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Revision of the *Agrilus cyaneoniger* species group

Eduard JENDEK

Institute of Zoology, Slovak Academy of Sciences, Dúbravská cesta 9, SK-842 06 Bratislava, Slovakia
E-mail: uzaejend@savba.sk

JENDEK, E. 2000. Revision of the Agrilus cyaneoniger species group. *Entomol. Probl.* 31(2): 187-193. *Agrilus cyaneoniger* species group is established and diagnosed, two new species of *Agrilus* are described: *A. lubopetri* sp.nov., *A. qinling* sp.nov. *Agrilus agnatus* KERREMANS is considered as a valid species. All species are keyed and illustrated. Lectotypes of *Agrilus auristernum* OBENBERGER, *Agrilus agnatus* KERREMANS, *Agrilus bifoveolatus* KERREMANS are designated.

Key words: Taxonomy, Coleoptera, Buprestidae, *Agrilus*, Palaearctic region, Oriental region.

Introduction

The examination of the majority of the numerous type material of the genus *Agrilus* from the Palaearctic and Oriental regions allowed me to start species grouping, which will serve next as the base for a subgeneric division of this large genus. Species grouping is based on set of characters, a combination which seems to be distinctive and constant within group.

Material and methods

The examined material comes from following collections:

EJCB Collection E. Jendek, Slovak Academy of Sciences, Bratislava, Slovakia
MCSN Museo civico di Storia Naturale "Giacomo Doria", Genova, Italy
MNHN Muséum national d'Histoire naturelle, Paris, France
NMPC Národní muzeum v Praze, Prague, Czech Republic

Other abbreviations: DV (dorsal view), FV (frontal view); LW (proportional relation between length and wide); MS (manuscript); PDV (postero-dorsal view). The backslash "\" is used to separate data from different labels; square brackets "[ ]" are used for my remarks; [p], preceding data printed; [h], preceding data hand-written.

The lectotype designations in this paper are provided in order to preserve the stability of nomenclature by fixing the status of the specimen as the sole name-bearing type of a particular nominal taxon and in order to specify the type locality. Designated lectotypes are provided with a printed red label bearing all relevant data as: species name in the original combination and correct spelling, author name, year of publication and an inscription "Lectotype ... E. Jendek design." along with year of designation.

Historical or vague localities are made more precise using the GEOnet Names Server (GNS), which is accessible on the Internet, providing access to the database of foreign geographic feature names of the National Imagery and Mapping Agency. Localities written in Russian are transcribed according to the British standard.

Agrilus cyaneoniger species group

Elongate, medium sized or large species (8.5 – 15.5 mm); eyes medium or small; vertex large, minimally 2x as wide as width of eye (DV); pronotum widest before middle; anteromedial pronotal lobe vague or absent; pronotal disk with large, 8-shaped, medial, longitudinal sulcus; prehumerus obsolete or obliterate; scutellum rudimentary, with obsolete or obliterate transverse carina, often deeply impressed on disk; apex of last abdominal ventrite arcuate or subtruncate, medially sometimes weakly, arcuately emarginate. Ventral side in male without obvious sexual modification.

The group can be subdivided into the subgroup of large and distinctive species of *Agrilus cyaneoniger* SAUNDERS, *A. auristernum* OBENBERGER and *A. lubopetri* sp.nov. and the subgroup of smaller and very closely related species of *A. lafertei* KERREMANS, *A. agnatus* KERREMANS, *A. bifoveolatus* KERREMANS and *A. qinling* sp.nov.

The oak (*Quercus* sp.) is only known as the host plant of species from this group (*Agrilus cyaneoniger*, *A. auristernum*, *A. lafertei*, *A. agnatus*).

Agrilus cyaneoniger SAUNDERS

Remarks. This species was studied in detail by JENDEK (1995: 140-141), where ssp. *melanopterus* SOLSKY was reduced to the infrasubspecific level. In this paper I follow the apprehension of AKIYAMA, K. & OHMOMO, S., (1997: 31-32) who revalidated the subspecific status of this taxon. Distribution map (Fig. 14). Distribution records were given by CHÛJÔ & MATUDA (1940), DESCARPENTRIES, & VILLIERS (1963), JENDEK (1995) and OBENBERGER (1958). Further material examined see under particular subspecies.

Agrilus cyaneoniger cyaneoniger SAUNDERS
(Figs. 1, 7, 14)

Agrilus cyaneoniger SAUNDERS, 1873: 515.

