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THE LEAF BEETLES OF THE SUBFAMILY CRIOCERINAE FROM BALI, INDONESIA

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ABSTRACT

The Criocerinae from Bali is represented by 17 species, including 14 new records and one new species, *Lema empatompok*. There are two genera, *Lilioceris* and *Lema*, represented by 3 and 14 species, respectively. Eight of the listed species are also found in Java, which is represented by 32 species. A key and colour photos for all the species of Criocerinae known from Bali are provided.

Key words: Coleoptera, Chrysomelidae, Criocerinae, new records, species list, Bali, Indonesia.

ABSTRAK

Kumbang Criocerinae dari Bali diwakili 17 spesies, termasuk 14 rekod baru dan satu spesies baru, *Lema empatompok*. Terdapat dua genus, *Lilioceris* dan *Lema*, masing-masing diwakili 3 dan 14 spesies. Lapan daripada spesies yang tersenarai itu terdapat juga di Jawa, yang mana diwakili 32 spesies. Satu kekunci dan foto berwarna untuk semua spesies Criocerinae yang diketahui dari Bali dikemukakan.

Kata kunci: Coleoptera, Chrysomelidae, Criocerinae, rekod baru, senarai spesies, Bali, Indonesia.

INTRODUCTION

In nineteenth century, during the active period of natural history expeditions conducted by the European museums in the eastern part of the Malay Archipelago, Bali was not selected for collecting trips. Expeditions were focused on Wallacea, a transition zone located between the Oriental and Australasian Regions, which contains a mixture of flora and fauna from Asia and Australia. Wallacea includes the islands of Sulawesi, Lombok, Sumbawa, Sumba, Flores, Timor, Buru, Batchian, Seram, Tenimbar, Ternate, and Halmahera.

Alfred Russel Wallace (1890) did visit Bali in 1856 during his voyage to the Malay Archipelago, but it was not his intention to do so. Wallace was unable to obtain a ship with direct passage from Singapore to Makassar (Sulawesi), which was his main destination. Arriving in Bali, Wallace landed at Buleleng, located on the north of the island. He found that Bali was well cultivated and had not much indigenous vegetation, except upon the sea-beach. A longtime resident of the island, Zollinger, who was a Dutch naturalist, informed him that Bali's productions completely assimilate with those of Java, and he was not aware of a single animal found in Bali which did not inhabit Java. Besides, Wallace also had seen several birds of highly characteristic of Javan ornithology. We believe, with the information given by Zollinger and his brief encounter on the natural history of Bali, Wallace decided to shorten his stay in Bali and proceeded to Lombok.

After almost eighty years since the Wallace's famous voyage, no Chrysomelidae, which is one of the largest families of beetles, were recorded from Bali. It was toward the end of the twentieth century and early twenty-first century records of chrysomelid beetles from Bali began to appear in literature. Hitherto, about 90 species of Chrysomelidae have been recorded from the island (Laboissiere 1932; Warchalowski 1970; Borowiec 1990, 2001; Barroga 2001; Mohamedsaid 2001; Bezdek 2005; Mohamedsaid & Takizawa 2007; Takizawa 2007; Medvedev 2008).

Today, Bali is one of the well known tourist spots in the world. There is no doubt on the impact of developments, including tourism on the fauna of the Chrysomelidae of the island. Besides, Bali is special for its location at the extreme end of the eastern border of the Oriental Region that separated it from the Australasian Region. Wallace's Line, a demarcation between the two regions runs between Bali and Lombok and between Borneo and Sulawesi.

With the objective to contribute to the knowledge of the Chrysomelidae from Bali, we present a list and colour photos for all 17 species of the subfamily Criocerinae known from the island.

MATERIALS AND METHODS

Specimens examined in the present study were collected by sweep nets. Identification was done with aids from several references (Baly 1865; Jacoby 1908; Kimoto & Gressitt 1979; Medvedev 2008) and comparison with determined specimens in the collection of the Centre for Insect Systematics, Universiti Kebangsaan Malaysia (UKM). Specimens are deposited in the following repositories; UKM, and HT (H. Takizawa's private collection, Hasuda, Japan).

RESULTS AND DISCUSSION

The Chrysomelidae of the subfamily Criocerinae from Bali is represented by 17 species and two genera, *Lilioceris* Reitter and *Lema* Fabricius. The former is distinguished from the latter in having tarsal claws free, not fused at the base. The list contains 14 new records and one new species, *Lema (Lema) empatompok* Mohamedsaid & Takizawa, of which description is herein presented.

