

SHORT COMMUNICATION

Notes on the *Dianous luteoguttatus* complex with description of a new species (Coleoptera: Staphylinidae)

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Abstract. *Dianous lilizheni* sp. nov., a new species of the *Dianous luteoguttatus* complex from China, is described. Males of *D. vorticipennis* Puthz, 2005 and *D. depressifrons* Puthz, 2016 and the female of *D. rimosipennis* Puthz, 2005 are discovered for the first time. New distributional records are reported for *D. cruentatus* L. Benick, 1942 and *D. depressifrons* Puthz, 2016. A key to species of the *Dianous luteoguttatus* complex is provided.

Key words. Coleoptera, Staphylinidae, *Dianous luteoguttatus* complex, new species, identification key, China

ZooBank: <http://zoobank.org/urn:lsid:zoobank.org:pub:E0D2154F-829D-4995-AAFF-5B01F282DBB0>

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Introduction

The *Dianous luteoguttatus* complex established by PUTHZ (2005) is a small group with five known species: *Dianous luteoguttatus* Champion, 1919, *D. cruentatus* L. Benick, 1942, *D. rimosipennis* Puthz, 2005, *D. vorticipennis* Puthz, 2005 and *D. depressifrons* Puthz, 2016 (PUTHZ 2016). The members of the complex can be easily recognized by the following combination of characters: eyes large, 2.5–3.5 times as long as temple, interocular area deeply concave with median portions slightly convex, and hind tarsomeres IV simple with long setae or tarsal shoes. A detailed definition of the complex can be found in PUTHZ (2005, 2016).

In this paper, a sixth species of the *Dianous luteoguttatus* complex is described, range extensions and characters for newly discovered sexes of several species are also reported.

Material and methods

The specimens examined in this paper were collected by searching exposed rocks and logs in streams, and killed with ethyl acetate. For examination of the genitalia, the last three abdominal segments were detached from the body after softening in hot water. The aedeagi or the valvifers,

together with other dissected pieces, were mounted in Euparal (Chroma Gesellschaft Schmidt, Koengen, Germany) on plastic slides. Photos of sexual characters were taken with a Canon G9 camera attached to an Olympus SZX 16 stereoscope; habitus photos were taken with a Canon macro photo lens MP-E 65 mm attached to a Canon EOS7D camera and stacked with Zerene Stacker (<http://www.zerenesystems.com/cms/stacker>).

The specimens treated in this study are deposited in the following public and private collections:

SHNU	Department of Biology, Shanghai Normal University, P. R. China;
cPut	private collection Volker Puthz, Schlitz, Germany;
cSme	private collection Aleš Smetana, Ottawa, Canada.

Body measurements are abbreviated as follows:

BL	body length, measured from the anterior margin of the clypeus to the posterior margin of abdominal tergite X
FL	forebody length, measured from the anterior margin of the clypeus to the apex of the elytra (apicolateral angle)
HW	width of head including eyes
PW	width of pronotum at the widest point
EW	width of elytra at the widest point
PL	length of pronotum
EL	length of elytra, measured from humeral angle
SL	length of elytral suture



Taxonomy

Dianous luteoguttatus Champion, 1919

(Fig. 1)

Dianous luteoguttatus Champion, 1919: 98; PUTHZ (2000: 451); PUTHZ (2016: 749).

Material examined. CHINA: TAIWAN: 1 ♀, Nantou Hsien, Shanlinchi, 1650 m, 19.v.1991, A. Smetana leg. (cSme)

Distribution. China (Taiwan), India, Nepal, Vietnam.

Dianous cruentatus L. Benick, 1942

(Figs 2, 7–9)

Dianous cruentatus L. Benick, 1942: 37, PUTHZ (2015: 150).

Material examined. CHINA: YUNNAN: 1 ♂, Lushui County, Qiqi, alt. 1980 m, 25.v.2009, Jian-Qing Zhu leg. (SHNU); 1 ♂, Lushui County, Pianma, alt. 2400 m, 24.vi.2010, Liang Tang leg. (SHNU); 6 ♂♂ 2 ♀♀, Gongshan County, Qiqi, alt. 1900 m, 2.vii.2010, Liang Tang leg. (SHNU); 4 ♂♂ 6 ♀♀, Tengchong County, Mingguang Town, Zizhi Vill., Donghe, 25°42'N 98°34'E, alt. 2100–2300 m, 1.v.2013, Dai, Peng & Song leg. (SHNU). XIZANG: 2 ♂♂, Motuo County, Hanmi, alt. 2100 m, 23.vii.2011, Wen-Xuan Bi leg. (SHNU); 5 ♂♂ 4 ♀♀, Motuo County, Hanmi, alt. 2100 m, 12–31.vii.2013, Wen-Xuan Bi leg. (SHNU).

