Xylotrechus villioni (Coleoptera: Cerambycidae) and its Relatives

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Abstract *Xylotrechus villioni* and its relatives are revised, and five species and one subspecies are recognized, viz., X. villioni (VILLARD) from Japan, X. multiimpressus PIC from Yunnan, X. aureounifasciatus WAKEJIMA from northern Vietnam, X. magnificus PIC from northern Indochina and Yunnan, X. khampaseuthi khampaseuthi HOLZSCHUH from Laos, and X. k. shibatai ssp. nov. from Guangxi. A new subgenus *Ootora* nov. under the genus *Xylotrechus* is established for the species-group. Besides, the Himalayan genus *Hesperoclytus* HOLZSCHUH is revised in comparison with the new subgenus.

Xylotrechus villioni (VILLARD) is one of the most famous beetles in the Japanese cerambycid fauna and characterized by the large monstrous facies resembling a *Vespa* wasp. It is a strong yearning for all cerambycid lovers since the adult beetle is seldom found in the field at least until recent years. This clytine is endemic to the Japanese main islands and considered to be an isolated congener within the genus *Xylotrechus*, and characterized by the large body, the small head without the frontal carina, the large expanded pronotum, the arcuate concavities on the pronotum in the male, the subparallel-sided elytra and the short legs.

WAKEJIMA recently proposed the *villioni* group in the genus *Xylotrechus* for the reason of the above peculiarity, and recognized three species as its members including a new taxon, *X. aureounifasciatus* from northern Vietnam (WAKEJIMA, 2006 a, b). Almost at the same time, NIISATO had an opportunity to examine the type specimens of three clytine species belonging to this species-group, *X. villioni* (VILLARD), *X. multiimpressus* PIC and *X. magnificus* PIC, at the Muséum national d'Histoire naturelle, Paris, and also recognized an additional species of the group from northern Indochina and Southwest China. In this paper, we will revise again "the *villioni* group" based on our recent study. The species-group is upgraded to the rank of a subgenus of the genus *Xylotrechus*, being composed of five species and one subspecies as described in the following lines.

On the other hand, possibility of relationship between X. villioni and the monotypic genus *Hesperoclytus* HOLZSCHUH was suggested by NIISATO (1992), though this idea was denied by WAKEJIMA (2006). The type species of *Hesperoclytus* is certainly very similar to X. villioni in such external morphology as the large pronotum contracted towards the small head, the deep arcuate concavities on pronotal disc in the male and the parallel-sided elytra. At the opportunity of the revised study of X. villioni and its relatives, we would like to clear up their true affinities in comparison with both external and genitalic morphology.

The present paper is dedicated to the memory of Taichi SHIBATA who passed away on 20 May, 2007. He was the leader of the Osaka Kôchû Dôkôkai, and had guided many amateur coleopterists in his life time.

The abbreviations used for the depositories of type specimens are as follows: MNHNP – Muséum national d'Histoire naturelle, Paris, NSMT – National Museum of Nature and Science, Tokyo, ZUG – Zhongshan University, Guangdong.

Genus Xylotrechus CHEVROLAT, 1860

- Xylotrechus CHEVROLAT, 1860, Annls. Soc. ent. Fr., (3), 8: p. 456; type species: Clytus sartorii CHEVROLAT, 1860
- Clytus (Xylotrechus): KRAATZ, 1879, Dt. ent. Z., 23, p. 89.
- Xylotrechus (s. str.): GRESSITT, 1951, Longicornia, Paris, 2, p. 239.

Amauresthes CHEVROLAT, 1863, Mém. Soc. Sci. Liège, 18, p. 327 (part).

- Xyloclytus REITTER, 1912, Fn. Germ., 4, p. 46, note 3; type species: Clytus chinensis CHEVROLAT, 1852.
- Rusticoclytus VIVES, 1977, L'Entomologiste, Paris, 33, p. 130; type species: Leptura rustica LINNAEUS, 1758.

Notes. The genus *Xylotrechus* CHEVROLAT is one of the largest and most various groups of the tribe Clytini and composed of about 180 species mostly from the Palearctic, Oriental and Nearctic Regions, a few members from the Ethiopian Regions and the Southern Hemisphere. The genus is characterized by the median and lateral carinae of frons though they are sometimes inconspicuous or evanescent in several peculiar species. The members of the genus are usually classified into species-groups by previous authors (cf. GRESSITT & RONDON, 1970; NIISATO, 2007) which were sometimes regarded as independent genera under the names *Amauresthes* CHEVROLAT, *Xyloclytus* REITTER and *Rusticoclytus* VIVES usually based on rather isolated species.

Xylotrechus is no doubt closely related to the genus *Perissus* CHEVROLAT, which is also a various group and composed of about 50 species from the Oriental and Palearctic Regions. Although the two genera are barely distinguished by the presence or absence of



Figs. 1–12. Habitus of *Xylotrechus (Ootora)* and *Hesperoclytus* species. — 1, *Xylotrechus (Ootora) villioni* (VILLARD), ♂[↑] from Honshu, Japan; 2, ditto, ♀; 3, *X. (O.) aureounifasciatus* WAKEJIMA, holotype ♂[↑] from N. Vietnam; 4, ditto, ♀; 5, *X. (O.) magnificus* PIC ♂[↑] from Laos; 6, ditto, ♀ from N. Thailand; 7, *X. (O.) khampaseuthi khampaseuthi* HOLZSCHUH, ♂[↑] from Laos; 8, ditto, ♀; 9, *X. (O.) khampaseuthi shibatai* ssp. nov., holotype ♂[↑] from Guangxi Zhuangzu Ziziqu of SW. China; 10, ditto, allotype ♀; 11, *Hesperoclytus katarinae* HOLZSCHUH, ♂[↑] from N. India; 12, ditto, ♀.

frontal carina, morphological variation almost perfectly agrees even in such character on the frons. It seems to be convenient to regard *Perissus*, the younger taxon, as the junior synonym of *Xylotrechus* for the reason of morphological agreement, and to place the species-groups and/or subgenera under the combined genera.

Subgenus Ootora nov.

Type species: Clytus (Xylotrechus) villioni VILLARD, 1892.

