
Baseline survey of benthic marine communities of Cape Preston and Preston Island

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May 2000

Prepared for Halpern Glick Maunsell Pty Ltd

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1. Executive Summary

A survey of benthic marine communities was conducted around the northern part of Cape Preston and around Preston Island. Sampling within the survey region was stratified along four transects perpendicular to Cape Preston and around Preston Island. Three different methods were used to describe the communities at each site depending on the abundance and diversity of constituent species. The community assemblage at each site was then used to produce six general habitat types within the region that are representative of near-shore communities found along the Pilbara coast. A species list of coral and algae for the region was also compiled.

The tip of Cape Preston is typical of exposed rocky shore environments in the tropics. This habitat type extends from the cape shore for approximately 100m. There is a high abundance and diversity of algae dominated by *Sargassum spp.* (~ 25%). There is also a high diversity of other benthic invertebrates including sponges, zoanthids, ascidians and soft corals in low abundance. Coral cover is low and characteristic of this environment, largely consisting of *Turbinaria sp.*, and Favids.

A habitat consisting mainly of sand and algae extends from the top of Cape Preston, south to Preston spit. This community consists mainly of *Sargassum spp.* in variable abundance (5 - 50%) with other associated algae and some benthic invertebrates.

Beyond the sand and algae strip is a diverse habitat consisting of algae, hard coral, soft corals, sponges and other benthic invertebrates. The increase in organisms here reflects the increase in hard substrata for settlement. Algae is dominant in this region (~ 30%) and coral cover is low (<10%) but there is a wide diversity of benthic organisms present. Many colonies are large and old indicating that the area provides a suitable habitat but that reef formation is limited by substrata availability.

In the northern region of Cape Preston and around Preston Island is a strip of coral reef with high coral cover (~ 30%) and diversity. Algae are in low abundance (<10%) and benthic invertebrate communities are typical of near-shore reefs, including sponges soft corals and ascidians. Representative coral species generally fall within the families Dedrophyllidae, Faviidae and Acroporidae. Associated with these reefs is a region of

high coral cover and very high species diversity on the northern side of Preston Island. This region is more characteristic of mid- to outer-coral reef environments and may provide a valuable source of coral recruits for connected communities.

Extending beyond these regions is a habitat type consisting of sand and silt with benthic biota consisting of occasional sponges, ascidians and gorgonians.

2. Introduction

This study was commissioned to provide baseline marine biological data of Cape Preston before the establishment of an export facility for hot briquetted iron and steel. The objective of the survey was to quantify and map dominant benthic habitat types for future assessment of potential impacts following development. A list of coral and algae species observed within the survey area has also been produced. Coral species distributions for Western Australia have been published by Veron and Marsh (1988) while the tropical algal records for Australia have been systematically listed by Lewis (Rhodophyta:1984, Phaeopyta:1985, Chlorophyta:1986). Other studies of tropical marine algae from north Western Australia include a detailed account of benthic marine flora of the Dampier Archipelago, north-east of Cape Preston, in the Pilbara region by Borowitzka and Huisman (unpublished). A list of the corals and some associated invertebrates of the Dampier Archipelago was published by Marsh (1978). To date many surveys of the marine flora and fauna of north Western Australia are restricted to species lists and short site descriptions. Quantification of abundance of species that together characterise typical communities is rare or restricted to grey literature.

3. Materials and Methods

3.1 Survey area

Cape Preston is located approximately 80 km south west of Karratha in the Pilbara region of Western Australia. The marine survey encompassed the area north from Preston Spit to the tip of Cape Preston, and included Preston Island. The survey area extended from the intertidal shoreline to the 12m depth contour. Site locations are displayed on the habitat (Figure 9).

3.2 Survey techniques

Aerial photographs and bathymetric charts of the Cape Preston region were studied in order to develop a survey strategy. The choice of survey sites was stratified to provide a representative selection of habitats. Sites were distributed among six main regions:

1. tip of Cape Preston;
2. transect I. from the tip of the cape to Preston Island;
3. Preston Island;
4. transect II. perpendicular to Cape Preston and 400 meters south of the tip;
5. transect III. perpendicular to Cape Preston and 2400 meters south of the tip;
6. transect IV. along Preston spit perpendicular to the shore.

