

SCIRTIDAE:
World check list of *Hydrocyphon* REDTENBACHER,
and revision of the Chinese species
(Coleoptera)

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Abstract

Eight new species of the genus *Hydrocyphon* REDTENBACHER (Coleoptera: Scirtidae) are described from China: *H. bicornis* sp.n., *H. dudgeoni* sp.n., *H. guangxiensis* sp.n., *H. hainanensis* sp.n., *H. jaechi* sp.n., *H. lii* sp.n., *H. schoenmanni* sp.n., and *H. uenoi* sp.n. The male genitalia of *Hydrocyphon sinicus* PIC, 1934 are described and illustrated based on a syntype. A character list of the species groups and a world check list of the species are given. *Cyphon dubius* KLAUSNITZER, 1980 is transferred to *Hydrocyphon*.

Key words: Coleoptera, Scirtidae, *Hydrocyphon*, systematics, new species, species groups, China, world check list.

Introduction

In the course of the China Water Beetle Survey (CWBS) many specimens of water beetles were obtained from various localities in China, and several papers have been published based on that material (see JÄCH & Ji 1995, 1998). However, this is the first comprehensive study about Chinese Scirtidae.

The genus *Hydrocyphon* REDTENBACHER is distributed widely in the Palearctic Region (KLAUSNITZER 1970, 1976, 1980a, 1980b, 1981, 1991, NYHOLM 1967, 1972a, PIC 1914, YOSHITOMI 2001). Though many species have been described from neighbouring countries, only one species has been recorded from Mainland China (KLAUSNITZER 1995, PIC 1934).

In this paper, we describe eight new species of the genus *Hydrocyphon* from China based on more than 50 specimens collected mainly by the CWBS. The male genitalia of *Hydrocyphon sinicus* PIC, 1934 are described. In addition, a list of significant characters of the species groups and a world check list of species are given.

The terminology of the male genitalia follows NYHOLM (1967, 1972b).

Acronyms & CWBS localities:

CASS Chinese Academy of Science, Institute of Applied Ecology, Shenyang

CAEU College of Agriculture, Ehime University, Matsuyama

CWBS China Water Beetle Survey

NMW Naturhistorisches Museum Wien

NSMT National Science Museum, Tokyo

¹ Contribution to the knowledge of the family Scirtidae no. 98

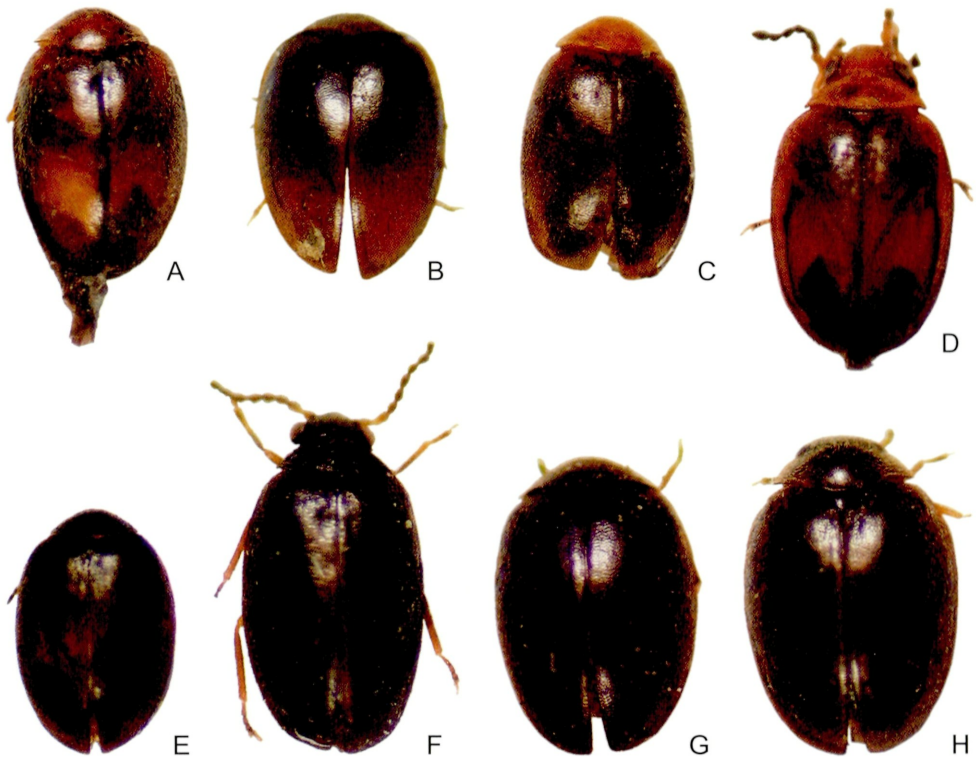


Fig. 1: Photographs of holotypes of A) *Hydrocyphon guangxiensis* sp.n., B) *H. hainanensis* sp.n., C) *H. dudgeoni* sp.n., D) *H. schoenmanni* sp.n., E) *H. lii* sp.n., F) *H. uenoi* sp.n., G) *H. jaechi* sp.n., H) *H. bicornis* sp.n.

EL	length of elytra
EW	width of elytra
PL	length of pronotum
PW	width of pronotum
TL	total length (PL plus EL)

CWBS loc. 5: **Hong Kong**; New Territories; Lam Tsuen River, near Kadoorie Farm, SW Tai Po New Town, stream, 3 - 4 m wide (during wet season), shaded by secondary forest, ca. 125 m a.s.l.; 25.VI.1992; leg. M.A. Jäch; [locality number on label: 4].

CWBS loc. 7: **Hong Kong**; Lantau Island; NW Mui Wo Village; shallow pools and streams between Mui Wo and Ngau Kwu Long, ca. 25 - 100 m a.s.l.; 26.VI.1992; leg. M.A. Jäch; [locality number on label: 6]; (see JÄCH & Ji 1995: Fig. 9).

CWBS loc. 46: **Guangxi Autonomous Region**; Yülin Prefecture; Liuwan Da Shan; ca. 15 km E of Liuwan Forest Station; very small stream, ca. 0.2 - 0.3 m wide, near CWBS loc. 45, scanty riverside vegetation, ca. 200 m a.s.l.; 18.XI.1993; leg. H. Schönnmann, H. Schillhammer & L. Ji; [locality number on label: 24].

CWBS loc. 172: **Hong Kong**; NW New Territories; Plover Cove Country Park, near abandoned village (Ha Mui Tin), ca. 1.5 km E Wu Kau Tang; Sam A Chung stream, ca. 1 - 2 m wide, partly shaded by secondary forest, ca. 60 m a.s.l.; 14.I.1996; leg. M.A. Jäch.

CWBS loc. 202: **Hainan Province**; Ledong County; E Jianfeng Town; several streams (including residual pools), 1 - 5 m wide, slowly flowing through rice fields and shrubs, only partly shaded, ca. 60 m a.s.l.; 21.I.1996; leg. M.A. Jäch, L. Ji & M. Wang.

CWBS loc. 395: **Yunnan Province**, Simao Prefecture, Mojiang County, 35 km SW Mojiang, ca. 1000 m a.s.l.; forest stream (right tributary of CWBS loc. 394), ca. 50 cm wide, with sinter, small pools and waterfalls; 19.XI.1999; leg. H. Schönmann & M. Wang.

Table 1: Significant characters of the species groups of *Hydrocyphon* (male genitalia).

species groups \ characters	<i>australis</i>	<i>bicornis</i>	<i>deflexicollis</i>	<i>kambaiticus</i>	<i>nakanei</i>	<i>pallidicollis</i>	<i>renati</i>
aedeagus	symmetrical	asymmetrical	asymmetrical	symmetrical	symmetrical	asymmetrical	symmetrical
parameroids	similar shape	similar shape	similar or different shape	similar shape	similar shape	different shape	similar shape
trigonium		with 2 processes projecting posteriad				with 1 process	with 2 bent apices
tegmen	capulus and ± wide pterygia	pterygia forked	capulus and ± wide pterygia	pterygia long and slender	pterygia reduced	capulus and ± wide pterygia	wide, antero-laterally with 2 long processes
9 th tergite	anteriorly connected by sclerotized bar, posteriorly not extended into acute tip		sclerotized bar absent, posteriorly extended into acute tip pointing ventrad	posteriorly extended into acute tip	posteriorly not extended into acute tip	sclerotized bar absent, posteriorly extended into acute tip pointing ventrad	posteriorly not extended into acute tip
8 th sternite	wide plate with apodemes	plate reduced, rod-like shape	wide plate with apodemes	plate reduced, rod-like shape	plate reduced, rod-like shape	wide plate with apodemes	wide plate with apodemes
9 th sternite	wide plate with apodemes	plate reduced, rod-like shape	wide plate with apodemes	plate reduced, rod-like shape	plate reduced, rod-like shape	wide plate with apodemes	

Hydrocyphon pallidicollis species group

This species group is characterised by the following male genital characteristics: penis and parameroids asymmetrical; trigonium with one projection (NYHOLM 1967).

