

A Contribution to the Knowledge of the Staphylinid Fauna of Kume-jima Island, the Ryukyus, Japan (Coleoptera, Staphylinidae)

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Abstract The staphylinid fauna of Kume-jima Island, the Ryukyus is reviewed based on our field and literature surveys. Consequently, a total of 31 species are recognized from this island, including the following twelve species new to the fauna: *Cilea limbifera*, *Coproporus evanescens*, *Sepedophilus armatus*, *Tetrabothrus japonicus*, *Anotylus lewisius*, *Astenus latifrons*, *Nazeris okinawanus*, *Cephalochetus rufus*, *Rugilus japonicus*, *Sunesta setigera*, *Oedichirus longipennis*, and *Palaminus formosae*. Four out of the 31 species, *Scaphidium sakura*, *Megalopinus hirashimai*, *Lobrathium cribricolle*, and *Pseudolathra unicolor*, are based on questionable distributional records in literature.

Introduction

Kume-jima is one of the islands in the Okinawa Islands, located off the west of Okinawa-jima Island, and natural forests and wetlands are relatively well preserved on this island.

In fauna, Kume-jima Island has a lot in common with the islands of the central Ryukyus. Also, some remarkable endemic species are distributed on this island as typified by the Kikuzato's stream snake *Opisthotropis kikuzatoi* (OKADA et TAKARA, 1958) and the Kume-jima firefly *Luciola owadai* M. SATO et KIMURA, 1994. For example, 32 species of Scarabaeidae have been recorded from this island, of which twelve (sub) species are endemic to the central Ryukyus and three (sub) species are endemic to this island (SATÔ, 1995; OKAJIMA & ARAYA, 2012; KANEKO & NAGANO, 2017; OCHI *et al.*, 2019).

However, the coleopteran fauna of Kume-jima Island has not yet been satisfactorily elucidated (*e.g.* TAMADERA *et al.*, 2019). The staphylinid fauna of this island is poorly known, with only nineteen species previously recorded (SHIBATA *et al.*, 2013; HOSHINA, 2013 a, b; KANAO *et al.*, 2016; NOMURA & NAKAMURA, 2019).

In 2018, each of us conducted a field survey on Kume-jima Island and collected many staphylinid species. After close examination, we concluded that these species include some unrecorded species. Herein, we newly record twelve species, and compile a list of staphylinid beetles of this island.

Material and Methods

This study was based on dried specimens collected mainly by us on Kume-jima Island in summer of 2018. The specimens were identified by the first author. The examined specimens are deposited in the Hiwa Museum of Natural Science, Shôbara (HIWA) and Y. SENDA private collection, Shôbara (PCYS).

New Records

Tachyporinae

1) *Cilea limbifera* (MOTSCHULSKY, 1858)

Specimens examined. 2 exs., Mt. Daruma-yama, alt. 150 m, 14.VII.2018, Y. SENDA leg. (from leaf-litter) (HIWA); 1 ex., Mt. Ôtake, alt. 150 m, Gushikawa, 24.VIII.2018, R. NAKAMURA leg. (by light trap) (HIWA).

Remarks. New to Kume-jima Island. This species is common and widely distributed in the East Palearctic and Oriental Regions (NEWTON, 2020). In Japan, this species has been recorded mainly from southwestern area (SHIBATA *et al.*, 2013).

2) *Coproporus evanescens* (BOHEMAN, 1858)

Specimen examined. 1 ex., Mt. Ôtake, alt. 150 m, Gushikawa, 24.VIII.2018, R. NAKAMURA leg. (by light trap) (HIWA).

Remarks. New to Kume-jima Island. This species is widely distributed in the Oriental Region (NEWTON, 2020). In Japan, this species has hitherto been recorded from the Izu Islands, Ogasawara Islands and Ryukyus (SHIBATA *et al.*, 2013; ITO & UTOO, 2015).

3) *Sepedophilus armatus* (SHARP, 1888)

Specimen examined. 1 ex., Mt. Ôtake, alt. 150 m, Gushikawa, 23.VIII.2018, R. NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. This species is widely distributed and commonly found in Japan (SHIBATA *et al.*, 2013).

Aleocharinae

4) *Tetraphothrus japonicus* NAKANE, 1991

Specimen examined. 1 ex., Maja, N 26°21'30", E 126°47'18", alt. 140 m, 14.VII.2018, Y. SENDA & K. NAKAO leg. (by light trap) (HIWA).

