# Distribution Records of Leaf Beetles (Coleoptera, Chrysomelidae) from Tokunoshima Is., the Amami Isls., Central Ryukyus, Southwestern Japan (I)

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Abstract In this paper, distribution records of 16 leaf beetles (Coleoptera, Chrysomelidae) from Tokunoshima Is., the central Ryukyus are dealt with, as the first part of our ongoing research on the chrysomelid fauna of the island. Among them, 13 species are newly recorded from Tokunoshima Is.: 1) Acrothinium gaschkevitchii shirakii, 2) Colasposoma viridicoeruleum, 3) Demotina serriventris, 4) D. elegans, 5) Pagria ingibbosa, 6) Platycorynus japonicus, 7) Phola octodecimguttata, 8) Aulacophora bicolor, 9) A. lewisii, 10) Charaea amamiensis, 11) Monolepta chujoi, 12) M. miyamotoi, and 13) Lanka fulva. Additional records of Sphaeroderma quadrimaculatum, Laccoptera nepalensis, and Cassida circumdata are also provided from the island.

Tokunoshima Is., which belongs to Kagoshima Prefecture as administrative division, is the second largest island (area ca. 248 km², perimeter ca. 90 km) of the Amami Isls., central Ryukyus, southwestern Japan. Tokunoshima Is. is the fourth widest island of the Ryukyus with the highest point (645 masl) at the summit of Mt. Inokawa-dake (ÔGAI, 2016). Tokunoshima Is. has rich fauna which is very similar to Amami-ôshima Is. For example, various endemic species in common with Amami-ôshima Is., represented by the Amami rabbit, *Pentalagus furnessi* (STONE) (Lagomorpha, Leporidae), and *Neolucanus progenetivus* Y. Kurosawa and *Dorcus metacostanus* Kikuta (Coleoptera, Lucanidae), are distributed on this island (OKAJIMA & ARAYA, 2012; Kagoshima Prefecture, 2016). In addition, the fauna of Tokunoshima Is. contains endemic elements, such as *Tokudaia tokunoshimensis* (Endo et Tsuchiya) (Rodentia, Muridae) and *Goniurosaurus splendens* (Nakamura et Ueno) (Squamata, Eublepharidae) (Endo & Tsuchiya, 2006; Kurita *et al.*, 2017). Furthermore, *Dorcus japonicus* Nakane et S. Makino (Coleoptera, Lucanidae) is known only from Cape Sata-misaki and Tokunoshima Is. (OKAJIMA & Araya, 2012).

As far as we know, about thirty chrysomelid species have hitherto been recorded from Tokunoshima Is., many of which are common to Amami-ôshima Is. (SHIYAKE, 2012; KIMOTO & GRESSITT; 1966; KIMOTO & TAKIZAWA, 1994; SASAKI *et al.*, 2002; etc.). However, the chrysomelid fanua of this island has never been satisfactorily studied, with the number of known species less than one third of that from Amami-ôshima Is. containing about 100 leaf beetles (KIMOTO & GRESSITT, 1966; KIMOTO & TAKIZAWA, 1994; ÔGAI, 2016). Therefore, a survey is required to clarify the chrysomelid fauna of Tokunoshima Is.

In this paper, as the first part of our ongoing faunistic research on Chrysomelidae of Tokunoshima Is., we report new distribution records of 16 leaf beetles from the island; 13 of which are new to the fauna of Tokunoshima Is., while two of which are little-known from this island (Shiyake, 2012) and the remaining one species, *Laccoptera nepalensis* Boheman, was previously recorded from "Tokunoshima Is." without reliable data of its occurrence on the island (Takizawa, 2014).

Classification and nomenclature follow a recent catalogue edited by LÖBL and SMETANA (2010),

but partially follow REID (2006) and BEENEN and LEE (2010) for several genera. The examined specimens, all of which were collected by H. Yoshitake (HY), are deposited mostly in the Institute for Agro-Environmental Sciences, NARO, Tsukuba, but partially in the private collection of Haruki Suenaga, Kurashiki.

#### **Distribution Records**

Family **Chrysomelidae** Latreille, 1802 Subfamily **Eumolpinae** Hope, 1840

1. Acrothinium gaschkevitchii shirakii NAKANE, 1956

[Japanese name: Akagane-saru-hamushi]

(Fig. 1)

*Specimens examined.* 5 exs., Tokunoshima-chô, Inokawa, 25.VI.2017, HY; 1 ex., Amagi-chô, near Mt. Yamatogusuku-vama, 25–26.VI.2017, HY.

