

Two New Species of the Genus *Necydalis* LINNAEUS (Coleoptera, Cerambycidae) from Vietnam

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Abstract Two new species of the nominotypical subgenus of the genus *Necydalis* LINNAEUS, 1758 are described from Vietnam as follows: *Necydalis (Necydalis) fallax* sp. nov. from Vinh Phuc Province, and *N. (N.) arcana* sp. nov. from Kon Tum Province. The first new species has so far been treated as *N. (N.) marginipennis* GRESSITT, 1948 based on a misidentification by TAKAKUWA and NIISATO (1996), however it is an isolated taxon with no relatives among the members of the nominotypical subgenus. Another new species is related to *N. (N.) spissicus* HOLZSCHUH, 2009 from Laos or *N. (N.) mizunumai* KUSAMA, 1974 from Taiwan, however, it is easily distinguishable from them by features of the pronotum, elytra and male abdomen.

Introduction

The fauna of the genus *Necydalis* LINNAEUS, 1758 from Vietnam is rather rich and nine species from two subgenera have so far been recorded from the northern and southern regions of the country (TAKAKUWA & NIISATO, 1996; NIISATO, 1998 a, b, c, 2008; NIISATO & N. OHBAYASHI, 2003) since the pioneer study by HOLZSCHUH (1989). This number comprises about one-fifth of all Asian species of the genus (TAVAKILIAN & CHEVILLOTTE, 2018).

In our field surveys over the past ten years, we examined a number of specimens of the genus *Necydalis* from north to south of Vietnam, and additional knowledge was revealed about the fauna of this country. In this paper, we will describe two new species of the nominotypical subgenus from Vinh Phuc and Kon Tum Provinces as a part of our survey.

Material and Methods

The type series of the new species described herein are tentatively housed in the private collection of Tatsuya NIISATO, Tokyo, Japan (CTNJ), though the holotypes will be preserved in the Vietnam National Museum of Nature (VNMN), Ha Noi, Vietnam following our study of the genus *Necydalis* from Vietnam.

Material was observed and photographed under a stereoscopic microscope (OLYMPUS SZX16), an optical microscope (OLYMPUS BX53M) with a microscope digital camera (OLYMPUS DP73), and image analysis software (OLYMPUS CellSens). SEM images were taken by a Keyence VHK-D500 Ultra Depth Multi-Angle Observation System. The habitus and body parts of specimens were photographed by a Canon digital camera EOS 80D with macro photo lens EF-50mm, MP-E 65mm and Life-size Converter EF.

The abbreviations used for the ratios of measurements when describing taxon are as follows: BL — body length measured from apical margin of clypeus to abdominal apex; BLE — body length measured from apical margin of clypeus to elytral apices; HW — maximum width of head across eyes; FL — length of frons; FA — apical width of frons; FB — basal width of frons; 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) fallax sp. nov.

(Figs. 1–12 & 25–27)

Necydalis marginipennis (non GRESSITT, 1948): TAKAKUWA & NIISATO, 1996: 80, figs. 2 & 13–17 [redescription & distribution (Vietnam)]. — NIISATO, 1998 b: 6, fig. 13 [diagnostic description].

Description. Confer TAKAKUWA and NIISATO (1996) in detail.

Colour black, brown in antennae, abdomen and legs, matte in general; elytra light brown except for each apical 3/10 which is black, the black area linearly extended to humerus along external margin and obliquely so to apical half along sutural margin; abdomen brown with ventrite I slightly infusate near middle; hind tarsi pale yellowish brown. Body clothed with fine light golden pubescence, without maculation of dense pubescence anywhere; pronotum almost glabrous on median area, densely with fine light brown pubescence on apical and basal 1/5 of disc, rather densely with short light golden hairs on sides; elytra partly with dense, recumbent light golden pubescence on raised area of each apical 1/5 and near suture of each apical half.