Remarks. New to Kume-jima Island. This species is widely distributed in Japan (SHIBATA *et al.*, 2013).

Oxytelinae

5) *Anotylus lewisius* (SHARP, 1874)

Specimens examined. 4 exs., Hiyajô, alt. 190 m, 14.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS); 2 exs., Ôta, alt. 10 m, 14.VII.2018, Y. SENDA leg. (PCYS); 5 exs., Mt. Uegusuku-dake, alt. 140 m, 16.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS, HIWA); 5 exs., Mt. Daruma-yama, 16.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS); 1 ex, Shimajiri, alt. 100 m, 22.VIII.2018, R.

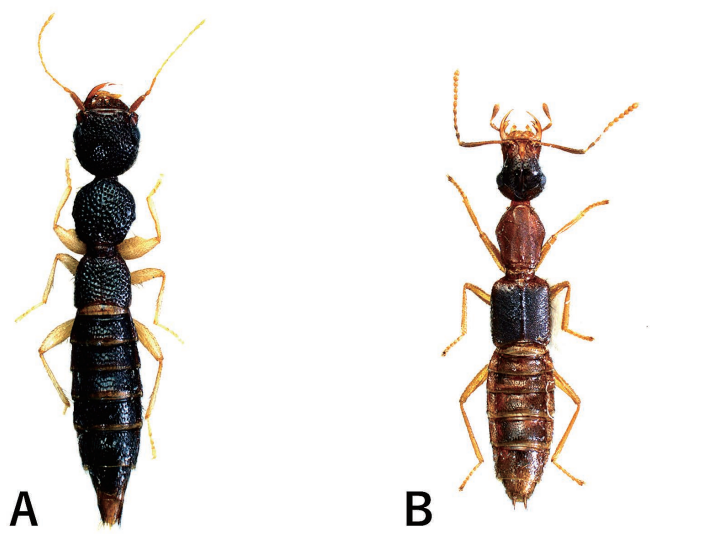


Fig. 1. Habitus of two staphylinid species from Kume-jima Island. — A, *Nazeris okinawanus*; B, *Cephalochetus rufus*. Scale: 2.0 mm.

NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. This species is widely distributed not only in Japan but also in East Asia (Japan, Korea, China, and Taiwan) (SHIBATA *et al.*, 2013; NEWTON, 2020).

Paederinae

6) *Astenus latifrons* (SHARP, 1874)

Specimen examined. 1 ♀, Gima, alt. 0–50 m, 23.VIII.2018, R. NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. This species is widely distributed in southwestern Japan (SHIBATA *et al.*, 2013).

7) *Nazeris okinawanus* ITO, 1986 (Fig. 1)

Specimens examined. 4 ♂♂, 1 ♀, Hiyajō, alt. 190 m, 14.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS); 1 ♀, Mt. Uegusuku-dake, alt. 140 m, 16.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS).

Remarks. New to Kume-jima Island. This species is classified into two subspecies (ITO, 1986, 1994): the nominotypical subspecies known from Okinawa-jima Island and *N. o. amamianus* ITO, 1994 from Tokunoshima Island in the Amami Islands (ITO, 1994). The specimens collected from Kume-jima Island are different from the population of Okinawa-jima Island in the following points: 1) body color darker; 2) base of apical lobe of aedeagal median lobe more slim; 3) parameres longer and slender, distinctly curved inwardly. We will leave the taxonomic aspects of these individuals to other research.

8) *Cephalochetus rufus* (CAMERON, 1918) (Fig. 2)

Specimens examined. 1 ♀, Mt. Daruma-yama, alt. 150 m, 14.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS); 1 ♀, Mt. Ôtake, alt. 150 m, Gushikawa, 23.VIII.2018, R. NAKAMURA leg. (PCYS).

Remarks. New to the Okinawa Islands. This strange species seems to be rare, but is known to be widely distributed in the Oriental Region. In Japan, this species has been hitherto recorded from the Tokara Islands (Nakanoshima Island) (SAWADA, 1961) and the Yaeyama Islands (the islands of Ishigaki-jima and Iriomote-jima) (WATANABE, 2009; NOZAKI, 2020).