Three different survey techniques were used depending on the abundance and diversity of organisms observed at each site. Spot dives were used only when the numbers of organisms present were low (e.g. bare sand sites), or when the community assemblage was easily allocated to a habitat type that had already been investigated using a more detailed method of assessment. Qualitative measures of community assemblage were made by counting the numbers or estimating the percent cover of dominant organisms within an area of 50 x 5m swum on snorkel. This method was also used mainly when abundance or diversity of organisms was low and the site was characteristic of established habitat types. In any survey it is necessary to use quantitative methods to provide accurate and comparative results that underlie the habitat descriptions. When abundance and diversity of organisms at a site was comparatively high, video transect analysis was employed to quantify the community assemblage. The point intercept method of determining percent cover for the dominant benthic organisms was used

according to methods adapted by the Australia Institute of Marine Science (Christie et al. 1996). Transects (50m) were laid at a total of six sites and video footage taken according to the above methods.

3.3 Habitat map

Coordinates of each survey site were collected using a global positioning system. The accuracy of these instruments is typically quoted as within 20m. Each site was placed into one of six habitat types characteristic of the survey area. Using percent cover and species diversity information from each site a general community assemblage was created for each habitat type. More detailed descriptions for each site in each habitat type were also included in the results. This data was extrapolated to create a broad habitat diagram for the survey region.

3.4 Species List

A list of coral and algal species within each habitat was made as a measure of distribution and diversity that could be compared with other geographic regions along the Pilbara. Algae were identified using Huisman J.M. and Walker D.I. (1990) and Borowitzka and Huisman (Unpublished). The identification of coral species was based on morphology, habitat and regional distribution using Marsh (1978), Veron and Marsh (1988), Veron (1993) and Wolstenholme (1998).

4. Results

4.1 Description of substrata and habitat types

Six dominant habitat types were identified within the survey area, that ranged in depth from 0 – 12 m. These habitat types are representative of shallow benthic communities located along the Pilbara coast. The general characteristics of each habitat are described below in terms of substratum, dominant flora and faunal composition. Within each habitat type individual sites have been allocated, and a more detailed description of each of these has been included following the general summary. Graphs of the percent cover of each category or dominant genera, for each site quantified using video techniques, are located at the end of their relevant habitat types. Photographs of characteristic habitat types are also included.

1) Bare sand

Much of the shallow and intertidal areas along the shoreline, including Preston Spit, were characterised by calcareous sand. No benthic macrophytes or corals were observed in this habitat. [Sites: 18, 19, 20, 26, 27, 28, 29, 30]

Site 18 to 20 - Transect III: 50m - 450m offshore

These sites consist almost entirely of sand, with little rubble or algal cover observed.

Site 26 to 30 – Transect IV (Preston Spit): 100m - 2000m west of Spit

These sites cover the western extension of Preston Spit and are composed entirely of sand. No algae or other benthic organisms were observed at these sites.

2) Sand / algae

This habitat type was characterised by a sandy bottom with some rubble and algal cover. *Sargassum spp.* are the dominant macroalgae, with percent cover varying between the sites (5 – 50%). Sparse algal cover (<10%) was found in the deeper areas between Cape Preston and Preston Island. Higher cover of algae was observed at near-shore sites and those surrounding Preston Spit. Species of *Halimeda*, *Padina*, *Laurencia*,

Dictyota and *Codium* were also present at much lower densities. [Sites: 4, 5, 13, 14, 15, 21, 31, 32]

Site 4 - Transect I (Cape to Island): 200m offshore.

Sandy bottom characterised by *Sargassum spp.* and sparse distribution of large erect sponges, soft corals, and large established coral colonies (*Turbinaria sp.* Poritids Favids and occasional Acroporids).

Site 5 - Transect I (Cape to Island): 500m offshore.

Half way between mainland and Preston Island and similar to Site 4. Predominately sand and *Sargassum spp.* (~30 - 50%) cover. Corals, soft corals and sponges of similar diversity and size structure to Site 4. but in lower density.

Sites 13 to 15 - Transect II: 100m - 400m offshore

The substrata at these sites consist of sand and rubble. *Sargassum spp.* are by far the dominant organisms having approximately 25 - 50% cover. Other algae genera include *Padina*, *Halimeda*, *Bornetella*, *Galaxaura* and branching and encrusting coralline algae.

Site 21 - Transect III: 650m offshore

The substrata here is predominantly sand although rubble is becoming more common. There is sparse algal cover (5 - 10%) related to the presence of hard substrata which mostly consists of *Sargassum spp.* This site is similar to the near-shore Sites 13 - 15.

