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SURVEY OF THE MARINE BIOTA OF THE EASTERN KIMBERLEY, WESTERN AUSTRALIA

The University of Western Australia
Western Australian Museum
Museum and Art Gallery of the Northern Territory

PART 8. CRUSTACEANS

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Summary

A total of 180 species of Crustacea have been identified from collections made during the survey. Of these 157 belonged to the Order Decapoda, and this is an increase on the previously highest number of decapods collected from the Kimberley region - 151 by Davie & Short (1995). 59 of the fully identified species were additional to the previous year's (1994) survey, and thus the faunal list from the region is considerably increased. Four species appear, on preliminary assessment, to be new to science, while additional material of several other previously discovered, but still undescribed, new species were collected.

Introduction

This report builds on earlier survey work conducted in the Kimberley Region (Morgan, 1990, 1992; Davie & Short, 1995). The present work has allowed intensive collecting over sites restricted to the northern section of the Kimberley region. Some underwater collections were made by snorkelling, but there was extensive intertidal collecting in a variety of habitats ranging from coral reef through to mangrove mud. The emphasis was on general collecting, in particular on the decapod fauna. The non-decapod Malacostraca can be considered to represent only incidental collections, as to sample them properly would require specialist personnel and techniques. As in 1994 (Davie & Short, 1995), there was particular attention paid to the shrimp fauna which has been undersampled in earlier surveys of the region.

Due to the relatively short time to prepare this interim report and because of the large size of the collection, the identifications presented should be regarded as preliminary. Many species remain to be critically assessed and these will probably be sent to taxonomic experts in the relevant groups, either soon, or at the completion of the final expedition. However where identifications to species level have been given, they can be considered correct except where doubt is indicated.

Results

The full species list is presented in Table 8.1. Systematic arrangement follows Bowman & Abele (1982), but within each higher taxonomic unit families genera and species are arranged alphabetically. Table 8.2 gives a breakdown of the number of species found at each site and therefore is a broad indication of biodiversity.

Table 8.1. Kimberley Islands Survey 1995: Crustacea

TAXON	SITE
Order CONCHOSTRACA	
Suborder SPINICAUDATA	
Family LIMNADIIDAE	
Limnadiidae sp.	3
Order THORACICA	
Suborder BALANOMORPHA	
Family BALANIDAE	
Balanus sp.	5
Family CHTHAMALIDAE	
Chthamalus malayensis Pilsbry, 1916	2
Family TETRACLITIDAE	
Tetraclita squamosa squamosa (Bruguière, 1789)	2, 4, 5
Order AMPHIPODA	
Suborder GAMMARIDEA	
Gammaridea sp.	9
Oedicerotidae sp.	5
Order ISOPODA	
Alloniscus pallidulus Budde-Lund, 1885	11, 16, 19
Booralana sp.	18
Bopyridae sp. 1	13
Bopyridae sp. 2	18
Cerceis sp.	13
Cirolana sp. 1	17, 18
Cirolana sp. 2	9
Cymodoce sp. 1	13
Cymodoce sp. 2	5, 7
Cymodoce sp. 3	7
Excirolana orientalis (Dana, 1853)	3
Ligia exotica Roux, 1828	7, 16
Natatolana sp.	18
Norileca sp.	18
Sphaeromatidae sp. 1	7
Sphaeromatidae sp. 2	18
Order STOMATOPODA	
Family GONODACTYLIDAE	
Gonodactylus chiragra (Fabricius, 1781)	5, 7, 13
Family NANNOSQUILLIDAE	
Acanthosquilla multifasciata (Wood-Mason, 1895)	10
Order DECAPODA	
Suborder DENDROBRANCHIATA	
Family PENAEIDAE	
Metapenaeus dalli Racek, 1957	1, 11
Penaeus ? merguiensis de Man, 1888	10
Family SICYONIIDAE	
Sicyonia sp.	Troughton Is., anchorage
Suborder PLEOCYEMATA	
Infraorder CARIDEA	
Caridea sp.	18

