

The Genus *Necydalis* (Coleoptera, Cerambycidae) from Northern Vietnam, with Descriptions of Two New Taxa

北ベトナム産ホソコバネカミキリ属について

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インドシナからは、ホソコバネカミキリ属 *Necydalis* Linnaeus (カミキリムシ科甲虫)としては1種が記録されているにすぎなかったが、ここに北ベトナム産の5種を記録する。4種は基亜属に含まれるものであり、このうち1種は新種で、台湾の *N. (Necydalis) nanshanensis* Kusama や屋久島に固有の *N. (N.) yakushimensis* Kusama の系統に含まれ、1種は台湾の *N. (N.) hirayamai* Ohbayashi の新亜種としてそれぞれ記載される。また、北ベトナムから既知であった *N. (N.) strnadi* Holzschuh, これまで中国四川省のみから知られていた *N. (N.) marginipennis* Gressitt については再記載を行う。残りの1種は中国広西壮族自治区から最近記載された *N. (Eonecydalis) bicolor* Pu で、本種についても再記載される。

Abstract. Five species of the longicorn genus *Necydalis* from northern Vietnam are recorded: *N. (Necydalis) hirayamai flemona* subsp. nov., *N. (N.) marginipennis* Gressitt, *N. (N.) shinborii* sp. nov. which is surely related to *N. (N.) nanshanensis* Kusama from Taiwan and *N. (N.) yakushimensis* Kusama from N. Ryukyus, *N. (N.) strnadi* Holzschuh which is treated as a senior synonym of *N. nigra* Pu and *N. similis* Pu from Hainan, SE China, and *N. (Eonecydalis) bicolor* Pu from Guangxi, SE China. They are full-described and illustrated.

Key Words: *Necydalis*, Cerambycidae, new taxa, new synonyms, N. Vietnam

The genus *Necydalis* of brachelytrous cerambycid beetles are widespread in the Eurasian Continent and its neighboring islands and also along the West Coast of North America. The genus is usually split into four subgenera and has so far been known to include about thirty-five species. Although the most members of the genus distribute in Asia, only one species, *Necydalis strnadi* Holzschuh (1989, p.156, fig.13) from northern Vietnam, has hitherto been known from the Indochina Region. Recently, Pu (1992) described five species from the Chinese territory near Indochina; cf. *N. nigra* and *N. similis* from Hainan, *N. inermis* from Gansu and Qinghai, *N. bicolor* from Guangxi, and *N. maculipennis* from Xizang (Tibet). In any previous reports, the

faunal solution of *Necydalis* in Indochina may still be very poor. In the recent field investigation in northern Vietnam, we were able to obtain a rather lot of specimens of *Necydalis*. After careful examination, it was clear that these Vietnamese specimens contained distinct five species including two new taxa.

Three previously known species are *N. strnadi* Holzschuh, *N. marginipennis* Gressitt and *N. bicolor* Pu. *Necydalis strnadi* seems very peculiar in having the wholly blackish body, though it has close relationship with *N. moriyai* from the Ryukyus of Southwest Japan. *Necydalis marginipennis* was originally described from Sichuan and is first introduced to the Indochinese fauna. Though this

species has the lateral tubercles on pronotum, it is similar to *N. esakii* Miwa et Mitono and *N. mizunumai* Kusama from Taiwan in some other characters. Another species, *N. bicolor* belonging the subgenus *Eonecydalis*, has close relationship to *N. formosana* from Taiwan and may be regarded as a geographical race of the latter species.

Two new taxa are also very interesting in the zoogeographical viewpoint. They have more or less relationships to the Taiwanese fauna. *Necydalis shinborii* sp. nov. is actually the same group of *N. nanshanensis* Kusama from Taiwan and *N. yakushimensis* Kusama from Yakushima I. of the Ryukyus. They agree with such the basal characters as the broad and voluminous head and pronotum, the thickened antenna, and short and broad elytra. Another is a subspecies of *N. hirayamai* Ohbayashi occurring in central Taiwan. The faces of two populations are closely related to each other, however, clearly separable especially in the coloration of elytra, abdomen and legs and the conformation of head, pronotum and abdomen.

As was writing above, the *Necydalis* fauna of northern Vietnam is very similar to that of Taiwan and also to that of the Ryukyus of Southwest Japan. The members of three different areas are basically contained by common species groups. This fact suggests an example of faunal similarity between these areas.

Before going further details, we wish to express our hearty thanks to Drs. Masanobu Kubota and Akiko Saito, Messrs. Takao Arai, Kazuhiro Ishida, Masao Ito, Haruki Karube, Nobuhiko Katsura, Kunio Kume, Tetsuro Mizunuma, Masao Nakagome, Shin-Ichi Nakamura and Toyohiko Shinbori, and Mrs. Sachiyo Karube, for supplying with materials and helps in the field investigations. Thanks are also due to Prof. Dr. Masataka Sato and Dr. Shuhei Nomura for reexamining the type series of the Chinese *Necydalis* species deposited in the Smithsonian Institute, Washington DC, and the Academia Sinica, Beijing, respectively, and to Mr. Toru Shimomura for offering photographs of the holotype of *Necydalis strnadi*.