Measurements. BL: 6.1–7.2 mm, FL: 3.5–4.2 mm. HW: 1.24–1.49 mm, PL: 0.95–1.13 mm, PW: 0.83–0.95 mm, EL: 1.31–1.56 mm, EW: 1.19–1.44 mm, SL: 1.03–1.28 mm. Head 0.92–1.05 times as wide as elytra; pronotum 1.15–1.21 times as long as wide; elytra 1.07–1.13 times as long as wide.

Distribution. China (Yunnan, Xizang), Myanmar.

Notes. The species can be easily recognized among the members of the complex by its bicolored femora. It can also be distinguished from other spotted species of the complex by the larger punctures of the head and smaller elytra spots. It can be distinguished from *D. luteoguttatus* and *D. rimosipennis* by the deeply concave median portion of the interocular area and larger eyes. The species is new to Xizang.

Dianous rimosipennis Puthz, 2005

(Figs 3, 10)

Dianous rimosipennis Puthz, 2005: 141.

Material examined. CHINA: YUNNAN: 1 ♀, Jinghong City, Nabanhe N. R., Naban Vill., 7.i.2004, Li & Tang leg. (SHNU).

Measurements. BL: 6.8 mm, FL: 3.4 mm. HW: 1.25 mm, PL: 1.03 mm, PW: 0.9 mm, EL: 1.54 mm, EW: 1.43 mm, SL: 1.25 mm. Head 0.88 times as wide as elytra; pronotum 1.14 times as long as wide; elytra 1.08 times as long as wide.

Description of female. Sternite VII with posterior margin slightly emarginate at middle; sternite VIII with posterior margin entire; valvifer (Fig. 10) with a slender apicolateral projection, posterior margin with four small teeth.

Distribution. China (Yunnan).

Note. The above female specimen corresponds to the male holotype in all relevant characters and was found at a locality very close (420 km apart) to the type locality of the species. For these reasons we consider it as conspecific with the holotype of *D. rimosipennis*, despite not having examined any co-occurring male specimens.

Dianous depressifrons Puthz, 2016

(Figs 4, 11–14)

Dianous depressifrons Puthz, 2016: 731.

Material examined. CHINA: GUANGXI: 25 ♂♂ 9 ♀♀, Lingui County, Huaping N. R., Anjiangping, alt. 1200 m, 13–18.vii.2011, Peng & Zhu leg. (SHNU); 2 ♂♂ 4 ♀♀, Jinxiu County, Shengtangshan, alt. 1000–1200 m, 27.vii.2011, Peng Zhong leg. (SHNU); 4 ♂♂ 3 ♀♀, Jinxiu County, 16 km, alt. 900 m, 29.vii.2011, Peng Zhong leg. (SHNU); FUJIAN: 4 ♂♂, Wuyishan City, Guadun Vill., 27°44'N 117°37'E, alt. 1200–1500 m, 24–28.v.2012, Peng & Dai leg. (SHNU).

Measurements. BL: 5.3–6.1 mm, FL: 2.9–3.1 mm. HW: 1.04–1.16 mm, PL: 0.84–0.95 mm, PW: 0.76–0.84 mm, EL: 1.24–1.41 mm, EW: 1.11–1.29 mm, SL: 1.05–1.15 mm. Head 0.90–0.94 times as wide as elytra; pronotum 1.03–1.15 times as long as wide; elytra 1.01–1.15 times as long as wide.

Description of male. Sternite V flattened posteromedially; sternite VI impressed at posteromedian part, posterior margin of the impression emarginate with a sharp projection on each side, pubescence of impression distinctly longer; sternite VII slightly impressed with shallow emargination along posterior margin of the impression, pubescence of impression distinctly longer; sternite VIII (Fig. 13) with deep emargination in the middle of posterior margin; sternite IX (Fig. 12) with apicolateral projections very strong and sharply pointed, posterior margin serrate; tergite X with posterior margin slightly emarginate. Aedeagus (Fig. 11) slender, apical sclerotized area nearly triangular with a short transverse ridge at middle; parameres slightly longer than median lobe, each with 24–28 setae on inner side of apical portion.