Body large on an average, usually more than 25 mm in length or at least more than 20 mm in small individuals, provided with yellowish and blackish bands on elytra by pubescence or discal colour, usually bearing cross blackish maculation on female pronotum. Head small in contrast to large expanded pronotum, a little more than half the width; frons without median carina, recognized either as vestigial line or as faintly raised costa. Pronotum large and globular, slightly wider than long, widest at a posterior part to middle; male pronotal disc provided with a pair of arc-shaped grooves including several concavities, and supplementary with short oblong median concavities near base. Elytra moderately long to rather long, almost parallel-sided or gently attenuate posteriad. Legs with hind femora not reaching elytral apices; 1st hind tarsal segment rather short, less than 1.5 times as long as the following two segments combined.

Male genitalia. Eighth tergite semicircular, rounded or concave at apical margin. Eighth sternite transverse, usually emarginate at apical margin. Median lobe broad to very broad, with apical lobe nearly half the length of median lobe and weakly convex, ventral plate pointed at apex, sometimes largely exposed in dorsal view. Tegmen with widened ring part, with paramere dehiscent in apical third to half, densely provided with long setae. Female genitalia as shown in Fig. 36 (*X. villioni*).

Range. Japan, SW. China and Indochina.

Notes. The above description is almost the same as that of the *villioni* group which was already noted in the previous paper of the junior author's except for the genitalic feature (WAKEJIMA, 2006, p. 237). We reproduce it herein as the description of the new subgenus. The subgenus *Ootora* nov. is composed of the following five species and one subspecies, *viz., X. villioni* (VILLARD) from Japan, *X. multiimpressus* PIC from Yunnan, *X. aureounifasciatus* WAKEJIMA from northern Vietnam, *X. magnificus* PIC from northern Indochina and Yunnan, *X. khampaseuthi khampaseuthi* HOLZSCHUH from Laos, and *X. k. shibatai* ssp. nov. from Guangxi Zhuangzu Ziziqu.

Ecological information about the subgenus is still very poor since most members are known from only the type series and a few additional specimens. *Xylotrechus villioni*, the type species is known as a phloem-feeder associated with such live conifers as *Abies* and *Picea*. The larvae actively move under the bark of live trees and feed nutritious live tissues, and then pupate in wood part. The adult beetles appear in the late summer, and visit living trunks of the host plants and rarely on the blossoms. Other members of the subgenus may



Figs. 13–15. Holotypes of *Xylotrechus (Ootora)* species preserved in the Muséum national d'Histoire naturelle, Paris. — 13, *Xylotrechus (Ootora) villioni* (VILLARD), ♀ from Kyoto of Japan; 14, X. (O.) multiimpressus Pic, ♂ from Yunnan of SW. China; 15, X. (O.) magnificus Pic, ♂ from Pou Lane of Laos.

have a similar ecology to that of X. villioni.

Etymology. The new name, *Ootora*, means "big tiger" or "heavy drinker" derived from the Japanese name of the type species "Ootora-kamikiri".

Key to Species and Subspecies

- 1(4) Elytra brownish with black discal bands, without yellowish pubescent bands or only two narrow ones; male pronotum provided with a pair of long arcuate concavities at sides and a median one near base, and also with one or two pairs of small concavities outside of the arcuate pair.
- 2(3) Elytra brown to dark brown, only with four transverse black bands and apical one; most external concavities on male pronotum composed of two pairs of rounded ones... X. (O.) villioni



Figs. 16–21. Male head in frontal view of Xylotrechus (Ootora) and Hesperoclytus species. — 16, Xylotrechus (Ootora) villioni (VILLARD) from Honshu, Japan; 17, X. (O.) aureounifasciatus WAKEJIMA from N. Vietnam; 18, X. (O.) magnificus PIC from Laos; 19, X. (O.) khampaseuthi khampaseuthi HoLZSCHUH from Laos; 20, X. (O.) khampaseuthi shibatai ssp. nov. from Guangxi Zhuangzu Ziziqu of SW. China; 21, Hesperoclytus katarinae HoLZSCHUH from N. India.

- 4(1) Elytra largely black with broad yellowish pubescent bands; concavities on male pronotum basically composed of long arcuate ones and a median basal one, sometimes supplemented by a pair of oblique concavities at apical third of sides.
- 6(5) Body moderately broad; elytra more than 2.4 times as long as the humeral width, provided with three yellow pubescent bands; body without long and/or wavy hairs.
- 8(7) Elytral yellow pubescent bands narrow, composed of oblique linear ones; concavities on male pronotum basically composed of long arcuate ones and a median basal one,



Figs. 22–27. Male pronotum in dorsal view of *Xylotrechus (Ootora)* sprcies. — 22, *Xylotrechus (Ootora) villioni* (VILLARD) from Honshu, Japan; 23, *X. (O.) multiimpressus* PIC, from Yunnan of SW. China; 24, *X. (O.) aureounifasciatus* WAKEJIMA from N. Vietnam; 25, *X. (O.) magnificus* PIC from Laos; 26, *X. (O.) khampaseuthi khampaseuthi* HOLZSCHUH from Laos; 27, *X. (O.) khampaseuthi shibatai* ssp. nov. from Guangxi Zhuangzu Ziziqu of SW. China.

supplemented by a pair of oblique ones at apical third of sides.

> *Xylotrechus (Ootora) villioni* (VILLARD, 1892) (Figs. 1–2, 13, 16, 22, 28–35, 37–41)

Clytus (Xylotrechus) villioni VILLARD, 1892, Annls. Soc. ent. Fr., **61**, p. LI; type locality: Kyoto, Japan. *Xylotrechus villioni*: AURIVILLIUS, 1912, Coleopt. Cat., (39), p. 363. *Xylotrechus (Xylotrechus) villioni*: KUSAMA, 1959, New Ins. Collect. Guide, p. 408.

Xylotrechus (Xyloclytus) villioni: HAYASHI, 1983, Check-list Coleopt. Japan, (24), p. 22. Xylotrechus nipponicus SEKI, 1935, Kontyû, Tokyo, 9, p. 92; type locality: Mt. Kasuga-yama, Nara Pref.