The 17 species of the Criocerinae recorded from Bali represents an increase of nearly six-fold from the previous records of three species (Takizawa 2007; Medvedev 2008). As a comparison, there are 32 species and four genera of Criocerinae recorded from Java (Kimoto 1984). Eight species are shared

between Bali and Java, including three from *Lilioceris* and five from *Lema*. Evidently, the Criocerinae from Bali (17 species) is more diverse than Java, relative to its size. The total land area of Bali (5632 sq km) is about 5% of Java (134,045 sq km). Mohamedsaid (2001) also recorded a relatively high diversity of Galerucinae from Bali (68 species) compared with Java (113 species).

Bali is separated from Lombok by a narrow Lombok Straits, which is about 20 km wide at the narrowest point. Along Lombok Straits runs Wallace's Line, a demarcation between the Oriental and the Australasian Region. A comparison between the Criocerinae of Bali and Lombok shows that latter is poorly represented by two species of *Lema*, and no *Lilioceris*. Medvedev (2008) discovered a new subspecies, *Lema sumbawaensis lomboki*. The first author, during his five visits to Lombok between 2005 and 2007, managed to collect one criocerine, *Lema coromandeliana* (Fabricius), but 59 species from other subfamilies (Mohamedsaid, unpublished). Area wise, Lombok (4725 km sq) is only slightly smaller than Bali (5632 km sq).

The present day geography of Bali and Lombok shows they are close with each other, but both islands underwent different geological history. For example, during the low sea level, Bali was connected with Java as one landmass together with Borneo, Sumatra and Peninsular Malaysia and known as Sundaland. But Lombok never connected with Sundaland (Voris 2000). Sharing one landmass and no ocean barrier made it possible for dispersal of the criocerine across Sundaland, including Bali.

However, recent discovery of *Lema coromandeliana* in Lombok suggests that although dispersal from the western side of the Wallace's Line into the eastern side is possible, it is restricted. Further study on the Chrysomelidae in this region, including their food plants and ecology, will provide some explanation on why dispersal stop at Bali, thus Wallace's Line appears as a faunal barrier.

SYSTEMATICS

Description of new species

Lema (Lema) empatompok, new species

(Figs. 1a-d)

Oblong-elongate; dorsal surfaces brownish, except elytra with four small oval-shaped black spots, shiny; antennae, anterior part of clypeus, labrum, maxillary palpi, legs, ventral surface except prosternum black. Body length 4.7 mm.

Head: vertex distinctly raised, not divided, impressed with fine punctures, sparsely covered with fine hairs; occiput smooth, impunctate; orbits delimited from vertex by very deep groove; frontal tubercles elevated, transverse; fronto-clypeus smooth, depressed, not triangularly raised; labrum transverse, truncate at apex; maxillary palpi slender. Eyes prominent, with inner margin deeply notched; sides behind oblique, then parallel forming neck; distance across eyes as broad as prothorax. Antennae slender, moderately long, extended to two-third of elytra; segment I large, oval-shaped; II short, 1.5 times as long as broad; segments III and IV subequal in length, one and half as long as II; segment V thicker, 1.2 times as long as IV; segments VI to X gradually shortened towards apex; segment XI one and half longer than X, pointed; interantennal space twice as broad as antennal socket.

Thorax: Pronotum subquadrate, 1.1 times as long as broad, with sides very deeply constricted at middle; transverse furrow at basal one-fourth; surface smooth, impunctate, shiny. Scutellum suboblong, smooth, truncate posteriorly. Elytra subparallel-sided, 1.5 times as long as broad, narrowed towards apex; subbasal area deeply depressed; surface strongly impressed with punctures, arranged in rows, including a short scutellar rows; large punctures confined in the subbasal area. Ventral surface densely covered with fine golden pubescence. Legs slender, with stout femora; first segment of hind tarsus as long as the second and third combined; tarsal claws fused at base.

Etymology. The species name, *empatompok*, is derived from two Malay words, *empat* and *tompok*, meaning four and spot, respectively; it refers to the elytra having four black spots.

HOLOTYPE. INDONESIA, Bali, C. Bali, Apuan Vill., 6.v.1998, H. Takizawa.

Type specimen is deposited in the collection of the Institute for Systematic Entomology, Hokkaido University (SEHU), Sapporo, Japan.

Remarks. The new species is very distinct from other species known in Sundaland, with its smaller size and elytra having four small black spots. However, *Lema (Lema) nigrosignata* Pic 1926 described from Vietnam resembles the new species with elytra having four small black spots, but differs with pronotum having two transverse furrows, one subbasally and another anterior to middle.