Sites 31 to 32- Transect: IV (Preston Spit) 2200 - 3000m west of Spit

These sites are characterised by small patches of hard substrata with medium cover of *Sargassum spp.* (~ 25%). Sand is still the dominant substrata type although some rubble is present. West of Site 32 substrata becomes sand again with no associated benthic communities.

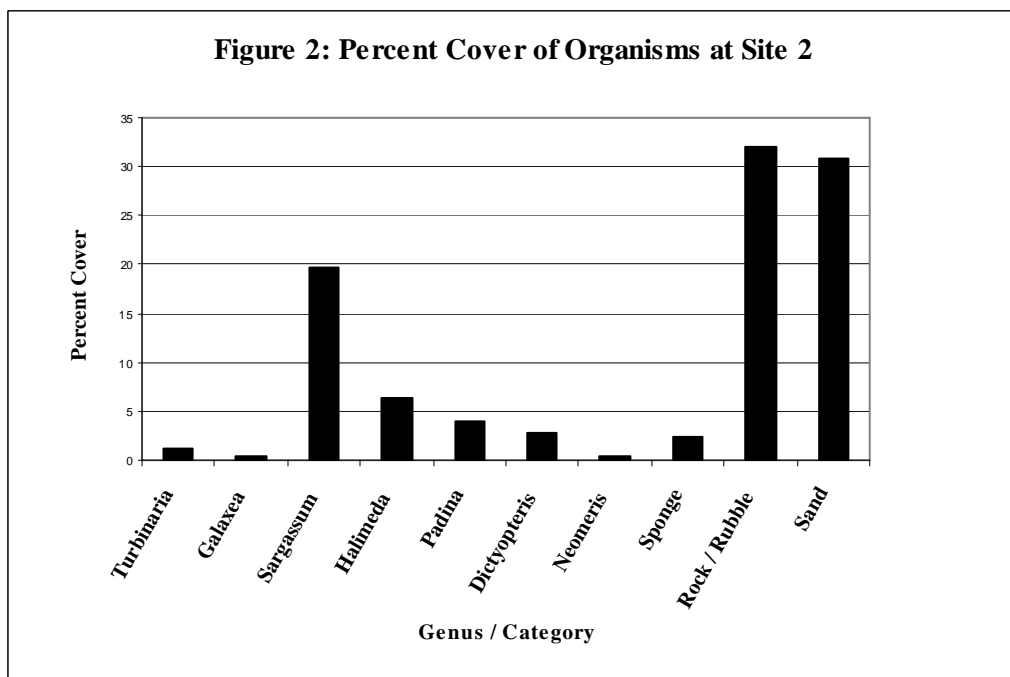
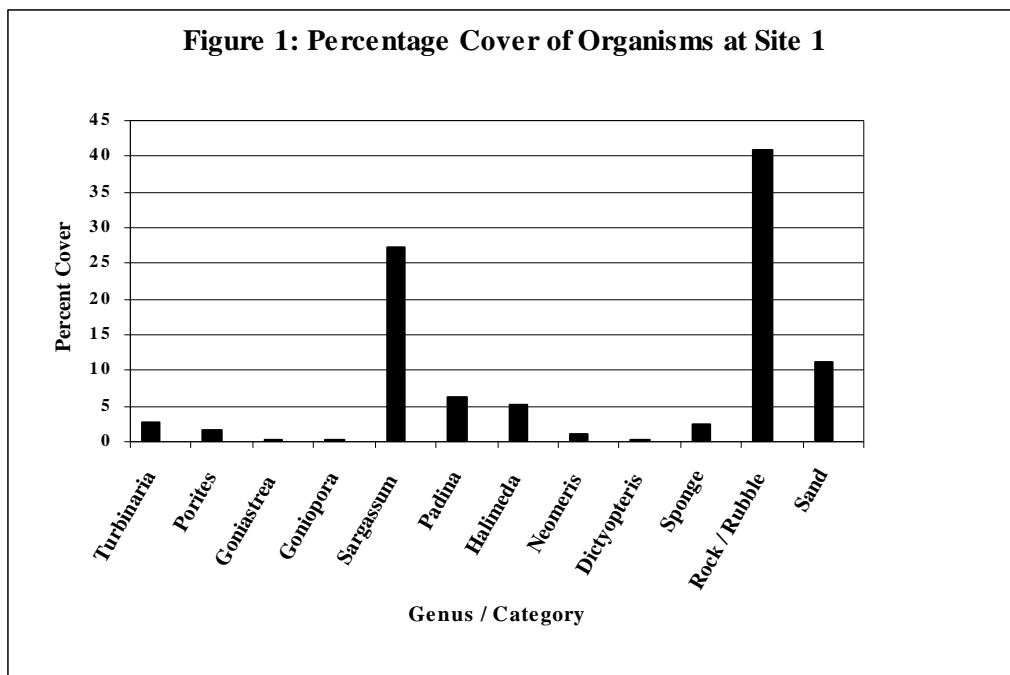
3) Sparse coral / mixed algae / sponges / sand / rubble

