Cape Range Bush Blitz

Crustacea

16 – 28 June 2019

Submitted: 27 September 2019

Andrew Hosie

Ana Hara

Nomenclature and taxonomy used in this report is consistent with:

The Australian Faunal Directory (AFD)

http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home

World Record of Marine Species (WoRMS)

http://www.marinespecies.org/index.php

Contents

List of contributors

List of contributors to this report.			
Name	**Institution/affiliation**	**Qualifications/area of expertise**	**Level/form of contribution**
Andrew Hosie	***WA Museum***	***Crustacea***	***Survey participant, identifications, principle author***
Ana Hara	***WA Museum***	***Crustacea***	***Survey participant, identifications, principle author***

Abstract

The results of marine Crustacea component of the Cape Range Bush Blitz Expedition are presented. A total of 129 crustacean species were identified in the course of the Expedition. Among these are numerous discoveries including range extensions, such as a species of symbiotic barnacle, *Pectinacasta cancellorum*, newly recorded in Australian waters and undescribed barnacle species of the genera *Euacasta* and *Conopea.* The mangrove forests of Bay of Rest and Gales Bay yielded new species of sesarmid crabs in the genera *Parasesarma* and *Neosesarma*. Specimens collected in this survey will be used in existing taxonomic research on the crustacean diversity of Western Australia.

1. Introduction

North West Cape is located at the western margin of the Pilbara Bioregion in north Western Australia. The marine environments surrounding North West Cape can be loosely divided into two broad habitats. The west coast is dominated by Ningaloo Reef, which is a 260km long narrow fringing/barrier coral reef with an extensive back-reef lagoon (Wilson 2013). Ningaloo Reef was protected as a marine park in 1987 and in 2011 was recognised with World Heritage Status.

To the east of the Cape is the large embayment of Exmouth Gulf, some 40 km wide and 80 km long (ca 3000 km^2). The gulf is dominated by soft sediments with widespread filter-feeder communities of sponges and soft corals. Much of the gulf has been subjected to widespread prawn trawling since the early 1960s (Kangas et al. 2007). The north western edge of the gulf is fringed with intertidal reef platforms and sandy beaches, leading to weedy rubble reefs and seagrass communities subtidally. The eastern and southern edges of the gulf are very turbid and support broad mudflats and mangrove lined tidal creeks. A row of subtidal shoals and emergent islands some 5-10 km off the eastern shore provide dense and diverse coral reefs that have avoided impact by trawling.

Even though collecting effort in the region has been high, it has been sporadic and largely in the immediate area around Ningaloo Reef or easily accessible areas close to shore. A synthesis of the crustacean biodiversity of the area is lacking and much of the biodiversity knowledge has only been published in specific taxon focussed projects such as publications resulting from the Census of Marine Life 2008–2011 (e.g. Daneliya 2012, Saito & Anker 2014), larger taxonomic revisions, or housed in museum collections' databases such as those held at the WA Museum and unpublished reports.

A significant contribution to the knowledge of decapod (shrimps, crabs) crustaceans is based from bycatch monitoring of the prawn and scallop fishery in the Gulf (Kangas et al. 2007) and more recently of the mesophotic zone on Ningaloo Reef (Abdul Wahab et al. 2019. The WA Museum has conducted limited SCUBA and intertidal surveys in 1995 (Jones & Hewitt 1996, Hewitt, 1996) and more recently the Net Conservation Benefits Fund (NCB), which targeted conservation systematics of the western Pilbara fauna, including a trip to Exmouth (2016).

The WA Museum has conducted extensive surveys targeting the decapod crustacea in the waters of the Montebello Islands (Jones & Berry 2000), Dampier Archipelago (Jones 2007) and much of the diversity is expected to be shared with the marine habitats around Cape Range.

2. Methods

2.1 Site selection

Most sampling sites were located in Exmouth Gulf, with a few targeted collections on the west coast of the Cape Range Peninsula. Exmouth Gulf was prioritised for targeted sampling after examination of specimen records kept by the WA Museum and on the Atlas of Living Australia, which showed that it has received comparatively less biodiversity collecting effort. Sites were chosen to represent as wide a range of habitat types as possible, including subtidal and intertidal coral reefs, sponge and rubble reefs, algae and seagrass pavements, and mangroves and mangrove-lined creeks. Site locations were partly determined by accessibility via boat, 4WD or helicopter and OHS requirements.