Distribution. China (Guangxi, Fujian), Vietnam.

Remarks. The species is the smallest member of the complex with the elytra punctation less confluent. The species is new to China.

Dianous vorticipennis Puthz, 2005

(Figs 5, 15–17)

Dianous vorticipennis Puthz, 2005: 144.

Material examined. CHINA: YUNNAN: 3 ♂♂, Gongshan County, Qiqi, alt. 1900 m, 2.vii.2010, Liang Tang leg. (SHNU).

Measurements. BL: 7.5–7.9 mm, FL: 3.6–3.8 mm. HW: 1.43–1.44 mm, PL: 1.13–1.15 mm, PW: 0.98 mm, EL: 1.55–1.58 mm, EW: 1.28 mm, SL: 1.26–1.28 mm. Head 1.12–1.13 times as wide as elytra; pronotum 1.13–1.15 times as long as wide; elytra 1.22–1.24 times as long as wide.

Description of male. Sternite VII flattened posteromedially with shallow emargination along posterior margin of the flatten area; sternite VIII (Fig. 17) with emargination in the middle of posterior margin which is 0.13 times as long as the sternite; sternite IX (Fig. 16) with apicolateral projections slender and long, situated sublaterally rather than laterally, hind margin between projections serrate; tergite X with posterior margin broadly rounded. Aedeagus (Fig. 15) nearly same to that of *D. lilizheni* sp. nov. except apical sclerotized area broader, parameres slightly longer than median lobe with 14–15 setae on inner side of apical portion.

Distribution. China (Yunnan).



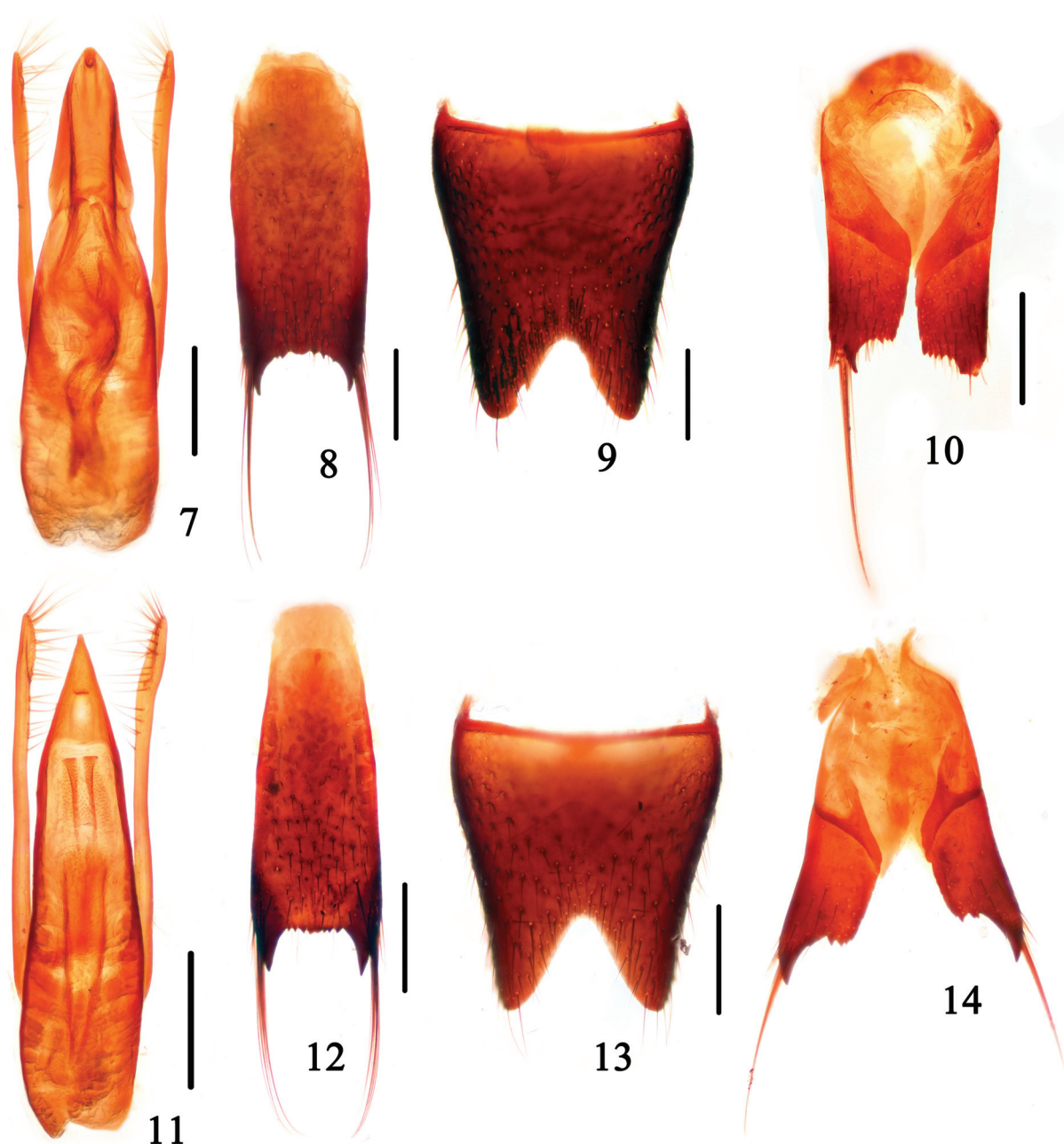
Figs 1–6. Habitus of the species of the *Dianous luteoguttatus* species complex. 1 – *D. luteoguttatus* Champion, 1919; 2 – *D. cruentatus* L. Benick, 1942; 3 – *D. rimosipennis* Puthz, 2005; 4 – *D. depressifrons* Puthz, 2016; 5 – *D. vorticipennis* Puthz, 2005; 6 – *D. lilizheni* sp. nov. Scale bars: 1 mm.

