

HYDROPHILIDAE:

II. The Chinese species of *Crenitis* BEDEL, with descriptions of two new species

(Hydrophilidae)

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Abstract

The known Chinese species of *Crenitis* BEDEL (Coleoptera: Hydrophilidae) are reviewed: *C. apicalis* REITTER (Liaoning, Jilin), *C. cordula* HEBAUER (Yunnan), *C. formosana* HEBAUER (Taiwan), *C. primorica* HEBAUER (Liaoning) and *C. satoi* HEBAUER (Taiwan); *C. primorica* is recorded for the first time from China; *C. apicalis* is recorded for the first time from Liaoning. Two new species are described: *C. convexa* sp.n. (Shaanxi, Yunnan) and *C. shaanxiensis* sp.n. (Shaanxi). One new synonymy is proposed: *Crenitis apicalis* (= *C. protuberans* JIA syn.n.).

Key words: Coleoptera, Hydrophilidae, *Crenitis*, China, new records, new species.

Introduction

The taxonomy of the hydrophilid genus *Crenitis* BEDEL, 1891 was treated by HEBAUER (1994), who recorded 23 species from the Old World (Asia and Africa) and 15 species from the New World. Since then, one new species was described (JIA 1996).

Six species of *Crenitis* were recorded from China (see HEBAUER 1994, GENTILI et al. 1995, JIA 1996). Based on a single female, HEBAUER (1994) uncritically recorded the Japanese *Crenitis osawai* NAKANE, 1966 from Taiwan. Due to the fact that *H. osawai* cannot be distinguished from *C. formosana* HEBAUER, 1994 except by the male genitalia (see HEBAUER 1994: 27) here it is removed from the list of Chinese *Crenitis*.

Two new species are described herein, one new synonymy is established, and one species is recorded here from China for the first time.

Material and methods

Specimens were examined with a Wild M3C stereoscopic microscope with direct lighting and a Wild M10 stereoscopic microscope with diffuse lighting. Aedeagi were examined with an Olympus BH-2 transmitted light microscope and illustrated with the aid of a drawing tube attached to the Olympus BH-2.

Male genitalia were placed in concentrated lactic acid in a cavity slide for at least several days before they were examined and illustrated.

Acronyms & CWBS localities:

CASS	Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang
CHG	Coll. F. Hebauer, Grafing
CPE	Coll. Pütz, Eisenhüttenstadt
CWBS	China Water Beetles Survey
MHNG	Museum d'Histoire naturelle Genève
MNS	Staatliches Museum für Naturkunde, Stuttgart
NMW	Naturhistorisches Museum Wien
NSMT	National Science Museum, Tokyo
TMB	Természettudományi Múzeum, Budapest

- CWBS loc. 67: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; several unshaded pools in the surroundings of Baihe City, near Academia Sinica Changbai Mountain Research Station, ca. 700 m a.s.l.; 15.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 4].
- CWBS loc. 74: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 50 km N Baihe City, near the road to Changbai Mountain; stream, 2 m wide, very cold, flowing through primary coniferous forest, 1100 m a.s.l.; 16.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 11].
- CWBS loc. 75: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; on the way to top of Changbai Mountain, ca. 50 km N Baihe City, ca. 200 m N of Bai Shan Station; stream, ca. 3 m wide, basalt, warm water (probably thermally heated), flowing through degraded primary forest, 1100 m a.s.l.; 16.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 12].
- CWBS loc. 76: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; 6 km W Baihe City; Toudao Bai He (= 1st White River), ca. 20 m wide, basalt, 600 m a.s.l.; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 13].
- CWBS loc. 77: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; springfed pool, ca. 50 m from CWBS loc. 76, unshaded; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 14].
- CWBS loc. 78: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; near Hongsi Forest Station, ca. 30 km NE Baihe City; stream, ca. 3 m wide, through primary broadleaf forest, basalt, ca. 650 m a.s.l.; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 15]; (see JÄCH & Ji 1995: Fig. 23).
- CWBS loc. 79: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; shallow pool with muddy edges, close to CWBS loc. 78; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 16].
- CWBS loc. 80: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 30 km NE Baihe City; near Hongsi Forest Station; Sidao Bai He (= 4th White River), ca. 30 m wide, ca. 650 m a.s.l.; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 17].
- CWBS loc. 81: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; near Baihe City; Erdao Bai He [river], below the power plant dam, ca. 4 m wide, degraded primary forest, ca. 650 m a.s.l.; 17.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 18].
- CWBS loc. 83: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 80 km SE Baihe City; shallow, unshaded roadside rain pools; 18.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 20].