Key to species of Criocerinae from Bali

1. Tarsal claws free, not fused at base; antennae generally robust (*Lilioceris* Reitter) 2
 Tarsal claws fused at base; antennae generally slender (*Lema* Fabricius) 4

2. Elytra conspicuously raised behind scutellum, impressed with extremely large punctures, foveolate (subgenus *Chujoita* Monros); elytron brownish, with a triangular-shaped black marking on middle of side; length 7.5 mm (Fig. 4) *dromedaria* (Baly)
 Elytra not conspicuously raised behind scutellum, not impressed with extremely large punctures (subgenus *Lilioceris* Reitter) 3

3. Elytra entirely reddish brown; scutellum reddish brown, pubescent; length 8-9.4 mm (Fig. 3) *semipunctata* (Fabricius)

- Elytra black with the apical third reddish brown; scutellum black, glabrous; length 7.4 mm (Fig. 2) *dimidiata* (Lacordaire)
4. Elytra (with each elytron) having a short scutellar row of punctures, or inner rows of punctures confused by extra punctures of similar size basally (subgenus *Lema* Fabricius) 5
 Elytra without scutellar row of punctures, or punctures in scutellar row much smaller than those of the others; punctures always regularly arranged in longitudinal lines, even on basal portion, and without extra punctures or minute ones in interstices (subgenus *Petauristes* Lacordaire) 15
5. Elytra bicolor, brownish and black 6
 Elytra unicolor, entirely brownish, blue, purplish or greenish 8
6. Elytron brownish, with two small black spots, one each near the base and behind the middle; antennae, legs, ventral surface black; head with fronto-clypeal area smooth, depressed, not triangularly raised; length 4.7 mm (Fig. 1a-d) *empatompok*, new species
 Elytron largely black, with median brownish band 7
7. Basal black band not extended to sutural margins; punctures moderately large; legs either entirely brownish or black; larger species, with length 5.7-6.6 mm (Fig. 14) *quadriplagiata* Baly
 Basal black band extended to sutural margins; punctures small; forelegs brownish, the middle and hind legs entirely black; smaller species, with length 4.0-5.2 mm (Fig. 9) *delauneyi* Baly
8. Elytra entirely blue, purplish or greenish 9
 Elytra entirely brownish 12

9. Pronotum with only 1 transverse furrow 10
 Pronotum with 2 transverse furrows, 1 subbasally and another before middle; elytra metallic green; legs entirely black or brownish; in male, middle tibiae with triangular tooth before apex; length 5.0-6.5 mm (Fig. 6) *coromandeliana* (Fabricius) (parts)
10. Head, pronotum, scutellum reddish brown; elytra metallic purplish blue; ventral surface black; both antennae and legs, black or brownish; pronotum with small punctures on anterolateral areas; larger species, length 5.6-6.4 mm (Fig. 11) *fruhstorferi* Jacoby
 Head, pronotum, scutellum black; elytra metallic blue; smaller species 11
11. Antennae, legs brownish; pronotum with deep transverse furrow; length 3.4-4.8 mm (Fig. 5) *baliana* Medvedev
 Antennae, legs black; pronotum with shallow transverse furrow; length 4.0-5.0 mm (Fig. 8) *cyanea* Fabricius
12. Pronotum with only 1 transverse furrow 13
 Pronotum with 2 transverse furrows, 1 subbasally and another before middle 14
13. Ventral surface with breast black, abdomen brownish; head, pronotum reddish brown; legs black except forelegs reddish brown; length 4.4-5.1 mm (Fig. 13) *phungi* Pic
14. Ventral surface with breast entirely black or brownish; head, pronotum brownish; legs either entirely black or brownish; length 5-6 mm (Fig. 12) *lacertosa* Lacordaire
15. Antennae, legs black; head, pronotum, elytra, reddish brown with purplish tinge; ventral surface reddish brown; elytra with shallow subbasal depression; in male middle tibiae with triangular tooth before apex; length 5.0 mm (Fig. 7) *coromandeliana* (Fabricius) (parts)

- Head, antennae, legs entirely brownish; meso-, metasternite and the first abdominal sternite largely black; elytra with very deep subbasal depression; length 5.5-6.4 mm (Fig. 10)
 *feae* Jacoby
16. Pronotum with a deep elongate, fovea in middle; elytron reddish brown, with two black spots, one each in middle and behind the middle; antennae brownish, with segments 8 and 9 black; length 8-9.2 mm (Fig. 18)...*quadripunctata* (Olivier)
 Pronotum without fovea 16
17. Last segment of maxillary palpi enlarged; dorsal and ventral surfaces brownish; length 6.1-8.0 mm (Fig. 17)
 *palpalis* Lacordaire
 Last segment of maxillary palpi slender, not enlarged; elytra blue 17
18. Abdomen reddish; elytra purplish-blue, the subbasal transverse depression distinct, moderately deep; head, pronotum black; length 6.8 mm (Fig. 15)
 *abdominalis* (Olivier)
 Abdomen black; elytra greenish-blue, the subbasal depression indistinct; head reddish brown, with vertical area black; pronotum dark brown; length 5.7 mm (Fig. 16)
 *javana* Lacordaire

List of Criocerinae from Bali

1. *Liliocerus (Liliocerus) dimidiata* (Lacordaire), (Fig. 2)

Criocerus dimidiata Lacordaire, 1845, Mon. Phyt., 1: 572 (Java).
Liliocerus (Liliocerus) dimidiata: Kimoto, 1984, Kurume Univ. J.,
 33 (1): 55.

