

Discovery of an Isolated Population of *Limnocarabus (Euleptocarabus) porrecticollis* (Coleoptera, Carabidae) from the Southern Foot of Mt. Fuji in Shizuoka Prefecture, Central Japan

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Abstract An isolated population of *Limnocarabus (Euleptocarabus) porrecticollis* (BATES, 1883) is recorded from the southern foot of Mt. Fuji in Shizuoka Prefecture of Central Japan, and described as a new subspecies under the name *L. (E.) p. pacificus*.

Limnocarabus (Euleptocarabus) porrecticollis is a well-known carabid beetle endemic to Japan. It was described by the famous British coleopterologist H. W. BATES nearly 130 years ago (BATES, 1883, p. 228), and divided later into two subspecies, namely, the nominotypical *porrecticollis* and subsp. *kansaiensis* by NAKANE (1961, p. 2), though the distributional borders between these two races are not yet defined properly. This species is widely but rather discontinuously distributed mainly on the Japan Sea side of Honshu, from Akita Prefecture in the north to Hiroshima Prefecture in the southwest. On the Pacific side, however, it occurs rather sporadically in certain areas such as the Sendai Plain, northern edge of the Kantô Plain, northeastern edge of the Nôbi Plain and the northern part of the Kii Peninsula. Areas along the Pacific coast between Iwate and Wakayama Prefectures have been remained as a large blank of distribution except for the central part of the Sendai Plain near Matsushima Bay, where the species invades into low alluvial plain close to the sea (Fig. 9). It is therefore most unexpected that BATES' species was discovered from the southern foot of Mt. Fuji in Shizuoka Prefecture, which lies nearly at the centre of the distributional blank of the species and faces the Pacific Ocean in a short distance.

In March of 2004, the second author visited Ôbuchi of Fuji-shi on the southern slope of Mt. Fuji, and collected a carabine specimen with general features agreeing with those of *L. (E.) porrecticollis*. At that time, however, he was unaware of its importance from the zoogeographical viewpoint. In February of 2011, the first author had an opportunity to hear about that story, and we soon visited the place where *L. (E.) porrecticollis* was found seven years ago. Fortunately, we succeeded in collecting a series of examples of the same species from several different stations in Ôbuchi, though the environment of the habitat and its nearby regions have been partly destroyed and dramatically changed because of widening of road and development of residential area during the past several years. For the following few weeks, our investigations progressed rapidly and intensively, and we have arrived at a rough estimation on the range of distribution and living environment of this unique population.

The specimens of *L. (E.) porrecticollis* from the southern slope of Mt. Fuji bear unique combination of characters in both external and male genitalic features, and could be distinguished from all the other populations of *L. (E.) porrecticollis*, though our knowledge is still insufficient on its geographical variation and subspecific classification. In this paper, we are going to describe the Fuji population as a new subspecies under the name of *L. (E.) porrecticollis pacificus*.

The higher classification employed herein is the same as that proposed by the first author

(IMURA, 2002 b), and terms for the genital organ are the same as those used in other papers of the first author's (cf., IMURA, 1990, p. 139; 2002 a, p. 130; IMURA *et al.*, 1998, p. 20). The abbreviations of collector's name used in the text are as follows: YI—Yûki IMURA; MM—Masamitsu MATSUNAGA.

Before going further, we wish to express our sincere gratitude to Messrs. Yoshihiko SHICHINO (Tokyo), Kiyoyuki MIZUSAWA (Yokosuka), Osamu TOMINAGA (Nara) and Osamu YAMAJI (Okayama) for their kind cooperation. Thanks are also due to Dr. Shun-Ichi UÉNO (National Museum of Nature and Science, Tokyo) for critically reading the manuscript of this paper.

Limnocarabus (Euleptocarabus) porrecticollis pacificus

IMURA et MATSUNAGA, subsp. nov.

(Figs. 1–3, 8)

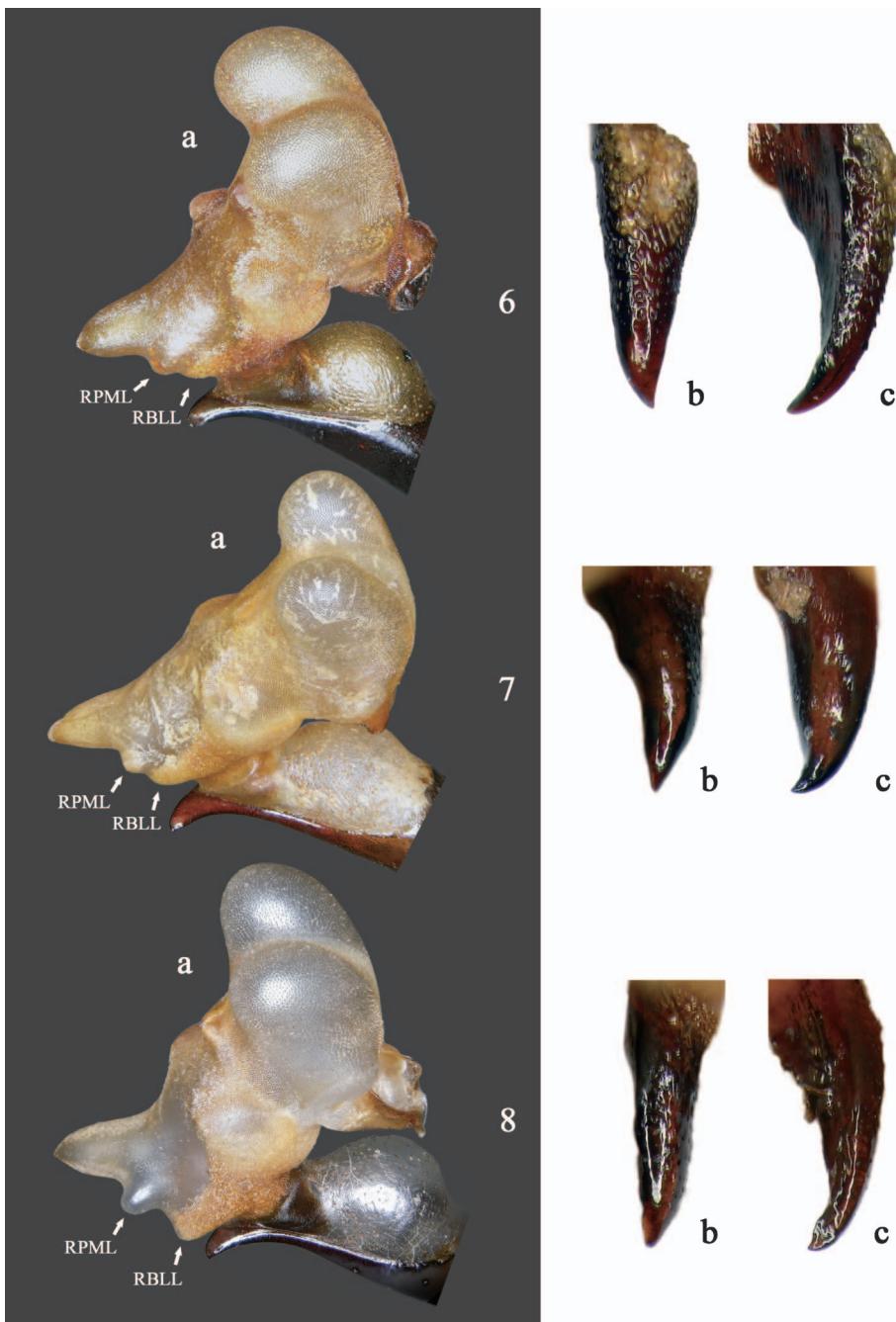
Length (including mandibles): ♂, 24.0–29.2 (arithmetic mean 27.7) mm; ♀, 28.3–32.2 (arithmetic mean 30.1 mm). Upper surface of body entirely black with a faint dark purplish tinge on head, pronotum and marginal areas of elytra, a little more prominently so in male. Coloration is stable, and no light purplish individual was found so far as we have examined.

Distinguishable from the nominotypical *L. (E.) porrecticollis* and *L. (E.) p. kansaiensis* (NAKANE, 1961) in the combination of the following morphological character states: 1) dorsal coloration stably darker, above all in elytra which are mat black without purplish tinge except for lateral margins; 2) sides of pronotum less remarkably cordate in anterior halves, less remarkably sinuate posteriorly, with lateral portions less strongly reflexed above; 3) propleura coarsely and evidently punctate; 4) epipleura a little less coarsely granulate than in nominotypical subspecies; 5) humeral serration of elytra barely recognizable in most specimens examined; 6) primary foveoles of elytra averagely shallower; 7) secondary intervals of elytra indicated by narrow and independent costae, while they are often fused with adjacent granules to form a reticular or radiate pattern in subsp. *kansaiensis*; 8) tertiary interval of elytra not costate as in nominotypical subspecies but indicated by irregularly set rows of granules as in subsp. *kansaiensis*, though areas between intervals much less coarsely scattered with granules which are smaller than those of subsp. *kansaiensis*; 9) internal sac of male genitalia with a small lobe lying at right side of median lobe (we call it right paramedian lobe) and right basal lateral lobe more prominently protruded than in other two subspecies; 10) lepidospinula (IMURA *et al.*, 1998, p. 20) unique in size and shape as shown in Figs. 8b and 8c, apparently smaller than that of nominotypical subspecies and slenderer than in subsp. *kansaiensis*, sometimes indistinctly tuberculous a little behind tip on ventral or inflexed side.

