The Ambush Bugs of China: Taxonomic Knowledge and Distribution Patterns (Heteroptera, Reduviidae, Phymatinae)[1]

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Abstract: Forty-five species of Chinese ambush bugs belonging to three tribes, Phymatini, Carcinocorini, and Macrocephalini, are listed and keyed. Distribution maps of all species and habitus illustrations of a representative species of each of the nine genera, *Agdistocoris*, *Amblythyreus*, *Carcinochelis*, *Carcinocoris*, *Chelocoris*, *Cnizocoris*, *Diurocoris*, *Glossopelta*, and *Phymata*, are provided. The biology and relevance of this group in mountainous forest ecosystems are briefly discussed.

Key words: Ambush bugs, China, distribution, Phymatinae, Reduviidae, taxonomy.

Introduction

Most ambush bugs are small or mid-sized insects which prefer to stay in flowers or on small twigs of shrubs, where they lurk for prey. The most striking character is the raptorial, chelate or mantid-like forelegs, which are only missing in the Ethiopian *Themonocoris*, probably the ancestral genus (and subfamily), with four known species, however, their phylogenetic position is still a matter of discussion (e.g. Carayon et al. 1958; Van Doesburg 2004).

To date, approximately 290 species have been described from all over the world, with the exception of Australia, New Zealand, and the Pacific islands. Because of distinct sexual dimorphism in shape, structures, and colors, and the often limited material available for study of the variability of characters, determination sometimes is challenging.

The first summary of the Chinese Phymatinae fauna we are aware of includes 35 species (Hsiao & Liu 1981). Putshkov & Putshkov (1996) listed 41 species, and in the present paper 45 species belonging to nine genera and three tribes (Carcinocorini, Macrocephalini, Phymatini) are listed and keyed for China. In Carcinocorini, seven species are recognized in *Chelocoris*, two in *Carcinocoris*, and one in *Carcinochelis*. In Macrocephalini, only one species is known in each of two genera, *Diurocoris* and *Agdistocoris*; and the genera, *Glossopelta*, *Cnizocoris*, and *Amblythyreus* include 6, 14, and 11 species, respectively. In Phymatini, the genus *Phymata* includes two species from China.

Material and Methods

Distribution of the species was compiled from the literature, but some data were excluded either because it was not possible to trace the position of the localities in China or because of ambiguous determinations. Keys are modified from Froeschner & Kormilev (1989) and include all species described thereafter. An ! indicates a new record for the region according to Putshkov & Putshkov (1996).

Abbreviations: NW: Northwestern Territory, NO: Northern Territory, NE: Northeastern Territory, WP: Western Plateau, SW: Southwestern Territory, CE: Central Territory, SE: Southeastern Territory, TA: Taiwan, EL: Extra Limital, loc.typ.: locus typicus.

[1] It is with great pleasure that we dedicate this paper to Ernst Heiss, in recognition of the contributions he has made to the systematics of the Aradidae, and also on the heteropteran fauna of Europe.

Denisia 19, zugleich Kataloge der OÖ. Landesmuseen Neue Serie 50 (2006), 795–812

Taxonomy

Phymatinae Laporte

Key to tribes of Chinese Phymatinae

1 Head above eye and propleuron just ventral to lateral margin each with a distinct longitudinal groove; protarsi and propretarsi normal . . . . . Phymatini

– Head and propleuron without that groove; protarsi and propretarsi absent 2

2 Profemur with anteroventral angle extended as a fingerlike projection as long as tibia . . . . . Carcinocorini

– Profemur without projection . . . . . Macrocephalini

Phymatini Laporte

Phymata Latreille 1802

The genus *Phymata* includes some 150 taxa, almost all of them occurring in the New World. Only five species are known from the Palaearctic Region, and two of these occur in China.

Key to species of Chinese *Phymata*

1 Dark brown; ratio of antennal segments I-IV in male 0.36: 0.52: 0.48: 1.52 . . . . . *Phymata crassipes* (Fabricius)

– Body color lighter; ratio of antennal segments I-IV in male 0.32: 0.52: 0.36: 1.20 . . . . . *Phymata chinensis* Drake

Phymata crassipes (Fabricius 1775)

Acanthia crassipes Fabricius 1775: 695.
Phymata crassipes (Fabricius). - Maa & Lin 1956: 113. Kormilev 1957: 63. Hsiao & Liu 1981: 374. Froeschner & Kormilev 1989: 49. Nonnaizab et al. 1989: 341. Putshkov & Putshkov 1996: 185.

Distribution: NE: Heilongjiang (Harbin), Jilin (Mt. Changbai); NO: Inner Mongolia (Xing´an League); EL: widely distributed in the Palaearctic Region.

Phymata chinensis Drake 1947 (Fig. 1)

Phymata chinensis Drake 1947: 145. Nonnaizab et al. 1989: 341. Putshkov & Putshkov 1996: 185. *Phymata crassipes chinensis* Drake. - Kormilev 1957: 64. Hsiao & Liu 1981: 374. Froeschner & Kormilev 1989: 49.

Distribution: NO: Beijing, Inner Mongolia (Xing´an League), Shandong (Tsinanfu (= Jinan) Longtong [loc.typ.]), Shanxi (Wuzai), Tianjin (Ji Co.).

Note: The taxonomic status of *Phymata chinensis* is still a matter of controversy. *Phymata chinensis* was described as a species (Drake 1947), downgraded (Kormilev 1951) and synonymized (Maa & Lin 1956), raised as a subspecies (Kormilev 1957), synonymized again (Josifov 1968), and restored to species status (Nonnaizab et al. 1989). Hence, a comprehensive analysis of specimens across the distribution range, combining morphological and molecular techniques, seems necessary to determine its true status.

Carcinocorini Handlirsch

Key to genera of Chinese Carcinocorini

1 Scutellum very long, about twice as long as pronotum and reaching past midlength of membrane . . . . . *Carcinocoris*

– Scutellum short, not longer than pronotum and reaching only to base of membrane 2

2 Apical projection of anterior femur thickened, about twice the diameter of tibia . . . . . *Carcinochelis*

– Apical projection of anterior femur slender, subequal to diameter of tibia . . . . . *Chelocoris*

Carcinochelis Fieber 1861

The genus *Carcinochelis* includes seven species distributed in the Oriental region. Only one species reaches the south of China.

Carcinochelis bannaensis Hsiao & Liu 1979 (Fig. 2)

Carcinochelis bannaensis Hsiao & Liu 1979: 170. - Hsiao & Liu 1981: 387. Froeschner & Kormilev 1989: 8. Putshkov & Putshkov 1996: 183.

Distribution: SW: Yunnan (Xishuangbanna [loc.typ.]).

Carcinocoris Handlirsch 1897

The genus *Carcinocoris* includes seven species distributed in the Oriental region. Two species occur in the south of China.

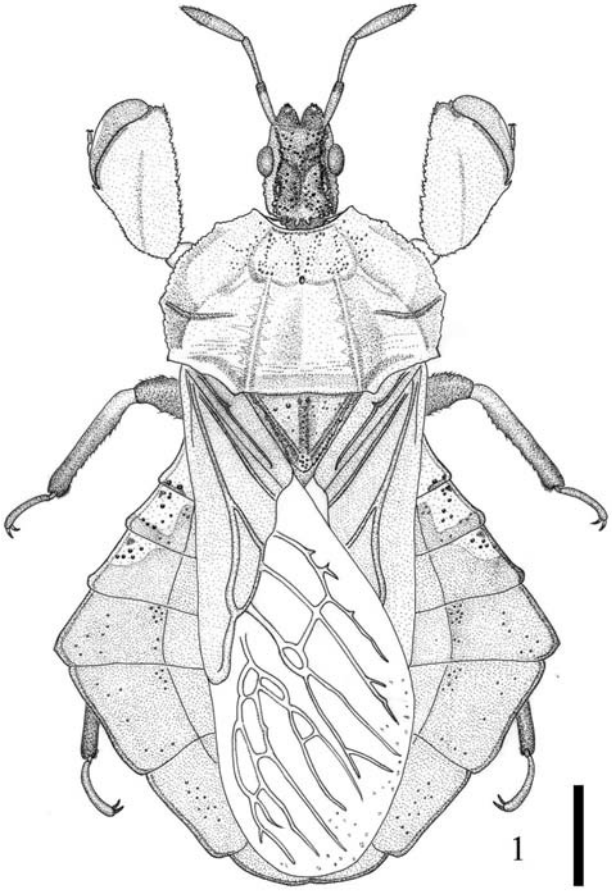


Fig. 1: *Phymata chinensis* Drake. Habitus of female. Scale bar = 1 mm.

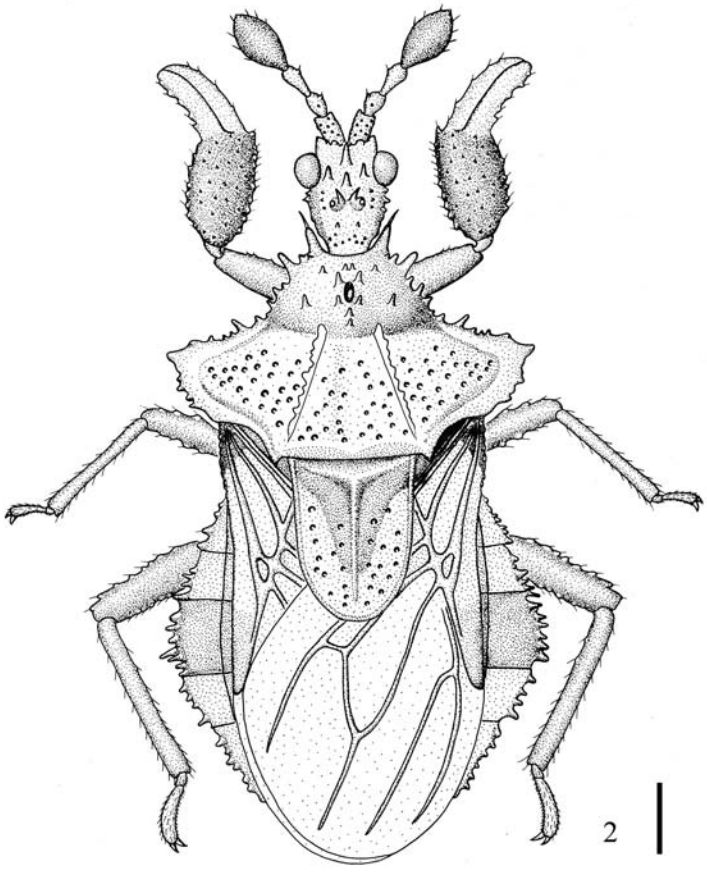


Fig. 2: *Carcinochelis bannaensis* Hsiao & Liu. Habitus of male (from Hsiao & Liu 1979). Scale bar = 1 mm.

Key to species of Chinese *Carcinocoris*

1 Abdomen elliptical, width about two-thirds length ("C. *binghami*-group"); scutellum with long setigerous spines; connexival margin with few long spines
. . . . . *Carcinocoris binghami* (Sharp)

– Abdomen rhomboid, about as wide as long ("C. *castetsi*-group"); scutellum with 14-18 short setigerous spines; connexival margin with few short spines . . . . . .*Carcinocoris yunnanus* Rabitsch, Cui & Cai

Carcinocoris binghami (Sharp 1897) (Fig. 3)

Carcinochelis binghami Sharp 1897: 35.
Carcinocoris binghami (Sharp). - Handlirsch 1897: 221. Maa & Lin 1956: 149. Hsiao & Liu 1979: 170, 1981: 387. Froeschner & Kormilev 1989: 9. Putshkov & Putshkov 1996: 184.

