

Taxonomic Review of the Genus *Xylotrechus* (Coleoptera: Cerambycidae: Cerambycinae) in Korea with a Newly Recorded Species

Youngeun Han^{1*} and Dongpyeo Lyu²

¹Plant Clinic, College of Agriculture and Life Sciences, Seoul National University, Seoul, 151-921 Republic of Korea

²Department of Forestry, College of Life Science and Natural Resources, Sangji University, Wonju-si, 220-702 Republic of Korea

한국산 호랑하늘소속(Genus *Xylotrechus*) (딱정벌레목: 하늘소과: 하늘소아과)에 대한 분류학적 재검토

한영은^{1*} · 류동표²

¹서울대학교 농업생명과학대학 식물병원, ²상지대학교 생명자원과학대학 산림과학과

ABSTRACT: A total of sixteen *Xylotrechus* species from the Korean peninsula are recognized, including a newly recorded species, *Xylotrechus pavlovskii* Plavilstshikov, 1954. We present brief descriptions of the Korean *Xylotrechus* species, except four species which could not be examined in this study. The geographic distribution, host plants, illustrations for each species, and a key to the Korean *Xylotrechus* species are provided.

Key words: *Xylotrechus* Chevrolat, *Xylotrechus pavlovskii* Plavilstshikov, Newly recorded species

초 록: 본 연구를 통하여 한국산 호랑하늘소속은 16종으로 정리된다. 이 중 1종(*Xylotrechus pavlovskii* Plavilstshikov)은 우리나라에서 처음으로 분포가 확인되는 미기록종이었다. 본 연구의 결과로, 이번 연구에서 표본을 확인하지 못한 4종을 제외한 모든 종에 대한 기술과 각 종별 분포, 기주식물 그리고 삽화를 제공하였으며, 또한 본 속에 속하는 종들에 대한 검색표를 제공한다.

검색어: 호랑하늘소속, 녀점에호랑하늘소, 미기록종

The genus *Xylotrechus* Chevrolat, 1860 is Holarctic in origin and richest in species in Southeast Asia, especially in Japan, and in North America (Cherepanov, 1990). At least 180 species of the genus *Xylotrechus* are recorded from the world (Ohbayashi and Niisato, 2007).

In Korea, fifteen species have been recorded, after Ganglbauer's record of *Xylotrechus rusticus* (Linnaeus) in 1887 (Table 1).

The larval habits and host plants preferences of *Xylotrechus* are various and the major hosts include the

genera *Quercus*, *Pinus*, and *Salix* (Linsley, 1964).

The genus *Xylotrechus* Chevrolat (Coleoptera: Cerambycidae: Cerambycinae) can be distinguished by other genera in Clytini by 'frons with longitudinal carinae, broad sutures laterally or parallel sides; sides of vertex with minute punctuations, but sometimes sharply punctuate sclerites or without them, and with uniformly deep punctuations; antennae short, apices extend at most up to anterior third of elytra; sides of pronotum rounded, disk convex, densely punctuate; legs moderately long, femora nonclavate; first segment of hind tarsi much longer than two successive segments together' (Cherepanov, 1990).

In Korea, there is no taxonomic study on the genus

*Corresponding author: yehan@snu.ac.kr

Received April 12 2010; revised June 11 2010; accepted June 21 2010

Table 1. Historical records of Korean *Xylotrechus* species.

Author	Year	First record in species
Ganglbauer	1887	<i>X. rusticus</i> (Linnaeus)
Pic	1917	<i>X. atronotatus</i> Pic
Okamoto	1927	<i>X. chinensis</i> (Chevrolat)
Machida & Aoyama	1930	<i>X. pyrrhoderus</i> Bates
Cho	1934	<i>X. cuneipennis</i> (Kraatz)
Matsuhita & Tamanuki	1935	<i>X. polyzonus</i> (Fairmaire)
Cho	1936	<i>X. clarinus</i> Bates <i>X. rufilius</i> Bates
Matsushita	1938	<i>X. adspersus</i> (Gebler)
Mochizuki & Masui	1939	<i>X. grayii</i> (White)
Plavilstshikov	1940	<i>X. hircus</i> (Gebler)
Lee	1979	<i>X. salicis</i> Takakuwa et Oda
Lee	1983	<i>X. yanoi</i> Gressitt
Lee	1987	<i>X. altaicus</i> (Gebler) <i>X. incurvatus</i> (Chevrolat)
Total no. of species		15

Xylotrechus Chevrolat since Lee (1987). Therefore, the purposes of this paper are to review the taxonomic works on the genus *Xylotrechus* and provide a key to the Korean species with the diagnostic description, distribution, recorded host plants and illustration of each species.

In this study, the morphological terms which are used in diagnosis, descriptions and keys follows as Ohbayashi and Niisato (2007), and the abbreviations for the provinces of collection sites and depositories of examined specimens used here as : GW: Gangwon-do, GG: Gyeonggi-do, CB: Chungcheongbuk-do, CN: Chungcheongnam-do, JB: Jeollabuk-do, JN: Jeollanam-do, GB: Gyeongsangbuk-do, GN: Gyeongsangnam-do, JJ: Jeju-island. SJU: Sangji University, SNU: Seoul National University, NAAS: National Academy of Agricultural Science, KNA: Korea National Arboretum, and OHY: private collection of Mr. Oh, haeyong.

Taxonomic Accounts

Family Cerambycidae Leach, 1815

Subfamily Cerambycinae Latreille, 1804

Tribe Clytini Mulsant, 1839

Genus *Xylotrechus* Chevrolat, 1860

Xylotrechus Chevrolat, 1860, Ann. Soc. Ent. France, 3(8): 456. Type species: *Clytus sartorii* Chevrolat, 1860 [TL: Mexico]

Xylotrechus adspersus (Gebler, 1830) 북방호랑하늘소

Clytus adspersus Gebler, 1830, Ledebour Reise, 2,3: 181 [Siberia].

Xylotrechus adspersus: Pic, 1902, Mat. Longic., 4, 1: 16; Matsushita, 1938: 94 [Horyuri=Pung-Yu-Ri]; Cho, 1946: 44; Gressitt, 1951: 239; Cho, 1959: 13-14; Cho, 1962: 112; Cho, 1969: 475; Lee, 1979: 57; Lee, 1982: 38; Lee, 1987: 102; Ohbayashi and Niisato, 2007: 484.

Distribution. Eastern palaeartic region (Korea, China, Japan, Kazakhstan, Mongolia, Russia).

Host plants. Salicaceae [*Chosenia* sp., *Salix cardiophylla* Trautv. & Mey., *S. caprasa* L., *Salix* spp.] (Gressitt, 1951; Cho, 1959; Svacha and Danilevsky, 1988; Cherepanov, 1990; Korea Forest Research Institute, 1995; Hua, 2002; Danilevskaya *et al.*, 2009)

Remarks. This species was recorded by Matsushita (1938) from North Korea but we couldn't examine any Korean specimen of this species in this work.

Xylotrechus altaicus (Gebler, 1830) 검정가슴호랑하늘소

Clytus altaicus Gebler, 1830, Bull. Soc. Nat. Moscou, 9: 342 [Altai].

Clytus popovii Mannerheim, 1849, op. cit. 12(1): 241.

Xylotrechus altaicus: Chevrolat, 1863, Mem. Soc. Sc. Liege. 18: 313(61); Lee, 1987: 102-103.

Distribution. Eastern palaeartic region (Korea, China, Kazakhstan, Mongolia, Russia).

Host plant. Pinaceae [*Larix* sp.] (Gressitt, 1951; Svacha and Danilevsky, 1988; Hua, 2002).

Remarks. This species listed by Lee (1987) but we couldn't examine any Korean specimen of this species in this work.

Xylotrechus atronotatus subscalaris Pic, 1917 제주 호랑하늘소 (Figs. 1, 13 and 25)

Xylotrechus atronotatus Pic, 1917: Cho, 1969: 475-477; Lee, 1979: 58; Lee, 1980a: 51; Lee, 1982: 39; Lee, 1987: 106 [Formosa].

Xylotrechus atronotatus var. *subscalaris* Pic, 1917, Mat. Long., 10(2): 11 [Quelpart Is. = Jeju-island].

Xylotrechus atronotatus subscalaris: Mitono, 1940, Bull. Sch. Agric. For. Taihoku. Imp. Univ., (2), p.92; Cho, 1946: 44; Gressitt, 1951:240; Cho, 1962: 112; Cho, 1963: 212; Niisato and Koh, 2003: 290-292.

Diagnosis. Body length 11-20 mm. Pronotum black with dense dark yellowish pubescences and blackish pubescences on median and sub-apical area. Elytra black with dark yellowish pubescences bands. Frons with median longitudinal smooth 'V'-shaped carina, longitudinal smooth carina frons to vertex. Pronotum widest at one fourth area from the base. Elytra about 2.3x as long as wide; base of median area with dense dark brownish pubescences; sub-basal area with 'C'-shaped dark brownish pubescences band; median area with transverse grayish pubescences band; apical elytra suture with grayish pubescences; apice of elytra truncated with outward spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan).

