

Review of *Necydalis lateralis* PIC (Coleoptera, Cerambycidae)

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Abstract A little-known *Necydalis* species, *N. lateralis* PIC, 1939 is redescribed and illustrated mainly based on the newly collected materials from Inner Mongolia Autonomous Region, China. This species placed under the nominotypical subgenus and has closely relationship with *N. gigantea* KANO, 1933 from Japan and *N. ulmi* CHEVROLAT, 1838 from Europe.

Introduction

Necydalis lateralis PIC was originally described from “environs de Péking” (PIC, 1939) and one of the little-known species among the Palaearctic members of the genus. This rare species has been re-recorded twice from “E. Tomb, Hopei” (= Hebei; GRESSITT, 1945), and Shaanxi (ZHOU *et al.*, 1988). Though GRESSITT (1951) placed it under the subgenus *Necydalisca* PLAVILSTSHIKOV without any comment, the true affinity including the subgeneric status is still uncertain.

During a field survey of Inner Mongolia Autonomous Region, China in the summer of 2010, the second author LIN unexpectedly found several pairs of large *Necydalis* species in an open forest of Mt. Helanshan. After the field trip, the *Necydalis* specimens in question were entrusted to NIISATO for the taxonomic identification, and he immediately recognized it as *N. lateralis* whose rediscovery had been expected for a long time.

In the following lines, we will redescribe and illustrate *N. lateralis* in detail based mainly on the newly collected specimens from Inner Mongolia, and discuss its taxonomical status.

