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Revision of the Taiwanese and Japanese Species of the Genus *Laius* (Insecta: Coleoptera: Malachiidae)

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Hiroyuki Yoshitomi and Chi-Feng Lee (2010) Revision of the Taiwanese and Japanese species of the genus *Laius* (Insecta: Coleoptera: Malachiidae). *Zoological Studies* **49**(4): 534-543. The Taiwanese and Japanese species of the genus *Laius* are revised. Two new species, *L. lutaoensis* sp. nov. and *L. taiwanus* sp. nov., are described from Taiwan, and 2 previously known Japanese species, *L. miyamotoi* Nakane and *L. asahinai* Nakane, are redescribed. The 2 Taiwanese species previously treated as *Laius* are transferred to the genus *Intybia*. http://zoolstud.sinica.edu.tw/Journals/49.4/534.pdf

Key words: Taxonomy, Malachiidae, *Laius*, Taiwan, Japan.

Species of *Laius* Guérin-Ménevelle, 1830 (sensu Evers 1994) belonging to the family Malachiidae (Coleoptera: Cleroidea) inhabit rocky seashores from Asia to east Africa (Champion 1921, Satô et al. 2006, Yoshitomi 2008). This genus presently consists of about 250 species, most of which must be transferred to another genus based on the generic redefinition by Evers (1994). Some species were transferred to another related genus (e.g., the genus *Intybia*) by some authors, but many species still remain in the genus *Laius*. The autapomorphies of the genus shown by Evers (1994) are as follows: male protibia thickened basally with the inside of the basal area distinctly hollow, and elytra black with a greenish or bluish luster.

Wittmer (1997) transferred 8 Taiwanese and Japanese species from *Laius* to *Intybia*. However the remaining species were not treated. Until now, *Laius* was represented by 3 species from Taiwan and 2 species from Japan (Miwa 1931, Wittmer 1982 1986, Satô 1985). In this paper, we review the Taiwanese and Japanese *Laius*, and describe 2 new species from Taiwan.

MATERIALS AND METHODS

Type depositories include the following collections: Ehime University Museum (EUM), Matsuyama, Japan; National Science Museum (NSMT), Tokyo, Japan; Naturhistorisches Museum Basel (NHMB), Basel, Switzerland; Taiwan Agricultural Research Institute (TARI), Taichung, Taiwan; Naturhistorisches Museum Wien (NMW), Wien, Austria; and the Laboratory of Systematic Entomology (SEHU), Hokkaido University, Sapporo, Japan.

Specimens were measured as follows: total length (TL; anterior margin of the clypeus to the elytral apex); elytral length along the suture (EL); maximum elytral width (EW); maximum pronotal length (PL); and maximum pronotal width (PW). The arithmetic means of the measurement are given in parenthesis after the range. The label data of the specimens are shown verbatim as

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indicated using quotation marks. Technical terms of the male genitalia follow Wittmer (1997).

RESULTS

Laius lutaoensis sp. nov.

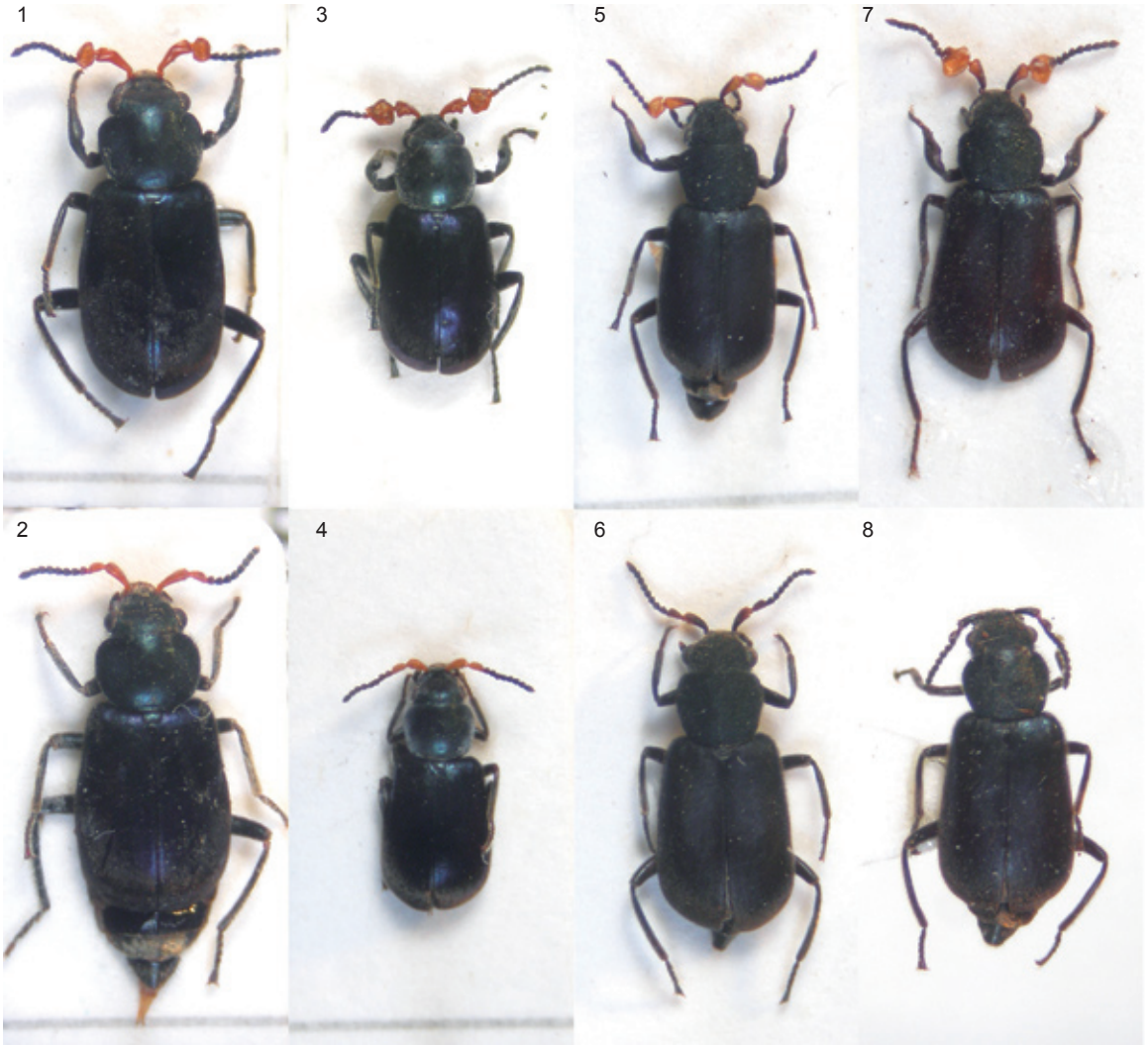
(Figs. 1, 2, 9-11, 21, 25, 31)