- CWBS loc. 84: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 70 km SE Baihe City; blackwater stream, 3 - 5 m wide, slowly flowing, very cold water, margins with *Sphagnum*, 1100 m a.s.l.; 18.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 20a].
- CWBS loc. 86: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 40 km SE Baihe City; Heilong Jiang (= Black Dragon River), 2 - 3 m wide, very cold water, flowing through dense forest, ca. 900 m a.s.l.; 18.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 22].
- CWBS loc. 89: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; surroundings of Changbai Mountain Research Station, along the road to Changbai Mountain; unshaded roadside pools, ca. 750 m a.s.l.; 19.VIII.1994; leg. M.A. Jäch; [locality number on label: 25].
- CWBS loc. 90: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; near Power Plant of Baihe City; forest pool, obviously springfed, rich in decaying organic matter, in primary forest, cool water, ca. 750 m a.s.l.; 19.VIII.1994; leg. M.A. Jäch; [locality number on label: 26].
- CWBS loc. 92: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City; Baohujü District; Erdao Bai He [river] below Erdao Bai He Power Plant, near Baihe City, near CWBS loc. 81, but further upriver, below the big dam, ca. 750 m a.s.l.; 19.VIII.1994; leg. M.A. Jäch; [locality number on label: 28].
- CWBS loc. 93: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; near Power Plant of Baihe City, near CWBS loc. 90; unshaded, springfed pools, cold water, ca. 750 m a.s.l.; 19.VIII.1994; leg. M.A. Jäch; [locality number on label: 29].
- CWBS loc. 94: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 62 km N Baihe City; hot spring, 1 km below the waterfall, temperature varying between 10°C - 50°C within a few centimeters, ca. 1800 m a.s.l.; 20.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 30]; (see JÄCH & JI 1995: Fig. 20).
- CWBS loc. 95: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 62 km N Baihe City; Erdao Bai He [river], including pools on gravel bank, ca. 1750 m a.s.l.; 20.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 31]; (see JÄCH & JI 1995: Fig. 21).
- CWBS loc. 96: **Liaoning Province**; Jinzhou City Region; Beizhen County; Yiwulü Shan; ca. 5 km NW Beizhen City (Guaning); Toudao Gou He (= 1st Valley River), 2 - 5 m wide, only partly shaded, flowing through Chinese Pine (*Pinus tabulaeformis*) forest, strongly washed out due to heavy spates which occurred two weeks before, ca. 200 m a.s.l.; 22.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 32].
- CWBS loc. 101: **Liaoning Province**; Jinzhou City Region; Beizhen County; Yiwulü Shan, ca. 15 km W Beizhen City; small stream, ca. 1 m wide, partly through secondary forest, granite, ca. 200 m a.s.l.; 23.VIII.1994; leg. M.A. Jäch, L. Ji & M. Wang; [locality number on label: 37].
- CWBS loc. 102: **Liaoning Province**; Fushun City Region; Xinbin County; 70 km NE Fushun City; 3 km S Nanzamu Township; small stream, unpolluted, ca. 1 m wide, slowly flowing, ca. 18°C, shaded, with gravel, incl. rock pools, some stones with moss, flowing through secondary forest (*Larix* sp., *Maackia* sp. and other shrubs), ca. 180 - 200 m a.s.l.; 10.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 38].
- CWBS loc. 105: **Liaoning Province**; Fushun City Region; Xinbin County; 80 km NE Fushun City; small stream, fast flowing; 11.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 41].
- CWBS loc. 106: **Liaoning Province**; Fushun City Region; Xinbin County; 80 km NE Fushun City; ground water pool near CWBS loc. 105, shallow, warm, muddy margin, ca. 1 m², unshaded, unpolluted; 11.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 42].

- CWBS loc. 107: **Liaoning Province**; Fushun City Region; Xinbin County; 80 km NE Fushun City; 6 km SW Liujiazi Village; small, cold stream, ca. 0.5 - 1 m wide, gravel, shaded, some stones with moss, decaying plant material, river margin covered by rich vegetation, *Larix* sp., *Pinus* sp., *Crataegus* sp., *Juglans* sp., ca. 130 m a.s.l.; 11.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 43].
- CWBS loc. 108: **Liaoning Province**; Fushun City Region; Qingyuang County; 120 km NE Fushun City; 4 km W Douhutun Town; Shiaoja Gou; small, cold stream, ca. 0.5 - 1 m wide, shaded, gravel, including rock pools, unpolluted, surrounding vegetation composed of shrubs, ca. 100 m a.s.l.; 12.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 44].
- CWBS loc. 112: **Liaoning Province**; Dandong City Region; Fengcheng County; Fenghuang Shan, 5 km SE Fengcheng City; stream, slowly flowing through secondary forest, ca. 2 - 3 m wide, granite, shaded, gravel and mud, rock pools, decaying plant material, unpolluted, ca. 15°C, surrounding vegetation composed of big trees (*Larix* sp., *Salix* sp., *Robinia* sp.), ca. 120 m a.s.l.; 24.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 48].
- CWBS loc. 119: **Liaoning Province**; Dandong City Region; Fengcheng County; 8 km N Tongyuanpu Village; Xiao Hei Shan (= Small Black Hill); small and shallow ground water pool, margin with mud, ca. 200 m a.s.l.; 25.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 55].
- CWBS loc. 120: **Liaoning Province**; Dandong City Region; Fengcheng County; Xiao Hei Shan; small stream above CWBS loc. 119, 0.5 - 1 m wide, slowly flowing, limestone, shaded, unpolluted, gravel, mud and sand, including gravel pools, decaying leaves, 18°C, rich vegetation of *Larix* sp., *Pinus* sp., *Castanea* sp., *Robinia* sp., *Populus* sp. and *Quercus* sp.; 25.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 56].
- CWBS loc. 125: **Liaoning Province**; Benxi City Region; Benxi County; ca. 50 km SE Benxi City; small stream, ca. 1 m wide, fast flowing, limestone, shaded, gravel, sand and stones with moss, very cold, ca. 13°C, very rich vegetation of *Juglans* sp., *Larix* sp., *Salix* sp., *Crataegus* sp., ca. 300 m a.s.l.; 26.IX.1994; leg. L. Ji & M. Wang; [locality number on label: 61].
- CWBS loc. 158: **Liaoning Province**; Dandong City Region; Kuandian County; Baishila Natural Reserve; ca. 35 km NE Kuandian City; small stream near the Village, ca. 0.5 m wide, slowly flowing, unshaded, mud and gravel, banks with gravel pools, 400 m a.s.l.; 30.VIII. 1995; leg. L. Ji & M. Wang.
- CWBS loc. 159: **Liaoning Province**; Dandong City Region; Kuandian County; Baishila Natural Reserve; ca. 35 km NE Kuandian City, 9 km N of Baishila Village; small stream (named Jiamian Gou by local people), ca. 0.5 m wide, fast flowing, cold, shaded, gravel, incl. gravel pools, 520 m a.s.l.; 30.VIII.1995; leg. L. Ji & M. Wang.
- CWBS loc. 160: **Liaoning Province**; Dandong City Region; Kuandian County; Baishila Natural Reserve; ca. 35 km NE Kuandian City; 10 km N of Baishila Village; rain and ground water pool (ca. 3 m²), surrounded by forest, cold water, shaded, with mud and gravel, 500 m a.s.l.; 30.VIII.1995; leg. L. Ji & M. Wang.
- CWBS loc. 162: **Liaoning Province**; Dandong City Region; Kuandian County; Baishila Natural Reserve; ca. 35 km NE Kuandian City; 12 km N of Baishila Village; stream (Gaoligou He), ca. 3 m wide, unshaded, with gravel, 520 m a.s.l.; 31.VIII.1995; leg. L. Ji & M. Wang.
- CWBS loc. 164: **Liaoning Province**; Dandong City Region; Kuandian County; Qingshangou Forest Park; ca. 50 km NE Kuandian City; small stream (Nangou (= South Valley)), ca. 1 m wide, cold and fast flowing, shaded and unpolluted, with rocks and gravel, limestone, 300 m a.s.l.; 1.IX.1995; leg. L. Ji & M. Wang.
- CWBS loc. 165: **Liaoning Province**; Dandong City Region; Kuandian County; Qingshangou Forest Park; ca. 50 km NE Kuandian City; small stream (Beigou (= North Valley)), ca. 0.5 m wide, very cold and fast flowing, shaded and unpolluted, with rocks and gravel, limestone, 300 m a.s.l.; 1.IX.1995; leg. L. Ji & M. Wang.

