

Nosodendridae (Coleoptera, Derodontoidea) of the Indochinese Subregion

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Abstract Nosodendrid species of the Indochinese subregion were reviewed. A new species, *Nosodendron panense* sp. nov., is described, and four previously known species, *Nosodendron hispidum*, *N. nomurai*, *N. horaki*, and *Nosoglobulus wakaharai* are briefly redescribed. *Nosodendron hispidum* is newly recorded from Laos. A key to the species of the Indochinese subregion is provided.

Introduction

The family Nosodendridae contains 81 species in three genera (HÁVA, 2005, 2010; HISAMATSU *et al.*, 2011; YOSHITOMI, 2013), of which the most species-rich area is the Oriental Region where about 40 species are recorded. However, there are only 11 species known in the Indochinese subregion, i.e. Vietnam, Laos, Cambodia, Thailand and Myanmar.

In the present paper, the species recorded from the Indochinese subregion are reviewed, and a new species is described and four previously known species are redescribed.

Materials and Methods

General observations and dissections were made under a Leica MZ95 stereomicroscope. Microstructures of the dissected parts were studied in pure glycerine under an Olympus BH-2 compound microscope. After the observation, the dissected parts were mounted on the same card with the specimen. Photographs were taken under a Leica MZ95 and combined in Helicon® Focus ver. 4.70.5 Pro (Helicon Soft® Limited). Some structures were observed with a digital microscope HiROX KH-1300 and images were captured with the 2D measurement software SHX-13M ver. 2.9.0.

Morphological terminology follows LESCHEN and BEUTEL (2010). The apical parts of parameres of this family have 1–4 small setae (see also YOSHITOMI, 2013, fig. 12), which is a character indicating specific diagnosis. In the present paper, this character is newly called “apical seta(e)”.

The holotype and paratype are preserved in the Ehime University Museum, Matsuyama (EUMJ) and the National Museum of Nature and Science, Tsukuba (NMNST).

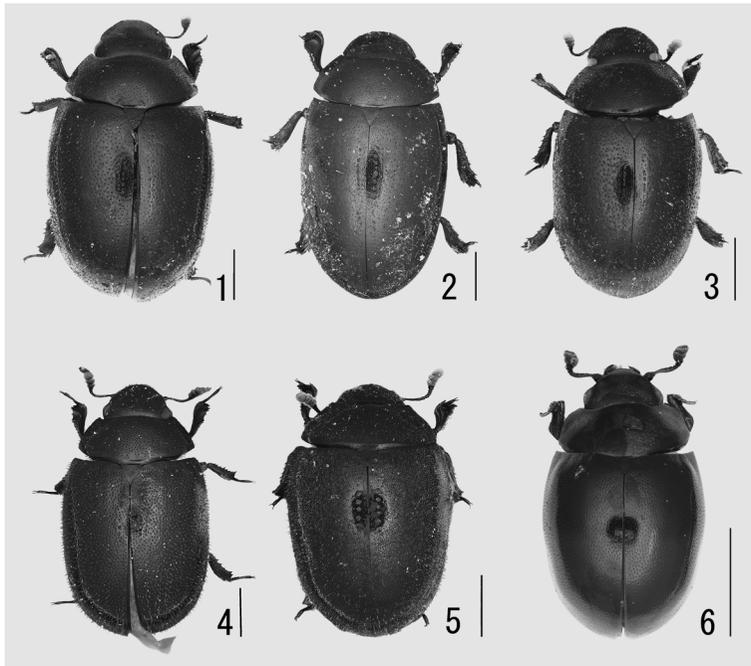
Morphological abbreviations used in measurement are as follows: EL — length of elytra in suture; EW — maximum width of elytra; PL — length of pronotum in median line; PW — maximum width of pronotum; TL — total length (PL+EL). The average is given in parenthesis after the range.

Taxonomy

Nosodendron hispidum CHAMPION, 1923

(Figs. 1, 7, 11, 15, 19, 23–31)

Nosodendron hispidum CHAMPION, 1923: 590; HÁVA, 2000: 58.

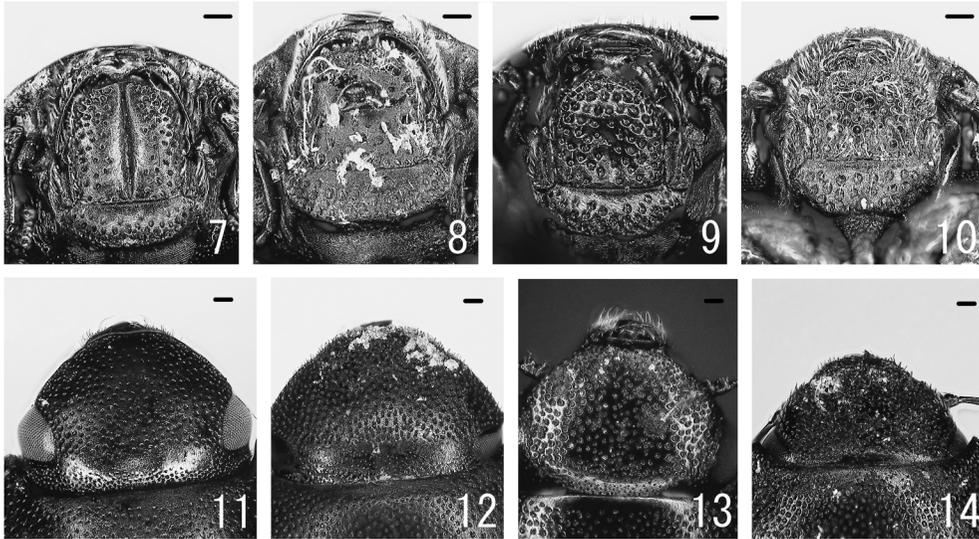


Figs. 1–6. Habitus of Nosodendridae. — 1, *Nosodendron hispidum*; 2, *N. nomurai*, holotype; 3, *N. nomurai* from Laos; 4, *N. horaki*; 5, *N. panense* sp. nov., holotype; 6, *Nosoglobulus wakaharai*, holotype. Scales 1.0 mm.