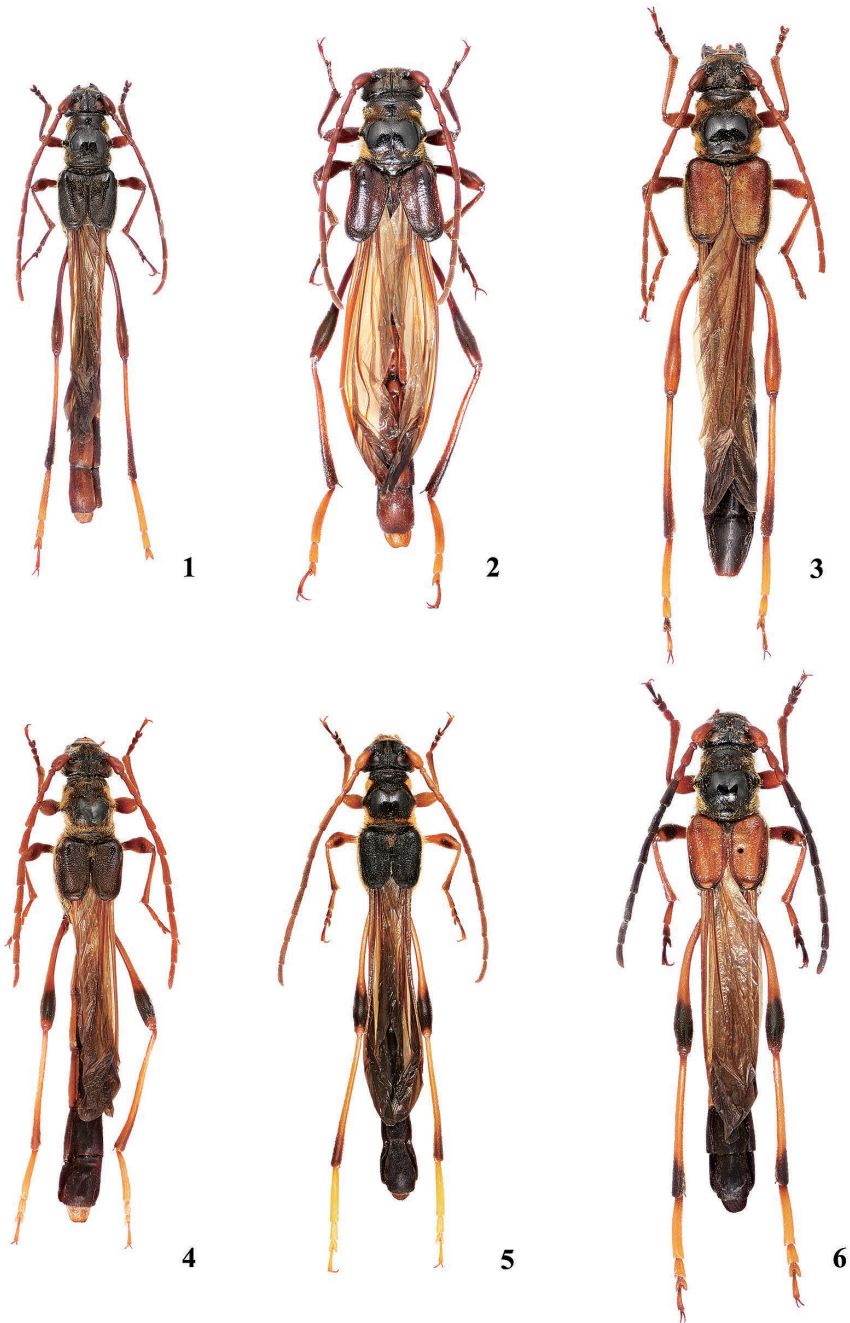
Material and Method

The specimens examined are preserved in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZAS), the private collection of Chang-Chin CHEN, Tianjin, China (CCCC) and the private collection of Wen-Xuan BI, Shanghai, China (CBWX). The holotype of *Necydalis lateralis* PIC in the Muséum National d'histoire Naturelle, Paris (MNHN) was also examined. The collecting data of specimens examined are described in the original spellings, though several Chinese characters were translated to English within parenthesis when necessary.

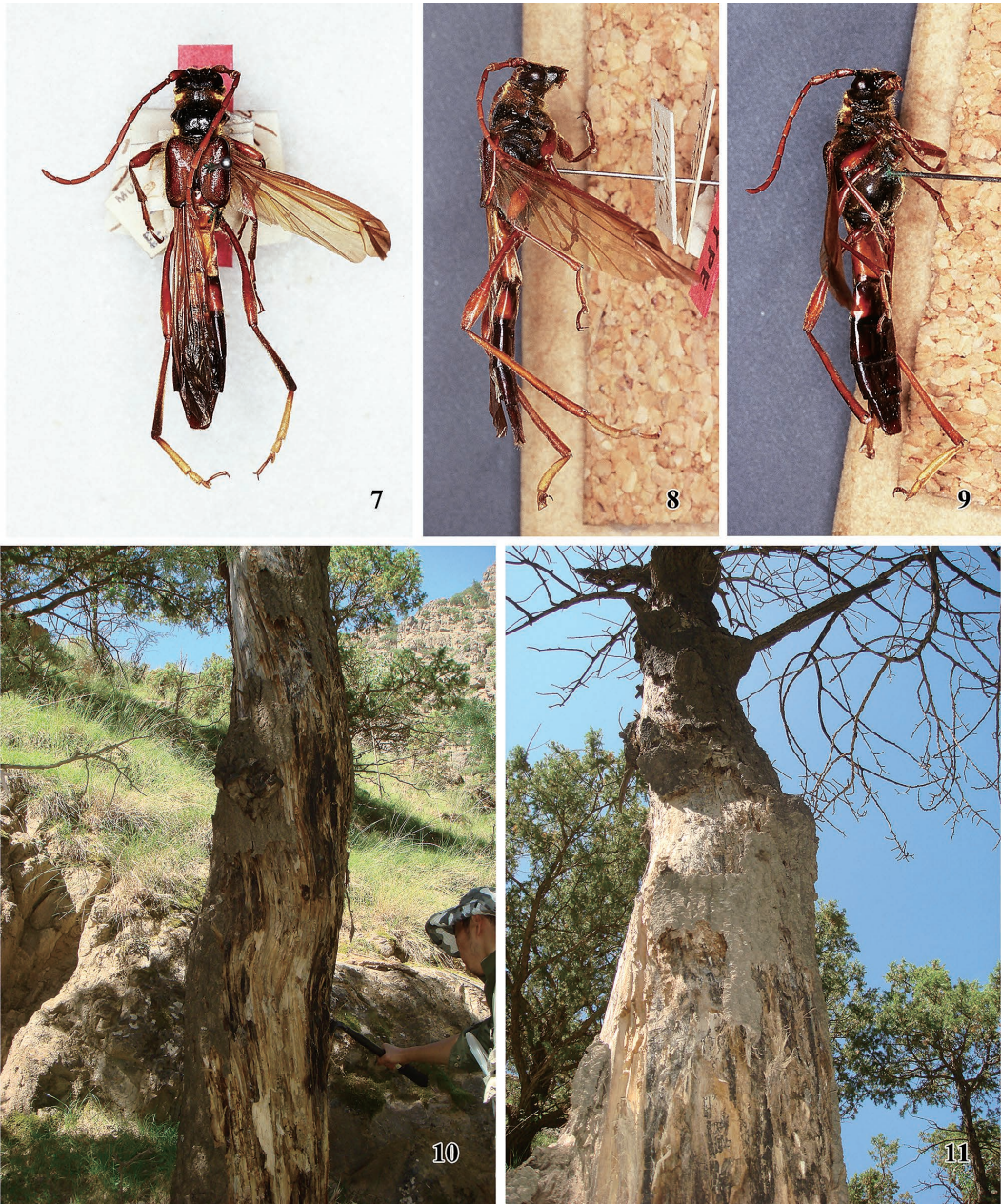
The collecting data of the comparative species allied to *N. (N.) lateralis* shown in the text figures is as follows.