Material examined: **JAPAN**: **Oita**: "Kyushu, Japan, 25-26. v. 1991, Kurodake, Kujû mts. [33°05'N, 131°16'E] Oita Pref., Ryô Noda leg." **CHINA**: **Guizhou**: "China, Guizhou prov., Leigongshan, Xijiang [26°30'N, 108°11'E], 29 May - 2 June 1997, 1200 -1900 m, Bolm lgt". **Shaanxi**: "CHINA, 1000 – 1300 m, Shanxi [prov.], Qinling mts., XUNYANGBA (6 km E) [33°33'N, 108°37'E], 23. v. – 13. vi. 1998, I. H. Marhshal leg."; "China, S Shaanxi, 1700 m, 15 km SW Dongiangkou [33°35'N, 108°31'E], 1998, Bolm lgt, 14-17 Jul.". **Sichuan**: "China, Sichuan"; "China, Sichuan, Gonga Shan, Moxi, 1300 m, 3. VII. 1996, 29°13N, 102°10E"; "[China] Sichuan, Moxi, Gongashan mts. [29°40'N, 102°07'E] 28. VI. - 2. VII. 1994, Bolm lgt, 1650 m"; **Yunnan**: "CH -Yunnan, 13-14. VI. 1995, 100 km W of KUNMING, DIAOLIN Nat. Reservation [25°11'N, 101°54'E] E. Jendek & O. Šauša leg.". **VIETNAM**: **Cao Bang**: "Tonkin.- N. O. de Bao-Lac [22°57'N, 105°40'E] (Dr. Battarel [leg.])" (DESCARPENTRIES, & VILLIERS, 1963 under name cyaneoniger marquardti Obenberger).

Agrilus cyaneoniger melanopterus SOLSKY
(Fig. 14)

Agrilus melanopterus SOLSKY, 1875: 277-279.

Material examined: **RUSSIA**: **Primorskiy Kray**: "Rossia or, 2. 7. [19]91 Primorsk, Turij Roh [45°14'N, 131°58'E], Kuzněcov lgt."; "Russia E., Primorskyi reg. Artyom town. [43°22'N, 132°13'E] env., 3-15. VII. 1996, Plutenko leg.". **JAPAN**: **Fukushima**: "Fukushima Pref., Kaida Kunimi Town [37°53'N, 140°33'E], 25. VI, 1999"; "Fukushima Pref., Kawauchi [37°30'N, 139°42'E] VII, 1999"; Fukushima Pref., Mt. Atsukashi-Yama, Kunimi town, [37°53'N, 140°33'E] 4. VII., 22. VII. 1998"; "Moniwa, Iizaka Town [37°54'N, 140°26'E] Fukushima City, Fukushima Pref., Japan, 25 June 1995, Nobuo Sagiura leg."; **Nagasaki**: "Tsushima Is[land]. [34°20'N, 129°20'E] 12. 6. 1981".

Agrilus auristernum OBENBERGER (Fig. 8)

Agrilus auristernum OBENBERGER, 1924: 34-35, 37, Pl. 1, figs. 15, 50.

Type material: **Lectotype**, sex not examined, NMPC, by present designation: "Pe-yen-tsing [h] [= Yanfeng, 25°52'N, 101°05'E] Yunnan \ Typus [p] [red label] \ Agrilus auristernum m. Type [Obenberger's MS] Det. Dr. Obenberger [p] \ Mus. Nat. Pragae Inv. [p] 24789 [h] [orange label]". Number of syntypes unknown.

Remarks. Species from Ninglang were collected by author on fruticose form of Quercus sp. Male unknown.

Additional material examined: **CHINA**: **Yunnan**: 1 ♀, "Yunnanfou" [= Kunming, 25°02'30"N, 102°43'02"E]; 1 ♀, "China, Yunnan, 6-10. VII. Ninglang env. 27°.19'N, 100°.55'E, E. Jendek leg. 1992"; **Xizang**: 1 ♀, "Djoukoula [= South of Xiayanjingxiang, = Caka'lho, 29°01'N, 98°36'E] Yunnan [sic!]".

Agrilus lubopetri **sp.nov.** (Figs. 2, 9a, b)

Type material. Holotype, ♂, EJCB: "N Vietnam, 21°27N, 105°39E, 70 km NW of Hanoi, Tam Dao, 9-19.v.1996, 900-1200 m, Dembický & Pacholátko leg.". **Paratypes**, 2 ♀♀, EJCB: "N Vietnam, 21°27N, 105°39E, 70 km NW of Hanoi, Tam Dao, 1-8.vi.1996, 900-1200 m, Dembický & Pacholátko leg.".

Description. Length 14.8 - 15.5 mm. Holotype (14.8 mm): Body strikingly elongate. Pronotum and elytra dark olivaceous-brown, silky lustrous; frons, vertex and ventral side metallic-blue or metallic-green. Lower part of frons, pronotal sides and ventral side with short, whitish, recumbent pubescence. Elytra glabrous, except from white, semierect pubescence on apicalmost part of apices.