Material examined. [OHY] JJ 8exs, Andeok valley, Jeju-si, 8-12.VII.2004, H.Y.Oh; 1ex, *ditto*, 24.VII.2002, H.Y.Oh; 1ex, *ditto*, 25.VII.2000, H.Y.Oh; 1ex, *ditto*, 7-12.VII.2004, H.Y.Oh; 3exs, Cheonjiyeon waterfall, Cheonji-dong, Seogwipo-si, 24.VII.2002, H.Y.Oh.

Remarks. Previous record from Korean peninsula is questionable since the illustration in the book (Lee, 1987) is an illustration of misidentified specimen of *Chlorophorus diadema* (Motschulsky) (Niisato and Koh, 2003). I could not examine any Korean specimen in this work.

Four subspecies are known from Eastern palaeartic region, *Xylotrechus atronotatus subscalaris* Pic, 1917 from Korea, *X. a. angulithorax* Gressitt, 1934, and *X. a. generosus* Matsushita from Japan and *X. a. draconiceps* Gressitt, 1951 from China, respectively.

X. atronotatus Pic, 1917 had used as a species name, cause of absence of study on subspecies level of this species and synonym list which has no comment on subspecies in Lee (1987). But, Niisato and Koh (2003) concluded that *X. a. subscalaris* Pic is one of subspecies, which is endemic to Jeju-island based on morphological comparison with conspecific subspecies.

Xylotrechus chinensis (Chevrolat, 1852) 호랑하늘소 (Figs. 2, 14 and 26)

Clytus chinensis Chevrolat, 1852, Revue Mag. Zool., 2(4): 416 [Shanghai, China].

Xylotrechus chinensis: Chevrolat, 1863, Mem. Soc. Sci. Liege, 18: 313; Okamoto, 1927: 74; Cho, 1946: 44; Gressitt, 1951: 238; Cho, 1946: 44-45; Cho, 1959: 14; Cho, 1962: 92, 112; Cho, 1969: 474-475; Lee, 1979: 57; Lee, 1980a: 50; Lee, 1980b: 65; Lee, 1981: 48; Lee, 1982: 38; Lee, 1987: 101-102; Ohbayashi and Niisato, 2007: 482.

Xylochytus chinensis: Reitter, 1912, Fauna Germ. 4: 46.

Xylotrechus chinensis var. *sauteri* Schwarzer, 1925, Ent. Blatt. 21: 26 [Kosempo, Formosa, China].

Xylotrechus chinensis var. *griseofasciatus* Pic, 1943, Opuscula Martialia, 9: 1 [China].

Diagnosis. Body length 15-25 mm. Head red with dense yellowish pubescences; antennae red except 5th to 9th dark reddish antennal segments. Pronotum black; anterior area with yellowish pubescences band; median area with transverse reddish band; posterior area with yellowish pubescences patch at middle. Elytra black with two pairs of thin yellowish pubescences bands and two pairs of thick yellowish pubescences bands. Frons with median longitudinal smooth 'V'-shaped carina, longitudinal smooth carina from frons to vertex. Pronotum slightly wider than long with numerous small punctures. Elytra. Humeral area slightly elevated from surface; basal yellowish pubescences band curved toward scutellum disconnected with scutellum and curved toward anteriorly at lateral area; sub-basal yellowish pubescences band oblique toward lateral margin; sub-apical yellowish pubescences band thick; apical yellowish pubescences band thickest among the bands; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan).

Host plants. Moraceae [*Morus alba* L., *M. bombycis* Koidz. var. *bombycis*], Rosaceae [*Malus pumila* Mill., *Pyrus* sp.], Vitaceae [*Vitis vinifera* L.] (Gressitt, 1951; Cho, 1959; Lee, 1987; Cherepanov, 1990; Hua and Yu, 1993; Korea Forest Research Institute, 1995; Hua, 2002; Kang *et al.*, 2002).

Material examined. [NAAS] GG 1ex, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 11.VIII.1932, NAAS; 1ex, Suwon-si, 2.VIII.1982, D.J.Im; [OHY] GG 1ex, Yangsu-ri, 11.VIII.2000, H.Y.Oh; GW 5exs, Hongcheon-gun, 19-20.VII.2005, H.Y.Oh; 2exs, *ditto*, 18.VIII.2001, H.Y.Oh; 1ex, *ditto*, 5.VIII.2006, H.Y.Oh; 1ex, *ditto*, 17.VII.2001, H.Y.Oh; 1ex, Gajeong-ri, Chuncheon-si, 17.VII.2001, H.Y.Oh.

Xylotrechus clarinus Bates, 1884 북자호랑하늘소 (Figs. 3, 15 and 27)

Xylotrechus clarinus Bates, 1884, J. Linn. Soc. London, 18: 231 [Junsai, Hokkaido, Japan]; Gressitt, 1951: 242; Cho, 1959: 14-15; Cho, 1962: 112; Cho, 1969: 477; Lee, 1979: 57-58; Lee, 1980b: 65; Lee, 1982: 38; Lee, 1987: 106-107; Cherepanov, 1990: 50-54; Ohbayashi and Niisato, 2007: 486-487.

Xylotrechus rectangulus: Pic, 1902, Mat. Longic., 4(1): 17, 19 [Japan] (nec. Motschulsky, 1875).

Xylotrechus rufilius: Cho, 1936, Trans. Nat. Hist. Soc. Formosa, 26: 93 [Heihoku, Manpochin= Man-Po-Jin, Pyeong-Bug].

Xylotrechus ibex: Krivolutskya, 1966, Forest Ins.-Pests Far East: 56 [Kurul Is.: Shikotan Is., Kunashiri Is., Etofu Is.] (nec. Gebler, 1825).

Diagnosis. Body length 9-16 mm. Pronotum black with yellowish pubescences on anterior, posterior and lateral areas. Elytra dark brown with yellowish pubescences bands on sub-basal, median and sub-apical area. Frons with median longitudinal elevated 'V'-shaped carina. Pronotum slightly wider than long with numerous small coarse granules. Elytra about 2.2x as long as wide; humeral area with oblique,

transverse yellowish pubescences band; sub-basal area with 'U'-shaped yellowish pubescences band with obtuse distal angle; sub-apical area with transverse yellowish pubescences band; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan, Russia).

Host plants. Betulaceae [*Alnus hirsute* Tures., *A. japonica* (Thunb.) Steud., *Betula ermani* Chamisso, *B. grossa* Siebold & Zucc., *B. maximowicziana* Regel, *B. platyphylla* var. *japonica* Hara, *B. costata* Trautvetter, *Betula* sp.], Salicaceae [*Populus* sp.] (Gressitt, 1951; Cho, 1959; Lee, 1987; Cherepanov, 1990; Korea Forest Research Institute, 1995; Hua, 2002).

Material examined. [OHY] GG 1ex, Gwangreung Arboretum, Soheul-eub, Pocheon-si, VII.2007, W.Kang; [SNU] GG 1ex, Namsu-dong, Suwon-si, 14.VI.1968, K.R.Choi.

Xylotrechus cuneipennis (Kraatz, 1879) 세줄호랑하늘소 (Figs. 4, 16 and 28)

Clytus (*Xylotrechus*) *cuneipennis* Kraatz, 1879, Deutsche Ent. Zeitschr., 23: 110, pl.1, f.5 [Amurland].

Xylotrechus cuneipennis: Cho, 1946: 45; Gressitt, 1951: 242; Cho, 1959: 14; Cho, 1962: 112; Cho, 1963: 212; Cho, 1969: 477-478; Lee, 1979: 58; Lee, 1980a: 50-51; Lee, 1981: 48; Lee, 1982: 38-39; Lee, 1987: 105-106; Cherepanov, 1990: 37-43; Ohbayashi and Niisato, 2007: 485.

Clytus decolor Thieme, 1881, Berl. Ent. Z., 25: 101 [Amurland].

Xylotrechus albifilis Bates, 1884, J. Linn. Soc. London., 18: 232 [Usui-toge, Gunma Pref., Japan].

Xylotrechus hircus Gebler var. *cuneipennis*: Heyden, 1893, Cat. Coleopt. Sib. (ed.2): 184.

Xylotrechus pallipennis Matsumura, 1906, Thous. Ins. Japan, 3: 154, pl. 54, fig. 12; Cho, 1934: 45 [Hae-In-Sa, Gyeong-Nam]; Cho, 1962: 98.

Diagnosis. Body length 10-24 mm. Pronotum black except each side of anterior and posterior margin with yellowish pubescences spots. Elytra pale brown, semi-

transparent with weak whitish pubescences bands on humeral, median and sub-apical area. Frons with longitudinal elevated 'V'-shaped carina on median area; frons with a pair of lateral longitudinal carinae from clypeus and antennal socket. Pronotum as long as wide with numerous coarse granules. Elytra about 2.6x as long as wide; humeral area with weak and oblique whitish transverse pubescences band; median area with whitish pubescences band rapidly curved toward scutellum at elytral suture; sub-apical area with oblique whitish pubescences band; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan, Mongolia, Russia).