Necydalis (Necydalis) gigantea gigantea KANO, 1933: 1 ♂, “Mt. Mitakesan / TOKYO. (Okutama) / 31–VII–1976 (Am 6:00) / T. NIISATO leg.”. *Necydalis (Necydalis) gigantea akiyamai* HAYASHI, 1978: 1 ♂, “Shiratani-Unsuikyô, / Yakushima-chô, Kumage-gun / Kagoshima Pref., Yaku Is. / 15–VII–2014 / T. NIISATO leg.”. *Necydalis (Necydalis) ulmi* (CHEVROLAT, 1838): 1 ♂, “Cogaloi (83) / France / July 10, 1991”.

The morphology of specimens was observed and photographed by using a stereoscopic micro-



Figs. 1–6. *Necydalis (Necydalis) lateralis* PIC, 1939 and its allied species. — 1, *N. (N.) lateralis* PIC from Inner Mongolia Autonomous Region, ♂ with black elytra; 2, ditto, ♂ with dark brown elytra; 3, ditto, ♀; 4, *N. (N.) gigantea gigantea* KANO, 1933, ♂ from Honshu, Japan; 5, *N. (N.) g. akiyamai* HAYASHI, 1978, ♂ from Yaku Is., Japan; 6, *N. (N.) ulmi* CHEVROLAT, 1838, ♂ from France.



Figs. 7–11. Holotype and habitus of *Necydalis (Necydalis) lateralis* PIC, 1939. — 7, Holotype, dorsal view; 8, ditto, lateral view; 9, ditto, latero-ventral view; 10, dead tree of poplar (*Populus* sp.) in the collecting site of Inner Mongolia Autonomous Region; 11, ditto, foreground.

scope (OLYMPUS SZX16), a light microscope (OLYMPUS BX53M) with a microscope digital camera (OLYMPUS DP73) and an image analysis software (OLYMPUS cellSens). SEM images of several structures such as abdominal ventrite were taken by the Keyence Ultra Depth Multi-angle Observation System (KEYENCE VHK-D500). The whole habitus of specimens were photographed by Canon digital camera EOS 70D with macro photo lens EF-50 mm and Life-size Converter EF. The drawing of the structure was made by using Adobe Illustrator CS3.

The measurement in the redescription is based on the collections (four males and three females) of *N. lateralis* preserved in IZAS and CCCC.

The abbreviations used for the ratio of the measurement in the redescription are as follows: HW — maximum width of head across tempora just behind lower eye-lobes; PL — length of pronotum; PW — maximum width of pronotum near middle; PA — apical width of pronotum; PB — basal width of pronotum; EL — length of elytra; EW — humeral width of elytra; M — arithmetic mean.

Taxonomy

Necydalis (Necydalis) lateralis PIC, 1939

(Figs. 1–3, 7–9, 16–20)

Necydalis lateralis PIC, 1939: 2; type locality: Hebei, Zhuolu County. — GRESSITT, 1945: 124; locality record: E. Tomb, Hopei. — ZHOU *et al.*, 1988: 27, pl. 4, fig. 20; locality record: Shaanxi. — HUA, 2002: 218. — LIN, 2013: 350, pl. 18, fig. 203; locality record: Inner Mongolia.

Necydalis (Necydalisca) lateralis: GRESSITT, 1951: 126, pl. 5, fig. 1.

Original description. *Necydalis lateralis* n. sp. *Elongatus, pro parte aurato pubescens, niger, labro, membris et abdomine ad basim rufis, elytris rufis, ad basim et apice nigro cinctis, lateraliter late piceo vittatis, his parum fortiter sat sparse punctatis, thorace paulo latioribus, brevibus, apice paulo dehiscentibus; aliis griseo luteis; capite ruguloso-punctato, medio sulcato; thorace elongato, lateraliter sinuato, medio distincte tuberculato et supra diverse multi impresso, diverse, pro parte minute et sparse, punctato; pedibus elongatis, femoribus parum clavatis. Long. 27 mill. Chine, environs de Péking (P. Licent, in coll. Licent). Diffère de *N. sericella* Gglb. par les antennes entièrement rouges, les élytres marquées de foncé (en plus de j'apex) sur leur base et sur la partie infléchie de leurs côtés.*