Diagnosis. Body length 21–27.5 mm in $\sigma^2 \, \hat{P}$. Large and strongly robust species, characterized by ordinary four black bands on yellow elytra. Colour black to dark brown on head except for brown frontal part and underside, and thoraces, brown on abdomen, antennae and legs; elytron dull yellow, black in narrow basal part, at incomplete oblique band on basal fifth, oblique complete band on basal third, suboblique complete band on middle and transverse broad band on apical third. Pubescence dense in general though very short; head yellow pubescent except for median line from apical margin of frons to occipital end; antenna with brown pubescence on basal five segments; pronotum dull yellow pubescent except for the median narrow line and transverse broad one, showing black cross maculation due to dense pubescence in female; venter of thoraces with yellow or dull yellow one at middle of prosternum, sides and inter-coxal process of mesosternum, apical 2/5 or so of metepisternum, anterior sides and hind margins of metasternum; abdomen largely yellow pubescent, except for base of each ventrite; legs with yellowish short hairs.

Head a little less than a half of the maximum width of pronotum, provided with a longitudinal groove running from basal 2/3 of frons to behind vertex, frons gently arcuately dilated apicad; genae rather deep, slightly deeper than lower eye-lobes. Antennae very short and rather stout, reaching behind humeri (σ^2) or bases (φ) of elytra, each segment reduced and simply thickened apicad in segments 2–10. Pronotum large and globose, a little more than 0.8 times as long as wide, widest at basal third, fairly (σ^2) or a little (φ) wider than the elytral humeri, irregularly shallowly reticulate; discal concavities in male composed of a pair of long arcuate ones, two pairs of rounded ones outsides of the arcs and a rounded median one near base, the first one of which is deeper at the anterior part, the middle and the posterior. Elytra more than twice of the humeral width, almost parallel-sided though gently narrowed apicad, with very small dents at external sides of apices, densely shallowly punctured. Ventral surface closely more or less coarsely punctured on pro- and mesothoraces, finely so on metathorax and abdomen. Legs very stout, moderate in length, with hind femora reaching apical fifth of elytra in σ^2 .

Male genitalia. Eighth tergite a little wider than long, with sides arcuately convergent to apical 2/11 then rather strongly so to apical margin which is distinctly concave. Eighth sternite transverse semicircular, with faint emargination near middle of apical margin. Median lobe not so broadened, moderately arcuate in profile, with dorsal plate gently sinuately narrowed to apical 3/8, then arcuately narrowed to apex which is indistinctly pointed, exposing only the blunt apex of ventral plate. Parameres rather short, distinctly narrowed to apices, dehiscent in apical 3/4 measured along mid-line, with bluntly pointed apices, densely provided with long setae.

Specimens examined. 1♀ (holotype), "Kyoto, Japan" / "HOLOTYPE" (in coll. MNHNP). [Hokkaido] 1♂, Horoka, Kamishihoro, Tokachi-shichô, 24. VII. 1972, S



Figs. 28–34. *Xylotrechus (Ootora) villioni* (VILLARD) from Honshu, Japan, J. — 28, Habitus in dorsal view; 29 habitus in ventral view; 30, metathorax and hind coxa in lateral view (*mt*: metasternum, *mts*: metepisternum, *mtm*: metepimeron, *c3*: hind coxa, *as*: 3rd abdominal sternite, *e*: elytron); 31, head in frontal view; 32, maxillary palpus; 33, labial palpus; 34, right hind wing.

INOKAWA leg.; $3 \Leftrightarrow \Leftrightarrow$, Tomakomai, 2. VIII. 1968, N. ENDA leg. [Honshu] $1 \Leftrightarrow$, Nikko Nat. Park, Japan (1,530 m), 18–25. VII. 1949, A. AOKI leg.; $1 \Leftrightarrow$, Sasa, Kimitsu City, Chiba Pref., 10. IX. 1995, S. MARU leg.; $1 \Leftrightarrow$, same locality and collector, 25. VIII. 1998; $1 \circ^3$, same locality, 6. VIII. 2002 (emerged out), T. ITOH leg.; $1 \circ^3$, same locality and collector, 26. VII. 2002 (emerged out); $1 \Leftrightarrow$, Shuku, Kimitsu City, 29. VIII. 1998 (emerged out), S. MARU leg.; $1 \Leftrightarrow$, same locality and collector, 16. VIII. 2000; $1 \circ^3$, Shukubara, Kimitsu City, 1–14. VIII. 2000 (emerged out), S. MARU leg.; $1 \Leftrightarrow$, Mt. Takao, Hachiôji City, Tokyo Met.,



Figs. 35–36. Female genitalia of *Xylotrechus (Ootora) villioni* (VILLARD) from Honshu, Japan (35), and *Hesperoclytus katarinae* HOLZSCHUH from N. India (36), ventral view; *cx*: coxite, *cl*: coxite lobe: *sty*: stylus, *mo*: median oviduct, *sp*: spermatheca, *spg*: spermathical gland, *bc*: bursa copulatrix.



Figs. 37–41. Male genitalia of *Xylotrechus (Ootora) villioni* (VILLARD) from Honshu, Japan. — 37, Median lobe in lateral view; 38, ditto in dorsal view; 39, tegmen in dorsal view; 40, 8th sternite; 41, 8th tergite.

3. IV. 2006, T. WAKEJIMA leg.; $1 \triangleleft^3$, $1 \updownarrow^3$, $1 \updownarrow^3$, same locality and collector, 6, 18. VIII. 2007 (emerged out); $1 \updownarrow^3$, Hanbaragoe, Akikawa-chô, Kanagawa Pref., 12. VIII. 2004 (emerged out), T. KINOSHITA leg.; $1 \triangleleft^3$, Fuji-Rindô, Mt. Fuji, Narusawa-mura, Yamanashi Pref., VII. 1997 (emerged out, F–1 from the original locality), T. KINOSHITA leg.; $1 \updownarrow^3$, Shimobe-chô, Yamanashi Pref., 8. IX. 1996, T. WAKEJIMA leg.; $1 \updownarrow^3$, same locality, VIII. 2001 (emerged out), T. KINOSHITA leg.; $1 \updownarrow$, Minoto, 1,800 m, Mts. Yatsugatake, Nagano Pref., 6–9. VIII. 2001, A. SHINOHARA leg.; $1 \updownarrow^3$, Mt. Myôtaisan, Awa-chô, Awa-gun, Tokushima Pref., 3. VIII. 2002 (emerged out), Y. NAMEDA leg.; $1 \clubsuit$, Kodegawa, Shionoe, Kagawa Pref., 19. IX. 2001; $1 \clubsuit$, Komenono, Matsuyama City, Ehime Pref., 23–24. X. 1993 (dead specimen), N. OHBAYASHI leg.