Remarks. The species can be easily distinguished from the other members of *Dianous luteoguttatus* complex by the characters mentioned by PUTHZ (2005) and the key below. Additionally, the widest point of the elytra is distinctly anteriad of the basal half in this species, while always being posteriad of the basal half in the remaining species.

***Dianous lilizheni* sp. nov.**

(Figs 6, 18–22)

Type material. HOLOTYPE. CHINA: SICHUAN: ♂, glued on a card with labels as follows: “China: Sichuan Prov., Emeishan, Qingyinge-Hongchunping, 7.VIII.2011, Huang Hao leg.” “Holotype / *Dianous lilizheni* / Tang & Wang” [red handwritten label] (SHNU). PARATYPES. 1 ♂, Emeishan, Changshou Bridge, 29°33'N 103°22'E, alt. 1400 m,



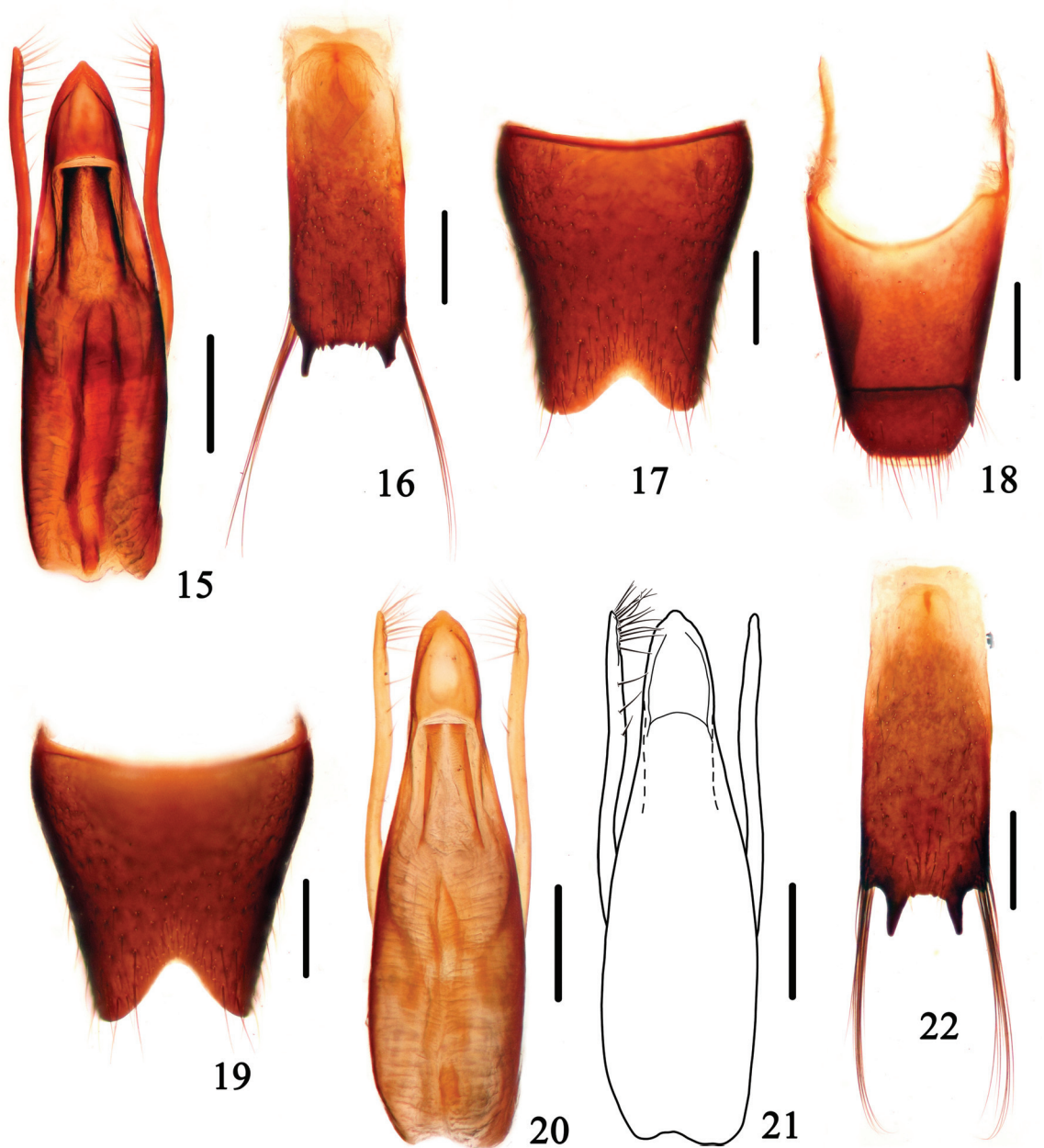
Figs 7–14. Sexual characters. 7–9 – *Dianous cruentatus* L. Benick, 1942; 10 – *D. rimosipennis* Puthz, 2005; 11–14 – *D. depressifrons* Puthz, 2016; 7, 11 – aedeagus; 8, 12 – male sternite IX; 9, 13 – male sternite VIII; 10, 14 – valvifer. Scale bars: 0.25 mm.

26.vii.2012, Peng, Dai & Yin leg. (cPut). YUNNAN: 1 ♂, Jinghong City, Nabanhe N. R., Bengganghani, 14.i.2004, Li & Tang leg. (SHNU)

Description. Head and abdomen black, pronotum and elytra dark brown to blackish with strong plumbeous luster, antennae dark brown with club slightly lighter, legs blackish with tibiae and tarsomeres slightly lighter, trochanters brownish, maxillary palpi with segment I yellowish, segment II brown and segment III dark brown. Pubescence silvery, distinct on head and abdomen, nearly invisible on pronotum and elytra.

BL: 6.3–6.6 mm; FL: 3.1–3.4 mm. HW: 1.24–1.30 mm, PL: 0.95–0.99 mm, PW: 0.85–0.89 mm, EL: 1.33–1.43 mm, EW: 1.15–1.29 mm, SL: 1.10–1.18 mm.