Redescription. Large-sized species of robust body, with stout antennae and legs. Colour black, moderately shiny; antennae dark reddish brown to dark yellowish brown; elytra black, dark reddish brown or dark yellowish brown according to individuals, almost always infusate in narrow apical parts; hind wings dull yellowish brown; abdomen black, usually reddish brown in parts of ventrites 1–3, almost dark reddish brown in tergite in ♂; legs dark brown to dark yellowish brown, infusate in apical third or so in hind tibia, light yellow in hind tarsus. Body clothed with light yellow to dark brown pubescence, mostly on tibiae and tarsi, partly with dense fringe of light golden yellow pubescence on frons, tempora, on sides of pronotum except near lateral tubercles, apical half of prosternum, sides and apical third of metasternum, apical parts of mesepimeron and metepisternum and most of all coxae.

Male. Body length: 23.5–28.0 mm (from apical margin of clypeus to abdominal apex).

Head large, weakly convex, closely provided with coarse and irregular-sized punctures, HW/PA 1.14–1.37 (M 1.23), HW/PW 0.91–1.00 (M 0.96); frons distinctly wider than long, slightly narrowed

apicad in sinuate line, strongly raised to midline, with a rather wide, very deep median groove extending to the anterior margin of occiput; clypeus with apical lobe sparsely punctured except for smooth apical half; genae about half the depth of lower eye-lobes; tempora strongly produced beyond the level of eyes; occiput distinctly raised posteriad; eyes moderately prominent. Antennae rather slender, medium in length, barely reaching 4th abdominal tergite, with segments 5–10 serrate and more or less flattened though rather strongly so in segments 5 and 6; scape swollen, finely punctured, slightly longer than segment 3, segments 3 and 4 distinctly thickened apicad, segment 4 $\frac{3}{5}$ the length of the preceding, segment 5 the longest and about 1.4 times as long as segment 3, terminal segment gently arcuate.

Pronotum distinctly longer than wide, rather strongly contracted to apex, almost straight in apical and basal margins, though usually emarginate near middle of the former, distinctly grooved along apical and basal margins; PL/PA 1.32–1.50 (M 1.37), PL/PW 0.97–1.07 (M 1.04), PA/PB 0.82–0.90 (M 0.88), PW/EW 0.72–0.92 (M 0.85); sides moderately prominent just behind apex and rather distinctly so before base, with large lateral tubercles near middle; disc markedly convex at a level between apical $\frac{3}{10}$ and basal sixth, without median groove, sparsely provided with fine punctures, depressed and provided with coarse punctures before and behind the median convex area, weakly raised near apical and basal margins, which are coarsely shagreened and with a few punctures. Scutellum large, trapezoidal, thickly bordered along sides, provided with coarse punctures.

Elytra slightly longer than wide, EL/EW 1.0–1.09 (M 1.03), arcuately dehiscent in apical $\frac{3}{10}$, thickly bordered along suture, slightly exposing the sides of metathorax; sides with humeri weakly produced, gradually narrowed in straight line to apical fourth, roundly truncate at apices which have small dents at sutural angles; disc strongly raised in apical sixth, with J-shaped distinct depression from just behind base near suture to before apical sixth near external margin; surface entirely provided with very small punctures, though sparse near humeri, and sparsely with medium-sized punctures except for humeri and in apical sixth.