Materials examined. Bali, Pekutatan, Jembarana, 5.v.1998, feeding on *Dioscorea* sp., H. Takizawa, 7 (HT), 1 (UKM).

Distribution. Java, Bali, Amboina, Seram, Ternate, Batchian.

Remarks. This is a new record for Bali.

2. *Liliocerus (Liliocerus) semipunctata* (Fabricius),
(Fig. 3)

Lema semipunctata Fabricius, 1801, Syst. El., 1: 472 (Sumatra).
Liliocerus (Liliocerus) semipunctata: Kimoto, 1979, Pac. Ins., **20**
(2-3): 230.

Materials examined. Bali, Asah Panji, Lake Tamblingan, 6.v.1998, H. Takizawa, 10 (HT), 1 (UKM); vi.1998, Arbaimon, 1 (HT); 6.v.1998, Arbaimon, 1 (HT); 6.xii.1998, Arbaimon, 10 (HT). Denpasar, 25.ii.1978, H. Fushima, 1 (HT). Kuta Beach, 27.iii.1993, Y. Miyake, 1 (HT).

Distribution. India, Sri Lanka, Nepal, Thailand, Hainan, Peninsular Malaysia, Sumatra, Borneo, Java, Bali.

Remarks. This is a new record for Bali.

3. *Liliocerus (Chujoita) dromedaria* (Baly),
(Fig. 4)

Criocerus dromedaria Baly, 1861, J. Ent., 1: 279 (Cambodia).
Liliocerus (Chujoita) dromedaria: Kimoto & Gressitt, 1979, Pac. Ins., **20** (2-3): 221 (Cambodia, Vietnam).- Takizawa & Wahid, 2007, Serangga, 12 (1-2): 30 (Bali).

Distribution. Cambodia, Vietnam, Java, Bali.

4. *Lema (Lema) baliana* Medvedev,
(Fig. 5)

Lema (Lema) baliana Medvedev, 2008, Stuttgart. Beitrag. Naturkund. **1**: 432 (Bali).

Material examined. Bali, Wanasari, 4-6.v.1998, H. Takizawa, 1 (HT).

Distribution. Bali.

5. *Lema (Lema) coromandeliana* (Fabricius),
(Figs. 6-7)

Leptura coromandeliana Fabricius, 1798, Ent. Syst. Suppl.: 154 (Tranquebar).

Lema coromandeliana: Fabricius, 1801, Syst. Eleuth., 1: 475.

Lema (Lema) coromandeliana: Kimoto & Gressitt, 1979, Pac. Ins., 20 (2-3): 243 (Thailand, Laos, Vietnam).

Materials examined. Bali, Pekutatan, 5.v.1998, H. Takizawa, 1 (HT); 24.ix.1998, H. Takizawa, 1 (HT). Tabanan, 25.v.-1.vi.2000, H. Takizawa, 2 (HT).

Distribution. India, Thailand, Cambodia, Laos, Vietnam, China, Taiwan, Peninsular Malaysia, Sumatra, Borneo, Java, Sulawesi, Bali.

Remarks. This is a new record for Bali. There are two colour forms, one with pronotum reddish brown and elytra metallic green and other with pronotum and elytra brownish. In the two forms the males middle tibiae with triangular tooth before apex.

6. *Lema (Lema) cyanea* Fabricius,
(Fig. 8)

Lema cyanea Fabricius, 1801, Syst. Eleuth., 1:472 (Sumatra).

Lema (Lema) cyanea: Kimoto & Gressitt, 1979, Pac. Ins., 20 (2-3): 246 (Thailand, Vietnam).

Materials examined. Bali, Ubud, Gianyar, 23.viii.1997, feeding on *Commelina* sp., H. Takizawa, 3 (HT). Tabanan, Apuan Village, 6.v.1998, H. Takizawa, 2 (HT); Tabanan, Mt. Batukaru, 27.v.2005,

H. Takizawa, 1 (HT); Tabanan, 25.v.-1.vi.2005, H. Takizawa, 1 (HT). Asah Panji, Lake Tamblingan, Buleleng, 20.ix.1998, H. Takizawa, 3 (HT). Pekutatan, Jemberana, 5.v.1998, H. Takizawa, 3 (HT); Yehsumbul, Jemberana, 24.ix.1998, H. Takizawa, 3 (HT). Bali Is., 6.ii.1998, native collector, 2 (HT). Bali, Tabanan, Batukaru, 13.xi.2007, M. S. Mohamedsaid, 2 (UKM).

