Some Coleoptera from the Kermadec Islands

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Summary

The following Coleoptera recorded from the Kermadec Islands are discussed (new records asterisked): Carabidae: *Mecyclothorax ambiguus rotundicollis*; Dermestidae: *Anthrenus verbasci**; Phycosecidae: *Phycosecis limbata*; Cleridae: *Necrobia ruficollis*; Cucujidae: *Cryptamorpha desjardinsi**, *Oryzaephilus surinamensis**; Lathridiidae: *Lithostygnus serripennis**, *Corticaria fenestralis*, *Melanophthalma hirtalis**; Tenebrionidae: *Tribolium castaneum**, Cerambycidae: *Prionoplus reticularis**. Most of these species were probably introduced accidentally to the islands. *Cryptamorpha desjardinsi* was misidentified by Broun as *C. suturalis*. The record of *Phycosecis limbata* by Broun may be erroneous.

INTRODUCTION

This is the first of a series of papers on the Coleoptera of the Kermadec Islands. Many of the Kermadecs Coleoptera have been sent to specialists for study, and will be the subject of later reports. The present paper includes mainly families represented on the Kermadecs by widely distributed species, some of which have certainly, and others have probably, been introduced accidentally.

General information on the Kermadec Islands is contained in my introductory paper elsewhere in this issue (Watt, 1975). The only previously published records of Coleoptera from the Kermadecs will be found in Broun (1910). BP = Bernice P. Bishop Museum, Honolulu; CM = Canterbury Museum, Christchurch. All other material is in the collection of Entomology Division, D.S.I.R., Auckland. L = larva(e).

FAMILY CARABIDAE

Mecyclothorax Sharp

Sharp, 1903, Fauna Hawaiiensis *3*: 243. — Britton, 1948, Occ. Pap. B. P. Bishop Mus. *19* (4): 110–1.

Mecyclothorax ambiguus rotundicollis (White)

White, 1846, Voy. Ereb. Terr. Ins., p. 6 (*Oopterus rotundicollis*). Britton, 1948, op. cit.: 108. — Pilgrim, 1963, Pacif. Ins. *5*: 842-4.

Macauley Island, Kermadec Is. Exped. 1908 [printed], 19, *Cyclothorax insularis* [Broun's hand], 2 CM; Macauley I., Nov 1970, W. Sykes, Sandy Bay, ex liver wort, 1; Macauley I., Nov 70, W. Sykes, turf 70/244, 1.

This species was recorded by Broun (1910) as *Cyclothorax insularis* (Motschulsky, 1864), which may be a synonym of *M. a. rotundicollis*. Pilgrim (loc. cit.) has outlined the problems involved in the uncertain synonymy of this species. Britton (loc. cit.) reduced *rotundicollis* to a subspecies of the Australian *M. ambiguus* (Erichson, 1842). The specimens from Macauley Island agree well with specimens from the New Zealand mainland identified by Britton as *"Mecyclothorax rotundicollis"*.

In the Kermadecs, the species is known only from Macauley Island. It may have been accidentally introduced there, although it could conceivably have been dispersed there by natural means. *Mecyclothorax* is one of the very few genera of Carabidae to reach the Hawaiian Islands, where a single original immigrant species arriving

by chance trans-oceanic dispersal gave rise to 85 species by explosive evolutionary radiation (Britton, loc. cit.). *Mecyclothorax* has also reached other oceanic islands. Since *rotundicollis* is subspecifically distinct from *ambiguus* it is most unlikely to have been introduced into New Zealand, as it must have had sufficient time to evolve differences from Australian populations. It shows no evidence of geographical variation in New Zealand, so it is apparently not prone to evolve local races quickly. Thus the ancestor of *rotundicollis* almost certainly reached New Zealand by chance dispersal across the Tasman Sea from Australia.

FAMILY DERMESTIDAE

Anthrenus Geoffroy

Geoffroy, 1762, Hist. Ins. *1*: 113 — Hinton, 1945, Mon, Beetles Stored Prod. *1*: 325–6.