Hydrocyphon guangxiensis sp.n. (Figs. 1A, 2)

TYPE LOCALITY: Yülin Prefecture, Guangxi Autonomous Region, China (CWBS loc. 46).

TYPE MATERIAL: **Holotype** ♂ (CASS): "CHINA: S. -Guangxi 30km SW Yulin Liuwan Dashan / 18.11.1993, 200m (24) leg. Schillhammer", genitalia on slide no. HY 559.

DESCRIPTION: Male. Body oval, gently convex above, covered closely with long yellowish white hairs. Coloration almost brown, but head, mesonotum and metanotum fuscous.

Head wide, slightly convex above; distance between eyes about 3.0 times as long as diameter of eye. Pronotum depressed strongly in lateral areas; PW/PL 2.54. Elytra oval, convex above, broadest at about proximal 1/3; EL/EW 1.30; EL/PL 5.0; EW/PW 1.52; TL/EW 1.56.

Apical margin of 7th abdominal sternite arcuate. Eighth and 9th sternite connected, 8th sternite rod-like, with rounded apex; 9th sternite composed of pair of short plates, with some long setae at outer margin of apical part; 8th tergite transversal trapezoidal, covered closely with minute spines on caudal part, with some minute setae on caudal part; 9th tergite Y-shaped. Tegmen Y-shaped; parameres curved gently, pointed at apex. Penis almost same length as tegmen; proximal part (para) elliptical; trigonium short, pointed at apex; parameroids asymmetrical, covered sparsely with punctures; left fattened in proximal part, curved abruptly in about apical 1/3, pointed at apex; right almost straight, rounded at apex.

Female unknown.

Measurements: Holotype (n = 1). TL 1.95 mm; PW 0.83 mm; PL 0.33 mm; EW 1.25 mm; EL 1.63 mm.

REMARKS: This is a very remarkable species due to its male genital characters. The penis is somewhat similar to that of *H. dudgeoni*, but is distinguishable easily from it by the shape of the parameroids.

***Hydrocyphon hainanensis* sp.n.**
(Figs. 1B, 3)

TYPE LOCALITY: Hainan Province, China (CWBS loc. 202).

TYPE MATERIAL: **Holotype** ♂ (CASS): "CHINA: Hainan (202) E. Jianfeng 60m, 21.1.1996 leg. Ji & Wang", genit. s. no. HY 553.

DESCRIPTION: Male. Body oval, convex above, strongly shining, covered with very short, yellowish white hairs. Coloration dark brown, but antennae, lateral part of pronotum and legs paler.

Head wide, slightly convex above; distance between eyes about 3.3 times as long as diameter of eye. Pronotum depressed in lateral areas; PW/PL 2.71. Elytra oval, remarkably convex above, broadest at about proximal 1/4; EL/EW 1.24; EL/PL 4.86; EW/PW 1.45; TL/EW 1.49.

Apical margin of 7th abdominal sternite gently arcuate. Eighth and 9th sternite and tergites broken. Tegmen broad Y-shaped; parameres broad, with pair of peg-like appendages which are covered with short setae. Penis long, about 1.5 times as long as that of tegmen; para deeply concave on anterior margin; trigonium very long, lacking median plate; parameroids very long, acuminate to apex, flattened and rounded at apex.

Female unknown.

Measurements: Holotype (n = 1). TL 2.05 mm; PW 0.95 mm; PL 0.35 mm; EW 1.38 mm; EL 1.70 mm.

REMARKS: Judging from the male genitalia, this is a very remarkable species. In this paper we include this species in the *H. pallidicollis* species group only on the basis of the shape of the penis.

***Hydrocyphon dudgeoni* sp.n.**
(Figs. 1C, 4)

TYPE LOCALITY: Lantau Island, Hong Kong (CWBS loc. 7).

TYPE MATERIAL: **Holotype** ♂ (NMW): "HONGKONG (6) 1992 Lantau Island 26.VI. leg. Jäch". **Paratypes** (NMW, NSMT, CAEU, CASS): 1 ♀: same data as for the holotype; 1 ♂, 1 ♀: "HONGKONG (4) 1992 N. T. -Lam Tsuen Riv. 25.VI. leg. Jäch" (CWBS loc. 5), genit. s. nos. HY 556, 761; 1 ♂: "HONGKONG: New T. (172) Plover

Cove Country P. 1.5 km W Wukan Tang, 60m 14. 1. 1996, leg. Jäch" (CWBS loc. 172); 2 ♀♀: "HONGKONG (3) 1992 N. T. -Plover C. Res., 25.VI. leg. Jäch"; 1 ♂, 2 ♀♀: "HONGKONG, Tai Po Kau 6.8.1983 leg. Dudgeon (downstr.)", genit. s. no. HY 557; 1 ♂: "HONGKONG Tai Po Kau 13-14. 11. 1983 leg. Dudgeon, (comb.)", genit. s. no. HY 561; 1 ♂: "HONGKONG Tai Po Kau 6. 7. 1978 leg. Dudgeon, (K)", genit. s. no. HY 558; 1 ♀: "HONGKONG, Tai Po Kau 3.-4. 11. 1983 leg. Dudgeon (downstr.)"; 1 ♀: "HONGKONG, Tai Po Kau 28.-29. 6. 1984 leg. Dudgeon (downstr.)"; 1 ♀: "HONGKONG, Tai Po Kau 11. 11. 1977 leg. Dudgeon (downstr.)"; 1 ♀: "HONGKONG, Tai Po Kau 27. 8. 1977 leg. Dudgeon (k5)"; 1 ♀: "HONGKONG, Tai Po Kau 16-17. 6. 1984 leg. Dudgeon (up str.)"; 1 ♀: "Hochung, Hong Kong, 31. V. 1965 K. Morimoto"; 1 ♀: "HONGKONG: New Terr. Tai Po Kau Sp. Area 13. 1. 1997, forest stream W. D. Shepard (WDS-A-1249)".

DESCRIPTION: Male. Body oval, gently convex above, slightly shining, covered with short yellowish white hairs. Coloration of body brown; pronotum, mouthparts, proximal part of antennae and legs orange.

Head slightly convex above; distance between eyes about 2.5 times as long as diameter of eye. Pronotum depressed in lateral areas; PW/PL 4.9 - 5.78 (5.31). Elytra oval, broadest at about middle; EL/EW 1.17 - 1.23 (1.20); EL/PL 4.50 - 5.0 (4.69); EW/PW 0.70 - 0.80 (0.74); TL/EW 1.43 - 1.50 (1.46).

Apical margin of 7th abdominal sternite arcuate. Eighth and 9th sternite and tergites broken. Tegmen with broad parameres; posterolateral corners protruding posteriorly; anterolateral angles acute. Penis longer than tegmen; para elliptical; trigonium very short, rounded at apex, lacking median plate; parameroids long, asymmetrical, evenly slender to apex.

Female. Sexual dimorphism indistinct; PW/PL 2.42 - 2.83 (2.58); EL/EW 1.26 - 1.33 (1.30); EL/PL 4.64 - 5.67 (5.12); EW/PW 1.43 - 1.59 (1.53); TL/EW 1.48 - 1.58 (1.55).

Apical margin of 7th abdominal sternite same as in male. Sternite 8 moderately sclerotized, subtriangular, concave in anterior margin; 8th tergite moderately sclerotized in lateral parts, membranous in mesal part, with short and slender apodemes. Ovipositor relatively short, sparsely punctate in coxite and baculus; relative length of stylus, coxite and baculus: 1.0 : 3.0 : 11.0. Prehensor well sclerotized, short, covered with about 60 short spines on each plate.

Measurements: Male (n = 3). TL 1.65 - 1.80 (1.71) mm; PW 0.83 (0.83) mm; PL 0.30 (0.30) mm; EW 1.10 - 1.25 (1.18) mm; EL 1.35 - 1.50 (1.41) mm. Female (n = 4). TL 1.75 - 2.00 (1.91) mm; PW 0.73 - 0.88 (0.81) mm; PL 0.30 - 0.35 (0.31) mm; EW 1.13 - 1.35 (1.23) mm; EL 1.45 - 1.70 (1.59) mm.