2.2 Survey techniques

Crustaceans were sampled by several methods. The main method of sampling was targeted collection by hand using SCUBA or snorkel (Fig. 01). During dives, samples of substrate such as rubble, rocks and fragments of coral or sponges were also collected using hammers, chisels and knifes, and taken to the lab for further investigation. This approach allows the collection of small cryptic and/or symbiotic species that are not visible during the dive. Intertidal species were collected by hand during the low tide on exposed reef platforms or sand flats (Fig. 02), including a night collection. Mangrove species were collected by hand, with the use of a suction pump or dug up with a shovel. Some infaunal crustaceans were collected incidentally with the sand elutriation that was targeting micromolluscs.

Figure 01. Hand collecting on SCUBA at the marina rock wall (CR19/15), 21/06/2019. Photo by Ana Hara, copyright WAM.

Figure 02. Searching for specimens during the low tide at the Bay of Rest mangrove (CR19/18), 21/06/2019. Photo by Ana Hara, copyright WAM.

2.2.1 Methods used at standard survey sites

No standard survey methods have been developed for marine sampling yet.

2.3 Identifying the collections

Identification of vouchered specimens were made by the authors, initially in the field and then all retained vouchers were identified in the laboratory, using the preserved specimens, microscopes, available literature and museum collections. The following is a list of primary literature sources used for the identification of the collected specimens organised by taxa: Anomura (hermit and porcelain crabs): Haig (1965), McLaughlin et al. (2007), Osawa (2007); Brachyura (true crabs): Davie (1992, 2012), George & Jones (1982), Griffin & Tranter (1986), Serène (1984), Serène & Soh (1970), Stephenson (1972); Caridea (shrimp): Banner & Banner (1975, 1982), Bruce (2013), Chace (1993, 1997); Cirripedia (barnacles): Kolbasov et al. (2016), Liu & Ren (2008); Stomatopoda (mantis shrimp): Ahyong (2001). Numerous species specific references were referred to.

3. Results and Discussion

Appendix 1 lists all crustaceans recorded during the Cape Range Bush Blitz. Three broad habitat types were sampled: intertidal and shallow subtidal rocky reef, sponge garden and mangal, with a total of 128 putative species identified during the survey.

Sampling targeted the Decapoda (crabs, lobsters, shrimp) and Cirripedia (barnacles) in line with the expertise of the authors. There were incidental collections of other marine and terrestrial crustacean taxa such as amphipods, copepods and isopods were made but not always identified due to the specialist expertise required for these groups. These have been retained in the collections of the WA Museum and are available for future study.

3.1 Un-named or not formalised taxa

The species listed in Table 1 includes identifications of undescribed species that the authors were already aware of, as well as explanation for some of the taxa where the exact identity is unknown.

Table 1. Putatively un-named or not formalised taxa

Taxon	Comment
Acasta cf. *folliculus*	Poorly known species, difficult to confirm based on original description, possible new species
Acasta cf. *flexuosa*	Part of a species complex, tissue sampled for DNA
Cantellius cf. *albus*	Poorly known species, difficult to confirm based on original description
Chaenostoma sp. BBCR01	Part of species complex, tissue sampled for DNA
Conopea sp. BBCR01	Potential undescribed species, collected from region previously, tissue sampled for DNA.
Selatium cf. brockii	Single female collected, male needed to confirm identification.
Euacasta sp. BBCR01	Undescribed species, collected from the region previously, tissue sampled for DNA.
Glabropilumnus sp. BBCR01	Potential undescribed species known from the region, species in this group are very difficult to identify, tissue sampled for DNA
Neoacasta cf. *laevigata*	Part of a species complex currently under review
Paguristes sp. BBCR01	Small, juvenile hermit, unable to identify
Pagurus sp. BBCR01	Small, juvenile hermit, unable to identify
Paracleistostoma sp. BBCR01	Single female collected, male needed to confirm identification
Paraxanthias cf. *elegans*	Small, juvenile crab, similar to *P. elegans*
Periclimenes sp. BBCR01	Small, juvenile shrimp unable to identify
Pilumnus cf. *bleekeri*	Potential juvenile, male needed to confirm identification
Platypodia cf. *pseudogranulosa*	Small, juvenile crab, unable to identify
Xanthias sp. BBCR01	Small, juvenile crab, unable to identify