Distribution: SW: Yunnan (Simao, Gengma, Jingdong, Xishuangbanna); EL: Laos, Myanmar [loc.typ.], Thailand, Vietnam.

Carcinocoris yunnanus Rabitsch, Cui & Cai 2006

Carcinocoris yunnanus Rabitsch, Cui & Cai 2006: 581.

Distribution: SW: Yunnan (Baoshan, Lijiang [loc.typ.]).

Chelocoris Bianchi 1899

The genus *Chelocoris* includes 16 species distributed in the Oriental region. Seven species occur in China.

Key to species of Chinese *Chelocoris*

1 Head without spines between eyes 2

– Head with spines between eyes 4

2 Membrane with two cells, the outer slightly longer than the inner; anterolateral borders of pronotum with spines; lateral angles of pronotum angular; body length 8.5-9 mm . . . . . .
. . . . . *Chelocoris handlirschi* Bianchi

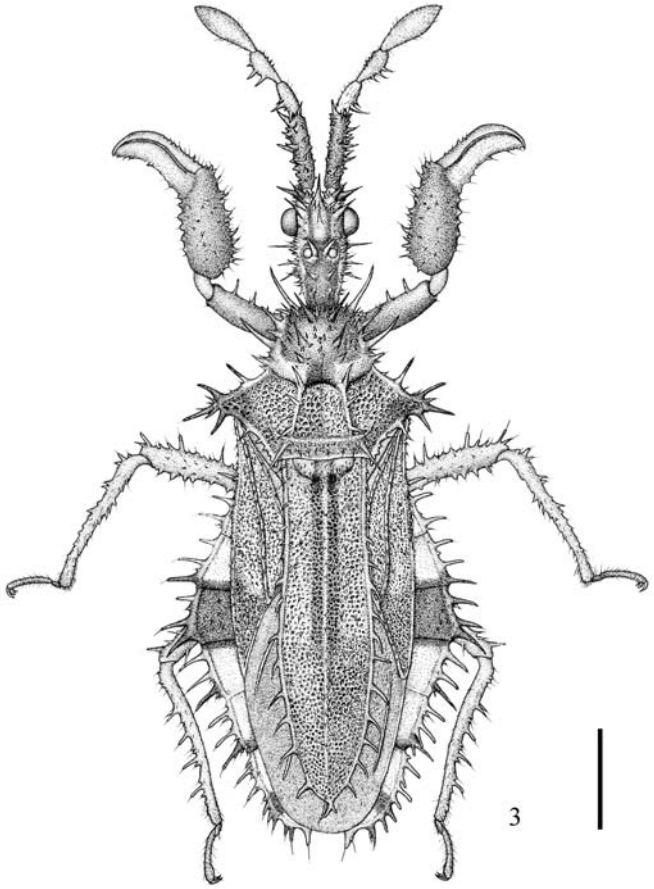


Fig. 3: *Carcinocoris binghami* (SHARP). Habitus of male. Scale bar = 1 mm.

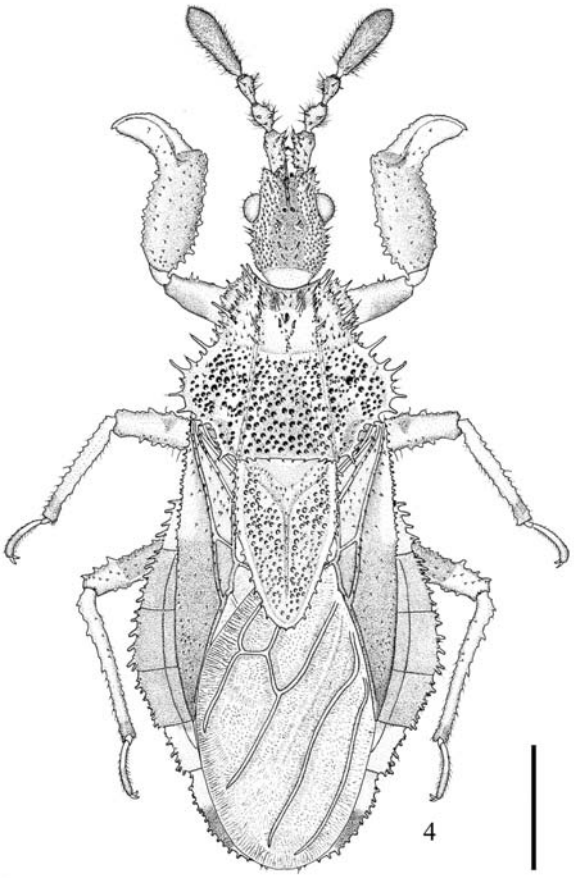


Fig. 4: *Chelocoris yunnanus* HSIAO & LIU. Habitus of male. Scale bar = 1 mm.

– Membrane with the two cells subequal in length 3

3 Large, over 7 mm in length. Forelobe of head with 3 distinct spines longitudinally in a row; scutellum reaching end of abdominal segment III; several small spines on each side of anterior border of hind lobe of pronotum. Lengths (mm) of antennal segment I: II: III: IV = 0.34: 0.24: 0.26: 1.36, and 0.36: 0.20: 0.20: 0.80, in male and female, respectively; body length 7.4-8.7 mm . . . . . *Chelocoris tibeticus* HSIAO & LIU

– Small, less than 7 mm long. Forelobe of head without a distinct spine; scutellum reaching end of abdominal segment IV; a single small spine on each side of anterior border of hind lobe of pronotum. Lengths (mm) of antennal segment I: II: III: IV= 0.44: 0.32: 0.36: 1.04, and 0.40: 0.20: 0.24: 0.48, in male and female, respectively; body length 6.5-6.8 mm . . . . . *Chelocoris heissi* RABITSCH, CUI & CAI

4 Lateral projection of posterior pronotal lobe with outer apex truncate (ignore series of marginal spines, when present), parallel to midline of pronotum; body length 7.7 mm . . . . . *Chelocoris dissimilis* LIU

– Lateral projection of posterior pronotal lobe with outer apex angled, not parallel to midline of pronotum 5

5 Head with two spines between eyes . . . . . *Chelocoris bianchii* KORMILEV

– Head with three or four spines between eyes 6

6 Head with three spines between eyes . . . . . *Chelocoris yunnanus* HSIAO & LIU

– Head with four spines between eyes . . . . . *Chelocoris sinicus* HSIAO & LIU

Chelocoris bianchii KORMILEV 1971

Chelocoris bianchii KORMILEV 1971: 884. - HSIAO & LIU 1981: 388. FROESCHNER & KORMILEV 1989: 11. PUTSHKOV & PUTSHKOV 1996: 184.

Distribution: SW: Sichuan (Kangding [loc.typ.]). WP?

Chelocoris dissimilis Liu 1988

Chelocoris dissimilis Liu 1988: 72. - Froeschner & Kormilev 1989: 11. Putshkov & Putshkov 1996: 184.

Distribution: SW: Yunnan (Lijiang [loc.typ.]).

Chelocoris handlirschi Bianchi 1899

Chelocoris handlirschi Bianchi 1899: 235. - Maa & Lin 1956: 145. Hsiao & Liu 1981: 388. Froeschner & Kormilev 1989: 11. Liu 1992: 174. Putshkov & Putshkov 1996: 184.

Distribution: SW: Sichuan (Xiaojin Co., Ma'erkang).

Chelocoris heissi Rabitsch, Cui & Cai 2006

Chelocoris heissi Rabitsch, Cui & Cai 2006: 584.

Distribution: SW: Yunnan (Daju-Tiger Gorge, Lijiang [loc.typ.]).

Chelocoris sinicus Hsiao & Liu 1979

Chelocoris sinicus Hsiao & Liu 1979: 172. - Hsiao & Liu 1981: 389. Froeschner & Kormilev 1989: 12. Putshkov & Putshkov 1996: 184.

Distribution: SW: Yunnan (Hekou [loc.typ.]); SE: Fujian (Fuzhou).

Chelocoris tibeticus Hsiao & Liu 1979

Chelocoris tibeticus Hsiao & Liu 1979: 171. - Hsiao & Liu 1981: 387. Froeschner & Kormilev 1989: 12. Liu 1992: 174. Putshkov & Putshkov 1996: 184.

Distribution: WP: Xizang (Jiangda Co. [loc.typ.]); SW: Sichuan (Dege).

Chelocoris yunnanus Hsiao & Liu 1979 (Fig. 4)

Chelocoris yunnanus Hsiao & Liu 1979: 171. - Hsiao & Liu 1981: 388. Kormilev & Van Doesburg 1986: 126. Froeschner & Kormilev 1989: 12. Liu 1992: 174. Putshkov & Putshkov 1996: 184.

Distribution: SW: Yunnan (Dali, Weixi, Xiaguan Co. [loc.typ.]), Sichuan (Luding, Tatsienlu).

Macrocephalini Handlirsch

Key to genera of Chinese Macrocephalini

1 Scutellum very long, reaching or surpassing apex of membrane 2

– Scutellum triangular or U-shaped, not reaching midlength of membrane 4

2 Abdomen apically broadly with acutely triangular emargination between two long, narrow, subtriangular extensions; antennal segment II ventrally near apex with a prominent, nearly erect, conical projection whose length is half as long as segment's diameter . . . . . *Diurocoris*

– Abdomen apically with very short extensions or none; antennal segment II without such a projection 3

3 Preocular part of head laterally with a strong carina forming upper edge of longitudinal groove for reception of antenna at rest . . . . . *Agdistocoris*

– Preocular part of head laterally convexly rounded, not carinate . . . . . *Glossopelta*

4 Abdomen oblong or ovoid, much narrow than long; scutellum subangular apically . . . . . *Cnizocoris*

– Abdomen rhomboidal, as wide or wider than long; scutellum broadly rounded apically . . . . . *Amblythyreus*

Agdistocoris Kormilev 1962

The genus *Agdistocoris* includes three species; two occur in India and one in the south-east of China.

Agdistocoris kormilevi Cui, Cai & Rabitsch 2003 (Fig. 5)

Agdistocoris kormilevi Cui, Cai & Rabitsch 2003: 669.

Distribution: SE: Hainan (Jianfengling, Mt. Wuzhi [loc.typ.]).

Amblythyreus Westwood 1842

The genus *Amblythyreus* includes 15 species, of which eleven occur in China.