Host plants. Abies and Picea (Pinacea).

Distribution. Japan (Hokkaido, Honshu, Shikoku and Kyushu).

Notes. The type species of the new subgenus is very well known among the Japanese clytine beetles and has been repeatedly described by previous authors (VILLARD, 1862; SEKI, 1935; KUSAMA & TAKAKUWA, 1984; NIISATO, 2007) as regards the external morphology. It is characterized by the robust reddish yellow body with four black bands on the ely-tra, and also has a distinct sexual dimorphism in the pronotal maculation which is shown as a cross black one in the female instead of the almost entirely black in the male. It may show the weak geographical variation in the elytral maculation between several local populations

and its details have so far been analyzed. The black bands on the elytra become brighter in colour in such western populations as Shikoku and Kinki District, and also the lowland population in Kantô District. The populations from Hokkaido and the higher lands of eastern Honshu show enlarged black elytral bands.

This is the unique species in the subgenus *Ootora* whose life history has been known. The adult beetles appear on the live trunk of *Abies* and *Picea* conifers in the late summer. The female beetle lays eggs on the live bark, the larva feeds the living wood under the bark like drawing a circle, and then pupate at the center of the circle.

Xylotrechus (Ootora) multiimpressus PIC, 1911 (Figs. 14 & 23)

Xylotrechus multiimpressus PIC, 1911, Mat. Longic., 8(1), p. 19; type area: Yunnan.

Original description. "Xylotrechus multiimpressus n. sp. Robuste, mat en majeure partie d'un brun rougeâtre avec quelques portions du corp noires, élytres fasciés de rougeâtre et de jaune. Antennes courtes, assez robustes, rougeâtres, mais assez largement obscurcies vers l'extrémité; tête petite, densément pubescente de jaune, sillonnée au milieu, à lignes élevées presque effacés; prothorax particulier, robuste, subglobuleux, marqué de 4 fortes impressions antérieures disposés transversalement, de deux postérieures, une de chaque côté et d'un court sillon median basal, cet organe est d'un brun rougeâtre, largement marqué de noir vers les impressions postérieures avec des traces de pubescence jaune sur le milieu et le bord postérieur; écusson grand, noir; élytres à peu prés de la largeur du prothorax, trés peu rétrécis postérieurement, tronqué-subarrondis au sommet, d'un brun rougeâtre sur tout le pourtour, largement vers l'extrémité et plus courtement à la base, teintés de noir sur le milieu du disque avec une bande antérieure rougeâtre oblique, flanquée en avant d'une bande grisâtre large et raccourcie, une bande transversale jaune médiane et une 2° bande jaune également transversale placée en dessous du milieu, derrière chaque bande jaune la coloration foncière s'obscurcit un peu; dessous du corps en partie noir, en partie brun-rougeâtre, segments abdominaux bordés de jaune postérieurement, pattes en partie rouses, en partie foncées. Long. 19 mill. Yunnan (coll, Guerry)."

Specimen examined. 1 d (holotype), Xylotrechus multiimpressus Pic (handwritten by PIC) / Yunnan / HOLOTYPE (red label) (in coll. MNHNP).

Distribution. SW. China: Yunnan.

Notes. Xylotrechus multiimpressus is characterized by the large subquadrate male pronotum with two pairs of long arcuate concavities at sides, a pair of rounded ones outside of the arcuate pair and a median small one near base, the brown elytron with incomplete oblique black bands, and two lemon yellow pubescent bands just before middle and apical third. This species may be a closest relative of *X. villioni* from the Japanese Islands, since they share the similar pattern of discal concavities on the male pronotum, and brown and

thinly haired body with black bands on the elytra.

This species has so far been known from only the male holotype specimen collected somewhere in Yunnan Province, Southwest China. Though having examined the holotype, we were unable to study its detailed morphology including the male genital organ.

Xylotrechus (Ootora) aureounifasciatus WAKEJIMA, 2006 (Figs. 3–4, 17, 24, 42–46)

Xylotrechus aureounifasciatus WAKEJIMA, 2006, Elytra, Tokyo, **34**, p. 233, figs. 1–3; type locality: Ha Gang, Ha Tuyen Province of northern Vietnam.

Diagnosis. Body length 26.5 mm in \Diamond , 29.5 mm in \Diamond . Large and markedly broadened species of hairy blackish body, characterized by golden yellow median band on elytra. Colour mostly dark brown to blackish brown, black on head, and all thoraces except for brownish scutellum; antennae blackish; elytra black in basal third, yellowish brown in apical 2/3; abdomen and legs dark reddish brown. Hairs and pubescence dense in general, partly long or wavy on prothorax and bases of elytra and all legs; head and pronotum black pubescent, with reddish brown pubescence along the arcuate concavities on the latter;



Figs. 42–46. Male genitalia of *Xylotrechus (Ootora) aureounifasciatus* WAKEJIMA from Ha Gang of N. Vietnam. — 42, Median lobe in lateral view; 43, ditto in dorsal view; 44, tegmen in dorsal view; 45, 8th sternite; 46, 8th tergite.

antenna with a few yellow hairs along underside of segments 3–6; elytra blackish brown pubescent, decorated with a broad pale golden yellow band near middle, and sometimes with vague reddish spots near bases; ventral surface with blackish brown hairs on pro- and mesothoraces, reddish brown on metathorax and yellowish brown on abdomen; legs with long wavy yellowish brown hairs.