Distribution. Japan: the Ryukyus (Amami-ôshima Is. and Tokunoshima Is.) (NAKANE & KIMOTO, 1961 b).

Notes. New to Tokunoshima Is. The examined specimens were provisionally identified as A. gaschkevitchii shirakii, based on the same body color as those from Amami-ôshima Is. However, a part of the specimens shows a unique body color, which differs from any other subspecies currently recognized under A. gaschkevitchii. Therefore, the present subspecies identification may be in need of revision.

#### 2. Colasposoma viridicoeruleum Motschulsky, 1860

[Japanese name: Okinawa-imo-saru-hamushi]

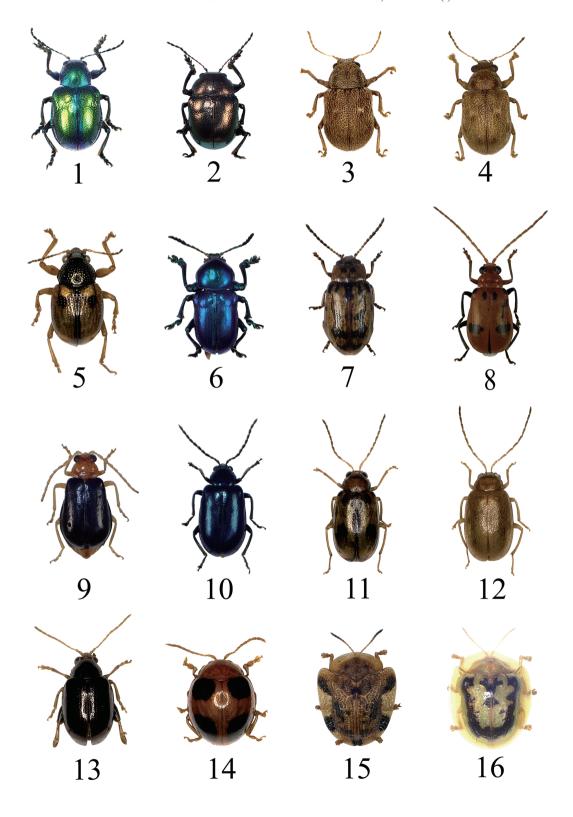
(Fig. 2)

Specimen examined. 1 ex., Amagi-chô, Senma-kaigan, 28.IX.2016, HY.

Distribution. Japan: the Ôsumi Isls. (Yaku-shima Is.) and Ryukyus (Kuchinoshima Is., Nakanoshima Is., Takara-jima Is., Akuseki-jima Is., Kikai-jima Is., Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-jima Is., Aka-jima Is., Geruma-jima Is., Kume-jima Is., Miyako-jima Is., Irabu-jima Is., Tarama-jima Is., Ishigaki-jima Is., Iriomote-jima Is., and Yonaguni-jima Is.); the Andaman Isls., China, India, Indochina, Malaysia, Myanmar, and Taiwan (Azuma & Kimoto, 1981; Kimoto, 1964 a; Kimoto & Gressitt, 1966; Nakane & Kimoto, 1961 a, b; Takizawa, 1998, 2009; Yoshimichi & Takizawa, 2007).

Note. New to Tokunoshima Is.

Figs. 1–16. Dorsal habitus of Chrysomelidae spp. from Tokunoshima Is., the central Ryukyus, southwestern Japan.
 — 1, Acrothinium gaschkevitchii shirakii; 2, Colasposoma viridicoeruleum; 3, Demotina serriventris; 4, D. elegans; 5, Pagria ingibbosa; 6, Platycorynus japonicus; 7, Phola octodecimguttata; 8, Aulacophora bicolor; 9, A. lewisii; 10, Charaea amamiensis; 11, Monolepta chujoi; 12, M. miyamotoi; 13, Lanka fulva; 14, Sphaeroderma quadrimaculatum; 15, Laccoptera nepalensis; 16, Cassida circumdata.