3.2 Putative new species (new to science)

From this study two crab species, found in the mangal areas of the Bay of Rest and Gales Bay, are morphologically distinct from their congeners and are considered herein to be new to science. Both species are burrowers, and like most crabs in the family Sesarmidae, are presumed to be mostly herbivorous, feeding on mangrove leaves. The species of Sesarmidae play significant role in nutrient cycling within the mangrove forests by preventing the build-up of decaying leaves, which can deplete oxygen in the sediments and surrounding waters (see Cannicci et al. 2008, Kristensen 2008).

Table 2. Putative new species (new to science)

Species	Comment
Clistocoeloma sp. BBCR01	Distinct morphological species in Australia, tissue sampled for DNA
Parasesarma sp. BBCR01	Distinct morphological species in Australia, tissue sampled for DNA

3.3 Exotic and pest species

No exotic or pest species of crustaceans were recorded.

3.4 Threatened species

No threatened species of crustaceans were recorded.

3.5 Range extensions

Table 5. Range extensions or significant infill in distribution records for species

Species	Location sighted/observed	Distance from nearest known record (km)	Comments
Acanthonyx euryseroche	CR19/01	~100	Range extension from Coral Bay, only other record at WAM is from Shark Bay
Agostodina munta	CR19/27	~200	Previously only known from Montebello Islands
Aulacolambrus diacanthus	CR19/27	~300	Previously recorded in WA from Dampier Archipelago
Baruna trigranulum	CR19/17 CR19/22	~1,200	Range extension south from Kimberley region

Ceina gerlachae	CR19/05	~3,800	First record since description from GBR
Conopea willhearsti	CR19/11 CR19/25	~1,200	Range extension south from Kimberley region
Diogenes cf. *pallescens*	CR19/30	~300	Range extension from Cape Preston (WAM database records, pending ID confirmation)
Gonodactylellus dianae	CR19/06 CR19/15	~300	First record outside of type locality, Dampier Archipelago
Huenia australis	CR19/30	~100	Range extension from Coral Bay
Neodorippe callida	CR19/18	~400	Range extension from Shark Bay
Pectinoacasta sculpturata	CR19/07	~3,000	First record for Australia, previously known from Indonesia
Periclimenaeus arabicus	CR19/08 CR19/30	~300	Southern most record in WA, previously known from Dampier Archipelago
Petrolisthes haplodactylus	CR19/22	~2,000	Previously known from NT & QLD
Platypodia cf. *pseudogranulosa*	CR19/11	~300	Previously recorded in WA from Dampier Archipelago (pending ID confirmation)
Sarmatium germaini	CR19/16	~1,200	Range extension south from Kimberley

3.6 Genetic information

Specimens were preserved in 100% ethanol and will be made accessible for molecular analysis by the scientific community. Certain species have been prioritised for sequencing under existing projects and more than 50 tissue samples have been taken and will be sequenced as funding allows.

4. Information on species lists

Members of the Amphipoda, Copepoda, Cumacea, Isopoda and Ostracoda require specialist expertise for each to be identified confidently. For the purposes of this report identifications have been made for only distinctive or readily identifiable species of these groups.

5. Information for land managers

N/A

6. Other significant findings

During the night time reef walk on Bundegi Reef Flat (CR19/24) several prawns were seen in tidal pools. Only one specimen was collected and identified as *Melicertus marginatus*. This species is not known from inside Exmouth Gulf and is not part of the commercial prawn catch but is instead found in deeper waters (up to 300 m) adjacent to the Gulf.

7. Conclusions

This survey resulted in a diverse collection of Crustacea and as anticipated has discovered a number of novel species and new records for the area.

