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A PRELIMINARY LIST OF LAND CRABS (CRUSTACEA : DECAPODA) FROM KOH SIMILAN, ANDAMAN SEA, INCLUDING EIGHT SPECIES NEW TO THAILAND

by

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A PRELIMINARY LIST OF LAND CRABS (CRUSTACEA: DECAPODA) FROM KOH SIMILAN, ANDAMAN SEA, INCLUDING EIGHT SPECIES NEW TO THAILAND

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ABSTRACT

Eleven species of decapod crustacean land crabs belonging to families Coenobitidae (Decapoda : Anomura), Ocypodidae, Grapsidae and Gecarcinidae (Decapoda : Brachyura) were collected from Koh Similan, Similan Islands, Andaman Sea. The land crabs were found in habitats typical of them in relation to their terrestrial adaptations. Species are recorded for the first time on the island, and eight are new to the fauna of Thailand.

INTRODUCTION

Similan (or Sayer) Islands consist of three groups totalling nine islands belonging to Thailand (Phangnga Province) and are situated on the edge of the continental shelf approximately 65 km. from Laem Tam Chok on the west coast of peninsular Thailand (see Map 1). Very little is known about the fauna of these relatively unexplored islands, apart from preliminary accounts of the coral (Kohn, 1971; Ditlev, 1976) and cone (Kohn & Nybakken, 1975) faunas. Thus, data presented here provide the first record of decapod crustaceans for the islands. Moreover, eight of the eleven species recorded are new to the fauna of Thailand (Rathbun, 1910; Suvatti, 1950; Serène, 1966; Lundøer, 1974). A further, more intensive, survey of the Similan Islands may prove zoogeographically of interest as, due to their location, the islands may be found to have an interesting mixture of oceanic and continental elements.

A number of decapod crustaceans belonging mostly to families Coenobitidae (Decapoda : Anomura), Ocypodidae, Grapsidae and Gecarcinidae (Decapoda : Brachyura) show various degrees of adaptation toward a terrestrial way of life. These adaptations involve modification of the respiratory apparatus to allow breathing in air rather than in water, and involve a tendency toward the economic use of water (Harms, 1929, 1930; Edney, 1960; Wolvenkamp & Waterman, 1960; Gross, 1964; Macnae, 1968; Bliss, 1968). Thus, land crabs are relatively independent of the sea, except during the breeding season when the females visit it to shed eggs (Johnson, 1965), and hermit crabs (Coenobitidae) often make nightly excursions to the waters edge to moisten their gill chambers and fill their adopted shells with water (Seurat, 1904; Johnson, 1965; Alexander, 1976).

Some terrestrial representatives of these families were collected from a sheltered bay on the northwest coast of Koh Similan (or Great Sayer Island), one of the northernmost Similan Islands (Map 1), during a five day visit there in November 1976. Eleven species of land crabs were collected: three species of Coenobitidae, three species of Ocypodidae, four species of Grapsidae, and one species of Gecarcinidae. Brief notes on the habitat(s) from which each species was collected are given here. The habitats were, seaward to landward, as follows:—

Rocks in the upper shore areas of the littoral zone.

Coarse sandy beach in the upper shore areas of the littoral zone.

Beach crest and associated vegetation.

Mature primary forest as far as some 50 m. inland.