Head nearly half of the maximum width of pronotum, provided with a deep longitudi-

nal groove running from the upper part of frons to vertex; frons trapeziform, without median carina; genae deep, 1.25 times as deep as lower eye-lobes. Antennae short and rather stout, reaching basal tenth (σ^3) or behind humeri (\mathcal{P}) of elytra, segments 6–10 more or less compressed and slightly serrate extero-apically. Pronotum large and globose, 0.85 times as long as wide, widest at basal third, somewhat irregularly reticulate; discal concavities in male composed of a pair of long arcuate ones and a rounded median basal one, the former of which are shallow though deeper at both the anterior part and the middle. Elytra a little more than twice as long as the humeral width, almost parallel-sided, with small dents at sutural sides of apices, coarsely punctured near bases, though the punctures becoming gradually sparser and finer towards apices. Ventral surface deeply and densely punctured on pro- and mesothoraces, finely so on metathorax and abdomen. Legs stout, moderate in length, with hind femora not quite reaching elytral apices.

Male genitalia. Eighth tergite a little wider than long, slightly emarginate at middle of apical margin, Eighth sternite nearly fan-shaped, widely emarginate at apical margin and gently produced at external half of sides. Median lobe fairly broad, hardly arcuate in profile, with dorsal plate sinuately arcuate in basal 3/4, then arcuately narrowed to apex which is bluntly pointed, the apical half of ventral plate which is strongly pointed at apex, flattened in sinuate line in lateral view. Parameres elongate and rather slender, moderately narrowed apicad, dehiscent in apical 3/8, provided with very long setae.

Specimens examined. 1 \triangleleft (holotype), Ha Gang, Ha Tuyen Province of northern Vietnam, VII. 2004 (in coll. NSMT); 1 $\stackrel{\circ}{\uparrow}$, same locality as the holotype, VI. 2005; 1 $\stackrel{\circ}{\uparrow}$, near Dong Van, Ha Tuyen Province, VI. 2006.

Distribution. Indochina: N. Vietnam.

Notes. This species is easily recognized by the robust blackish body with a median golden yellow band on the elytra, and seems to be an isolated species among five known members of the subgenus. One of the pronounced characters of *X. aureounifasciatus* is the entirely black pronotum in the female. In three of all the five known *Ootora* members, the female always has black cross maculation on the pronotum as sexual dimorphism, except for *X. multiimpressus* which is known only from the male holotype. Though bearing such a peculiarity in external morphology, *X. aureounifasciatus* has close relationship in the male genital organ with *X. magnificus*. It is strange that two externally unlike species share the almost same structure of tegmen as well as the 8th sternite. Besides, the general shape of median lobe almost agrees in the two species except only for the length of ventral plate. We were able to examine two additional female specimens of this splendid clytine

beetle through the courtesy of Messrs. S. NII and T. ARAI, which were collected near the type locality in the summer season like the holotype.

Xylotrechus (Ootora) magnificus PIC, 1922 (Figs. 5–6, 15, 18, 25, 47–51)

Xylotrechus magnificus PIC, 1922, Mél. Exot.-Ent., (37), p. 12; type area: Laos.

Diagnosis. Body length 23.0–24.5 mm in \Diamond^2 , 23.5 mm in \Diamond^2 . Large but not so robust species, characterized by light yellow elytra with broad black area in basal 3/10, oblique black band near middle and transverse one on apical 3/10. Colour black, brown in abdomen, antennae and legs except for usually infuscate underside of femora, elytra almost black though apical tenth or so and sides of apical 2/5 dull yellow. Pubescence dense in general, partly with long hairs; head with dense reddish yellow pubescence on frons and along the posterior margins of eyes, lemon yellow pubescent on the posterior part; antenna thinly pubescent, provided with tufts of several brown hairs along underside of segments 2–5; male pronotum sparsely with black or brownish black short hairs in general, provided with broad arcuate lemon yellow pubescent bands along basal margin, and wavy long brown (sometimes silvery white) hairs mostly near mid-line and at sides, and also with brown hairs near middle and on discal concavities; female pronotum largely with dense



Figs. 47–51. Male genitalia of *Xylotrechus (Ootora) magnificus* PIC from Laos. — 47, Median lobe in lateral view; 48, ditto in dorsal view; 49, tegmen in dorsal view; 50, 8th sternite; 51, 8th tergite.

lemon yellow pubescence, except for median transverse glabrous area, and also with wavy long reddish yellow hairs at sides near middle; scutellum yellow pubescent; elytron with wavy long brownish hairs near base and near suture behind scutellum, decorated with lemon yellow pubescent bands as follows: 1) an oblique band on basal 2/5, slightly extending forwards along suture and bent forwards near external margin, 2) broad band behind middle, strongly oblique on anterior margin and weakly sinuate on posterior margin, 3) apical band in apical 3/10 connected with the preceding band at external margin, the pubescence becoming reddish near apex, in the rests blackish brown pubescent; ventral surface densely with lemon yellow pubescence, except for thinly brown haired prosternum and the middle of mesosternum; legs densely with wavy long lemon yellow hairs mostly on all femora, and fore and mid tibiae.

Head a little less than a half the maximum width of pronotum, provided with a deep longitudinal groove running from basal 2/5 of frons to behind vertex; frons arcuately emarginate at sides, moderately dilated apicad, distinctly raised along mid-line in apical third; genae slightly shallower than lower eye-lobes. Antennae short and rather stout, reaching basal sixth (\triangleleft) or behind humeri ($\stackrel{\circ}{\uparrow}$) of elytra, flattened in segments 3–11, especially so and serrate in 6-11. Pronotum rather large, a little more than 0.8 times as long as wide, slightly wider than (σ^{\uparrow}) or almost as wide as (\mathcal{P}) the elytral humeri, arcuately dilated to apical fifth, then nearly straightly dilated to basal 2/5 which is the widest, irregularly indistinctly reticulate; discal concavities in male composed of a pair of long arcuate ones and a rounded median basal one, the former of which are shallow though deeper at the anterior parts, the middle and near bases. Elytra fairly long among the members of the subgenus, a little more than 2.5 times as long as the humeral width, almost parallel-sided though gently arcuate at sides in apical 2/3, with apices more or less obliquely truncate, without any dents, irregularly coarsely punctured on basal 3/10, though the punctures become gradually sparser and shallower towards apices. Ventral surface coarsely and closely punctured on thoraces, finely and somewhat rugosely so on abdomen. Legs long and not so stout, with hind femora reaching apical tenth of elytra in $\overline{\mathcal{A}}$.