#### 3. **Demotina serriventris** Isono, 1990

[Japanese name: Kushiba-arage-saru-hamushi]

(Fig. 3)

Specimens examined. 2 exs., Amagi-chô, Matsubara, Mt. Fûgusuku-yama, 16.IX.2017, HY.

*Distribution*. Japan: Kyushu, and the Ôsumi Isls. (Yaku-shima Is.) and Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.); Nepal and Taiwan (Isono, 1990; Takizawa, 2009).

Note. New to Tokunoshima Is.

## 4. *Demotina elegans* Chûjô et Shirozu, 1955

[Japanese name: Yaku-kasahara-hamushi]

(Fig. 4)

Specimen examined. 1 ex., Tokunoshima-chô, Kametsu, Hagedake-rindô, 15.IX.2017, HY.

*Distribution*. Japan: Honshu, Kyushu, and the Izu Isls. (Mikura-jima Is. and Hachijô-jima Is.), Ôsumi Isls. (Yaku-shima Is.) and Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.); Taiwan (Isono, 1990; Takizawa, 2009).

Note. New to Tokunoshima Is.

#### 5. Pagria ingibbosa Pic, 1929

[Japanese name: Chibi-kibane-saru-hamushi]

(Fig. 5)

Specimen examined. 1 ex., Amagi-chô, Senma-kaigan, 28.IX.2016, HY.

*Distribution.* Japan: Honshu, the Ogasawara Isls. (Iwo-tô Is.), Shikoku, Kyushu, Iki Is., and the Ryukyus (Nakanoshima Is., Tokunoshima Is., Aka-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.); Southeast China, India, Indonesia (Sumba Is. and Lombok Is.), Hawaii Isls., Malaysia, Nepal, Singapore, Thailand, and Vietnam (IMASAKA & MINAMI, 2008; ISOWA, 2012; LÖBL & SMETANA, 2010).

Notes. New to Tokunoshima Is. Takizawa (1998) recorded *Pagria signata* (Motschulsky) from Tokunoshima Is., but Moseyko and Medvedev (2005) excluded *P. signata* from the Japanese fauna. They resurrected and removed *P. consmile* (Baly), *P. flavopustulata* (Baly) and *P. ingibbosa* Pic from the synonymy of *P. signata*, and recorded these species from Japan. After that, Imasaka and Minami (2008) revised Japanese species of the genus *Pagria* and newly recorded *P. ussuriensis* Moseyko et Medvedev from Japan. More recently, Isowa (2012) revised distribution records of *Pagria* species from Japan and recorded *P. ingibbosa* from Nakanoshima Is., Ishigaki-jima Is., and Iriomote-jima Is. This species, which represents the southern limit of the genus in Japan, is rare in the main islands of Japan, but common in the Ryukyus (Suenaga, 2016). The first author observed that *P. ingibbosa* adults were commonly found on the leaves of a Fabaceae vine in the coast of Ishigaki-jima Is.

## 6. Platycorynus japonicus (JACOBY, 1896)

[Japanese name: Ô-midori-saru-hamushi]

(Fig. 6)

Specimens examined. 2 exs., Tokunoshima-chô, Inokawa, 25.VI.2017, HY.

Distribution. Japan: the Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-jima Is., Ishigaki-jima Is., Hateruma-jima Is., Iriomote-jima Is., and Yonaguni-jima Is.) (Chùjô, 1935 a; Nakane & Kimoto, 1961 a; Kimoto, 1964 a; Kimoto & Gressitt, 1966; Shiyake, 2012).

*Notes.* New to Tokunoshima Is. Within the species *P. japonicus*, the population of Okinoerabu-jima Is. is deep blue in body color and often treated as an independent subspecies, *P. japonicus umebayashii* KIMOTO. The examined specimens from Tokunoshima Is. are similar to the populations of Amami-ôshima Is., Okinawa-jima Is., and the Yaeyama Isls. in having the greenish blue bodies.

#### Subfamily Chrysomelinae Latreille, 1802

## 7. *Phola octodecimguttata* (Fabricius, 1775)

[Japanese name: Hamagou-hamushi]

(Fig. 7)

Specimens examined. 14 exs., Amagi-chô, Senma-kaigan, 28.IX.2016, HY.