CWBS loc. 313: **Shaanxi Province**; Ankang Prefecture; Ningshan County; 5 km NW Huoditang Town; stream (Huodi Gou), ca. 2 m wide, fast flowing, very cold, with boulders, sand and gravel, surrounded by dense forest, unpolluted, ca. 1900 m a.s.l.; 5.VI.1998; leg. M. Wang.

Key to the Chinese species of *Crenitis*

- 1 Body length: 1.7 - 2.2 mm; body form elongate (Fig. 11). Eight antennomeres. Reliable separation by male genitalia only..... 2
- Body length: 2.8 - 3.3 mm; body form oval to broadly oval (Figs. 8 – 10). Nine antennomeres 4
- 2 Maxillary palpomere 2 moderately swollen. Parameres concave at inner face, rounded apically *primorica*
- Maxillary palpomere 2 conspicuously swollen. Parameres straight at inner face or sharply pointed apically..... 3
- 3 Median lobe of aedeagus rounded apically; parameres sharply pointed apically, strongly convex at outer face *satoi*
- Median lobe of aedeagus straight apically; parameres moderately rounded apically, straight or rather slightly convex at outer face *formosana*
- 4 Body form broadly oval. Elytral striae very distinct, strongly impressed; intervals slightly convex *convexa* sp.n.
- Body form moderately oval. Elytral striae less distinct, slightly impressed; intervals flat..... 5
- 5 Pronotum without impressions. Pronotal punctures evenly distributed. Elytra rounded apically. *apicalis*
- Pronotum with distinct impressions. Pronotal punctures distinctly coarser and more aggregated towards lateral margins. Elytra slightly attenuated apically..... 6
- 6 Mesoventrite with blunt protuberance posteromesally. Head and pronotum weakly microsculptured. Parameres truncate apically..... *cordula*
- Mesoventrite with low transverse ridge posteromesally. Head and pronotum without microsculpture. Parameres rounded apically *shaanxiensis* sp.n.

Crenitis apicalis (REITTER)

Paracymus apicalis REITTER 1896: 285. - HEBAUER 1994: 16. - GENTILI et al. 1995: 210.

Crenitis protuberans JIA 1996: 96 (= **syn.n.**).

TYPE LOCALITY: Eastern Siberia.

TYPE MATERIAL: **Holotype** ♂ (TMB): "Paracymus apicalis Rtt. / Transbaikalien, Leder, Reitter". **Paratype**: 1 ♂ (NMW): "Transbaikalien, Leder, Reitter / Paracymus apicalis Rtt. n. sp. / TYPUS / Crenitis apicalis REITT. det. F.HEBAUER '93" (NMW). Holotype not examined.

ADDITIONAL MATERIAL EXAMINED:

C H I N A: JILIN: CWBS locs. 67, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 86, 89, 90, 92, 93, 94, 95; LIAONING: CWBS loc. 96, 101, 102, 105, 106, 107, 108, 112, 119, 120, 125, 158, 159, 160, 162, 164, 165 (all specimens deposited in NMW and CASS).

R U S S I A: Vladivostok, leg. H. Friebe (NMW); Siberia, leg. Reitter, (NMW); Primorye, Slavianska, Riazanovka, 17.-23.VII.1992, leg. D. Boukal (NMW); Primorye, Novochuguevka, 26.-31.VII.1992, leg. D. Boukal (NMW); Primorye, Ussuriisk, Kaimanovka, 2.-9.VIII.1992, leg. D. Boukal (NMW); Primorye, Arsenjev, VI.1991, leg. M. Štrba (NMW).

SYNONYMY: JIA (1996) described *C. protuberans* from Heilongjiang indicating that it resembles *C. punctatostriata* (LETZNER) differing mainly by mesoventrite with small round median protuberance posteriorly, by punctures on elytra sparsely lined, by lateral margin of pronotum nearly straight and body less convex. We have collected about 600 specimens of

C. apicalis from Jilin and Liaoning Provinces. These specimens agree very well with *C. apicalis* and with the original description of *C. protuberans*, which is therefore regarded as a junior synonym of *C. apicalis*.