In particular, the mangrove forests of Bay of Rest and Gales Bay yielded 20 species, with up to three putative new species, two range extensions south from the Kimberley and one new record for the state. This is the result of just a few hours at each site and is indicative of how little is known of the mangrove invertebrate fauna in Western Australia.

The commensal barnacle fauna found in symbiosis with Cnidaria and Porifera in Western Australia are currently subject to an active project and many new species are in the process of being described. Preliminary results are showing high levels of host specificity, which is driving speciation patterns. The present specimens will be invaluable to this project and genetic data generated from them will be utilised in upcoming taxonomic and systematic papers.

While the knowledge of the decapod, stomatopod and barnacle fauna surveyed herein is still incomplete for the region, it would be advisable for future work to include participants with expertise in lesser studied crustacean taxa such as the Amphipoda, Isopoda, Copepoda and Ostracoda.

Acknowledgements

Firstly, we would like to thank Kate Grarock, Haylee Weaver, Jo Harding & Zoe Jarvis from Bush Blitz and Sandra McCullough and Maria Garcia Rojas from Earth Watch for all of their efforts in ensuring a well organised and run expedition. We would also like to thank the Department of Biodiversity, Conservation and Attractions Exmouth Office, in particular Peter

Barnes, Heather Barnes, Arvid Hogstrom, and our boat skippers Matt Smith and Joe Morgan for their support and for providing access to their vessel. We thank the Department of Defence, especially Warrant Officer Anderson, for the use of the Pilbara Regiment facilities. We thank BHP and their team of volunteers for their engagement and assistance in the field, the staff from Goodwin-McCarthy Helicopters (Brian Goodwin and Kimi McCarthy) for the exciting and smooth flights and Robbie Bayliss for feeding us. Lastly, thanks to the participating scientists for their company in the field.

References

Abdul Wahab, M.A., Radford, B., Fromont, J., Hosie, A.M., Miller, K., Heyward, A., 2019. The diversity and distribution of mesophotic benthic invertebrates at Ningaloo Reef, Western Australia. Marine Biodiversity, 49, 2871-2886.

Ahyong, S.T. (2001). Revision of the Australian stomatopod Crustacea. Records of the Australian Museum Supplement, 26, 1-326.

Banner, A.H., & Banner, D.M. (1975). The Alpheid Shrimp of Australia. Part II: The Genus *Synalpheus*. Records of the Australian Museum, 29(12), 267-389.

Banner, A.H. & Banner, D.M. (1982). The Alpheid shrimp of Australia. Part III: The remaining alpheids, principally the genus *Alpheus*, and the family Ogyrididae. Records of the Australian Museum, 34(1), 1-357.

Bruce, A.J. (2013). Identification aid for the Indo-West Pacific species of *Periclimenaeus* Borradaile, 1915, (Crustacea; Caridea: Pontoniinae) using ambulatory dactyli. Memoirs of the Queensland Museum—Nature, 56(2), 647-664.

Cannicci, S., Burrows, D., Fratini, S. Smith III, T. J., Offenberg, J. & Dahdouh-Guebas, F. (2008). Faunal impact on vegetation structure and ecosystem function in mangrove forests: a review. Aquatic botany, 89(2), 186-200.

Chace, F.A., Jr. (1997). The caridean shrimps (Crustacea: Decapoda) of the Albatross Philippine Expedition, 1907–1910, Part 7: Families Atyidae, Eugonatonotidae, Rhynchocinetidae, Bathypalaemonellidae, Processidae, and Hippolytidae. Smithsonian Contributions to Zoology, 587, 1–106.

Chace, F.A., Jr. & Bruce, A.J. (1993). The caridean shrimps (Crustacea: Decapoda) of the Albatross Philippine Expedition, 1907-1910, part 6: Superfamily Palaemonoidea. Smithsonian Contributions to Zoology, 543, 1–152.

Daneliya, M.E. (2012). Description of *Heteromysis* (*Olivemysis*) ningaloo new species and interesting records of *H.*(*Gnathomysis*) *harpaxoides* Bacescu and Bruce (Crustacea: Mysida: Mysidae) from Australian coral reefs. Records of the Western Australian Museum, 27(2), 135-147.