Distribution. India, Sri Lanka, Nepal, Myanmar, Thailand, Laos, Vietnam, China, Taiwan, Peninsular Malaysia, Sumatra, Bali.

Remarks. This is a new record for Bali.

7. *Lema (Lema) delauneyi* Baly,
(Fig. 9)

Lema delauneyi Baly, 1889, Ann. Soc. Ent. France, ser. 6, 9: 488 (Hue).- Medvedev, 2008, Stuttgart. Beitrage Naturkund. A. N. S. 1: 432 (Bali; identified as *gestroi* Jacoby 1884).

Materials examined. Bali, Wanasari, 4-6.v.1998, H. Takizawa, 1 (HT). Asah Panji, C. Bali, 6.xii.1999, H. Takizawa, 1 (HT). Ubud, Gianyar, 18.i.2005, H. Takizawa, 1 (HT). Tabanan, Batukaru, 13.xi.2007, M. S. Mohamedsaid, 1 (UKM).

Distribution. Thailand, Vietnam, Peninsular Malaysia, Bali.

Remarks. Medvedev's (2008) specimens have the elytra entirely black on basal and apical fourths, which are similar with specimens we presently examined. On the other hand, *L. gestroi* Jacoby 1884, which was described from Sumatra and Java, possesses rounded spots in apical fourth of the elytra. Jacoby's type is in the depository of the Museum of Comparative Zoology, Harvard (MCZ). We believe that *delauneyi* and *gestroi* are two valid species.

8. *Lema (Lema) empatompok* Mohamedsaid & Takizawa, new species
(Figs. 1a-d, this work)

9. *Lema (Lema) feae* Jacoby,
(Fig. 10)

Lema feae Jacoby, 1892, Ann. Mus. Civ. Genova **37**: 873 (Burma).
Lema (Lema) feae: Kimoto & Gressitt, 1979, Pac. Ins., **20** (2-3):
248 (Thailand, Vietnam).

Materials examined. Bali, Asah Panji, Lake Tamblingan,
6.v.1998, H. Takizawa, 1 (HT), 1 (UKM); 20.ix.1998, H.
Takizawa, 1 (HT); 6.xii.1999, H. Takizawa, 1 (HT).

Distribution. Myanmar, Thailand, Vietnam, Bali.

Remarks. This is a new record for Bali.

10. *Lema (Lema) fruhstorferi* Jacoby,
(Fig. 11)

Lema fruhstorferi Jacoby, 1900, Stett. Ent. Ztg., 61: 385 (Java).

Materials examined. Bali, Negara, 14.xi.2007, M. S.
Mohamedsaid, 5 (UKM), 3 (HT); Izfa & Roslan, 9 (UKM).

Distribution. Java, Bali.

Remarks. This is a new record for Bali.

11. *Lema (Lema) lacertosa* Lacordaire,
(Fig. 12)

Lema lacertosa Lacordaire, 1845, Monogr. Phytoph. **1**: 339
(Bengal).

Lema (Lema) lacertosa: Kimoto & Gressitt, 1979, Pac. Ins., **20**:
249 (Laos, Vietnam).

Materials examined. Bali, Negara, 14.xi.2007, M. S.
Mohamedsaid, 4 (UKM); Izfa & Roslan, 5 (UKM).

Distribution. India, Laos, Vietnam, S. China, Peninsular Malaysia, Bali.

Remarks. This is a new record for Bali. There are three forms, first with antennae, legs and ventral surface brownish, second the antennae, legs brownish, and ventral surface black, and third the antennae, legs and ventral surface black.

12. *Lema (Lema) phungi* Pic,
(Fig. 13)

Lema phungi Pic, 1924, Mel. Exot. Entomol., 41: 13 (Tonkin).

Lema (Lema) phungi: Kimoto & Gressitt, 1979, Pac. Ins., **20** (2-3): 252 (Thailand, Laos).

Material examined. Bali, Tabanan, 25.v.-1.vi.2005, H. Takizawa, 1 (HT).

Distribution. Thailand, Laos, Vietnam, Peninsular Malaysia, Bali.

Remarks. This is a new record for Bali.

13. *Lema (Lema) quadriplagiata* Baly,
(Fig. 14)

Lema quadriplagiata Baly, 1865, Ann. Mag. Nat. Hist., ser. 3, 16: 155 Pachyhuri, Siam).

Lema (Lema) quadriplagiata: Kimoto & Gressitt, 1979, Pac. Ins., **20** (2-3): 252 (Thailand, Laos).