DIAGNOSIS: 3.1 - 3.5 mm. Body convex, moderately oval (Fig. 8). Dorsal surface of head, pronotum, and elytra reddish brown to black, shining. Clypeus and frons evenly convex, without impressions, densely covered with very coarse punctures, becoming coarser and more aggregated towards margins, intervals with very indistinct microsculpture. Nine antennomeres. Frontoclypeal suture indistinct. Maxillary palpi reddish brown, palpomere 2 swollen, palpomere 4 infusate, asymmetrical with straighter inner face. Pronotum evenly convex, without impressions, with evenly distributed, dense and coarse punctures as on head, intervals smooth and shining, very weakly shagreened. Lateral and anterior margins of pronotum weakly beaded; anterior margin strongly bisinuate, with distinctly projecting anterior corners, posterior margin weakly bisinuate, lateral margin gradually converging anteriorly in weakly curved lines. Elytra with coarse irregular punctures and ten indistinct striae of coarse serial punctures in posterior half. Sutural stria extended in more than posterior half, deeply impressed. Elytra broadly rounded apically. Pseudepipleuræ almost vertical, epipleura oblique. Mesoventrite bulging mesally, with small blunt protuberance posteromesally. Metaventrite with distinctly bulging partially glabrous mesal area, abruptly raised and thus set off from lateral portion. Thoracic and abdominal ventrites black, femora partially, tibiae, tarsi, epipleura reddish brown. Mesofemora pubescent in proximal two third. Metafemora pubescent basally and on proximal half of anterior margin. Apical margin of fifth abdominal sternite rounded.

Aedeagus (Fig. 1): Median lobe elongate, gradually narrowed towards apex. Parameres almost parallel-sided at middle and strongly concave along inner face of apical half; broadly rounded apically.

This species can be separated from the similar *C. cordula* and *C. shaanxiensis* by evenly convex pronotum without impressions, evenly distributed pronotal punctures and rounded elytral apex.

DISTRIBUTION: China (Jilin, Liaoning), Russian Far East (Primorye).

Crenitis convexa sp.n.

Crenitis cordula HEBAUER 1994: 18 (ex parte).

TYPE LOCALITY: Qin Ling, 108.47° E / 33.51° N, 47 km S of Xi'an, Shaanxi, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "China: Shaanxi, Qin Ling Shan 108.47 E, 33.51 N, Mountain W pass at Autoroute km 70, 47 km S Xian 2300 - 2500m, sifted 26.-30.08.1995, leg. M. Schülke". **Paratypes:** 1 ♂, 1 ♀: "China: Shaanxi, Qin Ling Shan 107.56 E. 33.45 N, Autoroute km 93 S of Zhouzhi, 108 km SW Xian Mountain Forest, sifted, 1650 m 1.-2.09.1995, leg. A. Pütz" (CPE, NMW); 2 ♂♂: "CHINA: Shaanxi, Qin Ling 107°56'E 33°45'N 108 km SW Xian Autoroute km 93 S Zhouzhi / 1650 m, sifted 1. - 2.9. 1995 leg. M. Schülke" (NMW); 1 ♂: "CHINA: Shaanxi, 5.6. 1998 Ningshan Co., ca. 1900m 5km NW Huoditang leg. M. Wang (CWBS 313)" (NMW); 1 ♂: "CHINA: Sichuan Gongga Shan, Hailuoguo, Lake above Camp 2, 2750 m 29°35'N, 102°00'E, 4.VII. 1998, A. Smetana [C74] / 1998 China Expedition, J. Farkaš, D. Král, J. Schneider & A. Smetana" (NMW); 3 ♂♂: "China: Sichuan, Ganzi pref. Daxue Shan, 102.00 E. 30.03 N, 5km E Kangding, valley ca. 3000m, 20./23.V. 1997, leg. A. Pütz" (CPE); 26 exs.: "CHINA: W-Hubei Daba Shan pass E of Mt. Da Shennongjia 12 km NW Muyuping 31°30'N 110°21'E. 2050 m 19.7. 01 A. Smetana [C112]" (NMW, CASS); 1 ♂: "China Yunnan 1.-19.VII. HEISHUI, 35km N Lijiang 27°13'N 100°19'E E.Jendek leg. 1992" (NMW); 1 ♂, 2 ♀♀: "CHINA-Yunnan 24.-29.6. 50 km N Lijiang, 1993 Yulongshan Nat. Res. E.Jendek & O.Sausa leg." (NMW, CASS).

DIAGNOSIS: 2.8 - 3.3 mm. Body convex, broadly oval (Fig. 9). Dorsal surface shining, head black, pronotum reddish brown to dark brown, yellowish to reddish brown at anterior and lateral margin, elytra reddish brown to dark brown. Clypeus and frons with slight shallow impressions, densely covered with unevenly distributed coarse punctures, more aggregated towards lateral margins; intervals weakly shagreened. Frontoclypeal suture weak. Nine antennomeres. Maxillary

palpi reddish brown, palpomere 2 swollen, palpomere 4 infusate, almost symmetrical. Pronotum with distinct, shallow paramedian impressions and weak impressions near lateral margins; with dense and coarse punctures, becoming distinctly coarser and more aggregated laterally to paramedian impressions; intervals between punctures smooth and shining, very weakly shagreened. Lateral and anterior margins of pronotum weakly beaded; anterior margin strongly bisinuate, with distinctly projecting anterior corners, posterior margin weakly bisinuate; lateral margin gradually converging anteriorly in weakly curved lines. Elytra with fine irregular punctures, distributed between ten distinct striae, extending from base to apex, consisting of coarse punctures, becoming strongly impressed towards apex. Intervals between striae convex. Sutural stria extended in more than posterior half, deeply impressed. Elytra slightly attenuated towards apex. Pseudepipleura and epipleura oblique. Mesoventrite bulging mesally; with distinct horizontal ridge posteromesally. Metaventrte with distinctly bulging, partially glabrous mesal area, abruptly raised and thus set off from lateral portion. Thoracic and abdominal ventrites black, femora partially, tibiae, tarsi, epipleura reddish brown. Mesofemora pubescent in proximal two third. Metafemora pubescent basally and on proximal half of anterior margin. Apical margin of fifth abdominal sternite rounded.