9) *Rugilus japonicus* WATANABE, 1961

Specimens examined. 3 exs., Ôta, alt. 10 m, 14.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS & HIWA); 1 ex., Mt. Uegusuku-dake, alt. 140 m, 16.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS); 1 ex., Mt. Daruma-yama, alt. 150 m, 16.VII.2018, Y. SENDA leg. (from leaf-litter) (PCYS).

Remarks. New to Kume-jima Island. This species is widely distributed in the Oriental and southern Palaearctic Regions (ASSING, 2012). From Japan, this species is recorded from the Izu Islands and Ryukyus (the islands of Tanegashima, Yaku-shima, Kuchinoerabu-jima, Amami-Ôshima, Okinawa-jima, Ishigaki-jima, and Iriomote-jima) (ASSING, 2012; ITO & UTOO, 2015).

10) *Sunesta setigera* (SHARP, 1874)

Specimens examined. 1 ♀, Ôta, alt. 10 m, 14.VII.2018, Y. SENDA leg. (HIWA); 1 ♀, Hiyajô, alt. 190 m, 14.VII.2018, Y. SENDA leg. (HIWA); 2 ♂♂, Mt. Daruma-yama, alt. 150 m, 14.VII.2018, Y. SENDA leg. (PCYS); 1 ♂, Zenda, alt. 20–100 m, 24.VIII.2018, R. NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. This species is common and widely distributed in Japan (SHIBATA *et al.*, 2013).

11) *Oedichirus longipennis* KRAATZ, 1859

Specimens examined. 1 ♀, Gima, alt. 0–50 m, 23.VIII.2018, R. NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. *Oedichirus idae* SHARP, 1874 was treated as a junior synonym of this species (ROUGEMONT, 2018), and this species is widely distributed in the Oriental Region (ROUGEMONT, 2018). In Japan, this species has hitherto been recorded from Honshu, Kyushu, and the Ryukyus (the islands of Tokunoshima, Okinawa-jima, Miyako-jima, Ishigaki-jima, Iriomote-jima, Kamiji-jima, and Yonaguni-jima) (SHIBATA *et al.*, 2013; ROUGEMONT, 2018).

12) *Palaminus formosae* CAMERON, 1949

Specimens examined. 3 exs., Mt. Ôtake (alt. 150 m), Gushikawa, 24.VIII.2018, R. NAKAMURA leg. (HIWA).

Remarks. New to Kume-jima Island. This species was originally described from Taiwan, and was also recorded from the Ryukyus (“Loochoo Islands” and the island of Amami-Ôshima), Japan in the same paper (CAMERON, 1949).

Table 1. A list of the staphylinid species known from Kume-jima Island, the Okinawa Islands, Ryukyus.

Subfamily	Species	Literature
Pselaphinae	<i>Triomicrus hamifer</i> LÖBL, KURBATOV et NOMURA, 1998	NOMURA & NAKAMURA (2019)
Tachyporinae	<i>Cilea limbifera</i> (MOTSCHULSKY, 1858)	present study
	<i>Coproporus evanescens</i> (BOHEMAN, 1858)	present study
	<i>Sepedophilus armatus</i> (SHARP, 1888)	present study
Aleocharinae	<i>Holobus kashmiricus beneficus</i> (NAOMI, 1984)	KANAO <i>et al.</i> (2016)
	<i>Tetrabothrus japonicus</i> NAKANE, 1991	present study
	<i>Zyras optatus</i> SHARP, 1888	WATANABE (1998)
Scaphidiinae	<i>Scaphidium kumejimaense</i> HOSHINA et MARUYAMA, 1999	HOSHINA & MARUYAMA (1999)
	<i>Scaphidium sakura</i> HOSHINA, 2001*	SHIBATA <i>et al.</i> (2013)
	<i>Baeocera caliginosa</i> LÖBL, 1984	HOSHINA (2013 a)
Oxytelinae	<i>Anotylus lewisius</i> (SHARP, 1874)	present study
Megalopsidiinae	<i>Megalopinus hirashimai</i> NAOMI, 1986*	SHIBATA <i>et al.</i> (2013)
Scydmaeninae	<i>Cephennodes vafer</i> KURBATOV, 1995	HOSHINA (2013 b); HOSHINA (2019)
	<i>Euconnus kumejimensis</i> HOSHINA, 2013	HOSHINA (2013 b)
Euaesthetinae	<i>Edaphus kumejimanus</i> PUTHZ, 2010	PUTHZ (2010 a)
	<i>Stenaesthetus okinawaensis</i> PUTHZ, 2010	PUTHZ (2010 b)
Paederinae	<i>Nazeris okinawanus</i> ITO, 1986	present study
	<i>Astenus latifrons</i> (SHARP, 1874)	present study
	<i>Cephalochetus rufus</i> (CAMERON, 1918)	present study
	<i>Lobrathium cribricolle</i> SHARP, 1889*	KIMURA (1996)
	<i>Pseudolathra unicolor</i> KRAATZ, 1859*	KIMURA (1996)
	<i>Paederus fuscipes</i> CURTIS, 1826	AZUMA & KINJO (1987); SATÔ (1995); KIMURA (1996)
	<i>Rugilus japonicus</i> WATANABE, 1961	present study
	<i>Sunesta setigera</i> (SHARP, 1874)	present study
	<i>Pinophilus sauteri</i> BERNHAUER, 1935	ITO (2010)
	<i>Oedichirus longipennis</i> KRAATZ, 1859	present study
	<i>Palaminus formosae</i> CAMERON, 1949	present study
Staphylininae	<i>Philonthus amicus</i> SHARP, 1874	WATANABE (1998)
	<i>Philonthus lewisius</i> SHARP, 1874	WATANABE (1998)
	<i>Philonthus rectangulus</i> SHARP, 1874	WATANABE (1998)
	<i>Phucobius densipennis</i> BERNHAUER, 1931	NAOMI (1984)