Specimens examined. Three males & one female (EUMJ), “[LA17] Tam Pha, Vientiane Prov., 1.VI.2013, N17 39.395 E102 26.017, 225 m, H. Yoshitomi leg.”; 3 exs. (EUMJ), “Lao PDR, III–IV, 1998 Merkl & Csorba leg., No. 4”; 3 exs. (EUMJ), “Lao PDR, III–IV. 1998 Merkl & Csorba leg.”; 2 exs. (EUMJ), “(THAILAND) Doi Pui Chieng Mai 26–31.IV.1983”.

Additional redescription. Male (Fig. 1). Fully redescription see HÁVA (2000). Head (Fig. 11) with arcuate anterior margin, coarsely and closely punctate; punctures separated by 1.0–2.0 times their diameters. Mentum (Fig. 7) with deep median sulcus from base to anterior margin, coarsely and closely covered with deep punctures in lateral parts; punctures bearing short golden setae, separated by 1.0–2.0 times their own diameters; interstices between punctures closely covered with transversal fine furrows. Pronotum (Fig. 15) irregularly and coarsely covered with small and deep punctures; punctures separated by 2.0–4.0 times their diameters; interstices between punctures reticulate; PW/PL 2.13–2.29 (2.19). Elytra (Fig. 19) coarsely and closely covered with deep punctures; punctures sometimes bearing short suberect setae, separated by 2.0–6.0 times their diameters; interstices between punctures closely covered with minute punctures; EL/EW 1.07–1.11 (1.09); EL/PL 2.87–3.25 (3.00); EW/PW 1.21–1.27 (1.25); TL/EW 1.44–1.48 (1.46).

Tergite VIII (Fig. 23) well sclerotized, semicircular, closely covered with minute spines, bearing short curved setae in lateral portions; sternite VIII (Fig. 24) well sclerotized, fan-shaped, deeply concave in caudal margin, bearing short setae; tergite IX (Fig. 25) slightly sclerotized, U-shaped, bearing minute setae in distal portions; sternite IX (Fig. 26) well sclerotized, strongly expanded in apical portion, bearing long and short setae, with short lateral struts; tergite X (Fig. 25) slightly sclerotized, bearing short spines. Aedeagus (Figs. 27, 28) 0.9 mm, 1.49 times as long as sternite VIII; phallobase



Figs. 7–14. Mentum (7–10) and gead (11–14) of *Nosodendron* spp. — 7, 11, *Nosodendron hispidum*; 8, 12, *N. nomurai*; 9, 13, *N. horaki*; 10, 14, *N. panense*. Scales 0.1 mm.

short, gently arcuate in lateral margins, arcuate in basal margin; parameres long, 2.15 times as long as phallobase, subparallel-sided, truncate in apices, closely punctate, with two pairs of apical setae in dorsal surface; penis relatively short, 1.71 times as long as phallobase, obtuse and deeply notched at apex, with short and curved struts.

Female. Sexual dimorphism indistinct. PW/PL 2.20; EL/EW 1.10; EL/PL 3.30; EW/PW 1.36; TL/EW 1.43. Tergite VIII (Fig. 29) moderately sclerotized, transverse, closely covered with minute spines, bearing short curved setae in lateral portions; sternite VIII (Fig. 30) moderately sclerotized, transverse, shallowly concave in caudal margin, sparsely covered with minute setae, with long and stout spiculum ventrale. Ovipositor (Fig. 31) long; styli long, bearing short and very long setae in apical portions; distal lobe of gonocoxite obtuse at apex, bearing long setae in apical portion, 1.59 times as long as proximal lobe; approximate ratio of styli, gonocoxite, and paraproct ($n=1$) as 1.0 : 4.4 : 6.8.

Measurements. Male ($n=3$): TL 4.18–5.10 (4.58) mm; PW 2.30–2.75 (2.51) mm; PL 1.08–1.20 (1.14) mm; EL 3.10–3.90 (3.43) mm; EW 2.90–3.50 (3.13) mm. Female ($n=1$): TL 4.30 mm; PW 2.20 mm; PL 1.00 mm; EL 3.30 mm; EW 3.00 mm.