Aedeagus (Fig. 2): Median lobe elongate, rather similar to *C. shaanxiensis*, but rounded apically, shorter than parameres, outer face of parameres broadly convex., almost as long as parameres. Parameres straight at inner face, broadly rounded apically.

This species resembles *C. cordula* and *C. shaanxiensis*, from which it can be separated by broadly oval form of body, pronotum with distinct impressions, mesoventrite with conspicuous horizontal ridge and distinctly impressed elytral striae.

DISTRIBUTION: China (Shaanxi, Yunnan, Sichuan).

Crenitis cordula HEBAUER

Crenitis cordula HEBAUER 1994: 18 (ex parte) - GENTILI et al. 1995: 210.

TYPE LOCALITY: Mere Dara, 3200 m a.s.l., Bagmati Province, Nepal.

TYPE MATERIAL: **Holotype** ♂ (MHNG): "Nepal (Prov. Bagmati). Mere Dara, 3200 m, 8.4.1981, leg. LÖBL & SMETANA / *Crenitis cordula* n. sp. det. F. HEBAUER'93 / HOLO-TYPUS / ♂". **Paratypes**: 1 ♂, 1 ♀: "NEPAL (Prov. Bagmati) Ridge betw. Mere Dara and Thare Pati, 3500 m, 9.4.1981, leg. LÖBL & SMETANA / Paratypus, *Crenitis cordula* n. sp. det. F. HEBAUER'93" (MHNG, CHG); 1 ♀: "CHINA-Yunnan 24.-29.6., 50 km N Lijiang, 1993, Yulongshan Nat. Res., E. JENDEK & O. SAUSA leg. / Paratypus, *Crenitis cordula* n.sp. det. F.HEBAUER '93" (NMW).

NOTE: The paratype from Yunnan may belong to a different species; externally it is similar to *C. convexa* sp.n., from which it differs in some characters: elytra strongly impressed from base to apex, and sharply rounded apically; denser and coarser punctures on head and pronotum; elongate body shape.

DIAGNOSIS: 3.2 - 3.7 mm. Body convex, moderately oval. Dorsal surface of head, pronotum, and elytra dark brown to black, shining. Clypeus and frons evenly convex with very weak shallow impressions; densely covered with coarse punctures, becoming more aggregated towards lateral margins; intervals weakly shagreened. Frontoclypeal suture indistinct. Nine antennomeres. Maxillary palpi reddish brown, palpomere 2 swollen, palpomere 4 infusate, almost symmetrical. Pronotum with very weak, shallow paramedian impressions, without impressions near lateral margins; with dense and coarse punctures, becoming distinctly coarser and more aggregated laterally to paramedian impressions. Intervals between punctures weakly shagreened. Lateral and anterior margins of pronotum weakly beaded; anterior margin strongly bisinuate, with distinctly projecting anterior corners, posterior margin weakly bisinuate, lateral margin gradually converging anteriorly in weakly curved lines. Elytra with moderately coarse irregular punctation between ten striae of coarse punctures, indistinct in anterior half, becoming

gradually more distinct and impressed towards apex. Intervals between striae flat. Sutural stria extended in more than posterior half, deeply impressed. Elytra slightly attenuated towards apex. Pseudopipleura and epipleura oblique. Mesoventrite bulging mesally, with small blunt protuberance posteromesally. Metaventrite with distinctly bulging, partially glabrous mesal area, abruptly raised and thus set off from lateral portion. Thoracic and abdominal ventrites black, femora partially, tibiae, tarsi, epipleura reddish brown. Mesofemora pubescent in proximal two third. Metafemora pubescent basally and on proximal half of anterior margin. Apical margin of fifth abdominal sternite rounded..

Aedeagus (Fig. 3): This species can easily be separated from other congeners by the median lobe narrowed in apical half, by parameres widened, evenly rounded at outer face, and truncate apically.

This species can be separated from *C. shaanxiensis* by weakly microsculptured head and pronotum and by blunt, not horizontal protuberance on mesoventrite.

DISTRIBUTION: Nepal; ? China (Yunnan).

Crenitis formosana HEBAUER

Crenitis formosana HEBAUER 1994: 21. - GENTILI et al. 1995: 210.

TYPE LOCALITY: Shao-Wulai, Taoyuan, Taiwan.

TYPE MATERIAL: **Holotype** ♂ (NMW): "TAIWAN 30.3.1991 Taoyuan Hsien, Shao-Wulai / 59 leg. M.L. Jang / ♂ / Holotypus *Crenitis formosana* sp. n. det. F. HEBAUER". **Paratypes:** 13 exs., labelled as holotype (NMW, CASS); 1 ♂, 1 ♀: "TAIWAN 23.8.1991 Taoyuan Hsien Daping / (85) leg. M.L. Jeng" (NMW).