Frons in lower part densely rugoso-punctate, deeply, subtriangularly impressed (FV); impression with smooth surface and short medial, longitudinal carina. Upper part of frons and vertex sparsely punctate, divided by deep medial sulcus into two hemispheres (DV, PDV). Eyes small, convex (DV), lower part extends below upper side of antennal sockets. Vertex 2.8 as wide as width of eye (DV); clypeus flat; antennae slender and long, overreaching beyond half of pronotal length, serrate from antennomere 4.

Pronotum transverse (LW = 0.7), widest in anterior half; sides in apical half almost subparallel, basally strongly curved. Basal pronotal angles sharp; anteromedial lobe absent; anterior angles sharply projecting forward. Disk superficially, transversely rugose; medial sulcus obvious; lateral impressions deep; prehumerus absent. Marginal and submarginal carinae convergent, joined before basal angles. Scutellum (l : w = 0.4) obsolete, without transversal carina.

Elytra obviously prolonged (LW = 4.1), strikingly extending beyond abdominal apex (VV); humeral pits very deep; apices regularly, separately rounded, with serrulate margin.

Metatarsi as long as metatibiae; basal metatarsomere 1.2 x longer as three following together; tarsal claws bifid, inner tooth nearly as long as outer one.

Mentonniere narrow; outer margin widely and feebly arcuately emarginate. Prosternal process flat, triangular; sides evenly tapering to tip. Last ventrite subtruncate on apex, weakly arcuately emarginate medially. Aedeagus (Fig. 2).

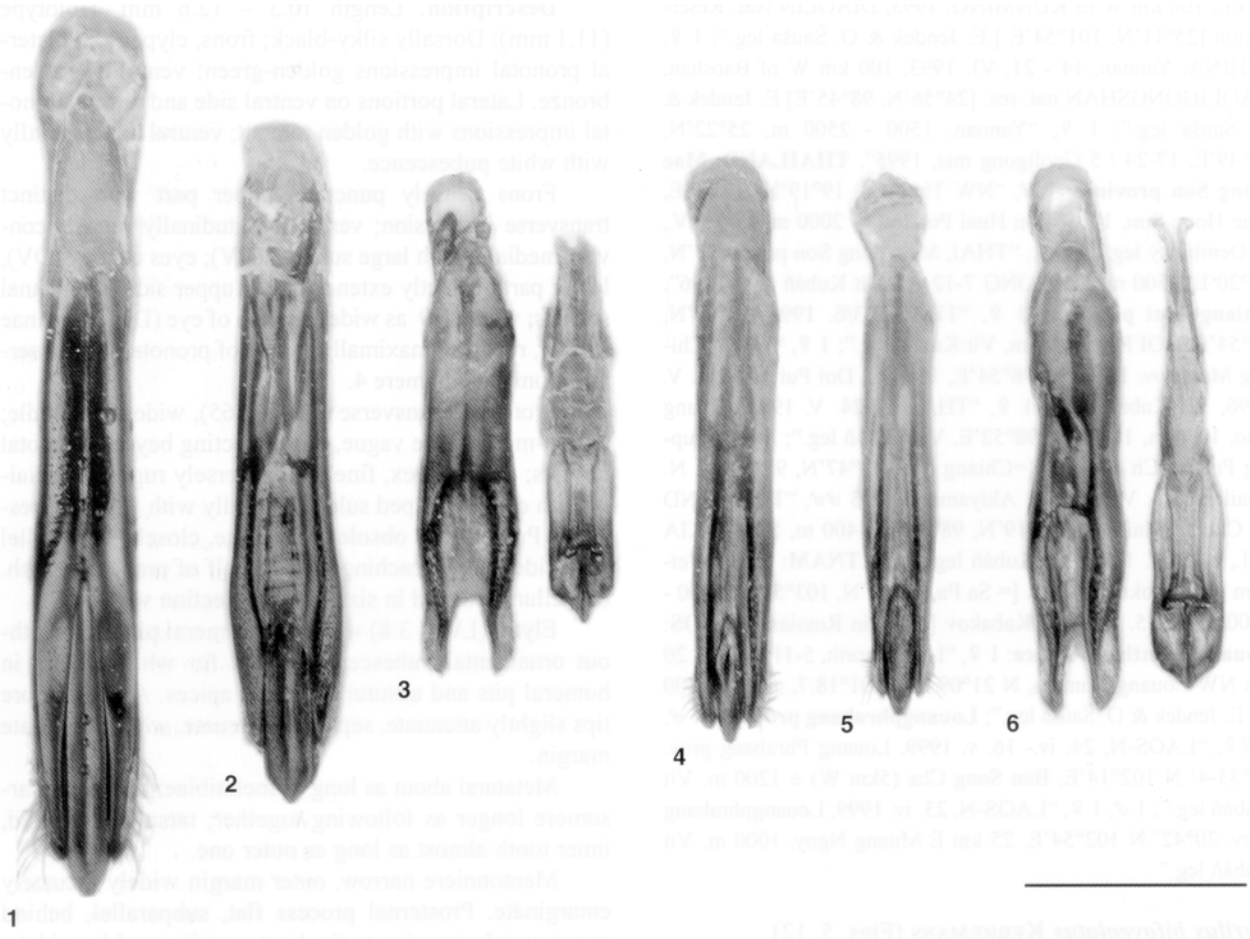
Sexual dimorphism. Female with striking, transverse fascia of dense, golden-yellow toment on pronotum.

