

Records of Some Lucanidae and Scarabaeidae (Coleoptera) from Minna-jima and Sesoko-jima Islands of the Okinawa Group, Ryukyu Archipelago

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Abstract Two species of the Lucanidae and one of the Scarabaeidae are newly recorded from Minna-jima Island, and one Lucanidae and two Scarabaeidae from Sesoko-jima Island of the Okinawa Group, Ryukyu Archipelago. Some morphometric characters of the present specimens are described and discussed.

Introduction

Sesoko-jima Island is located about 0.8 km west of Okinawa-jima Island (i.e., 26°39'N, 127°52'E). The total length of the shore-line is 7.0 km, area 2.8 km² and maximum elevation 14 m. Minna-jima Island is next to Sesoko-jima Island (i.e., 26°43'N, 127°47'E), the total length of the shore-line 3.7 km, area 0.3 km² and maximum elevation 14 m. There are only small secondary forests on both the small islands and most of the surface are covered with grasses. Up to date, though some records of butterflies have been made (ARAKI, 1978; HIGA, 1979, 1982), little is known about the beetle fauna of these islands. In this brief report, two species of the Lucanidae and one of the Scarabaeidae will be recorded from Minna-jima Island, one Lucanidae and two Scarabaeidae from Sesoko-jima Island, all new to the fauna of the islands.

Materials and Methods

All the specimens from Minna-jima Island were collected by Mr. M. HINOUE, Kyoto University on 7–23 August 1991. Beetles from Sesoko-jima Island were collected on 29 August 1991 by Mr. K. NAKAI, Kyoto University. Species (subspecies) identification of the present specimens were made by observing the shape of genitalia as well as the external characters. The body length and some morphometric characters were measured for the specimens of lucanid beetles as shown in Fig. 1. The measured characters were body length (BL, without mandibles), right mandible length (RML, female specimens were omitted), position of the largest serra of the right mandible (PBSR, female specimens were omitted), pronotal width (PW), elytral width (EW), elytral length (EL), right front-tibial width (RFTW) and right front-tibial length (RFTL). The morphometric characters of *Serrognathus platymelus* presently collected from Minna-jima Island were compared to those from Okinawa-jima Island.

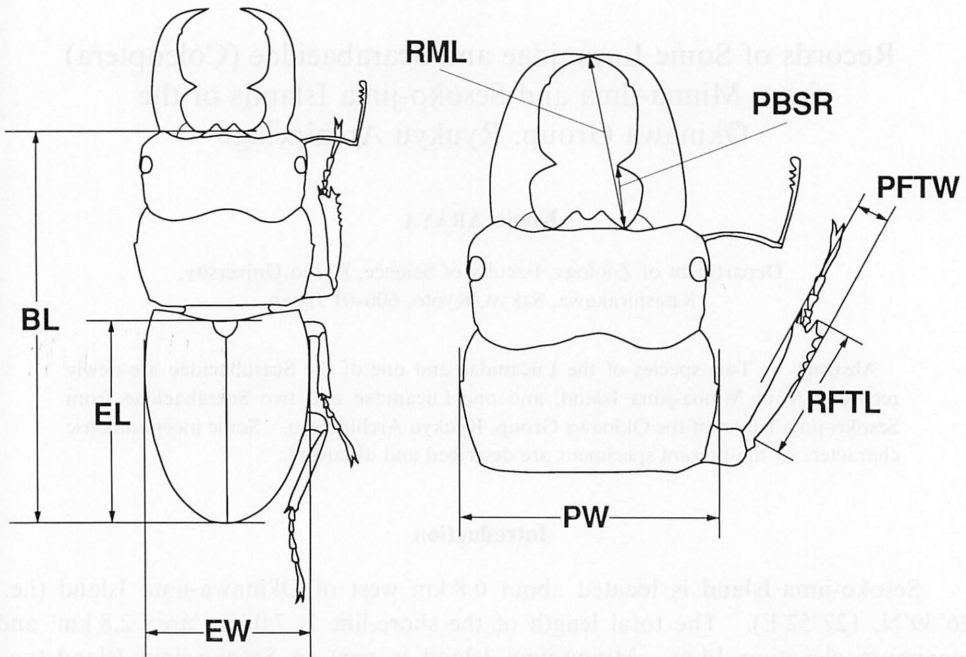


Fig. 1. Schematic diagram of measured characters of lucanid beetles (*Serrognathus platymelus okinawanus*). BL: body length without mandibles, RML: right mandible length, PBSR: position of largest serra of right mandible, PW: pronotal width, EW: elytral width, EL: elytral length, RFTW: right front-tibial width, RFTL: right front-tibial length. When measuring RML and PBSR, the tips of mandibles are kept in touch as shown in the figure.

All the present specimens were deposited in the entomological collection of the Department of Zoology, Kyoto University (catalogued as KUZU).

Results

Lucanid and scarabaeid beetles collected from the two islands are listed below.

I. *Minna-jima* Is.

Lucanidae

Serrognathus platymelus okinawanus. 4 ♂♂, 1 ♀, 7–VIII–1991; 15 ♂♂, 12 ♀♀, 8–VIII–1991; 4 ♂♂, 3 ♀♀, 9–VIII–1991.