Male genitalia. Eighth tergite slightly dilated apicad, subtriangularly concave at middle of apical margin. Eighth sternite transverse quadrate, widely emarginate at apical margin. Median lobe very wide, hardly arcuate in profile, with dorsal plate triangularly narrowed apicad and slightly exposing the strongly pointed apex of ventral plate which is slightly turned up in lateral view. Parameres slender, moderately narrowed apicad, dehiscent in apical half, densely provided with very long setae.

Specimens examined. 13 (holotype), Xylotrechus magnificus n sp (handwritten by PIC) / "Laos" "Pou Lane" "le 13.V.1918" "R. Vitalis et Salvaza" / type (handwritten by PIC) / "Museum Paris" "Coll. M. Pic" / HOLOTYPE (red label) (in coll. MNHNP); 13, Nambothaki, Oudongxay, C. Laos, 21. VI. 1999, K. IKEDA leg.; 13, Wiang Papao, Chiang Rai Prov., Thailand, VI. 2003; 13, same locality as the preceding, VI. 2005; 19, same locality as the preceding, VI. 2005; 19, same locality as the preceding, VI. 2006.

Distribution. Laos, N. Thailand (new record) and Yunnan.

Notes. Xylotrechus magnificus is a little known clytine beetle and has so far been recorded only from Phou Khoay Khoay and Ban Van Heua of Laos (GRESSITT & RONDON, 1970) and Yunnan (HUA & NIISATO, 1993) other than the type locality. Though it may have slight geographical variation in the elytral maculation, three isolated populations from Laos, Thailand and Yunnan are difficult to be discriminated at the subspecies level. This species may have some relationship to the following species, *X. khampaseuthi* at least in the external morphology, though they have quite differently formed male genital organ.

Xylotrechus (Ootora) khampaseuthi khampaseuthi HOLZSCHUH, 2007 (Figs. 7–8, 19, 26, 52–56)

Xylotrechus khampaseuthi Holzschuh, 2007, Ent. Basil., **29**, p. 244, fig. 50; type locality: NE Laos, Hua Phan prov. Phou Pan (Mt.).

Diagnosis. Body length 17.5–22.5 mm in 3° , 22.5–27.0 mm in 2° . Colour largely black and dullish, brown in basal four segments of antennae and legs; elytra black with brown external margins including apices, the brown areas extending to external third of basal fourth or so in $\overline{\triangleleft}$, or forming clear basal bands in basal 2/5 in $\widehat{\triangleleft}$, the posterior margins of which are sinuately oblique. Body densely clothed with light greenish yellow pubescence and partly with lemon vellow pubescence; head with lemon vellow pubescence on frons and the area between posterior margin of occiput and tempora; pronotum in \overline{a} almost glabrous, with a few brownish minute pubescence near apical and basal margins, provided with a pair of arcuate vellow pubescent maculation along the same shaped concavities at sides of basal third, and also a pair of short similar maculation located at more external portions of apical third; pronotum in $\stackrel{\circ}{\uparrow}$ clothed with lemon yellow pubescence except for large black cross area which is almost glabrous and sparsely with very long greenish yellow hairs; scutellum lemon yellow pubescent; elytra entirely with dense minute brown pubescence, provided with lemon yellow pubescent maculation as follows: 1) a vague oblong transverse maculation at basal eighth, almost reaching the external yellow spot behind humerus, 2) an oblique complete band on basal third, narrowly slightly extending along suture and strongly bent forwardly near external margin, 3) an oblique complete broad band on apical 2/5, gradually narrowed externally, 4) a vague apical band in short distance from apex; ventral surface densely with greenish yellow pubescence, with lemon yellow pubescence on prosternum, sides and anterior process of mesosternum, apical 2/3 of metepisterna, metasternum except for large triangular part at middle, and abdominal ventrites except near basal margin.

Head very short, about 5/8 in \checkmark or 5/9 in \updownarrow as wide as pronotum, rather densely provided with small punctures; from slightly wider than long, without a raised glabrous median line which is distinctly convex at middle near apical margin. Antennae short and stout,



Figs. 52–56. Male genitalia of *Xylotrechus (Ootora) khampaseuthi khampaseuthi* HOLZSCHUH from Laos. — 52, Median lobe in lateral view; 53, ditto in dorsal view; 54, tegmen in dorsal view; 55, 8th sternite; 56, 8th tergite.

attaining to basal fifth in σ^3 or basal sixth in φ of elytra. Male pronotum slightly wider than long, gently arcuate to the widest points of basal 2/5, then roundly narrowed just before base; disc distinctly convex, coarsely finely asperate, provided with a pair of oblique weak impression at sides of apical third, a pair of comma-shaped distinct depressions on basal third, and also with a longitudinal groove along mid-line in basal third which is somewhat carinate near base. Female pronotum almost globose though widest just before middle, with sides distinctly arcuate throughout, disc closely coarsely asperate throughout except for longitudinal oblong smooth area on basal 3/10. Scutellum large, trapezoidal. Elytra 2.4–2.5 times as long as the humeral width, not so broad, with rounded or roundly prominent humeri, then slightly narrowed to before middle, dilated and narrowed in weak arcuate line to apices, which are transversely rounded, closely finely punctured throughout. Venter of thoraces closely provided with small coarse punctures. Abdomen elongate, finely closely punctured. Legs rather slender and markedly long among the subgenus.

Male genitalia. Eighth tergite rounded trapezoidal, gently arcuate at apical margin. Eighth sternite transversely quadrate though strongly arcuate at sides, with apical margin weakly bisinuate. Median lobe moderate in width, strongly arcuate in profile, with dorsal plate arcuately though more or less sinuately narrowed to apical fourth, then suddenly narrowed apicad and forming a triangular apical part, largely exposing the sides and apices of apical 2/5 of dorsal plate. Parameres hardly elongate, dehiscent in apical 2/5 measured

along mid-line, with rounded apices, densely provided with long setae.

Distribution. Laos.