Distribution. Japan: Honshu (Chiba, Tottori, and Kôchi Prefs.), Shikoku, Kyushu, and the Ôsumi Isls. (Tanegashima Is.) and Ryukyus (Takara-jima Is., Kikai-jima Is., Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-jima Is., Iheya-jima Is., Yakabi-jima Is., Tarama-jima Is., Ishigaki-jima Is., Iriomote-jima Is., Hateruma-jima Is., and Yonaguni-jima Is.); Australia, China, India, the Malay Peninsula, Myanmar, the Philippines, Sri Lanka, Taiwan, and Vietnam; introduced to New Caledonia. (Azuma & Kimoto, 1981; Jourdan & Mille, 2006; Kamezawa, 2015; Kimoto, 1964 b; Kimoto & Gressitt, 1966; Nakane & Kimoto, 1961 a; Reid, 2006; Shiyake, 2012).

Note. New to Tokunoshima Is. Reid (1993, 2006) placed this species in the genus *Phola*. However, Löbl and Smetana (2010) treated it as a member of the genus *Chalcolampra*, and the treatment had been widely accepted among Japanese coleopterists. The genera *Phola* and *Chalcolampra* possess many taxonomically important features in common, but *Chalcolampra* can be distinguished from *Phola* mainly by the pronotum which is slightly narrower than the elytra at the base, the lack of functional hind wings, and some other traits (Reid, 1993). Here we treat 'octodecimguttata' as a *Phola* species, following Reid's opinion.

#### Subfamily Galerucinae Latreille, 1802

#### 8. Aulacophora bicolor (Weber, 1801)

[Japanese name: Futairo-uri-hamushi]

(Fig. 8)

Specimens examined. 2 exs., Tokunoshima-chô, Kanami, 26.IX.2016, HY.

Distribution. Japan: the Ryukyus (Kikai-jima Is., Amami-ôshima Is., Kakeroma-jima Is., Yoro-shima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-jima Is., Miyako-jima Is., Irabu-jima Is., Ishiga-ki-jima Is., Iriomote-jima Is., Hateruma-jima Is., and Yonaguni-jima Is.); China, India, Indonesia, Laos, Malaysia, the Philippines, Sri Lanka, Thailand, Taiwan, and Vietnam (IMASAKA & IWAI, 2007; KIMOTO, 1964 c; KIMOTO & GRESSITT, 1966; LEE & BEENEN, 2015; NAKANE & KIMOTO, 1961 b; OSADA & SUENAGA, 2015; TAKIZAWA, 2011; SHIYAKE, 2012).

Note. New to Tokunoshima Is.

## 9. Aulacophora lewisii BALY, 1866

[Japanese name: Hime-kuro-uri-hamushi]

(Fig. 9)

Specimens examined. 4 exs., Tokunoshima-chô, Kanami, 26.IX.2016, HY.

Distribution. Japan: the Ôsumi Isls. (Yaku-shima Is.) and Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinoerabu-jima Is., Okinawa-jima Is., Miyagi-jima Is., Aka-jima Is., Geruma-jima Is., Tokashi-ki-jima Is., Zamami-jima Is., Miyako-jima Is., Ishigaki-jima Is., Iriomote-jima Is., Hateruma-jima Is., and Yonaguni-jima Is.); Afghanistan, Bhutan, Cambodia, China, India, Indonesia, Laos, Nepal, Pakistan, Sri Lanka, Taiwan, Thailand, and Vietnam (Azuma & Kimoto, 1981; Chûjô, 1935 a; Lee & Beenen, 2015; Kimoto, 1964 c; Kimoto & Gressitt, 1966; Löbl & Smetana, 2010; Miwa, 1933; Nakane, 1958; Nakane & Kimoto, 1961 b; Sasaki et al., 2002).

Note. New to Tokunoshima Is.

## 10. Charaea amamiensis (NAKANE & KIMOTO, 1961)

[Japanese name: Amami-kibara-hime-hamushi]

(Fig. 10)

Specimens examined. 1 ex., Amagi-chô, Amagi, Mt. Yamatogusuku-yama, 16.IX.2017, HY; 1 ex., ditto, 18.IX.2017, HY; 1 ex., Tokunoshima-chô, Kametsu, Hagedake-rindô, 19.IX.2018, HY.

Distribution. Japan: the Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Iheya-jima Is., Aka-jima Is., Geruma-jima Is., Yakabi-jima Is., Zamami-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.) (Azuma & Kimoto, 1981; Kimoto, 1965 a; Kimoto & Gressitt, 1966; Takizawa, 2011).