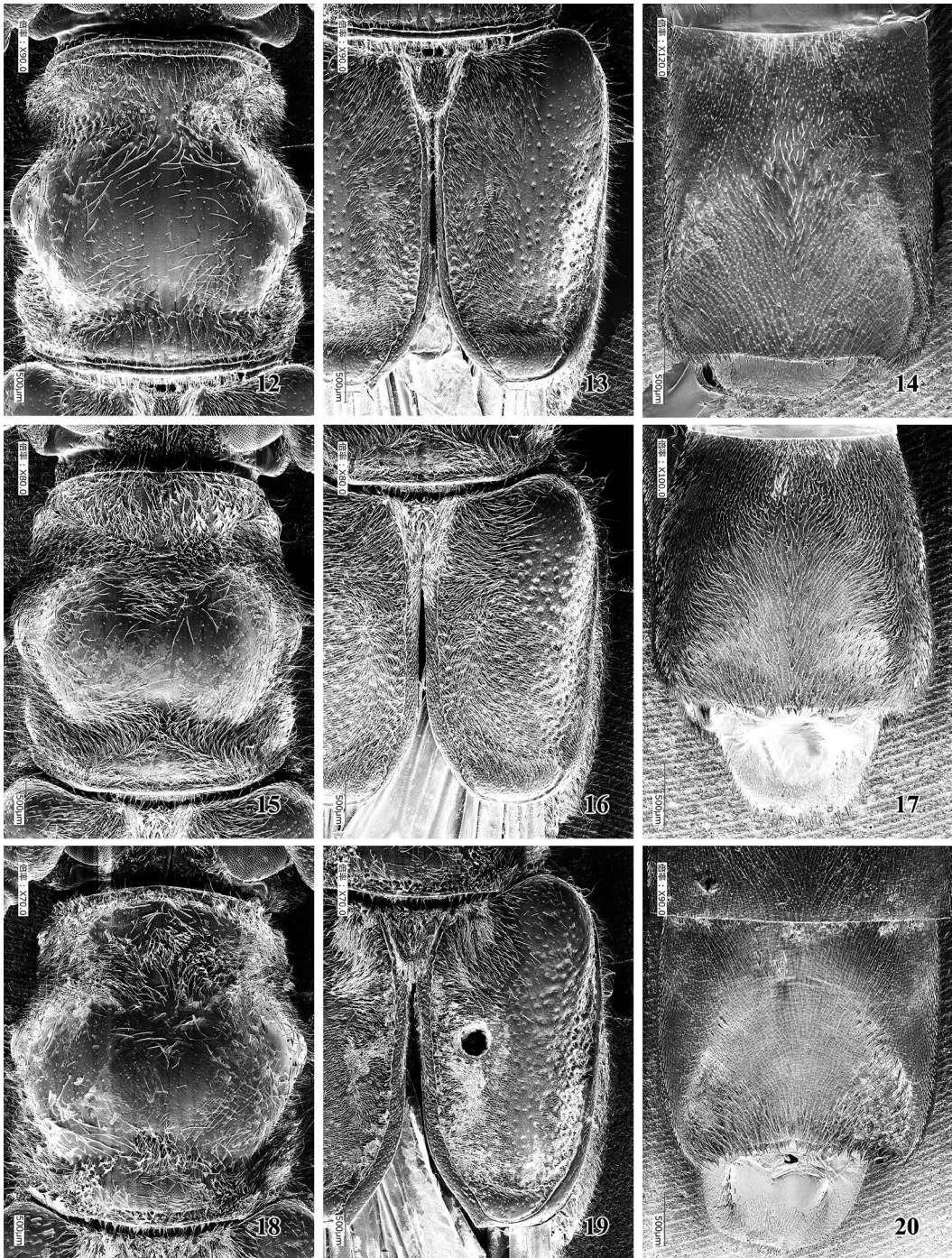
Venter of thoraces coarsely punctured in most part, finely and closely so on meso- and metasterna; prosternal process with apical part triangular, vertical at sides, rugose on surface; mesosternal process slightly narrowed apicad, deeply emarginate at apical margin; metasternum with median projection of apical margin thickly bordered and vertical. Abdomen finely shallowly punctured, though more or less rugose on base of ventrite 1; ventrites 1–3 slightly thickened at each apical part though ventrite 4 rather distinctly dilated apicad, ventrites 2–4 almost equal in length, $\frac{3}{4}$ the length of ventrite 1. Anal ventrite subquadrate though slightly dilated apicad, 1.3 time as long as the basal width; disc with apical $\frac{7}{10}$ distinctly declivous posteriad, moderately carinate in arcuate line along sides, slightly sinuate on apical margin.

Legs not so stout, medium in length, with hind tibia reaching apical $\frac{2}{3}$ of anal tergite; hind tarsus rather thin, with segment 1 almost twice the following two segments combined.