REMARKS: This is a very remarkable species due to the following male genital characteristics: posterior angle of tegmen is protruding, and parameroids of penis are curved.

The life cycle of this species already has been studied by DUDGEON (1995).

ETYMOLOGY: The epithet is named after Dr. D. Dudgeon of the University of Hong Kong.

***Hydrocyphon schoenmanni* sp.n.**
(Figs. 1D, 5)

TYPE LOCALITY: 35 km SW Mojiang, Simao Pref., Yunnan, China (CWBS loc. 395).

TYPE MATERIAL: **Holotype** ♂ (NMW): "CHINA: Yunnan, Simao Pref. 35km SW Mojiang 19.11.1999, ca. 1000 m Schönnmann & Wang (CWBS 395)", genitalia on slide no. HY 579.

DESCRIPTION: Male. Body oval, convex above, slightly shining, closely covered with short hairs. Coloration of body light brown, but head, pronotum and legs paler; 6th to 11th antennal segments black.

Head slightly convex above, with almost straight front margin of clypeus; distance between eyes about 2.2 times as long as diameter of eye. Antennae moderate in length, reaching about

proximal 1/6 of elytra. Pronotum with almost straight front margin, depressed in lateral part, almost right-angled in anterior and posterior corners; PW/PL 2.20. Elytra oval, convex above, broadest at about middle; EL/EW 1.32; EL/PL 4.30; EW/PW 1.48; TL/EW 1.63.

Apical margin of 7th abdominal sternite arcuate. Eighth tergite trapezoidal, covered with short spines in posterior part, with pair of short apodemes; 8th and 9th sternites and 9th tergite broken, but similar to those of *H. guangxiensis*. Tegmen Y-shaped; parameres broad, pointed at apex, with pair of dentiform projections just before apex. Penis long and slender, about 1.6 times as long as tegmen; para almost parallel-sided; trigonium short and slender, lacking median plate; parameroids long, distinctly asymmetrical, left parameroid longer than right parameroid.

Female unknown.

Measurements: Male (n = 1). TL 2.12 mm; PW 0.88 mm; PL 0.40 mm; EW 1.30 mm; EL 1.72 mm.

REMARKS: This species is characterized by the shape of the tegmen and the penis.

ETYMOLOGY: The epithet is named after Dr. H. Schönmann of the NMW.

***Hydrocyphon lii* sp.n.**
(Figs. 1E, 6)

TYPE LOCALITY: Mt. Xitianmu, 300 – 400 m a.s.l., northwestern Zhejiang, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Mt. Xi- Tianmu alt. 300–400 m Lin-An City Zhejiang, China / 15. VII, 2000 N. Ohbayashi & Li-Zhen Li leg.", genit. s. no. HY 740. **Paratype**, ♀ (NMW): same data as for the holotype, genit. s. no. HY 741.

DESCRIPTION: Male. Body oval, convex above, slightly shining, covered densely with short yellowish white hairs. Coloration of body dark brown, but four proximal segments of antennae, mouthparts, lateral part of pronotum and legs paler.

Head wide, almost flat, with arcuate front margin of clypeus; distance between eyes about 2.8 times as long as diameter of eye. Pronotum slightly depressed in lateral areas, with almost straight front margin; PW/PL 2.18. Elytra oval, convex above, broadest at about middle; EL/EW 1.31; EL/PL 4.03; EW/PW 1.41; TL/EW 1.63.

Apical margin of 7th abdominal sternite arcuate. Eighth tergite transverse trapezoidal, with short spines on posterior margin, covered with fine furrow in mesal part, with short apodemes protruding from near anterolateral corners; 8th sternite slightly sclerotized, broad V-shaped; 9th tergite trapezoidal, slightly sclerotized, but near posterolateral corners well sclerotized, with pair of slim and short apodemes protruding from anterolateral corners; 9th sternite reduced, slightly sclerotized, with some short setae in apical part, with pair of long and stout apodemes curved in apical 1/6. Tegmen Y-shaped; posterior part wide, prolonged posteriorly in posterolateral corners which bear two pairs of large claw-shaped projections on outer margin. Penis long, about 1.3 times as long as tegmen; para elliptical; trigonium very short, oval, lacking median plate; parameroids long, asymmetrical, left parameroid longer than right parameroid, curved interiorly in apical part.

Female. Sexual dimorphism indistinct; PW/PL 2.13; EL/EW 1.33; EL/PL 4.00; EW/PW 1.41; TL/EW 1.67.

Apical margin of 7th abdominal sternite arcuate. Eighth sternite large, well sclerotized, trapezoidal; 8th tergite moderately sclerotized in caudal part, projecting triangularly in the middle part of posterior margin, with long and slim apodemes protruding from near anterolateral corners. Ovipositor relatively long, covered with minute setae in coxite; relative length of stylus,

coxite and baculus: 1.0 : 3.6 : 13.0. Prehensor slightly sclerotized, with some short and thin spines in posterior part.

Measurements: Male (n = 1). TL 1.96 mm; PW 0.85 mm; PL 0.39 mm; EW 1.20 mm; EL 1.57 mm. Female (n = 1). TL 2.00 mm; PW 0.85 mm; PL 0.40 mm; EW 1.20 mm; EL 1.60 mm.

REMARKS: Judging from the shape of tegmen and penis this species is somewhat similar to *H. dudgeoni*, but is distinguishable easily from it by the bidentate apices of the tegmen and the more elongated parameroids. In the female, this species is characterized by the very unique morphology of the 8th sternite, 8th tergite and prehensor.

ETYMOLOGY: The epithet named after Dr. Li-Zhen Li of the Shanghai Teachers University.

Hydrocyphon kambaiticus species group

This species group is characterised by the following male genital characteristics: 8th and 9th sternites rod-like; tegmen slender; penis symmetrical (NYHOLM 1981).

Hydrocyphon uenoi sp.n. (Figs. 1F, 7)

TYPE LOCALITY: 50 km N Lijiang, Yulongshan Natural Reserve, Yunnan, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "CHINA-Yunnan 24-29.6. 50 km N Lijiang, 1993 Yulongshan Nat. Res. E.Jendek & O.Sausa leg.". **Paratypes** (NMW, NSMT, CAEU, CASS): 8 ♂♂, 11 ♀♀, same data as for the holotype, male genit. s. no. HY 548; 4 ♂♂, 1 ♀: "China Yunnan 1.-19. VII HEISHUI, 35 km N. Lijiang 27°13'N 100°19'E E. Jendek leg. 1992", male genit. s. no. HY 570, female genit. s. no. HY 549.

DESCRIPTION: Male. Body oblong, moderately convex above, slightly shining, covered closely with short yellowish white hairs. Coloration blackish brown, but legs and 2nd to 4th antennal segments paler.

Head wide, slightly convex above, distance between eyes about 3.0 times as long as diameter of eye. Pronotum depressed in lateral areas; PW/PL 2.14 - 2.92 (2.39). Elytra oblong, slightly convex above, subparallel-sided in middle area, broadest at about middle; EL/EW 1.48 - 1.61 (1.55); EL/PL 5.36 - 6.67 (5.71); EW/PW 1.46 - 1.63 (1.54); TL/EW 1.70 - 1.90 (1.83).

Apical margin of 7th abdominal sternite arcuate. Eighth and 9th sternite rod-like, connected at middle; 8th sternite expanding at apex; 9th sternite with some minute serrae on lateral margin, bidentate at apex; 8th tergite square, slightly bisinuous in caudal margin which bears minute spines; 9th tergite transverse, with pair of stout apodemes protruding from anterolateral corners, covered with small punctures in posterolateral areas, with pair of small projections situated in posterolateral corners. Tegmen with pair of long and slender parameres curved in about apical 1/3. Penis elongated triangular, concave on anterior margin; trigonium furcate in caudal part, with long median plate; parameroids punctate sparsely.

Female. Sexual dimorphism indistinct in external feature; antennae somewhat thinner than in male. PW/PL 2.27 - 2.75 (2.53). EL/EW 1.51 - 1.64 (1.57); EL/PL 5.53 - 6.83 (6.16); EW/PW 1.45 - 1.64 (1.55); TL/EW 1.76 - 1.90 (1.83).