Etymology. Name combined by first names of the collectors of this species, my friends, Luboš Dembický and Petr Pacholátko from Brno, Czech Republic.

Agrilus lafertei KERREMANS (Figs. 3, 10)

Agrilus lafertei KERREMANS, 1892a: 212-213.
Agrilus auriventris LA FERTÉ: KERREMANS, 1892a: 212. (unavailable name)

Type material: Holotype by monotypy, ♀, MNHN: "Auriventris (Laferté) Inde [h] \ Ex-Musaeo Mniszech [p] \ Kerremans vidit 1892 [p] \ La Fertei Kerr. Type [Kerremans' MS]".



Figs 1 – 6 Aedeagi (dorsal aspect): 1) *Agrilus cyaneoniger cyaneoniger* SAUNDERS; 2) *Agrilus lubopetri* sp.nov.; 3) *Agrilus lafertei* KERREMANS; 4) *Agrilus agnatus* KERREMANS; 5) *Agrilus bifoveolatus* KERREMANS; 6) *Agrilus qinling* sp.nov. Scale bar: 1 mm.

Remarks. In description of *A. lafertei* listed KERREMANS the name "[*Agrilus*] *auriventris* LA FERTÉ" not SAUNDERS, 1873 as objective synonym of *A. lafertei*. "*Agrilus auriventris* LA FERTÉ" has been never published and introduced to the synonymy by this act of KERREMANS.

Data on distribution given by TÔYAMA (1988) from Thailand and by DESCARPENTRIES & VILLIERS (1963) from Vietnam and Laos are related very probably to *Agrilus agnatus* KERREMANS. Aedeagus (Fig. 3).

Additional material examined: **NEPAL**: 1 ♀, "O[st]. NEPAL, 1980, W. Wittmer [leg.] Arunthan Chichila [site unlocated], 1300 - 1950 m, 23. V."; **Kosi zone**: 1 ♂, 1 ♀, "E-NEPAL, Koshi, Basantapur [site unlocated], 2300 m, 30. V. - 2.VI. 1985, leg. C. Holzschuh"; 1 ♂, "E NEPAL, Koshi, Gufa – Gorza [site unlocated], 2800 - 2100 m, 4. VI. 1985, leg. C. Holzschuh"; **Bagmati zone**: 1 ♀, "NEPAL Centr., Bagmati Zone, Kathmandu valley, Lalitpur Distr., Godawari – Phulchoki [27°36'N, 85°24'E], 2200 - 2700 m, 1-7. vi. 1996, P. Čechovský leg.". **BHUTAN**: 35 ♀♀, "West BHUTAN, Thimphu Distr. [27°36'N, 89°40'E], Taba [site unlocated], 20 - 30. VI. 1988, 2600 m, leg. C. Holzschuh".

Agrilus agnatus KERREMANS, resurrected name
(Figs. 4, 11)

Agrilus agnatus KERREMANS, 1892b: 820-821.

Type material: Lectotype ♀, MCSN, by present designation: "Carin Cheba [= Karen Hills, Karan State, Myanmar, mountainous region about 40 km NE from Toungoo (= Tongu, Tounghoo). Source: itinerant map of L. Fea in Burma, sensu Dr. Poggi, MCSN (personal communication) approximate coordinates 19°13'N, 96°35'E], 900-1100 m L. Fea [leg.] V XII-[18]88 [p] \ Typus [p] [red ink, red border] \ agnathus [sic!] Kerr. [h] [black border] \ agnatus Kerr. Type [Kerremans' MS] \ Agrilus agnathus [sic!] Kerr. typus! [h] \ Museo Civico di Genova [p]". Number of syntypes unknown.