Materials examined. Bali, 20.i.1998, Detani, 1 (HT). Tabanan, Batukaru, 13.xi.2007, M. S. Mohamedsaid, 1 (HT). Negara, 14.xi.2007, feeding on wild ginger plant, M. S. Mohamedsaid, 8 (UKM), 5 (HT); Izfa & Roslan, 15 (UKM).

Distribution. Thailand, Laos, Bali.

Remarks. This is a new record for Bali.

14. *Lema (Petauristes) abdominalis* (Olivier),
(Fig. 15)

Crioceris abdominalis Olivier, 1808, Ent., **6**: 741 (Java).

Lema abdominalis: Lacordaire, 1845, Mon. Phyt., **1**: 350.

Materials examined. Bali Island, E. Java, iii.1990, 1 (UKM). Pekutatan, Jembarana, 5.v.1998, feeding on *Dioscorea* sp., H. Takizawa, 1 (HT); Yehsumbul, Jembarana, 5-8.xii.1999, H. Takizawa, 8 (HT). Bali Is., 6.ii.1998, iii. 1990, native collector, 5 (HT).

Distribution. Java, Bali.

Remarks. This is a new record for Bali.

15. *Lema (Petauristes) javana* Lacordaire,
(Fig. 16)

Lema javana Lacordaire, 1845, Mon. Phyt., **1**: 382 (Java).

Materials examined. Bali, Pekutatan, 5.v.1998, H. Takizawa, 1 (HT). C. Bali, Yeh Sumbul Negara, 5-8.xii.1999, H. Takizawa, 1 (HT).

Distribution. Java, Bali.

Remarks. This is a new record for Bali.

16. *Lema (Petauristes) palpalis* Lacordaire,
(Fig. 17)

Lema palpalis Lacordaire, 1845, Mon. Phyt., **1**: 315 (Java).

Lema (Petauristes) palpalis: Kimoto & Gressitt, 1979, Pac. Ins.,
20 (2-3): 239 (Thailand, Laos, Vietnam).

Materials examined. Bali Is., 30.i.1998, Detani, 1 (HT). Bali, Wanasari, 4-6.v.1998, H. Takizawa, 1 (HT). Yeh Sumbul, Negara, 5-8.xii.1998, H. Takizawa, 1(HT).

Distribution. India, Nepal, Thailand, Laos, Vietnam, Peninsular Malaysia, Java, Bali.

Remarks. This is a new record for Bali.

17. *Lema (Petauristes) quadripunctata* (Olivier),
(Fig. 18)

Crioceris quadripunctata Olivier, 1808, Ent., 6: 731 (Java).

Lema quadripunctata: Lacordaire, 1845, Mon. Phyt., 1: 318.

Lema (Petauristes) quadripunctata: Kimoto & Gressitt, 1979, Pac. Ins., 20: 240 (Thailand, Laos, Vietnam).

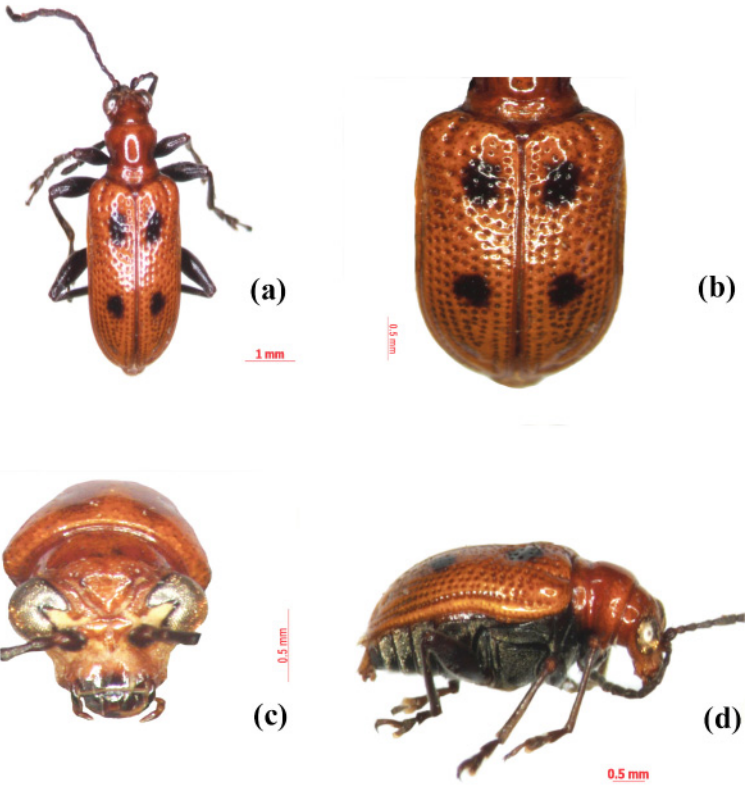
Materials examined. Bali, Pekutatan, Jembarana, 5.v.1998, H. Takizawa, 1 (UKM). Yehsumbul, Jembarana, 24.ix.1998, H. Takizawa, 2 (HT); 5-8.xii.1999, H. Takizawa, 2 (HT).