Type series. Holotype: ♂, Ôbuchi [大渊] in Fuji-shi, 360 m in altitude, at the southern foot of Mt. Fuji, in Shizuoka Prefecture, central Honshu, Central Japan, 13-II-2011, YI & MM leg., deposited in Hokkaido University Museum, Sapporo. Paratypes [27 ♂♂, 26 ♀♀]: 3 ♂♂, 2 ♀♀, same data as for the holotype; 1 ♂, same locality, 28-III-2004, MM leg.; 1 ♂, same locality, 9-II-2011, MM leg.; 1 ♀, same area (ca. 1.2 km distant to the east from the type locality, 420 m in altitude), 13-II-2011, YI & MM leg.; 1 ♂, 2 ♀♀, same area (ca. 1.9 km distant to the east from the type locality, 440 m in altitude), 13-II-2011, YI & MM leg.; 3 ♂♂, 1 ♀, same area (ca. 0.9 km distant to the northeast from the type locality), 430 m in altitude, 17-II-2011, MM leg.; 1 ♂, same area (ca. 2.5 km distant to the north-northeast from the type locality), 560 m in altitude, 17-



Figs. 1–5. *Limnocarabus (Euleptocarabus) porrecticollis pacificus* IMURA et MATSUNAGA subsp. nov. from the type locality.—1, ♂, holotype; 2, ♀, paratype; 3, left prothorax (male, paratype); 4, right shoulder (male, paratype); 5, median portion of left elytron (male, paratype).



Figs. 6–8. Male genital organ of *Limnocarabus (Euleptocarabus) porrecticollis* subsp. — 6, *L. (E.) p. porrecticollis* from Urasa in Niigata Pref.; 7, *L. (E.) p. kansaiensis* from Iwawaki in Osaka Pref.; 8, *L. (E.) p. pacificus* from Ōbuchi of Fuji-shi in Shizuoka Pref.; all from the type locality. — a, fully everted internal sac in right subdorsal view; b, lepidospinula in dorsal view; c, ditto in lateral view. — RPML—right paramedian lobe; RBLL—right basal lateral lobe.

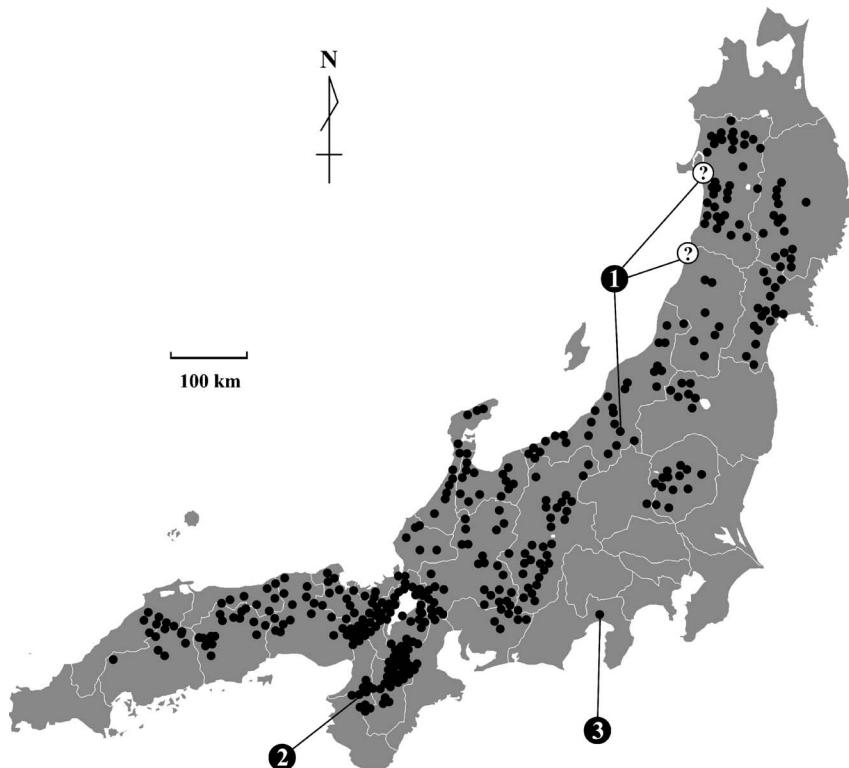


Fig. 9. Map of Honshu showing the known localities of *Limnocarabus (Euleptocarabus) porrecticollis* drawn on the basis of the specimens examined in the present study and those recorded by Kinki Research Group of Carabid Beetles (1979), TOMINAGA & HIURA (1980), YAMAYA (1989) and YAHIRO (2003). — 1, type localities of *L. (E.) p. porrecticollis* designated by BATES (1883) (closed circle — Urasa in Niigata Pref.; question marks — “northwestern coast of Akita and Sakata”); 2, type locality of *L. (E.) p. kansaiensis* designated by NAKANE (1961) (Iwawaki in Osaka Pref.); 3, type locality of *L. (E.) p. pacificus* (Ôbuchi of Fuji-shi in Shizuoka Pref.).

II–2011, MM leg.; 5♂♂, 3♀♀, same area (ca. 1.6 km distant to the south from the type locality, 280 m in altitude), 19–II–2011, MM leg.; 1♂, same area (ca. 1.4 km distant to the north from the type locality, 450 m in altitude), 23–II–2011, MM leg.; 4♂♂, 6♀♀, same area (ca. 1.5 km distant to the north-northeast from the type locality, 470 m in altitude), 23–II–2011, MM leg.; 2♂♂, same area (ca. 1.1 km distant to the northwest from the type locality, 380 m in altitude), 25–II–2011, MM leg.; 2♂♂, 3♀♀, same area (ca. 0.6 km distant to the southwest from the type locality, 310 m in altitude), 25–II–2011, MM leg.; 3♂♂, 4♀♀, same area (ca. 1.8–1.9 km distant to the east-southeast from the type locality, 400 m in altitude), 27–II–2011, YI, MM & Y. SHICHINO leg.; 1♀, same area (ca. 1.9 km distant to the south-southwest from the type locality, 240 m in altitude), 8–III–2011, MM leg.; 3♀♀, Nakamura [中村] of Sugita [杉田] in Fujinomiya-shi (ca. 1.6 km distant to the south-southwest from the type locality, 230 m in altitude), 8–III–2011, MM leg.

Type depository. Holotype and a female paratype are deposited in Hokkaido University Museum, Sapporo, with the collection number 30633 & 30634, respectively. All the remaining paratypes are separately preserved in the collections of the authors, Y. SHICHINO and K.

MIZUSAWA.