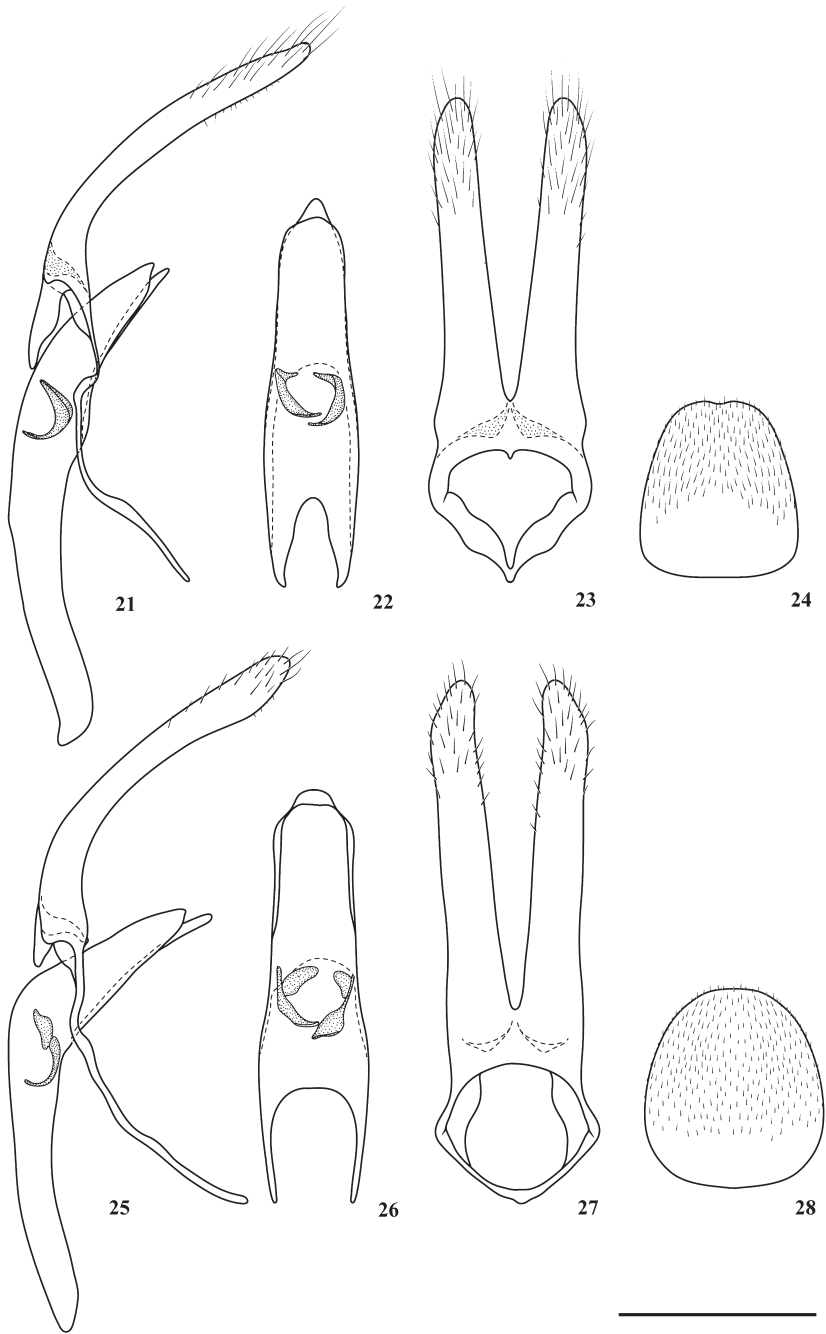
Male genitalia. Median lobe relatively slender, moderately convex, weakly arcuate in profile; dorsal plate gradually narrowed in weak sinuate line to apex which is bluntly produced, exposing the subtriangular apical part of ventral plate; ventral plate in lateral view sharply produced apicad; median struts about half the length of median lobe, rather wide in profile. Tegmen slender; parameres narrowly dehiscent in about 30° in degree, gently arcuate and simply pointed in profile, provided with relatively long setae on apical third; each lobe in dorsal view, completely straight even near apical part in inner margin, though suddenly narrowed in arcuate line near apical part of outer margin. Eighth tergite almost trapezoidal with arcuate sides, gently bisinuate on apical margin.

F e m a l e. Body length: 26.5–30.5 mm (from apical margin of clypeus to abdominal apex).

Body broad. Antennae almost reaching the apex of 3rd abdominal tergite, with middle segments



Figs. 12–20. SEM images of body structures of *Necydalis (Necydalis) lateralis* PIC, 1939 and its allied species. — 12–14, *N. (N.) lateralis* PIC, ♂ from Inner Mongolia Autonomous Region; 15–17, *N. (N.) gigantea gigantea* KANO, 1933, ♂ from Honshu, Japan; 18–20, *N. (N.) ulmi* CHEVROLAT, 1838, ♂ from France. — 12, 15, 18, Pronotum; 13, 16, 19, elytra; 14, 17, 20, anal ventrite.



Figs. 21–28. Male genitalia of *Necydalis (Necydalis)* spp. — 21–24, *N. (N.) lateralis* PIC, 1939, ♂ from Inner Mongolia Autonomous Region; 25–28, *N. (N.) gigantea gigantea* KANO, 1933, ♂ from Honshu, Japan. — 21, 25, Median lobe and tegmen, lateral view; 22, 26, median lobe, dorsal view; 23, 27, tegmen, dorsal view; 24, 28, 8th abdominal tergite. Scale: 1.0 mm.

more or less flattened, apical four segments shortened. Pronotum slightly wider than long. Elytra provided with fringe of light golden yellow pubescence near scutellum; disc with J-shaped depression at a level between middle and apical sixth along suture, and transverse depression just before apical seventh. Abdomen broad, almost parallel-sided in basal three ventrites, slightly arcuate in ventrites 4–5, densely provided with minute punctures; anal ventrite elongate trapezoidal, slightly concave at the middle of apical margin. Legs with hind tibia slightly extended the abdominal apex due to the shorter abdomen than in ♂. Standard ratios of body parts are as follows: HW/PA 1.05–1.43 (M 1.25), HW/PW 0.83–1.14 (M 0.95), PL/PA 1.18–1.36 (M 1.26), PL/PW 0.93–1.00 (M 0.96), PA/PB 0.80–0.84 (M 0.89), PW/EW 0.86–0.95 (M 0.85), EL/EW 0.95–1.04 (1.00).