Apical margin of 7th abdominal sternite same as in male. Sternite 8 broad subtriangular, with minute spines on apical margin, with some short setae on posterolateral margins; 8th tergite semicircular, with pair of long apodemes, covered with minute spines in caudal area, discal margin with extra projection as in Fig. 7H. Coxite and baculus of ovipositor punctate; approximate ratio of length of stylus, coxite and baculus: 1.0 : 4.4 : 19.6; prehensor well-developed, with about 70 spines on each plate.

Measurements: Male (n = 9). TL 2.23 - 2.45 (2.32) mm; PW 0.75 - 0.88 (0.83) mm; PL 0.30–0.38 (0.35) mm; EW 1.20 - 1.35 (1.27) mm; EL 1.88 - 2.08 (1.98) mm. Female (n = 9). TL 2.20 - 2.45 (2.32) mm; PW 0.78 - 0.85 (0.82) mm; PL 0.30 - 0.38 (0.33) mm; EW 1.20 - 1.38 (1.27) mm; EL 1.90 - 2.08 (1.99) mm.

REMARKS: This species is similar to *H. alticola* (KLAUSNITZER) from Bhutan on account of the male genitalia, but is distinguishable from it by the shape of the tegmen and the 8th sternite.

ETYMOLOGY: The epithet is named after Dr. Shun-ichi Uéno of the NSMT.

Hydrocyphon sinicus PIC, 1934

(Fig. 8)

Hydrocyphon sinicus PIC 1934: 23.

TYPE MATERIAL: **Syntype** ♂: "Nitou Tatsienlu, Szechuan China, Em. Reitter / Cotypus (label red) / *Hydrocyphon sinicum* Pic / 592 / Coll. C. Bosch / Senckenberg-Museum Frankfurt/Main".

DESCRIPTION (male genitalia): Eighth tergite trapezoidal, bearing short spines on posterior margin, with pair of long and slim apodemes protruding from anterolateral corners; 8th and 9th sternites connected in proximal part, rod-like, with short spines in apical part of 9th sternite; 9th tergite widely membranous, with pair of very long apodemes. Tegmen U-shaped; parameres very long, slim, pointed at apex. Penis symmetrical, as long as tegmen; para wide, projecting laterally in caudal part; trigonium composed of two long asymmetric projections, pointed at apex; parameroids relatively short, with obtuse apex.

REMARKS: This species is very remarkable in the shape of its penis.

Hydrocyphon renati species group

This species group is characterised by the following male genital features: tegmen wide, with a pair of long lateral plates on anterolateral part; penis symmetrical; trigonium bifurcate in posterior margin (NYHOLM 1981).

Hydrocyphon jaechi sp.n.

(Figs. 1G, 9)

TYPE LOCALITY: Ciping, Jinggang Shan, Jiangxi, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "CHINA Jiangxi W JINGGANG SHAN Ciping env. 2-14. VI. 1994". **Paratypes** (NMW, NSMT, CAEU): 1 ♂: same data as for the holotype, genit. s. no. HY 554; 2 ♂♂: "CHINA W-Yunnan env. Baoshan 5-8.6.1993, E. Jendek & O. Sausa leg.", genit. s. no. HY 551.

DESCRIPTION: Male. Body oval, convex above, shining, covered closely with short yellowish white hairs. Coloration of body blackish brown, but lateral parts of pronotum and legs paler.

Head wide, almost flat, distance between eyes about 3.5 times as long as diameter of eye. Pronotum slightly depressed in lateral areas; PW/PL 2.40 - 2.71 (2.56). Elytra oval, gently convex above, broadest at about middle; EL/EW 1.25 - 1.45 (1.33); EL/PL 4.47 - 6.00 (5.04); EW/PW 1.44 - 1.53 (1.47); TL/EW 1.52 - 1.69 (1.60).

Apical margin of 7th abdominal sternite arcuate. Sternite 8 slightly sclerotized, broad subtriangular; 8th tergite trapezoidal, with short setae in posterior part, covered with short spines in posterior part, covered with short spines on posterior margin; 9th sternite oblong, with pair of short apodemes, with long setae on apical margin; 9th tergite semicircular, with pair of long

apodemes, covered with short spines in posterior part. Shape of tegmen and penis typical for species group; parameroids of penis long, tapering evenly to apex.

Measurements: Male (n = 3). TL 1.98 - 2.45 (2.16) mm; PW 0.90 - 0.95 (0.92) mm; PL 0.35 - 0.38 (0.36) mm; EW 1.30 - 1.45 (1.35) mm; EL 1.63 - 2.10 (1.80) mm.

Female unknown.

REMARKS: This species is related closely to *H. renati* NYHOLM from Myanmar and *H. satoi* YOSHITOMI from Japan, Taiwan and Korea. It can be distinguished from these only by the shape of the parameroids.

ETYMOLOGY: The epithet is named after Dr. M.A. Jäch (NMW).

Hydrocyphon bicornis species group

This species group is characterised by the following male genital characteristics: 8th and 9th sternites rod-like; tegmen well sclerotized, with two pairs of projections; penis asymmetrical; trigonium with two projections protruding posteriorly. Judging from the male genitalia, this species group is closely related to the *H. deflexicollis* species group, but is distinguishable easily from it by the shape of the tegmen.

Hydrocyphon bicornis sp.n. (Figs. 1H, 10)

TYPE LOCALITY: Diaolin Natural Reserve, 100 km W Kunming, Yunnan, China.

TYPE MATERIAL: **Holotype** ♂ (NMW): "CHINA-Yunnan 22.5. - 2.6. 100 km W Kunming Diaolin Nat. Res., 1993 E.Jendek & O.Sausa leg.". **Paratypes** (NMW, NSMT, CAEU): 3 ♂♂, 5 ♀♀: same data as for the holotype, 1 male and 1 female genit. s. nos. HY 555, 567, 568.

DESCRIPTION: Male. Body oval, convex above, shining, covered closely with short yellowish white hairs. Coloration of body blackish brown, but lateral parts of pronotum, antennae and legs pale brown.

Head wide, almost flat; distance between eyes about 3.0 times as long as diameter of an eye. Pronotum depressed in lateral areas; PW/PL 2.67 - 3.08 (2.87). Elytra oval, gently convex above, broadest at about the middle; EL/EW 1.19 - 1.28 (1.24); EL/PL 4.93 - 5.62 (5.27); EW/PW 1.43 - 1.55 (1.49); TL/EW 1.44 - 1.56 (1.50).

Apical margin of 7th abdominal sternite gently arcuate. Eighth and 9th sternite completely connected, J-shaped, with short setae in apical part; 8th tergite semicircular, with short spines on apical margin, covered sparsely with short setae in posterior area; 9th tergite U-shaped, expanding in apical part, which bears some long setae. Tegmen bifurcate in apical half of parameres, internal projections shorter than external projections; anterior angles of parameres prolonged anteriorly. Penis almost parallel-sided in para; trigonium with two asymmetrical projections, with long median plate; parameroids covered with fine punctures, rounded at apex.

Female. Sexual dimorphism of external feature indistinct; PW/PL 2.57 - 2.64 (2.61); EL/EW 1.42 - 1.43 (1.43); EL/PL 5.29 - 5.43 (5.36); EW/PW 1.41 - 1.47 (1.44); TL/EW 1.69 - 1.70 (1.70).

Apical margin of 7th abdominal sternite gently arcuate. Sternite 8 slightly sclerotized, with fine setae in caudal part; 8th tergite semicircular, with pair of thin apodemes, covered sparsely with minute setae and fine punctures in caudal part. Ovipositor punctate in coxite; approximate ratio

of length of stylus, coxite and baculus: 1.0 : 4.0 : 12.1. Prehensor well-developed, with about 120 spines on each plate.

Measurements: Male (n = 2). TL 2.23 mm; PW 1.00 mm; PL 0.33 - 0.38 (0.35) mm; EW 1.43 - 1.55 (1.49) mm; EL 1.83 - 1.85 (1.84) mm. Female (n = 2). TL 2.20 - 2.25 (2.23) mm; PW 0.90 - 0.93 (0.91) mm; PL 0.35 mm; EW 1.30 - 1.33 (1.31) mm; EL 1.85 - 1.90 (1.88) mm.

REMARKS: The bifurcate tegmen of this species is quite unique, and the relationships with other species are not clear. However, the rod-like 8th and 9th sternites are similar to those of the *H. kambaiticus* species group, but this character state may be due to parallelism.

ETYMOLOGY: Epithet is named after the unique shape of the tegmen.

Discussion

In this paper, nine species of the genus *Hydrocyphon* are recorded from China. It is obvious, that this area has the richest *Hydrocyphon* fauna world-wide.