Davie, P.J.F. (1992). Revision of *Sarmatium* Dana (Crustacea: Brachyura: Sesarminae) with descriptions of three new species. Memoirs of the Queensland Museum, 32, 79–97.

Davie, P.J.F. (2012). A revision of *Neosesarma* (Crustacea: Brachyura: Sesarmidae) with the description of a new species. Memoirs of the Queensland Museum – Nature, 56(1), 221-233.

George, R.W. & Jones, D.S. (1982). A revision of the fiddler crabs of Australia (Ocypodinae: *Uca*). Records of the Western Australian Museum, Supplement, 14, 1–99.

Griffin, D.J.G., & Tranter, H. A. (1986). The Decapoda Brachyura of the Siboga Expedition. Part 8. Majidae. Siboga-Expeditie Monographie, 39(C4), 1-335.

Haig, J. (1965). The Porcellanidae (Crustacea, Anomura) of Western Australia with descriptions of four new Australian species. Journal of the Royal Society of Western Australia, 48(4), 97-118.

Hewitt, M.A. 1996. Trapeziid and eumedonid crabs. In Hutchins, J.B., Slack-Smith, S.M., Bryce, C.W., Morrison, S.M. and Hewitt, M.A. marine biological survey of the Muiron Islands and the eastern shore of Exmouth Guf, Western Australia. Western Australian Museum, Perth. pp. 43–53. Unpublished report to the Ocean rescue 2000 Program.

Jones, D.S. (Ed.) (2007). Crustaceans collected by the Western Australian Museum/Woodside Energy Ltd. Partnership to explore the marine biodiversity of the Dampier Archipelago 1998–2002. (Vol. 73). Perth: Western Australian Museum.

Jones, D.S. & Berry, P.F. (2000). Crustacea of the Montebello Islands. Survey of the Marine Fauna and Habitats of the Montebello Islands, Western Australia. Records of the Western Australian Museum, Supplement, 59, 59-63.

Jones, D.S. & Hewitt, M.A. 1996. Barnacles. In Hutchins, J.B., Slack-Smith, S.M., Bryce, C.W., Morrison, S.M. and Hewitt, M.A. marine biological survey of the Muiron Islands and the eastern shore of Exmouth Gulf, Western Australia. Western Australian Museum, Perth. pp. 43–53. Unpublished report to the Ocean rescue 2000 Program.

Kangas, M.I., Morrison, S., Unsworth, P., Lai, E., Wright, I. and Thomson, A. 2007. Development of biodiversity and habitat monitoring systems for key trawl fisheries in Western Australia. Final report to Fisheries Research and Development Corporation on Project No. 2002/038. Fisheries Research Report No. 160, Department of Fisheries, Western Australia, 334p.

Kolbasov, G.A., Chan, B., Molodtsova, T.N., & Achituv, Y. (2016). Revision of the coral-inhabiting genus *Conopea* (Cirripedia: Archaeobalanidae) with description of two new species of the genera *Conopea* and *Acasta*. Zootaxa, 4178(2), 182-208.

Kristensen, E. (2008). Mangrove crabs as ecosystem engineers; with emphasis on sediment processes. Journal of sea Research, 59(1-2), 30-43.

Liu, R. & Ren, X. (2007). Crustacea, Cirripedia, Thoracica (Vol. 42). Beijing: Science Press.

McLaughlin, P.A., Rahayu, D.L., Komai, T. & Chan, T. (2007). A catalog of the hermit crabs (Paguroidea) of Taiwan. Keelung: National Taiwan Ocean University.

Osawa, M. (2007). Porcellanidae (Crustacea: Decapoda: Anomura) from New Caledonia and the Loyalty Islands. *Zootaxa*, *1548*(1), 1-49.

Saito, T., & Anker, A. (2014). Two new species and new records of *Microprosthema* Stimpson, 1860 (Crustacea: Decapoda: Stenopodidea: Spongicolidae) from the Indo-West Pacific. Zootaxa, 3857(2), 183-206.

Serène, R. (1984). Crustaces decapodes brachyoures de l'Ocean Indien occidental et de la Mer Rouge. Xanthoidea: Xanthidae et Trapeziidae. Faune Tropicale, 24, 1-349, i-xlviii.