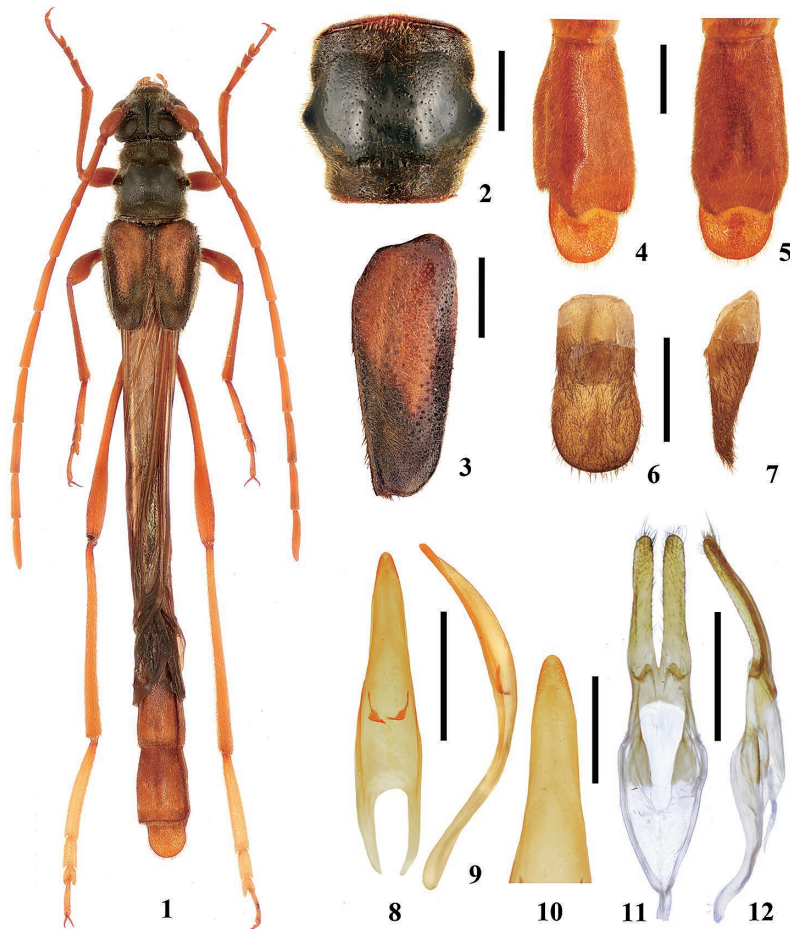
Male. Head distinctly wider than apical width of pronotum, finely provided with coarse punctures, with tempora not attaining level of eyes. Antennae about 3/5 length of body, attaining middle of abdominal tergite V, rather flat, with antennomeres IV–X hardly dilated apicad. Pronotum distinctly longer than apical width, moderately convergent apicad, provided with large triangular lateral tubercles on middle, finely punctured on disc. Elytra distinctly longer than wide, moderately narrowed in a straight line to apices which have a distinct dent at each sutural angle, narrowly dehiscent in an almost straight line in apical halves; disc strongly convex in each apical 1/5, provided with small to medium punctures except for each sutural and apical 1/5 which are only finely punctured. Abdomen about 7/10 length of body; ventrite V (anal ventrite) moderately dilated from base to apical 1/4 then straightly narrowed to apex, with disc slightly depressed from apical half to apical 1/4 then suddenly declivous to apical margin, apical margin emarginate in an obtuse angle of about 150 degrees; tergite VIII weakly convex, about twice length of basal width, semicircular in apical half, gently arcuate on apical margin.

Male genitalia. Median lobe moderately arcuate in lateral view, with apical lobe narrowed in a straight line to obtusely rounded apex; ventral plate distinctly longer than dorsal plate, moderately thickened at apex in lateral view. Tegmen gently arcuate in lateral view; parameres 1/3 length of tegmen, almost parallel-sided, with each lobe slightly thickened apicad, densely clothed with short to medium setae near apex.

Female. Unknown.

Measurements. Male (n = 6): BL 17.82–26.22 mm; BLe 5.36–7.84 mm; HW/PA 1.44–1.59 (M 1.53); HW/PW 1.03–1.08 (M 1.06); FL/FB 0.55–0.64 (M 0.60); FA/FB 0.83–0.88 (M 0.86); PL/PW 0.98–1.09 (M 1.04); PL/PA 1.37–1.57 (M 1.51); PB/PA 1.14–1.26 (M 1.18); EL/EW 1.24–1.36 (M 1.27); EL/PL 1.37–1.50 (M 1.42).