From a zoogeographical point of view, it is very interesting that the Chinese species treated here are related more closely to the European and Oriental Asian species than to Japanese and Taiwanese species. The Japanese and Taiwanese species of this genus are thought to be of Indo-Himalayan origin (YOSHITOMI 2001).

World check list of the species of *Hydrocyphon*

Hydrocyphon australis species group

- | | |
|---|--|
| 1. <i>Hydrocyphon australis</i> LINDER, 1864 | France, Spain, Italy, Bosnia and Herzegovina |
| 2. <i>Hydrocyphon bhutanensis</i> KLAUSNITZER, 1976 | Bhutan |
| 3. <i>Hydrocyphon consolatorius</i> KLAUSNITZER, 1990 | Iran |
| 4. <i>Hydrocyphon finitimus</i> NYHOLM, 1977 | Turkey |
| 5. <i>Hydrocyphon minous</i> NYHOLM, 1967 | Crete |
| 6. <i>Hydrocyphon oblongulus</i> NYHOLM, 1967 | Cyprus |
| 7. <i>Hydrocyphon segrex</i> NYHOLM, 1972 | Greece, Turkey, Iran |
| 8. <i>Hydrocyphon vicinans</i> NYHOLM, 1972 | Turkey, Israel |

Hydrocyphon bicornis species group

- | | |
|--|----------------|
| 9. <i>Hydrocyphon bicornis</i> YOSHITOMI & KLAUSNITZER | Mainland China |
|--|----------------|

Hydrocyphon deflexicollis species group

- | | |
|--|---|
| 10. <i>Hydrocyphon celatus</i> KLAUSNITZER, 1980 | India |
| 11. <i>Hydrocyphon championi</i> REITTER, 1903 | Spain |
| 12. <i>Hydrocyphon deflexicollis</i> (MÜLLER, 1821) | Europe |
| 13. <i>Hydrocyphon forficulatus</i> NYHOLM, 1981 | Myanmar |
| 14. <i>Hydrocyphon fulvescens</i> NYHOLM, 1977 | Spain |
| 15. <i>Hydrocyphon fuscatus</i> KLAUSNITZER, 1970 | Albania |
| 16. <i>Hydrocyphon illiesi</i> KLAUSNITZER, 1991 | Algeria |
| 17. <i>Hydrocyphon interrogationis</i> KLAUSNITZER, 1980 | Pakistan |
| 18. <i>Hydrocyphon kaszabi</i> KLAUSNITZER, 1980 | Vietnam |
| 19. <i>Hydrocyphon novaki</i> NYHOLM, 1967 | Italy, Serbia and Montenegro (formerly Yugoslavia), Albania, Greece |
| 20. <i>Hydrocyphon ovatus</i> NYHOLM, 1967 | Italy |
| 21. <i>Hydrocyphon permigrans</i> NYHOLM, 1967 | Spain |
| 22. <i>Hydrocyphon proximus</i> NYHOLM, 1967 | Italy |
| 23. <i>Hydrocyphon pulchellus</i> KLAUSNITZER, 1980 | Nepal |
| 24. <i>Hydrocyphon rivulorum</i> NYHOLM, 1977 | Turkey |

Hydrocyphon kambaiticus species group

- | | |
|---|---------------|
| 25. <i>Hydrocyphon alticola</i> (KLAUSNITZER, 1976) | Bhutan, India |
|---|---------------|

26. *Hydrocyphon kambaiticus* NYHOLM, 1981 Myanmar
 27. *Hydrocyphon sinicus* PIC, 1934 Mainland China
 28. *Hydrocyphon stupendus* NYHOLM, 1981 Myanmar
 29. *Hydrocyphon uenoi* YOSHITOMI & KLAUSNITZER Mainland China

***Hydrocyphon nakanei* species group**

30. *Hydrocyphon aritai* YOSHITOMI, 2001 Taiwan
 31. *Hydrocyphon nakanei* YOSHITOMI, 2001 Japan

***Hydrocyphon pallidicollis* species group**

32. *Hydrocyphon dudgeoni* YOSHITOMI & KLAUSNITZER Mainland China
 33. *Hydrocyphon guangxiensis* YOSHITOMI & KLAUSNITZER Mainland China
 34. *Hydrocyphon hainanensis* YOSHITOMI & KLAUSNITZER Mainland China
 35. *Hydrocyphon hamiota* NYHOLM, 1972 Spain
 36. *Hydrocyphon hydrocyphonoides* (TOURNIER, 1868) Italy, Tunisia, Algeria
 37. *Hydrocyphon laeticolor* NYHOLM, 1967 Spain
 38. *Hydrocyphon lii* YOSHITOMI & KLAUSNITZER Mainland China
 39. *Hydrocyphon pallidicollis* RAFFRAY, 1873 Corsica, Sardinia, Algeria, Morocco
 40. *Hydrocyphon rectangulus* KLAUSNITZER, 1991 Algeria
 41. *Hydrocyphon schoenmanni* YOSHITOMI & KLAUSNITZER Mainland China

***Hydrocyphon renati* species group**

42. *Hydrocyphon dubius* (KLAUSNITZER, 1980), **comb.n.** India
 Cyphon dubius KLAUSNITZER, 1980
 43. *Hydrocyphon elongatus* NYHOLM, 1981 Myanmar
 44. *Hydrocyphon iriomotensis* YOSHITOMI, 2001 Japan
 45. *Hydrocyphon jaechi* YOSHITOMI & KLAUSNITZER Mainland China
 46. *Hydrocyphon renati* NYHOLM, 1981 Myanmar
 47. *Hydrocyphon satoi* YOSHITOMI, 2001 Japan, Taiwan, Korea
 48. *Hydrocyphon taiwanus* YOSHITOMI, 2001 Taiwan

species incertae sedis

49. *Hydrocyphon atratus* MOTSCHULSKY, 1863 Ceylon

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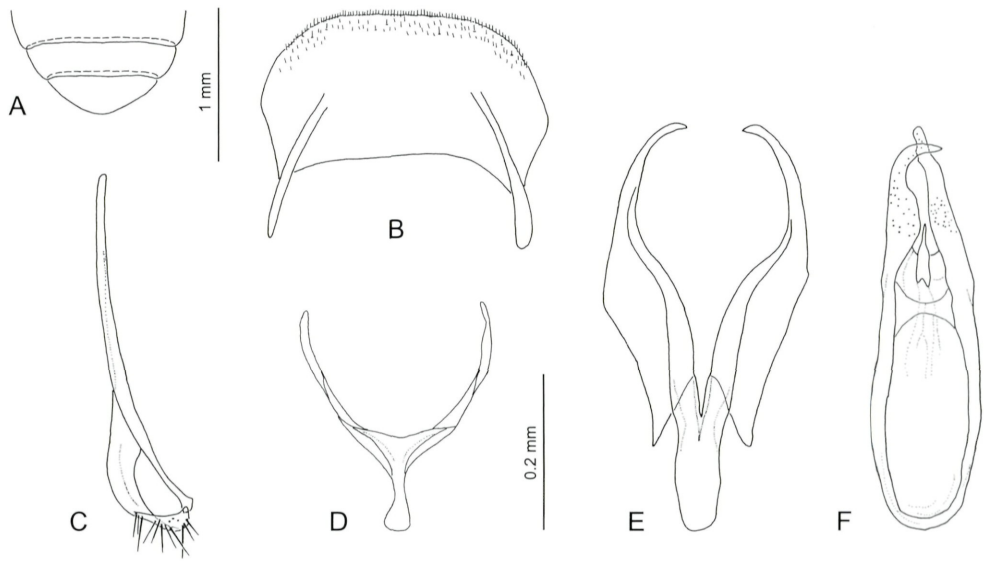


Fig. 2: *Hydrocyphon guangxiensis* sp.n., male, A) abdominal sternites, B) 8th tergite, C) 8th and 9th sternites, D) 9th tergite, E) tegmen, F) penis.