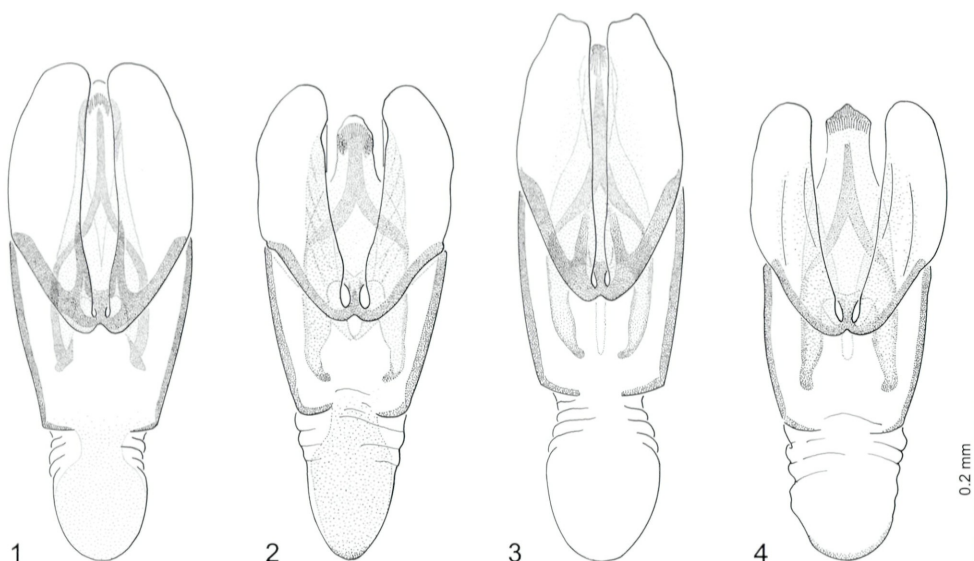
ADDITIONAL MATERIAL EXAMINED:

CHINA: TAIWAN: Kaohsiung, Meishan, 1.XI.1992, leg. Jeng & Chou (NMW); Taipei, Wulai, 24.IV.1991, leg. M.-L. Jeng (NMW).

DIAGNOSIS: 1.7 - 2.2 mm. Body elongate, almost parallel-sided. Dorsal surface of head, pronotum, and elytra dark brown to black, shining. Clypeus and frons variably with very weak shallow impressions; with distantly distributed coarse punctures, becoming coarser and more aggregated towards lateral margins. Frontoclypeal suture weak. Eight antennomeres. Maxillary palpi reddish brown, palpomere 2 conspicuously swollen, palpomere 4 slightly asymmetrical with straighter inner face. Pronotum without distinct impressions, variably flattened towards posterior corners; densely covered with coarse punctures, becoming more irregularly distributed towards lateral margins; intervals without perceptible microstructure; lateral and adjacent portion of anterior margins rather strongly beaded. Anterior corners of pronotum projecting anteriorly, mesal portion of anterior margin weakly convex, posterior margin weakly bisinuate, lateral margins slightly rounded, hardly converging. Elytra with densely distributed coarse subseriate punctures. Sutural stria deeply impressed, extended approximately in posterior half. Elytra rounded apically. Pseudopipleura and epipleura horizontal. Mesoventrite indistinctly bulging, without protuberance. Metaventrite with indistinctly bulging, partially glabrous mesal area. Thoracic and abdominal ventrites black, legs and epipleura reddish brown. Mesofemora pubescent in less than proximal half. Metafemora glabrous. Apical margin of fifth abdominal sternite truncate.

Aedeagus (Fig. 4): more than 0.3 mm long, median lobe elongate, narrowed towards apex; as long as parameres. Parameres straight at inner face, slightly convex in apical third.

DISTRIBUTION: Taiwan.



Figs. 1 - 4: Aedeagi of 1) *Crenitis apicalis*, paratype; 2) *C. convexa* sp.n., holotype; 3) *C. cordula*, paratype; 4) *C. formosana*, holotype.

Crenitis primorica HEBAUER

Crenitis primorica HEBAUER 1994: 27

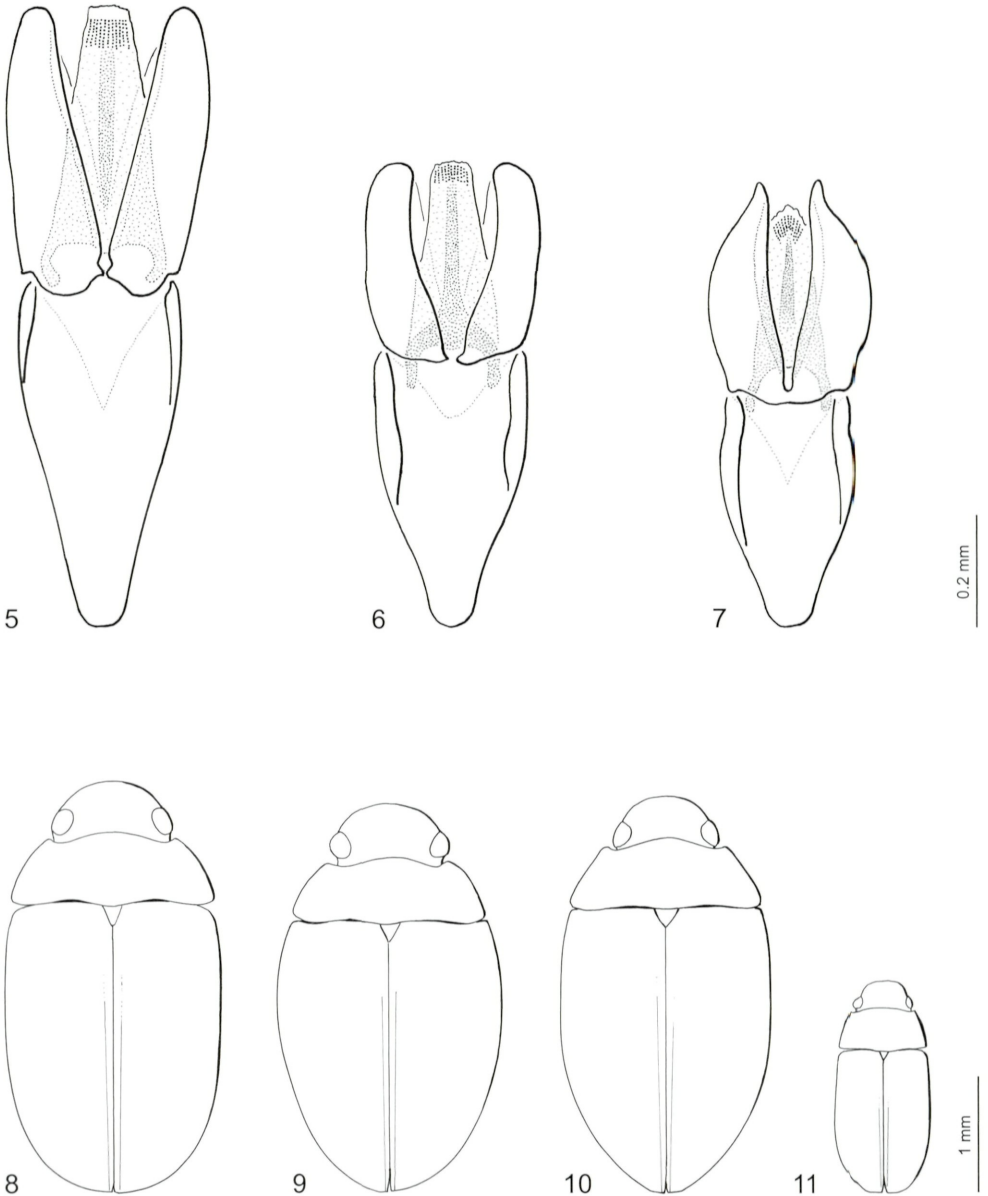
TYPE LOCALITY: Tigrovyi, Primorye, Russian Far East.