Necydalis (Necydalis) hirayamai flemonaea subsp. nov.
(Figs. 1, 8-12)

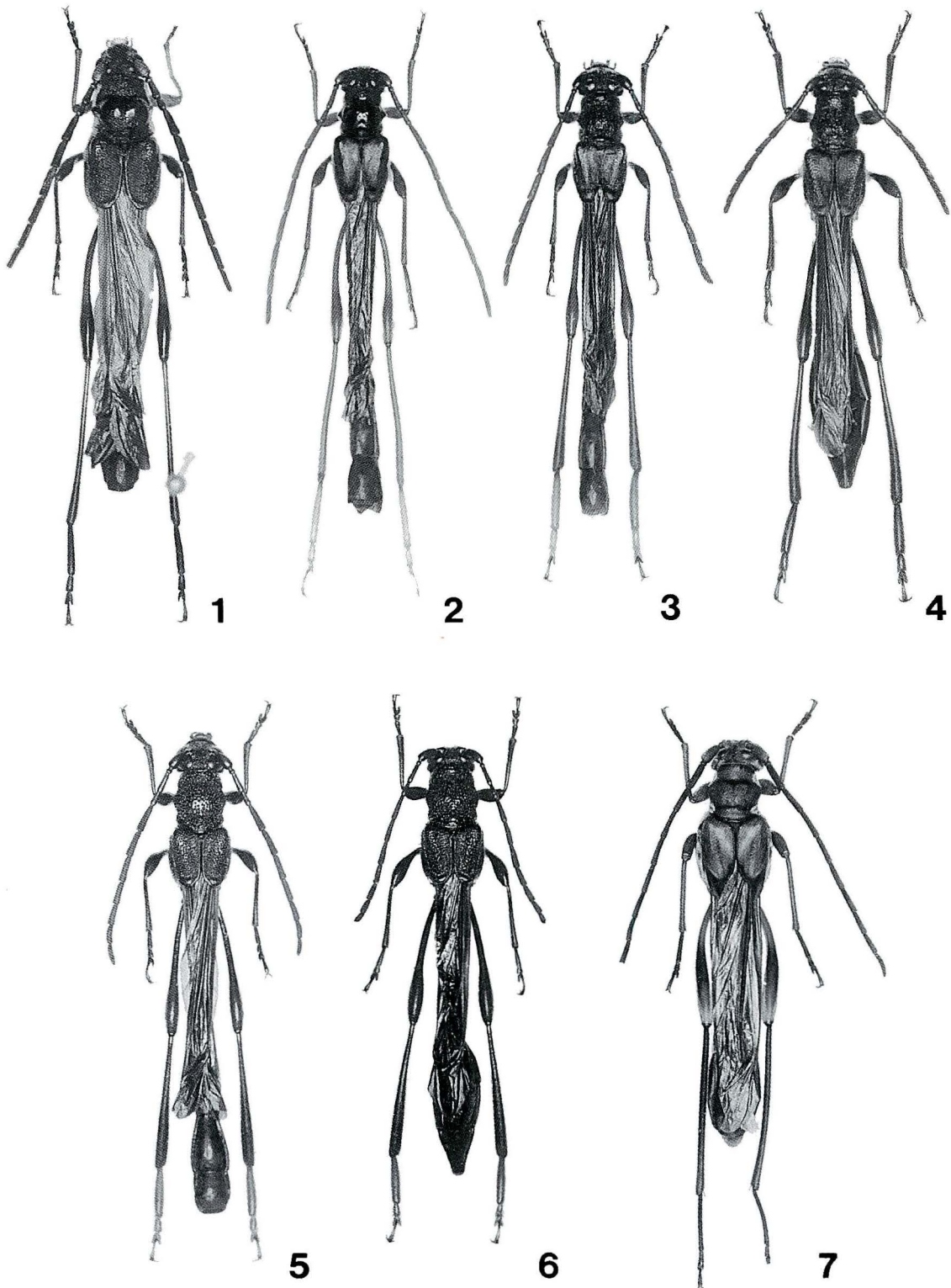
Male. Generally allied to the nominotypical subspecies from Taiwan, but apparently differs from that in the following characteristics:

Body reddish brown to red, densely clothed with deep golden yellow hairs or pubescence; antennal segments 1-4 largely yellowish red, often blackish at apices of 3rd and 4th, the remainder black; elytra without blackish area (apical parts blackish in the

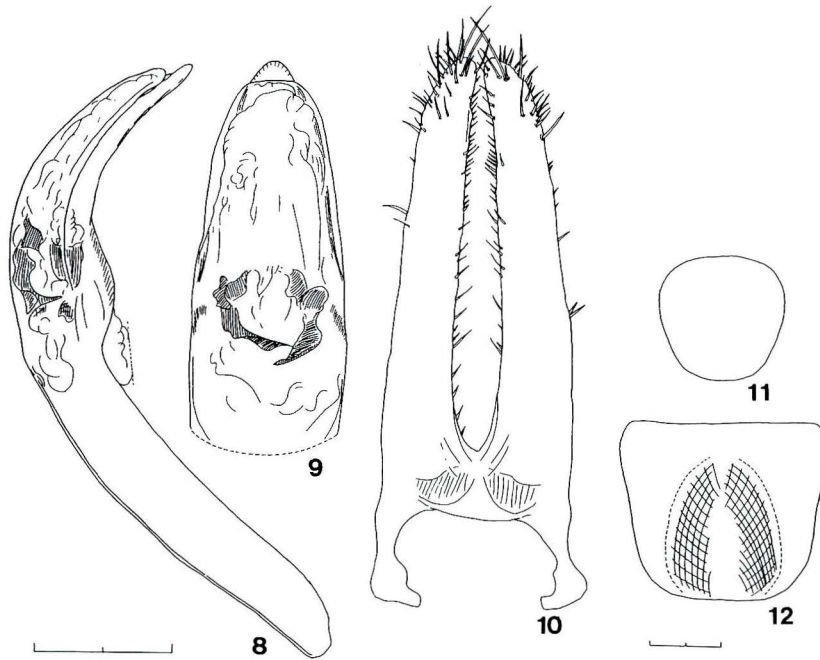
nominotypical subspecies); naked portions of hind wings transparently reddish yellow in basal 2/3, the remainder testaceous; legs with all tarsi, apices and external sides of mid tibiae, apical 3/4 of hind tibiae and clavate parts of hind femora blackish (almost blackish except for fore and mid femora and apices of all tibiae in the nominotypical subspecies); abdomen blackish, with segment 3 light testaceous to brown except for blackish apex (blackish except for basal half of 3rd light testaceous in the nominotypical subspecies).