Type series. Holotype: ♂ (VNMN), Mt. Tam Dao, ca. 1,000 m in alt., Vinh Phuc Province, Vietnam, V.2002. Paratypes (5 ♂♂): 3 ♂♂ (CTNT), same data as holotype; 1 ♂ (CTNT), same locality as holotype, V.1997; 1 ♂ (CTNT), same locality as holotype, 15–31.V.2001.



Figs. 1–12. *Necydalis (Necydalis) fallax* sp. nov., ♂, from Vinh Phuc Province, Vietnam. — 1, Dorsal habitus; 2, pronotum; 3, right elytron; 4, abdominal ventrite V (anal ventrite), latero-ventral view; 5, ditto, ventral view; 6, abdominal tergite VIII, dorsal view; 7, ditto, lateral view; 8, median lobe, dorsal view; 9, ditto, lateral view; 10, ditto, apical part, dorsal view; 11, tegmen, dorsal view; 12, ditto, lateral view. — 1, Holotype; 2–12, paratype. Scales: 1.00 mm for figs. 2–9, 11 & 12; 0.50 mm for fig. 10; no scale for fig. 1.

Etymology. The specific name, latin “*fallax*“ means “false” in English. This new species has so far been believed to be *N. (N.) marginipennis* GRESSITT, 1948 due to a misidentification.

Distribution. Vietnam: Vinh Phuc Province.

Diagnosis. The true affinity of *Necydalis (Necydalis) fallax* sp. nov. is uncertain, since there is no close relative among the members of the nominotypical subgenus. While it is somewhat similar in general appearance to *N. (N.) mizunumai* KUSAMA, 1975 from Taiwan and *N. (N.) spissicus* HOLZSCHUH, 2009 from Laos, it is distinguished from them by the shorter and broader pronotum with large lateral tubercles, and the relatively long elytra with a distinct dent at each sutural angle, and the long abdominal tergite VII with the apical half semicircular. This new species seems to be an isolated tax-

on, since these features are also hardly observed in the other members of the nominotypical subgenus.

Notes. This new species was erroneously recorded from Mt. Tam Dao of Vietnam under the name *N. (N.) marginipennis* GRESSITT, 1948 by a misidentification of TAKAKUWA and NISATO (1996). The first author recently examined detailed pictures of the holotype of *N. (N.) marginipennis* preserved in the Smithsonian Institution, Washington D. C., USA, and noticed that Tam Dao's species is actually an undescribed taxon. For reference, the true *N. (N.) marginipennis* is a similar species to *N. (N.) esakii* MIWA et MITONO, 1937 from Taiwan, *N. (N.) rufiabdominis* CHEN, 1991 from Hubei, and *N. (N.) choui* NISATO, 2004 from Guangxi. These four species are allopatric, and most probably belong to the same lineage within the nominotypical subgenus, and also can be clearly distinguished from this new species by the presence of dense yellowish pubescent maculation on the pronotum.

Bionomics. This new species has so far been known only from the type locality, Mt. Tam Dao, Vinh Phuc Province, Vietnam, and a large number of male specimens were collected on several mountain peaks of Mt. Tam Dao during a period from the 1990s to early 2000s.

Necydalis (Necydalis) arcana sp. nov.