Generally a low coral cover of <10% with low diversity, dominated by a few common species. In particular, representatives of the genus *Turbinaria*, *Porites*, *Goniastrea* and

Favites were most abundant in these areas. Algae are the most common component of these areas generally occupying between 30 - 50% of the substrata. Macroalgae of the genus *Sargassum* was spatially dominant covering approximately 25% of the substrata while the members of the genera *Padina* and *Halimeda* were also common. Species of *Caulerpa*, *Bornetella*, *Galaxaura*, *Amphiroa*, *Lobophora*, *Dictyota* and *Hormophysa* were also present. A single occurrence of *Syringodium isoetifolium* was observed near the cape, however this was the only seagrass sited within the study area. A variety of erect and encrusting sponges occupied small area of the substrata (< 5%) and despite having a high species diversity were generally dominated by a few common genera including, *Verongula*, *lanthella*, *Carteriospongia*, *Dysidea*, *Tethya*, *Haliclona*, *Callyspongia*, *Leuclonia* and *Jaspis*. A variety of other benthic invertebrates were present in this habitat type including ascidians, soft corals, gorgonians, hydrozoans and marine worms. Percent cover was very low in the deeper sites where gorgonians and sponges were the dominant organisms. [Sites:1, 2, 3, 6, 7, 8, 16, 22, 23, 24, 25]

Site 1 and 2- Tip of Cape Preston:

The substrata here consists of sand and hard bottom. *Sargassum spp.* are the dominant organism at these sites (~ 20%) although *Padina sp.*, *Halimeda sp.* and *Dictyopteris sp.* are also abundant. There are many other benthic invertebrates such as hard corals, soft corals, ascidians, zoanthids and sponges. Abundance of benthic invertebrates is generally low (10%), however the species diversity in this region is high. The most abundant coral is *Turbinaria sp.* although Favid species are also common (Figure 1, Figure 2).



Site 3 - Transect I (Cape to Island): 100m from shore.

Similar community assemblage to Site 2. There tends to be less hard substrata and the diversity of algae and invertebrates is decreasing. There tend to be more coral species present although in no greater abundance.

Site 6. - Transect I: 400m from Preston Island

Sand and *Sargassum spp.* dominate but substrata becoming harder with more rubble. Reflecting substrata shift is a change in algal cover, including *Halimeda* and *Padina*. Increases in hard corals, soft corals and sponge cover similar to those at Sites 4 and 5 but in higher abundance. Branching Acroporid corals also becoming common.

Site 7. - Preston Island: Southern tip of Preston Is.

Substrata consists of sand and rubble. *Sargassum spp.* dominate the algae (~30%) but *Halimeda* and *Padina* also common. Diversity and cover of coral reasonably high when compared to Sites 4, 5 and 6, with numerous small to large colonies. *Turbinaria sp.* is again by far the dominant coral species but Favids, Poritids and Acroporids are also common.

Site 8. - Preston Island: South-Eastern Bay 100m from Preston Is.