TYPE MATERIAL: **Holotype** ♂ (NMW): "ROSSIA OR. 92 Primorskiy kray, Tigrovyi / 19.-21.VIII. leg. Boukal / ♂ / Holotypus *Crenitis primorica* sp.n. det. F. HEBAUER". **Paratypes**: 8 exs.: labelled as holotype (NMW); 6 exs.: "Ussuri-country m. Tigrovyj 20.-27.7.1990 lgt.D.Boukal / *Crenitis primorica* sp.n. det. F.HEBAUER" (NMW, CASS).

ADDITIONAL MATERIAL EXAMINED:

CHINA: LIAONING: CWBS loc. 162 (NMW, CASS).

DIAGNOSIS: 1.8 - 2.2 mm. Body elongate, almost parallel-sided (Fig. 11). Dorsal surface of head, pronotum, and elytra dark brown to black, shining. Clypeus and frons variably with very indistinct shallow impressions; distantly distributed coarse punctures, becoming more aggregated on frons and towards lateral margins. Frontoclypeal suture weak. Eight antennomeres. Maxillary palpi reddish brown, palpomere 2 moderately swollen, palpomere 4 slightly asymmetrical with straighter inner face. Pronotum without distinct impressions, slightly flattened towards posterior corners; densely covered with coarse punctures, becoming more aggregated towards lateral margins; intervals without perceptible microstructure; lateral and adjacent portion of anterior margins rather strongly beaded. Anterior corners of pronotum projecting anteriorly, mesal portion of anterior margin weakly convex, posterior margin weakly bisinuate, lateral margins slightly rounded, hardly converging. Elytra with densely distributed coarse subseriate punctures. Sutural stria deeply impressed, extended approximately in posterior half. Elytra rounded apically. Pseudepipleura and epipleura horizontal. Mesoventrite indistinctly bulging, without protuberance. Metaventrite with indistinctly bulging, partially glabrous mesal area. Thoracic and abdominal ventrites black, legs and epipleura reddish brown. Mesofemora pubescent in less than proximal half. Metafemora glabrous. Apical margin of fifth abdominal sternite truncate.



Figs. 5 - 7: Aedeagi of 5) *Crenitis primorica*, holotype; 6) *C. satoi*, holotype; 7) *C. shaanxiensis*, holotype.

Figs. 8 - 11: Body outlines of 8) *C. apicalis*, 9) *C. convexa*, 10) *C. shaanxiensis*, 11) *C. primorica*.

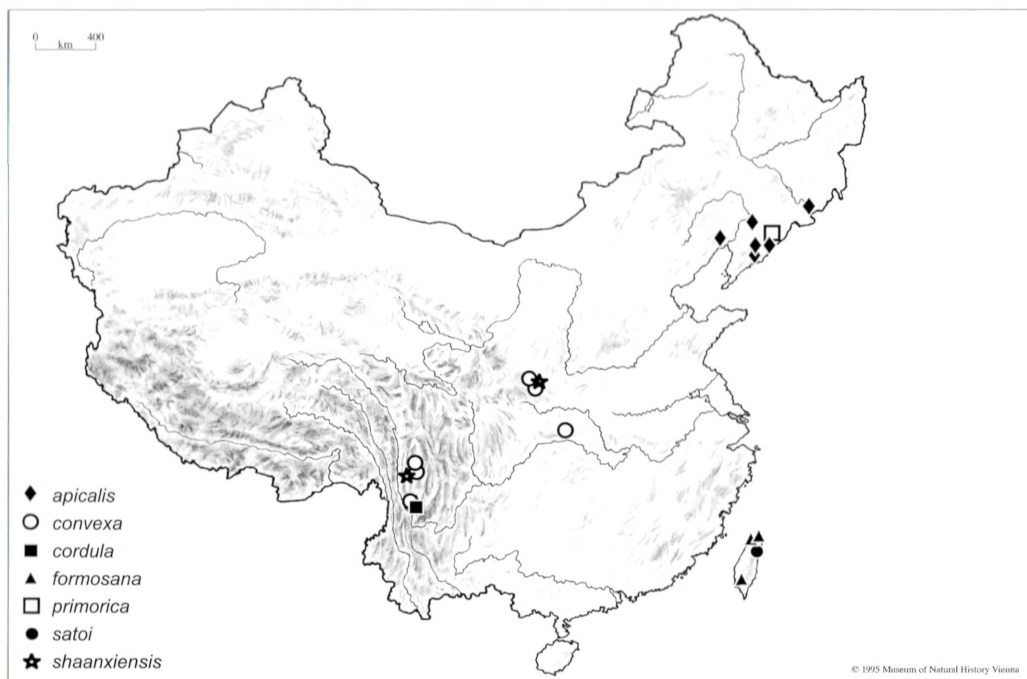


Fig. 12: Geographical distribution of the species of *Crenitis* in China.

