

Decapod Crustacea of Pacific Coral Reefs¹

JANET HAIG

*Allan Hancock Foundation, University of Southern California
Los Angeles, CA 90007*

The decapod Crustacea are among the most abundant and diverse animals in the tropical Indo-West Pacific. Serène (1972) estimated that this area is inhabited by nearly 2,000 species of *Brachyura* alone. A large proportion of the tropical Indo-West Pacific decapods live on coral reefs: Serène gave their number as over 500 for the brachyurans and classified them as associates with other living coral reef organisms; regular inhabitants of the dead part of the reefs; and species which ordinarily live on rocky, sandy, or muddy substrates off the reefs but occasionally occur there in suitable microhabitats.

In order to obtain an estimate of the number of species of decapods that have been reported from coral reefs in the western and central Pacific, I consulted some 230 papers. From this survey a list of 860 species was compiled. This figure is undoubtedly conservative, since 1) the papers surveyed are by no means all that deal with the subject, and further searching would probably have added several species to the list; 2) some excellent systematic papers lack ecological data, so that it is not clear from the text whether a given species was found on coral reefs or not; and 3) future work can be expected to reveal a number of species that are now undescribed or known only from the Indian Ocean.

Families with representatives on western and central Pacific coral reefs, and the estimated number of species in each, are listed in Table 1.

Although Indo-West Pacific decapods have been treated exhaustively in a large body of literature, information on a given family or other group is often widely scattered. Some of the earlier literature, including several of the "Siboga" reports, contained keys and checklists, but few compilations have been published in recent years. A number of families are currently under revision and the task of dealing with them will be made easier in the future. Among the families that are best represented on coral reefs, the following have received general treatment within the last 30 years or so:

PALAEEMONIDAE (subfamily PONTONIINAE). Holthuis (1952) published keys and checklists for the Indo-West Pacific species known at that time, and Bruce (1972) provided a key to the Indo-West Pacific pontoniinids associated with scleractinian corals. Active work on this subfamily is underway.

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Table 1. Decapod families with representatives on coral reefs in the western and central Pacific.

The number in parentheses () after each family represents an uncritical estimate of the number of coral reef species in that family, based on a survey of a limited number of publications. No distinction was made between species typical of the coral reef environment and those occurring only occasionally on reefs. Numbers in brackets [] are an estimate by Serène (1972) of brachyurans that are regular inhabitants of reefs in the entire Indo-West Pacific.

Natantia

Penaeidae (13); Disciadidae (1); Rhynchocinetidae (3); Palaemonidae: Palaemoninae (5), Pontoniinae (74); Gnathophyllidae (4); Alpheidae (140); Hippolytidae (15); Processidae (6); Pandalidae (1); Thalassocarididae (1); Stenopodidae (5).

Reptantia

MACRURA

Palinuridae (6); Scyllaridae (6); Nephropidae (1); Callianassidae (10); Axiidae (5); Callianideidae (1); Upogebiidae (6).

ANOMURA

Hippidae (1); Albuneidae (1); Coenobitidae (1); Diogenidae (49); Paguridae (5); Galatheididae (20); Porcellanidae (41).

BRACHYURA

Dromiidae (13) [5]; Dynomenidae (3) [9]; Leucosiidae (17) [30]; Calappidae (5); Majidae (30) [100]; Parthenopidae (15) [30]; Hymenosomatidae (3); Portunidae (56) [50]; Atelecy-clidae (3) [5]; Xanthidae (222) [250]; Goneplacidae (4); Pinnotheridae (6) [20]; Palicidae (5) [20]; Ocypodidae (6); Mictyridae (1); Grapsidae (26) [5]; Hapalocarcinidae (24) [25].

ALPHEIDAE. A. H. and Dora M. Banner have treated the family on a geographical basis in a series of papers; Y. Miya is revising the snapping shrimps of Japan and adjacent waters. Some of these papers have keys to species from particular geographical regions (A. H. Banner, 1953; D. M. and A. H. Banner, 1973; Miya, 1972).

PORCELLANIDAE. Most of the Indo-West Pacific coral reef forms may be identified with the aid of a paper by Miyake (1943), but considerable work on the family has been published since and revisionary studies are in progress.

PORTUNIDAE. A series of revisionary papers by W. Stephenson and several associates culminated in a checklist and keys to the Indo-West Pacific swimming crabs (Stephenson, 1972).

PINNOTHERIDAE. This family is greatly in need of revision, but access to the literature has been made easier through a recent compilation (Schmitt, McCain, and Davidson, 1973).

HAPALOCARCINIDAE. This family contains 27 known species, of which 25 occur in the central and western Pacific. The family was thoroughly reviewed by Fize and Serène (1957), with later changes in nomenclature by Serène (1966). Serène (1972) listed the families and genera of corals that are hosts to the various species of coral-gall crabs.

Treatment of coral reef decapods according to geographical area has been uneven. Among the better studied areas are southern Japan, the Ryukyu Islands,

and the Palau Islands; the East Indian Archipelago; eastern Australia; the Hawaiian Islands; Tahiti and the Tuamotu Islands; and New Caledonia. Information on most of these areas occurs in scattered publications. The Marshall Islands (in particular Eniwetok Atoll) have been heavily collected, but most of the studies on this material are not yet published.

In considering the problems involved in the study of decapods of Pacific coral reefs, it is immediately obvious that a wealth of information exists but that most of it is widely scattered through the literature. The greatest need, therefore, seems to be for more keys, annotated checklists and other aids to identification and retrieval of the available data. Certain families that are well represented on coral reefs are in need of modern revisions; fortunately such work is underway on some of them, including the difficult family Xanthidae. Special attention should be given to the study of the fauna of several poorly known areas, of which the Solomon and Phoenix Islands are examples. Ecological data should be emphasized when collections are made and reported upon. With these deficiencies remedied, this important component of the coral reef fauna may some day become one of the best known as well as one of the most conspicuous.

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