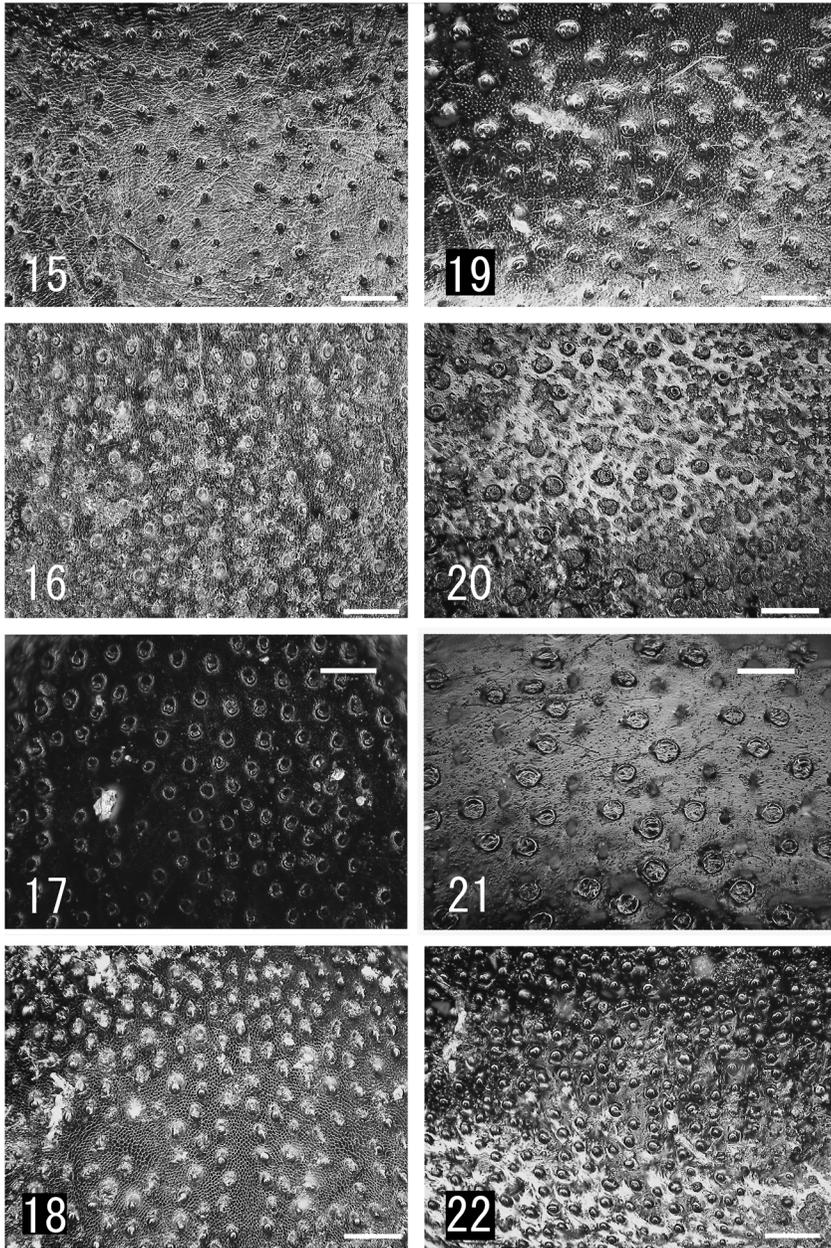
Distribution. India, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, Sikkim, Thailand, Laos (new record) and Vietnam.

Nosodendron nomurai HÁVA, 2000

(Figs. 2, 3, 8, 12, 16, 20, 32–40)

Nosodendron nomurai HÁVA, 2000: 58.

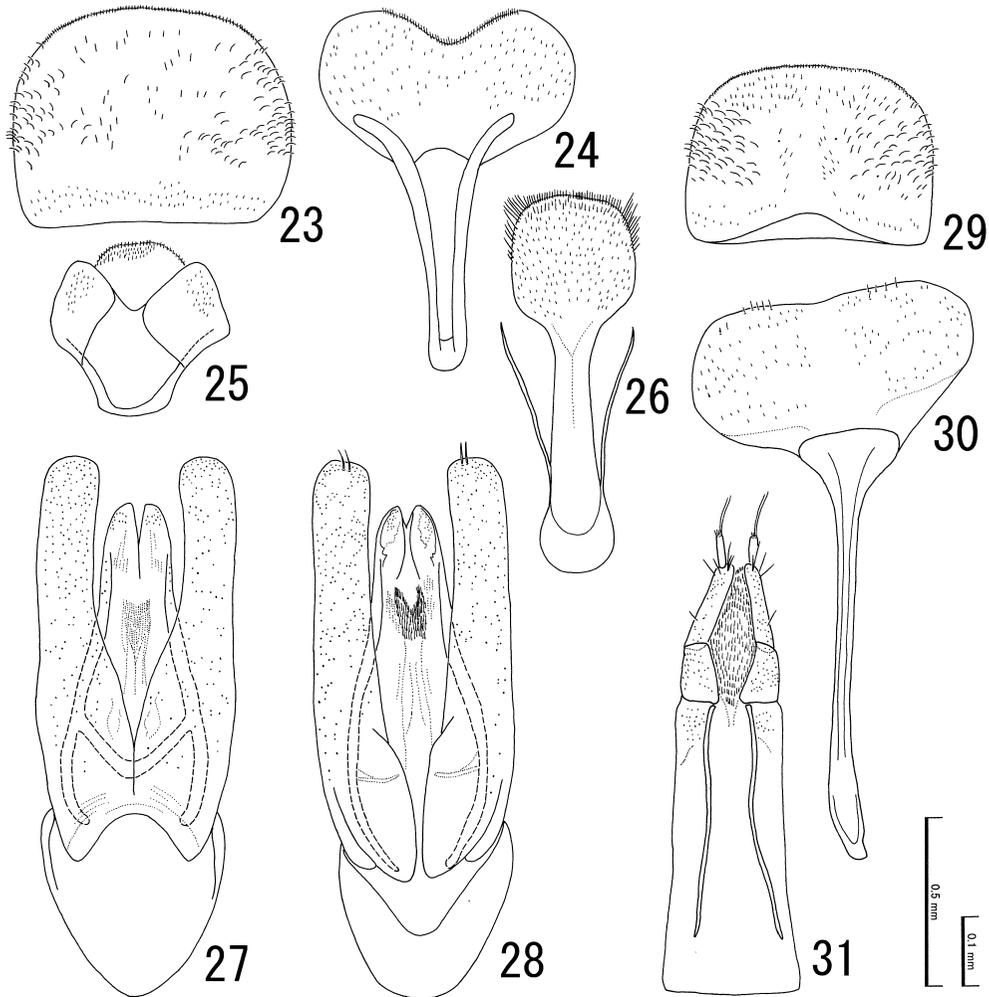
Specimens examined. Holotype (NSMT), male, “Doi Pui N. Thailand 26.IV–21.V.1983 A. Nishiyama”, “NSMT loan No. 97007–9 *Nosodendron* sp. indet. from Thailand S. Nomura det., 1997”, “♂”, “HOLOTYPE *Nosodendron nomurai* sp. n. Jiri Háva det 1997”. Two males & one female (EUMJ), “[LA17] Tam Pha, Vientiane Prov., 1.VI.2013, N17 39.395 E102 26.017, 225 m, H. Yoshito-