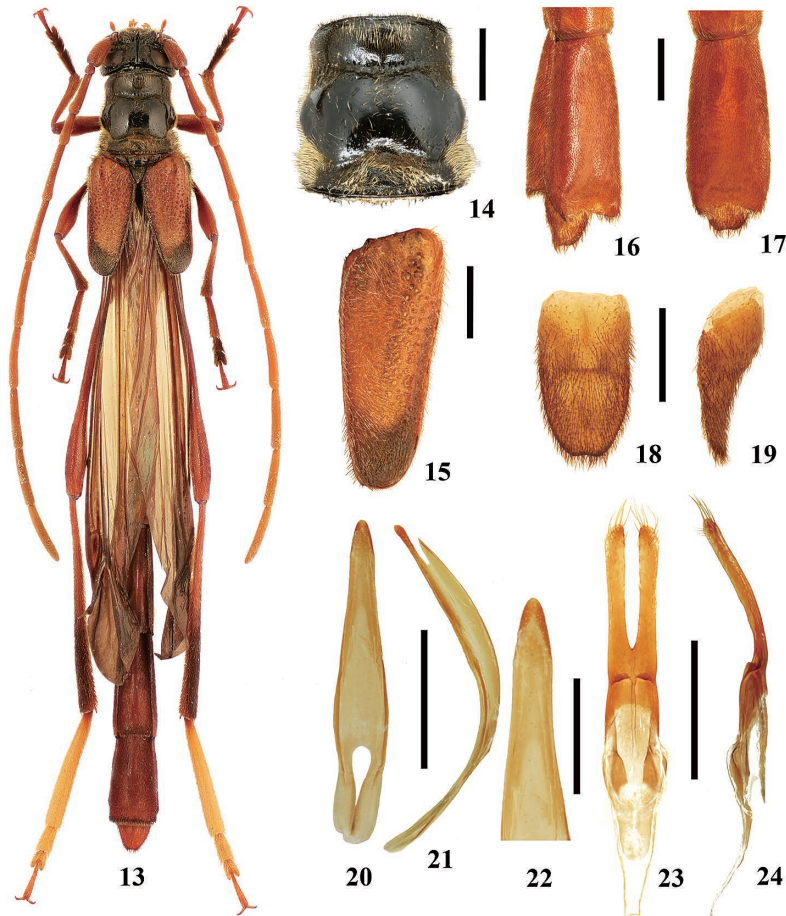
(Figs. 13–24 & 28–30)

Description. Colour black, partly brown, matte in general; antennae brown, light yellowish brown in antennomeres VII–XI; elytra light brown, black in each apical 3/10, the black area obliquely extended to apical half along sutural margin and linearly so to humerus along external margin; abdomen brown, slightly infusate in median part of ventrite I; legs brown, largely black in coxae, infusate in dorsal sides of fore and mid tarsi, pale yellowish brown in hind tarsi. Body clothed with fine light golden pubescence, without maculation of dense pubescence anywhere; head sparsely with light golden hairs, somewhat dense on frons; pronotum almost glabrous on median area, densely with fine light brown pubescence on apical and basal 1/5 on disc, rather densely with light golden hairs on sides especially in basal 1/3; scutellum with light golden pubescence near apex; elytra moderately covered with short light golden hairs, partly with dense, recumbent light golden pubescence on raised area of each apical 1/5 and near suture of each apical half.

Male. Head sparsely provided with coarse punctures; frons slightly wider than long, closely punctured, with a very deep median groove extending to anterior margin of occiput; clypeus with apical lobe scattered with coarse punctures; genae about half depth of lower eye-lobes; tempora not attaining level of eyes; eyes large, weakly prominent. Antennae rather long and slender, about 7/10 length of body, reaching middle of abdominal tergite V, neither serrate nor flattened in middle antennomeres; scape swollen, with fine shallow punctures; antennomere III 1.25 times as long as scape or IV, strongly thickened apical like in IV; VII longest though only slightly longer than VI.

Pronotum as long as or slightly longer than wide, moderately contracted to apex, apical and basal margins almost straight, narrowly bordered in the latter; sides constricted at apical 3/10 and basal 1/3, weakly swollen in obtuse triangular shape near middle; disc moderately convex from apical 3/10 to basal 1/5, entirely smooth though scattered with a few fine punctures, raised near apical and basal margins, which are shagreened and with fine punctures. Scutellum subtriangular, narrowly truncate at apex.