Head relatively small, with a median deep and distinct groove running from frontoclypeal suture to occiput (indistinct at/near occiput in the nominotypical subspecies); frons as wide as long; eyes not so large; genae just before eyes medially excavate in profile; tempora narrow, surely narrower than gena just below eye. Antennae a little exceeding the apex of abdominal tergite 3. Pronotum as long as or faintly longer than wide, coarsely, densely and deeply punctate excepting median callosities (more finely, sparsely and shallowly so in the nominotypical subspecies); base narrower than apex (1:1.1-1.27); disc swollen, shallowly concave along midline, the swellings more distinct than in the nominotypical subspecies. Scutellum slenderly tongue-shaped with broadly rounded apex, distinctly reflexed laterally. Elytra slightly longer than pronotum (1.02-1.13:1), just as wide as long (about 0.9 times in the nominotypical subspecies), more coarsely and deeply punctate than in the nominotypical subspecies, a little swollen near each apex which is broadly rounded; sutures gradually and arcuately dehiscent in apical about 1/2 - 3/7, then rather rapidly so apicad; sides expanded towards basal 1/3, gradually attenuate posteriad in basal 1/3 - 2/3, then arcuately convergent apicad. Hind wings not reaching the apex of abdominal tergite 7 (a little exceeding that in the nominotypical subspecies). Abdomen slenderer than in the nominotypical subspecies; sternite 3 about 3.3 times as long as apical width (2.9 times in the nominotypical subspecies); 5th slightly wider than long, with a shallow concavity along midline, apparently arcuate at sides (slightly so in the nominotypical subspecies); 7th about 1.15 times as wide as long (1.3 times in the nominotypical subspecies), widely parabolically concave (more narrowly so in the nominotypical subspecies); last tergite short, about as wide as long, widely rounded at apex which is faintly excavated at the middle (bilobed in the nominotypical subspecies). Hind legs somewhat slenderer; femora more weakly clavate behind apical 2/5, with lateral aspects almost impunctate or sparsely punctate and shiny, especially at apical parts (densely punctate in the nominotypical subspecies); tibiae straight; tarsi not so inflated.

Genitalia stout, relatively small. Median lobe light



Figs.1-7. *Necydalis* spp. from N. Vietnam. 1: *N. (N.) hirayamai flemonaea* subsp. nov., ♂(holotype); 2: *N. (N.) marginipennis* Gressitt, ♂; 3: *N. (N.) shinborii* sp. nov., ♂(holotype); 4: ditto, ♀ (paratype); 5: *N. (N.) strnadi* Holzschuh, ♂; 6: ditto, ♀; 7: *N. (Eonecydalis) bicolor* Pu, ♂.



Figs. 8-12. *Necydalis (Necydalis) hirayamai flemonaea* ssp. nov., male abdomen and genitalia. 8: median lobe, lateral view; 9: ditto, apical part in dorsal view; 10: paramere, dorsal view; 11: abdominal tergite 8, dorsal view; 12: abdominal sternite 7, ventral view. Scale 0.5 mm for Figs. 8-10 and 1 mm for Figs. 11-12.

amber in colour, with apical part short and fully bent ventrad; ventral plate parabolic with rounded apex. Tegmen deep amber in colour, longer than median lobe (4.3:4), fully bent ventrad; lateral lobes slender, slightly attenuate towards each apex which is narrowly rounded, with each basal ridge scarcely projected.

Body length: 25-30mm, width: 4.5-5.8mm.

Female. Unknown.

Type series. Holotype: ♂, Mt. Tam Dao, Vinh Phu Prov., N. Vietnam, 12. VII. 1990, T. Mizunuma leg. Paratypes: same locality as the holotype: 1 ♂, Mt. Tam Dao, 5. V. 1995, local col. leg.; 1 ♂, 20. V. 1995, same; 3 ♂♂, 1-18. VI. 1995, same; 1 ♂, 5. VII. 1995, same.

The holotype is preserved in the collection of the Kanagawa Prefectural Museum of Natural History, Odawara, and paratypes are in the private collection.

Distribution. N. Vietnam.

Notes. As was shown above, this new subspecies is apparently different from the nominotypical subspecies (Ohbayashi, 1948, p.13) distributed in the montane zone of central Taiwan especially in the coloration, distinct and deep median groove on vertex, longer elytra than pronotum, and slenderer abdomen.

Necydalis (Necydalis) marginipennis Gressitt
(Figs. 2, 13-17)

Necydalis marginipennis Gressitt, 1948, Lingnan Sci. J., 22, p.47; type locality: Suifu, Sichuan.—Hua,

1982, Check List Longic. Beetl. China, p.16.

Necydalis (s. str.) marginipennis: Gressitt, 1951, Longicornia, 2, p.125

Male. Slender and elongate species. Body black though appendages and abdomen reddish brown, moderately shiny, densely clothed with pale yellow or brown pubescence; head black, with mouth parts except for black mandibular tips and clypeal base and yellowish brown labrum and palpi dark reddish brown, with pale golden yellow pubescence on frons; antennae reddish brown, becoming paler distally; pronotum black, with pale golden yellow pubescence on sides and around discal callosity, and also with rather short pale hairs on sides; scutellum black, with pale yellow pubescence near apex; elytra dark reddish brown with broad black margins, pubescent along external margins; hind wings yellowish brown, iridescent, with dark brown veins; undersides of thoraces black, with dense pale golden yellow hairs near sides; abdomen reddish brown, infuscate on the middle of sternite 3 and bases of sternites 4-7, with dense pale yellow pubescence though the pubescence becomes dark brown on apical two sternites; legs reddish brown, infuscate on dorsal sides of tarsi and tibiae, coxae black, hind tarsi pale yellowish brown.