Figs. 15–22. Microsculptures of pronotum (15–18) and elytra (19–22) of *Nosodendron* spp. — 15, 19, *Nosodendron hispidum*; 16, 20, *N. nomurai*; 17, 21, *N. horaki*; 18, 22, *N. panense*. Scales 0.1 mm.

mi leg.”

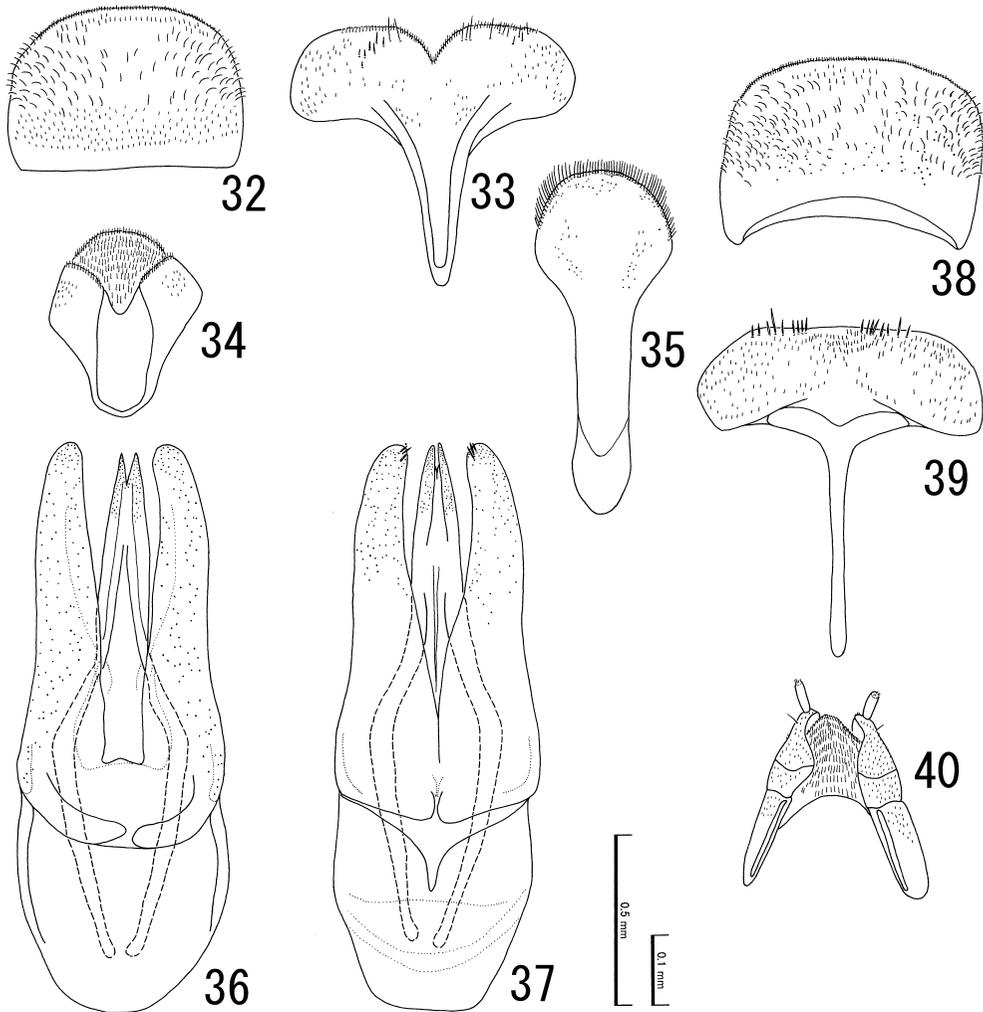
Additional redescription. Male (Figs. 2, 3). Fully description see HAVA (2000). Head (Fig. 12) with arcuate anterior margin, closely and coarsely covered with deep punctures; punctures bearing suberect short setae, separated by their own diameter. Mentum (Fig. 8) with reverse U-shaped deep



Figs. 23–31. Male (23–28) and female (29–31) genitalia of *Nosodendron hispidum*. — 23, 29, Tergite VIII; 24, 30, sternite VIII; 25, tergites IX–X; 26, sternite IX; 27, aedeagus in ventral view; 28, ditto in dorsal view; 31, ovipositor. Scale 0.5 mm for 23–26 and 29–31, 0.1 mm for 27–28.

groove in the middle, covered with large and shallow punctures. Pronotum (Fig. 16) punctate as in head; interstices between punctures conspicuously reticulate; PW/PL 1.94–2.29 (2.15). Elytra (Fig. 20) sparsely and irregularly covered with large and shallow punctures; punctures separated by 1.0–4.0 times their diameters; interstices between punctures sparsely bearing suberect short setae, irregularly and finely punctate; EL/EW 1.12–1.29 (1.20); EL/PL 2.59–3.45 (3.11); EW/PW 1.14–1.27 (1.20); TL/EW 1.53–1.69 (1.59).