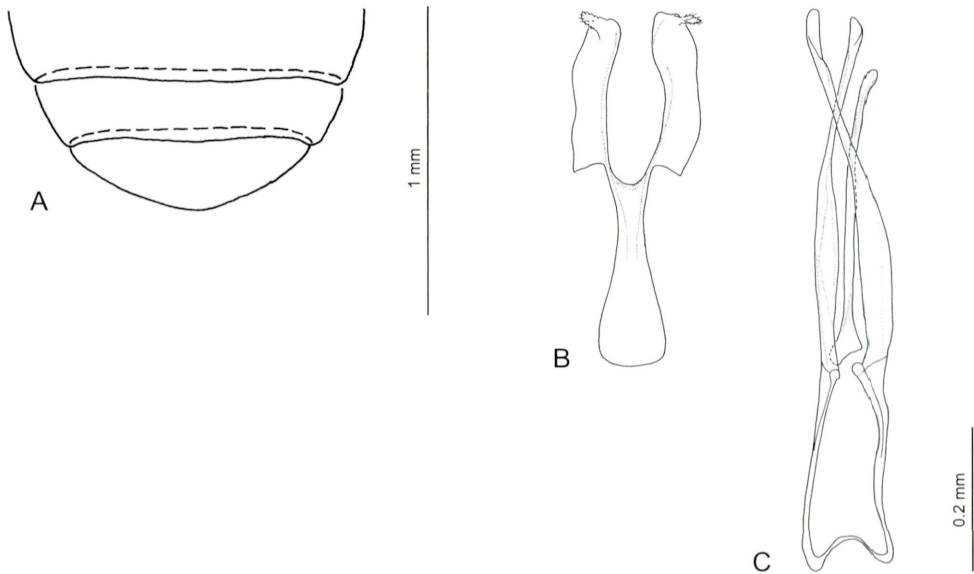


Fig. 3: *Hydrocyphon hainanensis* sp.n., male, A) abdominal sternites, B) tegmen, C) penis.

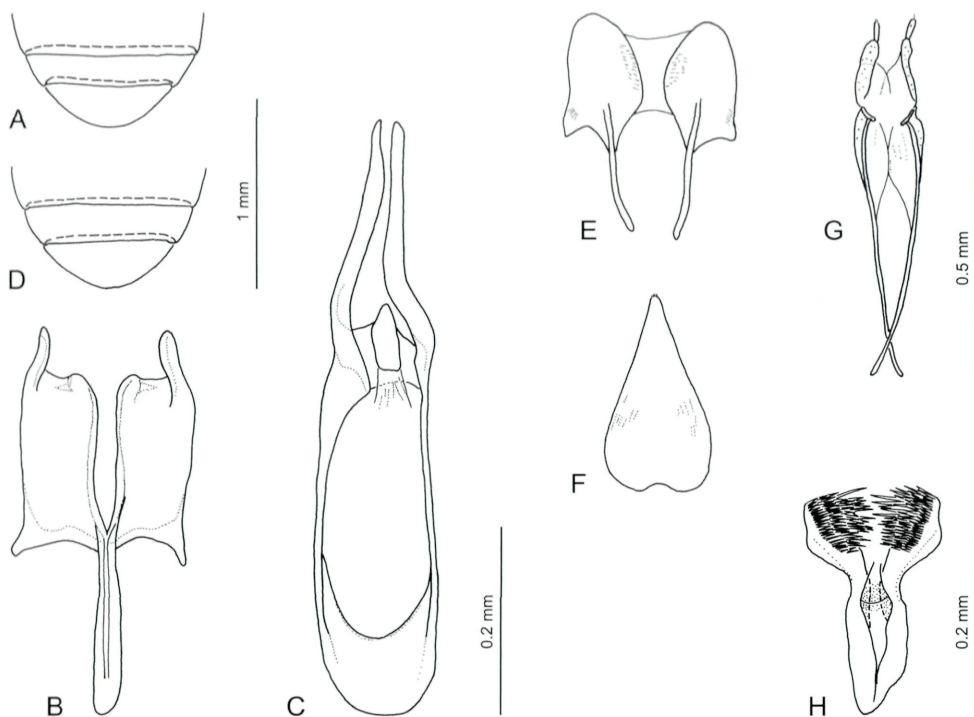


Fig. 4: *Hydrocyphon dudgeoni* sp.n., A – C: male, A) abdominal sternites, B) tegmen, C) penis; D–H: female, D) abdominal sternite, E) 8th tergite, F) 8th sternite, G) ovipositor, H) prehensor.

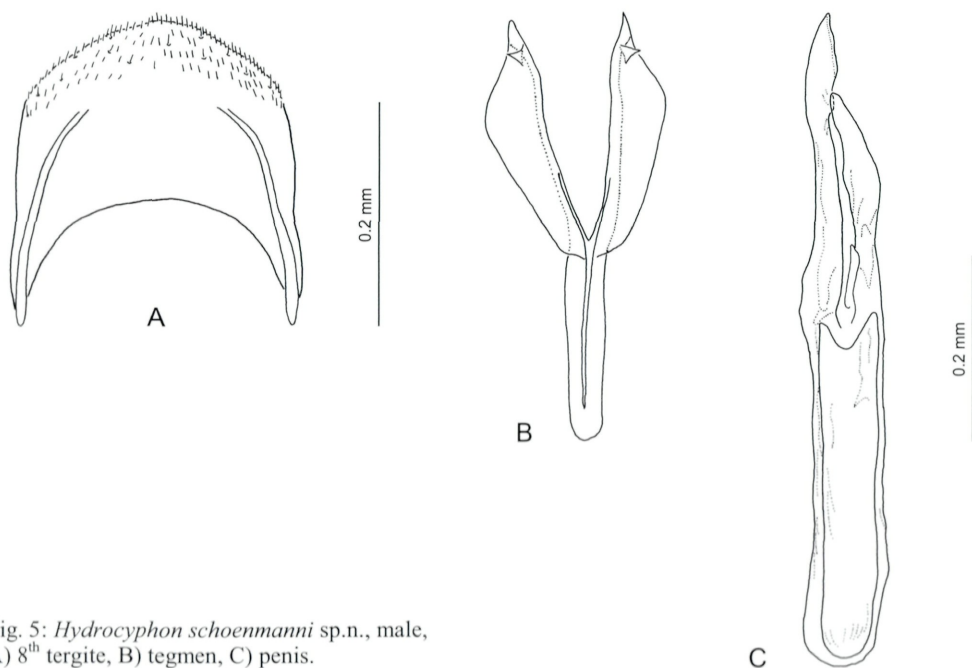


Fig. 5: *Hydrocyphon schoenmanni* sp.n., male, A) 8th tergite, B) tegmen, C) penis.