Head apparently wider than pronotal apex (5:4) and narrower than the widest point of pronotum across lateral swellings, coarsely and closely punctate; frons

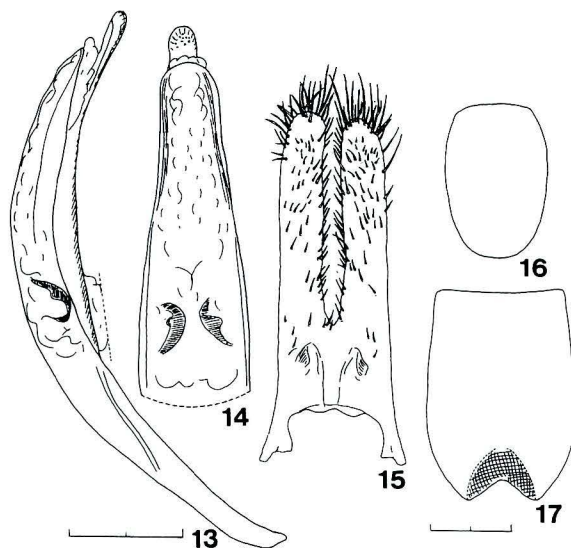
wider than long, provided with a very deep median groove extending to occiput, and frontoclypeal suture also deep; eyes weakly prominent, with lower lobes 2.3 times as deep as genae. Antennae long and somewhat stout, reaching the apex of abdominal tergite 4, relative lengths of segments as follows: 3.4:1.3:8:2.9:5.5:6.0:6.0:5.7:5.2:5.2:5.5. Pronotum relatively broad, provided with a pair of subtriangular swellings on middle, as long as wide, with base wider than apex (5:4); disc strongly convex and shiny near middle, subtriangularly raised on middle near base, scabrously punctate though finely so on basal half. Scutellum trapezi-formed, scabrously punctate, concave along midline, with weakly emarginate apex. Elytra about 1.33 times as long as pronotum, 1.2 times as long as the humeral width, coarsely and somewhat scabrously punctate, partly with large punctures along sides; sides with moderately prominent humeri, almost straightly narrowed to apical 1/7, then rounded with small sutural angles; sutures almost straightly dehiscent in apical half; disc convex though almost flattened above, strongly thickened in apical 1/7. Hind wings attained to the apical margin of abdominal tergite 6. Prosternum coarsely punctate though closely so near middle. Meso- and metathoraces scabrously punctate; metasterna strongly convex and expanded, closely and densely punctate near middle. Abdomen strongly elongate, with depressed sides of sternites; sternites 3-5 thickened at each apex, closely and shallowly punctate; sternite 5 as long as sternite 4, dilated apicad, punctate as on the preceding two sternites; sternite 6 moderately broad, weakly dilated apicad, finely and closely punctate, with a blunt projection at middle of apical margin; last sternite gently arcuate at sides, 1.75 times as long as basal width, subparallel-sided in basal 4/7 then narrowed to apex, semicircularly excavated in apical 2/7, with wide and subtriangular apical emargination; last tergite long and subquadrate. Legs long and slender; hind femora moderately compressed, clavate in apical 3/7; hind tibiae slightly sinuate and reaching the middle of last abdominal sternite.

Median lobe of male genitalia gently arcuate in profile; ventral plate bluntly pointed at apex, distinctly longer than dorsal plate; dorsal plate weakly sinuate at sides, with rounded apex. Tegmen with parameres elongate and subparallel-sided, rounded at each apex, provided with short setae along inner sides and also with irregular-sized ones at apices.

Body length: 24.5 mm, width: 3.2 mm.

Specimen examined. 1 ♂, Mt. Tam Dao, Vinh Phu Prov., N. Vietnam, V. 1995, local col. leg.

Distribution. W. China (Sichuan), N. Vietnam (new record).



Figs. 13-17. *Necydalis (Necydalis) marginipennis* Gressitt, male abdomen and genitalia. 13: median lobe, lateral view; 14: ditto, apical part in dorsal view; 15: paramere, dorsal view; 16: abdominal tergite 8, dorsal view; 17: abdominal sternite 7, ventral view. Scale 0.5 mm for Figs. 13-15 and 1 mm for Figs. 16-17.

Notes. *Necydalis marginipennis* is unique in the lateral tubercles of pronotum and does not seem to have any direct relationship with the other members of the subgenus. This species is similar in general appearance to *N. esakii* Miwa et Mitono (1937, p.161, pl.9) and *N. mizunumai* Kusama (1974, p.51, pl.1, fig.1), but two latter ones have no pronotal tubercles.

Necydalis (Necydalis) shinborii sp. nov.

(Figs. 3-4, 18-22)

Male. Body black, moderately shiny, sparsely clothed with pale yellow to whitish erect hairs on head and thorax, densely so in metathorax; mouth parts except for mandibles yellowish brown; antennae except for blackish scapes brownish, sometimes more or less darkened or blackish in segments 2-4 or 5; elytra reddish brown, usually blackish or darkened at apical, lateral and sutural portions, densely clothed with pale yellowish to whitish recumbent or semirecumbent pubescence near sutural areas, very sparsely with erect hairs in the remainder; abdomen reddish brown, densely clothed with semirecumbent golden yellow pubescence, with sternite 3 blackish at underside and 4 darkened at basal half of underside; legs brownish, except for yellowish hind tarsi and blackish basal portions of all femora (especially on beneath), more or less darkened in fore and mid tarsi.