A systematic list using the phylogeny of Sakai

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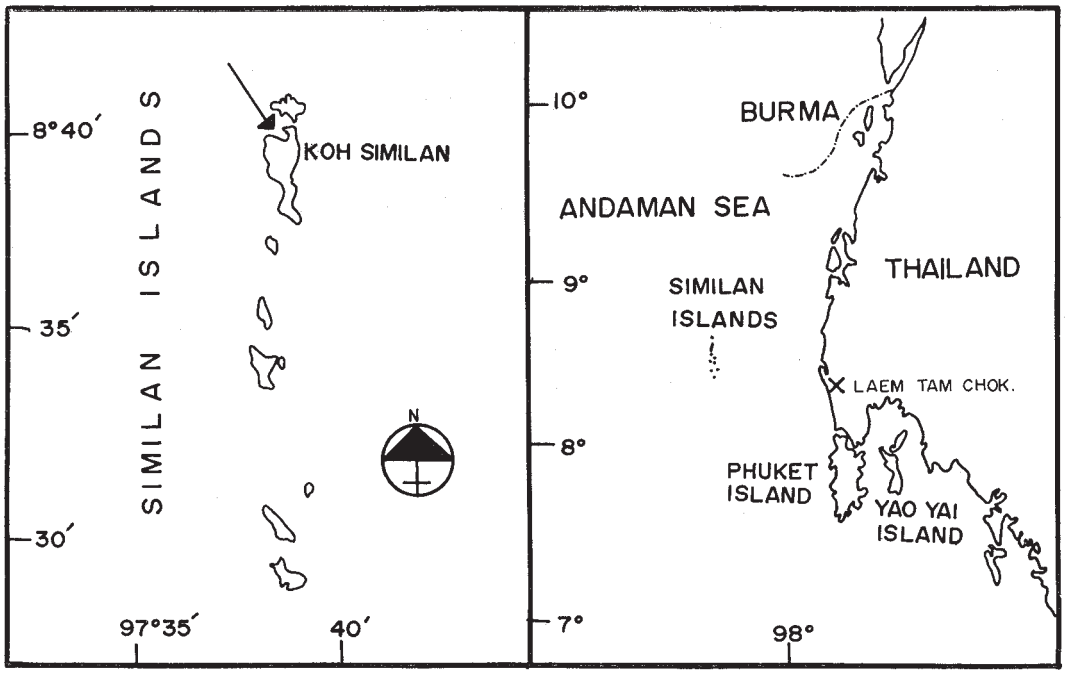

Map 1—Showing the location of the study area on Koh Similan (left) and the position of the Similan Islands relative to the mainland of western peninsular Thailand (right).

(1976) for all the families except the Coenobitidae is given below. Fieldwork and tentative identifications were carried out by the author, and confirmatory identifications and nomenclature decisions were made by the co-author at the British Museum (Natural History) in London.

LAND CRAB FAUNA OF KOH SIMILAN

Class **CRUSTACEA**

Order **DECAPODA**

Sub-order REPTANTIA

Section **ANOMURA**

Family COENOBITIDAE

Coenobita brevimana Dana, 1853. Among leaf litter and debris on beach crest. Among leaf litter, rotting wood, in sandy burrows, and crevices of tree trunks in the mature primary forest as far as about 50 m. inland.

C. hilgendorfi Terao, 1913. Among leaf litter and debris on beach crest. Among leaf litter, rotting wood, in sandy burrows, and crevices of tree trunks in the mature primary forest as far as about 50 m. inland.

C. rugosa H. Milne Edwards, 1837. On sand or in sandy burrows of coarse sandy beach in the upper shore areas of the littoral zone. Among leaf litter, rotting wood, in sandy burrows, crevices of tree trunks and under bark in the mature primary forest as far as about 50 m. inland. Noticeably more abundant than either of its congeners, particularly within the primary forest habitat.

Section **BRACHYURA**

Family OCYPODIDAE

Ocypoda ceratophthalma (Pallas, 1722). In deep, coarse sandy burrows of upper shore areas of the littoral zone.

O. cordimana Desmarest, 1825. In sandy burrows among leaf litter in the mature primary forest as far as about 40 m. inland.

O. cf. *stimpsoni* Ortmann, 1897. In coarse sandy burrows of upper shore areas of the littoral zone. Only one juvenile was collected, and since diagnostic features are only fully developed in the adult, this identification must be tentative.

Family GRAPSIDAE

Grapsus albolineatus Lamarck, 1818. On rocks, just above the water mark, in upper shore areas of the littoral zone.

G. tenuicrustatus (Herbst, 1783). On rocks, just above the water mark, in upper shore areas of the littoral zone.

Geograpsus crinipes (Dana, 1851). On coarse sandy beach in upper shore area of the littoral zone at base of, and under, overhanging rock. Only one specimen found.