Distribution. India, Sri Lanka, Myanmar, Thailand, Laos, Vietnam, Philippines, Java, Bali.

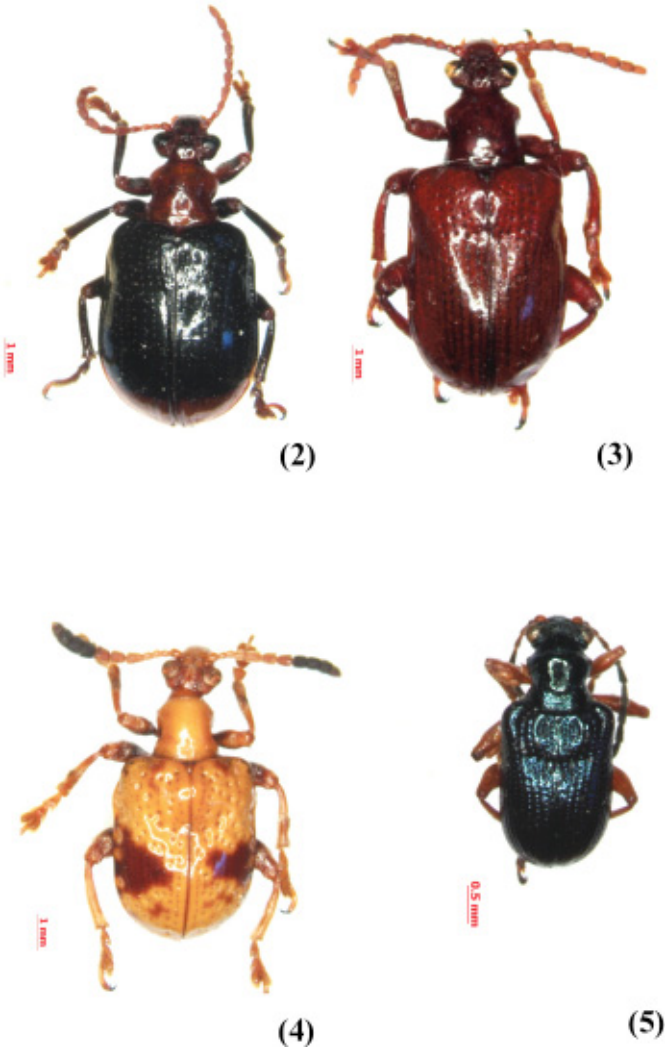
Remarks. This is a new record for Bali.

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Figs. 1a-d. *Lema (Lema) empatompok* Mohamedsaid & Takizawa, new species; a, habitus; b, elytra; c, frontal view; d, lateral view.



Figs. 2-5: 2, *Lilioceris (Lilioceris) diamidiata* (Lacordaire); 3, *Lilioceris (L) semipunctata* (Fabricius); 4, *Lilioceris (Chujoita) dromedaria* (Baly); 5, *Lema (Lema) baliana* Medvedev



(6)



(7)

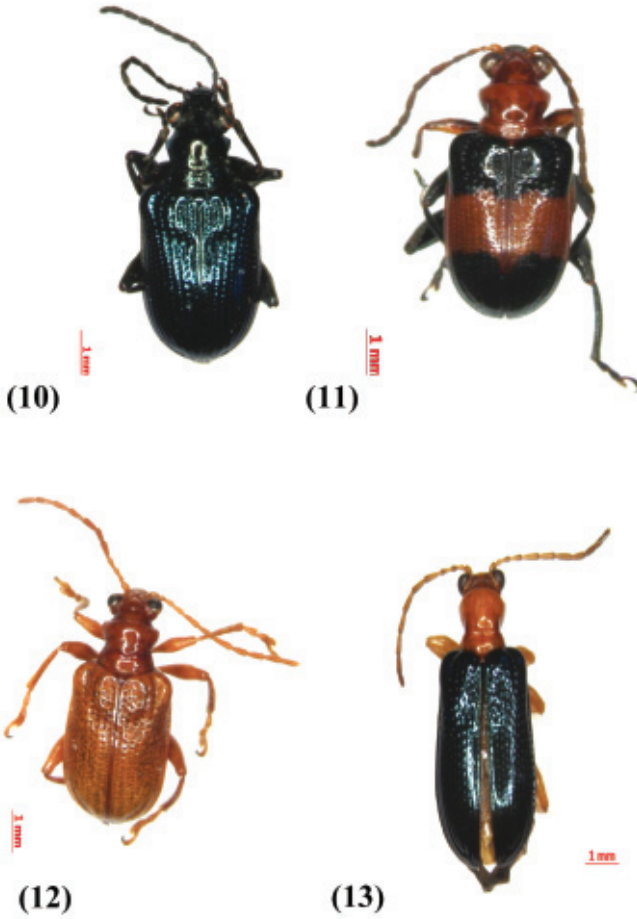


(8)