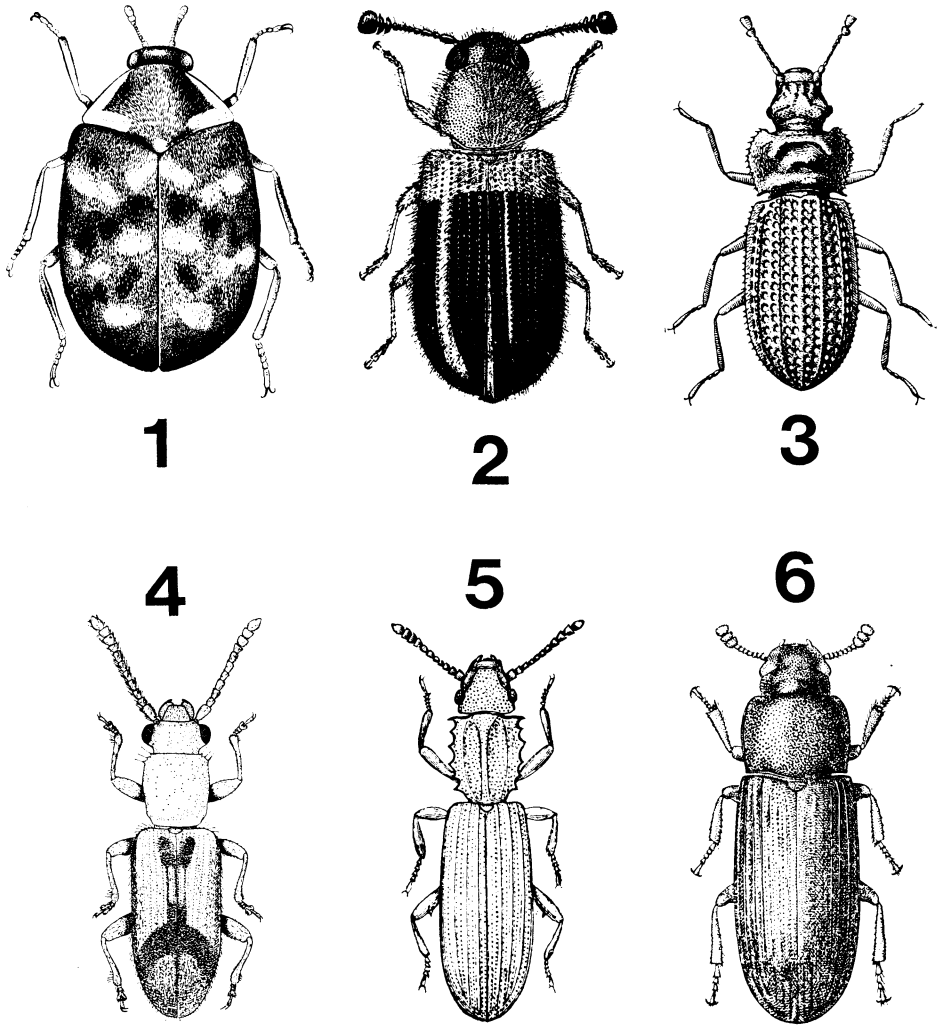

Fig. 1. *Anthrenus verbasci;* 2. *Necrobia ruficollis;* 3. *Lithostygnus serripennis;* 4. *Cryptamorpha desjardinsi;* 5. *Oryzaephilus surinamensis;* 6. *Tribolium castaneum.* [Figs. 1, 2, 4, 5 after Hatch, 1962; 3 after Hinton, 1941; 6 after Hinton, 1948.]

Anthrenus verbasci (Linnaeus). Fig. 1

Linnaeus, 1767, Syst. Nat. Ed 12: 568 — Hinton, 1945, op. cit., 326–34.

Raoul Island, on wool garment, Aug 67, A. T. Blake, 1 adult.

This ubiquitous species is notorious under the name of the Carpet Beetle in New Zealand, where its larva causes extensive damage to woollen carpets and stored woollen garments. According to Hinton, it prefers dried insects to wool when both are available, so it could establish itself away from human habitation on Raoul. There is no evidence that it has yet done so, however.

FAMILY PHYCOSECIDAE

Phycosecis Pascoe

Pascoe, 1875, Ann. Mag. nat. Hist. (4) *16*: 213–4. Crowson, 1964, Trans. R. ent. Soc. Lond. *116*: 313–4.