Notes. New to Tokunoshima Is. With regard to the generic placement of this species, KIMOTO (1965 a) transferred it from *Calomicrus* to *Exosoma*, and since then this treatment had been followed for many years by the subsequent Japanese authors. Relatively recently, BEENEN in LÖBL and SMETANA (2010, p. 488) synonymized *Charaea* with *Taphinellina* and placed this species in *Taphinellina*. However, this treatment was apparently made by a mistake since, on the contrary in the previous part of LÖBL and SMETANA (2010, p. 75), *Taphinellina* was synonymized with *Charaea* by BEENEN himself. Soon after that, BEENEN and LEE (2010) corrected this mistake on synonymy, clarifying that *Taphinellina* is a junior synonym of *Charaea*. We therefore treated 'amamiensis' as a *Charaea* species in this study.

## 11. Monolepta chujoi NAKANE et KIMOTO, 1961

[Japanese name: Komon-ashinaga-hamushi]

(Fig. 11)

Specimens examined. 3 exs., Tokunoshima-chô, Kametsu, Hagedake-rindô, 19.IX.2018, HY. Distribution. Japan: the Ryukyus (Amami-ôshima Is., Tokunoshima Is., Ishigaki-jima Is., and Iriomote-jima Is.) (KIMOTO, 1965 a; KIMOTO & GRESSITT, 1966).

Note. New to Tokunoshima Is.

#### 12. Monolepta miyamotoi KIMOTO, 1965

[Japanese name: Miyamoto-ashinaga-hamushi]

(Fig. 12)

Specimen examined. 1 ex., Tokunoshima-chô, Kametsu, Hagedake-rindô, 19.IX.2018, HY. Distribution. Japan: the Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., and Okinawa-jima Is.) (KIMOTO, 1965 a; KIMOTO & GRESSITT, 1966; KIMOTO & TAKIZAWA, 1994).

Notes. New to Tokunoshima Is. Monolepta miyamotoi is so similar in general appearance to M. minor Chûjô from Japan that M. miyamotoi can sometimes be confused with M. minor in species identification (KIMOTO, 1965 a; KIMOTO & GRESSITT, 1966). The taxonomic identity of M. miyamotoi should be revised, together with M. minor, based on an extensive sampling throughout the Ryukyus and detailed morphological observations including male genitalia.

## Subfamily Alticinae NEWMAN, 1835

### 13. *Lanka fulva* (Снûjô, 1937)

[Japanese name: Kiiro-sedaka-tobi-hamushi]

(Fig. 13)

Specimen examined. 1 ex., Tokunoshima-chô, Kametsu, Hagedake-rindô, 19.IX.2018, HY. Distribution. Japan: the Ôsumi Isls. (Yaku-shima Is.) and Ryukyus (Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.); Taiwan (Chûjô & Ohno, 1961; Kimoto, 1966 a; Kimoto & Gressitt, 1966; Ohno & Hirano, 1970).

Notes. New to Tokunoshima Is. This species shows a geographical variation in body color according to respective localities (Kimoto & Gressitt, 1966; Kimoto & Takizawa, 1994). In addition, this species is very similar to L. esakii (Chûjô et Ohno) not only in general appearance except body color but also in male genital structures. Therefore, the taxonomic identity of the species L. fulva and its relatives should be revised in the future.

#### 14. Sphaeroderma quadrimaculatum Chûjô, 1935

[Japanese name: Yotsumon-tama-nomi-hamushi]

(Fig. 14)

Specimen examined. 1 ex., Amagi-chô, Amagi, Kamimyôdô-shinrin-kôen, 18.IX.2017, HY.

Distribution. Japan: Kyushu, and the Ôsumi Isls. (Tanegashima Is. and Yaku-shima Is.) and Ryukyus (Nakanoshima Is., Takara-jima Is., Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Kume-jima Is., Miyako-jima Is., Ishigaki-jima Is., and Iriomote-jima Is.) (Chûjô, 1935 b; Kimoto, 1965 b; Kimoto & Gressitt, 1966; Nakane & Kimoto, 1961 c; Takizawa, 2013; Shiyake, 2012).

*Note.* This is the second record of *S. quadrimaculatum* from Tokunoshima Is. after SHIYAKE (2012) recorded it from this island for the first time.