Holotype (TARI): ♂, "Lutao Taiwan 22-26-III-1988 M. Satô leg.".

Paratypes (TARI, EUM, NSMT, NMW, NHMB, SEHU): 2 ♀♀, same data as for holotype; 4 ♂♂ and 4 ♀♀, "near Jhaorih Rudao Isl. SE of TAIWAN 5-6. IV. 2004 H. Yoshitomi leg.", genit. s. no. HY 1003 (♂) and HY 1057 (♀); 3 ♂♂, 6 ♀♀, "Lyudao, Taiwan 4-7. IV. 2004 M. Satô leg."

Description: Male (Fig. 1): Body oblong, strongly shiny, closely covered with short, black setae. Color of body black with bluish luster; clypeus and surrounding parts of antennal sockets yellowish-brown; antennal segments I-III yellowish-orange.

Head narrower than pronotum; vertex flattened. Eyes moderate in size, prominent. Antennae (Fig. 9) stout; segment I slightly curved laterally; segment III (Fig. 11) transverse in dorsal view, deeply concave on mesal part of dorsal surface; L/W = 0.8; approximate ratio of each antennal segment as (*n* = 1) 8.7: 1.0: 4.0: 2.0: 1.8: 1.7: 1.7: 1.7: 1.7: 1.7: 2.7. Pronotum quadrate, widest near anterior margin, antero- and posterolateral angles rounded, closely covered with fine punctures; PW/PL 1.23-1.38 (1.32).



Figs. 1-8. Habitus of *Laius* species. **1.** *Laius lutaoensis* sp. nov., holotype, ♂; **2.** same, paratype, ♀; **3.** *Laius taiwanus* sp. nov., holotype, ♂; **4.** same, paratype, ♀; **5.** *Laius miyamotoi* Nakane, ♂; **6.** same, ♀; **7.** *Laius asahinai* Nakane, ♂; **8.** same, ♀.

Scutellum semicircular, punctation similar to that of pronotum. Elytra oblong, broadest at apical 1/3; sides gradually expanded posterolaterally; EL/EW 1.29-1.55 (1.43); EL/PL 2.48-2.83 (2.72); EW/PW 1.35-1.56 (1.44); TL/EW 2.04-2.60 (2.33). Legs relatively long and stout; protibia slightly thickened basally with basal area internally excavated.

Caudal margin of tergite VIII shallowly emarginate (Fig. 21). Spiculum bidentate at anterolateral corners. Aedeagus (Fig. 25) long, irregularly curved; spine short, strikingly curved; apex broad, square, apical margin shallowly emarginate, covered with minute punctures.

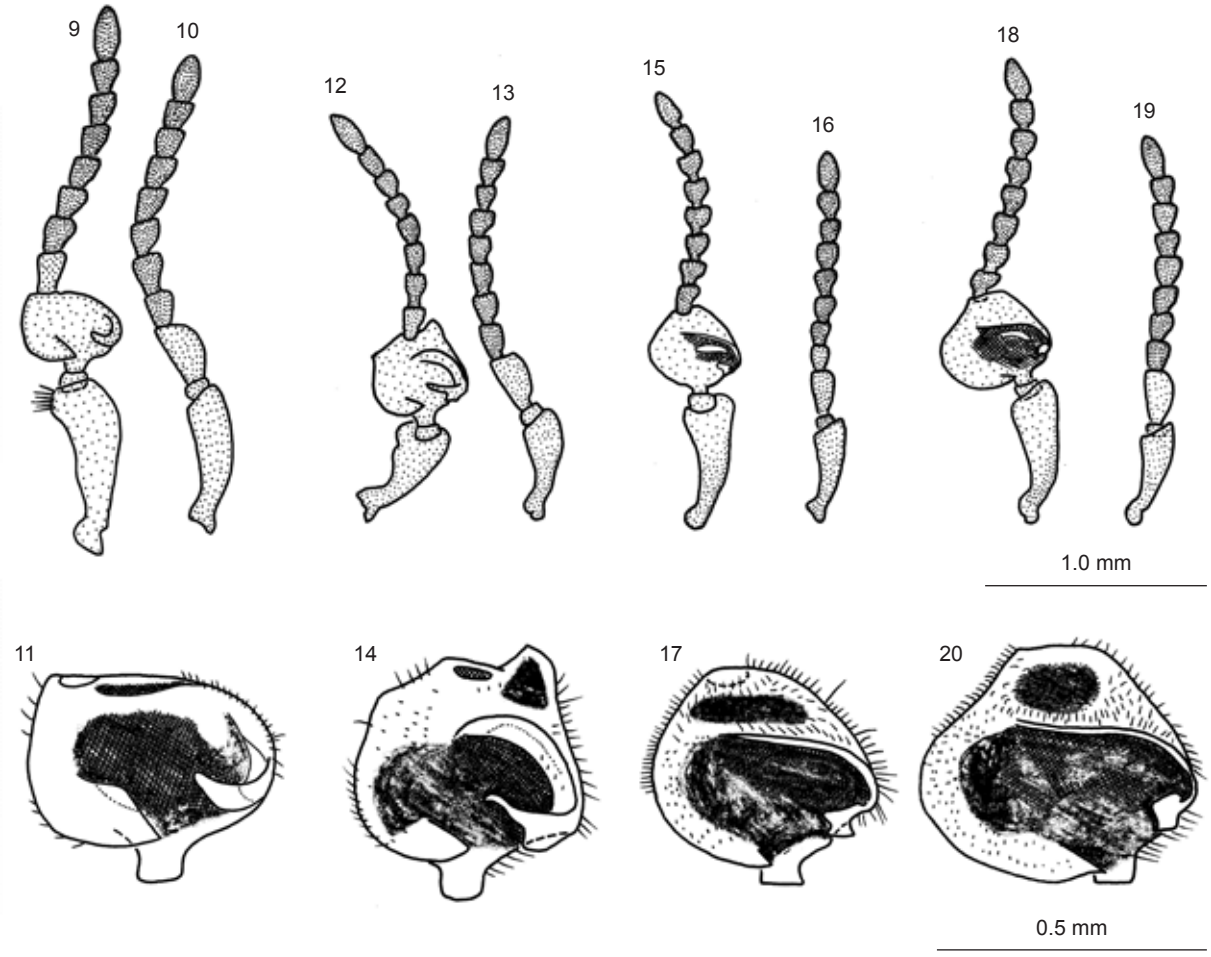
Female (Fig. 2): Similar to male in color. Antennae (Fig. 10) rather slender; segment III oblong, L/W = 2.0; approximate ratio of each antennal segment as (*n* = 1) 8.8: 1.0: 4.0: 2.0: 2.4: 2.4: 2.4: 2.0: 2.0: 1.8: 3.0. PW/PL 1.25-1.39 (1.33); EL/EW 1.35-1.54 (1.48); EL/PL 2.63-2.82 (2.76); EW/PW 1.32-1.50 (1.41); TL/EW 2.35-2.67 (2.54).