Head apparently wider than the apex of pronotum, slightly so than the widest, densely and roughly

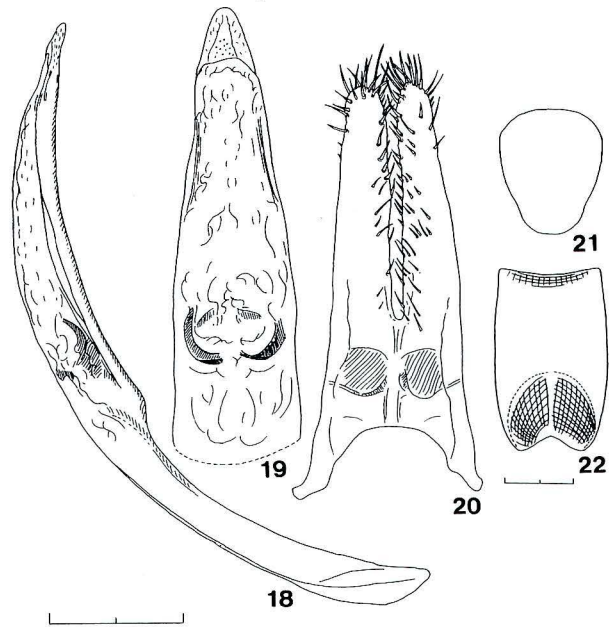
punctate; frons wider than long; eyes very large, distinctly prominent, with upper lobes fully broad, with lower ones almost circular, about 1.8-2.7 times as deep as genae below them. Antennae rather inflated, reaching the apex of abdominal tergite 3; relative lengths of segments of the holotype as follows: 3.7:1:3.3:2.3:4.8:4.9:4.9:4.4:3.9:3.7:4.3; terminal segments semisegmented at apical 1/4. Pronotum long, usually about 1.13-1.15 times as long as wide, coarsely and deeply punctate, constricted at apical 1/4 and before base, widest just the middle, with base about 1.05-1.1 times as wide as apex; discal raising moderate. Scutellum triangular with rounded apex, almost as long as wide. Elytra usually about 1.1-1.16 times as long as wide, strongly depressed at inner sides, obliquely reflexed upwardly before apices, densely clothed with moderate-sized punctures except for apical raisings which are clothed with minute dense punctures; sutures dehiscent in less than apical half or gradually separated posteriad; each apex rather narrowly rounded, often with inner angle obtusely angulate. Hind wings testaceous, reaching the base of abdominal tergite 6. Abdomen slender; each sternite gradually becoming broader and shorter posteriad; sternite 6 usually about twice longer than width, though about 2.5 times in small-sized individual; sternite 7 flat ventrally, nearly quadrate, about 1.6-1.7 times as long as wide, abruptly and semicircularly excavated in apical 2/5 - 1/3, deeply and triangularly or arcuately emarginate at apex; tergite 7 fully inflated, the vertical section of apex being circular; tergite 8 longer than wide (1.4:1), widely rounded at apex. Hind legs long though not so slender; femora clavate in apical about 2/5; tarsi fully inflated, with segment 1 about 1.6-1.8 times as long as the following two combined.

Genitalia fundamentally similar in shape to those of *N. nanshanensis*. Median lobe slender, longer than in *N. nanshanensis*, moderately arcuate in profile, with apical portion straightly convergent towards apex which is rather broadly rounded. Tegmen longer than median lobe (4.4:3.8), stouter than in *N. nanshanensis*; each basal ridge of lateral lobes distinctly projected anteriad.

Body length: 18.5-27mm, width: 2.5-3.6mm.

Female. Body above largely reddish; pronotum bloody red except for black apical and basal margins; antennae almost reddish brown; elytra reddish brown, except for sutural margins, a large quadrate maculation of posterior middle and a pair of lateral ones (often disappeared), both of which are darkened or blackish; abdominal segments almost black excepting apical and lateral areas of 3rd and 7th largely reddish brown; legs strongly with reddish tinge.

Head about as wide as the maximum width of



Figs. 18-22. *Necydalis (Necydalis) shinborii* sp. nov., male abdomen and genitalia. 18: median lobe, lateral view; 19: ditto, apical part in dorsal view; 20: paramere, dorsal view; 21: abdominal tergite 8, dorsal view; 22: abdominal sternite 7, ventral view. Scale 0.5 mm for Figs. 18-20 and 1 mm for Figs. 21-22.

pronotum; eyes smaller than in male, lower lobes about 1.3-1.5 times as deep as genae below them. Antennae scarcely reaching the middle of abdominal tergite 3. Pronotum and elytra more coarsely punctate than in male. Hind wings usually exceeding the apex of abdominal tergite 6. Abdomen distinctly shorter than in male, with sides sinuately broadened apicad, widest at apex of 5th or base of 6th; 5th and 6th wider than long; 7th flat in apical 3/4, longitudinally triangular with rounded apex in ventral view.

Length: 21.5-28mm, width: 3.3-4.4mm.

Type series. Holotype: ♂, Mt. Tam Dao, Vinh Phu Prov., N. Vietnam, 16-23. V. 1991, M. Takakuwa leg. Paratypes: 1 ♂, same data as the holotype; same locality as the holotype: 1 ♂, 14-17. V. 1992, M. Kubota leg.; 1 ♀, 23. V. 1993, H. Karube leg.; 3 ♂♂, 3. V. 1994, H. Karube leg.; 1 ♂, same, S. Nirasawa leg.; 3 ♂♂, 4. V. 1994, H. Karube leg.; 1 ♂, same, S. Nirasawa leg.; 1 ♂, 8. V. 1994, H. Karube leg.; 4 ♂♂, 2 ♀♀, 11. V. 1995, local col. leg.; 4 ♂♂, 1 ♀, 19. V. 1995, local col. leg.; 1 ♂, 21. V. 1995, A. Saito leg.; 1 ♂, V. 1995, local col. leg.; Cao Bang, N. Vietnam: 1 ♂, 17. V. 1995, K. Kume leg.; 1 ♀, 30. V. 1995, M. Ito leg.

The holotype is preserved in the collection of the Kanagawa Prefectural Museum of Natural History, Odawara, and paratypes are largely in the collectors' private collection.

Distribution. N. Vietnam.