Host plants. Aceraceae [*Acer* spp.], Betulaceae [*Alnus* sp., *Betula* sp., *Carpinus* sp.], Fagaceae [*Quercus mongolica* Fisch. ex Ledeb., *Quercus* sp.], Flacourtiaceae [*Xylosma* sp.], Oleaceae [*Fraxinus* sp.], Pinaceae [*Abies sachalinensis* (Schmidt), *Abies* sp., *Larix* sp.], Ulmaceae [*Ulmus* sp.] (Gressitt, 1951; Cho, 1959; Svacha and Danilevsky, 1988; Cherepanov, 1990; Korea Forest Research Institute, 1995; Kang *et al.*, 2002; Hua, 2002).

Material examined. [KNA] **GG** 4exs, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 28.VIII.1990, G.J.Weon; 2exs, *ditto*, 28.VIII.1993, G.J.Weon; 2exs, *ditto*, 6.VIII.1993, G.J.Weon; 1ex, *ditto*, 30.VIII.1990, G.J.Weon; 1ex, *ditto*, 9.VIII.1994, G.J.Weon; 3exs, *ditto*, 19.VIII.2001, G.J.Weon; 1ex, Soribong, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 25.VI.2005, B. K. Byun & H. J. Choi; 12exs, Mt. Taehwa, Samglim-ri, Docheok-myeon, Gwangju-si, 26.VI-4.VII.2007, J.O.Lim; 5exs, *ditto*, 20.VII-31.VIII.2007, J.O.Lim; 2exs, *ditto*, 9-24.VI.2007, J.O.Lim; **GW** 1ex, Guweolsa, Samsan-ri, Yeongok-myeon, Gangreung-si, 31.VII.2007, J.O.Lim; **SEOUL** 1ex, Mt. Surak, Sanggye-dong, Nowon-gu, 18.VII-24.VIII.2007, J.O.Lim; 1ex, *ditto*, 24.VIII-6.IX.2007, J.O.Lim; [NAAS] **GW** 1ex, Mt. Cheongok, Donghae-si, 16.VIII.1989, S.H.Lee; [OHY] **SEOUL** 1ex, Mt. Surak, Sanggye-dong, Nowon-gu, 16.VII.2001, H.Y.Oh; **GW** 1ex, Guryongryeong, 7.VII.2001, H.Y.Oh; 1ex, Hwalgi-ri, Samcheok-si, 8.V.2003, H.Y.Oh; 3exs, Haesanryeong, Hwacheon-eub, Hwacheon-gun, 26.VI.2003, H.Y.Oh; 1ex, Sambong Recreation Forest, Gwangwon-

ri, Nae-myeon, Hongcheon-gun, 14.VIII.2004, D.H.Park; 1ex, Sanmachi, Hongcheon-gun, 1.VII.2003, H.Y.Oh; 1ex, Mt. Obong, Chuncheon-si, III.2002, H.Y.Oh; 1ex, Hongcheon-gun, 6.VI.2000, H.Y.Oh; 1ex, *ditto*, 1.VII.2000, H.Y.Oh; 1ex, *ditto*, 17.VI.2000, H.Y.Oh; [SJU] **GW** 1ex, Gonggeun-myeon, Hoengseong-gun, 4.VIII.2008, K.S.Lee; [SNU] **CB** 1ex, Mt. Sokri, Naesokri-myeon, Boeun-gun, 24.VII.1960, Baek; **CN** 2exs, Donam-ri, Banpo-myeon, Gongju-si, 21-28.VI.2005, Y.T.Kim; 2exs, *ditto*, 26.VII-2.VIII.2005, Y.T.Kim; 1ex, *ditto*, 13-19.VII.2005, Y.T.Kim; 1ex, Mt. Mansu, Buyeo-gun, 11.VI.1999, S.W.Park; **GB** 1ex, Mt. Sobak, 15.VII.1994, M.J.Shim; **GG** 3exs, Mt. Taehwa, Samglim-ri, Docheok-myeon, Gwangju-si, 28.VI-14.VII.2008, J.O.Lim; 2exs, *ditto*, 14-27.VI.2008, J.O.Lim; 9exs, *ditto*, 8.VIII-5.IX.2008, J.O.Lim; 1ex, Korea National Arboretum, Jigdong-ri, Soheul-eub, Pocheon-si, 23.VIII.2006, J.O.Lim; 1ex, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 23.VI.1957, S.W.Park; 2exs, Mt. Yongmun, Yeonsu-ri, Yongmun-myeon, Yangpyeong-gun, 1-26.V.2009, J.O.Lim & Y.E.Han; 4exs, *ditto*, 26.VI-16.VII.2009, J.O.Lim & Y.E.Han; 17exs, *ditto*, 16-30.VII.2009, J.O.Lim & Y.E.Han; 11exs, *ditto*, 31.VII-17.VIII.2009, J.O.Lim & Y.E.Han; 3exs, *ditto*, 18.VIII-4.IX.2009, J.O.Lim & Y.E.Han; 3exs, Mt. Homyeong, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, 11-25.VI.2009, J.O.Lim & Y.E.Han; 2exs, *ditto*, 26.VI-16.VII.2009, J.O.Lim & Y.E.Han; 9exs, *ditto*, 16-30.VII.2009, J.O.Lim & Y.E.Han; 6exs, *ditto*, 31.VII-17.VIII.2009, J.O.Lim & Y.E.Han; 2exs, *ditto*, 18.VIII-4.IX.2009, J.O.Lim & Y.E.Han; **GN** 1ex, Jikjeon-ri, Mt. Jiri, 26.VII.1999, J.S.Ahn; **SEOUL** 2exs, Mt. Surak, Sanggye-dong, Nowon-gu, 7.IX-6.X.2007, J.O.Lim; **JJ** 1ex, Warm-temperate experiment forest, Hannam-ri, Namwon-eub, Namjeju-gun, 9.VIII.2007, S.W.Park.

Xylotrechus grayii (White, 1855) 별가슴호랑하늘소 (Figs. 5, 17 and 29)

Clytus grayii White, 1855, Cat. Col. Brit. Mus., 8: 261, pl. 6, f. 4 [North China].

Xylotrechus grayii: Chevrolat, 1863, Men. Soc. Sci. Liege, 18: 325 (73); Mochizuki et Masui, 1939, Keichu Rikabuho, 4: 70; Cho, 1962: 112; Cho, 1969: 478; Lee,

1979: 58; Lee, 1982: 39; Lee, 1987: 107-108; Ohbayashi and Niisato, 2007: 487.

Diagnosis. Body length 9-17 mm. Head black with yellowish pubescences on lower clypeus, gena, mandible; antennae black except 6th to 10th antennal segments with dense yellowish pubescences. Pronotum black with ten yellowish pubescences spots on dorsal surface and two spots on sub-ventral surface. Elytra pale reddish brown with weak whitish pubescences bands. Legs dark brown except reddish brown basal half of mid- and hind-femora and tibiae. Frons with three longitudinal carinae, median carina reaching vertex and a pair of lateral longitudinal carinae from clypeus to antennal socket. Elytra about 2.1x as long as wide; humeral area impressed longitudinally; median area with weak whitish longitudinal 'W'-shaped pubescences band; sub-apical area with weak whitish 'V'-shaped pubescences band; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan).

Host plants. Anacardiaceae [*Odina* sp.], Araliaceae [*Kalopanax* sp.], Caprifoliaceae [*Lonicera japonica* Thunb.], Myrtaceae [*Syzygium buxifolium* Hook.], Paulowniaceae [*Paulonia tomentosa* (Thunb.), *Paulownia* sp.], Pinaceae [*Abies* spp.], Rubiaceae [*Coffea arabica* L., *Randia spinosa* (Jacq.)], Rutaceae [*Citrus* sp.], Sterculiaceae [*Firmiana simplex* (L.) W.F.Wight], Ulmaceae [*Ulmus davidiana* var. *japonica* (Rehder) Nakai, *Ulmus* sp.], Verbenaceae [*Tectona grandis* Lin., *Tectona* sp.] (Gressitt, 1951; Lee, 1987; Hua and Yu, 1993; Kang *et al.*, 2002; Hua, 2002).

Material examined. [KNA] CN 1ex, Sudeoksa, Sacheon-ri, Deoksan-myeon, Yesan-gun, 11.VII.2007, J.W.Seong; [OHY] GG 1ex, Mt. Hwaya, Oeseo-myeon, Gapyeong-gun, 9.VI.2004, H.Y.Oh; 1ex, Gwangtan-myeon, Paju-si, 6-7.VI.2004, H.Y.Oh; GW 8exs, Haesanryeong, Hwacheon-eub, Hwacheon-gun, 21.VI.2003, H.Y.Oh; 1ex, *ditto*, 23.VI.2001, H.Y.Oh; 1ex, Hwalgi-ri, Samcheok-si, 24.V.2003, H.Y.Oh; 3exs, Hongcheon-gun, 11.VI.2000, H.Y.Oh; 4exs, *ditto*, 6.VI.2000, H.Y.Oh; 1ex, *ditto*, 17.VI.2000, H.Y.Oh;

1ex, *ditto*, 5.V.2000, H.Y.Oh; [SJU] GW 1ex, Gonggeun-myeon, Hoengseong-gun, 11.V.2009, K.S.Lee; 1ex, *ditto*, 6.VII.2009, K.S.Lee; [SNU] SEOUL 1ex, Daerim-dong, 18.V.2006, S.W.Park; GG 1ex, Mt.Yongmun, Yeonsu-ri, Yongmun-myeon, Yangpyeong-gun, 1-26.V.2009, J.O.Lim & Y.E.Han; 1ex, Mt. Homyeong, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, 1-26.V.2009, J.O.Lim & Y.E.Han.