Collection. The present specimens were collected at light.

Morphometric features. The variation of each character is given in Table 1. The results of the comparisons to *S. p. okinawanus* from Okinawa-jima Island are also presented in Table 1 and Fig. 2.

Prosopocoilus dissimilis. 1 ♀, 23-VIII-1991.

Collection. The present specimen was collected on the road, and partly damaged.

Morphometric features. BL 29.9 mm, EW 13.65 mm, EL 18.30 mm, RFTW 2.44 mm, RFTL 7.15 mm. The other characters were not measured because of the damage.

Scarabaeidae

Oryctes rhinoceros. 1 ♂, 1 ♀, 8-VIII-1991.

Collection. The present specimens were collected at light.

Morphometric features. Male specimen, BL 41.35 mm, EW 19.65 mm; female specimen, BL 37.80 mm, EW 18.60 mm.

II. Sesoko-jima Is.

Lucanidae

Prosopocoilus dissimilis. 1 ♀, 29-VIII-1991.

Collection. The present specimen was collected at light.

Morphometric features. BL 26.4 mm, PW 11.25 mm, EW 12.20 mm, EL 16.85 mm, RFTW 2.05 mm, RFTL 6.90 mm.

Scarabaeidae

Oryctes rhinoceros. 1 ♂, 29-VIII-1991.

Collection. The present specimen was collected at light.

Morphometric features. BL 40.25 mm, EW 18.45 mm.

Anomala albopilosa yashiroi. 1 ♂, 29-VIII-1991.

Collection. The present specimen was collected at light.

Morphometric features. BL 18.40 mm, EW 9.60 mm.

Discussion

The range of the male body size of *Serrognathus platymelus okinawanus* collected from Minna-jima Island leans toward smaller size than that of Okinawa-jima Island, but no significant difference in body length is found between them ($p > 0.05$, by Mann-Whitney's U-test). This may be due to the fact that all the present samples from Minna-jima Island came flying to lights. Moreover, there is no significant difference between the samples of the two islands in the ratio RML/PBSR, EW/EL and RFTW/RFTL ($p > 0.05$, by test for homogeneity of positions, Fig. 2) which were used as the diagnostic characters in discriminating the subspecies of *S. platymelus* (FUJITA & ICHIKAWA, 1985, 1986; FUJITA & OKUDA, 1989; *S. platymelus* is regarded as *S. titanus* in these papers). It is suggested that the population of *S. p. okinawanus* of Minna-jima Island is identical with that of Okinawa-jima Island in quantitative morphometric characters as well as in qualitative ones. *Serrognathus p. okinawanus* of Minna-jima Island may have immigrated from Okinawa-jima Island very recently by rafting or

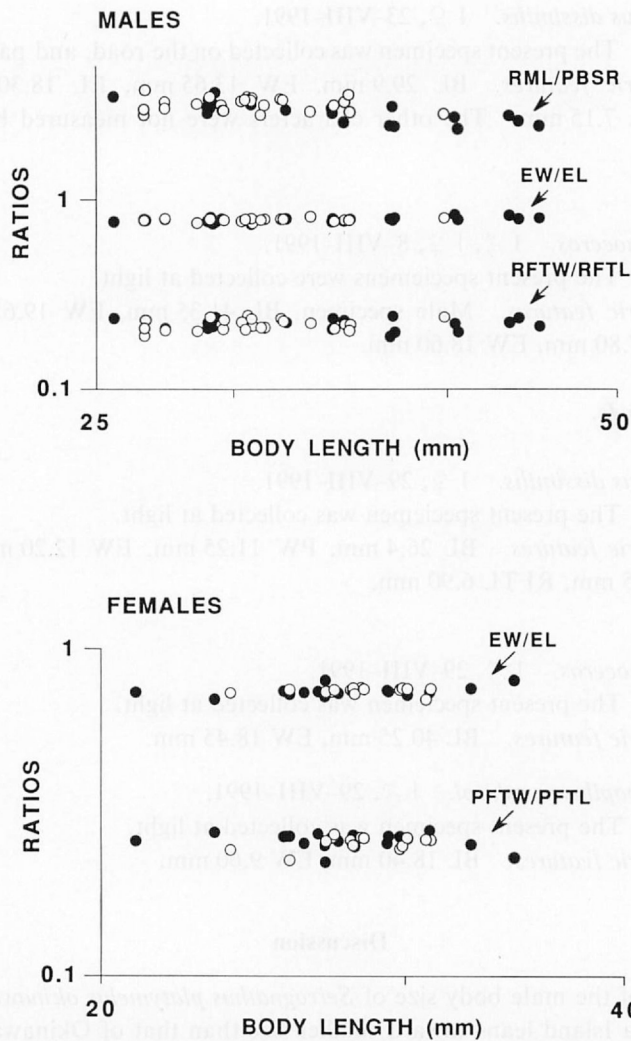


Fig. 2. The ratios RML/PBSR, EW/EL and PFTW/PFTL of *Serrognathus platymelus okinawanus* from Okinawa-jima Is. and Minna-jima Is. ●: samples from Okinawa-jima Is., ○: samples from Minna-jima Is. See Fig. 1 for abbreviations.