Phycosecis limbata (Fabricius)

Fabricius, 1781, Spec. Ins. *1*: (*Dermestes*). — Crowson, 1964, op. cit., 313–5.

atomaria Pascoe, 1875, Ann. Mag. nat. Hist. (4) *16*: 214.

This species was recorded by Broun (1910: 293) from "Sunday" (= Raoul) Island under the synonymous name *Phycosecis atomaria*. It is common on sandy beaches around the main islands of New Zealand. I spent many hours on Raoul Island searching for this species at North Beach and Denham Bay, without success. As no specimens of *Phycosecis* labelled "Sunday Island" have been located in collections, it is probable that Broun's record was erroneous.

FAMILY CLERIDAE

Necrobia Olivier

Olivier, 1795, Ent. 4, no. 76 bis.

Necrobia ruficollis (Fabricius). Fig. 2

Fabricius, 1781, Spec. Ins. *1*: 66 (*Dermestes*). — Crowson, 1964, op. cit., *42*: 304–5.

Sunday Island, Kermadec Is. Exped., 1908, 2 (recorded by Broun, 1910: 293); Denham Bay, Raoul I., 16 Jan 67, C. R. Veitch, on dry goat corpse, 3, 1 BP; Raoul I., Feb 67, J. C. Watt, in decayed bird carcase from Meyer I., 1; Raoul I., meat meal, poultry food store, Apr 67, A. T. Blake, 2.

This cosmopolitan species has been established in New Zealand for many years. It has been commonly recorded from dry carcases, skins, bones, etc. It also feeds on hams, cheese and copra in warehouses and ships.

Broun (loc. cit.) states that: "The Bell family, on one occasion [on Raoul Island], dried a great quantity of sea-birds' eggs, which became a moving mass of this species".

FAMILY CUCUJIDAE

Both species known from the Kermadecs fall into the "Silvanidae", which is frequently treated as a distinct family with little justification. The two species may be separated as follows:

1. Tarsi with third segment lobed beneath. Prothorax without prominent lateral teeth (Fig. 4) .... *Cryptamorpha desjardinsi*
- Tarsi without lobed segments. Prothorax with prominent lateral teeth (Fig. 5) *Oryzaephilus surinamensis*

Cryptamorpha Wollaston

Wollaston, 1854, Ins, Mader.: 156. — Grouvelle, 1908, Ann Soc. ent. Fr. *77*: 474.

Cryptamorpha desjardinsi (Guérin). Fig. 4

Guérin, 1829, Icon. Règne Anim. — 44, Ins. p. 96 (*Psammoecus*). — Lepesme, 1944, Encycl. Ent. (A) *22*: 133–6.

musae Wollaston, 1854, Ins. Mader. p. 157, pl. 4, fig, 1. — Broun, 1880, Man. N.Z. Col. *1*: 222 (as *C. suturalis*—misidentification). — 1910, Trans. N.Z. Inst. *42*: 293 (as *C. suturalis*).

Raoul Island, Denham Bay, Mahoe Peak, Trig V, Bell's Flat, Denham Bay Track, N. Terrace, N. Beach Ravine, Blue Lake, Low Flat, Bell's Ravine, N. Slopes, N.E. Slopes, Station, Lava Point, Mt. Moumoukai, 5–500 m (147 adults, ca. 180 larvae). *Meyer Island,* North and South (7 adults). On *Fomes applanatus* 2; under base of leaf of *Rhopalostylis cheesemanii* 18, 9.L.; on fermenting oranges 3; ex pendulous moss on *Ascarina lucida* var. *lanceolata* (67/77) 16L; in *Pterodroma neglecta* nest 1; ex pit traps 3; under bark *Metrosideros kermadecensis* 3; heartwood dead *Myrsine kermadecensis* 2; base of petioles of *Cordyline terminalis* 12; under bark dead *Myoporum laetum* 4; on *Macropiper excelsum* 1; beaten from *Ascarina lanceolata* 4; beaten from *Homalanthus polyandrus* 1; on tent 1; Malaise trap 9; stagnant pond 2; in dried corpse *Puffinus p. pacificus* 43 L (mainly small); abandoned nest of *Turdus merula* in orange tree (66/552) 3 L; midrib of dry *Rhopalostylis cheesemanii* frond 3; light trap 1; bases of petioles of *Alocasia macrorhiza* 6; *Corynocarpus laevigatus* tree trunk 1; dead *Rattus norvegicus* 2; leaves of *Colocasia esculenta* 1; in flowers of *Melicytus* 1; leaf litter samples 66/546 1L; 66/547 1L; 66/549 6; 66/553 5L (small); 67/54 1, 3L; 67/56 12, 17L; 67/57 4, 4L; 67/66 2, 22L; 67/74 46, 80L (all stages). Adults Sept–Jan. Collectors: D. E. Crockett, G. A. Samuelson, J. C. Watt. BP, CM.

