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Two new species of *Chrysolina* Motschulsky from China, with redescription of *C. kozlovi* Lopatin and notes on the genus *Doeberlia* Warchałowski (Coleoptera: Chrysomelidae: Chrysomelinae)

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Abstract. Two new species of the genus *Chrysolina* Motschulsky, 1860, *C. jelineki* Daccordi & Yang, sp. nov. and *C.* (*Chrysocrosita*) *josefi* Daccordi & Ge, sp. nov., are described from China and *Chrysolina* (*Pezocrosita*) *kozlovi* Lopatin, 1988 is redescribed. Habitus, aedeagi, spermathecae, antennae of male and female and fore tarsi of male of the three species are illustrated, as well as the larva of *C. kozlovi*. *Chrysolina kozlovi* is most likely viviparous. The genus *Doeberlia* Warchałowski, 2007 is treated as a new synonym of the subgenus *Timarchomela* Achard, 1922. *Chrysolina* (*Timarchomela*) *doeberli* Daccordi & Yang, nom. nov. is proposed as a substitute name for *Doeberlia subopaca* Warchałowski, 2007.

Key words. Chrysomelidae, Chrysomelinae, *Chrysolina*, new species, new synonymy, homonymy replacement, viviparity, China

Introduction

Chrysolina Motschulsky, 1860 is the largest genus in the leaf beetle subfamily Chrysomelinae. It is distributed in Asia, Europe, Africa, North America, and introduced in South America and Australia. In China it is very diverse, with 98 species occurring throughout the country and especially in western China. Among them, 76 species can be classified into 17 subgenera (Bieńkowski 2001) and 22 species are currently of uncertain position. In the present paper, we formally describe two new species of *Chrysolina* from China.

An interesting discovery was also made when dissecting the abdomen of one female of *Chrysolina* (*Pezocrosita*) *kozlovi* Lopatin, 1988: nine well-developed larvae were preserved

inside the abdomen though the specimen had been dried for over 40 years. Later, we have examined several other female specimens which all had well preserved larvae in the abdomen. Viviparity, like parthenogenesis, is not very common among chrysomelids, and seems rather randomly distributed (Bontems & Lee 2008). The genus *Chrysolina* contains a whole continuum ranging from oviparous species to species that incubate eggs inside the mother to species that give birth to larvae which have apparently been nourished inside the mother (Champion & Chapman 1901; Bontems 1981, 1984, 1988). We redescribe *C. kozlovi* and provide images of its larvae.

Finally, we discuss the nomenclatorial status of the genus *Doeberlia* Warchałowski, 2007 and its type species *Doeberlia subopaca* Warchałowski, 2007, which occurs in China as well.

Material and methods

This work is based on internal and external morphological characters. Specimens were examined using a Leica dissecting stereomicroscope with a drawing tube (8–100x magnification). Measurements were made using an ocular micrometer. Internal sclerotized structures were dissected in hot water. Heavily sclerotized parts were soaked in a dilute solution of potassium hydroxide (about 25%), then put in acetic acid and in ethanol; the dissected parts were glued to a triangular label pinned under the specimen. Species have been characterized using colour form, clypeus, eyes, mouth-parts, antennae, pronotum, scutellum, elytra, legs, punctures of head, pronotum, elytra and ventral side.

Type specimens are deposited in following collections:

BMNH Natural History Museum, London, United Kingdom;
HKc Horst Kippenberg collection, Herzogenaurach, Germany;
IZAS Institute of Zoology, Chinese Academy of Sciences, Beijing, China;
MDc Mauro Daccordi collection, Verona, Italy;
NMPC National Museum, Prague, Czech Republic;
ZIN Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Taxonomy

Chrysolina Motschulsky, 1860

Chrysolina Motschulsky, 1860: 210. Type species: *Chrysomela staphylaea* Linnaeus, 1758, by original designation.

Chrysolina (*Chrysocrosita*) *josefi* Daccordi & Ge, sp. nov.

(Figs. 1–7)

Type locality. China, Henan, Lushi, Qihe Linchang, 1200 m a.s.l.

Type material. Holotype: ♂, **CHINA: Henan:** Lushi, Qihe Linchang, 1200 m, 20.vii.2008, leg. Kang-Zhen Dong (IZAS). Paratypes: **CHINA: Henan:** 32 ♂♂ 29 ♀♀, same data as holotype (IZAS, 3 ♂♂ 3 ♀♀ MDc); Lushi: 10 ♂♂ 6 ♀♀, 1700 m, 20.vii.2001, leg. Si-Qin Ge (IZAS); Songxian: Baiyunshan: 2 ♀♀, 1300 m, 10–15.viii.2000, leg. Shen, Ren, Liu, Wang (IZAS); 1 ♀, 1500 m, 20.vii.1999, leg. Xiaocheng Shen (IZAS); 11 ♂♂ 11 ♀♀, 1500 m, 23.vii. 2001, leg. Si-Qin Ge (IZAS); 13 ♀♀ 9 ♂♂, 1600 m, 19.vii.2002, leg. Li-Jie Zhang (IZAS, 2 ♂♂ 2 ♀♀ BMNH); 2 ♂♂ 1 ♀, 1600 m, 19.vii.2002, leg. Wen-Zhu Li (IZAS); 6 ♂♂ 4 ♀♀, 1900 m, 23.vii.2002, leg. Li-Jie Zhang (IZAS, 2 ♂♂ 2 ♀♀ NMPC); 3 ♀♀, leg. Li-Jie Zhang (IZAS); 2 ♂♂ 3 ♀♀, 1600–2000 m, 24.vii.2002, leg. Li-Jie Zhang (IZAS); Songxian: Shaolinsi: 1 ♂, 850 m, 16.vii.2002, leg. Li-Jie Zhang (IZAS); Dengfangxian: Yuhangzhai:

1 ♀, 900m, 17.vii.2002, leg. Li-Jie Zhang (IZAS); Funiu Shan, Shiren shan: 5 ♂♂ 5 ♀♀, 33°42′N, 112°15′E, 2000 m, 15.vi–7.vii.2007, leg. J. Turna (4 ♂♂ 4 ♀♀ MDc, 1 ♂ 1 ♀ BMNH). **Shaanxi:** 7 ♂♂ 2 ♀♀, pass 50 km S. Xi'an road, Xi'an Ning shan 2000 m, 33°8′N, 108°8′E, Qin Ling Shan, 11.vi.2002, leg. J. Turna (4 ♂♂ 2 ♀♀ MDc, 2 ♂♂ BMNH, 1 ♂ in HKc); 1 ♂, Xi'an env., Qin Ling mts., 33°50′933N, 108°48′760E, Jiwozi, 1800 m,1.vii.2007, leg. P. Baňař (MDc). **Shanxi:** 2 ♀♀, Yongji, 9–18.v.2005, leg. E. Kučera (MDc).

Diagnosis. Black with bronze lustre; hind wing absent; pronotum lacking setigerous punctures on both anterior and posterior corners, with shallow lateral longitudinal depression; hind tarsomere 3 complete, entirely pubescent beneath in male and pubescent ventro-laterally in female; elytra with confused punctures; inner edge of epipleuron with bristles along apical third of its length; hypomera wrinkled and without punctures; pygidium with arcuate apex and long, deep, longitudinal median depression.

Description (based on holotype). Colour. Black with bronze lustre; antennomeres 1 and 2 reddish brown; eyes yellowish brown; apex of labrum, apex of clypeus, middle part of mandible, maxilla and galea reddish brown; onychium and claws yellowish brown.

Body. Length: 6.40 mm; width: 3.40 mm. Elongate-ovoid, large; convex in lateral view; hind wings absent (Fig. 1).

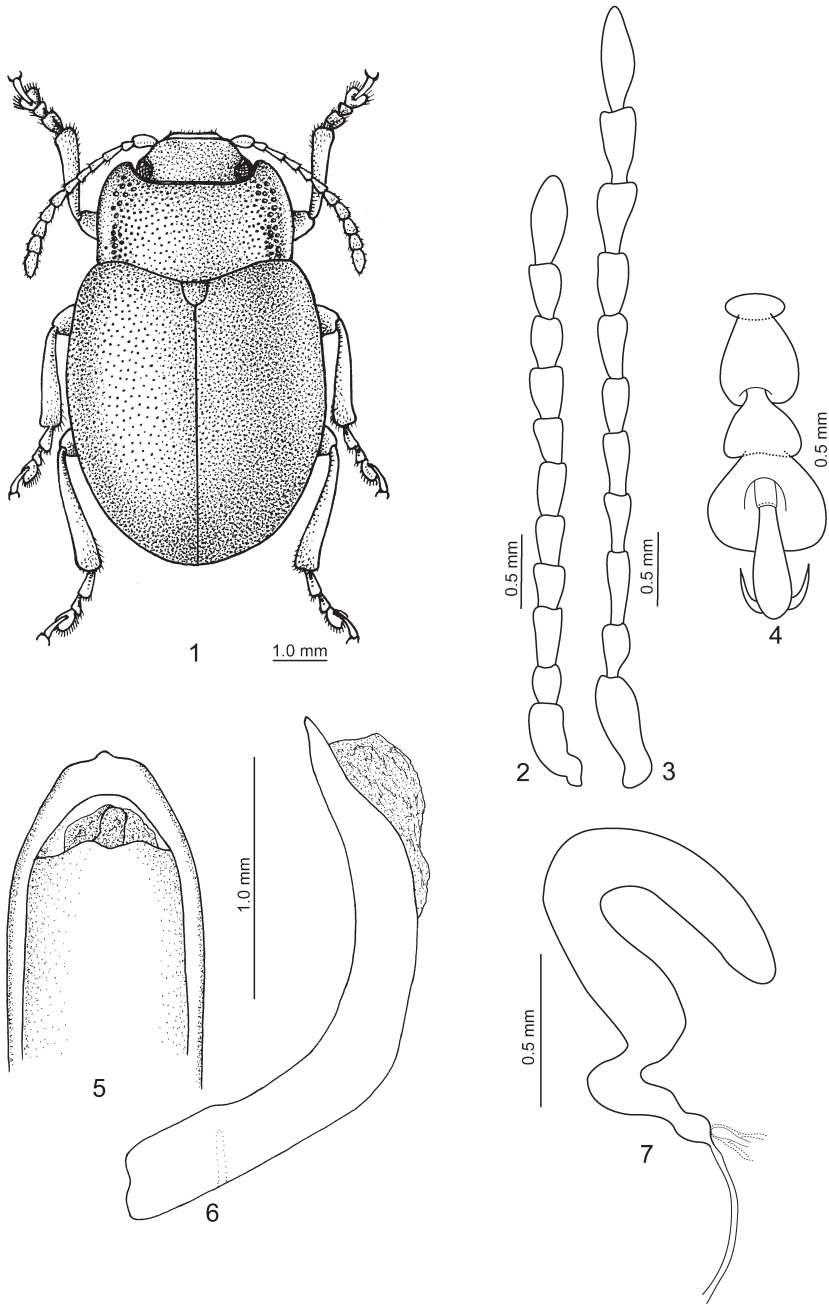
Head. Subprognathous, flat in lateral view; anterofrontal ridge sinuous. Clypeus trapezoid, with sparse pubescence and moderate punctures, base not raised; labrum incised anteromedially; frons smooth with sparse and moderate punctures; coronal suture present, frontal suture absent; vertex with sparse, moderate punctures; eyes oblong, dorso-ventral eye length (measured between dorsal and ventral side of eye) 0.36 mm, interocular distance 1.12 mm; mandible strong, with two denticles, outer surface with sparse and moderate punctures and dense pubescence; maxillary palpomere 3 shorter than palpomere 4, apex of the latter truncate. Antennae extending to base of elytra, with narrow segments; preapical segments as long as broad, not flattened; lengths of antennomeres 1–11 (in mm): 0.32 : 0.24 : 0.32 : 0.24 : 0.24 : 0.24 : 0.32 : 0.32 : 0.32 : 0.32 : 0.52 (Fig. 2).