Specimens examined. 1 ♀ (in MNHN), “Trappe / 21.VI.30” “2499 1” “HOLOTYPE (red label)” “MUSÉUM PARIS Coll P. LICENT” “*Necydalis lateralis* n. sp.”; 1 ♂ (in IZAS), “内蒙古 阿拉善左旗 贺兰 / 山水磨沟南沟 (Inner Mongolia (Neimenggu) Alxa League (Alashan), Left Banner (zuoqi), Helanshan Shuimogou Nangou) / 2010.VII.26 2307m / 中科院动物所” “N: 38.94775°, / E: 105.67493°” “林美英 (Mei-Ying LIN) / 中科院动物所” “IOZ(E)1899819” “*Necydalis / lateralis* Pic ♂ / Det. M.Y.LIN, 2011”; 1 ♂ (in CCCC), same as the preceding but 林美英 (Mei-Ying LIN), 黄鑫磊 (Xin-Lei HUANG), without collection number; 1 ♀ (in IZAS), same as the preceding, but collection number is “IOZ(E)1899833”; 1 ♀ (in IZAS), 内蒙古 阿拉善左旗贺 / 兰山 岔沟 (Inner Mongolia (Neimenggu) Alxa League (Alashan), Left Banner (zuoqi), Helanshan Chagou) / 2010.VIII.1 2442m / “N: 38.84541°, / E: 105.90730°” “林美英 (Mei-Ying LIN) / 中科院动物所” “IOZ(E)1899820” “*Necydalis / lateralis* Pic ♀ / Det. M.Y.LIN, 2011”; 1 ♀ (in CCCC), same as the preceding but without collection number; 1 ♂ (in CBWX), 内蒙古 贺兰山 山水磨沟 正沟 (Inner Mongolia (Neimenggu) Helanshan Shuimogou Zhenggou) / 2010–VII–31. 2322m 张鼎杰 (Ding-Jie ZHANG) leg. / N. 38°56.001' / E. 105°56.814'; 1 ♀, “Eastern Tomb” “Acad. Sinica” “2693” “NECYDALIS / LATERALIS / PIC / J.L. GRESSITT Det. 19?? (white card with black margin)” “*Necydalis / lateralis* Pic / 鑑定者: 蒲富基 1988”; 1 ♂ (in IZAS), 内蒙阿盟左旗 (Inner Mongolia (Neimeng), Alxa League (A Meng), Left Banner (Zuoqi) / 公尺 / 中国科学院” “1986. VII. 28 / 孟和 (He MENG) / 中国科学院” “*Necydalis / (Necydalis) / lateralis* Pic, / 1939 / Det. T. NIISATO, 2016”; 1 ♂ (in IZAS), “宁夏左旗 (Ningxia, Left Banner (Zuoqi)) / 1979.VII.3 / 中国科学院” “near / *Necydalis / ulmi* CHEVROLAT / 鑑定者:” “*Necydalis / (Necydalis) / lateralis* / Pic, 1939 / Det. T. NIISATO, 2016”.

Distribution. NE. China: Beijing (PIC, 1939), Hebei (GRESSITT, 1945), Inner Mongolia (LIN, 2013), Shaanxi (ZHOU *et al.*, 1988), and Ningxia (new provincial record).

Comparative notes. For identification, three allopatric species, *N. gigantea*, *N. lateralis* and *N. ulmi* are clearly distinguished from each other by the shape of pronotum (Figs. 12, 15 & 18) and elytra (Figs. 13, 16 & 19), concavity of anal ventrite in male (Figs. 14, 17 & 20), and male genitalia (Figs. 21–28). The plainest point without exception is the sutural angles of elytral apices which are briefly dentate in *N. lateralis* and *N. ulmi* instead of completely arcuate in *N. gigantea*. *Necydalis ulmi* is easily distinguished at sight from the other two species by the strong thick body with short and stout antennae, and its anal ventrite in male is deeply concaved in semicircular shape.