Notes. This new species is closely related to *N. (N.) nanshanensis* Kusama (1974, p.52, pl.2, figs.6-9) from Taiwan, but distinctly differs from that in the following points: pronotum coarsely and densely punctate (finely and sparsely so in *N. nanshanensis*); elytra apparently longer than wide (wider than long in *N. nanshanensis*), very densely and coarsely punctate (more sparsely and finely so in *N. nanshanensis*); abdominal sternite 7 of male deeply emarginate at apex (shallowly so in *N. nanshanensis*), with apical concavity larger and more abruptly depressed; male legs stouter, with 1st hind tarsi less than twice length of the following two combined (about twice in *N. nanshanensis*); male genitalia with slenderer median lobe and shorter lateral lobes.

The specific name is dedicated with sincere gratitude to Mr. Toyohiko Shinbori, the president of the Kanagawa Nature Conservancy, Yokohama, from whom many entomologists including the present authors have received various supports for studying insects a great deal.

Necydalis (Necydalis) strnadi Holzschuh

(Figs. 5-6, 23-29)

Necydalis strnadi Holzschuh, 1989, *Koleopt. Rdsch.*, 59, p.156, fig.13.

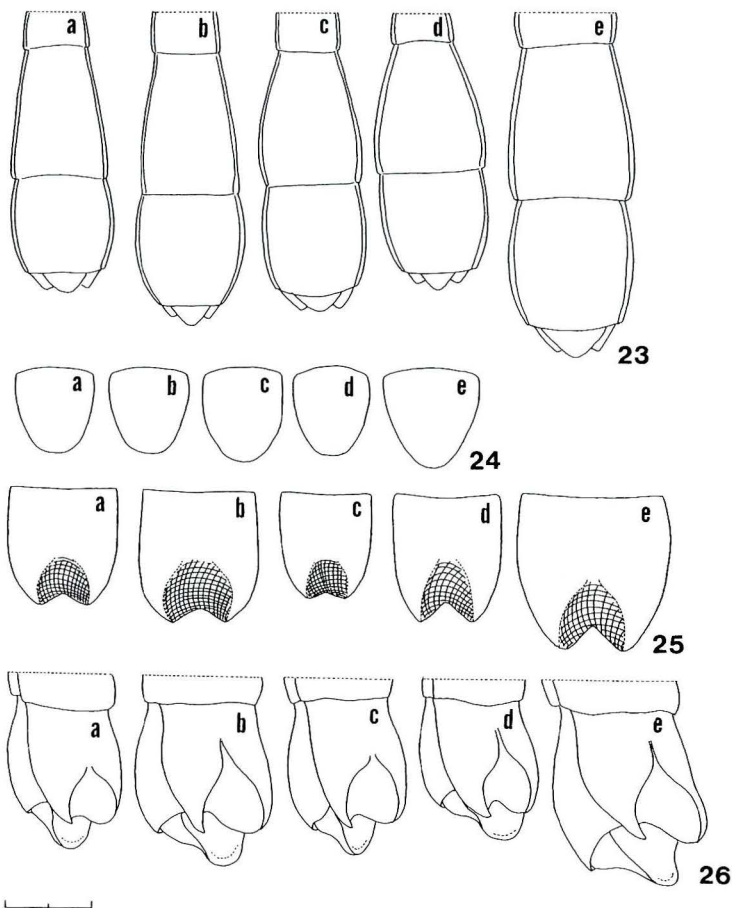
Necydalis nigra Pu, 1992, *Acta ent. sin.*, 35, pp.217-218, fig. 1; type locality: Jiangfengling, Hainan. **Syn. nov.**

Necydalis similis Pu, 1992, *Acta ent. sin.*, 35, p.218, fig. 2; type locality: Jiangfengling, Hainan. **Syn. nov.**

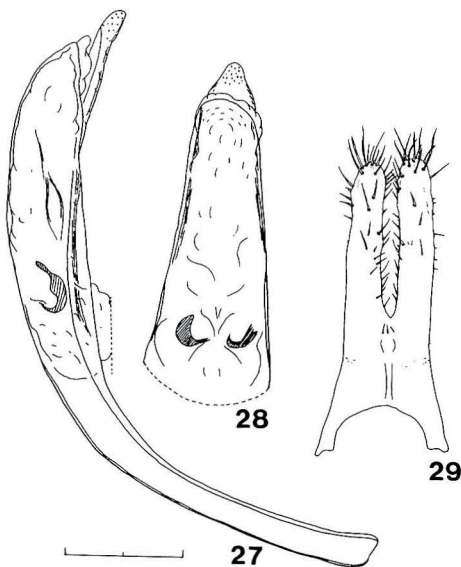
Male. Body black, shiny, with brownish abdomen and legs, densely clothed with erect pale brown hairs; head black, with mouth parts except for mandibles yellowish brown to dark yellowish brown, clypeus with brownish apical margin and with recumbent silver pubescence at base, and also with erect brownish hairs on posterior part and underside; antennae blackish brown, usually reddish on basal two segments, basal four segments shiny and the remainder dull; pronotum black, rather densely with brownish erect hairs and partly with silver pubescence on sides near basal margin; scutellum black, thinly pubescent; elytra black, with silver pubescence along sutures, sparsely with erect brownish hairs on sides; hind wings translucent blackish brown, infuscate on apical half, with dark yellowish brown veins; undersides of thoraces black, rather densely with erect blackish brown hairs on sides, and partly with silver pubescence at mesoepimera, on posterior part of metasternum and apices of metaepisterna; abdomen dark reddish brown though sometimes blackish according to individuals, densely with minute golden yellow pubescence on sterna and dense blackish brown pubescence on tergites 6-7; legs

dark reddish brown with black coxae and trochanters, usually blackish on the peduncle parts of hind femora, tibiae dark reddish brown excepting middle parts of hind ones, hind tarsi always yellowish brown.