This species was recorded by Broun (1910) from Sunday Island under the name *Cryptamorpha suturalis* (White). This is a misidentification, as *C. suturalis* is a synonym of *C. brevicornis* (White, 1846). Broun (1880) states that the species he identified as *C. suturalis* "is identical with Wollaston's *C. musae*". As a result of Broun's misidentification, *C. desjardinsi* has gone under the name of *C. suturalis* in New Zealand collections for over 90 years.

Specimens of *C. desjardinsi* from the Kermadecs and New Zealand were sent to Mr R. D. Pope (British Museum, Natural History), who kindly confirmed their identity. He also confirmed that "the specimens standing over *C. suturalis* in the Broun Collection are indeed *C. desjardinsi*".

C. desjardinsi is one of the commonest beetles on Raoul, where it occurs in a great diversity of ecological niches, including some (such as bird and rat carcases) in which it is unknown in New Zealand. According to Lepesme (loc. cit.) adults feed on vegetable debris, but the larva is an active predator, feeding on young larvae, Thysanura and mites. The distribution of *C. desjardinsi* is said to be cosmopolitan, but in reality it is limited mainly to the tropics and subtropics.

Oryzaephilus Ganglbauer
Ganglbauer, 1899, Kaf. Mitteleur *3*: 45

Orzyaephilus surinamensis (Linnaeus). Fig. 5
Linnaeus, 1758, Syst. Nat. Ed. *10*: 357 (*Dermestes*). — Lepesme, 1944, Encycl. Ent. (A) *22*: 139–43.

Raoul Island, in stored wheat, 19 Jan 67, J. C. Watt, 3 + 3 in alcohol.

This cosmopolitan species is the Saw-toothed Grain Beetle, a primary pest of stored grains. It is not known to be established in natural habitats on the Kermadecs.

FAMILY LATHRIDIIDAE

The three species known to occur on the Kermadecs may be distinguished as follows:

1. Body covered with a waxy coating, glabrous. Pronotum and elytra with raised carinae ..... *Lithostygnus serripennis*
– Body not covered with a waxy coating, pubescent. Pronotum and elytra not carinate 2

2. Prothorax with a distinct transverse pubescent fovea on each side obliquely anterior to front coxae. Sides of prothorax distinctly dentate, especially towards base. Scutellum strongly transverse, with transverse carina *Corticaria fenestralis*
- Prothorax without such foveae. Sides of prothorax minutely denticulate. Scutellum less transverse, without transverse carina .... *Melanophthalma hirtalis*

Lithostygnus Broun

Broun, 1886, Man. N.Z. Col. *4*: 950. — MacKechnie-Jarvis, 1973, Ent. Mon. Mag. *108*: 186–8.

Lithostygnus serripennis Broun. Fig. 3

Broun, 1914, Bull. N.Z. Inst. *1*: 185–6. — Hinton, 1941, Bull. ent. Res. *32*: 176 (*Metophthalmus*). — Watt, 1969, N.Z. Ent. *4*(2) : 61 (*Metophthalmus*). — MacKechnie-Jarvis, 1973, op. cit.: 186–8.

N. Meyer Island, 9 Dec 72, J. Ireland, litter 72/287, 1.

This species was described from New Zealand, where it has been found in litter and sea-birds' nests (Watt, loc. cit.). It has been established in Britain for 45 years, where it has been found associated with mouldy articles in cellars and out-buildings. MacKechnie-Jarvis (loc. cit.) has reinstated the genus *Lithostygnus,* which Hinton had previously synonymised with *Metophthalmus.*

There are no further data for litter sample 72/287, but as Meyer Island supports vast numbers of nesting sea-birds, it is probable that *L. serripennis* was associated in some way with nests. It may have been transported to the Kermadecs from New Zealand by sea-birds.