Specimens of L. (E.) p. porrecticollis and L. (E.) p. kansaiensis examined for comparative study (655 ♂♂, 586 ♀♀ from ca. 320 different localities). [AKITA Pref.] 1 ♀, Yamada [山田] in Ôdaté-shi, 21–XI–2004, T. KAYAHASHI leg.; 1 ♀, Yunosawa [湯ノ沢] in Fujisato-machi, 29–VIII–2009, Y. SYU leg.; 1 ♂, Usuizawa [薄井沢] of Kasugé [柏毛] in Fujisato-machi, 21–XI–2004, T. KAYAHASHI leg.; 1 ♀, Tané [種] in Noshiro-shi, 2–XI–2004, K. SEYA leg.; 1 ♂, Niageba [荷上場] in Noshiro-shi, 21–XI–2004, T. KAYAHASHI leg.; 4 ♂♂, 2 ♀♀, Iwawaki [岩脇] of Nanukaichi [七日市] in Kita-akita-shi, 3–V–2005, H. YOKOYAMA leg.; 2 ♂♂, 2 ♀♀, Nagano [長野] of Moriyoshi [森吉] in Kita-akita-shi, 21–XI–2004, T. KAYAHASHI leg.; 1 ♂, 1 ♀, Taihei [太平] in Akita-shi, 7–IV–1986, M. FUJIOKA leg.; 5 ♂♂, 4 ♀♀, Kawabé-iwami [河辺岩見] in Akita-shi, 2–XII–2004, T. KAYAHASHI leg.; 1 ♂, 1 ♀, Yûwa-kayagasaki [雄和萱ヶ沢] in Akita-shi, 18–XII–2004, T. KAYAHASHI leg.; 1 ♂, Yûwa-memeki [雄和女木米] in Akita-shi, 18–XII–2004, T. KAYAHASHI leg.; 1 ♂, Mt. Takao-san [高尾山] of Yûwa [雄和] in Akita-shi, 16–X–1988; 3 ♂♂, 1 ♀, Kyôwa-funasawa [協和船沢] in Daisen-shi, 8–XI–1992, F. SATÔ leg.; 2 ♀♀, same locality, 2–VIII–1994, K. MATSUMOTO leg.; 2 ♂♂, 2 ♀♀, “Kyôwa-machi [協和町]” (=Kyôwa of Daisen-shi at present), 25–V–1994, K. MATSUMOTO leg.; 1 ♂, 2 ♀♀, Ioka [伊岡] of Ômagari [大曲] in Daisen-shi, 23–XI–1980, F. SATÔ leg.; 4 ♂♂, 3 ♀♀, Iwaki-michikawa [岩城道川] in Yurihonjô-shi, 9–XII–2006, M. TAGUCHI leg.; 2 ♂♂, Sankichi-kôen [三吉公園] in Suedaté [末館] of Imashuku [今宿] in Yokoté-shi, 11–XII–2004, K. NARUSÉ leg. [IWATE Pref.] 1 ♂, 1 ♀, Kunuginomé [棚ノ目] in Hanamaki-shi, 29–XI–2004, T. KAYAHASHI leg.; 1 ♂, Ôhasama [大迫] in Hanamaki-shi, 4–XII–2004, T. KAYAHASHI leg.; 1 ♂, Genbi-chô [厳美町] in Ichinoseki-shi, 29–X–1995, T. WATANABE leg.; 1 ♂, 1 ♀, Yagi [谷起] in Ichinoseki-shi, 20–III–2005, T. KAYAHASHI leg.; 1 ♀, Mt. Jikyô-zan [自鏡山] of Hagishô [萩莊] in Ichinoseki-shi, 9–IV–2005, S. SAKURATANI leg. [YAMAGATA Pref.] 3 ♂♂, 3 ♀♀, Kuraoka [蔵岡] in Tozawa-mura, 4–I–1994, S. SAKURAI leg.; 6 ♂♂, 6 ♀♀, same locality & collector, 28–XI–1998. [MIYAGI Pref.] 1 ♂, 1 ♀, Kurikoma-torisawa [栗駒鳥沢] in Kurihara-shi, 21–III–2009, S. SAKURATANI leg.; 1 ♂, 1 ♀, Ôkawaguchi [大川口] of Ichihasama [一迫] in Kurihara-shi, 25–IV–2006, M. KODAMA leg.; 1 ♂, Shimizugasawa [清水ヶ沢] of Wakayanagi-muyari [若柳武館] in Kurihara-shi, 7–I–2007, M. KODAMA leg.; 1 ♂, 4 ♀♀, “Nomura [野村]” of Seminé [瀬峰] in Kurihara-shi, 1–IV–2007, M. KODAMA leg.; 2 ♂♂, 2 ♀♀, Chôjahara [長者原], 100 m, in Furukawa-shi, 10–XII–1991, M. KODAMA leg.; 1 ♂, Higashi-narita [東成田] in Ôsato-chô, 2–XII–1991, M. KODAMA leg.; 5 ♀♀, Ishikura [石倉] of Ono [小野] in Taiwa-chô, 25–XI–1991, M. KODAMA leg.; 1 ♂, 1 ♀, Aonoki [青野木] of Imozawa [芋沢] in Aoba-ku of Sendai-shi, 18–XI–2006, M. KODAMA leg.; 3 ♂♂, 3 ♀♀, Ôgamé [大龜] in Tomiya-machi, 3–VI–1987, M. KODAMA leg.; 2 ♀♀, Ôtsuka [大塚] in Higashi-matsushima-shi, 24–III–2010, S. SAKURATANI leg.; 1 ♂, 1 ♀, Mt. Tomi-yama [富山] in Higashi-matsushima-shi, 19–III–1998, S. SAKURATANI leg. [FUKUSHIMA Pref.] 1 ♂, Mt. Dôminé-san [堂峯山] of Yamato-machi [山都町] in Kitakata-shi, 2–IV–2005, K. SEYA leg.; 1 ♀, Urushikubo-otsu [漆窪乙] of Miné [峯] in Takasato-machi [高郷町] of Kitakata-shi, 30–IV–2005, K. NARUSÉ leg.; 2 ♂♂, 1 ♀, Mt. Raijin-yama [雷神山] in Takasato-machi [高郷町] of Kitakata-shi, 28–XI–2004, K. SEYA leg.; 2 ♂♂, Keitoku-machi-matsuiaike [慶徳町松舞家], 220 m, in Kitakata-shi, 27–IV–1997, O. TOMINAGA leg.; 1 ♂, “Aizu-wakamatsu”, 13–IV–1948, KUROSAWA leg. [NIIGATA Pref.] 1 ♂, Mt. Yakeminé-yama [焼峰山] in Shibata-shi, 3–IV–1972, T. SÔMA leg.; 1 ♀, same locality & collector, 1–X–1972; 1 ♂, Futatsuyama [二ツ山] of Kami-honai [上保内] in Sanjô-shi, 1–XII–1999, K. SEYA leg.; 1 ♂, 1 ♀, Mt. Gassan [月山] in Aga-machi, 4–IV–1976; 2 ♂♂, Hirotani [広谷], 160 m, in Aga-machi, 29–IV–1997, O.

TOMINAGA leg.; 2♂♂, Nagashima [長島] of Kitajô [北条] in Kashiwazaki-shi, 20–III–1992, K. SEYA leg.; 1♂, Shiiya [椎谷] in Kashiwazaki-shi, 19–I–1993, Y. KUSAKABÉ leg.; 1♂, 1♀, Mt. Yamamoto-yama [山本山] in Odiya-shi, 19–IV–2002, J. KANEKO leg.; 1♂, Takeda [竹田] of Nakayama [中山] in Kawaguchi-machi (Nagaoka-shi at present), 24–XI–1980, H. NAKABAYASHI leg.; 1♀, “Matsuzawa [松沢?]” in Kawaguchi-machi (Nagaoka-shi at present), 6–V–1981, H. NAKABAYASHI leg.; 5♂♂, Urasa [浦佐] in Minami-uonuma-shi, 18–XII–1998, K. SEYA leg.; 2♀♀, same locality & collector, 18–V–2005; 2♂♂, Ôzato [大里] in Minami-uonuma-shi, 30–VII–2002, T. MATSUMOTO leg.; 1♀, Mt. Sakato-yama [坂戸山] in Minami-uonuma-shi, 29–IV–1981, H. NAKABAYASHI leg.; 1♀, Pass Hakka-tôgé [八箇峠] in Minami-uonuma-shi, 31–VIII–2004, T. MIZUSAWA leg.; 1♂, Matsunoyama [松之山] in Tôkamachi-shi, 23–X–2005, M. NAGANO leg.; 4♂♂, 1♀, Shikawatari [鹿渡] of Sangakô [三箇甲] in Tsunan-machi, 27–IV–2006, K. SEYA leg.; 1♂, 4♀♀, Mugurasawa [葎沢] in Uonuma-shi, 23–VII–2000, K. SEYA leg.; 2♂♂, 3♀♀, Mt. Kanaya-san [金谷山] in Jôetsu-shi, 3–XII–1982, T. WATANABÉ leg.; 2♂♂, 3♀♀, Nagahama [長浜] in Jôetsu-shi, 4–III–1994, K. SEYA leg.; 2♂♂, 3♀♀, Tarayama [寺山] in Itoigawa-shi, 28–IV–1993, K. SEYA leg.; 1♂, 2♀♀, Kuzureyama [崩山] in Itoigawa-shi, 13–VII–1994, K. SEYA leg.; 1♀, Nougawa-keikoku [能生川渓谷] in Itoigawa-shi, 1–X–2002, J. KANEKO leg.; 3♀♀, Uramoto [浦本] in Itoigawa-shi, 28–V~4–VI–1995, T. TAKANO leg.; 1♂, 2♀♀, Uramoto [浦本]~“Takaminé [高峰]” in Itoigawa-shi, 10–V–1993, K. SEYA leg.; 1♂, Shinrin-kôen-takanominé [森林公園高ノ峯] in Itoigawa-shi, 1–I–1994, T. TAKANO leg.; 3♂♂, 1♀, Tômi-gawa [田海川] in Itoigawa-shi, 11–III–1994, K. SEYA leg. [TOCHIGI Pref.] 5♂♂, 5♀♀, Kobyaku [小百] in Imaichi-shi, 26–III–1999, T. SHIMADA leg.; 2♂♂, Machiya [町谷] near Riv. Kinu-gawa [鬼怒川] in Imaichi-shi, 28–III–2004, K. WATANABÉ leg.; 7♂♂, 11♀♀, Nikkô [日光] in Nikkô-shi, 6–I–1972, YI leg.; 10♂♂, 2♀♀, Kurisawa [栗沢] of Kami-nanmamachi [上南摩町] in Kanuma-shi, T. AOKI & S. YAMAGUCHI leg.; 2♂♂, same locality & collectors, 24–VI–1995; 1♂, Sengen-jinja [浅間神社] Shrine of Nishizawa-machi [西沢町] in Kanuma-shi, 2–VIII–2006, S. YAMAGUCHI leg.; 1♂, 1♀, “Utsunomiya”, 24–III–1969, K. MORI leg.; 1♂, same locality, 12–XII–1970, T. ISHIDA leg.; 2♂♂, 2♀♀, Mt. Hanzô-yama [半藏山] in Utsunomiya-shi, 13–XI–1988; 4♂♂, 6♀♀, Miyayamada [宮山田] in Utsunomiya-shi, 6–XI–1966, T. HANATANI leg.; 5♂♂, Kami-kogura-chô [上小倉町] in Utsunomiya-shi, 20–II–2010, Y. SHICHINO leg.; 1♂, 2♀♀, Ômori-machi [大森町] in Tochigi-shi, 26–XII–1993, A. TOBA leg.; 1♂, 1♀, same locality & collector, 29–X–1995; 1♂, Mt. Taihei-zan [大平山] in Ashio-machi, 7–XII–1981; 1♀, same locality, 10–V–1981; 1♀, Kabasaki-chô [樺崎町] in Ashikaga-shi, 19–I–2002, J. KANEKO leg.; 4♂♂, 6♀♀, Komaba [駒場] of Akami-chô [赤見町] in Sano-shi, 19–I–2002, J. KANEKO leg. [GUNMA Pref.] 1♂, 3♀♀, Hirosawa-chô [広沢町] in Kiryû-shi, 27–II–2002, J. KANEKO leg.; 2♂♂, 2♀♀, same locality & collector, 2–III–2002. [NAGANO Pref.] 1♂, 1♀, Kamishiro [神城] in Hakuba-mura, 27–VII–1999, T. OKUMURA leg.; 2♂♂, 2♀♀, Hokushin [北信] in Sakaé-mura, 3–V–2006, K. SEYA leg.; 5♂♂, Mt. Oshino-yama [押野山] in Akashina-machi, 2–V–1987, K. SEYA leg.; 4♂♂, Shiogawa [塩川] in Ueda-shi, 19–VII–2010, Y. SHICHINO leg.; 5♂♂, Seto [瀬戸] in Saku-shi, 29–XII–2010, Y. SHICHINO leg.; 2♂, Mt. Keshibôzu-yama [芥子坊主山] in Matsumoto-shi, 1–XI–1992, M. ARAI leg.; 1♂, Pass Shiojiri-tôgé [塩尻峠] in Shiojiri-shi, 19–VII–1980, T. WATANABÉ leg.; 3♂♂, 1♀, same locality, 25–IV–1995; 1♂, “Mt. Ontaké-san [御嶽山], 800 m”, 10–V–1981; 1♂, 1♀, “Ogôchi [小河内?] nr. Tatsuno”, 21–XI–1965, J. KOMIYA leg.; 1♀, Mt. Anagura-yama [穴倉山] in Tatsuno-machi, 22–VIII–1996, T. OKUMURA leg.; 2♂♂, 4♀♀, Kawashima [川島] in Tatsuno-machi, 25–VII–1997, T. OKUMURA leg.; 4♂♂, Mt. Ômiyama [大見山] in Suwa-shi, 22–I–1988, K. SEYA leg.; 1♂, 1♀, Nagaoka [長岡] of Higashiminowa [東箕輪] in Minowa-machi, 8–IX–1995, T. OKUMURA leg.; 1♂, 2♀♀, Takatô-jôshi [高