Prothorax. Length: 1.64 mm; width: 3.28 mm; trapezoidal, cilia of anterior margin present; anterior and posterior margin bordered; lateral margin narrow, distinctly visible from above and lacking setigerous punctures on both anterior and posterior corners; disc smooth, not strongly dilated anterior to middle; punctures on central portion moderate and dense, larger than those of head; disc without antebasal transverse impression and with shallow lateral longitudinal depression and dense punctures in depression near lateral side; punctures lateral to disc large and dense.

Scutellum. Subtriangular, with sparse and small punctures.

Elytra. Length along suture: 5.12 mm; combined width: 4.48 mm. Humeral callus absent; elytra with confused punctures; punctures smaller than those of side of pronotum; epipleuron horizontal, with outer border sharp, inner edge with sparse bristles along apical third of its length.

Legs. Femora slender, with sparse and moderate punctures and sparse pubescence; tibiae slender, with sparse and moderate punctures and sparse pubescence; tibiae with coarse punctures dorsally and dense pubescence apically; apices of all tibiae not expanded externally; fore tarsomere 1 enlarged; hind tarsomere 3 complete and entirely pubescent beneath, with shallow emargination; relative lengths of hind tarsomeres: 5>1>3>2, tarsomere 5 not ventrally toothed (Fig. 4); tarsal claws simple.



Figs. 1–7. *Chrysolina* (*Chrysocrosita*) *josefi* sp. nov. 1 – habitus; 2 – antenna, male; 3 – antenna, female; 4 – fore tarsus, male, dorsal view; 5 – aedeagus, dorsal view; 6 – aedeagus, lateral view; 7 – spermatheca.

Venter. Hypomera wrinkled and without punctures; cilia present on anterior margin of prosternum; middle part of intercoxal prosternal process more than half as wide as apex; prosternum with dense and large punctures, shagreened, truncate posteriorly, and not emarginate; anterior coxal cavities open posteriorly; mesoventrite shorter than prosternum between coxae; intercoxal process of metaventrite bordered and not truncate anteriorly; metaventrite shorter than prosternum, with moderate and dense punctures; mesepisternum, mesepimeron and metepisternum with moderate and sparse punctures; abdominal ventrites with sparse and moderate punctures; ventrite 1 without carina; ventrites not extending to sides; last abdominal ventrite of male without emargination; pygidium with arcuate apex and long deep longitudinal depression medially.

Median lobe of aedeagus (Figs. 5–6). Basal part of median lobe broader than apical part, curved in lateral view.

Female (based on paratypes) distinctly larger and broader than male. Fore tarsomere 1 not enlarged, hind tarsomere 3 with pubescence beneath restricted to ventro-lateral sides. Spermatheca simple, ductus without chitinous bulb (Fig. 7).

Variability. All males of the type series are very similar in size, shape and lustre, some specimens are metallic dark green on dorsum. The aedeagus of most specimens are identical, only the individuals from Shiren Shan, Henan, have the apex slightly narrower and more elongate.

Measurements (paratypes): Body length: 6.24–8.64 mm; body width: 3.20–4.96 mm; pronotum length: 1.52–2.24 mm; pronotum width: 2.88–3.92 mm; length of elytra along suture: 5.28–7.04 mm; combined width of elytra: 4.08–6.08 mm; dorso-ventral eye length: 0.24–0.32 mm; interocular distance 1.12–1.68 mm; lengths of antennomeres 1–11 (in mm): 0.36–0.48 : 0.24 : 0.32–0.48 : 0.24–0.32 : 0.24–0.32 : 0.24–0.32 : 0.32 : 0.32 : 0.32 : 0.32–0.40 : 0.48 (Fig. 3).

Remarks. *Chrysolina josefi* sp. nov. is somewhat similar to *Chrysolina* (*Chrysocrosita*) *sulcicollis* (Fairmaire, 1887) for the punctures of pronotum and elytra, but differs in the morphology of the aedeagus.

Etymology. Named in honour of our friend and colleague Josef Jelínek, past curator in the Department of Entomology, National Museum, Prague.

Host plants. *Artemisia* Linnaeus (Asteraceae).

Distribution. China: Henan, Shanxi and Shaanxi.

Chrysolina jelineki Daccordi & Yang, sp. nov.

(Figs. 8–16)

Type locality. China, Yunnan province, Jingdong, Wuliang Shan, 1850 m a.s.l.