Tergite VIII (Fig. 32) well sclerotized, semicircular, closely covered with minute spines, bearing short curved setae in distal portion; sternite VIII (Fig. 33) well sclerotized, fan-shaped, notched in caudal margin, bearing irregular setae in lateral and distal portions; tergite IX (Fig. 34) slightly sclerotized, U-shaped, bearing minute setae in distal portions; sternite IX (Fig. 35) well sclerotized, strongly expanded in distal portion, bearing short spines along caudal margin, without lateral struts; tergite X



Figs. 32–40. Male (32–37) and female (38–40) genitalia of *Nosodendron nomurai*. — 32, 38, Tergite VIII; 33, 39, sternite VIII; 34, tergites IX–X; 35, sternite IX; 36, aedeagus in ventral view; 37, ditto in dorsal view; 40, ovipositor. Scale 0.5 mm for 32–35 and 38–40, 0.1 mm for 36–37.

(Fig. 34) slightly sclerotized, bearing short spines. Aedeagus (Figs. 36, 37) about 0.9 mm, 2.17 times as long as sternite VIII; phallobase rather long, arcuate in lateral and basal margins, gently tapering basally; parameres long, 1.59 times as long as phallobase, abruptly tapering posteriorly in basal 1/3, then gently curved intero-posteriorly, rather pointed at apices, with three pairs of short apical setae in dorsal surface, punctate in apical portions; penis long, 2.21 times as long as phallobase, pointed and deeply notched at apex, with very long and stout struts.

F e m a l e. Sexual dimorphism indistinct. PW/PL 2.27; EL/EW 1.17; EL/PL 3.18; EW/PW 1.19; TL/EW 1.54. Tergite VIII (Fig. 38) moderately sclerotized, transverse, closely covered with minute spines, bearing short setae in caudal portion; sternite VIII (Fig. 39) moderately sclerotized, transverse, straight in caudal margin, bearing minute setae in lateral portions, bearing long and stout

setae in caudal portion, with short and stout spiculum ventrale. Ovipositor (Fig. 40) short; styli oblong, bearing short setae in apical portions; distal lobe of gonocoxite rather pointed at apex, closely covered with minute setae, 2.11 times as long as proximal lobe; approximate ratio of stylus, gonocoxite and paraproct (n=1) as 1.0 : 3.5 : 3.0.

Measurements. Male (n=3): TL 3.88–6.42 (5.07) mm; PW 2.10–3.32 (2.65) mm; PL 1.08–1.50 (1.27) mm; EL 2.80–4.92 (3.84) mm; EW 2.50–3.80 (3.17) mm. Female (n=1): TL 4.60 mm; PW 2.50 mm; PL 1.10 mm; EL 3.50 mm; EW 2.98 mm.

Distribution. Thailand and Laos.

Biological notes. In Laos (Figs. 59, 60), this species was collected from the sap of *Acacia* sp. (Fabaceae, Mimosoideae) with *Nosodendron hispidum* and *Aegus* sp. (Lucanidae).

Nosodendron horaki HÁVA, 2000

(Figs. 4, 9, 13, 17, 21, 41–49)

Nosodendron horaki HÁVA, 2000: 59.

Specimens examined. One male & two females (EUMJ), "(THAILAND) Doi Pui Chieng Mai 26–31.IV.1983."