遠城址] in Ina-shi, 10-X-1964, J. KOMIYA leg.; 1♂, Minamisawa-kōsen [南沢鉱泉] in Ina-shi, 20-III-1973; 1♂, Nakatsubo [中坪] of Tera [手良] in Ina-shi, 26-III-1983, T. WATANABÉ leg.; 1♀, "Nagano Pref., Ina", 10-XI-1981; 1♀, "Nagano nr. Ina", 21-XI-1965; 1♀, Nosoko [野底] in Ina-shi, 12-V-1985, M. NISHIMURA leg.; 4♂♂, 4♀♀, Misuzu [美鶯] in Ina-shi, 30-XI-1988, N. KOBAYASHI leg.; 2♂♂, Nishi-machi [西町], 650 m, in Ina-shi, 20-XI-2005, J. KANEKO leg.; 1♂, 1♀, Ina-kita [伊那北] in Ina-shi, 13-IV-1971, K. FUJIMOTO leg.; 1♂, 3♀♀, Komagané Service Area [駒ヶ根サービスエリア], 750 m, in Komagané-shi, 21-IV-1988, S. SHIMIZU leg.; 1♀, Fukuyo [福与], 500 m, in Minowa-machi, 27-III-1983, T. WATANABÉ leg.; 1♂, Bitchūbara [備中原] in Achi-mura, 8-X-1997, S. HATSUSHIBA leg.; 3♂♂, 2♀♀, Hirugami-onsen [昼神温泉] in Achi-mura, 4-IV-2004, T. BAN leg.; 1♀, Ōdaira [大平] in Iida-shi, 27-VII-1985, T. NONAKA leg.; 1♀, Chiyo [千代] in Iida-shi, 7-VII-1995, T. KISHIMOTO leg.; 2♂♂, 5♀♀, Tenryū-kyō [天竜峡] in Iida-shi, 25-XI-1973, YI leg.; 2♂♂, Kamihisakata [上久堅] ~Chiyo [千代], 710 m, in Iida-shi, 2-XI-1997, O. TOMINAGA leg.; 1♂, 3♀♀, "Shimojoh [下條], Shimoina, Nagano", 28-III-1983, T. WATANABÉ leg.; 1♂, 2♀♀, Ōkubo [大久保] of Mutsuzawa [睦沢] in Shimojō-mura, 25-VII-1995, T. OKUMURA leg.; 11♂♂, 5♀♀, Karakasa [唐笠] in Yasuoka-mura, 25-XI-1973, YI leg.; 1♂, 3♀♀, same locality, 8-VII-1995, T. KISHIMOTO leg.; 1♀, Mt. Chausu-yama [茶臼山], 1300 m, in Neba-mura, 13-IV-1995, M. HASEGAWA leg. [GIFU Pref.] 1♂, Nodani [野谷] in Shirakawa-mura, 2-X-1991, T. MATSUMOTO leg.; 1♂, 1♀, Ogino [荻野] in Shirakawa-mura, 17-IX-1993, S. NISHIGAKI leg.; 1♂, 1♀, Nakagiri [中切], 80 m, of Shirotori-chō [白鳥町] in Gujō-shi, 3~4-VI-1996, H. TATENO leg.; 1♂, 1♀, Shimo-asoya [下麻生野] of Kamioka-chō-asoya [神岡町麻生野] in Hida-shi, 25-VI~2-VII-1995, T. TAKANO leg.; 2♂♂, 1♀, Kamioka-chō-ishikami [神岡町石神], 600 m, in Hida-shi, 25-VI~2-VII-1995, T. TAKANO leg.; 5♂♂, 5♀♀, Kurinoki-ga-hora [栗ノ木ヶ洞] of Urushigaitō-machi [漆垣内町] in Takayama-shi, 21-IV-1999, H. TATENO leg.; 10♂♂, 12♀♀, Nyūkawa-cho-niibari [丹生川町新張], 630 m, in Takayama-shi, 18-XII-2004, S. SHIMIZU leg.; 1♂, 1♀, Nishi-mae-notani [西前の谷] of Tsurumi [鶴見] in Ibigawa-chō, 23-VII-2002, N. KAWASÉ leg.; 1♀, Odu [小津] in Ibigawa-chō, 16-VIII-2002, N. KAWASÉ leg.; 3♂♂, 1♀, Tama [玉], 190 m, in Sekigahara-chō, 19-II-1987, S. SHIMIZU leg.; 5♀♀, same locality & collector, 5-I-1990; 4♂♂, 1♀, same area (200 m) & collector, 29-III-1990; 1♂, 1♀, same locality & collector, 6-V-1991; 3♂♂, 3♀♀, same area (210 m) & collector, 23-XII-1990; 2♂♂, 1♀, same area (220 m) & collector, 3-V-1991; 1♂, 1♀, same area (180 m) & collector, 15-I-1994; 4♂♂, 3♀♀, same locality & collector, 14-III-1998; 1♂, same locality (south of Sekigahara-shōnyūdō [関ヶ原鍾乳洞], 180 m) & same collector, 2-I-1995; 1♂, 1♀, same area (west of Sekigahara-shōnyūdō, 220 m) & same collector, 21-IV-1991; 5♂♂, 4♀♀, same area (190 m) & collector, 31-I-1998; 1♂, 1♀, Imasu [今須], 200 m, in Sekigahara-chō, 9-II-1992, S. SHIMIZU leg.; 1♂, Makida [牧田], 150 m, of Kami-ishidu-chō [上石津町] in Ōgaki-shi, 21-II-1992, S. SHIMIZU leg.; 1♂, 1♀, Mae-ga-sé [前ヶ瀬] of Kami-ishidu-chō in Ōgaki-shi, 14-V-2002, K. MAEGAWA leg.; 5♂♂, 5♀♀, Furuyashiki [古屋敷], 150 m, in Mitaké-chō, 25-I-1990, S. SHIMIZU leg.; 1♂, 1♀, Maezawa [前沢], 320 m, in Mitaké-chō, 23-III-1996, S. SHIMIZU leg.; 2♂♂, 2♀♀, Tsurusato-chō-kakino [鶴里町柿野], 440 m, in Toki-shi, 17-IV-1993, S. SHIMIZU leg.; 3♂♂, 3♀♀, Kanda [神田], 450 m, of Ōkuté-chō [大湫町] in Mizunami-shi, 10-XII-1987, S. SHIMIZU leg.; 3♂♂, 3♀♀, Hiraiwa [平岩], 350 m, of Hiyoshi-chō [日吉町] in Mizunami-shi, 8-II-1990, S. SHIMIZU leg.; 1♂, 1♀, same area (390 m) & collector, 6-II-1992; 4♂♂, 3♀♀, Hosokuté [細久手], 450 m, in Mizunami-shi, 8-II-1990, S. SHIMIZU leg.; 7♂♂, 5♀♀, same locality, 29-XII-1994, T. KISHI leg.; 1♂, 1♀, Benzaiten-no-iké [弁財天の池], 450 m, of Hiyoshi-chō [日吉町] in Mizunami-shi, 30-I-1992, S. SHIMIZU leg.; 1♂, 1♀, Mt. Amagoi-yama [雨乞山], 420 m, in Mizunami-shi, 23-III-1996, S.