Notes. This species may have some relationship with *X. magnificus*, and almost identical with the public markings on elytra, similar pattern of dorsal concavities on the pronotum, rather long legs, though the feature of male genital organ is rather isolated among the subgenus. The parameters of this species are short and rounded at apices instead of the elongate and slender ones in those of the other member of the subgenus.

Xylotrechus khampaseuthi varies in the discal concavities of pronotum with yellowish pubescent maculation, the shape of scutellum and the length of elytra both geographically and individually. The known localities of nominotypical race of *X. khampaseuthi* are quite isolated at the subalpine zone of three (probably or four) higher mountains, *viz.*, Mt. Bia of Saisonbun, Mt. Pan of Houaphan and Mt. Samsoun of Xiengkhoung (or also three specimens from no detail data of Xiengkhoung) in the area between central to northeastern Laos. The host plant of the clytine may be a conifer as in the case of *X. villioni*. Several conifers as *Tsuga*, *Pinus* and *Fokinia* always grew in the forests of known localities of this species in spite of the lower latitude area in eastern Indochina.

Xylotrechus (Ootora) khampaseuthi shibatai ssp. nov. (Figs. 9–10, 20, 27, 57–61)

Externally differs from the nominotypical race from Laos in the following characters: Body slightly broader; yellow pubescence on head, pronotum and elytra more or less reddish instead of clear lemon yellow in the nominotypical race; arcuate concavities on male pronotum shallower, supplementary with a pair of small one at basal sides; elytra short, 2.4 times in σ or 2.25 times in ϕ as long as wide; legs shorter. Male genital organ basically similar to that of the nominotypical race, but 8th tergite weakly concave at middle of apical margin, 8th sternite transverse semicircular and simply emarginate at apical margin, median lobe slenderer, paramere shorter, dehiscent in apical 3/10 measured along the mid-line.

Type serires. Holotype \triangleleft , Longhu (ca 1,000 m in alt.), Wude Xiang, Longzhou Xian, Guangxi Zhuangzu Ziziqu, 16. V. 1980, Z.-Y. WAN leg. (in coll. ZUG). Allotype \updownarrow , same data as the holotype but 15. V. 1980 (in coll. ZUG).

Distribution. SW. China: Guangxi Zhuangzu Ziziqu.

Notes. As was written in the notes on the nominotypical subspecies, *X. khampaseuthi* is a variable species at least geographically, and may possibly be classified into some geographical races. We proposed the new subspecies for the population from Longhu of



Figs. 57–61. Male genitalia of *Xylotrechus (Ootora) khampaseuthi shibatai* ssp. nov. from Guangxi Zhuangzu Ziziqu of SW. China. — 57, Median lobe in lateral view; 58, ditto in dorsal view; 59, tegmen in dorsal view; 60, 8th sternite; 61, 8th tergite.

Guangxi Zhuangzu Ziziqu of Southwest China in view of its peculiarity in external morphology and the male genital organ. This new subspecies is known only from a pair of the type series collected more than a quarter century ago.

Etymology. The new subspecific name is dedicated to the late Mr. Taichi SHIBATA.

Genus Hesperoclytus HOLZSCHUH, 1986

Hesperoclytus Holzschuh, 1986, Koleopt. Rdsch., **58**, p. 123; type species: Hesperoclytus katarinae Holzschuh, 1986.

Redescription. Medium-sized clytine of long subparallel hind body, with subquadrate pronotum and short legs.

Head relatively small though wider than half the width of pronotum, moderately convex, gradually raised posteriad; frons slightly transverse, with a fine incomplete median costa reaching before apical margin; clypeus ordinarily trapezoidal, a little shorter than frons, with long basal lobe; mandible short, moderately arcuate and obliquely bent inwards



Figs. 62–68. *Hesperoclytus katarinae* HOLZSCHUH from N. India, ♂. — 62, Habitus in dorsal view; 63, habitus in ventral view; 64, metathorax and hind coxa in lateral view (*mt*: metasternum, *mts*: metepisternum, *mtm*: metepimeron, *c3*: hind coxa, *as*: 3rd abdominal sternite, *e*: elytron); 65, head in frontal view; 66, maxillary palpus; 67, labial palpus; 68, right hind wing.

in apical 3/8; maxilla less developed, with palpus short, 3rd segment strongly transverse, terminal segment thick and gently dilated apicad, nearly a half the length of palpus; labium with prementum longer than mentum, ligula small, terminal segment of palpus longer than the basal two segments combined, weakly dilated apicad; labrum semicircular though transverse at apical margin; vertex hardly raised including the parts near antennal cavities, with a fine deep median groove; eyes relatively small, though the lower lobe is deeper than gena.

Antenna not reaching basal half of elytra in σ^2 , more or less stout, clothed with long hairs along inner sides of basal six segments, with scape the longest, distinctly longer than segment 3, a little longer than segments 4 or 5, apical four segments distinctly shortened in length.

Pronotum subquadrate, large though slightly narrower than elytra, subtruncate both at the apical and basal margins; sides dilated to before middle, subparallel near middle, then narrowed to base; disc distinctly convex, provided with a pair of long arcuate concavities at sides and median narrow one near base, closely reticulate with fine granules. Scutelllum medium, flattened above.

Elytra elongate, usually about three times as long as the humeral width, subparallelsided though gently ample posteriad, completely rounded at apices, weakly convex though almost flattened above and coarsely punctured. Hind wing basically agreeing with that of *Xylotrechus* and its allied genera, with vein Pcu obliquely bent upwards near base and almost meeting basal sixth of vein Cu.

Prosternum strongly vertical towards the base of inter-coxal process which is rather narrow, flattened near base, parallel-sided; mesosternal process trapezoidal, with triangular concavity at apex; metasternum slightly convex. Abdomen elongate, slightly arcuate at sides, with anal sternite transverse semicircular though almost truncate at apex.

Legs short, with hind femur barely reaching apical fourth of elytra in σ ; hind tarsus compressed, with 1st segment nearly equal in length to the following two segments combined.

