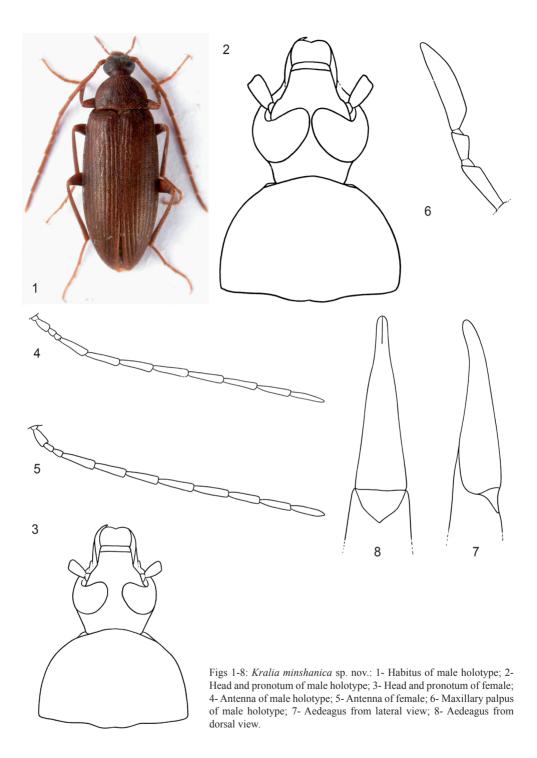
Pronotum (Fig. 2) approximately semicircular, brown, with short and relatively dense pale brown setation, distinctly narrower than base of elytra. Base of pronotum 1.64 times as wide as head together with eyes, longest in the middle, PL 1.14 mm, widest near one third from base, PW at base 1.82 mm. PI equal to 62.82. Borders almost complete, only in the middle of posterior part indistinct; posterior margin finely bisinuate, anterior margin finely rounded. Posterior angles finely obtuse, lateral margins rounded dorsally. Dorsal surface with shallow punctuation, rugosities and microgranulation, rather matte.

Elytra elongate, very finely oval, dorsal surface unicolored brown with short pale brown setation, EL 5.56 mm, EW 2.62 mm, widest near elytral half. EL/EW ratio equal to 2.13. Dorsal surface of elytral intervals with microgranulation, rows of punctures in elytral striae distinct, punctures small, separated by less than one diameter.

Elytral epipleura well-developed, brown, evenly narrowing in basal half, in apical half before abdominal ventrite 5 parallel, then narrowing to rounded apex.

Scutellum small, triangular, as colour as elytron itself, with punctures and microgranulation.

Legs long and narrow, brown, tarsi slightly paler than femora and tibia, with dense and



short pale brown setation, penultimate tarsomere of each tarsus without membranous lobes. Femora thicker than tibia. Tibia very narrow, slightly dilated anteriorly. Tarsomeres of all tarsi narrow. RLT (1-5): 1.00: 0.58: 0.56: 0.50: 1.15 (protarsus); 1.00: 0.24: 0.35: 0.30: 0.58 (mesotarsus); (1-4): 1.00: 0.47: 0.34: 0.57 (metatarsus). Both anterior tarsal claws with 7 visible teeth.

Ventral side of body brown with short pale brown setation, abdomen brown as elytron itself, with short and dense pale brown setation, microgranulation, transverse rugosities and shallow punctuation.

Aedeagus (Figs 7, 8) pale brown, slightly shiny with fine microgranulation. Basal piece 3.16 as long as apical piece. Basal piece straight, only very finely rounded laterally, regularly narrowing dorsally. Apical piece longitudinally triangular dorsally and laterally, with beak-shaped ending laterally.

**Female** (Figs 3, 5). Distinctly broader than male, antennae shorter than in male, reaching only two thirds of body length. Antennomere 2 shortest, distinctly shorter than antennomere 3. Space between eyes broader than in male, approximately as long as length of antennomere 3. Ultimate palpomere distinctly shorter than in male. Anterior tarsal claws with 5 visible teeth. RLA (1-11): 1.30: 0.73: 1.00: 2.49: 2.15: 2.49: 2.46: 2.52: 2.42: 2.33: 2.64. RL/WA (1-11): 1.59: 1.41: 1.74: 3.42: 3.23: 3.73: 3.79: 3.61: 3.81: 3.54: 3.96. RLT (1-5): 1.00: 0.55: 0.49: 0.55: 1.08 (protarsus); 1.00: 0.46: 0.39: 0.28: 0.65 (mesotarsus); (1-4): 1.00: 0.44: 0.65: 0.50 (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). BL 7.65 mm (7.38-8.05 mm); HL 1.00 mm (0.89-1.10 mm); HW 1.08 mm (1.06-1.11 mm); OI 6.00 (4.22-7.50); PL (along midline) 1.12 mm (0.93-1.22 mm); PW at base 1.65 mm (1.65-1.89 mm); PI 62.11 (57.64-65.53); EL 5.53 mm (5.35-5.70 mm); EW 2.55 mm (2.41-2.65 mm). Females (n = 4). BL 8.15 mm (7.80-8.72 mm); HL 1.01 mm (0.87-1.17 mm); HW 1.08 mm (1.05-1.15 mm); OI 16.25 (15.09-16.88); PL (along midline) 1.29 mm (1.20-1.32 mm); PW at base 2.08 mm (1.99-2.20 mm); PI 62.21 (59.61-65.20); EL 5.85 mm (5.62-6.39 mm); EW 2.90 mm (2.62-3.08 mm).