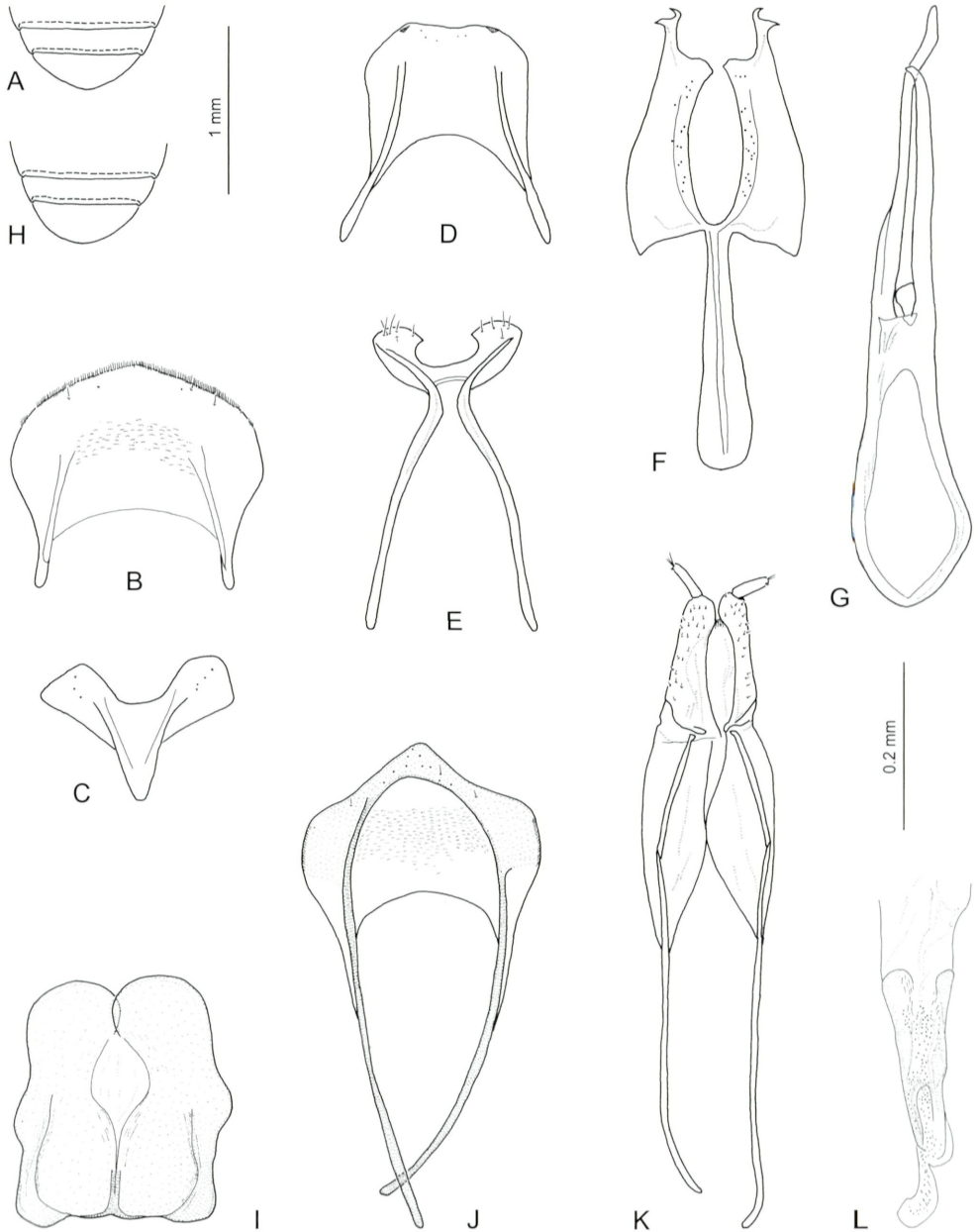


Fig. 6: *Hydrocyphon lii* sp.n., A – G: male, A) abdominal sternites, B) 8th tergite, C) 8th sternite, D) 9th tergite, E) 9th sternite, F) tegmen, G) penis; H – L: female, H) abdominal sternites, I) 8th sternite, J) 8th tergite, K) ovipositor, L) prehensor.

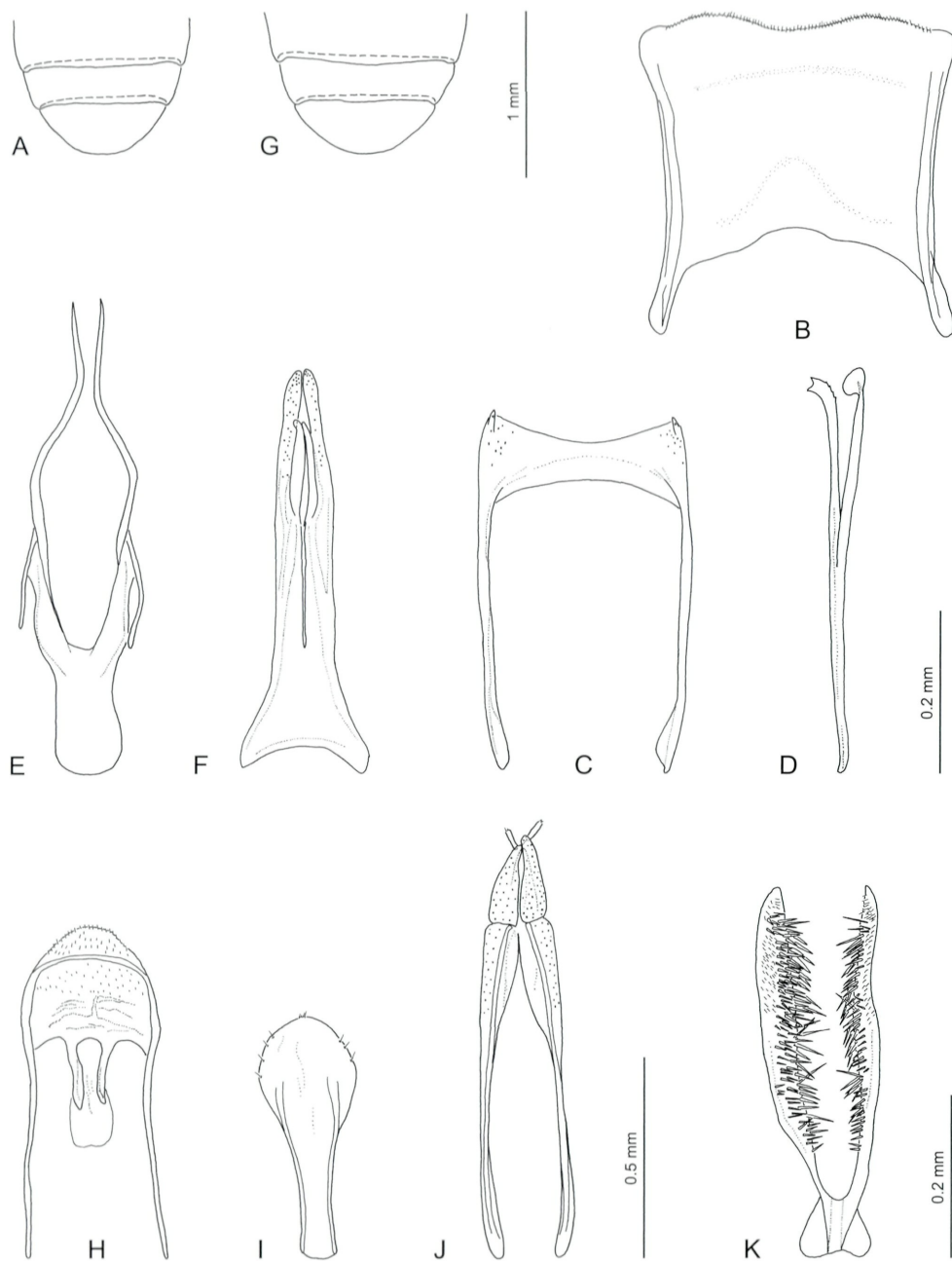


Fig. 7: *Hydrocyphon uenoi* sp.n., A – F: male, A) abdominal sternites, B) 8th tergite, C) 9th tergite, D) 8th and 9th sternites, E) tegmen, F) penis; G – K: female, G) abdominal sternites, H) 8th tergite, I) 8th sternite, J) ovipositor, K) prehensor.