Type material. Holotype: ♂, **CHINA: Yunnan:** Jingdong, Wuliang Shan, 1850 m, 22.iii.1957, leg. D. Panfilov (IZAS). Paratypes: **CHINA: Yunnan:** 1 ♂ 3 ♀♀, same data as holotype (1 ♂ 1 ♀ MDc, 1 ♀ IZAS); Jingdong: 1 ♂, 1200 m, 1.v.1957, leg. A. Monchadski (IZAS); 1 ♂, x.1933, without collector (IZAS); Midu-Jingdong Road,1 ♂, 19.vi.1957, A. Monchadski (IZAS); Dali: 1 ♂, 2100 m, 31.v.1955, leg. Cong-Le Liu (IZAS); 1 ♂, 31.v.1995, above lake Erhai, leg. S. Bečvář (MDc); 5 ♂♂ 2 ♀♀, 22–27.vii.1998, leg. Z. Jindra (MDc); 2 ♂♂ 2 ♀♀, 31.v.–1.vi.1993, leg. R. Červenka (MDc); 1 ♂, Dali, above Lake Erhai, 31.v.1995, leg. S. Bečvář (MDc); Jianchuan: 1 ♂ 2 ♀♀, 6.viii.1936, leg. Qi-Wu Wang (1 ♂ 1 ♀ BMNH, 1♀ IZAS); Fengyi: 1 ♂, 2000 m, 1.vi.1955, V. Popov (IZAS); Lanping: 1 ♂,

2300 m, 21.viii.1984, leg. Shu-Yong Wang (IZAS); Xishuangbanna: 2 ♂♂ 3 ♀♀, 1200–1600 m, 2.vii.1978, leg. Shu-Yong Wang (IZAS, 1 ♂ 1 ♀ NMPC); Lijiang: 3 ♂♂ 1 ♀, Ganhaizi/Lijiang road, Yulongshan Mts., 2500–2800 m, 24–26.vii.1990, leg. V. Kubáň (MDc); 2 ♀♀, Baishui village, 2900–3500 m, 27°08´N, 100°14´E, 7–12.vii.1990, leg. D. Král (MDc); 3 ♀♀, Yulong shan mts., 2900–3500 m, 27°01´N, 100°12´E, 24–26.vi.1993, leg. V. Kubáň (MDc); 1 ♀, Yulong shan mts., 2900–3200 m, 27°00´N 100°12´E, 23–24.vi.1993, leg. V. Kubáň (MDc); Jizu Mts: 2 ♂♂ , 2800 m, 25°58´N, 100°21´E, 30.v.–3.vi.1993, leg. Bolm (MDc); Xishan: 1 ♂ 1 ♀, 2300 m, 24°57´N, 102°38´E, 27.vi.1993, leg. Bolm (MDc); Cangshan: 2 ♂♂ 2 ♀♀, 2800 m, 25°38´N 100°09´E, 6.vi.1993, leg. Bolm (MDc); Cangshan: 4 ♂♂ 3 ♀♀, 2600–3100 m, 25°38´N, 100°09´E, 5–6.vi.1993, leg. V. Kubáň (MDc); Heishu: 1 ♂ 1 ♀, 35 km N Lijiang, 23°13´N, 100°19´E, 18.vi.–4.vii.1993, leg. S. Bečvář (MDc).

Diagnosis. Bronze with metallic purple; hind wings absent; pronotum lacking setigerous punctures on both anterior and posterior corners; elytra slightly shagreened and with regular double striae, interstrial punctures small and very sparse; inner edge of epipleuron with bristles along apical third of its length; hind tarsomere 3 complete and entirely pubescent beneath; hypomeron without punctures and without notopleural suture; pygidium with shallow median groove; basal part of median lobe much narrower than apical part, flagellum slender and long.

Description (based on holotype). Colour. Bronze with metallic purple; antennomeres 1–4 and claws reddish brown.

Body. Length: 5.92 mm; width: 3.20 mm; elongate, moderately large (Fig. 8), convex in lateral view; hind wings absent.

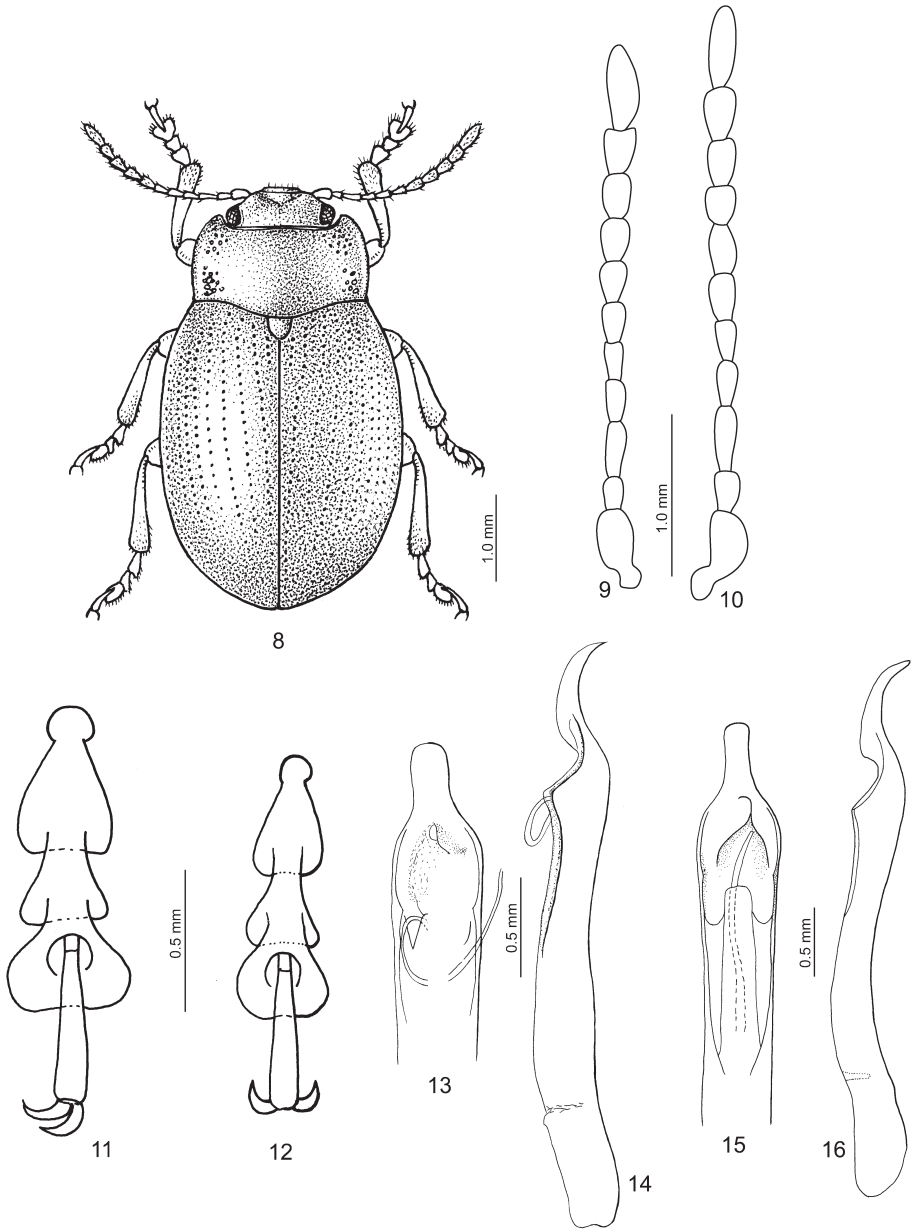
Head. Anterofrontal ridge sinuous; clypeus trapezoidal, with sparse pubescence and without punctures, base not raised; middle part of labrum incised; frons smooth, with sparse, small punctures; coronal suture present, frontal suture present but not very distinct; vertex with sparse and small punctures; eyes elliptic, interocular distance 1.28 mm, dorso-ventral eye length 0.64 mm; outer surface of mandible with sparse pubescence and moderately large and dense punctures; maxillary palpomere 3 shorter than palpomere 4, apex of the latter truncate. Antennae extending to base of elytra, with narrow segments; lengths of antennomeres 1–11 (in mm): 0.32 : 0.16 : 0.24 : 0.16 : 0.16 : 0.16 : 0.24 : 0.32 : 0.32 : 0.32 : 0.48 (Fig. 9).