**Differential diagnosis.** *Kralia minshanica* sp. nov. clearly differs from the species *Kralia phoupaneica* sp. nov. mainly by ultimate antennomere of male only 1.15 times longer than penultimate antennomere, body brown and larger (BL from 7.38 mm to 8.72 mm), antennomeres pale brown; while *Kralia phoupaneica* sp. nov. has ultimate antennomere of male 1.5 times longer than penultimate, body is ochre yellow and smaller (BL from 5.31 mm to 6.37 mm), antennomeres black.

**Etymology.** Toponymic, after the type locality Min Shan Mountains.

**Distribution.** China (Gansu).

# Kralia phoupaneica sp. nov.

(Figs 9-16)

Type locality. Laos NE, Houa Phan province, 20°12′-13.5′N; 103°59.5′-104°01′E, Phou Pane Mt., 1340-1870 m.

**Description of holotype.** Habitus of male holotype as in Fig. 9. Body narrow, elongate, parallel, BL 5.35 mm, from ochre yellow to blackish-brown, slightly shiny, dorsal surface with golden yellow setation, maximum width near elytral half 1.89 mm. BL/EW 2.83.

Head (Fig. 10) small, narrow, distinctly narrower than base of pronotum, posterior part dark blackish-brown with pale brown setation and dense punctuation, punctures coarse and large. Anterior part paler with distinct microgranulation, shallow punctures and pale brown setation, clypeus pale brown with longer pale brown setation. Eyes very large, transverse, deeply excised, space between eyes very narrow, distinctly narrower than length of antennomere 3. OI equal to 6.72. Head widest across eyes, HW 0.89 mm, approximately 0.63 times as wide as pronotal base. HL (visible part) 0.79 mm.

Antenna (Fig. 12). Filiform, relatively long and narrow, blackish-brown, with short and dense pale brown setation, small punctures and microgranulation, matte. AL 4.39 mm, AL/BL 0.82, antennomeres 2 and 3 very short, antennomere 3 shortest. Antennomeres 4-10 slightly widened at apex.

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RLA (1-11): 2.85: 1.46: 1.00: 5.31: 5.62: 5.08: 5.69: 5.69: 5.39: 5.08: 7.54. RL/WA (1-11): 2.06: 1.00: 0.72: 2.65: 3.17: 3.14: 3.08: 3.36: 3.33: 3.00: 5.16.
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Maxillary palpus (Fig. 14) with microgranulation, small punctures and pale brown setae, matte. Palpomere 2 dark brown with ochre yellow apex as colour as ultimate and penultimate palpomeres. Palpomere 2 and penultimate palpomere slightly broadest on apex. Penultimate palpomere shorter than palpomere 2 and ultimate palpomere. Ultimate palpomere long and narrow, longitudinally knife-shaped.

Pronotum (Fig. 10) ochre yellow, slightly longer than semicircular, with short and relatively dense golden yellow setation. Base of pronotum approximately as wide as base of elytra and 1.55 times as wide as head with eyes together, longest in the middle, PL 0.83 mm, widest at base PW 1.42 mm. PI equal to 58.55. Borders complete, posterior margin finely bisinuate, anterior margin distinctly rounded. Posterior angles finely roundly rectangular, lateral margins parallel in posterior half, then regularly rounded anteriorly. Dorsal surface with shallow punctuation and microgranulation, rather matte.

Elytra elongate, very finely oval, dorsal surface unicolored ochre yellow with golden yellow setation, EL 3.73 mm, EW 1.89 mm, widest near elytral half. EL/EW ratio equal to

1.97. Dorsal surface of elytral intervals with microgranulation, rows of punctures in elytral striae distinct, punctures small, separated by less one diameter.

Elytral epipleura well-developed, ochre yellow, as colour as elytron itself, regularly narrowing in basal half to abdominal ventrite 1, in apical half before abdominal ventrite 5 parallel, then narrowing to rounded apex.

Scutellum small, triangular, coloured as elytron itself, with setation, punctures and microgranulation.