G. grayi (H. Milne Edwards, 1853). Among leaf litter and rotting logs in the mature primary forest as far as about 50 m. inland, and at an elevation of about 10 m. a.s.l.

Family GECARCINIDAE

Gecarcoidea lalandii H. Milne Edwards, 1837. Among leaf litter and rotting logs in the mature primary forest as far as about 50 m. inland, and at an elevation of about 10 m. a.s.l.

DISCUSSION

The Similan Islands lie well within the recorded distributional ranges of all the land crab species dealt with in the present study (Dana, 1953; Terao, 1913; Sakai, 1939, 1965, 1976; Barnard, 1950; Banerjee, 1960; Fize & Serène, 1955; Wiens, 1962; Johnson, 1965). Furthermore, the species recorded are all characteristic of islands, mostly oceanic ones, in the Indo-West Pacific (Borradaile, 1903, 1907; Fryer, 1911; Tweedie, 1936, 1950, 1954; Gibson Hill, 1947 ; Sankarankutty, 1961; Hartnill, 1975; Alexander, 1976). Thus, whilst the presence of the species collected is not unexpected, they are recorded as occurring on this island group for the first time, and in some instances are new to the fauna of Thailand (see below).

Of the eleven species of land crabs found during the present study, only three of them, *Ocypoda ceratophthalma*, *Grapsus tenuicrustatus* (Suvatti, 1950; Serène, 1966; Lundøer, 1974) and *Gecarcoidea lalandii* (in Lundøer, 1974 as *Gegarcoidea humei*), have previously been listed for Thailand. The remaining eight species are,

therefore, recorded as occurring in Thailand for the first time. It is noteworthy, that subsequent to the present study, the land crabs *Coenobita brevimana*, *C. rugosa*, *Ocypoda cordimana* and *Grapsus albolineatus* have been found on Phuket Island (See Map 1), a continental island directly adjacent to the west coast of peninsular Thailand (Frith, unpublished data). Other land crab species previously recorded in Thailand, but not found during the present study, include *Ocypoda macrocera* H. Milne-Edwards (Suvatii, 1950; Serène, 1966). *Cardisoma carnifex* (Herbst); (Lundøer, 1974) and *Coenobita cavipes* (Frith, Tantanasiriwong & Bhatia, 1976). Their absence from Koh Similan may have been due, however, to the limited scope of collecting.

The grapsid crabs, *Grapsus albolineatus* and *G. tenuicrustatus*, were found sympatrically on rocks, just above the water's edge, in a habitat and situation typical of them (Banerjee, 1960). These rock dwelling grapsid crabs are mostly active during low water, unlike the other land crabs that are mainly nocturnal (Johnson, 1965). *Geograpsus crinipes* was found during the early evening on coarse sand beneath an overhang in the extreme upper shore area, a situation typical of the species (Banerjee, 1960; Alexander, 1976). This species has also been found in burrows in soil and beneath debris (Banerjee, 1960). *Geograpsus grayi* makes its burrows near the beach and in wooded areas (Banerjee, 1960) and has been found at great heights (Johnson, 1965). Thus, the habitat and situation occupied by it on Koh Similan was quite typical of the species. It is noteworthy that the land crab *Gecarcoidea lalandii*, which is characteristically found inland in damp jungle (Johnson, 1965), occurred sympatrically in some areas with *Geograpsus grayi*.

Ocypoda ceratophthalma is one of the most characteristic and abundant sandy beach dwellers in the Indo-West Pacific (Wiens, 1962), and for further details of its ecology and behaviour see Tweedie (1950 b), Hughes (1966) and Jones (1972). *Ocypoda cordimana* was found further inland than its congener in a habitat and situation typical of the species (Alexander, 1976).

Hermit crabs are characteristically found on small islands, and although represented by few species, are widespread (Wiens, 1962). *Coenobita rugosa* was noticeably more abundant than either of its congeners, *C. brevimana* or *C. hilgendorfi*, and was found in the upper shores areas of the sandy beach among beach crest leaf litter, and in a variety of microhabitats in the mature primary forest, whereas the other two coenobite species were only found in the latter habitat.

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