Prothorax. Length: 2.72 mm; width: 1.28 mm. Cilia of anterior margin present, anterior margin bordered, posterior margin bordered; lateral margin slightly dilated anterior to middle, distinctly visible from above, lacking setigerous punctures on both anterior and posterior corners; punctures on disc sparse and small, same as those on head, punctures laterally to disc slightly larger.

Scutellum. Subtriangular, with sparse punctures.

Elytra. Length along suture: 4.32 mm; combined width: 3.52 mm; humeral calli present; elytra with regular double striae, sutural striole present, punctures as strong as those on sides of pronotum, interstrial punctures small and very sparse, elytra slightly shagreened. Epipleuron horizontal, smooth, outer border sharp, inner edge with bristles along apical third of its length.

Legs. Apices of all tibiae not expanded externally; hind tarsomere 3 complete and entirely pubescent beneath, with shallow emargination (Fig. 11); relative lengths of hind tarsomeres: 5>1>3>2, tarsomere 5 not ventrally toothed; tarsal claws simple.



Figs. 8–16. *Chrysolina* spp. 8–14 – *C. jelineki* sp. nov. 8 – habitus; 9 – antenna, male; 10 – antenna, female; 11 – fore tarsus, male, dorsal view; 12 – fore tarsus, female, dorsal view; 13 – aedeagus, dorsal view; 14 – aedeagus, lateral view. 15–16 – *C. dohertyi* Maulik, 1926 (syntype, Burma). 15 – aedeagus, dorsal view; 16 – aedeagus, lateral view.

Venter. Hypomeron without punctures and without notopleural suture; cilia present on anterior margin of prosternum; middle part of intercoxal prosternal process more than half as wide as apex; prosternum without punctures, truncate posteriorly, not emarginate; anterior coxal cavities open posteriorly; mesoventrite shorter than prosternum between coxae; intercoxal process of metaventrite bordered anteriorly, metaventrite shorter than prosternum; mesepisternum without punctures, mesepimeron and metepisternum with small and sparse punctures; abdominal ventrites with sparse and small punctures; ventrite 1 without carina, last ventrite of male without emargination; pygidium with arcuate apex and shallow groove medially.

Median lobe of aedeagus (Figs. 13–14). Basal part of median lobe much narrower than apical part; flagellum slender and long.

Females on average slightly larger and broader than males. Spermatheca simple, ductus common, without chitinous bulb (Fig. 29).

Variability. All specimens more or less similar in shape and lustre.

Measurements (paratypes): Body length: 5.76–6.56 mm; body width: 3.04–3.36 mm; pronotum length: 2.56–2.88 mm; pronotum width: 1.12–1.28 mm; length of elytra along suture: 4.32–4.96 mm; combined width of elytra: 3.52–3.84 mm; dorso-ventral eye length: 0.62–0.32 mm; interocular distance: 0.96–1.28 mm; average lengths of antennomeres 1–11 (in mm): 0.32–0.36 : 0.16 : 0.24–0.28 : 0.16–0.18 : 0.16–0.18 : 0.16–0.18 : 0.24 : 0.32 : 0.32 : 0.32 : 0.48 (Fig. 10).

Remarks. *Chrysolina jelineki* sp. nov. is similar to *C. dohertyi* Maulik, 1926. Both species have double striated elytra, sparse interstrial punctures, and similar aedeagi. However, *C. jelineki* differs in having antennomeres 6–11 not strongly thickened, the scutellum with sparse punctures, and the apex of aedeagus broader in dorsal view (Figs. 13–16). Bechyně (1950) regarded *C. dohertyi* as a member of the subgenus *Anopachys* Motschulsky, 1860, but Daccordi (1980) included it in the subgenus *Hypericia* Bedel, 1899 because of the double row of punctures on the elytra. However, Bieńkowski (2001) considered that this species has some character states which differ from *Hypericia*, such as the pronotal lateral depression separated from the disc by a wide impression covered with large punctures basally, conspicuous shape of the aedeagus (flat with a narrow and long apical projection and very narrow, whip-shaped flagellum), and concluded that this combination of characters makes it difficult to include *C. dohertyi* in *Hypericia.* We agree with his opinion here and we leave *C. jelineki* sp. nov. in an uncertain position similar to *C. dohertyi* for the time being.