Species indicated by asterisk are based on questionable distribution records in literature (see discussion).

Discussion

As a result, 31 species are recognized from Kume-jima Island (Table 1). However, the distributions of four out of the 31 species on the island are questionable. According to ‘Catalogue of Japanese Staphylinidae’ (SHIBATA *et al.*, 2013), *Scaphidium sakura* HOSHINA, 2001 and *Megalopinus hirashimai* NAOMI, 1986 are distributed on Kume-jima Island, but as far as we know these species have not been recorded from the island until now. *Lobrathium cribricolle* SHARP, 1889 was recorded from the island by KIMURA (1996), but this species appears to be endemic to a mountainous area of western Kantô District, eastern Honshu (T. ITO, pers. comm.). *Pseudolathra unicolor*, which was recorded also by KIMURA (1996), was recently excluded from the Japanese fauna by some authors (*e.g.* ASSING, 2018), but one of the congeners, *P. pulchella* (KRAATZ, 1859), is known from the Yaeyama Islands in the Ryukyus, Japan (ASSING, 2013, 2018). Therefore, the distribution records of these species from Kume-jima Island were probably based on misidentification of similar species to each of them.

Among the 27 species excluding the questionable species, eighteen are widespread in the Oriental Region and/or East Asia, two are endemic to Japan, five are endemic to the Ryukyus, and the remaining two (*Euconnus kumejimensis* and *Edaphus kumejimanus*) are endemic to this island. This suggests that the endemism is not high in the staphylinid fauna of this island. However, the staphylinid fauna of this island has not yet been adequately revealed. More staphylinids including endemic species will be discovered by field surveys and research of natural history collections in the future.

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要 約

千田喜博・中村 涼：久米島のハネカクシ相(鞘翅目)に関する知見。———筆者らの調査で得られた標本と文献調査に基づいて、久米島(沖縄諸島)のハネカクシ類を検討した。その結果、同島からは31種が知られることとなった。そのうち同島初記録となるのは以下の12種である：1) フタテンツヤヒメマルクビハネカクシ、2) アカセマルチビマルクビハネカクシ、3) クロゲヒメキノコハネカクシ、4) コンボウヒゲブトハネカクシ、5) ルイスツヤセスジハネカクシ、6) キアシハラグロハネカクシ、7) オキナワアバタコバネハネカクシ、8) ナガズハネカクシ、9) ツマキクビボソハネカクシ、10) タチゲクビボソハネカクシ、11) ナガクロバネアリガタハネカクシ、12) タイワンアラハダドウナガハネカクシ。一方で、過去に同島から記録された以下の4種に関しては記録や同定に疑問があることを指摘した：1) サクラデオキノコムシ、2) ヒラシマメダカオオキバハネカクシ、3) キモンツツナガハネカクシ、4) ツماغロスジナガハネカクシ。

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