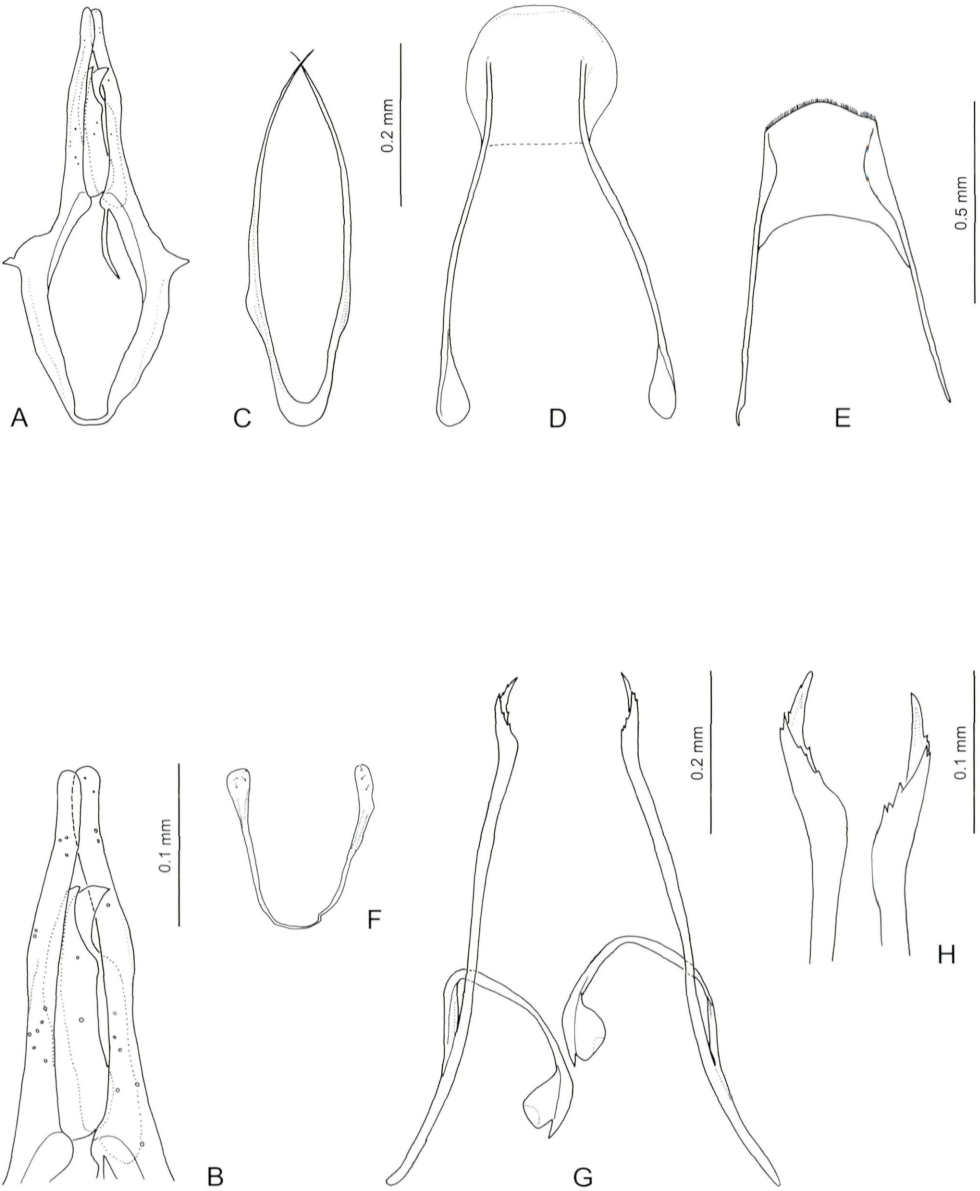


Fig. 8: *Hydrocyphon sinicus*, syntype, A) penis, B) penis, detail, C) tegmen, D) 9th tergite, E) 8th tergite, F) 8th sternite, G) 9th sternite, H) 9th sternite, apices.

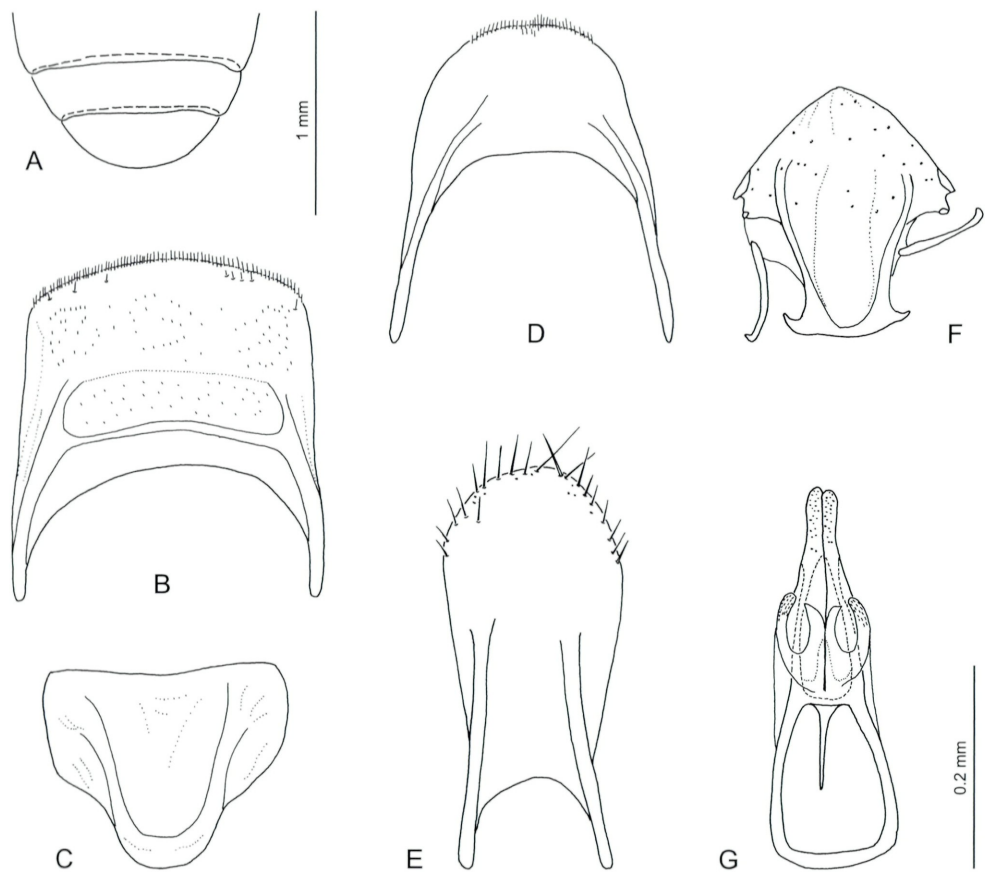


Fig. 9: *Hydrocyphon jaechi* sp.n., male, A) abdominal sternites, B) 8th tergite, C) 8th sternite, D) 9th tergite, E) 9th sternite, F) tegmen, G) penis.

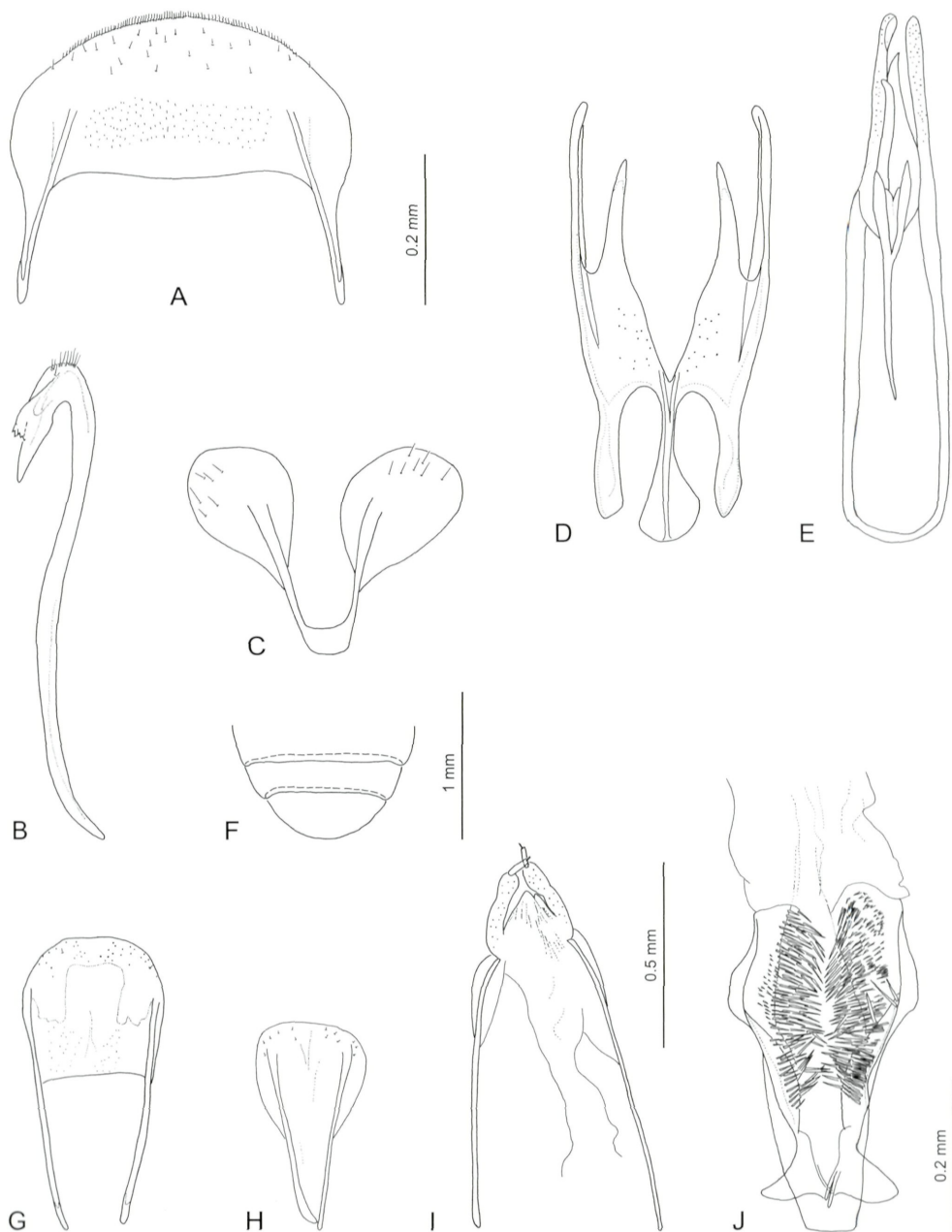


Fig. 10: *Hydrocyphon bicornis* sp.n., A – E: male, A) 8th tergite, B) 8th and 9th sternites, C) 9th tergite, D) tegmen, E) penis; F – J: female, F) abdominal sternites, G) 8th tergite, H) 8th sternite, I) ovipositor, J) prehensor.

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