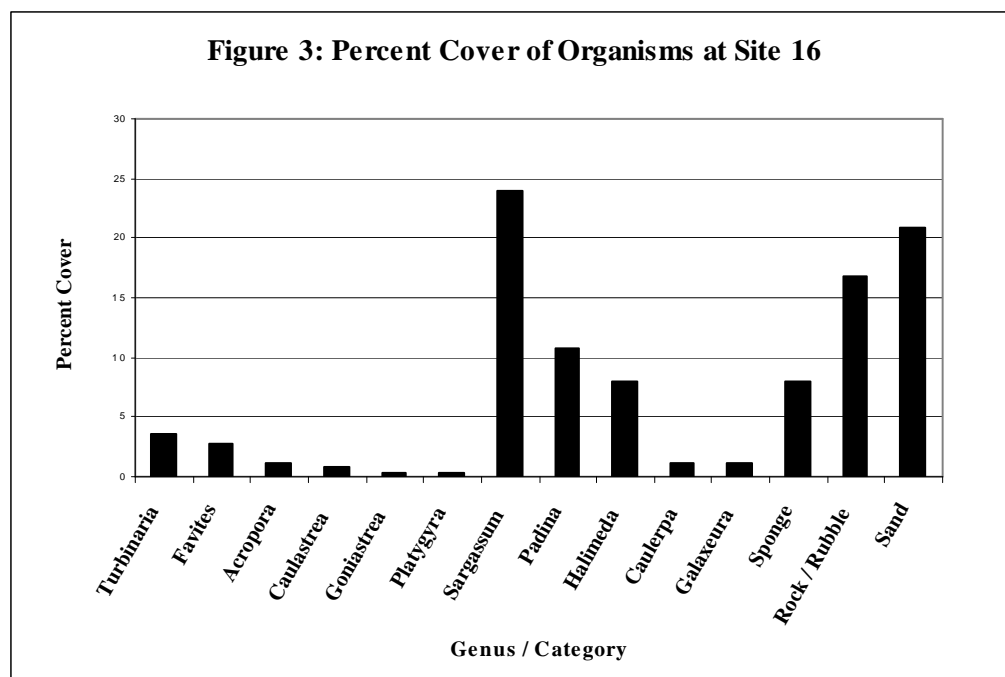
Substrata consists of sand and rubble with similar algal cover to Site 6. Medium to large colonies of the soft coral *Lobophyton sp.* are abundant in this bay, most likely reflecting a long history of asexual propagation.

Sites 16 - Transect II: 800m offshore

This site marks the change from a zone dominated by *Sargassum spp.* to a community characterised by a variety of hard corals, soft corals, sponges and other benthic organisms. Algae such as *Halimeda sp.* and *Padina sp.* are more common at this site. Coral cover is relatively low and dominated by *Turbinaria spp.* or occasional large Favid and Acropora colonies (Figure 3).

Sites 22 to 24 - Transect III: 800m to 1200m offshore.

Patches of hard substrata become more common at these sites. There is a low cover of *Sargassum spp.* (~ 5%) which occurs with *Padina spp.* and *Halimeda spp.* There is an increase in hard coral, soft coral and sponge cover at these sites although their distribution is largely constrained by the limited amount of hard substrata relative to sand. Coral colonies are generally old with *Turbinaria sp.* and large Poritid and Favid colonies most common. Other benthic invertebrates are also present. Site 22 marks the transition from a zone dominated by sand and low algal cover to a sparse community of corals and sponges, and thus is comparable to Site 16 in Transect II.



Site 25 - Transect III: 1400m offshore

This site marks the transition from the sparse coral and benthic invertebrate communities at Sites 22 - 24 to organisms found in deeper water sandy substrata. There is no algae cover beyond this site with occasional sponges, ascidians and gorgonians characteristic of deeper waters.