Measurements: Male (*n* = 6): TL 4.80-5.45 (5.18) mm; PW 1.45-1.6 (1.55) mm; PL 1.12-1.3 (1.18) mm; EL 3.12-3.25 (3.19) mm; EW 2.08-2.5 (2.24) mm. Female (*n* = 6): TL 5.20-5.88 (5.51) mm; PW 1.45-1.60 (1.54) mm; PL 1.10-1.20 (1.16) mm; EL 3.05-3.38 (3.20) mm; EW 2.00-2.30 (2.17) mm.

Distribution: Lutao (Green I.), about 30 km off the southeastern coast of Taiwan.

Biological notes: Members of this species inhabit rocky seashores (Fig. 30). The following marine insects were collected at the same localities: *Collarocoris satoi* (Miyamoto) (Omaniidae), *Hermatobates weddi* China (Hematobatidae), *Bembidion* (*Armatocillenus*) sp. (Carabidae), *Carpelimus* sp. (Staphylinidae), *Babalimnichus taiwanus* Satô, *Hyphalus taekoae* Satô, *Parathroscinus* sp. (Limnichidae), and *L. taiwanus* sp. nov.

Remarks: This species is related to *L.*



Figs. 9-20. Male (9, 12, 15, 18) and female (10, 13, 16, 19) antennae, and male antennal segment III (11, 14, 17, 20). **9-11.** *Laius lutaoensis* sp. nov.; **12-14.** *Laius taiwanus* sp. nov.; **15-17.** *Laius miyamotoi* Nakane; **18-20.** *Laius asahinai* Nakane.

taiwanus sp. nov., but differs by its larger body size and the shapes of the male antennal segment III and male genitalia.

Etymology: The species epithet is derived from the island type locality.

***Laius taiwanus* sp. nov.**
(Figs. 3, 4, 12-14, 22, 26)

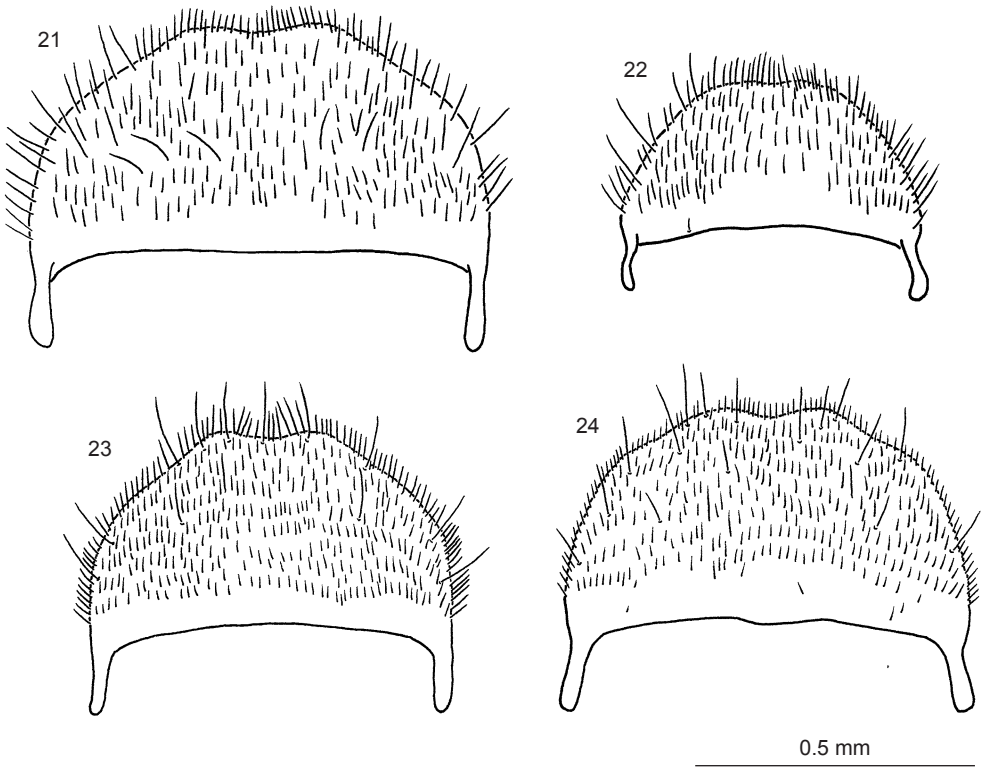
Holotype (TARI): ♂, "Ludao, Taiwan 4-7. IV. 2004 M. Satô leg."