Head 0.98–1.08 times as wide as elytra; interocular area with deep longitudinal furrows, median portion as wide as the side portions and convex posteriorly, extending far beneath the level of inner eye margins; punctures round to oval, those of anterior portion more or less confluent, those of the remaining area well delimited, diameter of punctures slightly wider than medial ommatidia of eyes; interstices shallowly reticulated except those on median portion, which are smooth, interstices at frons and along the furrows narrower than half the diameter of punctures, those on the remaining portions as wide to moderately wider than diameter of punctures. Antennae very long, when reflexed, reaching basal half of the elytra.



Figs 15–22. Male sexual characters. 15–17 – *Dianous vorticipennis* Puthz, 2005; 18–22 – *D. lilizheni* sp. nov.; 15, 20, 21 – aedeagus; 16, 22 – sternite IX; 17, 19 – sternite VIII; 18 – tergites IX and X. Scale bars: 0.25 mm.

Pronotum 1.09–1.12 times as long as wide; disk uneven with transverse impression near anterior margin, two deep pits at about middle, short longitudinal furrow along the middle, two distinct impressions near posterolateral margin and transverse impression near posterior margin; punctures slightly larger than those of head, partially well delimited, those at anterior and posterior impressions strongly and transversely confluent; interstices smooth, rugae-like and somewhat vortucose, mostly narrower than half the diameter of punctures except few on median portion or near anterior and posterior margins, which may be as wide as two or three punctures.