Table 8.1 (cont.). Kimberley Islands Survey 1995: Crustacea

Family ALPHEIDAE	
Alpheus cristatus Coutière, 1879	9
Alpheus sp. 1	5
Alpheus sp. 2	5
Alpheus sp. 3	17
Alpheus sp. 4	5, 17
Alpheus sp. 5	4
Alpheus sp. 6	4, 7
Alpheus sp. 7	2
Alpheus sp. 8	7
Alpheus sp. 9	9, 18
Alpheus sp. 10	9
Alpheus sp. 11	10
Alpheus sp. 12	7
Alpheus sp. 13	5
Alpheus sp. 14	2
Alpheus sp. 15	4
Alpheus sp. 16	5
Alpheus sp. 17	5, 9, 18
Athanas sp. 1	17
Athanas sp. 2	9
Racilius compressus Paulson, 1875	9
Synalpheus neomeris (de Man, 1897)	9
Synalpheus sp.	9
Family HIPPOLYTIDAE	
Hippolyte sp.	13
Hippolyte (?) sp. nov.	13
Lysmata vittata (Stimpson, 1860)	7
Paralatreutes bicornis Kemp, 1925	17
Saron marmoratus (Olivier, 1811)	5, 15
Thor spinipes Bruce, 1983	18
Thorella cobourgi Bruce, 1982	17, 18
Family PALAEMONIDAE	
Anchistus custos (Forskal, 1775)	9
Hamopontonia corallicola Bruce, 1970	9
Ischnopontonia lophos (Barnard, 1962)	9
Leander tenuicornis (Say, 1818)	13, 18
Palaemon semmelinkii (de Man, 1881)	2, 10
Palaemon serrifer (Stimpson, 1860)	1, 2, 4, 7, 13
Palaemonella rotumana (Borradaile, 1898)	5
Palaemonetes atrinubes Bray, 1976	13, 16
Periclimenes anacanthus Bruce, 1988	18
Periclimenes grandis (Stimpson, 1860)	4
Periclimenes indicus (Kemp, 1915)	18
Periclimenes sp.nov.(nr *amymone*)	9
Periclimenes sp.	4
Pericliminella spinifera de Man, 1902	5, 18
Infraorder PALINURA	
Family PALINURIDAE	
Panulirus versicolor (Latreille, 1804)	2
Infraorder THALASSINIDEA	
Family AXIIDAE	
Scytoleptus serripes Gerstaecker, 1856	5
Infraorder ANOMURA	

Table 8.1 (cont.). Kimberley Islands Survey 1995: Crustacea

Family COENOBITIDAE	
Coenobita variabilis McCulloch, 1909	1, 2, 6, 7, 13, 17
Family DIOGENIDAE	
Clibanarius ? infraspinatus (Hilgendorf, 1869)	1, 4
Clibanarius longitarsus (De Haan, 1849)	2, 10
Clibanarius taeniatus (Milne Edwards, 1848)	3, 17
Clibanarius virescens (Krauss, 1843)	4, 5, 13
Clibanarius sp.	9
Diogenes avarus Heller, 1865	17
Diogenes sp. 1	3, 4
Diogenes sp. 2	2, 10, 17
Family GALATHEIDAE	
Galathea sp. 1	18
Galathea sp. 2	5
Galatheidae sp.	18
Family PORCELLANIDAE	
Enosteoides sp.	9
Lissoporcellana spinuligera (Dana, 1853)	5, 9, 18
Pachycheles johnsoni Haig, 1965	9
Petrolisthes boscii (Audouin, 1826)	7, 9
Petrolisthes kranjiensis Johnson, 1970	1, 2
Petrolisthes teres Melin, 1939	7
Porcellana sp. 1	5, 9
Porcellana sp. 2	5, 9
Porcellana sp. 3	7
Porcellana sp. 4	7
Porcellana sp. 5	4
Infraorder BRACHYURA	
Family CALAPPIDAE	
Calappa hepatica (Linnaeus, 1758)	9
Matuta planipes Fabricius, 1798	3, 4
Matuta victor (Fabricius, 1781)	18
Family DROMIIDAE	
Cryptodromia ? amboinensis de Man, 1888	7
Cryptodromia tumida Stimpson, 1858	15
Cryptodromia sp. 1	5
Cryptodromia sp. 2	9
Family GRAPSIDAE	
Clistocoeloma merguiensis de Man, 1888	1, 12, 14, 19
Clistocoeloma sp.nov.	1
Grapsus longitarsis Dana, 1851	13
Metopograpsus frontalis Miers, 1880	1, 2, 10, 13, 17
Metopograpsus latifrons (White, 1847)	10, 19
Metopograpsus quadridentatus Stimpson, 1858	1
Nanosesarma sp. 1	5, 7, 17
Nanosesarma sp. 2	5, 7
Neosarmatium meinerti (de Man, 1887)	16, 19
Parasesarma moluccensis de Man, 1892	12, 14
Perisesarma darwinensis (Campbell, 1967)	1, 12, 14, 19
Perisesarma semperi semperi Bürger, 1894	1
Pseudograpsus sp.	3
Sarmatium germaini (A. Milne Edwards, 1869)	14
Sesarmoides borniensis (Tweedie, 1950)	1, 14