Key to species of Chinese *Amblythyreus*

1 Abdomen widest at end of connexivum II, latter wider than III 2

– Abdomen widest at juncture of connexiva II and III, or connexivum III 3

2 Antennal segment IV (male) about one-third longer than II and III together, 3.5 times as long as thick; three times as long as thick in female; pronotum 1.5 times as wide as long; body length 10-11 mm . . . . . *Amblythyreus martini* Handlirsch

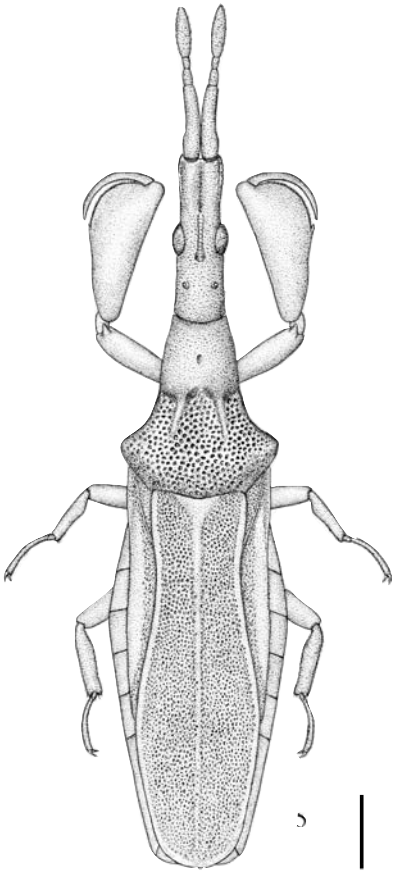


Fig. 5: *Agdistocoris kormilevi* Cui, Cai & Rabitsch. Habitus of female. Scale bar = 1 mm.

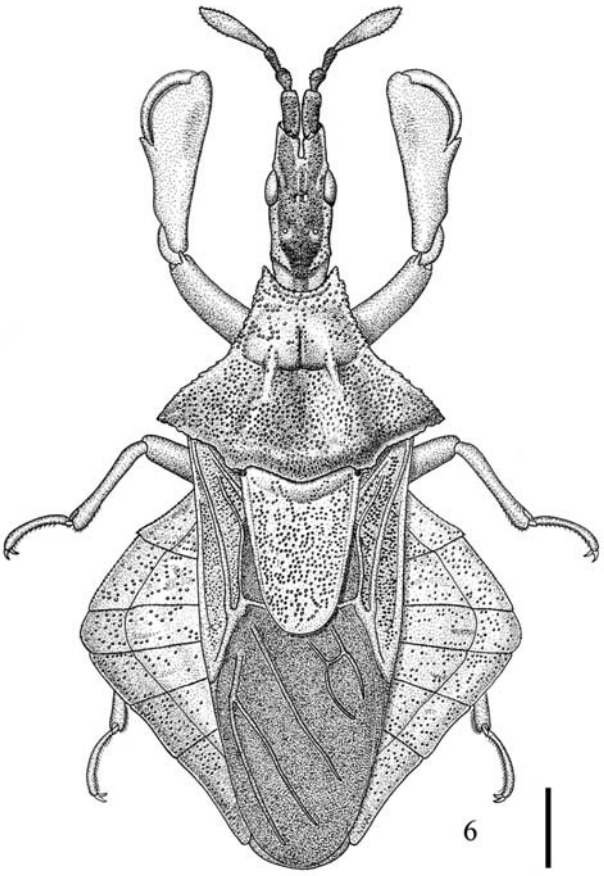


Fig. 6: *Amblythyreus esakii* Maa & Lin. Habitus of male. Scale bar = 1 mm.

– Antennal segment IV (male) about twice as long as II and III together, 5.5 times as long as thick; pronotum 1.67 times as wide as long; body length 9 mm . . . . . *Amblythyreus oberthueri* Handlirsch

3 Abdomen widest at juncture of connexiva II and III 4

– Abdomen widest at connexivum III . . . 8

4 Anterolateral borders of pronotum almost straight 5

– Anterolateral borders of pronotum sinuate 6

5 Antennal segment III as long as I; antennal segment IV (female) as long as II and III together, or 1.5 times as long as II and III together (male); length 10 mm . . . . . *Amblythyreus potaninae* (Bianchi)

– Antennal segment III two-thirds as long as I; antennal segment IV (female) one-and-a-half times as long as II and III together; body length 13 mm . . . . . *Amblythyreus rectus* Maa & Lin

6 Body long and narrow, two-and-a-half times as long as wide (male); abdomen as wide as pronotum; body length 9.7 mm . . . . . *Amblythyreus izzardi* Kormilev

– Body less elongate; abdomen always wider than pronotum; body length > 10 mm 7

7 Abdomen only slightly wider than pronotum (23:20); lateral angles of pronotum forming an obtuse angle; antennal segment IV twice as long as II and III together; body length 10.5 mm . . . . . *Amblythyreus esakii* Maa & Lin

– Abdomen one-and-a-half times as wide as pronotum (30:20); lateral angles of pronotum forming a right angle; antennal segment IV only one-and-a-half times as long as II and III together; body length 14 mm . . . . . *Amblythyreus taiwanus* Sonan

8 Abdomen widest at anterior one-third of connexivum III 9

– Abdomen widest at middle of connexivum III 10

9 Posterolateral borders of abdomen almost straight; lateral angles of abdomen forming an obtuse angle; body length 10 mm . . . . *Amblythyreus fasciatus* (DUDICH)

– Posterolateral borders of abdomen strongly sinuate; lateral angles of abdomen forming a right angle; body length 13 mm . . . . . *Amblythyreus chapa* KORMILEV

10 Lateral angles of abdomen rounded; body length 11 mm . . . . . *Amblythyreus gestroi* HANDLIRSCH

– Lateral angles of abdomen angular; body length 11.5-12 mm; antennal segment IV (male) twice as long as II and III together . . . . . *Amblythyreus angustus* (WESTWOOD)

Amblythyreus angustus (WESTWOOD 1842)

Macrocephalus (*Amblythyreus*) *angustus* WESTWOOD 1842: 31.
Amblythyreus angustus (WESTWOOD). - HANDLIRSCH 1897: 212. SONAN 1935: 401. MAA & LIN 1956: 127. HSIAO & LIU 1981: 386. FROESCHNER & KORMILEV 1989: 17. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: TA:? EL: India, Laos, Nepal, Vietnam.

Note: The record for Taiwan by ESAKI (1922) was questioned by SONAN (1935).

Amblythyreus chapa KORMILEV 1962

Amblythyreus chapa KORMILEV 1962a: 352, 356. HSIAO & LIU 1981: 385. FROESCHNER & KORMILEV 1989: 17. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: SE: (Hainan); SW: Sichuan (Baoxing); EL: Vietnam (Chapa [loc.typ.]).

Amblythyreus esakii MAA & LIN 1956 (Fig. 6)

Amblythyreus gestroi (nec HANDLIRSCH) ESAKI 1930: 35. ESAKI 1932: 1651. SONAN 1935: 401.
Amblythyreus esakii MAA & LIN 1956. 128. HSIAO & LIU 1981: 385. FROESCHNER & KORMILEV 1989: 17. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: SW: Yunnan (Kunming, Shilin); TA: Sawanohira near Arisan [loc.typ.].

Amblythyreus fasciatus (DUDICH 1922)

Paramblythyreus fasciatus DUDICH 1922: 163, 175.
Amblythyreus fasciatus (DUDICH). - MAA & LIN 1956: 127. KORMILEV 1962a: 356. HSIAO & LIU 1981: 385. FROESCHNER & KORMILEV 1989: 17. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: NO: Shandong (Kiaotschou = Jiaoxian [loc.typ.]), "North China".

Amblythyreus gestroi HANDLIRSCH 1897

Amblythyreus gestroi HANDLIRSCH 1897: 211. MAA & LIN 1956: 131. HSIAO & LIU 1981: 385. FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: SW: Yunnan (Jingdong); EL: India, Myanmar [loc.typ.].

Note: The record for TA by PUTSHKOV & PUTSHKOV (1996) most probably refers to SONAN (1935), which belongs to *A. esakii* (*A. gestroi* nec HANDLIRSCH).

Amblythyreus izzardi KORMILEV 1962

Amblythyreus izzardi KORMILEV 1962a: 353. HSIAO & LIU 1981: 384. FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: WP: Xizang (Chayu); EL: Myanmar [loc.typ.]).

Amblythyreus martini HANDLIRSCH 1899

Amblythyreus martini HANDLIRSCH 1899: 33. MAA & LIN 1956: 127. HSIAO & LIU 1981: 383. FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 180.

Distribution: SW: Yunnan (Yunnan-sen [loc.typ.]).

Amblythyreus oberthueri HANDLIRSCH 1899

Amblythyreus oberthüri HANDLIRSCH 1899: 32. MAA & LIN 1956: 127.
Amblythyreus oberthuri HANDLIRSCH - HSIAO & LIU 1981: 383.
Amblythyreus oberthueri HANDLIRSCH - FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: SW: Yunnan (Yunnan-sen [loc.typ.]).

Amblythyreus potaninae (BIANCHI 1899)

Paramblythyreus potaninae BIANCHI 1899: 226.
Amblythyreus potaninae (BIANCHI). - MAA & LIN 1956: 126. KORMILEV 1962b: 6. HSIAO & LIU 1981: 383. FROESCHNER & KORMILEV 1989: 18. LIU 1992: 173. PUTSHKOV & PUTSHKOV 1996: 181. CUI et al. 2006: 91.
Amblythyreus potaniae (BIANCHI). - KORMILEV & VAN DOESBURG 1986: 125 (lapsus calami).

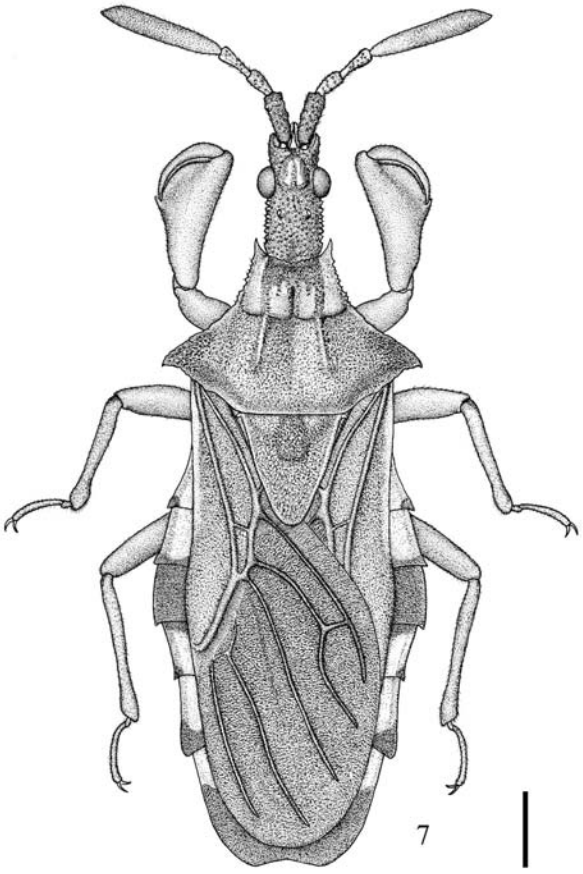


Fig. 7: *Cnizocoris sinensis* KORMILEV. Habitus of male. Scale bar = 1 mm.

Distribution: SW: Yunnan (Dali, Lijiang, Yongping), Sichuan (Batan [loc.typ.], Suifu, Xiangcheng); EL: India.

Amblythyreus rectus MAA & LIN 1956

Amblythyreus rectus MAA & LIN 1956: 128. HSIAO & LIU 1981: 384. KORMILEV & VAN DOESBURG 1986: 125. FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: SE: Guangxi (Yangshuo [loc.typ.]), Fujian (Shaowu).