Xylotrechus hircus (Gebler, 1825) 갈색호랑하늘소 (Figs. 6, 18 and 30)

Clytus hircus Gebler, 1825, in Hummel, Essais Ent., 4: 54 [Siberia].

Xylotrechus hircus: Chevrolat, 1863, Mem. Soc. Sci. Liege, 18: 325(73); Plavilstshikov, 1940: 355; Gressitt, 1951: 244; Cho, 1959: 15; Cho, 1962: 112; Cho, 1969: 478; Lee, 1979: 57; Lee, 1982: 38; Lee, 1987: 104; Cherepanov, 1990: 31-37; Ohbayashi and Niisato, 2007: 484.

Clytus (Xylotrechus) hircus: Kraatz, 1879, Deut. Ent. Zeit., 23: 89.

Clytus decolor Thieme, 1881, Berl. Ent. Zeit. 25: 101 [Siberia].

Diagnosis. Body length 8-15 mm. Pronotum black with a pair of longitudinal whitish pubescences bands on sub-middle area of posterior half. Elytra pale brown with weak whitish pubescences band on lateral area of sub-basal area; sub-apical area with oblique whitish pubescences band. Pronotum as long as wide with dense punctures and long erect hairs, widest at one fourth area from the base, the sides weakly narrowing anteriorly and rapidly narrowing posteriorly from the widest point. Elytra about 2.1x as long as wide; median area with oblique and weak whitish pubescences band from lateral margin to sub-lateral area; sub-apical area with oblique whitish pubescences band slightly curved and reaching toward elytral suture; apice of elytra rounded.

Distribution. Eastern palaeartic region (Korea, China, Japan, Kazakhstan, Mongolia, Russia).

Host plants. Betulaceae [*Betula costata* Trautv., *B. daurica* Pall., *B. platyphylla* Sukaczew, *B. platyphylla* var. *japonica* (Miq.) Hara, *Betula* sp.], Salicaceae [*Populus davidiana*

Dode], Styracaceae [*Styrax obassia* Siebold & Zucc.] (Gressitt, 1951; Cho, 1959; Lee, 1987; Svacha and Danilevsky, 1988; Cherepanov, 1990; Korea Forest Research Institute, 1995; Hua, 2002).

Material examined. [KNA] GG 1ex, Mt. Taehwa, Sanglim-ri, Docheok-myeon, Gwangju-si, 9-24.VI.2007, J.O.Lim; [SJU] GW 1ex, Gonggeun-myeon, Hoengseong-gun, 8.VI.2009, K.S.Lee; [OHY] GW 7exs, Haesanryeong, Hwacheon-eub, Hwacheon-gun, 26.VI.2003, H.Y.Oh; 1ex, Guryongryeong, Galcheon-ri, Seo-myeon, Yangyang-gun, 7.VII.2001, H.Y.Oh; 1ex, Hongcheon-gun, 17.VI.2000, H.Y.Oh; [SNU] GG 1ex, Imjingak, Paju-si, 3.VI.1997, K.S.Woo; 1ex, Mt. Homyeong, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, 11-25.VI.2009, J.O.Lim & Y.E.Han; 1ex, *ditto*, 1-26.V.2009, J.O.Lim & Y.E.Han; 1ex, *ditto*, 27.V-10.VI.2009, J.O.Lim & Y.E.Han.

Xylotrechus incurvatus (Chevrolat, 1863) 닭은애호랑 하늘소

Amauresthes incurvatus Chevrolat, 1863, Mem. Soc. Sc. Liege, 18: 331[India].

Xylotrechus incurvatus: Lee, 1987: 108-109.

Distribution. Eastern palaeartic region (Korea, China), Oriental region (India, Myanma).

Host plants. Juglandaceae [*Juglans regia* Dode, *Juglans* sp.], Rosaceae [*Prunus nepalensis* hort. ex K.Koch, *P. sachalinensis* (F.Schmidt) Koidz., *Prunus* sp.] (Gressitt, 1951; Hua and Yu, 1993; Hua, 2002).

Remarks. This species listed in the book by Lee (1987) but I couldn't examine any Korean specimen in this work.

Xylotrechus pavlovskii Plavilstshikov, 1954 낙점애호랑 하늘소 (신칭) (Figs. 7, 19 and 31)

Xylotrechus pavlovskii Plavilstshikov, 1954, Zoologicheskii Zhurnal, 33: 470-476.

Description. Body length 9-11 mm. Head black except dark brownish clypeus and antennae; lateral area of frons and the area between antennal socket and compound eye with dense yellowish pubescences; gena with yellowish

pubescences. Pronotum black except basal half with a pair of dense yellow pubescences patches on lateral area; distal half with a pair of yellow pubescences patches at middle; posterior margin with short yellowish transverse pubescences band; lateral margin with big and dense yellowish pubescences patch. Scutellum black with distal yellowish pubescences. Elytra black except reddish brown basal one fifth of elytra and yellowish pubescences bands on sub-basal, median, sub-apical and apical area. Legs reddish brown except dark brownish apical half of femora. Metepisternum black with anterior half and posterior margin with dense yellowish pubescences band; each ventrite with a pair of yellowish pubescences patches at each side. Head longer than wide in frontal view with moderate punctures. Frons without median and lateral carina, with longitudinal groove reaching vertex. Antennae short, reaching about midline of elytra; length of scape as long as length of 3rd antennal segment; scape to 6th antennal segments with inward long erect hairs. Pronotum as long as wide with short erect hairs and punctures smaller than head; median area of posterior half slightly elevated. Elytra 2.3 x as long as wide; sub-basal area with a pair of yellowish transverse pubescences bands; median area with a pair of narrow yellowish 'U'-shaped pubescences bands curved toward scutellum, not connected with scutellum; sub-apical and apical area with transverse yellowish pubescences bands; apice of elytra truncated with outward small spine-like projection. Femora and tibiae with short sub-erect hairs.

Distribution. Eastern palaeartic region (Korea (new record), Russia).

Host plant. Fagaceae [*Quercus* spp.] (Cherepanov, 1990).

Material examined. [OHY] ULSAN 1♀, Ungchon-myeon, 25.VI.2006, H.Y.Oh; [SNU] GG 1♀, Goyang-dong, Deogyang-gu, Goyang-si, 26.VI.2007, J.O.Lim.

Xylotrechus polyzonus (Fairmaire, 1888) 애호랑 하늘소 (Figs. 8, 20 and 32)

Clytus polyzonus Fairmaire, 1888, Revue. d'Ent., 7: 143 [Peking, Hopei, China].

Xylotrechus polyzonus: Matsushita et Tamanuki, 1935: 4; Cho, 1946: 45; Gressitt, 1951: 249; Cho, 1962: 99, 104,

113; Cho, 1969: 478; Lee, 1979: 58-59; Lee, 1982: 39; Lee, 1987: 108; Cherepanov, 1990: 66-68.

Xylotrechus jeholensis Kano, 1935, Rep. Ist. Sc. Exp. Manchoukuo, 5, 10, 52: 5, 8, pl.1, f.3.

Diagnosis. Body length 10-14 mm. Pronotum black with dense yellowish pubescences; black area without yellowish pubescences, forming a pair of blackish spots on median area; lateral area with a pair of smooth blackish spots; median black line reaching toward transverse blackish band on posterior margin, forming reverse 'T'-shape in dorsal view. Elytra dark brown except pale brownish basal one fourth with yellowish pubescences bands. Frons with smooth elevated carinae on median area, lateral carina absent; the area between upper frons and vertex with longitudinal groove. Elytra about 2.7x as long as wide; basal pale brownish band obliquely 'C'-shaped; median band thick and 'U'-shaped; sub-apical and apical bands thick and transverse; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Russia).

Material examined. [SNU] CB 1ex, Mt. Wolak, Hansu-myeon, Jecheon-si, 16.VI.1992, O.C.Kim.

Xylotrechus pyrrhoderus Bates, 1873 포도호랑하늘소 (Figs. 9, 21 and 33)

Xylotrechus pyrrhoderus Bates, 1873, Ann. Mag. Nat. Hist., 4(12): 200 [Nagasaki, Yokohama, Japan]; Machida et Aoyama, 1930, Chosen Gaichu Hen, 2: 184; Cho, 1946: 45; Gressitt, 1951: 249; Cho, 1959: 14; Cho, 1962: 113; Cho, 1969: 478-479; Lee, 1979: 58; Lee, 1982: 39; Lee, 1987: 103-104; Ohbayashi and Niisato, 2007: 484.