Serène, R. & Soh, C.L. (1970). New Indo-Pacific genera allied to *Sesarma* Say 1817 (Brachyura, Decapoda, Crustacea). Treubia, 27(4), 387–416.

Stephenson, W. (1972). An Annotated Checklist and Key to the Indo West Pacific Swimming Crabs (Crustacea, Decapoda, Portunidae). Royal Society of New Zealand Bulletin, 10, 1-64.

Wilson, B. 2013. The Biogeography of the Australian North West Shelf: Environmental Change and Life's Response. Burlington: Elsevier.

Appendices

Appendix 1. List of crustaceans recorded during the cape Range Bush Blitz

Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State/ Territory Act)	Exotic/ pest
ORDER: Myodocopida		Seed shrimp	No	No	No	No
ORDER: Cumacea		Hooded shrimp	No	No	No	No
ORDER: Harpacticoida		Copepod	No	No	No	No
Alpheidae	*Alpheus lobidens*	Snapping shrimp	No	No	No	No
Alpheidae	*Alpheus pacificus*	Snapping shrimp	No	No	No	No
Alpheidae	*Alpheus strenuus*	Snapping shrimp	No	No	No	No
Alpheidae	*Alpheus sulcatus*	Snapping shrimp	No	No	No	No
Alpheidae	*Athanas parvus*	Snapping shrimp	No	No	No	No
Alpheidae	*Synalpheus ancistrorhynchus*	Snapping shrimp	No	No	No	No
Alpheidae	*Synalpheus comatularum*	Snapping shrimp	No	No	No	No
Alpheidae	*Synalpheus neomeris*	Snapping shrimp	No	No	No	No
Anthuridae		Isopod	No	No	No	No
Acartiidae		Copepod	No	No	No	No
Archaeobalanidae	*Acasta* cf. *folliculus*	Soft coral barnacle	No	No	No	No
Archaeobalanidae	*Acasta* cf. *flexuosa*	Sponge barnacle	No	No	No	No
Archaeobalanidae	*Armatobalanus allium*	Barnacle	No	No	No	No
Archaeobalanidae	*Conopea calceolus*	Soft coral barnacle	No	No	No	No
Archaeobalanidae	*Conopea wilhearsti*	Soft coral barnacle	No	No	No	No
Archaeobalanidae	*Conopea* sp. BBCR01	Soft coral barnacle	No	No	No	No
Archaeobalanidae	*Conopea titani*	Soft coral barnacle	No	No	No	No
Archaeobalanidae	*Euacasta* sp. BBCR01	Sponge barnacle	No	No	No	No
Archaeobalanidae	*Neoacasta* cf. *laevigata*	Sponge barnacle	No	No	No	No
Archaeobalanidae	*Pectinoacasta cancellorum*	Sponge barnacle	No	No	No	No
Armadillidae	*Buddelundia* sp. BBCR01	Slater	No	No	No	No
Balanidae	*Amphibalanus poecilotheca*	Barnacle	No	No	No	No
Camptandriidae	*Baruna trigranulum*	Crab	No	No	No	No
Camptandriidae	*Paracleistostoma* sp. BBCR01	Crab	No	No	No	No
Carpiliidae	*Carpilius convexus*	Marbled stone crab	No	No	No	No
Ceinidae	*Ceina gerlachae*	Amphipod	No	No	No	No
Cirolanidae	*Neocirolana hermitensis*	Marine isopod	No	No	No	No
Corophiidae		Amphipod	No	No	No	No
Cymothoidae	*Renocila*	Isopod	No	No	No	No
Diogenidae	*Calcinus latens*	Hidden hermit crab	No	No	No	No
Diogenidae	*Calcinus morgani*	Morgan's hermit crab	No	No	No	No
Diogenidae	*Calcinus vachoni*	Hermit crab	No	No	No	No
Diogenidae	*Clibanarius virescens*	Yellow-footed hermit crab	No	No	No	No
Diogenidae	*Dardanus lagopodes*	Hairy red hermit crab	No	No	No	No