SHIMIZU leg.; 1 ♀, Nagata [永田], 450 m, in Ena-shi, 7–VII–1988, S. SHIMIZU leg.; 3♂♂, 8♀♀, Osashima-chō [長島町], 470–500 m, in Ena-shi, 2–I–1994, S. SHIMIZU leg.; 14♂♂, 10♀♀, Yamaoka-chō-babayamada [山岡町馬場山田], 530 m, in Ena-shi, 22–II–1990, S. SHIMIZU leg.; 1♂, 2♀♀, same area (520 m) & collector, 6–XI–1993; 1♂, 1♀, same area (560 m) & collector, 20–I–1996; 1♂, 1♀, same area (580 m) & collector, 28–II–1998; 2♂♂, 2♀♀, Yamaoka-chō-kami-tōgē [山岡町上手向], 550 m, in Ena-shi, 3–I–1995, S. SHIMIZU leg.; 1♂, 2♀♀, Nakabora [中洞], 560 m, of Yamaoka-chō-tashiro [山岡町田代] in Ena-shi, 28–II–1998, S. SHIMIZU leg.; 1♂, 1♀, Sasadaira [笹平], 400 m, of Yamaoka-chō-tashiro [山岡町田代] in Ena-shi, 21–XII–1994, K. MAEGAWA leg.; 2♀♀, Noda [野田], 550 m, of Yamaoka-chō-shimo-tōgē [山岡町下手向] in Ena-shi, 28–II–1998, S. SHIMIZU leg.; 9♂♂, 2♀♀, SE. of Pass Noshi-tōgē [野志峠], 540–580 m, of Akechi-chō-noshi [明智町野志] in Ena-shi, 20–I–1996, S. SHIMIZU leg.; 2♂♂, Mt. Shiro-yama [城山], 700 m, of Iwamura-chō [岩村町] in Ena-shi, 15–VII–1988, S. SHIMIZU leg.; 4♂♂, 2♀♀, Iwamura [岩村], 550 m, in Ena-shi, 2–II–1990, S. SHIMIZU leg.; 1♀, Kaji-ga-daira [梶平], 550 m, of Iwamura in Ena-shi, 16–I–1992, S. SHIMIZU leg.; 2♂♂, 3♀♀, Uedaira-tameiké [上平溜池], 600 m, of Iwamura in Ena-shi, 1–I–1992, S. SHIMIZU leg.; 3♂♂, 2♀♀, Mt. Yûdachi-yama [夕立山], 680 m, of Iwamura in Ena-shi, 1–I–1992, S. SHIMIZU leg.; 2♂♂, 2♀♀, Mt. Hoko-yama (or Boko-yama) [保古山] in Nakatsugawa-shi, 12–IV–1981, Y. KITSUKI leg. [AI-CHI Pref.] 1♂, “Kakino [柿野]” in Seto-shi, 28–V–1989; 1♂, 1♀, Kamikoshi-keikoku [神越渓谷], 510 m, in Toyota-shi, 4–IX–1987, S. SHIMIZU leg.; 1♂, Urushibata-chō [漆畠町], 250 m, in Toyota-shi, 8–XII–1988, S. SHIMIZU leg.; 4♂♂, 1♀, Azô-chō [阿藏町] of Mikawa-kôgen [三河高原] in Toyota-shi, 20–I–1976, N. KANIÉ leg.; 4♂♂, 1♀, same locality, 2–VIII–1998, T. OJIKI leg.; 2♂♂, 3♀♀, Shingen-kô [信玄坑] of Tsugu-kanayama [津具金山] in Shitara-chō, 20–VIII–2000, T. OJIKI leg.; 1♂, Sakauba [坂宇場] in Toyoné-mura, 26–VIII–2000, T. OJIKI leg. [TOYAMA Pref.] 1♂, Kamitako [上田子] in Himi-shi, 18–III–1967, J. KOMIYA leg.; 1♂, 1♀, Shimomukuta [下向田] in Takaoka-shi, 8–III–2006, K. SEYA leg.; 1♂, 1♀, Pass Kurikara-tōgê [俱利伽羅峠] in Oyabé-shi, 15–V–1995, M. MORI leg.; 1♂, 2♀♀, Shiroyama-kôen [城山公園] in Oyabé-shi, 1–VIII–1993, T. TAKANO leg.; 1♂, 1♀, Minami-saikawashichi [南才川七] in Nanto-shi, 13~15–VIII–1993, T. TAKANO leg.; 4♂♂, 3♀♀, Yatsuo-machi-matsubara [八尾町松原] in Toyama-shi, 4–IV–1993, T. SHIMOTORI leg.; 1♂, Momoyama [桃山] of Idé [出], 130 m, in Uodu-shi, 16–IV–1995, T. TAKANO leg.; 1♀, Yunoé [湯上] in Uodu-shi, 12–III–1995, T. TAKANO leg.; 2♂♂, 3♀♀, Uwazue [上末] ~ Kurotani [黒谷] in Tateyama-machi, 21–III–1995, T. TAKANO leg.; 1♂, 1♀, “Tana-ga-hara [棚ヶ原]” in Toyama-shi, 3–XI–1992, T. SHIMOTORI leg. [ISHIKAWA pref.] 1♀, Suzu-misaki [珠洲岬] in Suzu-shi, 16–X–1996, M. ÔHAMA leg.; 4♂♂, 5♀♀, Mt. Hachibusé-yama [鉢伏山] in Wajima-shi, 4–XI–1960, J. KOMIYA leg.; 1♂, 1♀, Ipponmatsu-kôen [一本松公園] in Wajima-shi, 1–I–2004, M. IMURA leg.; 1♂, Momoura [百浦] in Shika-machi, 27–VI–1991, T. MATSUMOTO leg.; 4♂♂, 3♀♀, Mt. Hôdatsu-san [宝達山] in Hôdatsu-shimizu-shô, 3–XI–1960, J. KOMIYA leg.; 7♂♂, 6♀♀, Mt. Manganji-yama [満願寺山] in Kanazawa-shi, 5–XI–1961, J. KOMIYA leg.; 1♂, Mt. Shiritaka-yama [後高山] in Kanazawa-shi, 18–VIII–1963, S. SHINONAGA leg.; 1♂, Tomurobessho [戸室別所], 230 m, in Kanazawa-shi, 14–VIII–2006, H. SATÔ leg.; 2♂♂, 4♀♀, Kojô-machi [湖城町] in Kaga-shi, 11–III–1990, M. NONAKA leg.; 3♀♀, Nishimata-machi [西俣町] in Komatsu-shi, 29–IX–1993. [FUKUI Pref.] 1♂, 2♀♀, Yamamuro [山室] in Awara-shi, 21–XII–2004, K. SEYA leg.; 2♂♂, 1♀, Rakuma [楽間] in Sakai-shi, 19–III–1967, J. KOMIYA leg.; 1♂, Jôhôji [浄法寺] in Eiheiji-chô, 15–X–1984, T. WATANABÉ leg.; 1♂, Mt. Monju-san (or Monju-yama) [文殊山] in Fukui-shi, 4–XII–1999, K. SEYA leg.; 1♂, Tsubotani [坪谷] ~ Ômori [大森] of Shimizu-chô [清水町] in Fukui-shi, 14–IV–1997, O. TOMINAGA leg.; 1♂, Mt. Ôtani-yama [大谷山] in Echizen-shi, 27–IX–1995, H. SATÔ