Male genitalia. Abdominal segment 8th slightly transverse, with semicircular tergite and anchor-shaped sternite. Median lobe flattened, hardly arcuate, with short apical lobe which is nearly fourth the length of median lobe; dorsal plate broad, not so distinctly narrowed towards apex which is broadly rounded; ventral plate nearly equal in length to dorsal plate; endophallus without any sclerotized plates except for a pair of crescent ones near base, minutely pigmented on surface. Tegmen more or less elongate, with parameres relatively wide, weakly narrowed towards apices, moderately dehiscent, densely setose near apices.

Female genitalia as shown in Fig. 36 (H. katarinae).

Range. Himalaya. Only known from the localities of the type species.

Notes. Hesperoclytus HOLZSCHUH of the monotypic genus was established based on *H. katarinae* HOLZSCHUH from the Himalayan region of western Nepal. This genus suggested a relationship to *X. villioni* by reason of external similarities (NIISATO, 1992). According to our comparative study, *Hesperoclytus* is quite different not only from *X. villioni* and its relatives but also from the genera *Xylotrechus* and *Perissus*, and doubtless belongs to an isolated group in the tribe Clytini. The type species of *Hesperoclytus* has such peculiar configuration of head as the strongly attenuate genae in frontal view, the long clypeus which is deeply inserted in the apical margin of frons, the flattened vertex between the antennal cavities, and the reduced palpi, especially in the terminal segment. Besides, the genital organs

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Figs. 69–73. Male genitalia of *Hesperoclytus katarinae* HOLZSCHUH from N. India. — 69, Median lobe in lateral view; 70, ditto in dorsal view; 71, tegmen in dorsal view; 72, 8th sternite; 73, 8th tergite.

in both sexes are fairly different in conformation. In the type species of *Hesperoclytus*, the median lobe of male genitalia has reduced apical lobe in contrast to the long median struts, very short paraproct of female genitalia and no spermathecal gland instead of long gland in those of *Xylotrechus* species.

Hesperoclytus katarinae HOLZSCHUH, 1986 (Figs. 11–12, 21, 36, 62–73)

Hesperoclytus katarinae HOLZSCHUH, 1986, Koleopt. Rdsch., **58**, p. 123, fig. 9; type locality: W. Nepal, NW Pokhara, Deurali, 3000 m.

The type species of *Hesperoclytus* was carefully described by the original author. We additionally describe the character of male genital organ which is not shown in the original description.

Male genitalia. Tergite 8th semicircular, with distinct concavity at middle of apical margin. Sternite 8th transverse anchor-shaped, arcuately concave near middle of apical



Fig. 74. Distribution of *Xylotrechus (Ootora)* species. — Longitudinal lines, *Xylotrechus (Ootora) villioni* (VILLARD); blank circle, *X. (O.) multiimpressus* PIC; black circle, *X. (O.) aureounifasciatus* WAKEJIMA; transverse lines, *X. (O.) magnificus* PIC; blank triangle, *X. (O.) khampaseuthi khampaseuthi* HOLZSCHUH; black triangle, *X. (O.) khampaseuthi shibatai* ssp. nov.

margin. Median lobe flattened, hardly arcuate, with apical lobe 3/8 the length of median lobe; dorsal plate gently narrowed apicad, broadly rounded at apex which has minute projection at middle; ventral plate a little longer than dorsal plate, bluntly produced at apex. Tegmen with elongate ring parts, with parameres 2/7 the length of tegmen, weakly narrowed apicad, dehiscent in apical 2/5 when measured along the mid-line, provided with relatively long setae near apices.

Specimens examined. 1♂, near Darjeeling, India, 17. VI. 1986 (no further data); 2♂ ♂, Tonglu, NW. Bengal, India, 17–19. VI. 2003, E. KUČERA leg.; 1♀, same locality and collector as the preceding, 1–3. VI. 2006.

Distribution. Himalaya: W. Nepal and N. India (new record).

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要 約

新里 達也・分島 徹人:オオトラカミキリとその近縁種. ____ オオトラカミキリ Xylotrechus villioni は日本列島に固有の種で,オオスズメバチに似た赤褐色と黒色の縞模 様の大きい体に,大きく張り出した前胸背板と対照的に小さい頭部,雄前胸背板の一対の 弧状陥没部,短い触角と肢などの特徴をそなえ,トラカミキリ属 Xylotrechus のなかではむ しろ孤立した存在として知られている.本種はインドシナから記載された X. magnificus に 唯一,類縁が近いものだろうと考えられていたが,最近になって,やはり同系列とみなさ れる X. aureounifasciatus が新たに北ベトナムから発見され,これら 3種をもってオオトラ カミキリ種群 Xylotrechus villioni Group が提唱されている.

本研究では、これら 3種に加え、雲南から記載された X. multiimpressus, ラオスと広西 壮族自治区に分布する X. khampaseuthi を同系列の一員と認めたうえで、後者の広西壮族 自治区産を新亜種X. (Ootora) k. shibatai ssp. nov.として記載し、これら合計 5種について、 新亜属オオトラカミキリ亜属 Ootora subgenus nov. (基準種はオオトラカミキリ) をトラ カミキリ属のなかに創設した. さらに、オオトラカミキリと類縁が近いと指摘されていた ヒマラヤ地域から知られる Hesperoclytus属の基準種 H. katarinae を詳細に検討した結果、 予想に反して外観の相似とは異なり、このヒマラヤの属は、おもに頭部の構造や雌雄交尾 器からみて、オオトラカミキリとその近縁種どころかトラカミキリ属ともはるかに遠縁で あることが明らかになった。

本論文で検討したオオトラカミキリ亜属 5種(1亜種)とそれぞれの分布域は次のとおり である。

- 1) *Xylotrechus (Ootora) villioni* (VILLARD) (オオトラカミキリ):日本(北海道,国後, 本州,四国および九州)
- 2) Xylotrechus (Ootora) multiimpressus PIC: 中国雲南省
- 3) Xylotrechus (Ootora) aureounifasciatus WAKEJIMA: 北ベトナム
- 4) Xylotrechus (Ootora) magnificus PIC: ラオス,タイ北部および中国雲南省
- 5) *Xylotrechus (Ootora) khampaseuthi khampaseuthi* HOLZSCHUH: ラオス *Xylotrechus (Ootora) khampaseuthi shibatai* ssp. nov.: 中国広西壮族自治区

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