Xylotrechus rufilius: Yokohama, 1931, Col. Japan., 2: 35, pl 5, fig. 3 (nec. Bates, 1884).

Diagnosis. Body length 9-14 mm. Head black except dark brown clypeus, antennae and yellowish hairs on clypeus. Pronotum red except a few short pubescences on anterolateral area. Scutellum red with distal yellowish pubescences. Elytra black with thick yellowish bands on

basal and sub-apical areas; basal yellowish band connected by sharp angle with sub-basal band along elytral suture; sub-apical area with transverse whitish pubescences band. Pronotum as long as wide with dense and coarse punctures. Elytra about 2.1x as long as wide; apice of elytra truncated with outward spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan).

Host plants. Vitaceae [*Ampelopsis brevipedunculata* (Maxim.) Trautv., *Vitis vinifera* L.] (Gressitt, 1951; Cho, 1959; Lee, 1987; Korea Forest Research Institute, 1995; Kang *et al.*, 2002; Hua, 2002).

Material examined. [KNA] GG 1ex, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 13.IX.1980, G.J.Weon; GB 1ex, Geumgok-dong, Andong-si, 2.VI.2007, M.J.Lee; GW 2exs, Mt. Gyebang, Yongpyeong-myeon, Pyeongchang-gun, 18.VI.2006, S.E.Noh; [NAAS] GG 2exs, Suwon-si, 4.IX.1982, D.J.Im; 38exs, *ditto*, 10.VIII.1984, S.W.Lee; 1ex, *ditto*, 22.VIII.1985, S.B.Ahn; 10exs, *ditto*, 25.VIII.1988, B.N.Cha; JJ 1ex, Seogwipo-si, 5.IX.1975, H.S.Kim; [OHY] GG 18exs, Jebu-island, VII.2002, H.Y.Oh; [SNU] CN 4exs, Cheonan-si, 28.VIII.1997, D.S.Kim; GG 1ex, Gwanak Arboretum, Anyang-dong, Anyang-si, 5.IX.1998, D.H.Gwak; 1ex, Mt. Gwanggyo, Sanggwanggyo-dong, Jangan-gu, Suwon-si, 15.IX.1998, C.H.Yoo; 1ex, Namhansanseong, 11.IX.2000, J.Y.Park; 1ex, *ditto*, 12.IX.2000, J.Y.Park; 1ex, Mt. Homyeong, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, 18.VIII-4.IX.2009, J.O.Lim & Y.E.Han; SEOUL 1ex, Mt. Bulam, Gongneung-dong, Nowon-gu, 9.IX.2007, S.W.Park.

Xylotrechus rufilius Bates, 1884 홍가슴호랑하늘소 (Figs. 10, 22 and 34)

Xylotrechus rufilius Bates, 1884, J. Linn. Soc. London, 18: 233 [Junsai, Hokkaido, Japan]; Cho, 1936: 93 [Heihoku, Manpochin=Man-Po-Jin, Pyeong-Bug]; Cho, 1946: 45; Gressitt, 1951: 250; Cho, 1959: 14; Cho, 1962: 99, 113; Cho, 1969: 479; Lee, 1979: 58; Lee, 1982: 39; Lee, 1987: 107; Cherepanov, 1990: 73-78; Ohbayashi and Niisato, 2007: 483.

Diagnosis. Body length 7-13 mm. Pronotum red with some dark reddish parts. Scutellum black with distal dense yellowish pubescences. Elytra black with relatively thin whitish pubescences band on basal and sub-apical area; basal band connected with sub-basal band at elytral suture with obtuse angle; sub-apical area with transverse whitish pubescences band, curved posteriorly with angle. Frons with median longitudinal 'V'-shaped carinae and lateral carinae. Elytra about 1.9 x as long as wide; apice of elytra truncated with outward small spine-like projection.

Distribution. Eastern palaeartic region (Korea, China, Japan, Russia).

Host plants. Aceraceae [*Acer pictum* subsp. *mono* (Maxim.), *Acer* sp.], Fabaceae [*Dalbergia* spp.], Fagaceae [*Castanopsis sclerophylla* (Lindl. & Paxton)], Juglandaceae [*Juglans regia* Dode], Meliaceae [*Melia azedarach* L.], Oleaceae [*Fraxinus mandshurica* Rupr., *Fraxinus sieboldiana* Bl., *Fraxinus* sp.], Ulmaceae [*Ulmus parvifolia* Jacq., *Ulmus* sp.] (Gressitt, 1951; Cho, 1959; Svacha and Danilevsky, 1988; Cherepanov, 1990; Korea Forest Research Institute, 1995; Kang *et al.*, 2002; Hua, 2002).

Material examined. [KNA] GG 9exs, Gwangreung, Bupyeong-myeon, Jinjeob-eub, Namyangju-si, 18.VI.1991, G.J.Weon; 2exs, Mt. Taehwa, Sanglim-ri, Docheok-myeon, Gwangju-si, 9.VI-24.VI.2007, J.O.Lim; 1ex, Goyang-dong, Deogyang-gu, Goyang-si, 23.VII-24.VIII.2007, J.O.Lim; 4exs, Gwanak Arboretum, Manan-gu, Anyang-si, 9-24.VI.2007, J.O.Lim; 4exs, Mt. Seongseok, Dongbaek-ri, Guseong-eub, Yongin-si, 19.VI.2007, S.W.Park; 1ex, Hwado-eub, Namyangju-si, 27.V.2007, S.W.Park; GN 1ex, Pyochungsa, Danjang-myeon, 12.VII.2007, B.W.Lee *et al.*; GW 1ex, Mt. Gyebang, Yongpyeong-myeon, Pyeongchang-gun, 18.VI.2006, S.E.Noh. JB 1ex, Mt. Munsu, Naun-dong, Gunsan-si, 16.VII.2006, H.A.Sung; JN 1ex, Wando-eub, Wando-gun, 11-16.VIII.2007, J.O.Lim; 1ex, Gwangyang-si, 22.VI.2004, W.B.Park; SEOUL 2exs, Mt. Surak, Sanggye-dong, Noweon-gu, 18.VII-24.VIII.2007, J.O.Lim; [NAAS] GG 3exs, Suwon-si, 5.VI.2002, D.J.Im; [OHY] GW 1ex, Haesanryeong, Hwacheon-eub, Hwacheon-gun, 26.VI.2003, H.Y.Oh; 2exs, Sanmachi, Hongcheon-gun, 1.VII.2003, H.Y.Oh; 2exs, Hongcheon-gun, 25.V.2000,

H.Y.Oh; 2exs, *ditto*, 11.VI.2000, H.Y.Oh; 1ex, 2.VIII.2001, H.Y.Oh; [SJU] GW 1ex, Gonggeun-myeon, Hoengseong-gun, 8.VI.2009, K.S.Lee; [SNU] CB 1ex, Mt. Wolak, Hansu-myeon, Jecheon-si, 5.VI.1993, S.J.Choi; CN 10exs, Donam-ri, Banpo-myeon, Gongju-si, 21-28.VI.2005, Y.T.Kim; 1ex, *ditto*, 5-13.VII.2005, Y.T.Kim; 3exs, *ditto*, 26.VII-2.VIII.2005, Y.T.Kim; 2exs, *ditto*, 2-9.VIII.2005, Y.T.Kim; 2exs, *ditto*, 13-20.IX.2005, Y.T.Kim; 6exs, Mt. Oseo, Cheongyang-gun, 10.VI.1999, S.W.Park; DAEGU 1ex, Gyeongbuk Nat'l Univ., Sangyeok-dong, 8.V-15.VI.2009, S.W.Park; GN 2exs, Dapcheon-ri, Ibanseong-myeon, Jinju-si, 5-11.VI.2007, B.K.Ahn; JN 1ex, Mt. Jiri, 24.VI.1993, Y.S.Kim; 1ex, *ditto*, 24.VI.1993, H.R.Son; SEOUL 5exs, Mt. Bulam, Gongneung-dong, Nowon-gu, 11-25.V.2008, S.W.Park.

Xylotrechus rusticus (Linnaeus, 1758) 줄호랑하늘소

Leptura rusticus Linnaeus, 1758, Syst. Nat., 10: 398 [Europe].

Xylotrechus rusticus: Okamoto, 1927, Ins. Matsum., 2(2): 73-74 [Sharei = Charyeong]; Cho, 1946: 45; Gressitt, 1951: 251; Cho, 1959: 14; Cho, 1962: 113; Cho, 1969: 479; Lee, 1979: 57; Lee, 1982: 38; Lee, 1987: 105; Lee, 1980b: 65; Cherepanov, 1990: 25-31; Ohbayashi and Niisato, 2007: 485.

Clytus (Clytus) rusticus: Heyden, 1881, Cat. Coleopt. Sib.: 186.

Clytus (Xylotrechus) rusticus: Ganglbauer, 1887, Hor. Soc. Ent. Ross., 20: 132.