Notes. The type locality of *Necydalis lateralis* was reported as “Chine, environs de Péking” (PIC, 1939) and followed as “Beijing” (ZHOU *et al.*, 1988; HUA, 2002). However, the “Trappe” written on the label was ignored. In the “Étapes des Voyages du P. LICENT (1914–1937)”, under the year 1930, “7 VI la Trappe (2 journées 1/2 à l’ouest de Péking)” was explained as “Yangjiaping (Hebei, SE. Huailai County); “21 VI Retour à la Trappe” was explained as “return to Yangjiaping”. Therefore, the “Trappe” indicates that the type locality should be Yangjiaping, which is located west of Beijing, belonging to Hebei Province, Zhuolu County, which is also part of Xiaowutaishan Nature Reserve, and the date of collection should be 1930. VI. 21. There was not available specimens from Beijing from

collections or literatures, but we did not delete Beijing from distribution list because it could distribute in Beijing for the same geographical and ecological conditions to the unknown localities.

Seven adult specimens of *N. lateralis* were collected during the field survey of Inner Mongolia Autonomous Region in the summer of 2010, of which four of them were found under the bark of a dead broadleaved tree in July 26 (Figs. 10 & 11). Though we carefully checked the dead tree, only several larvae of *Mesosa myops* (DALMAN, 1817) were dug out from its wood part instead of the expected *Necydalis* larvae. The tree thought to be the host plant of *N. lateralis* is more likely a kind of poplar (*Populus* sp.). One female was flying slowly in the open forest sparsely growing with the poplar in medium height. Another female was also flying slowly near the stream.

We reexamined the cabinet of IZAS and found two additional male specimens of *N. lateralis*, one of which collected from Ningxia Autonomous Region is a new provincial record of China.

Discussion

The true affinity of *Necydalis lateralis* is still uncertain since its taxonomic status has so far been only discussed in brief in the previous works. This species was compared with *N. sericella* GANGLBAUER, 1890 in the original description by PIC (1939), and treated as a member of the subgenus *Necydalisca* PLAVILSTSHIKOV in GRESSITT (1951).

Necydalis lateralis has such typical features of the nominotypical subgenus *Necydalis* s. str. as the robust body, more or less serrate middle segments of antennae, convex disc of pronotum, relatively thick hind tarsi, and cylindrical abdomen with rather distinct concavity on anal ventrite. These features are seldomly observed in the members of the subgenus *Necydalisca*. *Necydalis lateralis* has some intermediate features between two allopatric species, *N. (Necydalis) gigantea* KANO, 1933 from Japan and *N. (Necydalis) ulmi* CHEVROLAT, 1863 from Europe. They are common in the large head with developed tempora behind eyes, large lateral tubercles and almost smooth disc of pronotum which is densely fringed by golden yellow pubescence on sides, subquadrate elytra, and short anal ventrite in male with wide shallow concavity in apical half or at more length (CHEVROLAT, 1863; KANO, 1933; NIISATO, 2007; PIC, 1939; VILLIERS, 1978).

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要 約

新里達也・林 美英：*Necydalis lateralis* PICの再検討(鞘翅目カミキリムシ科)。———*Necydalis lateralis* は、PIC (1939)により“environs de Péking”(北京郊外)から記載されたホソコバナカミキリの大型種である。古くはGRESSITT (1951)による“E. Tomb, Hopei”(河北省)、その後は陝西省(ZHOU *et al.*, 1988)および内モンゴル自治区(LIN, 2013)のような中国東北地方から記録されているが、非常に稀なカミキリムシであるゆえ、これまでその分類学的扱いが十分に明らかにされていなかった。本研究では、パリ自然史博物館に所蔵されて

いる本種のタイプ標本に加え、中国科学院動物研究所蔵の標本群をもとに、本種の形態学的特徴を精査した。その結果、本種は GRESSITT (1951) がその所属を表明しているホソコバネカミキリ亜属 *Necydalisca* PLAVILSTSHIKOV ではなく、名義タイプ亜属の構成員であり、日本に分布するオニホソコバネカミキリ *Necydalis gigantea* KANO および欧州に分布するウルミホソコバネカミキリ *Necydalis ulmi* CHEVROLAT に、真の類縁関係が近いものであることが判明した。その類縁の根拠としては、頑強な体や鋸歯状の触角中間節、強く隆起する前胸背板、円筒形の腹部、太い後附節が指摘できるほか、とりわけ雄の腹部第7腹板の形状は比較される前2種によく似た形態をもっている。なお、本種のタイプ産地は原記載により“environs de Péking”とされてきたが、当時の史料を調査したところ、正しくは Yangjiaping (河北省) であることが明らかになった。したがって、本種の分布記録から北京市を除外することとした。

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