leg.; 2 ♀♀, Hakusan-jinja [白山神社] in Ôno-shi, 13-IV-1983, Y. KAWAHARA leg.; 1 ♀, Ikenokôchi [池河内] in Tsuruga-shi, 21-X-1993, S. NISHIGAKI leg.; 1 ♀, same locality & collector, 15-IV-1994; 1 ♀, Nakaikeemi [中池見] in Tsuruga-shi, 10-IV-1994, S. NISHIGAKI leg.; 1 ♀, Itsuhata [五幡] in Tsuruga-shi, 15-IV-1994, S. NISHIGAKI leg.; 1 ♀, Akasaki [赤崎] in Tsuruga-shi, 11-VIII-1994, S. NISHIGAKI leg.; 2 ♂♂, Awano [粟野] in Tsuruga-shi, 29-VII-1995, H. SATÔ leg.; 1 ♀, Té [手] in Tsuruga-shi, 6-VIII-1997, K. YOSHIDA leg.; 3 ♂♂, 3 ♀♀, Hara [原] in Tsuruga-shi, 7-VIII-1997, K. YOSHIDA leg.; 1 ♀, Myôjin-chô [明神町] in Tsuruga-shi, 1-VI-1998, T. HASHIGUCHI leg.; 10 ♂♂, 13 ♀♀, Bajo-gawa [馬背川] in Mihamachi, 7-VIII-1997, K. YOSHIDA leg.; 1 ♂, Nyû [丹生] in Mihamachi, 11-VII-2001, K. YUASA leg.; 1 ♂, 1 ♀, Mt. Aoba-san (or Aoba-yama) [青葉山] in Takahama-chô, 26-V-1993, H. FUKUHARA leg.; 1 ♂, same locality, 29-V-1993, I. TANAKA leg. [SHIGA Pref.] 1 ♂, 1 ♀, Kutsuki-kasé [朽木柏] in Takashima-shi, 15-XII-1996, K. FUJIMOTO leg.; 2 ♂♂, 2 ♀♀, Kutsuki-oisugi [朽木生杉] in Takashima-shi, 29-V-2000, M. KAWAHARA leg.; 2 ♀♀, Yogo-ko [余呉湖], 130 m, in Nagahama-shi, 14-IV-1988, S. SHIMIZU leg.; 2 ♂♂, 1 ♀, Mt. Shizu-ga-také [賤ヶ岳], 350 m, in Nagahama-shi, 12-XII-1992, S. SHIMIZU leg.; 2 ♂♂, 2 ♀♀, Ôshimizu [大清水], 280 m, in Maibara-shi, 15-III-1990, S. SHIMIZU leg.; 4 ♂♂, 4 ♀♀, same locality & collector, 9-II-1992; 1 ♀, same area, 250 m, 4-I-1992, S. SHIMIZU leg.; 1 ♂, 1 ♀, same area, 230 m, 31-I-1998, S. SHIMIZU leg.; 4 ♂♂, 3 ♀♀, same area, N. of Izumi-jinja [泉神社], 230 m, 31-I-1998, S. SHIMIZU leg.; 1 ♀, Yataka [弥高], 300 m, in Maibara-shi, 2-II-1992, S. SHIMIZU leg.; 1 ♂, 1 ♀, Terabayashi [寺林], 300 m, in Maibara-shi, 15-I-1994, S. SHIMIZU leg.; 4 ♂♂, 2 ♀♀, Kashiwabara [柏原], 190 m, in Maibara-shi, 15-III-1990, S. SHIMIZU leg.; 2 ♂♂, 1 ♀, Nagaoka [長岡], 130 m, in Maibara-shi, 10-I-1991, S. SHIMIZU leg.; 1 ♀, Dôdani [堂谷], 130 m, in Maibara-shi, 14-II-1991, S. SHIMIZU leg.; 1 ♂, 2 ♀♀, Isshiki [一色], 150 m, in Maibara-shi, 30-XII-1993, S. SHIMIZU leg.; 1 ♂, Shigaya [志賀谷], 150 m, of Santô-chô [山東町] in Maibara-shi, 15-IV-1997, O. TOMINAGA leg.; 1 ♂, Hikumo-jinja [日雲神社] Shrine, 280 m, of Shigaraki-chô-maki [信楽町牧] in Kôka-shi, 31-V-1987, YI leg.; 1 ♀, Shigaraki-chô-chokushi [信楽町勅旨], 280 m, in Kôka-shi, 31-V-1987, YI leg.; 7 ♂♂, 6 ♀♀, Takakura-jinja [高倉神社] Shrine, 350 m, in Minami-shinden-chô [南新田町] of Shigaraki-chô-kôyama [信楽町神山] in Kôka-shi, 31-V-1987, YI leg.; 7 ♂♂, 4 ♀♀, Pass Sakuratôgê [桜峠], 330 m, of Shigaraki-chô-kôyama [信楽町神山] in Kôka-shi, 31-V-1987, YI leg. [MIE Pref.] 5 ♂♂, 3 ♀♀, Fujiwara-chô-shimo-aiba [藤原町下相場], 160 m, in Inabé-shi, 24-I-1998, S. SHIMIZU leg.; 2 ♂♂, Fujiwara-chô-uenoyamada [藤原町上之山田] in Inabé-shi, 12-I-2006, INAGAKI leg.; 1 ♂, 1 ♀, Fujiwara-chô-yamaguchi [藤原町山口] in Inabé-shi, 23-III-1976, H. TSURUMAKI leg.; 1 ♂, 1 ♀, Suwa [諏訪] in Iga-shi, 14-XI-1981, K. MAEGAWA leg.; 2 ♂♂, 2 ♀♀, Marubashira [丸柱] in Iga-shi, 10-XI-1988, T. AOKI & S. YAMAGUCHI leg.; 11 ♂♂, 15 ♀♀, Anaishi-jinja [穴石神社] Shrine, 200 m, of Ishikawa [石川] in Iga-shi, 31-V-1987, YI leg.; 1 ♂, 3 ♀♀, "Vic. Nabari [名張]", 24-XII-1976, Y. KOIDE leg.; 2 ♂♂, 2 ♀♀, Shôrenji [青蓮寺] in Nabari-shi, 7-IV-1996, T. FUJIEDA leg.; 3 ♂♂, 5 ♀♀, same locality & collector, 14-IV-1996; 7 ♂♂, same locality, 8-V-1999, H. TATENO leg.; 4 ♂♂, 6 ♀♀, Kami-hinachi [上比奈知] in Nabari-shi, 4-IV-1999, H. TATENO leg.; 1 ♀, Kami-sada [上佐田] of Sada [佐田], 180 m, in Tsu-shi, 7-I-1992, S. SHIMIZU leg. [NARA Pref.] 1 ♂, Mt. Yamatokatsuragi-san [大和葛城山] in Gosé-shi, 11-XI-2001, K. MASAKI leg.; 2 ♂♂, 2 ♀♀, same locality, 8-III-2006, T. BAN leg.; 5 ♂♂, Mt. Kongô-san (or Kongô-zan) [金剛山] in Gosé-shi, 2-XII-1961, J. KOMIYA leg.; 1 ♂, Yagyû-kaidô [柳生街道] in Nara-shi, 6-V-1992, I. TANAKA leg.; 2 ♂♂, 1 ♀, Mt. Kasuga-yama [春日山] in Nara-shi, 16-VI-1992, I. TANAKA leg.; 1 ♂, 1 ♀, Tsubosaka [壺坂] in Takatori-chô, 20-IV-1986, T. KISHIMOTO leg.; 1 ♂, 4 ♀♀, Mt. Takatori-yama [高取山] in Takatori-chô, 14-XI-1976, T. WATANABÉ leg.; 4 ♂♂, Yoshinoyama [吉野山] in Yoshino-chô, 14-III-1983, T.