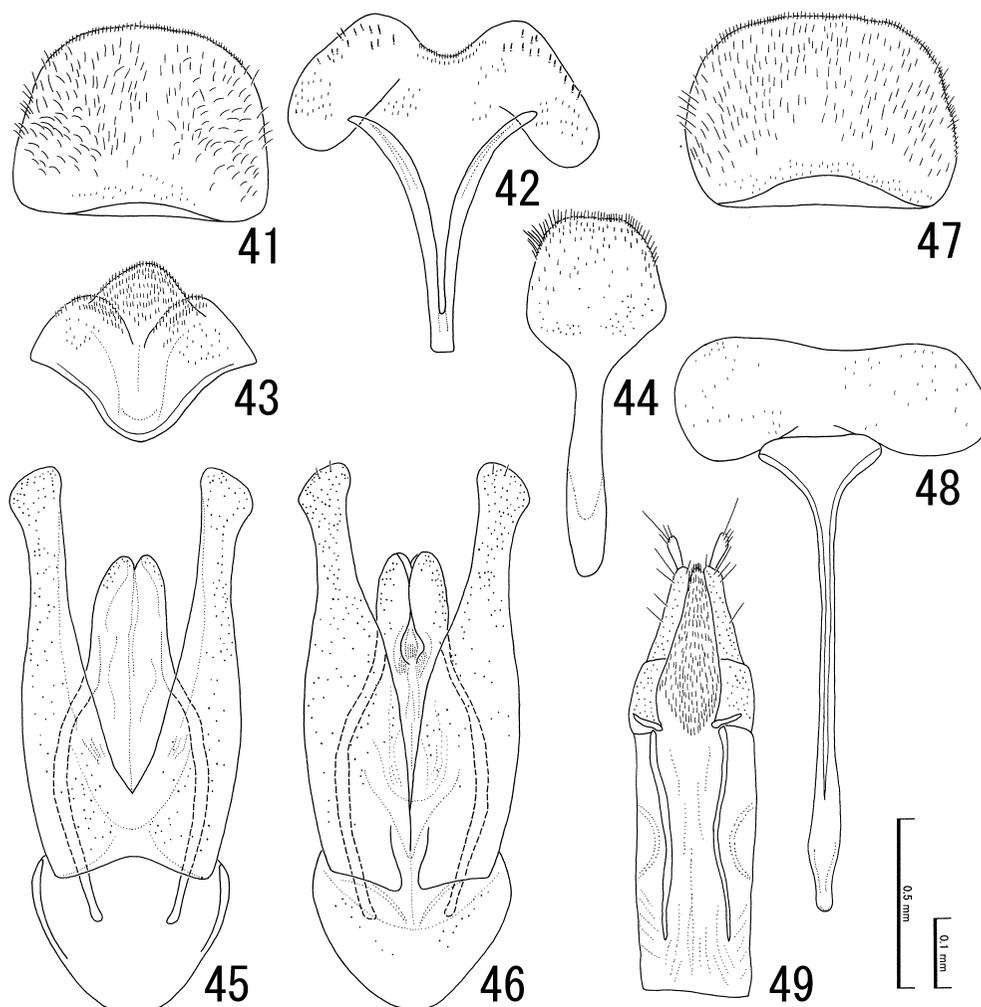
Additional redescription. Male (Fig. 4). Fully description see HÁVA (2000). Head (Fig. 13) with gently arcuate anterior margin, closely and coarsely covered with deep punctures; punctures separated by their own diameter. Mentum (Fig. 9) covered with large and shallow punctures separated by 0.5–1.0 times their own diameters; interstices between punctures closely covered with transversal fine furrows. Pronotum (Fig. 17) regularly and closely punctate; punctures bearing suberect short setae, separated by 1.0–2.0 their diameters; interstices between punctures impunctate; PW/PL 2.13; EL/EW 1.13. Elytra (Fig. 21) sparsely and regularly covered with large and shallow punctures; punctures separated by 1.0–5.0 times their diameters; interstices between punctures sparsely bearing erect rather long setae, finely punctate; EL/PL 3.04; EW/PW 1.27; TL/EW 1.50.

Tergite VIII (Fig. 41) well sclerotized, semicircular, closely covered with minute spines, bearing short setae; sternite VIII (Fig. 42) well sclerotized, fan-shaped, transverse, bearing minute setae; tergite IX (Fig. 43) slightly sclerotized, U-shaped, bearing minute setae in distal portion; sternite IX (Fig. 44) well sclerotized, expanded in distal portion, bearing short spines along caudal margin, without lateral struts; tergite X (Fig. 43) slightly sclerotized, bearing short spines. Aedeagus (Figs. 45, 46) about 0.9 mm, 1.60 times as long as sternite VIII; phallobase short, arcuate in basal margin; parameres long, 2.88 times as long as phallobase, expanded laterally in apical portions, with two pairs of apical setae, fully punctate; penis relatively short, 2.55 times as long as phallobase, deeply notched at apex, with long struts.

Female. Sexual dimorphism indistinct. PW/PL 2.17–2.20 (2.19); EL/EW 1.13–1.22 (1.17); EL/PL 3.00–3.31 (3.15); EW/PW 1.23–1.23 (1.23); TL/EW 1.50–1.59 (1.54). Tergite VIII (Fig. 47) well sclerotized, semicircular, closely covered with minute spines, bearing short setae throughout; sternite VIII (Fig. 48) well sclerotized, transverse, sparsely covered with minute setae, with long and slender spiculum ventrale. Ovipositor (Fig. 49) relatively short; styli oblong, bearing irregular setae; distal lobe of gonocoxite bearing some long setae, 1.21 times as long as proximal lobe; approximate ratio of stylus, gonocoxite, and paraproct (n=1) as 1.0 : 3.8 : 6.2.

Measurements. Male (n=1): TL 4.65 mm; PW 2.45 mm; PL 1.15 mm; EL 3.50 mm; EW 3.10 mm. Female (n=2): TL 4.80 & 5.08 mm; PW 2.60 mm; PL 1.18 & 1.20 mm; EL 3.60 & 3.90 mm; EW 3.20 mm.

Distribution. Thailand.