Etymology. Named with respect and affection for Josef Jelínek, past curator in the Department of Entomology, National Museum, Prague.

Distribution. China: Yunnan.

Chrysolina (*Pezocrosita*) *kozlovi* Lopatin, 1988

(Figs. 17–28)

Chrysolina (*Pezocrosita*) *kozlovi* Lopatin, 1988: 586.

Type locality. China, Qinghai, river Chok-Chu.

Type material examined. Holotype: ♂, River Chok-Chu, at the end of August 1900, 11–12000 feet [translated from Russian] / *Chrysolina (Pezocrosita) kozlovi*, sp. n., det. I. Lopatin (ZIN).

Additional material examined. CHINA: Qinghai: Nangqén, 3700 m, 7.vi.1965, 56 ♂♂ 45 ♀♀, leg. Shuyong Wang (IZAS, 1♂ MDc); Yushu, 3750 m, 30.vii. 1960, 16 ♂♂ 15 ♀♀, leg. Shuyong Wang (IZAS); Road Toramarkog – Nangqén, 30 km N Nangqén, ca. 3500 m, 24.vi.1995, 14 ♂♂ 8 ♀♀, leg. Rejsek (MDc); 20 km N Nangqén, cultural steppe, ca. 3300 m; 32°16´N 96°29´E, 5–6.vii.1995, 17 ♂♂ 11 ♀♀, leg. J. Turna (MDc); Road Toramarkog, Nangqén Valley, 26–27.vi.1995, 1 ♂ 2 ♀♀, leg. J. Kaláb (MDc). **Tibet:** Mila, 4600–4800 m, 15 km S of Bangda, 20.vi.1997, 4 ♂♂ 3 ♀♀, leg. A. Wrzecianko (MDc); Bachen Nala 2 km W, 4100 m, 7.vii.1995, 1 ♀, leg. S. Dacatra (MDc).

Diagnosis. Aeruginous with metallic purple; hind wing absent; pronotum lacking setigerous punctures on both anterior and posterior corners, disc with deep lateral longitudinal depression from base until middle part of pronotum, with dense punctures in depression near lateral side; elytra with regular separate striae, inner edge of epipleuron with bristles along apical third of its length; hind tarsomere 3 complete, entirely pubescent beneath in male and pubescent ventro-laterally in female; pygidium with arcuate apex and long, deep, longitudinal median depression.

Redescription. Colour. Head, pronotum, scutellum, and elytra aeruginous with metallic purple; eyes dark brown; antennae yellowish brown, legs yellowish brown; labrum and underside of body reddish brown; mandible yellowish brown, apical part black; maxillary and labial palpi and underside of head yellowish brown.

Body. Length: 4.56–5.76 mm; width: 3.04–3.60 mm; ovoid, moderately large, convex in lateral view. Hind wings absent (Fig. 17).

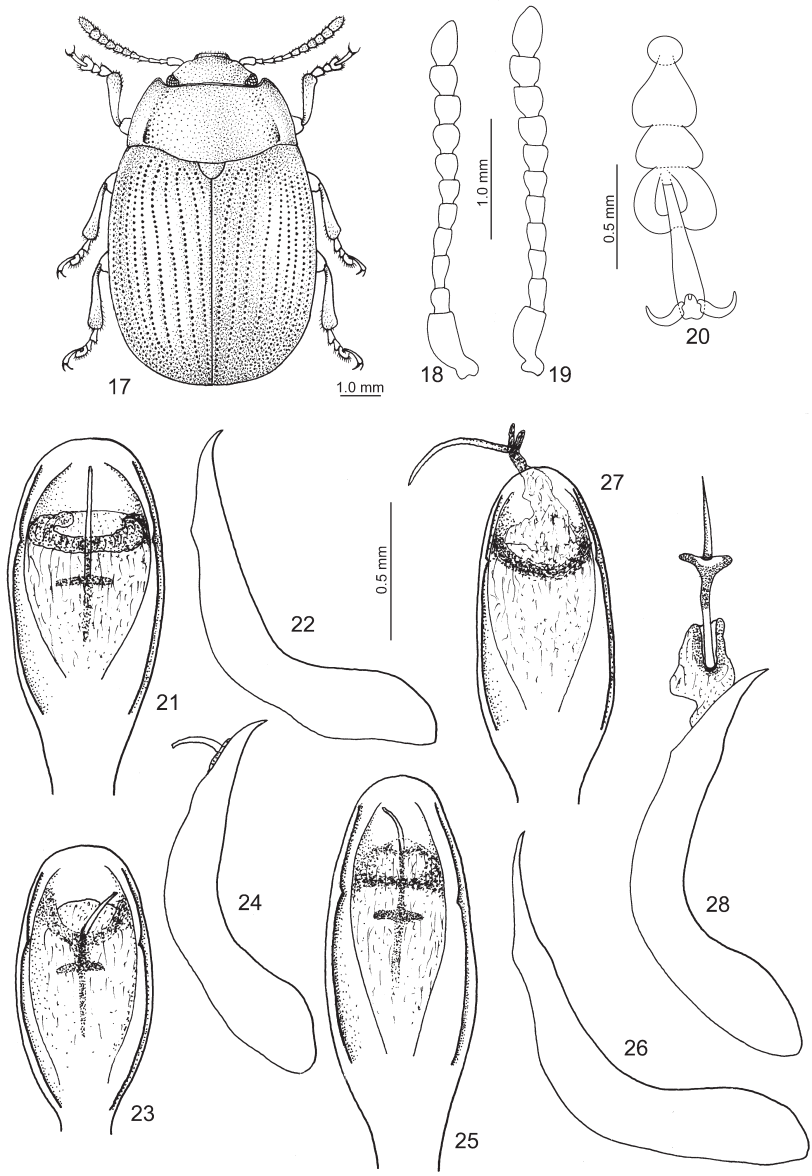
Head. Anterofrontal ridge sinuous; clypeus trapezoidal, with small, sparse punctures and sparse pubescence, base not raised; middle part of labrum incised; frons smooth, with sparse, small punctures; coronal suture present, frontal suture absent; vertex with sparse and small punctures; eyes elliptic, dorso-ventral eye length 0.24–0.32 mm, interocular distance 1.28–1.36 mm; mandible strong, outer surface with sparse pubescence; maxillary palpomere 3 shorter than palpomere 4, apex of the latter truncate. Antennae exceeding base of elytra; subapical segments flattened, broader than long; lengths of antennomeres 1–11 (in mm): 0.24–0.28 : 0.16 : 0.16 : 0.16 : 0.12–0.14 : 0.12–0.14 : 0.12–0.14 : 0.12–0.14 : 0.16 : 0.16–0.20 : 0.24–0.28 (Figs. 18, 19).