(9)

Figs. 6–9: 6, *Lema (L) coromandeliana* (Fabricius); 7, *Lema (L) coromandeliana* (Fabricius); 8, *Lema (L) cyanea* Fabricius; 9, *Lema (L) delauneyi* Baly



Figs. 10 - 13: 10, *Lema (L) cyanea* Fabricius; 11, *Lema (L) delauneyi* Baly; 12, *Lema (L) feae* Jacoby; 13, *Lema (L) fruhstorferi* Jacoby



(14)



(15)



(16)



(17)

Figs. 14–17: 14, *Lema (L) quadriplagiata* Baly; 15, *Lema (Petauristes) abdominalis* Olivier; 16, *Lema (P) javana* Lacordaire; 17, *Lema (P) palpalis* Lacordaire



Fig. 18. *Lema (P) quadripunctata* (Olivier)

REFERENCES

- Baly, J. S. 1865. *Phytophaga Malayana: a Revision of the Phytophagous Beetles of the Malay Archipelago, with Descriptions of the New Species, collected by Mr. A. R. Wallace. Transactions of the Entomological Society of London, ser. 3, 4: 1-76.*
- Barroga, G. F. 2001. The genus *Aulacophora* Chevrolat (Coleoptera: Chrysomelidae: Galerucinae) from Bali, Indonesia, with a description of a new species. *Serangga*, **6** (1): 37-50.
- Bezdek, J. 2005. New and interesting *Apophyllia* from Southeast Asia (Coleoptera: Chrysomelidae: Galerucinae). *Raffles Bulletin of Zoology*, **53** (1): 35-45.
- Borowiec, L. 1990. New records and new synonyms of Asiatic Cassidinae (Coleoptera: Chrysomelidae). *Bulletin Entomology Pologne*, **59**: 677-711.

- Borowiec, L. 2001. New records of Asian and Australopapuan Cassidinae, with descriptions of five new species of *Cassida* from Thailand (Coleoptera: Chrysomelidae). *Genus*, **12** (4): 493-563.
- Jacoby, M. 1908. *The fauna of British India, including Ceylon and Burma, Coleoptera, Chrysomelidae*, Vol. 2.. Taylor and Francis, London.
- Kimoto, S. & J. L. Gressitt. 1979. Chrysomelidae (Coleoptera) of Thailand, Cambodia, Laos and Vietnam. I. Sagrinae, Donaciinae, Zeugophorinae, Megalopodinae and Criocerinae. *Pacific Insects*, **2** (2-3): 191-256.
- Kimoto, S. 1984. Check List of Chrysomelidae of SE Asia, South of Thailand and West of Irian Jaya of Indonesia. *Kurume University Journal*, **33** (1): 41-58.
- Laboissiere, V. 1932. Resultats scientifiques du voyage aux Indes orientales neerlandaises de LL. BB. De Prince et de la Princesse Leopold Belgique. *Memoir Museum History Naturalles, Belgique, hors ser.*, **4** (4): 145-185.
- Medvedev, L. N. 2008. New and poorly known Chrysomelidae (Coleoptera) from the islands Bali and Lombok (Indonesia). *Stuttgarter Beitrage Naturkund A. N. S.*, **1**: 431-434.
- Mohamedsaid, M. S. 2001. The chrysomelid beetles of the subfamily Galerucinae from Bali, Indonesia (Coleoptera: Chrysomelidae). *Serangga*, **6** (1): 137-169.
- Mohamedsaid, M. S. & H. Takizawa. 2007. *Kumbalia longicornis*, a new genus and new species of Galerucinae (Coleoptera: Chrysomelidae). *Serangga*, **12** (1-2): 1-7.
- Takizawa, H. & N. Wahid, 2007. New records of *Lilioceris* (*Chujoita*) species from Sabah, Malaysia and Bali, Indonesia. *Serangga*, **12** (1-2): 29-32.

- Voris, H. K. 2000. Maps of Pleistocene sea level in Southeast Asia: shorelines, river systems and time durations. *Journal of Biogeography*, **27**: 1153-1167.
- Wallace, A. R. 1890. *The Malay Archipelago*. Paperback Edition, 2000. Periplus Editions, Singapore.
- Warchalowski, A. 1970. Revision der chinesischen *Longitarsus*-Arten (Coleoptera, Chrysomelidae). *Annales Zoologici Warszawa*, **28** (8): 97-152.