Amblythyreus taiwanus SONAN 1935

Amblythyreus taiwana SONAN 1935: 401.
Amblythyreus taiwanus SONAN. - MAA & LIN 1956: 130. HSIAO & LIU 1981: 385. FROESCHNER & KORMILEV 1989: 18. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: TA: Kusukusu near Koshun [loc.typ.].

Cnizocoris HANDLIRSCH 1897

The genus *Cnizocoris* includes 16 species; all but two (from Bhutan and India) occur in China. This is the most species-rich genus of Chinese Phymatinae.

Key to species of Chinese *Cnizocoris*

1 Male 2

– Female 11

2 Pronotum wider than abdomen 3

– Pronotum narrower than abdomen . . . 5

3 Antennal segment II ovate, III tapering toward base, widest part subequal to II in thickness; antennal segment IV less than twice as long as II plus III; body length 9.8 mm . . . . . *Cnizocoris obvius* HSIAO & LIU

– Antennal segment II and III both ovate, subequal in thickness; antennal segment IV more than 2.5 times as long as segments II plus III 4

4 Lateral expansion of posterior pronotal lobe with apex sharply acute; body length 10 mm . . . *Cnizocoris davidi* HANDLIRSCH

– Lateral expansion of posterior pronotal lobe blunt, almost rectangular; body length 7.6-9.2 mm . . . . . *Cnizocoris hsiaoi* LIU

5 Antennal segment II almost twice as long as III; connexival segments II and III combined into a distinct angle projecting well beyond costal margin in repose; body length 8 mm . . . . . *Cnizocoris shirakii* SONAN

– Antennal segment II and III subequal in length; connexival segments II and III independently angulate, each projecting slightly posterolaterally 6

6 Antennal segment IV slightly shorter than I-III combined; body length 9.4-9.6 mm . . . . . *Cnizocoris drakei* KORMILEV

– Antennal segment IV at least as long as I-III combined 7

7 Antennal segment IV as long as I-III combined 8

– Antennal segment IV longer than I-III combined 9

8 Body length 7-7.5 mm . . . . . *Cnizocoris berezowskii* BIANCHI

– Body length 9.3 mm . . . . . .*Cnizocoris acellularis* NONNAIZAB, KORMILEV & QI

9 Antennal segment IV slightly longer than I-III combined 10

– Antennal segment IV at least one-third longer than I-III combined; body length 9.9 mm . . . . *Cnizocoris sinensis* KORMILEV

10 Tip of abdomen deeply and sharply incised; body length 8.8 mm . . . . . *Cnizocorisshanxiensis* HSIAO & LIU

– Tip of abdomen not incised; body length 9.0 mm . . . . . *Cnizocoris unicellularis* NONNAIZAB, KORMILEV & QI

11 Head three times as long as width across eyes 12

– Head less than twice as long as width across eyes 14

12 Antennal segment IV short, only as long as I and II combined; body length 8.5 mm . . . . . *Cnizocoris jakowlewi* (BIANCHI)

– Antennal segment IV as long as I, II and III combined 13

13 Abdomen elongate, almost elliptical, twice as long as its width; body length 7-7.5 mm . . *Cnizocoris berezowskii* BIANCHI

– Abdomen widely rhomboid, one-and-a-half times as long as width; body length 9 mm . . . . . *Cnizocoris potanini* (BIANCHI)

14 Head only one-and-one-third as long as width across eyes; abdomen wider, one-and-seven-tenths as wide as long; body length 11 mm . . . . . *Cnizocoris dimorphus* MAA & LIN

– Head at least one-and-eight-tenths times as long as width across eyes; abdomen less than one-and-one-fourth times as wide as long; body length 10.3 mm 15

15 Tip of abdomen deeply and roundly incised; body length 11.3 mm . . . . . *Cnizocoris mongolicus* NONNAIZAB, KORMILEV & QI

– Tip of abdomen not deeply incised; body length 10.3 mm . . . . . *Cnizocoris sinensis* KORMILEV

Cnizocoris acellularis NONNAIZAB, KORMILEV & QI 1989

Cnizocoris acellularis NONNAIZAB, KORMILEV & QI 1989: 344. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: NO: Inner Mongolia (Liangcheng Co., Mt. Manhan [loc.typ.], Huhe-hot).

Cnizocoris berezowskii BIANCHI 1899

Cnizocoris berezowskii BIANCHI 1899: 231. DUDICH 1922: 163, 176. MAA & LIN 1956: 121. HSIAO & LIU 1981: 380, 382. FROESCHNER & KORMILEV 1989: 21. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: SW: Sichuan (Li-xian Co. [loc.typ.], Mao Co., Songpan Co., Wenchuan Co.), "South China". WP?

Cnizocoris davidi HANDLIRSCH 1897

Cnizocoris davidi HANDLIRSCH 1897: 214. MAA & LIN 1956: 121. HSIAO & LIU 1981: 378, 381. FROESCHNER & KORMILEV 1989: 21. LIU 1992: 173. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: NO!: Shaanxi (Mt. Taibai); SW: Sichuan ("Tibet, Mou-Pin" = Baoxing County [loc.typ.], Mt. Emei, Guan Co., Kangding, Yajiang). WP?

Cnizocoris dimorphus MAA & LIN 1956

Cnizocoris dimorphus MAA & LIN 1956: 122. KORMILEV 1971: 883. HSIAO & LIU 1981: 379, 382. FROESCHNER & KORMILEV 1989: 21. LIU 1992: 173. PUTSHKOV & PUTSHKOV 1996: 181.

Distribution: CE: Jiangxi (Mt. Lu), Zhejiang (Mt. Tianmu [loc.typ.]); SE: Guangxi (Longsheng); SW: Sichuan (Wen Co., Nanping). WP? TA?

Cnizocoris drakei KORMILEV 1957

Cnizocoris drakei KORMILEV 1957: 64. HSIAO & LIU 1981: 383. FROESCHNER & KORMILEV 1989: 21. PUTSHKOV & PUTSHKOV 1996: 181.
Cnizocoris draki KORMILEV. - HSIAO & LIU 1981: 380 (lapsus calami).

Distribution: NO: Hebei (Zhuolu Co. Yangjiaping, Zhuolu Co. = Chahar, Yangkiaping [loc.typ.]).

Cnizocoris hsiaoi LIU 1988

Cnizocoris hsiaoi LIU 1988: 71. FROESCHNER & KORMILEV 1989: 22. PUTSHKOV & PUTSHKOV 1996: 182.

Distribution: SW: Yunnan (Lijiang [loc.typ.]).

Cnizocoris jakowlewi (BIANCHI 1899)

Leptothyreus jakowlewi BIANCHI 1899: 229.
Cnizocoris jakowlewi (BIANCHI). - MAA & LIN 1956: 121. FROESCHNER & KORMILEV 1989: 22. PUTSHKOV & PUTSHKOV 1996: 182.
Cnizocoris jakowlevi (BIANCHI). - HSIAO & LIU 1981: 381 (lapsus calami).

Distribution: SW: Sichuan [loc.typ.].

Cnizocoris mongolicus Nonnaizab, Kormilev & Qi 1989

Cnizocoris mongolicus Nonnaizab, Kormilev & Qi 1989: 342. Putshkov & Putshkov 1996: 182.

Distribution: NO: Inner Mongolia (Liangcheng Co., Mt. Manhan [loc.typ.]).

Cnizocoris obvius Hsiao & Liu 1979

Cnizocoris obvius Hsiao & Liu 1979: 169. Hsiao & Liu 1981: 378. Froeschner & Kormilev 1989: 22. Putshkov & Putshkov 1996: 182.

Distribution: WP: Xizang (Chayu Co. [loc.typ.]).

Cnizocoris potanini (Bianchi 1899)

Leptothyreus potanini Bianchi 1899: 230.
Cnizocoris potanini (Bianchi). - Maa & Lin 1956: 122. Hsiao & Liu 1981: 379, 381. Froeschner & Kormilev 1989: 22. Putshkov & Putshkov 1996: 182.

Distribution: NO: Shaanxi (Xi'an, Mt. Taibai), SW: Sichuan [loc.typ.], Baoxing).

Cnizocoris shansiensis Hsiao & Liu 1979

Cnizocoris shansiensis Hsiao & Liu 1979: 170. Froeschner & Kormilev 1989: 22. Putshkov & Putshkov 1996: 182.
Cnizocoris shanxiensis Hsiao & Liu. - Hsiao & Liu 1981: 378 (unjustified emendation). Nonnaizab et al. 1989: 345.

Distribution: NO: Shanxi (Xi Co. [loc.typ.]), Inner Mongolia (Baotou, Mts. Daqing, Mt. Manhan, Huhe-hot). NW?

Cnizocoris shirakii Sonan 1935

Cnizocoris shirakii Sonan 1935: 402. Maa & Lin 1956: 121. Froeschner & Kormilev 1989: 22. Putshkov & Putshkov 1996: 182.
Cnizocoris sirakii Sonan. - Hsiao & Liu 1981: 378 (lapsus calami).

Distribution: TA: Tamaru, Taihoku Pref. [loc.typ.].

Cnizocoris sinensis Kormilev 1957 (Figs 7-14)

Cnizocoris sinensis Kormilev 1957: 67. Hsiao & Liu 1981: 381, 382. Kormilev & Van Doesburg 1986: 125. Froeschner & Kormilev 1989: 22. Nonnaizab et al. 1989: 346. Putshkov & Putshkov 1996: 182.

Distribution: NO: Beijing, Inner Mongolia (Baotou, Mts. Daqing, Mts. Jiufeng, Mt. Manhan, Huhe-hot), Hebei (Zhuolu Co.), Shanxi (Mt. Guandi), Shaanxi (Ganquan Co.), Shangdong (Mt. Tai). CE: Jiangxi (Guling, Mt. Lu [loc.typ.]).

Cnizocoris unicellularis Nonnaizab, Kormilev & Qi 1989

Cnizocoris unicellularis Nonnaizab, Kormilev & Qi 1989: 342. Putshkov & Putshkov 1996: 182.

Distribution: NO: Inner Mongolia (Huhe-hot, Lamadong [loc.typ.], Baotou, Mt. Jiufeng, Liangcheng Co. Mt. Manhan).

Diurocoris Maa & Lin 1956

The genus *Diurocoris* includes three species, two of which occur in the Oriental Region; one is known from China.

Diurocoris nakabayashii (Sonan 1937) (Fig. 15)

Glossopelta nakabayashii Sonan 1937: 175.
Diurocoris nakabayashii (Sonan). - Maa & Lin 1956: 135. Froeschner & Kormilev 1989: 24. Putshkov & Putshkov 1996: 182.
Duirocoris nakabayashii (Sonan). - Hsiao & Liu 1981: 376 (lapsus calami).

Distribution: SE: Fujian (Bohea Hills); TA: Asahiga-oka Park in Keelung [loc.typ.], Jilong.

Glossopelta Handlirsch 1897

The genus *Glossopelta* includes ten species, distributed from India to southern China and Borneo; six species are known from China.