Paratypes (TARI, EUM, NSMT, NMW, NHMB, SEHU): 10 ♂♂, 38 ♀♀, same data as for holotype; 7 ♂♂, 9 ♀♀, "Lutao Taiwan 22-26. III.1998 M. Satô leg."; 3 ♀♀, "TAIWAN: Taitung Lutao is., leg. C.-F. Lee 26-28. III. 1998"; 7 ♂♂, 10 ♀♀, "near Jhaorih Rudao Isl. SE of TAIWAN 5-6. IV. 2004 H. Yoshitomi leg.", genit. s. no. HY 1058, 1002 (♂) and HY 1059 (♀).

Additional materials examined: 2 ♂♂, 1 ♀, "Lanhsu Taiwan 5-10. VIII. 1998 M. Satô leg."; 4 ♀♀, "Lanhsu Taiwan 26-28-III-1998 M. Satô leg."; 11 ♂♂, 4 ♀♀, "Sanhsientai Taitung, Taiwan 13-VIII-2000 M. Satô leg.", genit. s. no. HY 1068 (♀) and HY 1069 (♂); 1 ♀, "TAIWAN: Taitung Sanhsientai, leg. Lee 12. VIII. 2000"; 2 ♂♂, 3 ♀♀, "Lung Keng Pintung, Taiwan 10-VIII-2000 M. Satô leg.", genit s. no. HY 1070 (♂).

Description: Male (Fig. 3): Body oblong, strongly shiny, closely covered with short black setae. Coloration of body black; head and pronotum with bluish-green luster; elytra with bluish-purple luster; antennal segments I-III yellowish-orange.

Head narrower than pronotum; vertex flattened, extending between eyes to antennal sockets. Eyes moderate in size, prominent. Antennae (Fig. 12) stout; segment I short, apically robust; segment III (Fig. 14) subtrapezoidal in dorsal aspect, projecting in anterolateral corners, with 2 shallow concavities and 1 deep concavity in dorsal surface; L/W = 1.1; approximate ratio of each antennal segment as (*n* = 1) 9.0: 1.0: 7.0: 2.5: 2.5: 2.3: 2.0: 1.8: 2.0: 2.0: 3.5. Pronotum quadrate, widest near anterior margin, antero- and posterolateral angles rounded, closely covered with fine punctures; PW/PL 1.17-1.38 (1.24). Scutellum semicircular, punctation similar to that of pronotum. Elytra oblong, broadest at apical 1/3; sides gradually expanded posterolaterally; EL/EW 1.38-1.70 (1.46); EL/PL 2.44-3.31 (2.67); EW/PW 1.41-1.60 (1.48); TL/EW 2.44-2.79 (2.54). Legs



Figs. 21-24. Male tergites VIII. **21.** *Laius lutaoensis* sp. nov.; **22.** *Laius taiwanus* sp. nov.; **23.** *Laius miyamotoi* Nakane; **24.** *Laius asahinai* Nakane.

relatively long and stout; protibia thickened basally with basal area internally excavated.

Caudal margin of tergite VIII almost straight (Fig. 22). Spiculum simply pointed at anterolateral corners. Aedeagus (Fig. 26) gently tapered apically; spine long, slightly curved in apical part; apex long, truncate, emarginate apically, bearing short setae.

Female (Fig. 4): Similar to male in color. Antennae (Fig. 13) rather slender; segment III oblong, L/W = 1.8; approximate ratio of each antennal segment as (*n* = 1) 8.3: 1.0: 4.3: 2.8: 2.3: 2.5: 2.0: 2.0: 2.0: 2.0: 3.3. PW/PL 1.20-1.37 (1.25); EL/EW 1.37-1.49 (1.43); EL/PL 2.50-2.89 (2.68); EW/PW 1.38-1.59 (1.50); TL/EW 2.39-2.69 (2.51).

Measurements: Male (*n* = 13): TL 3.90-4.88 (4.18) mm; PW 1.00-1.23 (1.11) mm; PL 0.80-0.98 (0.90) mm; EL 2.20-2.98 (2.39) mm; EW 1.55-1.80 (1.64) mm. Female (*n* = 13): TL 3.98-4.70 (4.35) mm; PW 1.05-1.23 (1.16) mm; PL 0.85-1.00 (0.93) mm; EL 2.23-2.78 (2.48) mm; EW 1.60-1.90 (1.74) mm.

Distribution: Taiwan, including Lutao (Green I.) and Lanyu (Orchid I.).

Biological notes: At the type locality (Fig. 30), this species was collected with *L. lutaoensis* sp. nov.

Remarks: Lanyu specimens are smaller than the Lutao specimens, type series (TL = 3.30-3.62 mm in males, 3.47-3.68 mm in females). Sanhsientai and Lung Keng specimens differ from those of the type series by being smaller (TL = 3.10-3.45 mm in males, 3.10-3.50 mm in females) and in the elytra having a purplish luster. However, the shapes of the male antennal segment III and male genitalia of all specimens examined do not differ from those of the type series; thus we consider all of them to be the same species.