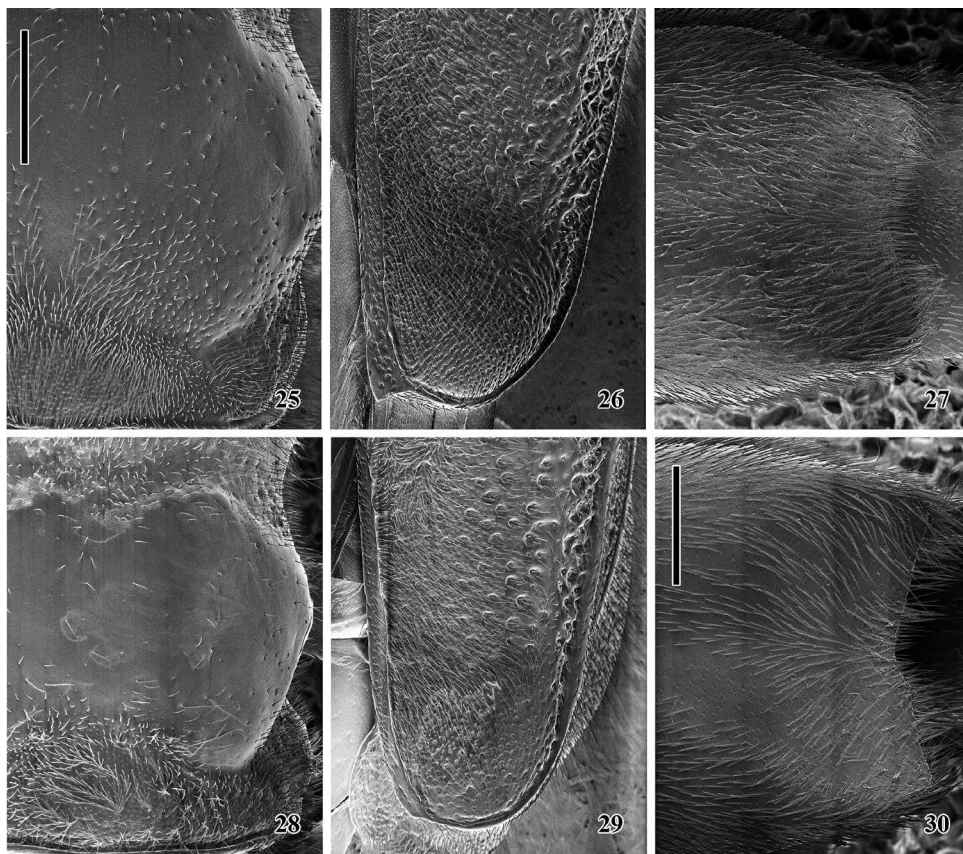
Elytra distinctly longer than wide, dehiscent in an almost straight line, narrowly bordered along suture; sides gradually narrowed in an almost straight line to apical 1/5, rounded at apices which have very weak sutural angles; disc weakly raised in apical 1/6, with L-shaped depression from basal 2/5 near suture to apical 1/6 near external margin; surface largely provided with coarse punctures, the punctures become sparse and small near humeri, fine and dense in apical 1/6.



Figs. 13–24. *Necydalis (Necydalis) arcana* sp. nov., ♂, from Kon Tum Province, Vietnam. — 13, Dorsal habitus; 14, pronotum; 15, right elytron; 16, abdominal ventrite V (anal ventrite), latero-ventral view; 17, ditto, ventral view; 18, abdominal tergite VIII, dorsal view; 19, ditto, lateral view; 20, median lobe, dorsal view; 21, ditto, lateral view; 22, ditto, apical part, dorsal view; 23, tegmen, dorsal view; 24, ditto, lateral view. — 13, Holotype; 14–24, paratype. Scales: 1.00 mm for figs. 14–21, 23 & 24; 0.50 mm for fig. 22; no scale for fig. 13.

Most of venter of thorax densely punctured. Abdomen $3/4$ length of body, shagreened, though scattered with a few fine punctures on ventrite I; ventrites I–III weakly thickened apically though IV rather distinctly dilated apicad; ventrite V (anal ventrite) weakly dilated from base to apical $1/4$ then narrowed to apical margin, about 2.7 times as long as basal width, with disc shallowly concave from basal $1/5$ to apical $1/4$ then suddenly declivous to apical margin, apical margin shallowly emarginate at an obtuse angle of about 140 degrees; tergite VIII weakly convex, 1.75 times as long as basal width, rather distinctly narrowed in an arcuate line to obtusely pointed apex which is gently emarginate at middle.

Legs rather stout, medium in length, with hind tibia reaching middle of abdominal tergite VIII;



Figs. 25–30. Body parts of *Necdalis* (*Necdalis*) spp. from Vietnam, paratype ♂ (SEM image). — 25–27, *N. (N.) fallax* sp. nov., from Vinh Phuc Province; 28–30, *N. (N.) arcana* sp. nov., from Kon Tum Province. — 25 & 28, Basal half of pronotum, showing discal feature; 26 & 29, apical half of right elytron, showing discal feature; 27 & 30, apical half of abdominal ventrite V (anal ventrite). Scales: 500 μ m for figs. 25–29; 300 μ m for fig. 30.

hind tarsus rather thin, with tarsomere I about 2.8 times as long as the following two others combined.