Prothorax. Length: 1.44–1.68 mm; width: 2.96–3.20 mm. Cilia on anterior margin of pronotum present, anterior margin and posterior margin bordered; lateral margin not strongly dilated anterior to middle, barely visible from above and lacking setigerous punctures on both anterior and posterior corners; punctures on central part small and sparse, same as those on head; punctures lateral to disc much larger and denser; disc with deep lateral longitudinal depression from base until middle part of pronotum, with dense punctures in depression near lateral side.

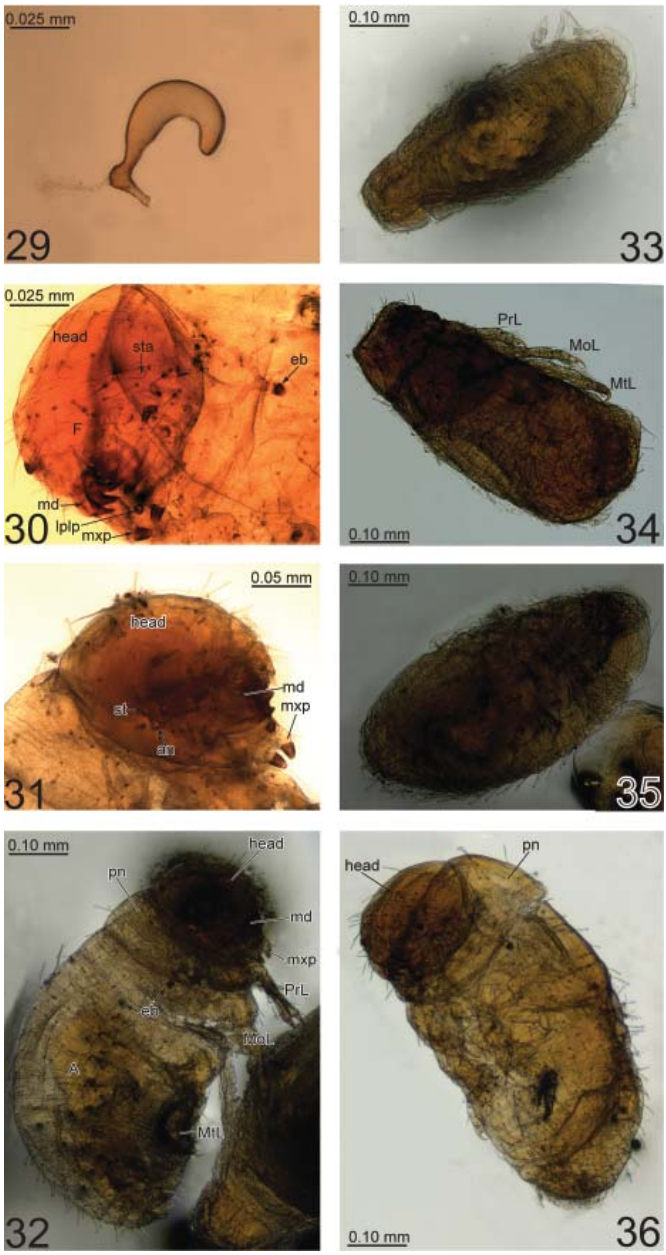
Scutellum. Half-rounded, with sparse punctures.

Elytra. Length along suture: 4.08–4.64 mm; combined width: 3.44–4.24 mm. Humeral calli present; elytra with regular separate striae, sutural striole present, punctures larger than those on side of pronotum; interstrial punctures small and sparse, shargeened especially in apical third. Epipleuron horizontal, smooth, outer edge sharp, inner edge of epipleuron with bristles along apical third of its length.

Legs. Apices of all tibiae not expanded externally; hind tarsomere 3 complete and entirely pubescent beneath and with shallow emargination in male (Fig. 20), pubescent ventro-laterally



Figs. 17–28. *Chrysolina* (*Pezocrosita*) *kozlovi* Lopatin, 1988. 17 – habitus; 18 – antenna, male; 19 – antenna, female; 20 – fore tarsus, male, dorsal view; 21 – aedeagus, dorsal view (specimen from Qinghai, Nangqén, 3700 m); 22 – aedeagus (same specimen as in Fig. 21), lateral view; 23 – aedeagus, dorsal view (specimen from Tibet, Mila); 24 – aedeagus (same specimen as in Fig. 23), lateral view; 25 – aedeagus, dorsal view (specimen from southeastern Qinghai, road Toramarkog-Nangqén); 26 – aedeagus, lateral view (same specimen as in Fig. 25); 27 – aedeagus, dorsal view (specimen from southern Qinghai, 20 km north of Nangqén); 28 – aedeagus, lateral view (same specimen as in Fig. 27).