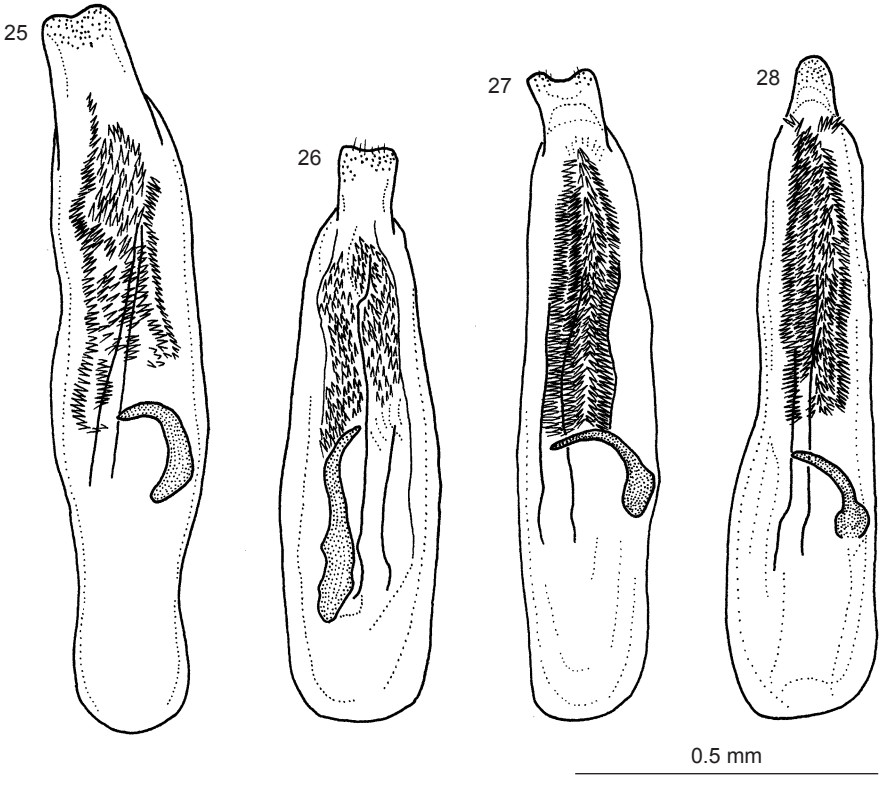
Etymology: The species epithet is derived from the type locality.

Laius miyamotoi **Nakane 1955**

(Figs. 5, 6, 15-17, 23, 27)

Laius miyamotoi Nakane 1955: 373; Satô 1985: 165, pl. 26, no. 11; Satô 1991: 162; Asano and Kojima 2009: 484.

Holotype (SEHU): ♂, "HOLOTYPE" (red), "TOKARA Is. Takara-jima 26. V. 1953", "Laius miyamotoi Nakane HOLOTYPE" (orange),



Figs. 25-28. Aedeagi. **25.** *Laius lutaoensis* sp. nov.; **26.** *Laius taiwanus* sp. nov.; **27.** *Laius miyamotoi* Nakane; **28.** *Laius asahinai* Nakane.

"HOLOTYPE Appended label by INARI", "NAKANE Coll. SEHU JAPAN 1999" (green), "0000000413 Sys. Ent. Hokkaido Univ. Japan [SEHU]".

Additional material examined: 2 ♂♂, 2 ♀♀, "[Tokara] Nakanoshima 29. V. 1962 M. Satô", genit. s. no. HY 1046; 2 ♂♂, 6 ♀♀, "NAKANOSHIMA Is. Tokara 12. vii. 1960 M. Satô leg."; 1 ♂, "NAKANOSHIMA Is. Tokara 8. vii. 1960 M. Satô leg."; 7 ♂♂, 5 ♀♀, "Onnason Okinawa-jima 26-28. IV. 2004 M. Satô leg."; 2 ♂♂, "Kume-jima Ryukyus 1. VII. 1977 H. Makihara"; 1 ♀, "KIBIRU Beach OKIERABU Is. 2-viii. 1984 S. NOMURA"; 1 ♀, "(RYUKYUS) Beach of Azama, Chinen Okinawa I. 4. VII. 1984 M. Tomokuni"; 1 ♂, 2 ♀♀, "Kawata Okinawa 5-V-1999 M. Satô leg.", male genit. s. no. HY 1045; 7 ♀♀, "Cape Bise-zaki Okinawa Is. Ryukyus, Japan 14-IV-1992 M. Hayashi et al."; 1 ♂, "Is. Taketomijima Yaeyama 21. III. 1995 T. Konishi leg."; 1 ♀, "Sumiyoshi Iriomote Is. Ryukyus, Japan 31-V-1990 M. Hayashi et al."; 1 ♀, "Yohan Amami-Oshima 3-V-1999 M. Satô leg."; 1 ♀, "Katabaruhama Yonaguni-jima 27-VIII-1994 M. Satô leg."; 1 ♀, "Higawa Is. Yonaguni 25-III-1994 M. Satô leg."; 2 ♂♂, "Shimotabaru-hama Ishigaki-jima, Ryukyus 25-V-2000 T. Fukaishi leg.", genit. s. no. HY 1047; 1 ♀, "Shiraho Ishigaki-jima 26-III-1994 M. Satô leg."; 1 ♂, "Sukuii-kaigan Ishigaki-jima 18-V-1990 T. Niisato leg."; 2 ♀♀, "Ishigaki City Ishigaki-jima 2-V-1969 H. Makihara"; 1 ♂, 1 ♀, "Kojimaiwa Ishigaki-jima 2-VI-2000 T. Fukaishi leg."

Redescription: Male (Fig. 5): Body oblong, slightly shiny, closely covered with black short setae. Color of body black; head, pronotum, scutellum, and elytra with dull bluish luster; antennal segments I-III yellowish-brown, dorsobasal portion of segment I infuscate.