Remarks. *Agrilus agnatus* was synonymized by DESCARPENTRIES & VILLIERS (1963: 8) as junior subjective synonym of *A. lafertei*. The type examination of both species revealed, that *Agrilus agnatus* is species well distinguishable by form of head, pronotum and aedeagus. Differential diagnosis is given in the key bellow.

Data on distribution given by TÔYAMA (1988) from Thailand and by DESCARPENTRIES & VILLIERS (1963) from Vietnam and Laos under name *A. lafertei* are related very probably to this species. Aedeagus (Fig. 4).

Additional material examined: **CHINA**: **Yunnan province**: 1 ♂, "Yun'an' 765 km po dor[oge]. [= on road] Kun'min [= Kunming] - Dalo, 1000 m, 26. IV. 1957, Pu Fu-di [site unlocated], [in Russian]"; 1 ♂, "CHINA, Yunnan, 22. V. -

2. VI., 100 km W of KUNMING, 1993, DIAOLIN Nat. Reservation [25°11'N, 101°54'E] E. Jendek & O. Šauša leg."; 1 ♀, "CHINA, Yunnan, 14 - 21. VI. 1993, 100 km W of Baoshan, GAOLIGONGSHAN nat. res. [24°56'N, 98°45'E] E. Jendek & O. Šauša leg."; 1 ♀, "Yunnan, 1500 - 2500 m, 25°22'N, 98°49'E, 17-24 / 5 Gaoligong mts, 1995". **THAILAND**: **Mae Hong Son province**: 1 ♂, "NW Thailand, 19°19'N, 97°59'E, Mae Hong Son, 1991, Ban Huai Po, 1600 - 2000 m, 17-29. V., L. Dembický leg."; 3 ♀♀, "THAI, Mae Hong Son pr., 19°27'N, 98°20'E, 1500 m, SOPPONG 7-12. V., Vít Kubáň leg., 1996". **Chiang Mai province**: 1 ♀, "THAI, 2-3/6. 1995, 18°49'N, 98°54'E, DOI PUI, 1400 m, Vít Kubáň leg."; 1 ♀, "THAI, Chiang Mai prov. 18°49'N, 98°54'E, 1600 m, Doi Pui mt., 2-6. V. 1996, Vít Kubáň leg."; 1 ♀, "THAI, 17-24. V. 1991, Chiang Dao, 1000 m, 19°25'N, 98°52'E, Vít Kubáň leg."; 1 ♀, "Phuping Palace, Ch eng Mai [=Chiang Mai, 18°47'N, 98°59'E], N. Thailand, 25. V. 1983, H. Akiyama leg."; 3 ♂♂, "THAILAND N, Chiang Mai prov. 19°19'N, 98°50'E, 1400 m, SANPAKIA vill., 1-15. V. 1998, Vít Kubáň leg.". **VIETNAM**: 1 ♀, "V'etnam gory V okr. SHA-PA [= Sa Pa, 22°21'N, 103°52'E] 1700 - 2000 m, 23. 5. 1963 g., Kabakov [leg.] [in Russian]". **LAOS**: **Louang Namtha province**: 1 ♀, "LAOS north, 5-11.V.1997, 20 km NW Louang Namtha, N 21°09.2, E 101°18.7, alt. 900±100 m, E. Jendek & O. Šauša leg."; **Louangphrabang province**: 1 ♂, 3 ♀♀, "LAOS-N, 24. iv.- 16. v. 1999, Louang Phrabang prov. 20°33-4' N 102°14'E, Ban Song Cha (5km W) ± 1200 m, Vít Kubáň leg."; 1 ♂, 1 ♀, "LAOS-N, 23. iv. 1999, Louangphrabang prov. 20°42' N 102°54'E, 25 km E Muang Ngoy, 1000 m, Vít Kubáň leg."

Agrilus bifoveolatus Kerremans (Figs. 5, 12)

Agrilus bifoveolatus Kerremans, 1895: 219.

Type material: **Lectotype** ♀, MNHN, by present designation: "Pedong [27°09'N, 88°37'E, Sikkim, India] A. Desgodins [leg.] [p] \ bifoveolatus Kerr. Type [Kerremans' MS] \ Kerremans vidit 1893 [p] \ collectio OBERTHUR [p]". Number of syntypes unknown.

Remarks. This species is distinguished by two pairs of golden, tomentose spots on the elytra, which have, however, often vanished in older specimens. Aedeagus (Fig. 5).