Figs. 29–36. 29 – *Chrysolina jelineki* sp. nov., spermatheca. 30–36 – *C.* (*Pezocrosita*) *kozlovi* Lopatin, 1988, larva. 30–31 – head, lateral view; 32 – habitus, lateral view; 33 – habitus, with membrane outside; 34 – habitus, dorsal view; 35–36 – habitus, lateral view. Abbreviations: A – abdomen; an – antennae; eb – egg burster; F – frons; lplp – labial palpi; md – mandible; MtL – hind leg; mxp – maxillary palpi; Pn – pronotum; PrL – proleg; sta – stemmata.

in female; relative lengths of hind tarsomeres: 5>1>3>2, tarsomere 5 not ventrally toothed; tarsal claws simple.

Venter. Hypomeron without punctures and without notopleural suture; cilia present on anterior margin of prosternum; middle part of intercoxal prosternal process more than half as wide as apex; prosternum, mesoventrite and metaventrite with moderate and sparse punctures; prosternum truncate posteriorly, not emarginate; anterior coxal cavities open posteriorly; mesoventrite shorter than prosternum between coxae; intercoxal process of metaventrite bordered and truncate anteriorly, metaventrite shorter than prosternum; mesepisternum, mesepimeron and metepisternum with small and sparse punctures; abdominal ventrites with moderate and sparse punctures; ventrite 1 without carina, last ventrite of male slightly sinuated on either side of middle of apex; pygidium deeply grooved medially, with arcuate apex.

Median lobe of aedeagus (Figs. 21–28). Basal part of median lobe little narrower than apical part, base not fissured, flagellum well developed, cross-shaped before apex (Figs. 21, 23, 25, 27).

Females slightly larger and broader, but not significantly different from males; punctures of pronotum denser than in males; fore tarsomere 1 much thinner and more slender than in males. Spermatheca absent.

Larva. *Chrysolina kozlovi* is most likely viviparous: we have found well-developed first-instar larvae inside the abdomen of one mature female. The larvae have typical characters of *Chrysolina*: body convex, yellowish brown, head darker; body length: 1.06–1.28 mm; body covered with setae all over the surface; antennae, mouthparts and stemmata well developed; abdomen without pygopod; meso- and metathorax and abdominal segment 1 with a pair of egg bursters; tubercles unclear or not developed; claws simple.

Variability. All males of the type series are very similar in size, shape and lustre. The shape of the aedeagus, however, slightly differs in specimens from different localities and even in different specimens from the same locality (Figs. 21–28). In some specimens, the elytral punctures are not very clear and the lateral depression of pronotum are complete along the whole pronotal length. In two specimens examined, the body colour is violet; another specimen is dark green with a violet reflection on the pronotum.

Discussion. We consider a redescription of *C. kozlovi* necessary because of its remarkable variability. The shape of the aedeagus varies between different localities as well as between specimens from the same locality. Such phenomenon has been indicated only for a few other species (Bieńkowski 1998, Kippenberg 2004). Further studies are necessary to understand possible subspecific structure of *C. kozlovi* in the alpine regions of southwestern China.

Remarks. *Chrysolina* (*Pezocrosita*) *kozlovi* Lopatin is somewhat similar to *C.* (*P.*) *yupeiyuae* Lopatin, 1998 for the punctures of pronotum and elytra and the coloration of the body, but differs in the morphology of the aedeagus.

Distribution. China: Qinghai and Tibet.

Nomenclatorial notes on *Doeberlia* Warchałowski, 2007

Warchałowski (2007) established a new genus, *Doeberlia* Warchalowski, 2007, with the type species *Doeberlia subopaca* Warchałowski, 2007 from Hunan, China. He based the diagnosis of *Doeberlia* on the absence of bristles on the inner margin of epipleura and a very

peculiar aedeagus. Bristles on the inner margin of epipleura are, however, absent also in some subgenera of the genus *Chrysolina*, such as *Timarchida* Ganglbauer, 1897, *Timarchomela* Achard, 1922, and *Semenowia* Weise, 1889. Moreover, we found at least one species assigned to *Chrysolina* from China with the same type of "peculiar aedeagus", namely *Chrysolina* (*Timarchomela*) *aeneolucens* (Achard, 1922). Therefore, we consider this combination of characters as insufficient to establish a separate genus and propose to treat *Doeberlia* as a new synonym of *Timarchomela*.

The species-group name *Chrysolina* (*Timarchomela*) *subopaca* (Warchałowski), comb. nov. is, however, preoccupied by *Chrysolina subopaca* (Rogers, 1856) which is currently treated as a synonym of *C.* (*Allohypericia*) *inornata* (Rogers, 1856) (Bieńkowski 2001). To replace the secondary homonymy arising from the transfer of *Doeberlia subopaca* Warchałowski to *Chrysolina*, we propose a new substitute name for it, *Chrysolina* (*Timarchomela*) *doeberli* Daccordi & Yang, nom. nov., according to Art. 60.3 of ICZN (1999) and in order to honour our meritorious colleague Manfred Döberl.

Chrysolina (*Timarchomela*) Achard, 1922

Timarchomela Achard, 1922: 17. Type species: not designated.

Doeberlia Warchałowski 2007: 481–482, **syn. nov.** Type species: *Doeberlia subopaca* Warchałowski, 2007, by monotypy.

Chrysolina (*Timarchomela*) *doeberli* Daccordi & Yang, nom. nov.

Doeberlia subopaca Warchałowski, 2007: 481–482. Secondary homonym to *Chrysolina subopaca* Rogers, 1856: 36.

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