Head wider than the apical width of pronotum (11:9) and almost as wide as or slightly narrower than the widest point of pronotum, coarsely and somewhat scabrously punctate; frons a little wider than long, provided with a median groove not so deep, frontoclypeal suture deep; clypeus provided with a few punctures; eyes moderately prominent, with lower lobes 2.3 times as deep as genae. Antennae stout and fairly short, almost reaching the apex of abdominal tergite 3, with segments 5-10 slightly dilated externally at each apex, relative lengths of segments as follows: 5.3:1.4:9:3.3:6.7:6.7:6.4:5.7:5.5:4.6:5.3. Pronotum relatively broad, slightly longer than wide (8:7), with base wider than apex (6:5), widest at middle; disc strongly convex, transversely and moderately impressed near base and apex, scabrously and closely punctate throughout, though sometimes provided with 2-3 impunctured small areas near centre of disc. Scutellum trapeziformed, scabrously punctate, strongly raised at sides. Elytra a little longer than pronotum, almost as long as wide, coarsely and somewhat closely punctate, each with distinctly marginate throughout; sides with moderately expanded humeri, almost straightly narrowed to apices which are rounded and provided with indistinct sutural angles; sutures arcuately dehiscent in apical half; disc convex, distinctly depressed along sutures and at apical 7/9, and also with distinct swellings at apices. Hind wings slightly extending the base of abdominal tergite 6. Prosternum strongly and transversely ridged near apical margin, and with a small callosity near apex of prosternal process. Meso- and metathoraces closely and scabrously punctate, though the punctures are rather weak on metasternum. Abdomen not so long, strongly expanded towards apical segment, hardly punctate; sternites 3-4 elongate and thickened at each apex, the former sternite nearly 1.5 times as long as the latter; sternite 5 arcuately dilated apicad, a little more than twice of the apical width; tergite 6 strongly expanded apicad though the shape is usually varied according to individuals; tergite 7 broad barrel-shaped; tergite 8 tongue-shaped, strongly convex and bluntly produced in profile; sternite 7 as long as or slightly longer than wide, gradually and arcuately narrowed apicad, deeply concave and arcuately excavated in apical half or rather deeply concave and triangularly excavated in apical 2/5. Legs stout and moderate in length; hind femora rather distinctly clavate in apical 9/16; hind tibiae straight, thickened apically, barely extending the apex of abdominal sternite 6.



Figs. 23-26. *Necydalis (Necydalis) strnadi* Holzschuh, variation of male abdomen, each alphabet a-e shows same individual. 23: apical segments, dorsal view; 24: tergite 8, dorsal view; 25: sternite 7, ventral view; 26: last segments, ventro-lateral view. Scale 0.5 mm.



Figs. 27-29. *Necydalis (Necydalis) strnadi* Holzschuh, male genitalia. 27: median lobe, lateral view; 28: ditto, apical part in dorsal view; 29: paramere, dorsal view. Scale 0.5 mm.

Median lobe of male genitalia moderately arcuate in profile; dorsal plate well convex near apex, with sides rather straightly narrowed apicad; ventral plate distinctly longer than dorsal plate, with blunt extremity. Tegmen with lateral lobes moderately elongate, nearly parallel-sided, rounded at apices, provided with rather long setae near apices and also short ones along inner sides.

Body length: 19.5-30.5 mm, width: 2.5-4.5 mm.

Female. Body broad with fairly short and thick appendages. Colour almost as in male, though abdomen is dark reddish brown excepting black apical three segments. Antennae barely reaching the middle of abdominal tergite 3, distinctly reduced in apical four segments. Pronotum voluminous, a little longer than wide, with base almost as wide as apex. Elytral humeri hardly produced. Hind wings reaching the base of abdominal tergite 7. Abdomen with strongly ample apical three segments; sternite 5 remarkably and arcuately dilated apically, about 1.3 times as long as the basal width which is a little more than $\frac{2}{3}$ of the apical width; sternite 6 about 1.08 times as long as the basal width, arcuate at sides; terminal

sternite triangularly pointed with narrow subtruncate apex. Hind tibiae nearly reaching the abdominal apex.

Body length: 21-24 mm, width: 3.1-3.6 mm.

Specimens examined. Mt. Tam Dao, Vinh Phu Prov., N. Vietnam: 3 ♂♂, 16-23. V. 1991, M. Takakuwa leg.; 1 ♂, same, S. Nakamura leg.; 1 ♂, 14-17. V. 1992, M. Kubota leg.; 1 ♂, same, S. Nakamura leg.; 1 ♂, 21. V. 1993, H. Karube leg.; 1 ♂, 2. VI. 1993, H. Karube leg.; 2 ♂♂, 3. V. 1994, H. Karube leg.; 4 ♂♂, 2 ♀♀, V. 1994, local col. leg. 18 ♂♂, 4 ♀♀, V. 1995, local col. leg.

Distribution. Hainan, N. Vietnam.

Notes. Though considerably differing in body colouration, this species doubtlessly bears a close relationship with *N. moriyai* Kusama (1970, p.73, pl.7, figs.1-6) from Amami-ohshima Island of the Ryukyus, Southwest Japan, as is indicated by the similarities in the robust and short body with stout appendages and the strongly expanded apical segments of male abdomen. These two species seem to form a species group within the subgenus *Necydalis*, and stand by the group of *N. nanshanensis* and its allies.

Necydalis strnadi shows distinct variation in the

shape of male abdomen. In some individuals, the abdominal segment 6 is expanded and strongly dilated posteriad, and the sternite 7 is strongly excavated apicad and triangularly emarginate at apical margin, while in the other ones have the weakly dilated abdominal segment 6 and rather shallow apical emargination in sternite 7. This is, of course, infraspecific variation, since the shape of male abdomen shows slight morphological cline, and also we can not find no other external and genitalic differentiations. As was already shows in above lines, this species has two junior synonyms, *N. nigra* and *N. similis*, both of which were described by Pu (1992) from Hainan. According to the examination of photographs of all the type series, two Pu's species are determined as the individual variations of the Vietnamese species. By this reason, *N. nigra* and *N. similis* should be treated as junior synonyms of *N. strnadi*, since the last-named one has priority over the others.