Corticaria Marsham

Marsham, 1802, Ent. Brit. *1*: 106. — Watt, 1969, N.Z. Ent. *4*(2) : 54, 62.

Corticaria fenestralis (Linnaeus)

Linnaeus, 1758, Syst. Nat. Ed. *10*: 346 (*Dermestes*). — Watt, 1969, op. cit. : 62, 64.

longula Broun, 1910, Bull. N.Z. Inst. *1*: 26. — 1910, Trans. N.Z. Inst. *42*: 293.

Sunday Island, Kermadec Is. Exped., 1908, 2 CM; Mt Moumoukai, 510 m, 23 Jan 67, J. C. Watt, litter under *Ascarina lucida* var. *lanceolata* 67/75, 1.

This ubiquitous species was recorded by Broun from Sunday Island under the synonymous name *C. longula.* It has been established in New Zealand for many years, where it has been found sporadically in moss and leaf litter (see Watt, 1969).

Melanophthalma Motschulsky

Motschulsky, 1866, Bull. Soc. Imp. Nat. Mosc. *39*: 269. — Watt, 1969. N.Z. Ent. *4*(2) : 54, 64–5.

Melanophthalma hirtalis (Broun)

Broun, 1880, Man. N.Z. Col. *1*: 236 (*Corticaria*). — Watt, 1969, op. cit.: 65 (as synonym of *gibbosa*).

Raoul I., Lava Point, 1–2 m, 7 Oct 62, G. A. Samuelson, leaves of *Colocasia esculenta,* 1 BP; Raoul I., N.E. Slopes Ravine, 200 m, 27 Oct–5 Nov 62, G. A. Samuelson, Malaise trap, 1, 3 BP; Raoul I., 13 Dec 66, J. C. Watt, on leaf of *Alocasia macrorhiza,* 1.

This species is common on crops and pastures in New Zealand (Watt, 1969), and also occurs in indigenous habitats. It apparently feeds on moulds on dead leaves. It was wrongly synonymised with *M. gibbosa* by Watt (loc. cit.).

FAMILY TENEBRIONIDAE

Tribolium Macleay

Macleay, 1825, Ann. javani a, p. 47. — Hinton, 1948, Bull. ent. Res. *39*: 25

Tribolium castaneum (Herbst). Fig. 6

Herbst, 1797, Kafer *7*: 282, pl. 112, fig. 3 (*Dermestes*). — Hinton, 1948, op. cit.: 29, fig. 31.

Raoul Island, 19 Jan 67, J. C. Watt, in stored wheat, 1.

This cosmopolitan species, the Rust-red Flour Beetle, is a primary pest of stored grains. It is not known to be established in natural habitats in the Kermadecs.

FAMILY CERAMBYCIDAE

Prionoplus White

White, 1843, in Dieffenbach, New Zealand *2*, App., p. 276. — Broun, 1880, Man. N.Z. Col. *1*: 566. — Lameere, 1912, Mem. Soc. Ent. Belg. *21*: 65.

Prionoplus reticularis White

White, 1843, op. cit.: 276. — Broun, 1880, op. cit.: 566. — Lameere, 1912, op. cit.: 66.

Raoul Island, N. Slopes Ridge, 150 m, 6–11 Oct 62, G. A. Samuelson, light trap ♂, BP.

This species (the Huhu Beetle) is otherwise confined to the main islands of New Zealand, where its larva lives in the dead wood of a variety of native conifers, but it is particularly common in the exotic *Pinus radiata*. The only possibly authentic records from non-Gymosperm timbers are from *Beilschmiedia tawa* (Edwards, 1959).

The only probably suitable host for *P. reticularis* on Raoul Island is the Norfolk Island Pine *Araucaria excelsa*. Trees of this species were examined by me in 1966–67, but no sign of *Prionoplus* workings was seen. Thus, it seems unlikely that the species is established on Raoul, and the single known specimen probably emerged from untreated pine timber taken to the meteorological station from New Zealand before 1962. *P. reticularis* cannot be regarded as definitely established on Raoul unless its presence there is confirmed by further collecting.

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