Head narrower than pronotum; vertex flattened. Eyes moderate in size, prominent. Antennae (Fig. 15) stout; segment I slightly curved outwardly; segment III (Fig. 17) semicircular in dorsal aspect, dorsal surface deeply concave; L/W = 1.0; approximate ratio of each antennal segment as (*n* = 1) 8.0: 1.0: 5.2: 1.6: 1.6: 1.6: 1.6: 1.6: 1.6: 1.6: 2.4. Pronotum quadrate, widest near anterior margin, antero- and posterolateral angles rounded, closely covered with fine punctures; PW/PL 1.11-1.23 (1.17). Scutellum semicircular, punctation similar to that of pronotum. Elytra oblong, sides subparallel from near base to apical 1/4; EL/EW 1.45-1.58 (1.52); EL/PL 2.63-2.75 (2.69); EW/PW 1.48-1.55 (1.53); TL/EW 2.19-2.52 (2.33). Legs relatively long and slender; protibia slightly thickened basally with basal area internally excavated.

Caudal margin of tergite VIII shallowly emarginate (Fig. 23). Spiculum simply pointed at anterolateral corners. Aedeagus (Fig. 27) gently tapered apically; spine long, slightly curved; apex long, truncate, shallowly emarginate, bearing short setae.

Female (Fig. 6): Similar to male in coloration, but antennal segments I-II almost black. Antennae (Fig. 16) rather slender; segment III oblong, L/W = 2.0; approximate ratio of each antennal segment as (*n* = 1) 8.0: 1.0: 3.5: 2.0: 1.8: 2.0: 2.0: 2.0: 1.8: 2.0: 3.0. PW/PL 1.09-1.22 (1.17); EL/EW 1.39-1.47 (1.43); EL/PL 2.45-2.83 (2.68); EW/PW 1.55-1.65 (1.59); TL/EW 2.20-2.40 (2.29).

Measurements: Male (*n* = 4): TL 3.5-4.2 (3.88) mm; PW 1.00-1.23 (1.10) mm; PL 0.90-1.00 (0.94) mm; EL 2.40-2.75 (2.53) mm; EW 1.55-1.90 (1.67) mm. Female (*n* = 4): TL 4.08-4.40 (4.25) mm; PW 1.10-1.22 (1.17) mm; PL 0.90-1.10 (1.00) mm; EL 2.50-2.83 (2.67) mm; EW 1.70-1.95 (1.86) mm.

Distribution: Japan (Tokara-nakano-shima, Okierabu-jima, Amami-Ôshima, Okinawa-jima, Kume-jima, Ishigaki-jima, Iriomote-jima, Yonaguni-jima).

Biological notes: The following marine insects are frequently collected at the same locality where this species occurs: *Babalimnichus masamii* Satô, *Hyphalus taekoae* Satô (Limnichidae), and *Cicindela yuasai okinawaensis* Hori et Cassola (Carabidae: Cicindelinae). The larva of this species was described by Satô (1964) and Asano and Kojima (2009).

Remarks: This species, closely related to the allopatric *L. asahinai* Nakane, differs by the shape of male antennal segment III and the apex of the aedeagus.

***Laius asahinai* Nakane 1955**

(Figs. 7, 8, 18-20, 24, 28)

Laius asahinai Nakane 1955: 375; Satô 1985: 165, pl. 26, no. 12; Asano and Kojima 2009: 481.

Holotype (SEHU): ♂, "HOLOTYPE" (red), "penis preparat.", "Sata, Ohsumi Kyushu 29. V. 1952 T. Nakane", "Laius asahinai Nakane HOLOTYPE" (orange), "HOLOTYPE Appended label by INARI", "0000000416 Sys. Ent. Hokkaido Univ. Japan [SEHU]".

Additional material examined: 3 ♀♀, "Koza Wakayama Pref. 4-7. viii. 1978 Y. Kurosawa"; 1 ♀, "Amatsu-kominato, Chiba Pref. 22-VII-1988

H. Yoshitomi leg."; 1 ♀, "Sa-jima Teniin-shima Kanagawa Pref. 30-V-1983 N. Ohba leg."; 1 ♂, 1 ♀, "Sata KAGOSHIMA-P. 30. IV. 1991 M. Saito leg."; 2 ♂♂, 1 ♀, "Izu-Nakagi VII 1967 N. Ohbayashi", male genit. s. no. HY 1049; 1 ♂, "Kurio Yakushima (isl.) Kagoshima Pref. 17. VII. 1997 H. Yoshitomi leg.", antenna on slide no. HY 1048; 1 ♂, "Kurio Is. Yaku-shima 14. Aug. 1964 T. Okadome leg."; 1 ♀, "(SHIKOKU) Takehama Ehime Pref. 17. V. 1970 S. Kinoshita".

Redescription: Male (Fig. 1G): Body oblong, slightly shiny, closely covered with black short setae. Color of body black; head, pronotum, scutellum, and elytra with dull, bluish luster; antennal segments I-III yellowish-brown, but with infuscate dorsobasal region of segment I.

Head narrower than pronotum; vertex flattened. Eyes moderate in size, prominent. Antennae (Fig. 2J) stout; segment I slightly curved outwardly; segment III (Fig. 2L) transverse in dorsal view, dorsal surface deeply concave; L/W = 0.9; approximate ratio of each antennal segment as (*n* = 1) 10.8: 1.0: 7.3: 2.3: 2.0: 2.3: 2.0: 2.0: 2.3: 2.0: 3.3. Pronotum subquadrate, widest near anterior margin, antero- and posterolateral angles rounded, closely covered with fine punctures; PW/PL 1.16-1.31 (1.25). Scutellum semicircular, punctation similar to that of pronotum. Elytra oblong, broadest at apical 1/4; sides gradually expanded posterolaterally; EL/EW 1.38-1.53 (1.44); EL/PL 2.84-3.05 (2.96); EW/PW 1.54-1.77 (1.64); TL/EW 2.08-2.45 (2.23). Legs relatively long and slender; protibia slightly thickened basally with basal area internally excavated.

Caudal margin of tergite VIII shallowly emarginate (Fig. 3D). Spiculum simply pointed at anterolateral corners. Aedeagus (Fig. 4D) tapered apically; spine long, slightly curved; apex somewhat produced, obtusely rounded, covered with minute punctures.