Necydalis (Eonecydalis) bicolor Pu

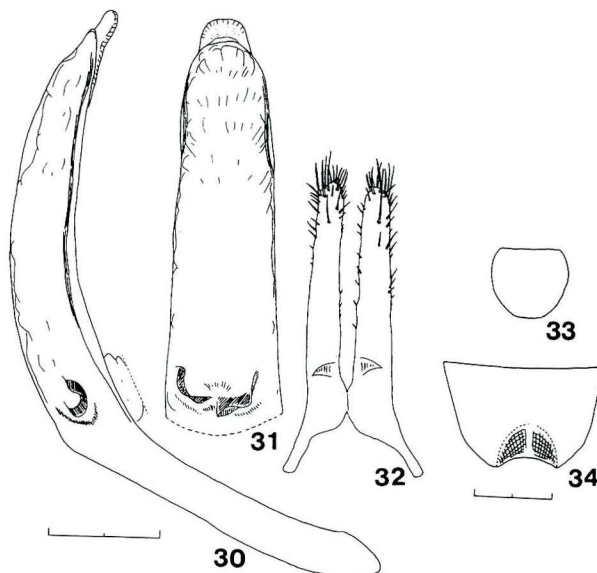
(Figs. 7, 30-34)

Necydalis bicolor Pu, 1994, Acta ent. sin., 35, p.219, fig.3; type locality: Longsheng, Gungxi.

Male. Externally distinguished from *N. formosana* and its local populations by the stout body form with voluminous head and the extremely long hind legs.

Body dark yellowish brown, not so lustrous, clothed with dense pale golden pubescence; head dark yellowish brown, with black mandibular apices, densely clothed with pale golden pubescence on anterior part; antennae dark brown except for reddish basal two segments, densely with minute dark brown pubescence; pronotum dark yellowish brown, black at apical and basal margins and around discal callosity, densely with recumbent brown pubescence and also with pale golden one near apical and basal margins; elytra yellowish brown, brownish along lateral and basal margins, at apices and midlines, densely with recumbent pale golden pubescence; hind wing yellowish brown with infuscate veins; undersides yellowish brown, more infuscate on the sides of abdominal sternites 3-4 and most of 5-7, with golden yellow pubescence; middle parts of hind femora, hind tibiae and all tarsi infuscate.

Head voluminous, strongly produced laterally just behind eyes, distinctly wider than the apex of pronotum (6:4), as wide as the maximum width of pronotum, scabrously and shallowly punctate; frons wider than long, with thick lateral carinae; eyes moderately prominent, with lower lobes about twice depths of genae. Antennae stout and moderate in length, reaching the apex of abdominal tergite 4; relative lengths of segments as follows: 4.3:1.5.3:5.8:5.5:5.5:5.5:5.0:4.5:4.0:4.5. Pronotum large, voluminous, as long



Figs. 30-34. *Necydalis (Eonecydalis) bicolor* Pu, male abdomen and genitalia. 30: median lobe, lateral view; 31: ditto, apical part in dorsal view; 32: paramere, dorsal view; 33: abdominal tergite 8, dorsal view; 34: abdominal sternite 7, ventral view. Scale 0.5 mm for Figs. 30-32 and 1 mm for Figs. 33-34.

as wide, closely punctate, with base wider than apex (4:3), widest just before middle; disc strongly convex, distinctly and transversely depressed near apex and base, with a transverse median callosity which is inconspicuously divided along midline. Scutellum large, subtriangular, with narrowly truncate apex. Elytra about 1.5 times as long as pronotum, 1.2 times as long as the humeral width, shagreened and sparsely provided with shallow punctures; sides arcuately and gently narrowed to apices; sutures sinuately dehiscent in apical 3/5, with bluntly hooked apices; disc convex, longitudinally depressed at each midline, weakly concave near sutures just behind scutellum, and strongly turned up near apices. Undersides of thoraces shagreened in most parts. Abdomen relatively broad, rudimentally punctate, with sides subparallel in basal segment, gently dilated apicad in sternite 4, and strongly dilated in the following two; terminal sternite transverse, 0.67 times as long as basal width, broadly arcuate in apical 1/4 of sides, with moderate apical emargination, with disc strongly and semicircularly excavated near apex; terminal tergite trapezi-formed. Legs long and rather stout; each hind leg especially long, reaching the abdominal apex at apical 1/3 of tibia, with 1st tarsal segment 2.6 times as long as the following two combined.

Male genitalia basically similar to *N. formosana* but more slenderer and lightly sclerotized. Median lobe moderately arcuate in profile, not so convex in apical

lobe; ventral plate roundly truncate at apex. Tegmen with parameres elongate and weakly narrowed apicad, parallel-sided, with pointed each apex which is provided with numerous irregular-sized setae and also with a few short ones on sides.

Body length: 22-23 mm, width: 4.0-4.1 mm.

Specimens examined. 2 ♂♂, Mt. Tam Dao, Vinh Phu Prov., N. Vietnam, V. 1995, local col. leg.

Distribution. SE China (Guangxi Zhuangzu Zizhiqu), N. Vietnam (new record).

Notes. *Necydalis bicolor* was described as a full species based on a single female specimen collected from Longsheng of Guangxi Zhuangzu Zizhiqu, Southeast China. In spite of such external difference as the robust body with the exceedingly long hind legs, this species may be regarded as a geographical race of *N. formosana* Kano (1933, p.270). *Necydalis formosana* is known as a variable species both geographically and individually, and has three subspecies, *N. f. formosana* of Taiwan, *N. f. matsudai* of Kyushu, and *N. f. niimurai* of Honshu and Shikoku.

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