Additional material examined: **INDIA**: **West Bengal state**: 1 ♂, 1 ♀, "Distr. Darjeeling [27°02'N, 88°16'E] India, W. Wittmer [leg.] Lopchu [site unlocated] 9. V. 1995, 1500 m"; **Meghalaya state**: 5 ♂♂, "NE INDIA, MEGHALAYA, 1999, 3 km E of Tura, 500-1150 m, 25°30'N, 90°14'E, 1.- 8.v., Dembický & Pacholátko leg.". **NEPAL**: **Kosi zone**: 1 ♀, "E NEPAL, Dhankuta, Arun - Valley, Num [27°33'N, 87°17'E], 1500 m, 3-6. VI. 1983, leg. C. Holzschuh"; 1 ♂, "E NEPAL, Dhankuta, Arun - Valley, KHANDBARI – BHOTEBAS [27°22'N, 87°13'E], 5. VI. 1988, 1000 - 1750 m, I. Probst. leg."

Agrilus qinling sp.nov. (Figs. 6, 13)

Type material. Holotype ♂, EJCB: "CHINA, 1000 – 1300 m, Shanxi [prov.], Qinling mts., XUNYANGBA (6 km E) [33°33'N – 108°37'E], 23. v. – 13. vi. 1998, I. H. Marhshal leg.". **Paratypes**: 7 ♀♀, EJCB, with the same locality data as holotype.

Description. Length 10.3 – 12.6 mm. Holotype (11.1 mm): Dorsally silky-black; frons, clypeus and lateral pronotal impressions golden-green; ventrally golden-bronze. Lateral portions on ventral side and lateral pronotal impressions with golden toment; ventral side medially with white pubescence.

Frons densely punctate, upper part with distinct transverse impression; vertex longitudinally rugose, convex, medially with large sulcus (PDV); eyes convex (DV), lower part distinctly extends below upper side of antennal sockets; vertex 2.9 as wide as width of eye (DV); antennae shorter, reaching maximally to half of pronotal length, serrate from antennomere 4.

Pronotum transverse (LW = 0.65), widest in middle; antero-medial lobe vague, not projecting beyond pronotal corners; disk convex, finely, transversely rugose, medially with deep 8-shaped sulcus, laterally with large impressions. Prehumerus obsolete, hair-like, closely subparallel with side edges, reaching beyond half of pronotal length. Scutellum reduced in size, hind projection very short.

Elytra (LW = 3.8) with deep humeral pits; disk without ornamental pubescence except for whitish hairs in humeral pits and adsutural part on apices. Apices before tips slightly attenuate, separately arcuate, with denticulate margin.

Metatarsi about as long as metatibiae; basal metatarsomere longer as following together; tarsal claws bifid, inner tooth almost as long as outer one.

Mentonniere narrow, outer margin widely arcuately emarginate. Prosternal process flat, subparallel, behind coxae evenly tapering to tip. Last ventrite weakly, widely, arcuately emarginate medially. Aedeagus (Fig. 6).

Sexual dimorphism. Prosternum in male with medial, longitudinal strip of white, erect pubescence.