Xylotrechus kawayamae Mitsuhashi, 1906, Trans. Sapporo N. H. Soc., 1: 204.

Rusticochytus rusticus: Vives, 1977, Entomologiste, 33: 130.

Distribution. Palaeartic region (Korea, Austria, Bosnia, Bulgaria, China, Croatia, Denmark, France, Germany, Greece, Hungary, Iran, Italy, Japan, Kazakhstan, Mongolia, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine).

Host plants. Aceraceae [*Acer* spp.], Betulaceae [*Alnus japonica* (Thunb.) Steud., *Betula ermanii* Cham., *B. platyphylla* var. *japonica* (Miq.) Hara, *Betula* spp.], Fagaceae

[*Castanea* sp., *Fagus* sp., *Quercus acutissima* Carruth., *Quercus* sp.], Oleaceae [*Fraxinus* spp.], Rosaceae [*Sorbus* sp.], Salicaceae [*Populus davidiana* Dode, *P. deltoides* Marsh., *P. euramericana* Guinier, *P. maximowiczii* A. Henry, *P. sieboldii* Miq., *Populus* sp., *Salix* sp.], Tiliaceae [*Tilia* spp.], Ulmaceae [*Ulmus* sp.] (Gressitt, 1951; Cho, 1959; Takakuwa and Oda, 1978; Lee, 1987; Svacha and Danilevsky, 1988; Cherepanov, 1990; Korea Forest Research Institute, 1995; Bense, 1995; Kang *et al.*, 2002; Hua, 2002; Danilevskaya *et al.*, 2009).

Remarks. This species was recorded by Okamoto (1927) from Korea but we couldn't examine any Korean specimen of this species in this work.

Xylotrechus salicis Takakuwa et Oda, 1978 닭은줄 호랑하늘소 (Figs. 11, 23 and 35)

Xylotrechus kuwayamae Mitsuhashi, 1906, Trans. Sapporo Nat. Hist. Soc., 1: 204 [Sapporo, Hokkaido, Japan] (nom. nud.).

Xylotrechus salicis Takakuwa et Oda, 1978: 49-52, f. 1-3 [Iwaobetsu, Hokkaido, Japan]; Lee, 1987: 104-105; Ohbayashi and Niisato, 2007: 484-485.

Xylotrechus rusticus: Lee, 1979: 57.

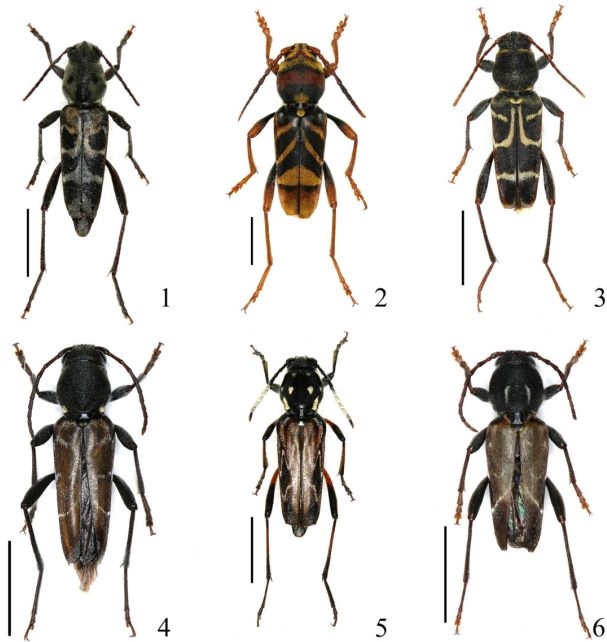
Diagnosis. Body length 13-22 mm. Head black with dark yellowish pubescences except pale brownish clypeus. Pronotum black with two pair of brownish longitudinal pubescences bands on median and lateral areas. Elytra black with irregular, obscure and thin yellowish pubescences bands. Frons with median longitudinal 'V'-shaped carinae and short lateral longitudinal carinae. Pronotum wider than long with numerous coarse granules; widest at one third area from the base. Elytra about 2.4x as long as wide with obscure and irregular yellowish pubescences concentrated on lateral area and apice of elytra; longitudinal, median area with irregular and obscure 'V'-shaped yellowish pubescences bands; apice of elytra rounded.

Distribution. Eastern palaeartic region (Korea, China, Japan, Mongolia, Russia).

Host plants. Salicaceae [*Populus deltoides* Marsh., *Salix* sp.] (Takakuwa and Oda, 1978; Lee, 1987; Kang *et al.*,

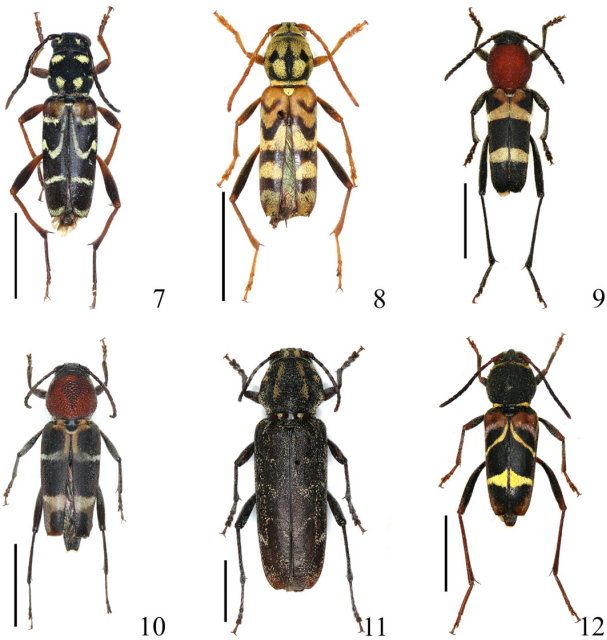
2002).

Material examined. [KNA] GG 1ex, Mt. Gwanggyo, Sanggwanggyo-dong, Jangan-gu, Suwon-si, 27.VI.1988, C.M.Park; [OHY] GW 4exs, Hongcheon-gun, 25.VI.2000, H.Y.Oh; 4exs, *ditto*, 1.VII.2000, H.Y.Oh; 5exs, *ditto*, 11.VI.2000, H.Y.Oh; 1ex, *ditto*, 2.VI.2001, H.Y.Oh; 1ex, *ditto*, 6.VI.2000, H.Y.Oh; 1ex, Sanmachi, Hongcheon-gun, 1.VII.2003, H.Y.Oh; [SNU] GG 1ex, College of Agriculture and Life Science Seoul Nat'l Univ., Seodun-dong, Gweonseon-gu, Suwon-si, 15.V.1989, H.W.Kwon; 1ex, *ditto*, 15.VI.1995, S.H.Han; 1ex, Gwanak Arboretum, Anyang-si, 27.IV.1989, S.H.Chae; 1ex, Suwon-si, 21.VI.1987, C.W.Lee; 1ex, Woncheon-dong, Yeongtong-gu, Suwon-si, 24.VI.1989, T.J.Kim; 1ex, Cheongpyeong-gun, 10.VI.1987, S.S.Park; 1ex, Suwon-si, 12.VI.1987, H.K.S; 2exs, Cheongpyeong-gun, 10.VI.1987, Y.K.Choi; 1ex, Suwon-si, 16.V.1987, S.K.Cho; 1ex, Uijeongbu-si, 25.V.1988, SNU; 1ex, Suwon-si, 2.VI.1986, D.S.Kim; 1ex, *ditto*, 1.VI.1990, B.H.W; 1ex, *ditto*, 9.VI.1987, Y.K.Choi; 1ex, Cheongpyeong-gun, 31.V.1987, C.W.Lee; 1ex, *ditto*, 10.VI.1990, H.U.Kim; 1ex, *ditto*, 5.VI.1988, H.S.Lee; 1ex, Gwangmyeong-si, 23.VI.1987, C.W.Lee; 1ex, Cheongpyeong-gun, 10.VI.1987, SNU; 1ex, Mt. Gwanggyo, Sanggwanggyo-dong, Jangan-gu, Suwon-si, 6.VI.1990, S.K.Choi; 1ex, Cheongpyeong-gun, 23.VI.1987, H.S.Lee; 1ex, Gwanak Arboretum, Anyang-dong, Anyang-si, 27.IX.1997, Y.T.Oh; 1ex, Singal-dong, Giheung-gu, Yongin-si, 22.VI.1992, D.H.Lee; 1ex, Suwon-si, 17.VI.1988, J.J.Ahn; 1ex, Mt. Gwanggyo, Sanggwanggyo-dong, Jangan-gu, Suwon-si, 23.VI.1992, SNU; 1ex, Suwon-si, 27.VI.1988, J.H.Lee; 1ex, Mt. Gwanggyo, Sanggwanggyo-dong, Jangan-gu, Suwon-si, 17.VI.1989, C.H.Jung; 1ex, Suwon-si, 23.V.1997, K.S.Woo; 1ex, Cheongpyeong-gun, 10.VI.1987, S.S.Park; 1ex, *ditto*, 10.VI.1987, SNU; 2exs, *ditto*, 10.VI.1987, Y.K.Choi; 1ex, Cheongnyang-ri, Seoul, 11.VI.1976, K.N.Park; GW 1ex, Oak valley, Wonju-si, 12.IX.1997, S.I.Lee; 1ex, Baekdamsanjang Mt. Seolak, Sokcho-ri, 26.VI.2002, H.J.Kim; INCHEON 3exs, Bupyeong-gu, 14.VI.1995, SNU; JN 1ex, Mt.Baekun, Chusan-ri, Okryong-myeon, Gwangyang-si, 26.VI.1991, V.T.Lim; SEOUL 1ex, Mt. Gwanak, Daehak-dong, 17.VIII.2007, Y.J.Kim; 1ex, Cheongnyang-ri, 11.VI.1976, K.N.Park.