Female (Fig. 1H): Similar to male in color, but antennal segments I and II almost black. Antennae (Fig. 2K) rather slender; segment III oblong, L/W = 1.8; approximate ratio of each antennal segment as (*n* = 1) 8.0: 1.0: 4.0: 2.3: 2.0: 2.0: 2.0: 2.0: 2.0: 2.0: 3.5. PW/PL 1.20-1.32 (1.28); EL/EW 1.50-1.58 (1.54); EL/PL 2.80-3.16 (2.95); EW/PW 1.48-1.52 (1.50); TL/EW 2.28-2.42 (2.33).

Measurements: Male (*n* = 3): TL 3.95-4.65 (4.27) mm; PW 1.10-1.23 (1.17) mm; PL 0.90-0.95 (0.93) mm; EL 2.70-2.90 (2.77) mm; EW 1.90-1.95 (1.92) mm. Female (*n* = 3): TL 4.10-4.60 (4.27) mm; PW 1.20-1.25 (1.22) mm; PL 0.93-1.00 (0.96) mm; EL 2.70-3.00 (2.83) mm; EW 1.80-1.90 (1.83) mm.

Distribution: Japan (Honshû, Shikoku, Kyûshû, Yakushima).

Biological notes: The following marine insects are frequently collected at the same localities where this species occurs: *Babalimnichus masamii* Satô (Limnichidae) and *Cicindela yuasai yuasai* Nakane (Cicindelidae). Hashimoto (1970) wrote that adults of this species are able to stay submerged in seawater for up to 30 h. The larvae and biology of this species were described by Asano and Kojima (2009).

Remarks: The obtusely rounded aedeagal apex is highly unusual in *Laius* and the related *Intybia*, a probable sister taxon of *Laius*. Until now, the occurrence of this species in Niigata Prefecture was the northernmost limit of the genus (Kurosawa 1974). This species was assigned the rank of "Data Deficient (DD)" by the *Japanese Insects Red List* (JME 2007).

New combinations for *Laius* species recorded from Taiwan

We propose to transfer 2 species treated as members of *Laius* to *Intybia* (Evers 1994, Wittmer 1997).

Intybia erectodentatus (Wittmer, 1982), comb. nov.

Laius erectodentatus Wittmer 1982: 368.

Holotype: (NHMB) "Taipei 3. IV. 77", "Taiwan 1977 J. and S. Klapperich", "PARATYPUS", "Laius erectodentatus Wittmer det. W. Wittmr", "MALACHIIDAE MALAC 00001639".

Paratypes: (NHMB) 1 ♀, same, "MALAC 00001586"; 1 ♀, same, "MALAC 0000108"; 1 ♂, "Yangmingshan Mts.", "Taiwan 1977 6. 4 J. and S. Klapperich", "PARATYPUS", "MALACHIDAE MALAC 00000134".

Intybia sexmaculatus (Pic, 1919), comb. nov.

Laius sexmaculatus Pic 1919: 12; Wittmer 1982: 369.

Specimens examined: 1 ♀ (EUM), "(TAIWAN) Kenting Park Pingtung Co. 17. V. 1981 K. Sasagawa", "Laius sexmaculatus Pic det. W. Wittmer"; 1 ♀ (EUM), "(FORMOSA) I. Lanyu Taitung Country IV-9, 1978 KÔZÔ MURAKAMI leg."

Species not treated in this paper

Laius pici Miwa 1931

Laius sexmaculatus Pic 1926: 78. (nec Pic 1919).
Laius pici Miwa 1931: 108.

Remarks: We did not examine specimens of this species, and do not refer to the taxonomic status. However, from the original description, this species is similar to *I. yapensis* (Wittmer) and *I. sexmaculatus* (Pic).

Key to species of *Laius* from Taiwan and Japan

1. Antennal segment I yellowish-orange in both sexes; pronotum and elytra with shiny luster; Taiwanese species 2
- Antennal segment I infuscate dorsobasally (male) or black (female); pronotum and elytra with faint luster; Japanese species.....3
2. TL 4.80-5.88 mm, EL 3.05-3.38 mm, PW 1.45-1.60 mm; antennal segment I slightly curved, about 2.0x length of segment III; male antennal segment III transversally oblong; aedeagal spine strikingly curved ....*Laius lutaoensis* sp. nov.
- TL 3.90-4.88 mm, EL 2.20-2.98 mm, PW 1.00-1.23 mm; antennal segment I strongly curved, about 1.3x (male)

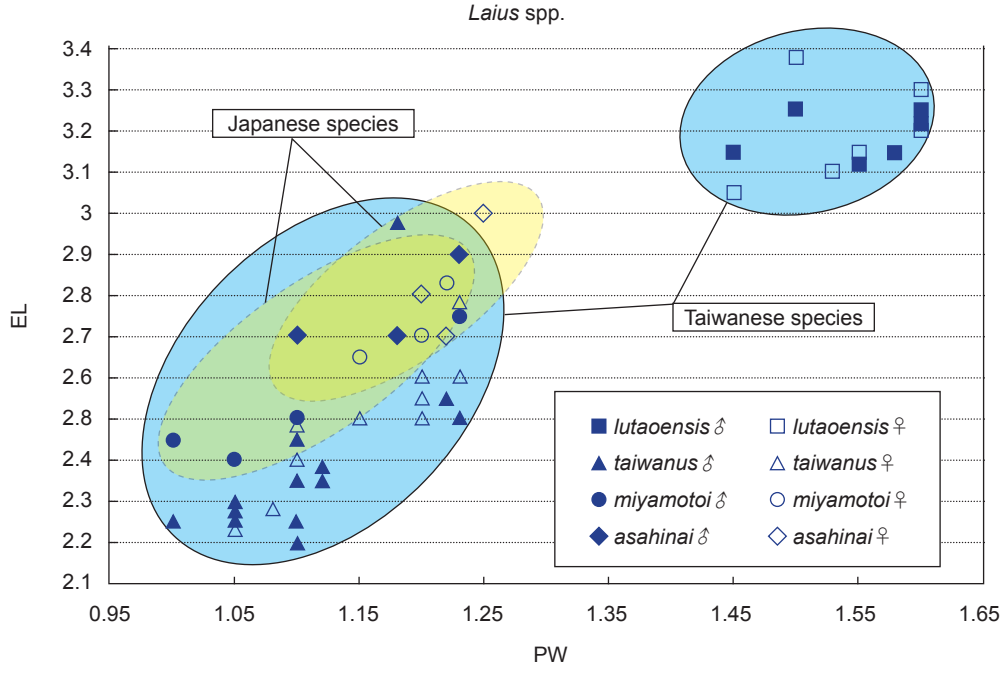


Fig. 29. Maximum pronotal width (PW) and elytral length along the suture (EL) of each *Laius* species.