WATANABÉ leg.; 1♂, 2♀, Mt. Otowa-yama [音羽山] in Ōuda-chō, 23-II-2002, K. MASAKI leg. [OSAKA Pref.] 2♂♂, Mt. Mikusa-yama [三草山] in Nosé-chō, 23-IX-1983, I. TANAKA leg.; 1♂, 1♀, Kôdaiji [高代寺] in Nosé-chō, 25-IX-1994, I. TANAKA leg.; 2♂♂, 2♀♀, Mt. Kenbi-san [剣尾山] in Nosé-chō, 15-IX-1997, Y. & M. KAWAHARA leg.; 10♂♂, 8♀♀, Mt. Mi-yama [深山] in Nosé-chō, 23-II-1998, I. TANAKA leg.; 10♂♂, 8♀♀, Mt. Kôno-yama [鴻応山] in Toyono-chō, 4-III-1992, K. YAMADA leg.; 2♂♂, 1♀, Terada [寺田] in Toyono-chō, 21-III-1994, I. TANAKA leg.; 1♂, Mt. Myôken-san [妙見山] in Toyono-chō, 24-X-1996, T. KISHIMOTO leg.; 1♂, 2♀♀, Senteiji [千堤寺] in Ibaraki-shi, 16-IX-1983, I. TANAKA leg.; 1♂, Mt. Satsuki-yama [五月山] in Ikeda-shi, 10-VII-1959, M. KAMIYOSHI leg.; 1♂, 2♀♀, Mt. Iwawaki-san (=Iwawaki-yama) [岩湧山] in Kawachi-nagano-shi, 23-XI-1957, M. KAMIYOSHI leg.; 1♂, same locality, 23-XI-1961, H. "MATUI" leg.; 1♂, same locality, 6-IX-1963; 1♂, 1♀, same area (Umeki-rindô [梅木林道]), 17-IX-1997, Y. & M. KAWAHARA leg.; 1♂, 1♀, Amami [天見] in Kawachi-nagano-shi, 19-II-1958, H. KAMIYOSHI leg.; 1♂, Mt. Kongô-san (or Kongôzan) [金剛山] in Chihaya-akasaka-mura, 3-XI-1961; 1♀, same locality, IV-1979, Y. YANO leg.; 1♂, same locality, 21-XI-1989, T. NONAKA leg.; 1♀, same locality, 9-III-2006, T. BAN leg.; 3♂♂, 2♀♀, same locality, 14-XII-1963; 2♂♂, 3♀♀, same locality, 14-XII-1963, T. MIZUNO leg. [WAKAYAMA Pref.] 1♀, Mt. Mitsuishi-yama [三石山] in Hashimoto-shi, 1-XI-1959, H. ISHIDA leg.; 1♂, 1♀, same locality, 1-XI-1959, S. TSUKAGUCHI leg.; 1♂, same locality, 25-III-1962, N. ÔTANI leg.; 1♀, same locality, 14-VI-1964, T. ITÔ leg.; 1♀, same locality, 18-III-1970, YI leg.; 1♂, Pass Kimi-tôgê [紀見峠] in Hashimoto-shi, 19-II-1958, T. MIZUNO leg.; 1♂, Oku-no-in [奥の院] on Mt. Kôya-san [高野山] in Kôya-chō, 16-III-1970, YI leg.; 1♀, Mt. Kôya-san in Kôya-chō, 10-IV-1985, I. TANAKA leg. [KYOTO Pref.] 2♂♂, Ômiya-chô-ikaga [大宮町五十河] in Kyôtango-shi, 22-VIII-2003, T. MITA leg.; 5♂♂, 4♀♀, Tango-jûkan-dôrô [丹後縦貫道路] in Kyôtango-shi, 22-VIII-2003, T. MITA leg. 2♂♂, 2♀♀, Kumihama-chô [久美浜町] in Kyôtango-shi, 20-III-1976, H. TSURUMAKI leg.; 1♀, Yumiki [弓木] in Yosano-chô, 15-VIII-2002, T. MITA leg.; 1♂, Mt. Tsunotsuki-yama [角突山] in Miyadu-shi, 1-III-1998, M. KAWAHARA leg.; 1♀, Matsu-no-o-dera [松尾寺] in Maiduru-shi, 6-V-2005, T. MITA leg.; 1♂, Pass Amabiki-tôgê [天引峠] in Kyôtanba-chô, 16~23-VIII-1970, K. SUGINO leg.; 2♂♂, 2♀♀, "Sonobé [園部]", 4-III-1963, T. OKUMURA leg.; 1♂, 1♀, "Kameoka [亀岡]", 29-XI-1970; 2♂♂, 2♀♀, Shirieda [尻枝] in Kidugawa-shi, 22-I-1999, Y. & M. KAWAHARA leg.; 1♂, 1♀, Miyama-chô-izumi [美山町和泉] in Nantan-shi, 6-I-1978, H. TSURUMAKI leg.; 2♂♂, Shiroyama [城山] of Inuidani [乾谷] in Seika-chô, 12-II-1998, O. TOMINAGA leg. [HYOGO Pref.] 2♂♂, 1♀, Hontani [本谷] in Shin-onsen-chô, 7-IX-1997, H. NAKAMINÉ leg.; 1♀, Oigo [多子] in Shin-onsen-chô, 8-V-1992, H. KARUBÉ leg.; 1♀, Takayama [高山], 400 m, in Shin-onsen-chô, 1-I-1997, Y. NAGAHATA leg.; 3♀♀, Pass Haruki-tôgê [春来峠] in Shin-onsen-chô, 1-VI-1999, M. KAWAHARA leg.; 1♀, Muraoka-ku-aida [村岡区相田] in Kami-chô, 16-IV-2010, M. KAMIYOSHI leg.; 1♂, Nasa-shinrin-kôen [奈佐森林公園] in Toyo-oka-shi, 13-X-2002, T. KOBAYASHI leg.; 2♂♂, Ôya-chô [大屋町] in Yabu-shi, 3-I-1970, YI leg.; 1♂, 1♀, Yôka-chô-takayanagi [八鹿町高柳] in Yabu-shi, 20-III-1976, H. TSURUMAKI leg.; 2♂♂, 2♀♀, same locality & collector, 6-I-1978; 1♂, 1♀, Haga-chô-togura [波賀町戸倉] in Shisô-shi, 20-III-1976, H. TSURUMAKI leg.; 3♂♂, Ônadé-san [大撫山] in Sayô-chô, 16-I-1989, M. MORI leg.; 1♂, 1♀, same locality, 24-XII-1995, I. TANAKA leg.; 2♂♂, Nobuyoshi [延吉] ~Toyofuku [豊福], 250 m, in Sayô-chô, 20-III-1996, O. TOMINAGA leg.; 1♀, Kurokawa-dam [黒川ダム] in Asago-shi, 21-V-1992, S. NISHIGAKI leg.; 1♀, same locality & date, M. ÔHAMA leg.; 4♀♀, Kurikara [栗柄] in Sasayama-shi, 24-VI-2000, Y. & M. KAWAHARA leg.; 2♂♂, 2♀♀, Tsubaichi-dam [鍔市ダム] in Sasayama-shi, 14-VII-1988, M. MORI leg.; 2♀♀, "藤枝" (error of 藤坂?) in Sasayama-shi, 27-V-1993, I.