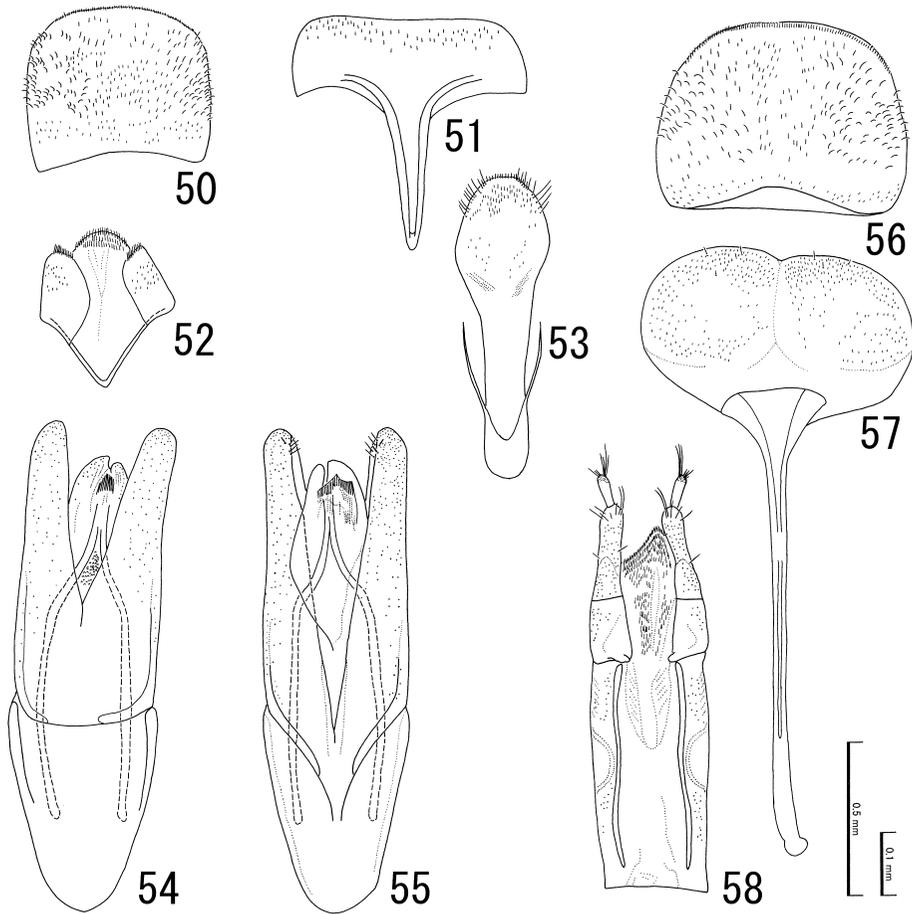
Figs. 41–49. Male (41–46) and female (47–49) genitalia of *Nosodendron horaki*. — 41, 47, Tergite VIII; 42, 48, sternite VIII; 43, tergites IX–X; 44, sternite IX; 45, aedeagus in ventral view; 46, ditto in dorsal view; 49, ovipositor. Scale 0.5 mm for 41–44 and 47–49, 0.1 mm for 45–46.

Nosodendron panense sp. nov.

(Figs. 5, 10, 14, 18, 22, 50–58)

Type series. Holotype (EUMJ), male, “LAOS Mt Phu-Pan Houa Phan Prov. Alt. ca 1,700–1,800 m 17–20.VI.2003 N. Ohbayashi”. Paratype (EUMJ), one female, “LAOS Mt. Ph-Pan Ban Saleui, Xam Neua Houa Pan Prov. alt. ca. 1,700 m 1–5.I.2002 M. Sano & F. Furuta”.

Description. **Male** (Fig. 5). Head (Fig. 14) with arcuate anterior margin, closely and coarsely covered with punctures; punctures bearing suberect short setae, separated by their own diameters. Mentum (Fig. 10) trapezoidal, fully covered with large and deep punctures separated by 0.5–1.0 times their own diameters; interstices between punctures reticulate. Pronotum (Fig. 18) punctate as in head; interstices between punctures evenly and conspicuously reticulate; PW/PL 2.14. Scutellum triangular,



Figs. 50–58. Male (50–55) and female (56–58) genitalia of *Nosodendron panense*. — 50, 56, Tergite VIII; 51, 57, sternite VIII; 52, tergites IX–X; 53, sternite IX; 54, aedeagus in ventral view; 55, ditto in dorsal view; 58, ovipositor. Scale 0.5 mm for 50–53 and 56–58, 0.1 mm for 54–55.



Figs. 59–60. Habitat (59) and habit (60) of *Nosodendron hispidum* and *nomurai*. Tam Pha, Vientiane Prov., Laos. Photo by H. YOSHITOMI.

finely punctate. Elytra (Fig. 22) widest at the base, gently tapering posteriorly, coarsely and closely covered with deep punctures; punctures small, bearing suberect short setae, separated by 1.0–3.0 times their diameters; interstices between punctures sparsely bearing erect long setae, finely and irregularly punctate; EL/EW 1.15; EL/PL 3.13; EW/PW 1.27; TL/EW 1.52.

Tergite VIII (Fig. 50) well sclerotized, subtrapezoidal, closely covered with minute spines, bearing short setae in distal portion; sternite VIII (Fig. 51) well sclerotized, fan-shaped, bearing short setae; tergite IX (Fig. 52) slightly sclerotized, U-shaped, bearing minute setae in distal portions; sternite IX (Fig. 53) well sclerotized, slightly expanded apically, with short lateral struts, bearing short setae in apical portion; tergite X (Fig. 52) slightly sclerotized, bearing short spines. Aedeagus (Figs. 54, 55) about 0.9 mm, 2.09 times as long as sternite VIII; phallobase rather long, gently and straightly tapering basally, arcuate in basal margin; parameres long, gently tapering posteriorly, 1.38 times as long as phallobase, with five or six pairs of short apical setae in intero-apical portions, closely punctate, obtuse at apices; penis long, 1.80 times as long as phallobase, deeply notched at apex, with very long and straight struts.