Key to species of Chinese *Glossopelta*

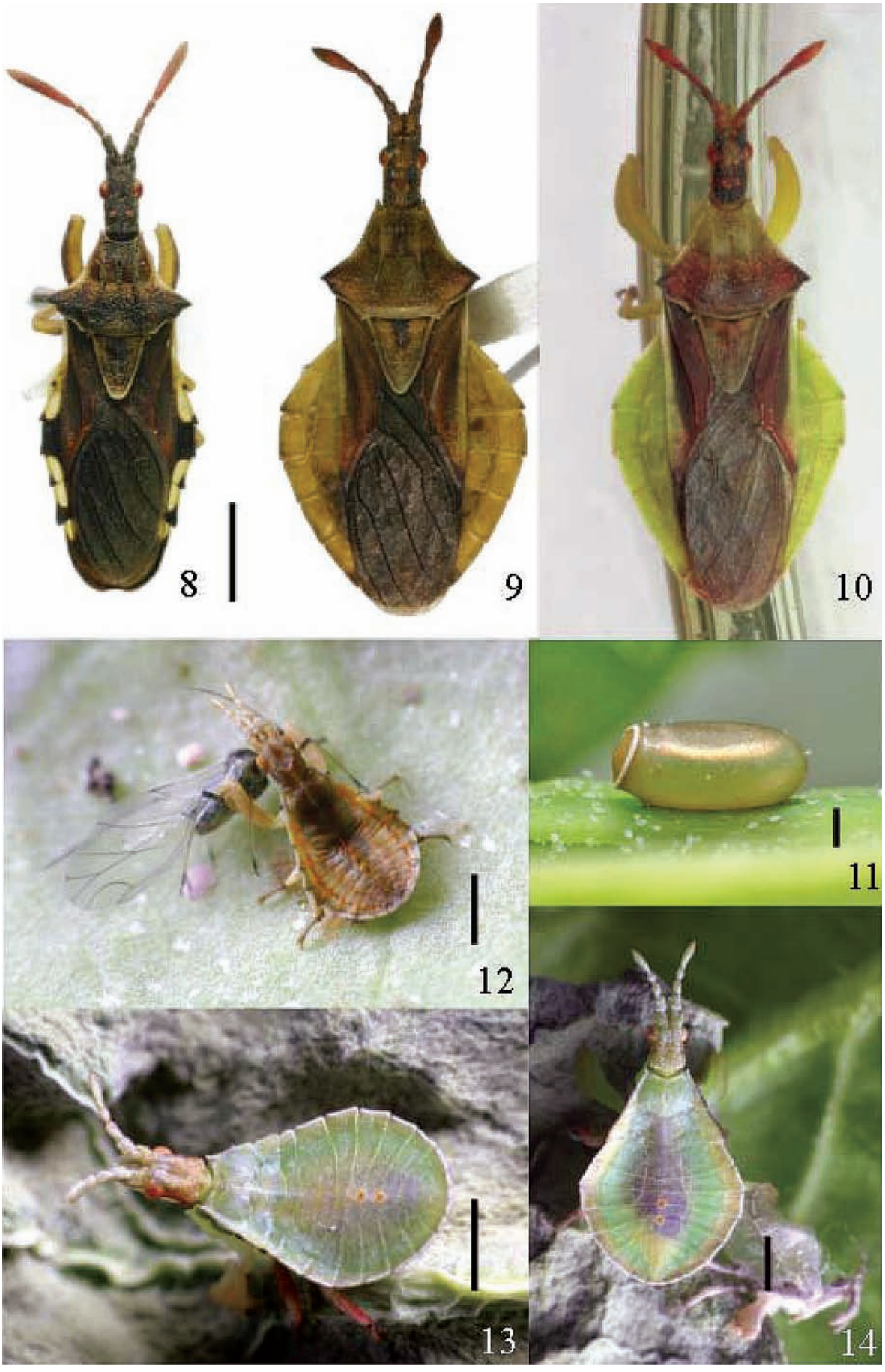
1 Lateral expansion of posterior pronotal lobe apically subtruncate with three rounded or blunt angles, median angle not or scarcely projecting laterad of the smaller angle on posterior margin 2

– Lateral expansion of posterior pronotal love with an acute angle distinctly projecting laterad of small angle on posterior margin 4

2 Lateral expansion of pronotum with three obtuse but distinct spines on apex; body length 11 mm . . . . . *Glossopelta tridens* Maa & Lin

– Lateral expansion of pronotum with apex broadly rounded anterior to angle on posterior margin 3

3 Antennal segment IV about as long as II plus III combined; dorsum in most part a



Figs 8-14: *Cnizocoris sinensis* Kormilev. (**8**) male (pinned) (**9**) female (pinned) (**10**) female (**11**) egg (**12**) 1st instar (**13**) 2nd instar (**14**) 3rd instar. Scale bar for 8-10 = 2 mm, for 11 = 0.1 mm, for 12-14 = 1 mm.

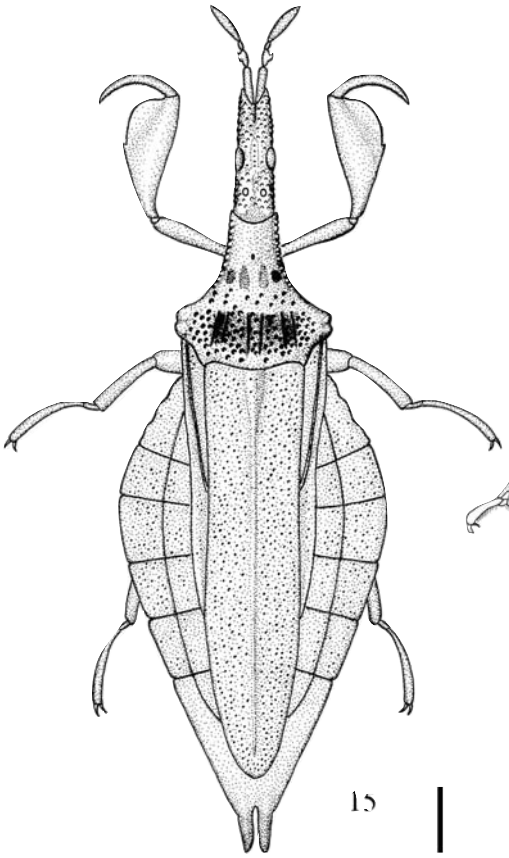


Fig. 15: *Diurocoris nakabayashii* (SONAN). Habitus of female (from SONAN 1937). Scale bar = 1 mm.

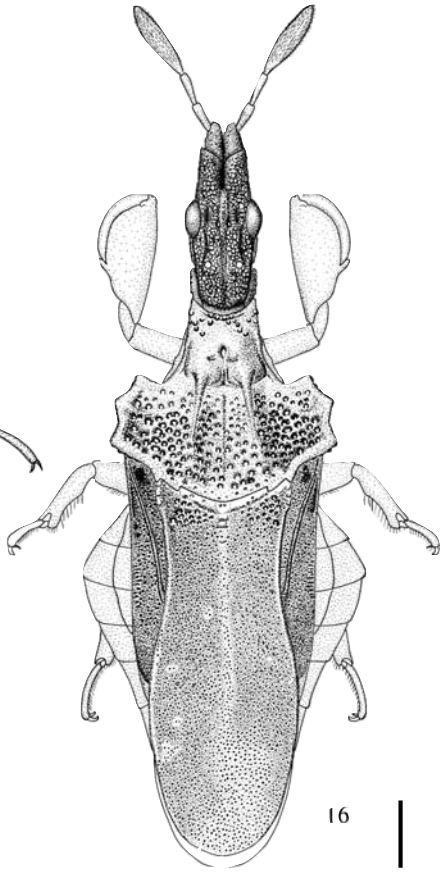


Fig. 16: *Glossopelta tridens* MAA & LIN. Habitus of male. Scale bar = 1 mm.

deep reddish brown; body length 8.5-9.6 mm .... *Glossopelta rhodiola* MAA & LIN

– Antennal segment IV distinctly longer than II plus III combined; dorsum yellowish; length 11 mm .... *Glossopelta truncata* DISTANT

4 Viewed laterally, preocular part of head four-fifths as long as postocular part; body length 9-9.5 mm .... *Glossopelta praerupta* MAA & LIN

– Viewed laterally, preocular part of head as long as postocular part 5

5 Antennal segments II plus III longer than distance between insertion of antennal II on I and front margin of eye; body length 10 mm .... *Glossopelta lineolata* DISTANT

– Antennal segments II plus III shorter than distance from insertion of antennal II on I and front margin of eye; body length 10-11.5 mm .... *Glossopelta acuta* HANDLIRSCH

Glossopelta acuta HANDLIRSCH 1897

Glossopelta acuta HANDLIRSCH 1897: 216. MAA & LIN 1956: 141. HSIAO & LIU 1981: 377. FROESCHNER & KORMILEV 1989: 25. PUTSHKOV & PUTSHKOV 1996: 183.

Distribution: SW: Yunnan (Midu, Jingdong, Puer, Jingping, Kunming, Xishuangbanna); EL: Indonesia (Sumatra) [loc.typ.], Myanmar [loc.typ.], Vietnam.

Glossopelta lineolata DISTANT 1909

Glossopelta lineolata DISTANT 1909: 496. DUDICH 1922: 163. MAA & LIN 1956: 142. HSIAO & LIU 1981: 376. KORMILEV & VAN DOESBURG 1986: 126. FROESCHNER & KORMILEV 1989: 25. PUTSHKOV & PUTSHKOV 1996: 183.

Distribution: NO!: Shandong (Kiaotschou = Jiaoxian); SW? EL: India, Myanmar, Laos, Vietnam.

Glossopelta praerupta MAA & LIN 1956

Glossopelta praerupta MAA & LIN 1956: 138, 141. HSIAO & LIU 1981: 377. FROESCHNER & KORMILEV 1989: 25. PUTSHKOV & PUTSHKOV 1996: 183.

Distribution: SE: Fujian (Kuatun Chong'an [loc.typ.], Bohea Hills Chong'an, Shaowu); EL: India.

Glossopelta rhodiola MAA & LIN 1956

Glossopelta rhodiola MAA & LIN 1956: 138, 139. HSIAO & LIU 1981: 377. FROESCHNER & KORMILEV 1989: 25.
Glossopelta radiola MAA & LIN. - PUTSHKOV & PUTSHKOV 1996: 183 (lapsus calami).

Distribution: NO: Beijing, SE: Fujian (Kuatun Chong'an, Shaowu Co. [loc.typ.]).

Glossopelta tridens MAA & LIN 1956 (Fig. 16)

Glossopelta tridens MAA & LIN 1956: 138, 142. KORMILEV 1962b: 15. HSIAO & LIU 1981: 376. FROESCHNER & KORMILEV 1989: 25. PUTSHKOV & PUTSHKOV 1996: 183. CUI et al. 2005: 111.

Distribution: CE: Jiangxi (Chongyi); SE: Fujian (Dazhulan, Kuatun Chong'an [loc.typ.], Mt. Wuyi, Sanxiang Chong'an); SW: Sichuan; TA: Mt. Hewang.

Glossopelta truncata DISTANT 1903

Glossopelta truncata DISTANT 1903: 150. MAA & LIN 1956: 139. KORMILEV 1957: 69. HSIAO & LIU 1981: 377. FROESCHNER & KORMILEV 1989: 25.

Distribution: CE: Zhejiang (Qu Co.); EL: Myanmar [loc.typ.].

Note: Not mentioned by PUTSHKOV & PUTSHKOV (1996).