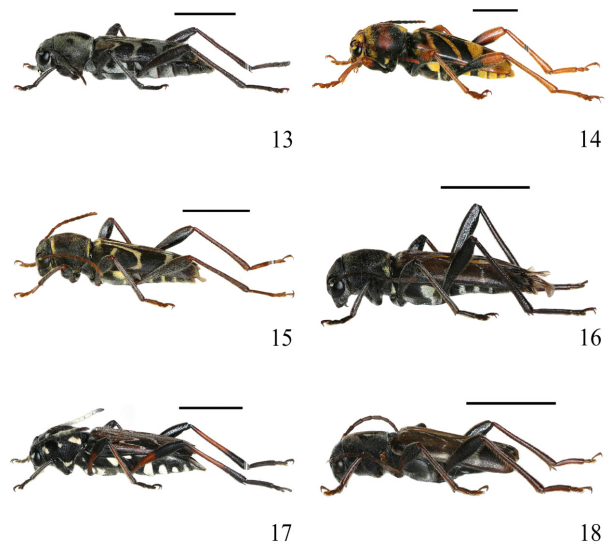
Figs. 1-6. Habitus of *Xylotrechus* spp. (in dorsal view) (scale bar = 5.0 mm)

1. *X. atronotatus subscalaris* Pic.; 2. *X. chinensis* (Chevrolat); 3. *X. clarinus* Bates; 4. *X. cuneipennis* (Kraatz); 5. *X. grayii* (White); 6. *X. hircus* (Gebler).



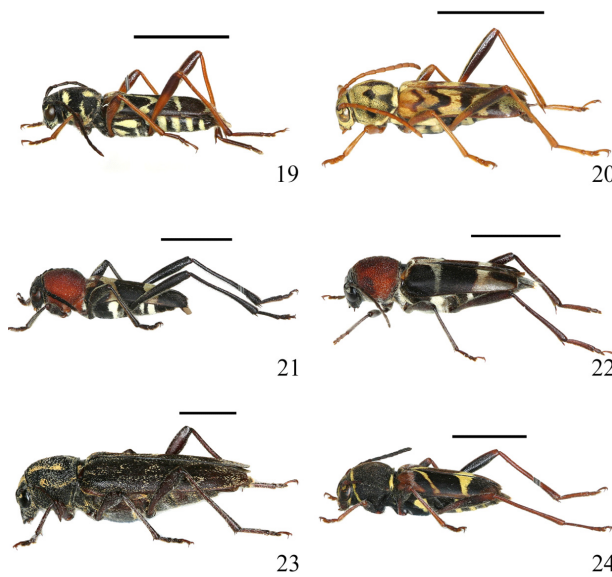
Figs. 7-12. Habitus of *Xylotrechus* spp. (in dorsal view) (scale bar = 5.0 mm)

7. *X. pavlovskii* Plavilstshikov; 8. *X. polyzonus* (Fairmaire); 9. *X. pyrrhoderus* Bates; 10. *X. rufilius* Bates; 11. *X. salicis* Takakuwa et Oda; 12. *X. yanoi* Gressitt.



Figs. 13-18. Habitus of *Xylotrechus* spp. (in lateral view) (scale bar = 5.0 mm)

13. *X. atronotatus subscalaris* Pic.; 14. *X. chinensis* (Chevrolat); 15. *X. clarinus* Bates; 16. *X. cuneipennis* (Kraatz); 17. *X. grayii* (White); 18. *X. hircus* (Gebler).



Figs. 19-24. Habitus of *Xylotrechus* spp. (in dorsal view) (scale bar = 5.0 mm)

19. *X. pavlovskii* Plavilstshikov; 20. *X. polyzonus* (Fairmaire); 21. *X. pyrrhoderus* Bates; 22. *X. rufilius* Bates; 23. *X. salicis* Takakuwa et Oda; 24. *X. yanoi* Gressitt.

Xylotrechus yanoi Gressitt, 1934 노랑줄호랑하늘소 (Figs. 12, 24 and 36)

Xylotrechus yanoi Gressitt, 1934, Pan-Pac. Ent., 9: 64; Lee, 1983: 79 [Mt. Baeg-Yang-San]; Lee, 1987: 103;



Figs. 25-36. Head of *Xylotrechus* spp. (in frontal view)
 25. *X. atronotatus subscalaris* Pic.; 26. *X. chinensis* (Chevrolat); 27. *X. clarinus* Bates; 28. *X. cuneipennis* (Kraatz); 29. *X. grayii* (White); 30. *X. hircus* (Gebler); 31. *X. pavlovskii* Plavilstshikov; 32. *X. polyzonus* (Fairmaire); 33. *X. pyrrhoderus* Bates; 34. *X. rufilius* Bates; 35. *X. salicis* Takakuwa et Oda; 36. *X. yanoi* Gressitt.

Ohbayashi and Niisato, 2007: 483 [Higo, Kumamoto Pref., Japan].

Xylotrechus pekingensis Pic, 1939, Echange, 55: 3 [Peking, Hopei, China].

Diagnosis. Body length 12-20 mm. Pronotum black; anterior margin with transverse yellowish pubescences band and posterior margin with disconnected with transverse yellowish pubescences band at middle. Elytra black except pale brownish basal and apical area and yellowish pubescences bands on sub-basal and sub-apical area. Head with moderate punctures; frons with elevated longitudinal ‘V’-shaped carinae on median area, and short longitudinal lateral carinae. Pronotum about 1.5x as wide as long with numerous small granules. Elytra about 2.0 x as long as wide; basal one fifth of elytra with transverse reddish band; weak whitish pubescences band along anterior reddish band; the band of sub-basal area curved toward scutellum, disconnected with scutellum; sub-apical area with transverse yellowish pubescences band, getting narrow toward lateral margin; apice of elytra truncated without outward spine-like projection.

Distribution. Eastern palaeartic region (Korea, Japan).

Host plant. Ulmaceae [*Celtis sinensis* Pers.] (Lee, 1987).

Material examined. [OHY] GG 1ex, Mt. Hwaya, Oeseo-myeon, Gapyeong-gun, 10.III.2003, H.Y.Oh; 2exs, ditto, IX.2002, H.Y.Oh; 1ex, Mt. Ungil, V.2001, H.Y.Oh; GW 1ex, Gajeong-ri, Chuncheon-si, VI.2003, H.Y.Oh; JB 30exs, Buan-gun, III.2005, H.Y.Oh; 1ex, ditto, V-VI.2005, H.Y.Oh.

Key to the species of *Xylotrechus* Chevrolat in Korea

1. Pronotum red entirely or just with transverse red band on middle in dorsal view 2
 - Pronotum black without any red marks in dorsal view 4
2. Pronotum red entirely; legs black 3
 - Pronotum with red transverse band on middle; legs reddish brown except for basal half of femora black *X. chinensis* (Chevrolat)
3. Basal two white bands connected together with angulated angle in dorsal view *X. pyrrhoderus* Bates
 - Basal two white bands connected together with paralleled angle in dorsal view *X. rufilius* Bates
4. Pronotum with yellow transverse band on the anterior or posterior margin 5
 - Pronotum without yellow transverse band on the anterior margin 9
5. Metepisternum with elongated yellow pubescences patch 6
 - Metepisternum with triangle yellow pubescences patch 8
6. Most of elytra with yellow pubescences, black spots and bands 7
 - Most of elytra with black pubescences, yellow spots and bands *X. pavlovskii* Plavilstshikov
7. Pronotum with distinct median black longitudinal pubescences band *X. polyzonus* (Fairmaire)
 - Pronotum without median black longitudinal pubescence band with several indistinct black spots *X. incurvatus* (Chevrolat)
8. Basal elytra with reddish brown pubescences; posterior