Aedeagus (Fig. 5): ca. 0.25 mm long, median lobe elongate, gradually narrowed towards apex, as long as parameres. Parameres concave at inner face in apical two thirds.

DISTRIBUTION: China (Liaoning) – first record, Russian Far East (Primorye).

Crenitis satoi HEBAUER

Crenitis satoi HEBAUER 1994: 29. - GENTILI et al. 1995: 210.

TYPE LOCALITY: Ilan Hsien, Chiduan-Shuling, Taiwan.

TYPE MATERIAL: **Holotype** ♂ (NMW): "TAIWAN 29.3.1991 Ilan Hsien Chiduan-Shuling / 58 leg. M.L.Jeng / ♂ / Holotypus *Crenitis satoi* sp.n. det. F.HEBAUER" (NMW). **Paratypes**: 10 exs.: from the type locality (NMW, CASS).

DIAGNOSIS: 1.7 - 1.9 mm. Body elongate, almost parallel-sided;. Dorsal surface of head, pronotum, and elytra dark brown to black, shining. Clypeus and frons without impressions, with evenly distributed moderately coarse punctures. Frontoclypeal suture indistinct. Eight antennomeres. Maxillary palpi reddish brown, palpomere 2 conspicuously swollen, palpomere 4 slightly asymmetrical with straighter inner face. Pronotum evenly and densely covered with coarse punctures, intervals without perceptible microstructure. Pronotum evenly convex, without impressions; lateral and adjacent portion of anterior margins rather strongly beaded. Anterior corners of pronotum projecting anteriorly, mesal portion of anterior margin weakly convex, posterior margin weakly bisinuate, lateral margins slightly rounded, hardly converging. Elytra with densely distributed coarse subseriate punctures. Sutural stria deeply impressed, extended approximately in posterior half. Elytra rounded apically. Pseudopipleura slightly oblique, epipleura horizontal. Mesoventrite indistinctly bulging, without protuberance. Metaventrte with indistinctly bulging, partially glabrous mesal area. Thoracic and abdominal ventrites black, legs

and epipleura reddish brown. Mesofemora pubescent in less than proximal half. Metafemora glabrous. Apical margin of fifth abdominal sternite truncate.

Aedeagus (Fig. 6): 0.25 mm long, separated from *C. primorica* and *C. formosana* by parameres with strongly convex outer face and sharply pointed apices.

DISTRIBUTION: Taiwan, Japan (Hokkaido).

Crenitis shaanxiensis sp.n.

TYPE LOCALITY: Qin Ling Shan, 108.47°E, 33.51°N., 2300 - 2500 m a.s.l., 47 km S Xi'an, Shaanxi, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "China: Shaanxi, Qin Ling Shan 108.47 E, 33.51 N, Mountain W pass at Autoroute km 70, 47 km 2500 - 2600 m, sifted 26.-27.08.1995, leg. M. Schülke". **Paratypes**: 60 exs.: collected in 1995 by A. Pütz and M. Schülke at the type locality and its close surroundings (NMW, CASS); 1 ♀: "CHINA: W Sichuan 20 km N Sabdê, 3200 m 29°35'N 102°23' E, 15.VII. 1998, A. Smetana [C83] / 1998 China Expedition, J. Farkač, D. Král, J. Schneider & A. Smetana" (NMW).

ADDITIONAL MATERIAL EXAMINED:

CHINA: SHAANXI: Taibai Shan above Houshenzi, 2500 - 2600 m a.s.l., 9.VI.-3.VII.1998, leg. Jäger & Martens (MNS).

DIAGNOSIS: 3.2 - 3.6 mm. Body convex, moderately oval (Fig. 10). Dorsal surface of head, pronotum, and elytra reddish brown to black, shining. Clypeus and frons without impressions; densely covered with coarse punctures, becoming more aggregated towards lateral margins. Frontoclypeal suture distinct. Nine antennomeres. Maxillary palpi reddish brown, palpomere 2 swollen, palpomere 4 infusate, almost symmetrical. Pronotum with weak shallow paramedian impressions and very weak impressions near lateral margins; with dense and coarse punctures, becoming distinctly coarser and more aggregated laterally to paramedian impressions; intervals without perceptible microstructure. Lateral and anterior margins of pronotum weakly beaded; anterior margin strongly bisinuate with distinctly projecting anterior corners; posterior margin weakly bisinuate; lateral margin gradually converging anteriorly in weakly curved lines. Elytra with moderately coarse irregular punctation between ten distinct striae of coarse punctures, becoming strongly impressed towards apex. Elytra slightly attenuated towards apex. Pseudepipleura oblique, epipleura slightly oblique. Sutural stria extended in more than posterior half, deeply impressed. Mesoventrite bulging mesally, with small horizontal ridge postero-mesally. Metaventrte with distinctly bulging, partially glabrous mesal area, abruptly raised and thus set off from lateral portion. Thoracic and abdominal ventrites black, femora partially, tibiae, tarsi, epipleura reddish brown. Mesofemora pubescent in proximal two third. Metafemora pubescent basally and on proximal half of anterior margin. Apical margin of fifth abdominal sternite rounded.

Aedeagus (Fig. 7): Median lobe elongate and angulate apically, as long as parameres. Parameres straight at inner face, broadly rounded apically.

DISTRIBUTION: Known only from the type locality.

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