Table 8.1 (cont.). Kimberley Islands Survey 1995: Crustacea

Family HYMENOSOMATIDAE	
Halicarcinus sp.nov. 1	2
Halicarcinus sp.nov. 2	4, 7
Family MAJIDAE	
Hyastenus sp.	9
Leptopisa australis Griffin and Tranter, 1986	5
Menaethius monoceros (Latreille, 1825)	4, 5, 7, 13
Paranaxia serpulifera (Guérin-Meneville, 1829)	7
Schizophrys aspera (H. Milne Edwards, 1834)	9
Family MICTYRIDAE	
Mictyris sp.nov.	2
Family OCYPODIDAE	
Baruna mangromurphia Harminto and Ng, 1991	4
Camptandriinae gen.nov.? sp.nov.	1
Camptandrium sp.nov.	1
Macrophthalmus convexus Stimpson, 1858	17
Macrophthalmus crassipes H. Milne Edwards, 1852	3
Macrophthalmus darwinensis Barnes, 1971	1, 3
Macrophthalmus sp.	5
Ocypode ceratophthalma (Pallas, 1772)	6, 7, 17, 18
Ocypode fabricii H. Milne Edwards, 1837	17
Paracleistostoma wardi (Rathbun, 1926)	1
Scopimera sp.	3
Uca capricornis Crane, 1975	1
Uca elegans George and Jones, 1982	1, 3
Uca flammula Crane, 1975	3
Uca hirsutimanus George and Jones, 1982	1
Uca mjoebergi Rathbun, 1924	10, 14
Uca seismella Crane, 1975	1
Uca signata (Hess, 1865)	1, 3
Family OZIIDAE	
Epixanthus dentatus (White, 1847)	1, 3
Myomenippe fornasinii (Bianconi, 1851)	1, 2, 4
Family PILUMNIDAE	
Actumnus setifer (de Haan, 1835)	9
Benthopanope estuarius Davie, 1989	4
Heteropanope glabra Stimpson, 1858	1, 4, 17
Heteropanope sp.	5
Pilumnus sp.	5, 7, 9
Pilumnus vespertilio (Fabricius, 1793)	4, 5, 7, 13
Family PORTUNIDAE	
Charybdis callianassa (Herbst, 1789)	18
Charybdis hellerii (A. Milne Edwards, 1867)	4
Podophthalmus vigil (Weber, 1795)	11, 18
Portunus pelagicus (Linnaeus, 1766)	4, 10, 13, 16, 17
Portunus rugosus (A. Milne Edwards, 1861)	11
Portunus sanguinolentus (Herbst, 1796)	4
Scylla serrata (Forskål, 1755)	3, 16
Thalamita admete (Herbst, 1803)	5
Thalamita crenata (H. Milne Edwards, 1834)	10, 17
Thalamita danae Stimpson, 1858	4, 5, 7, 10, 17
Thalamita sima H. Milne Edwards, 1834	13, 17
Thalamita spinimana Dana, 1852	9, 18

Table 8.1 (cont.). Kimberley Islands Survey 1995: Crustacea

Family TRAPEZIIDAE	
Tetralia nigrolineata Serène and Dat, 1957	9
Trapezia cymodoce (Herbst, 1799)	5
Trapezia guttata Rüppell, 1830	18
Family XANTHIDAE	
Actaea polyacantha (Heller, 1861)	4, 7
Actaeodes mutatus Guinot, 1976	7, 9, 10, 18
Atergatis floridus (Linnaeus, 1767)	5
Chlorodiella nigra (Forskål, 1775)	5, 18
Etisus laevimanus Randall, 1840	9
Euxanthus sculptilis (Herbst, 1790)	7
Gaillardiellus rueppelli (Krauss, 1843)	5
Leptodius exaratus (H. Milne Edwards, 1834)	7, 10, 17
Leptodius sp.	2, 7, 9, 13, 17
Lophozozymus pictor (Fabricius, 1798)	7
Pilodius granulatus Stimpson, 1859	5, 9, 18
Serenius sp.	7

Table 8.2: Comparison Of Diversity Between Sites.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
24	17	14	25	36	2	32	-	32	14	4	3	16	6	2	6	22	29	5

Discussion

A full discussion of the biogeographic affinities of the area will be reserved for the final report marking the completion of the three-year study of the Kimberley Islands and coast. On the basis of the present identifications it would seem that the fringing reef fauna of the area is dominated by wide-spread Indo-West Pacific or Indian Ocean species; however the soft-sediment intertidal fauna shows a high degree of endemicity, differing in a number of components even from study sites in the Northern Territory. In particular *Clistocoeloma* sp. nov., *Nanosesarma* spp. 1 & 2, *Mictyris* sp. nov. and *Scopimera* sp. nov.

Table 2 shows that there were a number of sites with high diversities (>20 species). In decreasing order of abundance these were sites: 5, 7, 9, 18, 4, 1, & 17. These sites were characterised by more complex habitats and a greater range of habitat types. Diversities were noticeably increased where there were well developed mangrove communities, and in particular at the mainland estuarine sites. Seventeen intertidal species were recorded in the Northern Kimberley, that were not found in the Southern Kimberley Survey, and this is explained primarily by the more complex estuarine environments of the mainland sites. As Morgan (1992) has observed, most Kimberley

intertidal reef flats are obviously effected by tidal scour and this restricts living spaces to cavities in the limestone, and these are prime habitats for xanthid and pilumnid crabs, with *Pilumnus vespertilio* being especially common. In the Southern Kimberley the terraced reefs include sheltered pools and gutters which allow significant coral development and sediment buildup, however at the Northern Kimberley study sites the predominant reefs are platformed, and coral development is rather poor in comparison. This explains the significantly reduced number of xanthid crab species compared with the previous years southern faunal survey (12 *versus* 20), as this family reaches its greatest diversity in association with corals.

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