#### Subfamily Cassidinae Gyllenhal, 1813

#### 15. Laccoptera nepalensis Boheman, 1855

[Japanese name: Yotsumon-kamenoko-hamushi]

(Fig. 15)

Specimen examined. 1 ex., Amagi-chô, Senma-kaigan, 28.IX.2016, HY.

Distribution. Japan: Hoshu (Kanagawa, Shizuoka, Mie, and Yamaguchi Prefs.), the Izu Isls. (Ôshima Is. and Miyake-jima Is.), Shikoku (Ehime and Kôchi Prefs.), Kyushu, and the Ôsumi Isls. (Yaku-shima Is.), Ryukyus (Kikai-jima Is., Amami-ôshima Is., Tokunoshima Is., Okinawa-jima Is., Miyako-jima Is., Ishigaki-jima Is., Hateruma-jima Is., and Iriomote-jima Is.) and Senkaku Isls.; China, India (Andaman Isls.), Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Singapore, Taiwan, Thailand, and Vietnam (Azuma & Kimoto, 1981; Imasaka & Iwai, 2007; Inahata & Watanabe, 2017; Kimoto, 1963, 1966 b; Kubota, 2008; Löbl & Smetana, 2010; Ochi & Yoshitomi, 2016; Sakai et al., 2008; Sano, 2014; Shigetoh, 2017; Shiyake, 2012; Świętojańska, 2001; Takizawa, 2014; Tokyo Metropolitan Plant Protection Office, 2012; Yamamoto, 2015).

*Note*. TAKIZAWA (2014) recorded *L. nepalensis* from Tokunoshima Is. without reliable data of its occurrence on the island. As far as we know, this is the first record of this species from Tokunoshima Is., based on a specimen with decent data.

#### 16. Cassida circumdata Herbst, 1799

[Japanese name: Tatesuji-hime-jingasa-hamushi]

(Fig. 16)

Specimen examined. 1 ex., Tokunoshima-chô, Aze, 18.IX.2017, HY.

Distribution. Japan: Honshu (Osaka and Okayama Prefs.), and the Izu Isls. (Hachijô-jima Is.), Ogasawara Isls. (Iwo-tô Is.), Ôsumi Isls. (Tanegashima Is. and Yaku-shima Is.), Ryukyus (Takara-jima Is., Kikai-jima Is., Amami-ôshima Is., Tokunoshima Is., Okinoerabu-jima Is., Okinawa-jima Is., Iheya-jima Is., Miyako-jima Is., Ishigaki-jima Is., Iriomote-jima Is., Hateruma-jima Is., and Yona-guni-jima Is.) and Senkaku Isls.; Bangladesh, China, India, Indonesia, Laos, Malaysia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, Taiwan, and Vietnam (AZUMA & KIMOTO, 1981; BOROWIEC, 1999; IMASAKA & IWAI, 2007; KAWABATA, 2010; KIMOTO, 1966 b; NAKANE & KIMOTO, 1961 a, c; SUENAGA, 2016; TAKIZAWA, 2014; SHIYAKE, 2012).

*Notes. Cassida circumdata*, which is known as a pest of sweet potato in the Ryukyus, was recorded for the first time from Tokunoshima Is. by Shiyake (2012), but there are no further reports on this species from the island. Recently, this species was introduced to the main islands of Japan, and then a special attention has been paid to this pest also in the Japan proper (Department of Environment, Agriculture, Forestry and Fisheries, Osaka Prefectural Government, 2012).

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## 要 約

末長晴輝・重藤裕彬・吉武 啓:徳之島産ハムシ科(鞘翅目)の分布記録(I). — 徳之島は、奄美大島の南西に位置する琉球列島第4の面積を誇る島で、その動物相は奄美大島との共通性が高いことが知られている。しかし、ハムシ類に関しては、奄美大島からはこれまでに約100種が記録されているのに対し、徳之島からはその3分の1にも満たない30種ほどしか記録されておらず、調査の余地がかなり大きく残されている。本論文では、我々の徳之島のハムシ相に関する研究の第1報として徳之島初記録となるハムシ科甲虫13種の採集例を報告したほか、同島からの記録が少ない2種とこれまで同島における確実な記録がなかった1種についても若干の知見を交えながら採集例を報告した。

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