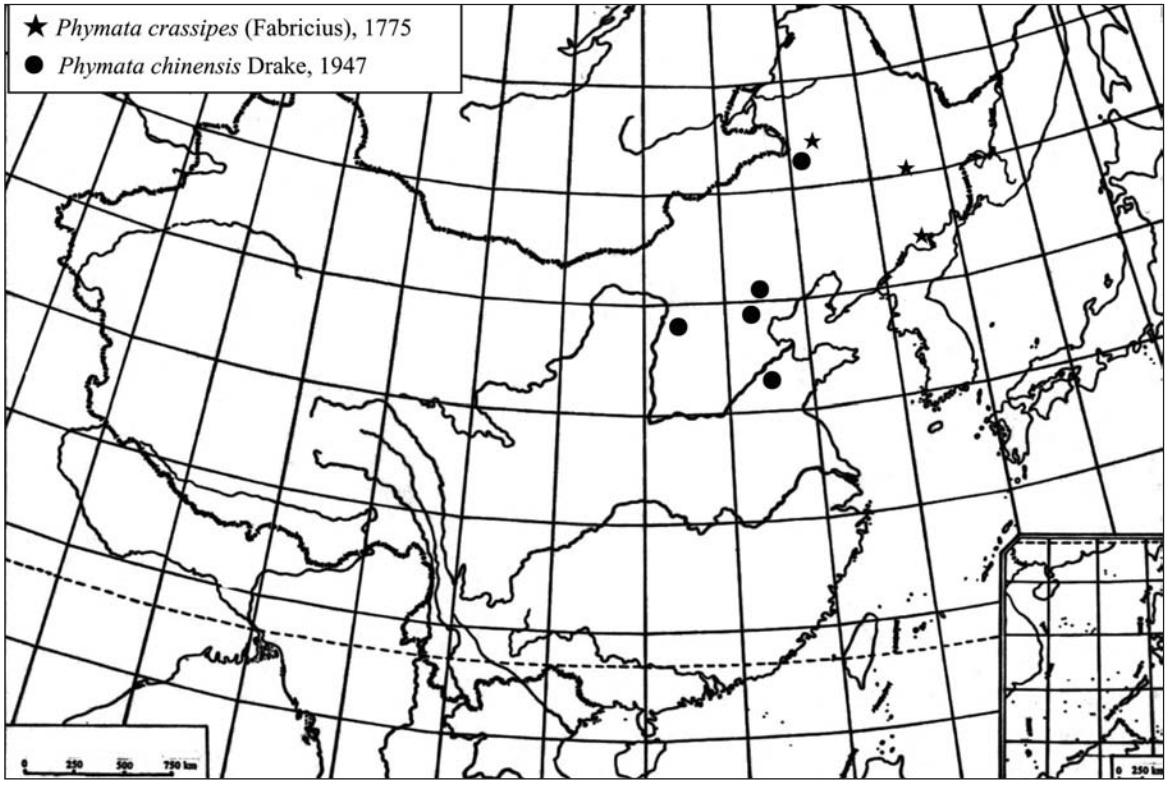


Fig. 17: Distribution of Chinese *Phymata*.

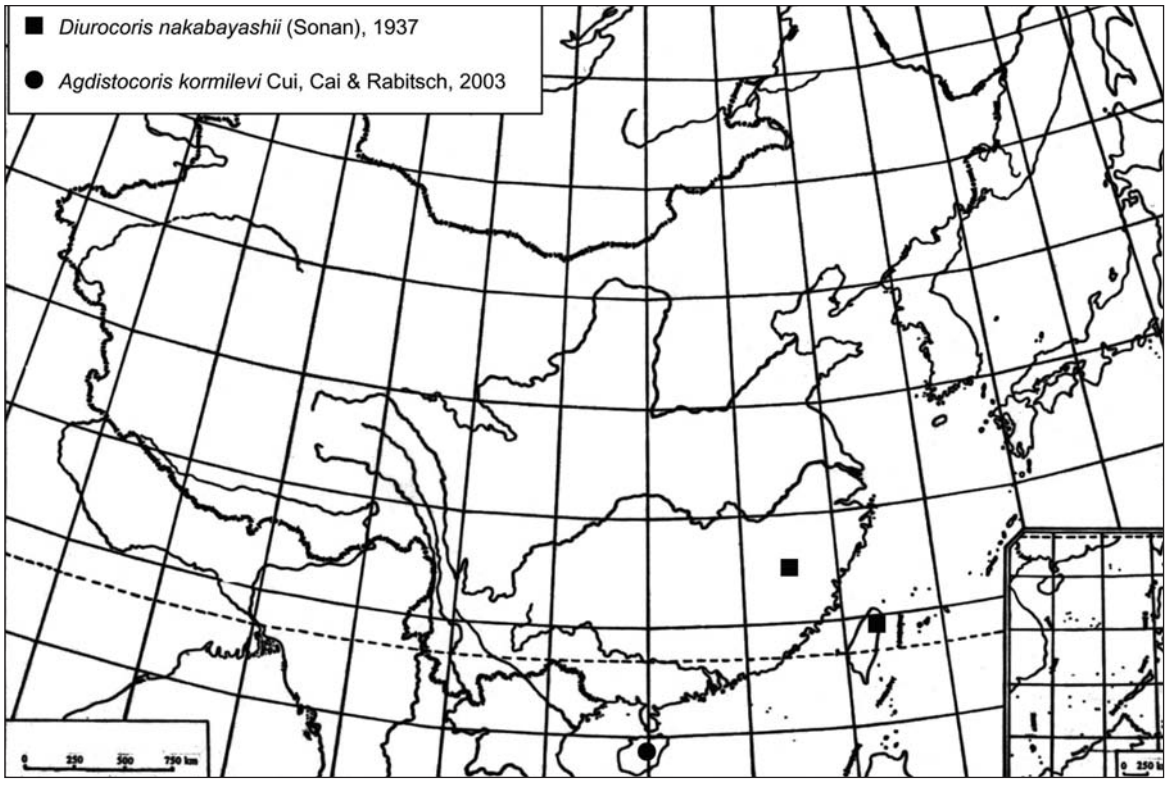


Fig. 18: Distribution of Chinese *Agdistocoris* and *Diurocoris*.

Discussion

Biogeography of Chinese ambush bugs

Phymata crassipes is distributed in Northeast China and *P. chinensis* in North China (Fig. 17). According to NONNAIZAB et al. (1989), their distribution overlaps in the western parts of the Northern Territory. *Diurocoris nakabayashii* was reported from Taiwan and Fujian and *Agdistocoris kormilevi* was described from Hainan (Fig. 18). *Glossopelta* species are distributed in the southern and northern provinces, three species are known from Fujian (Fig. 19). Most *Cnizocoris* species

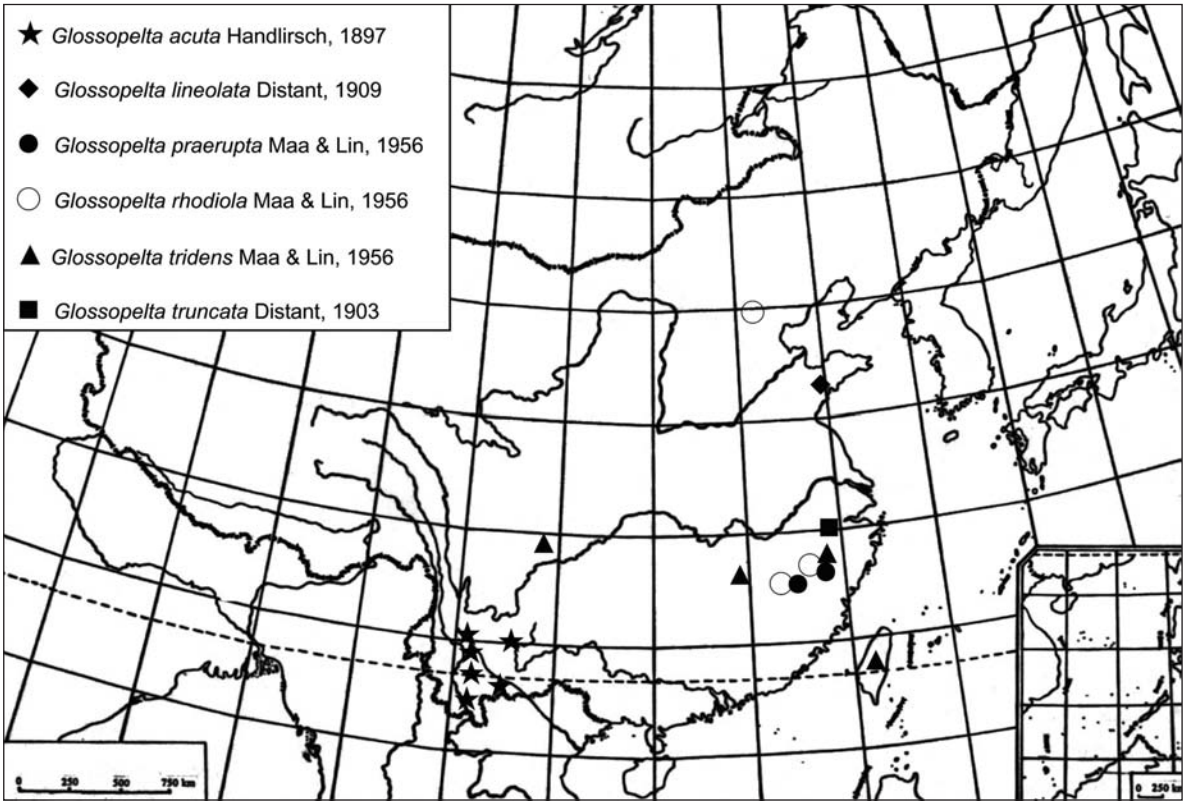


Fig. 19: Distribution of Chinese *Glossopelta*.