TANAKA leg.; 1♂, 1♀, Mitaké [三嶽] in Sasayama-shi, 24–VI–2000, M. KAWAHARA leg.; 2♂♂, “Kôdai-ji [高代寺] in Inagawa-chô”, 29–VII–1983, I. TANAKA leg. [TOTTORI Pref.] 1♂, Ôkachi [大河内] in Kurayoshi-shi, 23–XI–2006, T. INOUÉ leg.; 1♂, 1♀, Mt. Karasu-ga-sen [鳥ヶ山] in Kurayoshi-shi, 20–VIII–2006, T. INOUÉ leg.; 2♂♂, 5♀♀, Aoya-chô-aoya [青谷町青谷] in Tottori-shi, 14–VII–1999, Y. & M. KAWAHARA leg.; 1♂, 1♀, Ketaka-chô-hamamura [気高町浜村] in Tottori-shi, 20–III–1976, H. TSURUMAKI leg.; 2♂♂, 1♀, Hakuto [白兎] in Tottori-shi, 20–III–1976, H. TSURUMAKI leg.; 1♂, Pass Tatsumi-tôgé [辰巳峠] of Saji-chô-tochiwara [佐治町柄原] in Tottori-shi, 16–VIII–1999, I. MATSUBARA leg.; 1♂, 1♀, Saji-chô-yodo [佐治町余戸] in Tottori-shi, 20–XI–1982, O. YAMAJI leg.; 1♂, Mt. Iimori-yama [飯盛山] of Saji-chô in Tottori-shi, 20–XI–1982, O. YAMAJI leg.; 1♂, 1♀, Fukubé-chô-nouda [福部町南田] in Tottori-shi, 2–I–1996, Y. NAGAHATA leg.; 2♂♂, 1♀, Nakabara [中原], 420 m, in Chidu-chô, 6–I–1997, Y. NAGAHATA leg.; 1♂, Mt. Kago-yama [籠山], 800 m, in Chidu-chô, 12–IV–1981, S. NASU leg.; 1♂, 1♀, Oku-shinden [奥新田], 560 m, of Nishidani [西谷] in Chidu-chô, 6–I–1997, Y. NAGAHATA leg.; 2♂♂, 1♀, Sugi-jinja [杉神社] in Chidu-chô, 16–VIII–1999, I. MATSUBARA leg. [OKAYAMA Pref.] 1♂, Izaka [井坂] ~ Shitakibara [下木原], 280 m, in Kagamino-chô, 1–VIII–1992, K. ITÔ leg.; 3♂♂, 1♀, Tarumi [足見] in Niimi-shi, 5–I–1973, O. YAMAJI leg.; 3♂♂, 1♀, Yagami [矢神] of Tetsusei-chô-yada [哲西町矢田] in Niimi-shi, 23–III–1973, O. YAMAJI leg.; 1♀, Shingô-kamamura [神郷釜村] in Niimi-shi, 27–IX–1997, Y. OKUSHIMA leg.; 2♂♂, 1♀, Mt. Arato-yama [荒戸山] in Niimi-shi, 8–XI–1968, K. MIZUSAWA leg.; 2♀♀, same locality, 14–II–1971, K. SÔMA leg.; 2♂♂, 2♀♀, Ikura [井倉] in Niimi-shi, 18–I–1964, K. KIMURA leg.; 2♀♀, Rashômon [羅生門] of Kusama [草間] in Niimi-shi, 28–VI–1993, Y. OKUSHIMA leg.; 2♂♂, 1♀, Kusama-daichi [草間台地] in Niimi-shi, 21–IV–2002, I. MATSUBARA leg.; 1♀, Toyonaga-akôma [豊永赤馬] in Niimi-shi, 3–XII–2006, Y. OKUSHIMA leg.; 2♂♂, Nariwa-chô-fukiya [成羽町吹屋] in Takahashi-shi, 30–VI–2002, Y. OKUSHIMA leg.; 1♂, 1♀, Higashi-shitsugen [東湿原] in Maniwa-shi, 12–IX–1994, Y. OKUSHIMA leg.; 1♀, Pass Inubasari-tôgé [犬挟峠] in Maniwa-shi, 8–IV–2003, Y. OKUSHIMA leg.; 2♂♂, 2♀♀, Yubara-shitsugen [湯原湿原] in Maniwa-shi, 22–V–1991, M. NISHIMURA leg.; 2♂♂, 3♀♀, same locality & date, H. NAKAMURA leg.; 1♀, Yubara-onsen [湯原温泉] in Maniwa-shi, 22–V–1991, H. NAKAMURA leg.; 7♂♂, 3♀♀, Makabé [真加部] in Kagamino-chô, 21–XI–1992, M. MORI leg.; 1♂, 2♀♀, Hayashino [林野] in Mimasaka-shi, 5–VIII–1993, Y. OKUSHIMA leg.; 1♂, 2♀♀, Mt. Hinakura-yama [日名倉山] in Mimasaka-shi, 16–XI–1975, O. YAMAJI leg.; 1♂, Aida-aono [英田青野] in Mimasaka-shi, 29–IV–1990, K. NOJIMA leg.; 1♂, Koé-ga-tawa [声ヶ屾] of Ichiba [市場] in Tsuyama-shi, 14–XI–1981, O. YAMAJI leg.; 1♂, Kojima-kaminochô [児島上の町], 180 m, in Kurashiki-shi, 1~17–V–1997, S. MIYAKÉ leg.; 1♀, same locality & collector, 30–IV–2003. [SHIMANE Pref.] 1♂, “Mt. Sanbé-san [三瓶山]”, 7–XII–1972, T. OKUMURA leg.; 2♂♂, 1♀, Mt. Sanbé-san in Ôda-shi, 8–XII–1974, T. KOSAKA leg.; 2♂♂, 4♀♀, same locality, 20–III–1983, YI leg.; 1♂, 1♀, Tsunoi [角井] in Jinan-chô, 16–IV–2000, Y. SUZUKI leg.; 1♂, 1♀, Mt. Kotobiki-yama (or Kotobiki-san) [琴引山] in Iinan-chô, 17–X–1962, Y. YAMAWAKI leg.; 2♂♂, 2♀♀, Akana [赤名] in Iinan-chô, 9–XII–1974, T. KOSAKA leg.; 1♀, Tachikué-kyô [立久恵峠] in Izumo-shi, 16–IX–1997, H. SATÔ leg.; 2♂♂, 1♀, Takadono [高殿] of Yoshida-chô [吉田町] in Un-nan-shi, 11–X–2007, H. KADOWAKI leg. [HIROSHIMA Pref.] 2♀♀, Higashi-yawatahara [東八幡原] in Kita-hiroshima-chô, VIII–1998; 1♀, same locality, 20–V–2001, AKANA leg.; 1♂, Gotanda [五反田] of Takasugi-machi [高杉町] in Miyoshi-shi, 14~15–VIII–1998; 2♂♂, 2♀♀, Mt. Kenashi-yama [毛無山] in Shôbara-shi, 20–III–2002, I. MATSUBARA leg.; 2♂♂, 1♀, Saijô-chô-nakano [西城町中野] in Shôbara-shi, 3–XI–1973, T. KOSAKA leg.; 1♀, Saijô-chô-ôya [西城町大屋] in Shôbara-shi, 17–V–2001, Y. ASANO leg.; 1♀, Nagasué-chô [永末町] in Shôbara-

shi, 26–VII–2001, Y. AKIYAMA leg.; 1♀, Fukunaga [福永] in Jinseki-kōgen-chō, 16–V–1997, Y. AKIYAMA leg.; 1♂, 3♀, Takamitsu [高光] in Jinseki-kōgen-chō, 1–X–2007, Y. AKIYAMA leg.

Notes. Until unexpectedly found by the second author of this paper, we never imagined that such a unique population of *L. (E.) porrecticollis* did occur in narrowly restricted area at the southern foot of Mt. Fuji near the Pacific coast, which is more than 80 km distant in a beeline from the middle reaches of the Tenryū-gawa River, the nearest known locality of the same species, though a high mountain range called the Akaishis lies between these two localities. To give a convincing explanation for such an unusual distribution, it might be necessary to examine a possibility of immigration by river flow or artificial introduction. However, it is highly implausible that the population of *L. (E.) porrecticollis* occurring at the southern foot of Mt. Fuji was recently introduced from somewhere else, since there is no large river flowing from the other habitat of the same species into the habitat of the present new subspecies. Besides, the range of the new subspecies is attaining to at least 10 km², measured about 2.5 km from east to west and about 4 km from north to south at the widest part, and the population density seems to be maintained in every collecting site. It is difficult to elucidate at present why and how such an isolated distribution was established at the southern foot of Mt. Fuji.

The main habitat of the new subspecies is mixed forest of deciduous broad-leaved trees and planted cedar tree, and most specimens collected in February and March were hibernating mainly in the decayed trunk of cedar or chestnut tree fallen down on the forest floor. They are sympatric with such common and widely distributed species as *Ohomopterus lewisiensis*, *O. esakii* and *Damaster blaptoides*. It is worth noting that the other two carabid species, *Leptocarabus procerulus* and *L. kumagaii*, parapatrically inhabit the surrounding area, and are essentially not sympatric with *L. (E.) p. pacificus*, so far as we have investigated.

In the past time, this new subspecies must have inhabited more widely, but it is now only narrowly extant at the southern foot of Mt. Fuji, since the greater part of the same area have already been cultivated or developed as residential area. From such a point of view, this new subspecies is worth regarding as a threatened local population and should be protected.

要 約

井村有希・松永正光：富士山南麓から発見されたアキタクロナガオサムシ（コウチュウ目オサムシ科）の孤立集団。——*Limnocarabus (Euleptocarabus) porrecticollis*（アキタクロナガオサムシ）は古くから知られている我が国の固有種である。秋田県から広島県に至る本州の広い範囲から記録されているが、不連続かつ局地的な分布を示し、日本海側の地域からは普遍的に記録されているものの、脊梁山脈を越えて太平洋側に分布を伸ばしている地域は、仙台平野、関東平野北縁と濃尾平野北東縁の丘陵地帯、紀伊半島北部の山地などに限られており、太平洋に面した沖積平野の海岸近くにまで侵入している場所としては、仙台平野中部の松島湾に面した一帯が知られているにすぎなかった。我われはごく最近、富士山南麓の富士市大渕において本種の生息を確認し、検討を加えた結果、既知の集団から識別可能な形態学的特徴を有するものと判断できたので、*L. (E.) p. pacificus*（アキタクロナガオサムシ富士亜種、あるいは固有の亜種和名を与えるとすればフジアキタクロナガオサムシを提唱しておきたい）という名を与えて本論文に記載した。本新亜種の生息地は、最寄りの既知産地である天竜川中流域からさえ 80 km 以上も隔たっている。両者の間には赤石山脈が横たわっているうえ、上流に本種の生息地を擁し、かつ本新亜種の分布域近辺に流入している河川も存在しないので、河川を介しての漂着はまず考えられない。最初に発見されたのが 7 年前で、現在でも複数の地点において一定以上の個体密度をもって生息している様子が確認されているので、人為的に移入された個体

が偶然採集されたという可能性もまずなさそうである。現地の地理や生息状況などを勘案しても、自然分布とみなすのが妥当であろう。詳細な調査の結果、その生息域は東西約 2.5 km、南北約 4 km 程度のごく狭い範囲に限られているうえ、現地は道路整備と宅地化が年ねんいちじるしい速度で進行しており、本新亜種の命運はまさに風前の灯に近い状態である。アキタクロナガオサムシの種としての分布は広く、全国的にみれば生息数も十分に維持されているとはいえること本新亜種に関しては、絶滅の恐れのある地域個体群として保全を考慮するべきであろう。

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