Diogenidae	*Dardanus* cf. *lagopodes*	Hairy red hermit crab	No	No	No	No
Diogenidae	*Dardanus crassimanus*	Mauve-eyed hermit	No	No	No	No
Diogenidae	*Dardanus megistos*	White-spotted hermit crab	No	No	No	No
Diogenidae	*Dardanus pedunculatus*	Anemone hermit crab	No	No	No	No
Diogenidae	*Diogenes avarus*	Hermit crab	No	No	No	No
Diogenidae	*Diogenes* cf. *pallescens*	Hermit crab	No	No	No	No
Diogenidae	*Paguristes alegrias*	Hermit crab	No	No	No	No
Diogenidae	*Paguristes* sp. BBCR01	Hermit crab	No	No	No	No
Diogenidae	*Pseudopaguristes monoporus*	Blue-orange banded hermit crab	No	No	No	No
Domeciidae	*Cherusius?* sp. BBCR01	Crab	No	No	No	No
Dorippidae	*Neodorippe callida*	Leaf-porter crab	No	No	No	No
Dorippoidea	*Paradorippe*	Carrier crab	No	No	No	No
Dromiidae	*Cryptodromia*	Sponge crab	No	No	No	No
Epialtidae	*Acanthonyx euryseroche*	Decorator/spider crab	No	No	No	No
Epialtidae	*Huenia australis*	Decorator/spider crab	No	No	No	No
Epialtidae	*Menaethius monoceros*	One-horned spider crab	No	No	No	No
Eriphiidae	*Eriphia scabricula*	Hairy banded crab	No	No	No	No
Galatheidae	*Galathea platycheles*	Squat lobster	No	No	No	No
Gonodactylidae	*Gonodactylellus dianae*	Mantis shrimp	No	No	No	No
Grapsidae	*Metopograpsus* cf. *frontalis*	Shore crab	No	No	No	No
Hippolytidae	*Hippolyte ventricosa*	Hump backed shrimp	No	No	No	No
Hippolytidae	*Saron marmoratus*	Marbled shrimp	No	No	No	No
Leucosiidae	*Myra affinis*	Pebble crab	No	No	No	No
Lichomolgidae		Parasitic copepod	No	No	No	No
Macrophthalmidae	*Chaenostoma* sp. BBCR01	Sentinel crab	No	No	No	No
Macrophthalmidae	*Macrophthalmus latreillei*	Sentinel crab	No	No	No	No
Majidae	*Micippa philyra*	Decorator/spider crab	No	No	No	No
Majidae	*Paranaxia serpulifera*	Decorator/spider crab	No	No	No	No
Majidae	*Pseudomicippe banfieldi*	Decorator/spider crab	No	No	No	No
Majidae	*Schizophrys aspera*	Red sea toad/red spider crab	No	No	No	No
Mictyridae	*Mictyris occidentalis*	Western soldier crab	Yes	No	No	No
Mysidae	*Haplostylus tenuicaudus*	Opossum shrimp	No	No	No	No
Ocypodidae	*Austruca mjoebergi*	Mjöberg's fiddler crab	No	No	No	No
Ocypodidae	*Tubuca elegans*	Elegant fiddler crab	No	No	No	No
Ocypodidae	*Tubuca flammula*	Flame-backed fiddler crab	Yes	No	No	No
Paguridae	*Pagurus* sp. BBCR01	Hermit crab	No	No	No	No
Palaemonidae	*Coralliocaris viridis*	Shrimp	No	No	No	No
Palaemonidae	*Periclimenaeus arabicus*	Shrimp	No	No	No	No
Palaemonidae	*Periclimenes* sp. BBCR01	Shrimp	No	No	No	No
Palinuridae	*Panulirus versicolor*	Painted rock lobster	No	No	No	No
Parthenopidae	*Aulacolambrus diacanthus*	Elbow crab	No	No	No	No
Penaeidae	*Melicertus marginatus*	Aloha prawn	No	No	No	No
Pilumnidae	*Actumnus setifer*	Short-haired crab	No	No	No	No
Pilumnidae	*Glabropilumnus* sp. BBCR01	crab	No	No	No	No