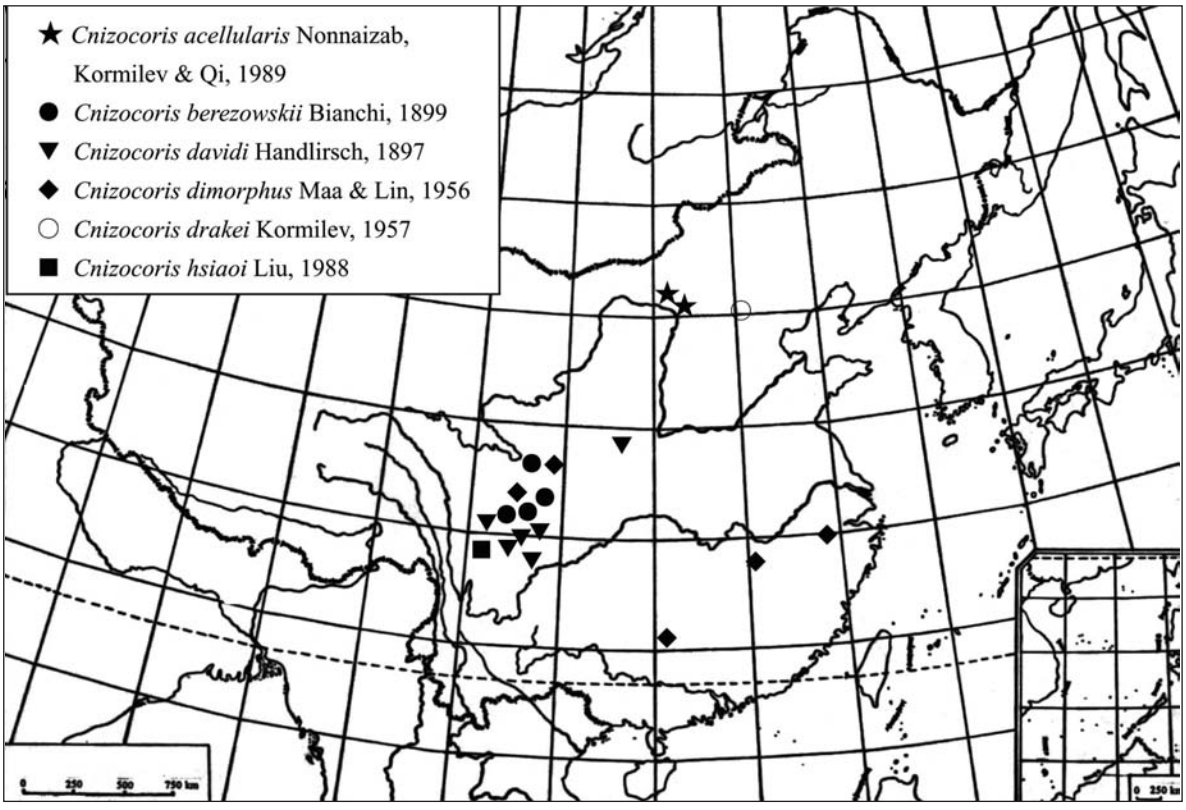


Fig. 20: Distribution of Chinese *Cnizocoris* (part 1).

occur in the Northern Territory (eight species) and in the western part of Sichuan (five species). One species each was found in eastern Xizang and in Taiwan (Figs 20-21). Most *Amblythyreus* species are known from Yunnan (five species) and Taiwan (three species). One species was found in the Qinghai-Xizang Region and three are distributed in the Central China Region (Fig. 22). Within the oriental Carcinocorini, both *Carcinocoris* and the one *Carcinochelis* species are recorded from the south of Yunnan; within

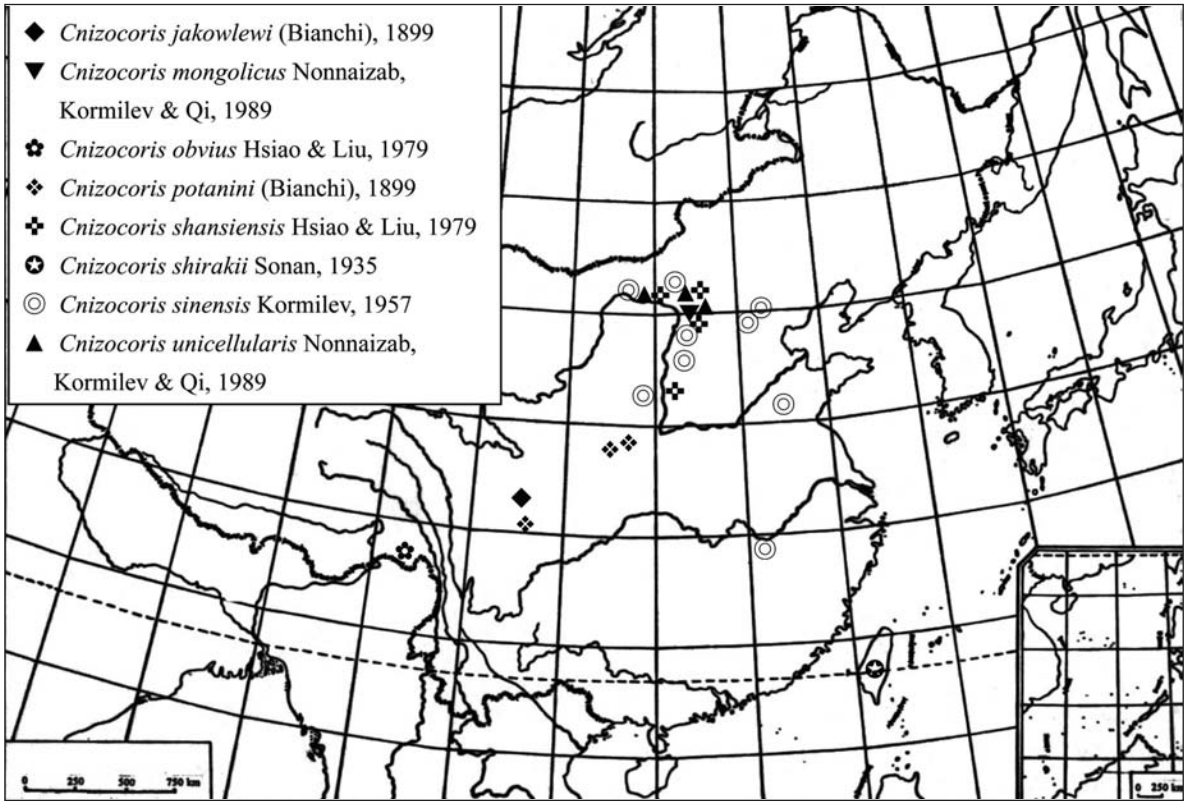


Fig. 21: Distribution of Chinese *Cnizocoris* (part 2).

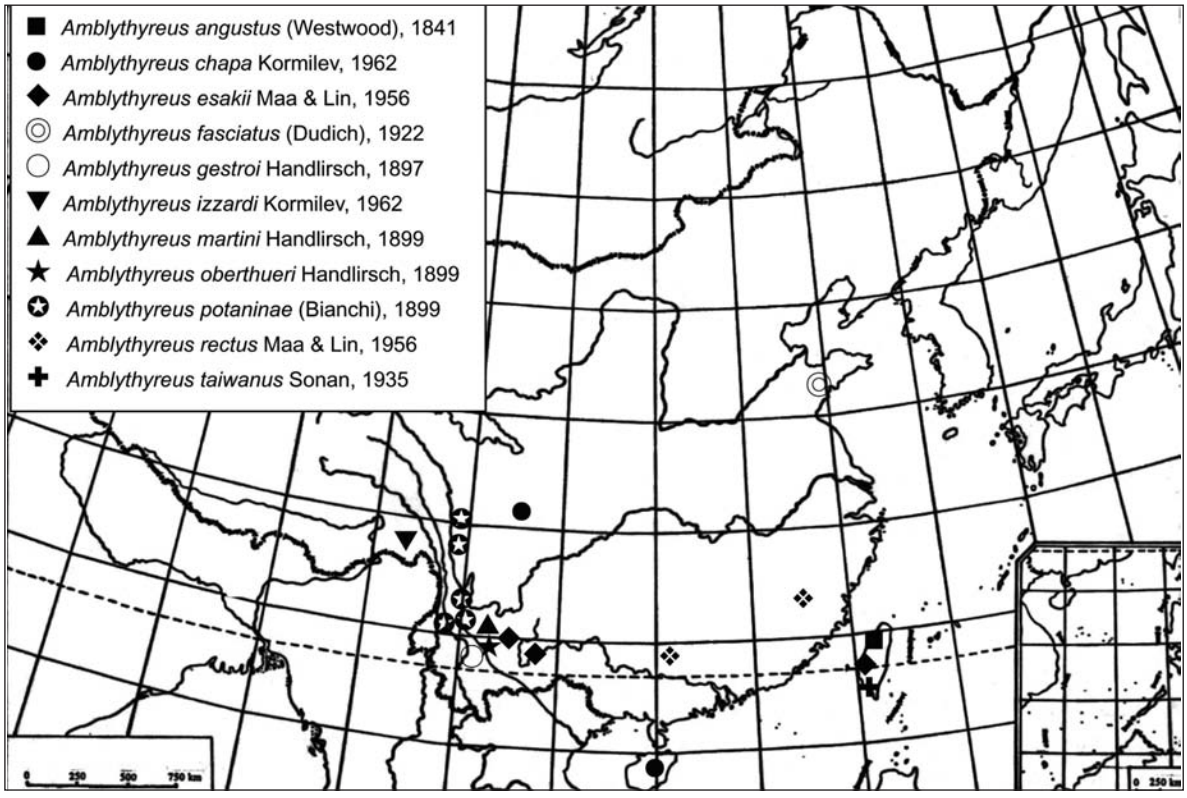


Fig. 22: Distribution of Chinese *Amblythyreus*.

Chelocoris, four species are recorded from Yunnan (*C. sinicus* with a notable disjunct distribution in Fujian), two from the west of Sichuan and one from eastern Xizang, near the west of Sichuan (Fig. 23).

In conclusion, there are four evident biodiversity hot-spots of Phymatinae in China: Yunnan, the west of Sichuan, the north of Fujian (especially Mt. Wuyi), and Taiwan.

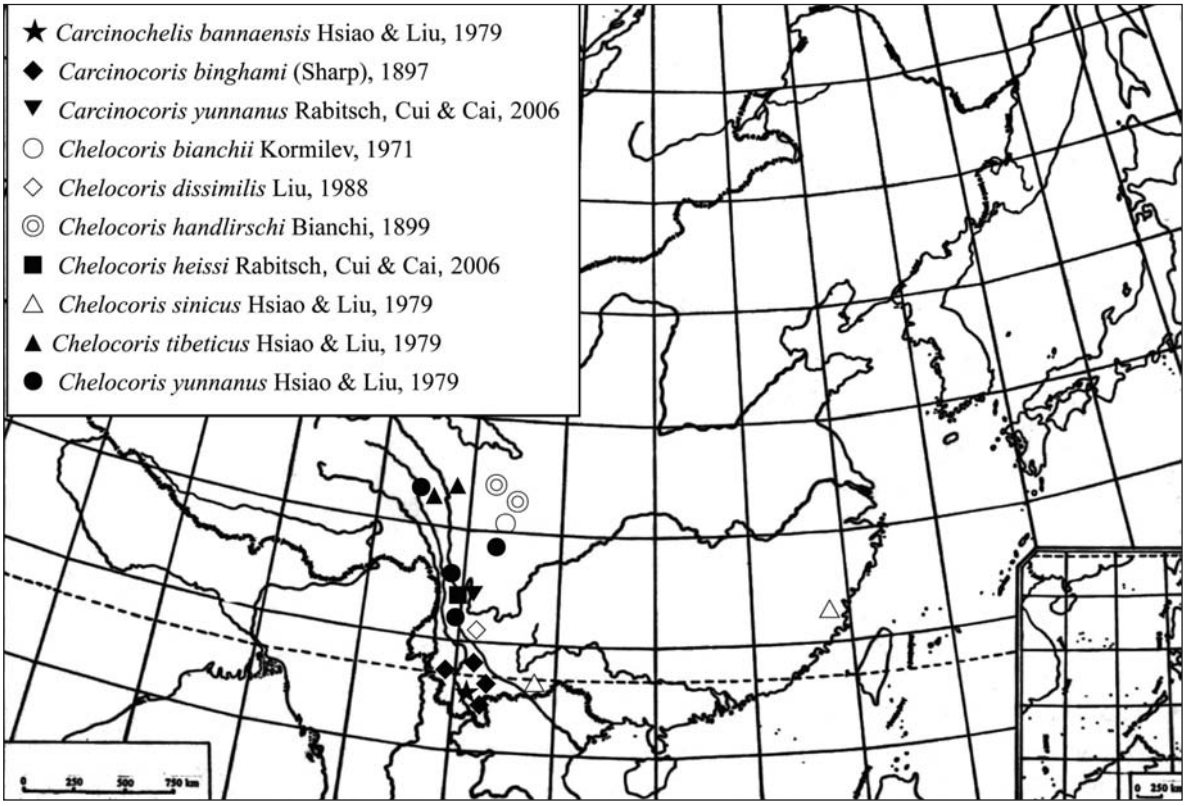


Fig. 23: Distribution of Chinese Carcinocorini.