Elytra 1.09–1.15 times as long as wide; humeral impressions distinct; punctuation strongly confluent, interstices

smooth and rugae-like, those of posteromedian area strongly vortucose forming a complete rosetta.

Metasternum with median area impressed, sparsely punctate and with dense microsculpture, diameter of punctures slightly wider than medial ommatidia of eyes.

Legs slender, metatarsi longer than 5/6 of hind tibiae, metatarsomere I distinctly longer than the following three segments combined, metatarsomere IV simple with long apical setae except for one paratype from Sichuan with metatarsomere IV slightly emarginate at apex.

Abdomen semi-cylindrical with broad, horizontal and densely punctate paratergites, width of paratergites of segment IV as wide as median cross section of metatibia; posterior margin of tergite VII with palisade fringe; punctures on

abdominal tergites III–VII minute, smaller than ommatidia of eyes, those on tergite VIII larger, as large as ommatidia of eyes; interstices transversely reticulated, varying from a little narrower than half the diameter of punctures to a little broader than diameter of punctures.

Male. Sternite VII slightly impressed posteromedially with shallow emargination along posterior margin of the impression, pubescence of impression distinctly longer; sternite VIII (Fig. 19) with deep emargination in the middle of posterior margin which is 0.23 times as long as the sternite; sternite IX (Fig. 22) with apicolateral projections very long, situated sublaterally rather than laterally; tergite X (Fig. 18) with posterior margin broadly rounded. Aedeagus (Figs 20, 21) slender, median lobe roundly prominent at apex with two sharp longitudinal ridges (dotted line in Fig. 21) on dorsal side, internal sac with slender copulatory tube and small basal tube; parameres slightly bent inwards and ventrally, as long as median lobe, each with 15–17 setae on inner side of apical portion.

Female. Unknown.

Etymology. This species is named in honor of Dr. Li-Zhen Li, my dear mentor.

Distribution. China (Sichuan, Yunnan).

Remarks. The species is closely related to *Dianous vorticipennis* Puthz, 2005 from Yunnan, but can be distinguished from the latter by the sparser punctuation of the interocular area and shorter elytra.

Key to the *Dianous luteoguttatus* complex

- 1 Elytra without orange spots, metatarsomere I distinctly longer than the following three tarsomeres combined 2
- Elytra with orange spots, metatarsomere I distinctly shorter than the following three tarsomeres combined. 3
- 2 Punctuation of interocular area dense, elytra longer with EL/EW=1.22–1.24. BL: 7.5–7.9 mm. Habitus: Fig. 5; sexual characters: Figs 15–17. China (Yunnan). *D. vorticipennis* Puthz, 2005
- Punctuation of interocular area sparse, elytra shorter with EL/EW=1.09–1.15. BL: 6.3–6.6 mm. Habitus: Fig. 6; sexual characters: Figs 18–22. China (Sichuan, Yunnan). *D. lilizheni* sp. nov.
- 3 Femora bicolored. BL: 6.1–7.2 mm. Habitus: Fig. 2; sexual characters: Figs 7–9. China (Yunnan, Xizang), Myanmar. *D. cruentatus* L. Benick, 1942
- Femora uniformly black. 4

- 4 Smaller species with BL: 5.3–6.1 mm, median portion of interocular area with interstices about as wide as diameter of punctures, punctuation of elytra less confluent. Habitus: Fig. 4; sexual characters: Figs 11–14. China (Guangxi, Fujian), Vietnam. *D. depressifrons* Puthz, 2016
- Larger species with BL: 6.0–7.2 mm, median portion of interocular area with interstices distinctly narrower than half the diameter of punctures, punctuation of elytra more confluent. 5
- 5 Body with plumbeous luster, pronotal punctuation less confluent, elytral spots smaller. BL: 6.0–7.2 mm. Habitus: Fig. 1; sexual characters: Figs. 87, 90 in PUTHZ (2000), Fig. 1 in PUTHZ (1980). China (Taiwan), India, Nepal, Vietnam. *D. luteoguttatus* Champion, 1919
- Body without plumbeous luster, pronotal punctuation more confluent, elytral spots larger. BL: 6.0–7.0 mm. Habitus: Fig. 3; sexual characters: Fig. 10; see also Figs. 3, 6 in PUTHZ (2005). China (Yunnan). *D. rimosipennis* Puthz, 2005

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