F e m a l e. Sexual dimorphism indistinct. PW/PL 2.30; EL/EW 1.18; EL/PL 3.20; EW/PW 1.18; TL/EW 1.55. Tergite VIII (Fig. 56) moderately sclerotized, semicircular, closely covered with minute spines, bearing minute or short curved setae; sternite VIII (Fig. 57) moderately sclerotized, oval, closely bearing minute setae, with long spiculum ventrale. Ovipositor (Fig. 58) relatively short; styli oblong, bearing irregular setae in apical portions; distal lobe of gonocoxite obtuse at apex, bearing long setae in apical portion, 1.50 times as long as proximal lobe; approximate ratio of stylus, gonocoxite, and paraproct (n=1) as 1.0 : 4.5 : 6.0.

Measurements. Male (n=1): TL 4.25 mm; PW 2.20 mm; PL 1.03 mm; EL 3.22 mm; EW 2.80 mm. Female (n=1): TL 5.12 mm; PW 2.80 mm; PL 1.22 mm; EL 3.90 mm; EW 3.30 mm.

Remarks. This species belongs to the *N. coenosum* species-group (HÁVA, 2005) by the absence of elytral tufts of setae. At Phu Pan (Mt. Pan), the type locality of this species, one female paratype of *Nosodendron laosense* was collected (HÁVA, 2007), but these species are not distinguishable in the female specimens.

Etymology. The species name refers to the type locality.

Distribution. Laos.

***Nosoglobulus wakaharai* S.-T. HISAMATSU, YAMASAKO et HÁVA, 2011**

(Fig. 6)

Nosoglobulus wakaharai S.-T. HISAMATSU, YAMASAKO et HÁVA, 2011: 89.

Remarks. In the original description, the parameres of this species lack apical seta (HISAMATSU *et al.*, 2011, figs. 6, 7). However, a close reexamination of the holotype in EUMJ clearly showed that this species have a pair of short apical setae on dorsal parts, like any other nododendrid species.

Distribution. Laos.

Key to Species of the Family Nosodendridae from Indochinese Subregion*

1. Body (Fig. 6) small, about 2.4 mm; antennal club compacted; phallobase indistinct (=strongly connected with parameres). (genus *Nosoglobulus*)
 *Nosoglobulus wakaharai* S.-T. HISAMATSU, YAMASAKO et HÁVA, 2011 (Laos)
- Body larger than 3.6 mm; antennal club loose; phallobase distinct. (genus *Nosodendron*)

- 2
2. Mentum with sulcus or impression. 8
- Mentum lacking sulcus or impression. 3
3. Body relatively small, 3.6–3.8 mm; apices of parameres curved interiorly (fig. 5 in HÁVA, 2000). *Nosodendron bilyi* HÁVA, 2000 (Thailand)
- Body large, 5.0–6.2 mm; apices of parameres projecting posteriorly. 4
4. Penis long, apex pointed, exceeding to parameral apex (fig. 1 in HÁVA, 2007).
..... *Nosodendron laosense* HÁVA, 2007 (Laos)
- Penis relatively short, apex obtuse or notched, not exceeding to parameral apex. 5
5. Apices of parameres expanded laterally (Figs. 45, 46).
..... *Nosodendron horaki* HÁVA, 2000 (Thailand)
- Apices of parameres not expanded laterally, evenly tapering apically or truncate. 6
6. Apices of parameres truncate (fig. 2 in HÁVA, 2005).
..... *Nosodendron incognitus* HÁVA, 2005 (Myanmar)
- Apices of parameres obtuse. 7
7. Lateral margins of parameres straightly tapering apically (Figs. 54, 55).
..... *Nosodendron panense* sp. nov. (Laos)
- lateral margins of parameres convergent in basal 3/5, then gently tapering apically (fig. 4 in HÁVA, 2005). *Nosodendron oblongum* CHAMPION, 1923 (Myanmar)
8. The groove on mentum longitudinal. 9
- The groove on mentum reverse U-shaped. 10
9. The groove on mentum narrow, reaching at basal margin (Fig. 7).
..... *Nosodendron hispidum* CHAMPION, 1923
(India, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, Sikkim, Thailand, Vietnam and Laos)
- The groove on mentum wide, running from anterior margin to basal 1/5 (fig. 13 in HÁVA, 2000). *Nosodendron helferi* HÁVA, 2000 (Myanmar)
10. Metasternum with large punctures; longitudinal striations of basal of sternite very long; parameres slightly curved, obtuse at apices (Figs. 36, 37).
..... *Nosodendron nomurai* HÁVA, 2000 (Thailand and Laos)
- Metasternum with large and small punctures; longitudinal striations of base of sternite long; parameres almost straight, truncate at apex (fig. 7 in HÁVA, 2000).
..... *Nosodendron prudeki* HÁVA, 2000 (Thailand)
- * *Nosodendron tonkineum* PIC, 1923 (Vietnam) is omitted.

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要 約

吉富博之：インドシナの新種ヒメトゲムシ科（コウチュウ目）。—— インドシナの新種ヒメトゲムシを再検討し、ラオスから1新種 *Nosodendron panense* sp. nov. を記載。 *Nosodendron hispidum* CHAMPION, 1923, *Nosodendron nomurai* HÁVA, 2000 および *Nosodendron horaki* HÁVA, 2000 の3種を再記載した。 *Nosodendron hispidum* CHAM-

PION, 1923 はラオスから初記録である。また、インドシナから記録されている種の検索表を作成した。本論文では本科に特有にみられる雄交尾器の側片先端付近に生える 1~4 本の短い刺毛について“apical setae”という名称を与え記載した。Nosoglobulus wakaharai S.-T. HISAMATSU *et al.*, 2011 の記載中には“apical setae”について触れられていなかったが、EUMJ に保管されているホロタイプを詳細に検視した結果、1 対の“apical setae”を有することが判明した。

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