Ecological role of Chinese phymatids

Little is known about the biology of these interesting insects. They conceal themselves in the flowers of some plants during the warmer seasons; with their pollen and nectar, these plants attract many insects (BALDUF 1939, 1940), but they also successfully occupy nonflowering green plants (YONG 2005). When these victims alight and their antennae, legs, palpi, or wings are within reach of the raptorial legs of the waiting ambush bug, the legs grasp the victims with so quick a movement of the fore legs that the human eye cannot follow. Coleoptera, Hymenoptera, Lepidoptera, Hemiptera, Homoptera, and mostly Diptera are recorded as prey of ambush bug. The proportion of prey is different from year to year depending on availability. This group, with other predators, regulates the density of other insects, especially the flower-visiting guild of insects (e.g., BALDUF 1942). In this way, ambush bugs play their role in the balance of forest high-mountain ecosystems. It has further been shown that in times of low food supply, ambush bugs feed on plant material, but they need animal food for normal growth and development (YONG 2003).

A clear preference for higher elevations was observed for many species (e.g., *Glossopelta rhodiola* between 1600-1800 m, *Cnizocoris unicellularis* 1300-2300 m); and without a doubt, ambush bugs play an important role in the mountain fauna as general predators. China counts as one of the megadiverse countries of this planet and hosts a unique and species-rich fauna and flora. Our knowledge of the Phymatinae of China is still incomplete and new species and distribution records are yet to be discovered.

Acknowlegdements

The authors are greatly in debt to the late Dr. N.A. Kormilev, Dr. R.C. Froeschner, Dr. T.-C. Maa, and Dr. K.-S. Lin for their kind help in many ways in our study of this interesting group. This research was partly supported by grants from the National Natural Science Foundation of China (Nos. 30370161, 30430100) and the Natural Science Foundation of Beijing (No. 6042014). We thank P. van Doesburg (Leiden) for critical comments on the manuscript and C.W. Schaefer (University of Connecticut, Storrs, CT) for a linguistic review.

Zusammenfassung

Fünfundvierzig Phymatinae aus China werden in drei Triben (Carcinocorini, Macrocephalini und Phymatini) mit einem Bestimmungsschlüssel aufgelistet. Verbreitungskarten aller Arten und Habitusabbildungen eines repräsentativen Vertreters jeder Gattung (*Agdistocoris*, *Amblythyreus*, *Carcinochelis*, *Carcinocoris*, *Chelocoris*, *Cnizocoris*, *Diurocoris*, *Glossopelta* und *Phymata*) werden präsentiert. Die Biologie und Bedeutung der Gruppe in Gebirgswaldökosystemen werden kurz diskutiert.

References

Balduf W.V. (1939): Food habits of *Phymata pennsylvanica americana* Melin (Hemip.). — Can. Entomol. **71**: 66-74.

Balduf W.V. (1940): More ambush bug prey records (Hemiptera). — Bull. Brooklyn Entomol. Soc. **35**: 161-169.

Balduf W.V. (1942): Evaluating the economic status of *Phymata*. — J. Econ. Entomol. **35** (3): 445-448.

Bianchi V. (1899): Ad cognitionem Phymatidarum Mundi Antiqui. — Ann. Mus. Zool. Acad. Imp. Sci. **4**: 221-236.

Carayon J., Usinger R.L. & P. Wygodzinsky (1958): Notes on the higher classification of the Reduviidae, with the description of a new tribe of the Phymatinae. — Rev. Zool. Bot. Afr. **57**: 256-281.

Cui J., Cai W. & W. Rabitsch (2003): Notes on the genus *Agdistocoris* Kormilev, 1962 (Heteroptera: Reduviidae: Phymatinae), with the description of a new species from China. — Ann. Zool. (Warszawa) **53** (4): 669-671.

Cui J., Cai W. & W. Rabitsch (2005): Redescription of *Glossopelta tridens* Maa et Lin, 1956 (Heteroptera: Reduviidae: Phymatinae). — Ann. Zool. (Warszawa) **55** (1): 111-116.

Cui J., Li S. & W. Cai (2006): A case of teratology in *Amblythyreus potaninae* (Bianchi, 1899) (Hemiptera: Reduviidae: Phymatinae) from China. — Entomol. News **117** (1): 91-94.

Distant W.L. (1903): The fauna of British India, including Ceylon and Burma. Rhynchota. Vol. **2** (1). — Taylor & Francis, London: x + 1-242.

Distant W.L. (1909): Rhynchotal notes. LXV. Oriental Rhynchota Heteroptera. — Ann. Mag. Nat. Hist. (**8**) 3: 491-507.

Drake C.J. (1947): A new phymatid from China (Hemiptera). — Musée Heude, Notes d'Entomologie Chinoise **11**: 145-148.

Dudich E. (1922): Die Phymatiden des Ungarischen National-Museums. — Ann. Hist.-Nat. Mus. Nat. Hung. **19**: 161-181.

Esaki T. (1922): Unrecorded Heteroptera from Formosa. — Trans. Nat. Hist. Soc. Formosa **12**: 49-60.

Esaki T. (1930): Notulae Cimicum Japonicorum IV. — Kontyu (Tokyo) **4**: 31-37.

Esaki T. (1932): Iconographia Insectorum Japonicorum. Hemiptera Heteroptera. — Hokuryukan, Tokyo: 1651.

Fabricius J.C. (1775): Systema entomologiae, sistens insectorum classes, ordines, genera, species, adjectis synonymis, locis, descriptionibus, observationibus. — Kortii, Flensburgi & Lipsiae: xxx + 1-832.

Froeschner R.C. & N.A. Kormilev (1989): Phymatidae or ambush bugs of the world: A synonymic list with keys to species, except *Lophoscutus* and *Phymata* (Hemiptera). — Entomography **6**: 1-76.

Handlirsch A. (1897): Monographie der Phymatiden. — Ann. Naturhist. Hofm. **12** (2): 127-230.

Handlirsch A. (1899): Deux espèces nouvelles du genre *Amblythyreus* Westw. (Hémiptères-Phymatides), des collections du Muséum d'Histoire Naturelle de Paris. — Bull. Mus. Hist. Nat. Paris **5**: 32-33.

Hsiao T.-Y. & S.-L. Liu (1979): New species and new records of Phymatidae from China (Hemiptera: Heteroptera). — Acta Entomol. Sinica **22**: 169-174.

Hsiao T.-Y. & S.-L. Liu (1981): Phymatidae. — In: Hsiao T.-Y., Ren S.-Z., Zheng L.-Y., Jing H.-L., Zou H.-G. & S.-L. Liu (Eds), A Handbook for the Determination of the Chinese Hemiptera-Heteroptera. Vol. **2**. — Science Press, Beijing: 374-389.

Josifov M. (1968): Die paläarktischen Arten der Gattung *Phumata* <sic!> Latreille, 1802 (Hem. Het. Reduviidae). — Bull. Inst. Zool. Musée, Sofia **26**: 29-32.

Kormilev N.A. (1951): Phymatidae Argentinas (Hemiptera) con observaciones sobre Phymatidae en general. — Rev. Inst. Nac. Invest. Cienc. Nat., Cienc. Zool. **2** (2): 45-110.

Kormilev N.A. (1957): Notes on Oriental Phymatidae (Hemiptera). The Oriental Phymatidae in the Drake Collection. — Quart. J. Taiwan Mus. **10**: 63-69.

Kormilev N.A. (1962a): Notes on Phymatidae in the British Museum (Nat. Hist.) (Hemiptera-Heteroptera). — Ann. Mag. Nat. Hist. (**13**) 5: 349-367.

Kormilev N.A. (1962b): Notes on African and Asiatic Macrocephalinae (Hemiptera, Phymatidae). — Am. Mus. Novitates **2107**: 1-15.

Kormilev N.A. (1971): New records of some Oriental Phymatidae, with a new species of *Chelocoris* Bianchi (Hemiptera: Heteroptera). — Pacif. Ins. **12**: 883-886.

Kormilev N.A. & P.H. van Doesburg (1986): Notes on Phymatidae (Heteroptera). — Zool. Med. Leiden **60** (8): 113-127.

Liu S. (1988): Two new species of Phymatidae from China (Hemiptera-Heteroptera). — Entomotaxonomia **10** (1-2): 71-74.

Liu S. (1992): Heteroptera: Phymatidae. — In: Chen S. (Ed.), Insects of the Hengduan Mountains Region, Vol. **1**: 173-174.

Maa T.-C. & K.-S. Lin (1956): A synopsis of the Old World Phymatidae (Hem.). — Quart. J. Taiwan Mus. **9**: 109-154.

Nonnaizab, Kormilev N.A. & B.-Y. Qi (1989): The preliminary study of the Phymatidae in Inner Mongolia, China (Hemiptera: Phymatidae). — Zool. Res. **10** (4): 341-346.

Putshkov P.V. & V.G. Putshkov (1996): Family Reduviidae Latreille, 1807 - assassin bugs. — In: Aukema B. & C. Rieger (Eds), Catalogue of the Heteroptera of the Palaearctic Region, vol. **2**, Netherlands Entomol. Soc., Amsterdam: 148-265.

Rabitsch W., Cui J. & W. Cai (2006): Two new ambush bugs (Insecta, Heteroptera, Reduviidae, Phymatinae) from Yunnan, southern China. — Denisia **19**: 581-588.

Sharp D. (1897): Description of an anomalous Hemipterous Insect. — Ent. Mon. Mag. **8**: 35-36.

Sonan J. (1935): Phymatidae of Formosa. — Trans. Nat. Hist. Soc. Formosa **25**: 401-403.

Sonan J. (1937): A New Species of Phymatidae in Formosa (Hemiptera). — Trans. Nat. Hist. Formosa **27**: 175-176.

Van Doesburg P.H. (2004): *Goellneriana deckerti* gen.nov. & spec.nov. (Heteroptera: Reduviidae: Phymatinae: Macrocephalini) from Namibia, with a review of the Afrotropical ambush bugs. — Zool. Med., Leiden **78**: 147-159.

Westwood J.O. (1842): Description of a new subgenus of exotic Hemipterous Insects. — Trans. Entomol. Soc. Lond. **3**: 28-31.

Yong T.-H. (2003): Nectar-feeding by a predatory ambush bug (Heteroptera: Phymatidae) that hunts on flowers. — Ann. Entomol. Soc. Am. **96** (5): 643-651.

Yong T.-H. (2005): Prey capture by a generalist predator on flowering and nonflowering ambush sites: are inflorescences higher quality hunting sites? — Environ. Entomol. **34** (4): 969-976.

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