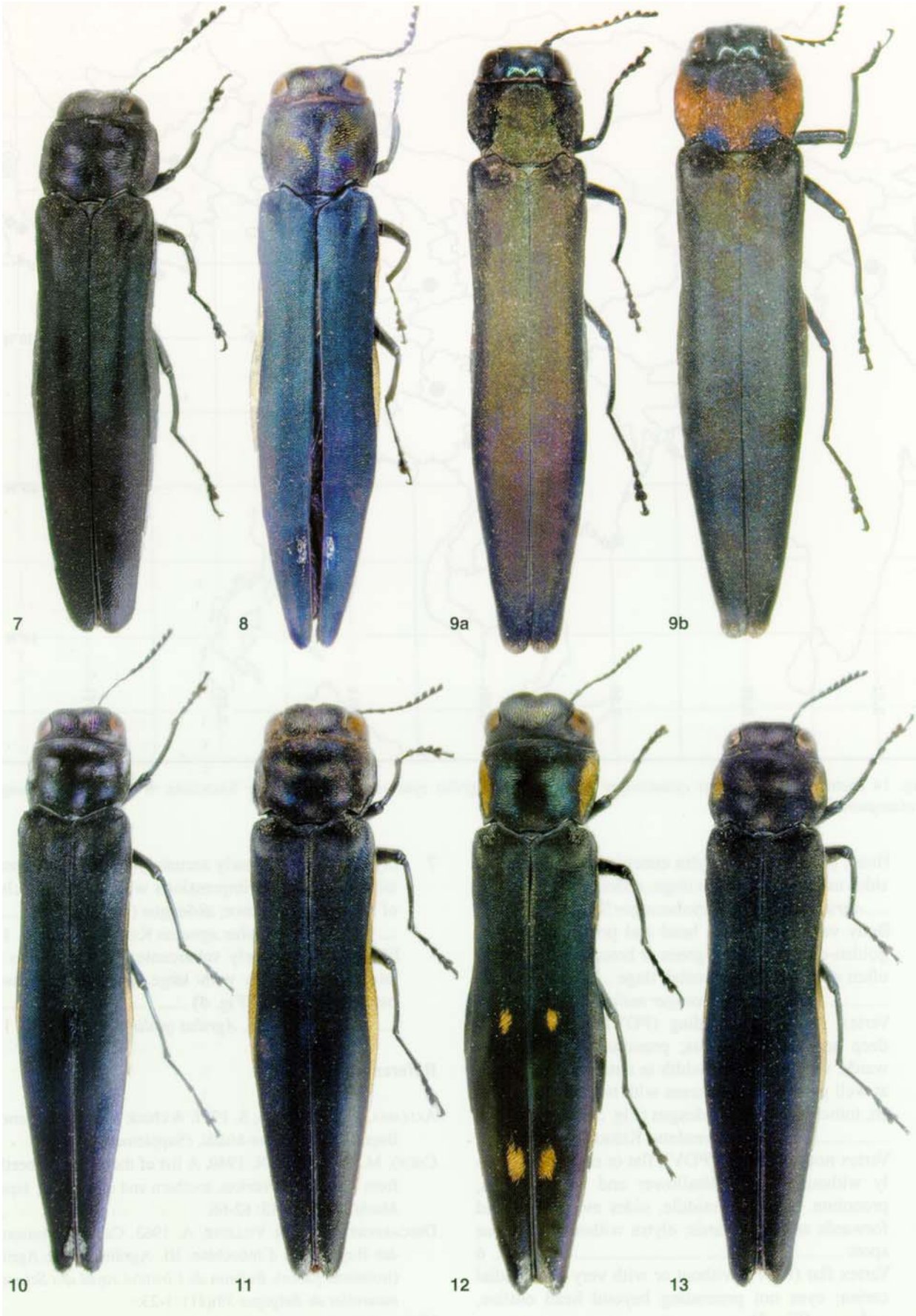
Etymology. Named in reference to the type locality.

Key to species

1 Elytral apices broadly, regularly arcuate, margin finely denticulate; large species, body rarely smaller than 13 mm 2
- Elytral apices narrowly arcuate or arcuately-acuminate, margin coarsely denticulate; smaller species, body rarely exceeds 13 mm 5

2 Pronotum widest before middle; sides in apical half almost subparallel, basally strongly arcuate; elytra strikingly elongate, apices with dense, whitish, erect pubescence, aedeagus (Fig. 2) .... *Agrilus lubopetri* sp.nov. (Figs 9a, b)
- Pronotum widest in middle, sides evenly arcuate; elytra not strikingly elongate, without pubescent apices 3

3 Prehumerus obsolete, hair-like, narrowly convergent with pronotal margin and reaching beyond middle of pronotal length; pronotal disk with fine structure; elytra with pair of adsutural, whitish, pubescent spots in apical third, male unknown .... *Agrilus auristernum* Obenberger (Fig. 8)
- Prehumerus absent; pronotal disk with coarse, transverse structure; elytra without ornamental pubescence 4



Figs 7 – 13 Habitus of: 7) *Agrilus cyaneoniger cyaneoniger* SAUNDERS; 8) *Agrilus auristernum* OBENBERGER; 9) *Agrilus iwopeiri* sp.nov., 9a) male, 9b) female; 10) *Agrilus lafertei* KERREMANS; 11) *Agrilus agnatus* KERREMANS; 12) *Agrilus bifoveolatus* KERREMANS; 13) *Agrilus qinling* sp.nov.