flying. *Serrognathus p. okinawanus* has been known from Okinawa-jima Island, Kume-jima Island, Tokashiki-jima Island (OKAJIMA & YAMAGUCHI, 1988), Ize-jima Island (KUSUI, 1976), Iheya-jima Island (KUSUI, 1991), and newly Minna-jima Island. There is a good possibility that this subspecies will be collected from the other islets around Okinawa-jima Island. The female specimens of *Prosopocoilus dissimilis* from the two islands must belong to *P. d. okinawanus* described from Okinawa-jima Island, though I was unable to identify them exactly.

Table 1. Comparison of the morphometric characters of *S. p. okinawanus* collected from Okinawa-jima Island and Minna-jima Island. Value for each sample is represented by mean \pm SD (mm) with ranges in parentheses. See Fig. 1 for abbreviations.

Characters	Okinawa-jima		Minna-jima	
	Male (n=20)	Female (n=19)	Male (n=25)	Female (n=16)
BL	34.60 \pm 5.86 (25.60–45.20)	27.80 \pm 3.19 (20.95–34.65)	30.94 \pm 3.20 (26.65–39.85)	28.20 \pm 1.89 (23.75–31.05)
RML	10.35 \pm 3.18 (5.35–15.05)	— (—)	8.76 \pm 2.23 (5.40–15.00)	— (—)
PBSR	3.78 \pm 1.53 (1.55– 6.25)	— (—)	2.82 \pm 0.80 (1.45– 5.40)	— (—)
PW	15.19 \pm 3.11 (10.45–20.30)	12.05 \pm 1.49 (8.70–15.10)	13.60 \pm 1.58 (11.20–18.40)	12.40 \pm 0.84 (10.50–13.95)
EW	14.73 \pm 2.50 (10.90–18.90)	12.49 \pm 1.50 (9.60–15.95)	13.43 \pm 1.27 (11.60–17.05)	12.76 \pm 0.86 (10.65–14.25)
EL	18.93 \pm 2.86 (14.35–23.90)	16.76 \pm 1.73 (13.00–19.85)	17.28 \pm 1.59 (14.85–21.55)	17.10 \pm 1.11 (14.50–18.85)
RFTW	2.06 \pm 0.41 (1.45– 2.85)	1.74 \pm 0.18 (1.25– 2.00)	1.85 \pm 0.26 (1.40– 2.65)	1.79 \pm 0.17 (1.45– 2.05)
RFTL	9.43 \pm 1.86 (6.20–12.20)	6.72 \pm 0.78 (4.85– 8.05)	8.53 \pm 0.96 (7.00–11.15)	7.05 \pm 0.52 (6.00– 8.00)

As was suggested by KUSUI (1991), *Oryctes rhinoceros* may have invaded from the Yaeyama Islands or a foreign country to Okinawa-jima Island and have spread their habitats to nearby islets. *Anomala albopilosa yashiroi* is the subspecies common to Okinawa-jima Island and the Iheya Islands (NOMURA, 1966; KUSUI, 1976, 1981, 1991; KOBAYASHI, 1988).

Further investigations on the beetle fauna of the small islands of the Okinawa Group are required. And then, more detailed comparison on morphometric characters as well as on qualitative ones should be made for making discussions on the specialization and zoogeography of the insect fauna of the Okinawa Group.

Materials Compared

Serrognathus platymelus okinawanus:

[Okinawa-jima] 1 ♀, Izumi, Motobu-chô, 26–VII–1974; 1 ♂, Mt. Yonahadake, 27–VII–1974, Y. OKUDA leg.; 1 ♀, Izumi, Motobu-chô, 28–VII–1974, I. KIYOSE leg.; 1 ♂, 1 ♀, Izumi, Motobu-chô, VIII–1981, AKIMOTO leg.; 1 ♂, Mt. Yonahadake, 28–IX–1982; 2 ♂♂, Kunigami-son, VIII–1983; 12 ♂♂, 2 ♀♀, Kunigami-son, 11 ~ 12–X–1988, K. ARAYA leg.; 4 ♂♂, 13 ♀♀, Kunigami-son, 4 ~ 5–VII–1991, M. MATSUI leg.

Prosopocoilus dissimilis okinawanus:

[Okinawa-jima] 2 ♀♀, Toguchi, Motobu-chô, 11-VIII-1991, M. HINOUE leg.

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要 約

荒谷邦雄: 琉球列島, 沖縄諸島の水納島および瀬底島からのクワガタムシ科とコガネムシ科の記録。— 琉球列島, 沖縄諸島の水納島より, クワガタムシ科2種とコガネムシ科1種, 瀬底島よりクワガタムシ科1種とコガネムシ科2種の甲虫がそれぞれ新たに採集, 記録された。今回採集された標本の形態について, いくつかの計測形質 (morphometric characters) を記載し, 検討を加えた。

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