Pilumnidae	*Pilumnus bleekeri*	Hairy crab	No	No	No	No
Pilumnidae	*Pilumnus* cf. *bleekeri*	Hairy crab	No	No	No	No
Pilumnidae	*Pilumnus vespertilio*	Bad-hair day crab	No	No	No	No
Porcellanidae	*Lissoporcellana furcillata*	Porcelian crab	No	No	No	No
Porcellanidae	*Lissoporcellana spinuligera*	Porcelian crab	No	No	No	No
Porcellanidae	*Pachycheles sculptus*	Porcelian crab	No	No	No	No
Porcellanidae	*Petrolisthes haplodactylus*	Porcelian crab	No	No	No	No
Porcellanidae	*Petrolisthes haswelli*	Porcelian crab	No	No	No	No
Porcellanidae	*Petrolisthes teres*	Porcelian crab	No	No	No	No
Portunidae	*Cycloachelous orbitosinus*	Swimming crab	No	No	No	No
Portunidae	*Portunus pubescens*	Swimming crab	No	No	No	No
Portunidae	*Thalamita admete*	Swimming crab	No	No	No	No
Portunidae	*Xiphonectes tuberculosus*	Swimming crab	No	No	No	No
Protosquillidae	*Haptosquilla corrugata*	Mantis shrimp	No	No	No	No
Protosquillidae	*Haptosquilla stoliura*	Mantis shrimp	No	No	No	No
Pyrgomatidae	*Cantellius* cf. *albus*	Coral barnacle	No	No	No	No
Pyrgomatidae	*Cantellius pallidus*	Coral barnacle	No	No	No	No
Pyrgomatidae	*Darwiniella conjugatum*	Coral barnacle	No	No	No	No
Pyrgomatidae	*Pyrgoma cancellatum*	Coral barnacle	No	No	No	No
Sesarmidae	*Episesarma?* sp. BBCR01	Mangrove crab	No	No	No	No
Sesarmidae	*Neosesarma* sp. BBCR01	Mangrove crab	No	No	No	No
Sesarmidae	*Parasesarma hartogi*	Mangrove crab	No	No	No	No
Sesarmidae	*Parasesarma holthuisi*	Mangrove crab	No	No	No	No
Sesarmidae	*Parasesarma* sp. BBCR01	Mangrove crab	No	No	No	No
Sesarmidae	*Sarmatium germaini*	Mangrove crab	No	No	No	No
Sphaeromatidae		Isopod	No	No	No	No
Sphaeromatidae	*Agostodina munta*	Isopod	No	No	No	No
Sphaeromatidae	*Sphaeroma terebrans*	Isopod	No	No	No	No
Talitridae		Amphipod	No	No	No	No
Tetraclitidae	*Neonrosella vitiata*	Barnacle	No	No	No	No
Tetraclitidae	*Tetraclita squamosa*	Barnacle	No	No	No	No
Tetraliidae	*Tetralia nigrolineata*	Bandit crab	No	No	No	No
Thalassinidae	*Thalassina saetichelis*	Mud lobster	No	No	No	No
Upogebiidae	*Upogebia carinicauda*	Ghost shrimp	No	No	No	No
Xanthidae	*Atergatis floridus*	Floral egg crab/green egg crab/shawl crab	No	No	No	No
Xanthidae	*Chlorodiella laevissima*	Crab	No	No	No	No
Xanthidae	*Cymo melanodactylus*	Black-fingered coral clinger/furry coral crab	No	No	No	No
Xanthidae	*Etisus australis*	Crab	No	No	No	No
Xanthidae	*Etisus electra*	Crab	No	No	No	No
Oziidae	*Epixanthus frontalis*	Rock crab	No	No	No	No
Xanthidae	*Paraxanthias* cf. *elegans*	Crab	No	No	No	No
Xanthidae	*Paraxanthias elegans*	Crab	No	No	No	No
Xanthidae	*Pilodius areolatus*	Areolated xanthid crab	No	No	No	No
Xanthidae	*Platypodia* cf. *pseudogranulosa*	Crab	No	No	No	No

Xanthidae	*Pseudoliomera helleri*	Crab	No	No	No	No
Xanthidae	*Xanthias lamarcki*	Crab	No	No	No	No
Xanthidae	*Xanthias* sp. BBCR01	Crab	No	No	No	No