Figs. 30, 31. 30. Habitat; **31.** male of *Laius lutaoensis* sp. nov. Photographed near Jhaorih, Lyudao (Green I.), 5 Apr. 2004, by HY.

or 1.9x (female) length of segment III; male antennal segment III subtrapezoidal, projecting at anterolateral corners; aedeagal spine slightly curved ..... *Laius taiwanus* sp. nov.

3. Male antennal segment III semicircular; apex of aedeagus shallowly emarginate ..... *Laius miyamotoi* Nakane

- Male antennal segment III transversal oblong; apex of aedeagus obtusely rounded ..... *Laius asahinai* Nakane

DISCUSSION

The 2 Taiwanese species described herein are sympatric (Fig. 32), having been collected at the same time and place at Lutao (Green I.). The difference in body sizes makes them clearly distinguishable in the field (Fig. 29). On the other hand, the 2 Japanese species are allopatric (Fig.

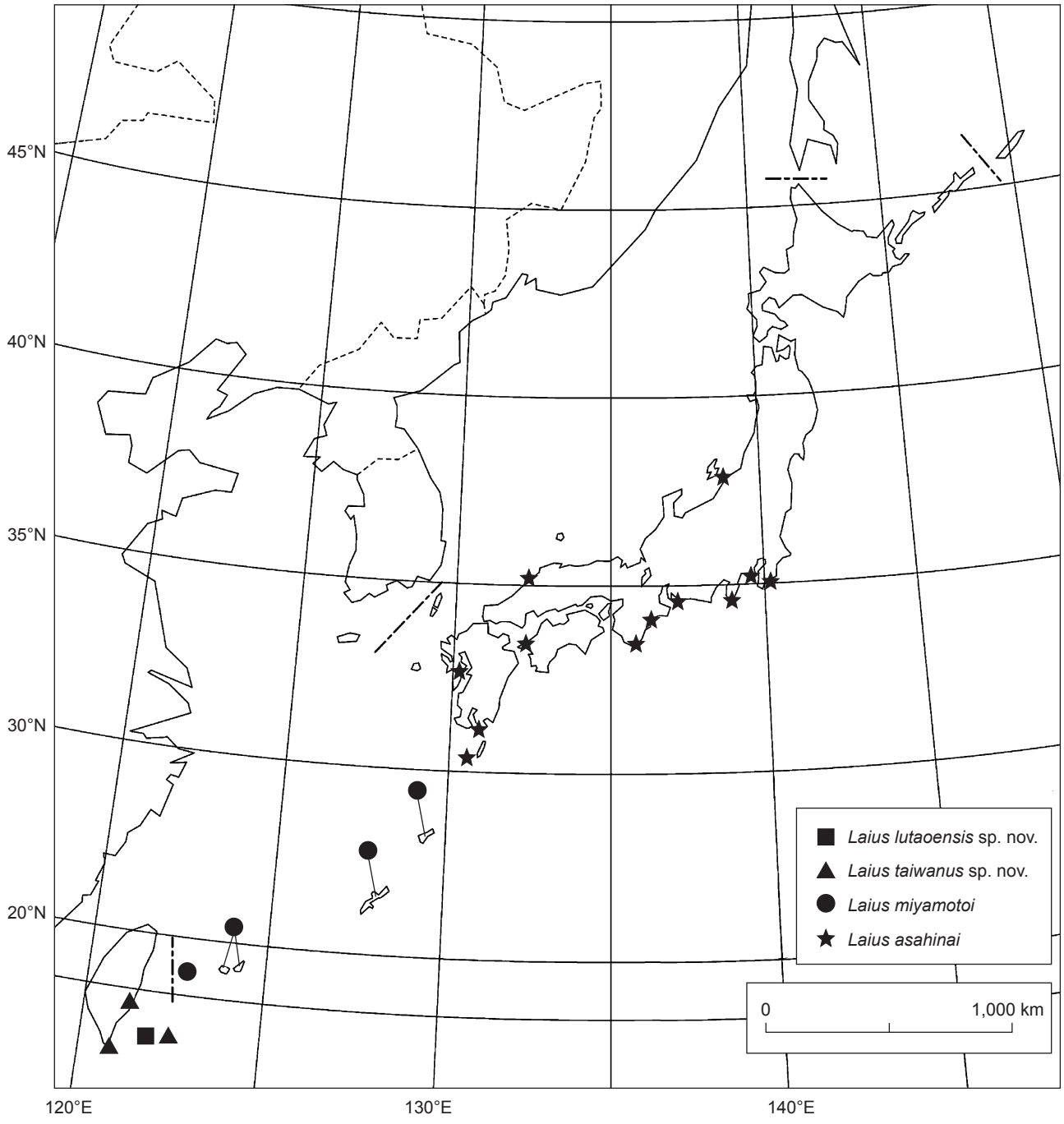


Fig. 32. Distribution map of *Laius* spp.

32). A distributional boundary line occurs between the Yakushima and Tokara Is. This line has been described as “Watase’s line” (Suzuki 2003). Body sizes of the 2 species overlap each other (Fig. 29).

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