Legs long and narrow, ochre yellow, tibia slightly darker than femora and tarsi, with dense and short golden yellow setation, penultimate tarsomere of each tarsus without membranous lobes. Femora thicker than tibia. Tibia very narrow, slightly dilated anteriorly. Tarsomeres of all tarsi narrow. RLT (1-5): 1.00: 0.57: 0.55: 0.41: 0.81 (protarsus); 1.00: 0.55: 0.42: 0.28: 0.65 (mesotarsus); (1-4): 1.00: 0.48: 0.35: 0.39 (metatarsus). Both anterior tarsal claws with 4 visible teeth.

Ventral side of body ochre yellow, meso- and metasternum slightly darker than prosternum and abdomen. Prosternum with small and dense punctures, punctures of meso- and metasternum larger. Abdomen with dense golden yellow setation, microgranulation and shallow punctuation.

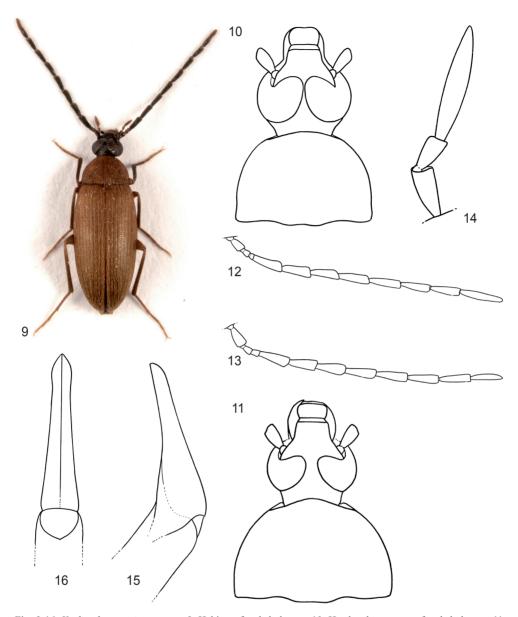
Aedeagus (Figs 15, 16) pale ochre yellow, slightly shiny. Basal piece 3.89 as long as apical piece. Basal piece straight, only in base rounded laterally, regularly narrowing dorsally. Apical piece longitudinally triangular dorsally and laterally, with beak-shaped ending laterally.

**Female** (Figs 11, 13). Slightly broader than male, antennae shorter than in male, only slightly longer than half of body length. Antennomere 2 shortest, distinctly longer than antennomere 3. Space between eyes broader than in male, approximately as long as length of antennomere 3. Anterior tarsal claws with 3 visible teeth.

RLA (1-11): 1.25: 0.85: 1.00: 2.75: 3.00: 3.11: 3.21: 3.21: 3.05: 3.05: 3.11. RL/WA (1-11): 1.32: 1.00: 1.18: 2.29: 2.40: 2.57: 3.09: 3.26: 2.87: 3.26: 4.11. RLT (1-5): 1.00: 0.50: 0.45: 0.37: 0.65 (protarsus); 1.00: 0.65: 0.44: 0.30: 0.56 (mesotarsus); (1-4): 1.00: 0.48: 0.35: 0.39 (metatarsus).

**Variability.** The type specimens vary somewhat in size; each character is given as its mean value, with full range in parentheses. Males (n = 9). BL 5.55 mm (5.31-5.94 mm); HL 0.79 mm (0.70-0.91 mm); HW 0.93 mm (0.86-1.03 mm); OI 7.66 (6.38-10.82); PL (along midline) 0.87 mm (0.81-1.00 mm); PW at base 1.44 mm (1.30-1.65 mm); PI 60.41 (56.21-63.19); EL 3.89 mm (3.73-4.18 mm); EW 1.91 mm (1.79-2.03 mm). Females (n = 22). BL 5.90 mm (5.31-6.37 mm); HL 0.70 mm (0.56-0.89 mm); HW 0.89 mm (0.82-0.96 mm); OI 15.02 (12.78-17.46); PL (along midline) 0.93 mm (0.79-1.07 mm); PW at base 1.68 mm (1.47-1.85 mm); PI 55.59 (52.56–59.60); EL 4.28 mm (3.92-4.62 mm); EW 2.23 mm (2.00-2.37 mm).

**Differential diagnosis.** *Kralia phoupaneica* sp. nov. clearly differs from the species *Kralia minshanica* sp. nov. mainly by ultimate antennomere of male 1.5 times longer than penultimate, body ochre yellow and smaller (BL from 5.31 mm to 6.37 mm), antennomeres black, while *Kralia minshanica* sp. nov. has ultimate antennomere of male only 1.15 times longer than penultimate, body brown and larger (BL from 7.38 mm to 8.72 mm), antennomeres pale brown.



Figs 9-16: *Kralia phoupaneica* sp. nov.: 9- Habitus of male holotype; 10- Head and pronotum of male holotype; 11- Head and pronotum of female; 12- Antenna of male holotype; 13- Antenna of female; 14- Maxillary palpus of male holotype; 15- Aedeagus from lateral view; 16- Aedeagus from dorsal view.

**Etymology.** Toponymic, after the type locality Phou Pane Mountain. **Distribution.** Laos.

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