Male genitalia. Median lobe strongly arcuate in lateral view, with apical lobe narrowed in an arcuate line to apical 1/3, then narrowed again in straight line to obtusely pointed apex; ventral plate moderately longer than dorsal plate, strongly thickened at apex in lateral view. Tegmen gently arcuate in lateral view; parameres 4/5 length of tegmen, slightly dehiscent apicad, with each lobe dilated on external side just before apex, densely clothed with long to medium setae near apex.

F e m a l e. Unknown.

Measurements. Male (n = 2): BL 20.55–24.52 mm; BLe 6.12–7.38 mm; HW/PA 1.42–1.47 (M 1.45); HW/PW 1.04–1.18 (M 1.11); FL/FB 0.82–0.87 (M 0.84); FA/FB 0.84–0.93 (M 0.88); PL/PW 1.00–1.12 (M 1.06); PL/PA 1.37–1.40 (M 1.38); PB/PA 1.11–1.24 (M 1.17); EL/EW 1.31–1.41 (M 1.36); EL/PL 1.40–1.47 (M 1.44).

Type series. Holotype: ♂ (VNMN), Mt. Ngoc Linh, Kon Tum Province, Vietnam, VI.2010. Paratype: 1 ♂ (CTNT), same data as holotype.

Distribution. Vietnam: Kon Tum Province.

Etymology. The specific name, “*arcana*” means “arcane” in English. This new species is very similar to *Necydalis (Necydalis) spissicus* HOLZSCHUH, 2009, and close examination is necessary for accurate determination.

Diagnosis. This new species is closest to *Necydalis (Necydalis) spissicus* HOLZSCHUH, 2009 from Laos in general appearance especially in the thick and short antennomere III, however it is distinguished from the latter by the pronotum being largely smooth instead of finely and densely punctured, the very weak sutural angle of elytral apex instead of a thick sutural tooth, and the apex of abdominal tergite VIII being gently emarginate instead of shortly bilobed. In pronotal features, this new species may be similar to *N. (N.) annectans* HOLZSCHUH, 2009 from Laos, however it is easily distinguished from the latter in the shape of antennomere III which is short and thick in this new species while long and slender in the latter.

Bionomics. The bionomic information of *Necydalis (Necydalis) arcana* sp. nov. is not known since we could examine only two male type series obtained by a local collector from Mt. Ngoc Linh, Kon Tum Province, Vietnam.

Acknowledgements

We wish to express our hearty thanks to Mr. Takashi MIYAGAWA for his useful information of the necydaline fauna of Vietnam, and to Dr. Meiyong LIN for taking detailed pictures of the holotypes of *Necydalis (Necydalis) marginipennis* GRESSITT and *N. (N.) rufiabdominis* CHEN. Our cordial thanks are also due to Dr. Nobuo OHBAYASHI and Ms. Alyssa SUZUMURA for their critical reading the original draft of this paper. This work was partly supported by the Vietnam National Museum of Nature, Vietnam Academy of Science and Technology (VAST) and the Asian Insect Research Society (AIRS).

要 約

新里達也・Vu Van LIEN：ベトナム産ホソコバネカミキリ属（鞘翅目カミキリムシ科）の2新種。——ベトナムからホソコバネカミキリ属名義タイプ亜属の2新種，*Necydalis (Necydalis) fallax* sp. nov. および *N. (N.) arcana* sp. nov. を命名・記載した。最初の種は、北部のビンフク州タムダオ山から、TAKAKUWA & NIISATO (1996) の誤同定により *N. (N.) marginipennis* GRESSITT, 1948 として知られていたが、*N. (N.) marginipennis* のタイプ標本調査の結果により、名義タイプ亜属ではとくに近縁なものがない顕著な新種であることが判明した。一方の種は、中部のコンタム州ゴクリン山で採集された2雄だけが知られ、ラオスの *N. (N.) spissicus* HOLZSCHUH, 2009 や台湾のミズヌマホソコバネカミキリなどに近縁であるが、前胸背板や上翅、腹部腹板の形態から容易に区別することができる。

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