- transverse band get thick to elytral suture
 ***X. yanoi* Gressitt**
- Basal elytra with black pubescences; posterior transverse band with similar thickness ***X. clarinus* Bates**
9. Elytra black 10
- Elytra pale brown 13
10. Pronotum with a pair of black spots at middle; elytra with distinct gray transverse pubescences
 ***X. atronotatus subscalaris* Pic**
- Pronotum without any black spots; elytra without distinct bands just with obscure bands 11
11. Elytra with yellowish separated spots
 ***X. adspersus* (Gebler)**
- Elytra with indistinct irregular yellowish thin bands 12
12. Length of elytra 2.36-2.50 x as long as basal width in male; frontal V-shape without puncture
 ***X. salicis* Takakuwa et Oda**
- Length of elytra 2.15-2.28 x as long as basal width in male; frontal V-shape with clear and deep punctures
 ***X. rusticus* (Linnaeus)**
13. Elytra grayish brown or red at bases and sides
 ***X. altaicus* (Gebler)**
- Elytra pale-brown to brown at bases and sides ... 14
14. Metepisternum with yellow pubescences patch; vertex with distinct median longitudinal carinae; Elytra truncate apically 15
- Metepisternum without pubescence patch; vertex without median longitudinal carinae; Elytra rounded apically
 ***X. hircus* (Gebler)**
15. Pronotum with two yellowish spots on the each anterior and posterior margins; elytral bands narrow angular curved toward scutellum; antennae totally black
 ***X. cuneipennis* (Kraatz)**
- Pronotum with ten separated yellowish spots; elytral bands narrow zig-zag lined toward scutellum; antennae black except for 7th to 11th segments yellowish
 ***X. grayii* (White)**

Acknowledgment

The authors thank to Dr. Ki-jeong Hong (National Plant

Quarantine Service, Korea), Dr. Seung-hwan Lee (Seoul National University, Korea), Dr. Bong-kyu Byun (Korea National Arboretum, Korea), Dr. Hae-chul Park (National Academy of Agricultural Science, Korea), Mr. Gwan-seok Lee (National Academy of Agricultural Science, Korea) for kindly lending many specimens, Dr. Ki-jeong Hong for translation of original description of *Xylotrechus pavlovskii* Plavilstshikov, Mr. Sang-wook Park and Mr. Jong-ok Lim for kindly reading the manuscript and providing valuable comments. Also, we are indebted to Mr. Seung-hwan Oh for providing original papers and comments, Mr. Hae-yong Oh for providing many valuable private specimens, and Mr. Eui-young Kang for providing many ecological information on the several species. This research was supported by a Sangji University Research Fund, 2008.

Literature Cited

- Bense, U. 1995. *Longhorn Beetles, Illustrated Key to the Cerambycidae and Vesperidae of Europe*. Margraf Verlag, Weikersheim. 512 pp.
- Cherepanov, A. I. 1990. *Cerambycidae of Northern Asia Vol.2 Cerambycinae part II*. Oxonian Press Pvt. Ltd., New Delhi. 270 pp.
- Cho, P.S. 1934. On the Some Longicorn Beetles from Korea. *Journal of Chosen Natural History*. 17: 39-50.
- Cho, P.S. 1936. On the Longicorn Beetles from Korea. *Trans. Nat. Hist. Soc. Formosa*. 26 (149): 93.
- Cho, P.S. 1946. A List of Longicorn Beetles from Korea. *Bulletin of the Zoological Section of the National Science Museum, Seoul*. 1(3): 27-48.
- Cho, P.S. 1959. A Study on the Damaged Plants of Longicorn Beetles in Korea (Cerambycidae). *Bulletin of Singeung University*. 2: 367-370.
- Cho, P.S. 1962. *A Historical Sketch on the Longicorn Beetles in Korea*. Humanities and Sciences, Korea University. 5: 89-120.
- Cho, P.S. 1963. *Insects of Quelpaert Island (Cheju-do)*. Humanities and Sciences, Korea University. 6: 210-242.
- Cho, P.S. 1969. *Illustrated Encyclopedia of Fauna and Flora of Korea* (x), Insecta (II): 473-488.
- Danilevskaya, G. B., M. L. Danilevsky, K. Hadulla, A. M. Shapovalov and Y. Yokoi. 2009. Cerambycidae collected in North-East Kazakhstan by an international collecting trip 2005 (Coleoptera). *Entomologische Zeitschrift, Stuttgart*. 119(4): 171-178.
- The Entomological Society of Korea & Kor. Soc. of Appl.

- Entomol. 1994. *Check List of Insects from Korea*. Kon-kuk University Press. Korea. 744 pp.
- Friedman, A.L.L., O. Rittner and V.I. Chikatunov. 2008. Five New Invasive Species of Longhorn Beetles (Coleoptera: Cerambycidae) in Israel. *Phytoparasitica*. 36(3): 242-246.
- Gebler, F.A. 1830. Bemerkungen über die Insekten Sibiriens, vorzüglich des Altai. [Part 3]: 1-228. In: Ledebour, F. (ed.), *Reise durch das Altai-Gebirge und die soongorische Kirgisen-Steppe. II. Zweiter Theil*. G. Reimer, Berlin. 427 pp.
- Ganglbauer, L. 1887. Die Bockkäfer der Halbinsel Koreas. *Horae Societatis Entomologicae Rossicae*. 20: 131-138.
- Gressitt, J.L. 1951. *Longicorn beetles of China*. Longicornia Vol.2. 667 pp.
- Hua, L.Z. 2002. *List of Chinese Insects. Vol. II*. Zhongshan (Sun Yat-sen) University Press. 612 pp.
- Hua, L.Z., H. Nara and C. Yu. 1993. *Longicorn beetles of Hainan and Guangdong*. Muh-sheng Museum of Entomology. Natou Hsien. 320 pp.
- Kang, E.Y., H.Y. Oh and H.Y. Oh. 2002. A larval host plant list of the Cerambycidae (Coleoptera) in South Korea(1). *Lucanus*. 3: 1-5.
- Korea Forest Research Institute. 1995. *A List of Insect Pests of Trees and Shrubs in Korea*. Korea Forest Research Institute. 360 pp.
- Lee, S.M. 1979. A Synonymic List of Longicorn Beetles of Korea. *The Kor. J. of Entomol.* 9(2): 29-83.
- Lee, S.M. 1980a. On the Longicorn Beetles of Various Islands of Korea. *The Kor. J. of Entomol.* 10(1): 45-57.
- Lee, S.M. 1980b. Longicorn Beetles of Gwang-Neung, Korea. *The Kor. J. of Entomol.* 10(2): 61-70.
- Lee, S.M. 1981. Longicorn Beetles of Mt. Seol-Ag-San, Korea. *The Kor. J. of Entomol.* 11(1): 42-53.
- Lee, S.M. 1982. Longicorn Beetles of Korea (Coleoptera, Cerambycidae). *Insecta Koreana Series*. 1: 1-44.
- Lee, S.M. 1983. Four Unrecorded Species of Longicorn Beetles from Korea (Col. Cerambycidae). *The Kor. J. of Entomol.* 13(1): 79-80.
- Lee, S.M. 1987. *The Longicorn Beetles of Korean Peninsula*. National Science Museum, Seoul, Korea. 287 pp.
- Linsely, E.G. 1964. *Cerambycidae of North America, Part V. Taxonomy and Classification of the subfamily Cerambycidae, tribes Callichromini through Ancylocerini*. University of California Publications in Entomol. 22: 197 pp.
- Machida, S. and Aoyama, T. 1930. *Manuals for Kor. Injurious Insects, Vol.2*. Miyake Book Co., Pusan.
- Makihara, H. 1977. Cerambycidae of Kuroshima Island, with descriptions of two new species and two new subspecies (Coleoptera). *Esakia*. 10: 45-69.
- Matsushita, M. 1938. Zur Kenntnis der Japanischen Cerambyciden (III). *Kontyu*. 12(3): 93-96.
- Matsushita, M. and K. Tamanuki. 1935. Über einige Bockkäfer Japans. *Insecta Matsumurana*. 10(1-2): 1-5.
- Mochizuki M. and M. Masui. 1939. A list of remains of Mr. Matsuo's insects collection. *Science Report, Keichu*. 4: 51-78.
- Niisato, T. and S. K. Koh. 2003. Taxonomic Notes on Clytine Longicorn Beetles (Coleoptera, Cerambycidae) from Korea. *Elytra*. 31(2): 289-299.
- Ohbayashi, N. and T. Niisato. 2007. *Longicorn beetles of Japan*. Tokai University Press. Kanagawa. 818 pp.
- Okamoto, H. 1927. The Longicorn beetles from Corea. *Insecta Matsumurana*. 2(2): 62-86.
- Pic, M. 1917. Notes diverses, descriptions et diagnoses. *L'Echange, Revue Linnéenne*. 33(381): 9-11.
- Plavilstshikov, N.N. 1940. *Faune de l'URSS. Insects Coleopteres. Vol.22. Cerambycidae (Part.2)*. Moscou, Leningrad. 785 pp.
- Plavilstshikov, N.N. 1954. New species of Timber-Beetles of the fauna of Soviet Union (Coleoptera, Cerambycidae), *Zoologicheskii zhurnal*. 33(2): 470-476 .
- Svacha, P. and M.L. Danilevsky. 1988. Cerambycoid larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part II. *Acta Universitatis Carolinae*. 31(3-4): 129-279.
- Takakuwa, M. and Y. Oda. 1978. Description of a New Species Allied to *Xylotrechus rusticus* (Linné) (Cerambycidae). *Elytra*. 6(2): 49-52.