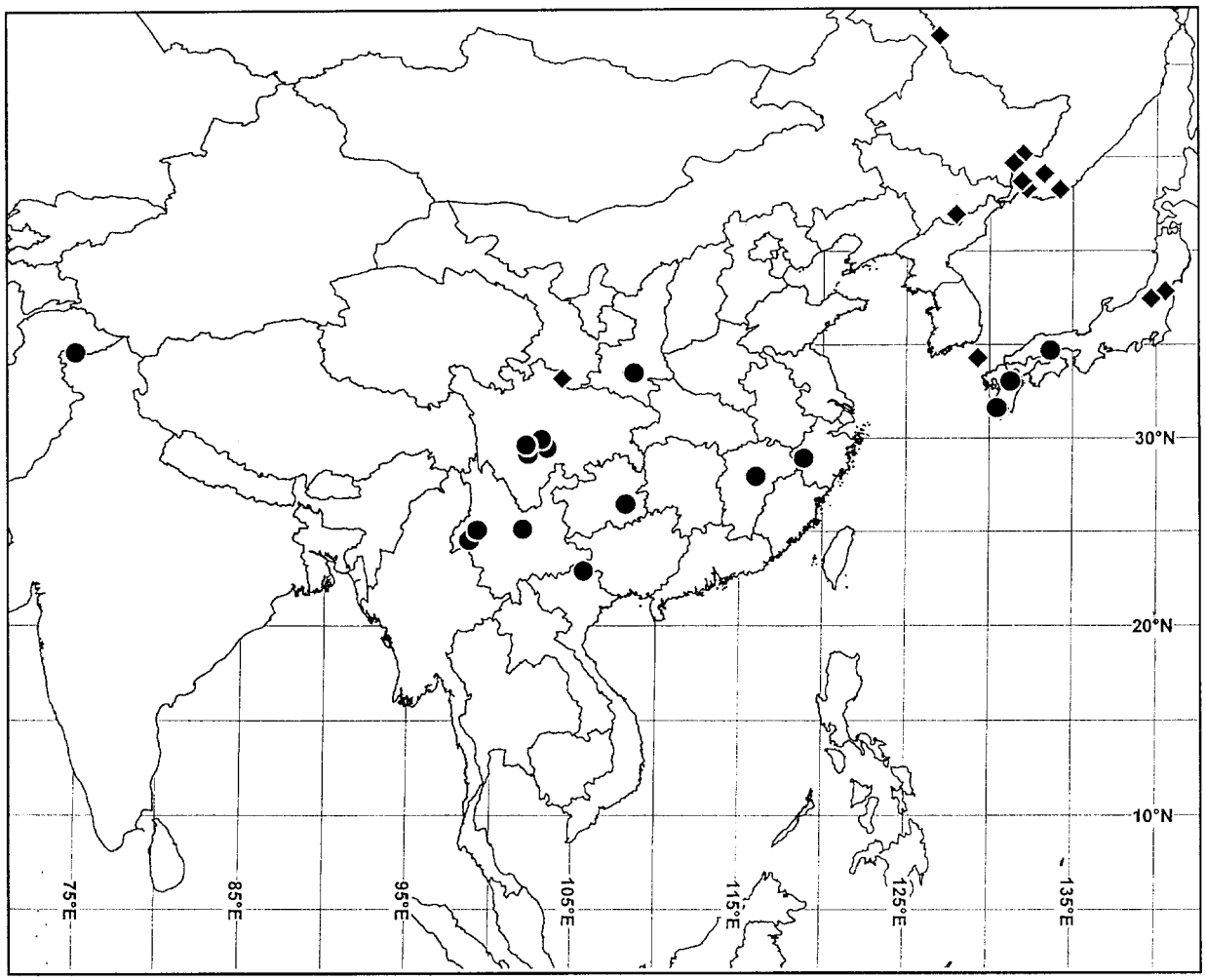


Fig. 14 Distribution of *Agrilus cyaneoniger* SAUNDERS: ● *Agrilus cyaneoniger cyaneoniger* SAUNDERS ◆ *Agrilus cyaneoniger melanopterus* SOLSKY.

4 Head, pronotum and elytra concolor black; pronotal sides usually with violet tinge, aedeagus (Fig. 1) .... *Agrilus cyaneoniger cyaneoniger* SAUNDERS (Fig. 7)
- Body ventraly bicolor; head and pronotum golden, golden-orange, golden-green or bronze, elytra black, often with bluish or greenish tinge .... *Agrilus cyaneoniger melanopterus* SOLSKY

5 Vertex strongly protruding (PDV), medially with deep and narrow sulcus; pronotum enlarged forwards, with maximum width in anterior third; elytra at well preserved specimens with two pairs of golden, tomentose spots; aedeagus (Fig. 5) .... *Agrilus bifoveolatus* KERREMANS (Fig. 12)
- Vertex not protruding (PDV), flat or convex, medially without or with shallower and wider sulcus; pronotum widest in middle, sides evenly rounded forwards and backwards; elytra without tomentose spots 6

6 Vertex flat (PDV), without or with very fine medial carina; eyes not protruding beyond head outline, aedeagus (Fig. 3) .... *Agrilus lafertei* KERREMANS (Fig. 10)
- Vertex convex (PDV), with distinct medial carina; eyes distinctly protruding beyond head outline 7

7 Elytral apices narrowly arcuately-acuminate; pronotal sides in lateral impressions with narrow patches of whitish pubescence; aedeagus (Fig. 4) .... *Agrilus agnatus* KERREMANS (Fig. 11)
- Elytral apices widely subarcuate; pronotal sides in lateral impressions with large, golden, tomentose patches; aedeagus (Fig. 6) .... *Agrilus qinling* sp.nov. (Fig. 13)

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