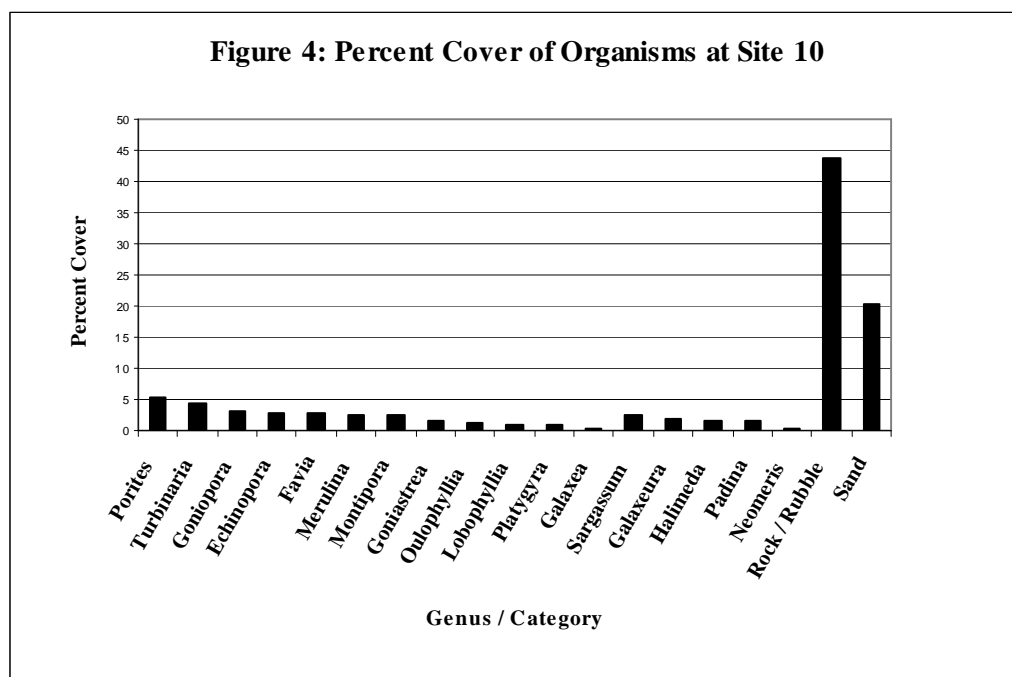
4) Medium coral cover / mixed algae

Scleractinian corals are the dominant component of this habitat type occupying approximately 25 - 30% of the substrata and are characterised by a reasonably high species diversity. Species from between 10 - 15 genera were recorded within this habitat type. Dominant species were members of the Family Dendrophylliidae, Poritidae and Faviidae while the members of the Families Merulinidae, Acroporidae and Mussidae were also well represented. Algal cover in this habitat is low (5 -10%) and much more characteristic of turfing algae common on coral reefs. The macroalgae *Sargassum spp.* is not a significant component of this habitat and covers areas of less than 5%. Other algae present include encrusting red algae, *Halimeda spp.*, *Padina sp.*, *Bornetella sp.* and *Galaxaura sp.*. Sponge cover is relatively low (<5%) and the species change to those more common on coral reef environments which are dissimilar to those described in the habitat characterised by sparse coral cover, algae and sponges. Algae dominate

at shallower depths of this habitat and changes to a higher proportion of coral cover in deeper water. [Sites: 10, 11, 12, 17]

Site 10 - Preston Island: South-Western Bay 200m from Preston Island

Substrata is mostly rubble with some sand. *Sargassum spp.*, *Halimeda spp.* and *Padina spp.* are present in low abundance. The coral community here is similar to Site 9 although cover and species diversity are not as high (Figure 4).

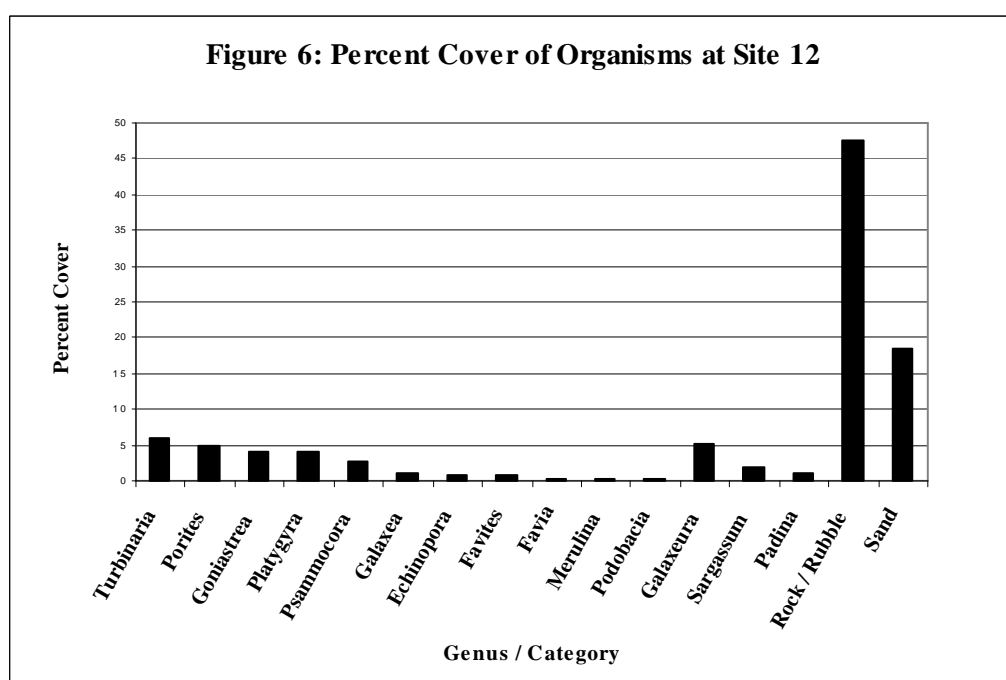
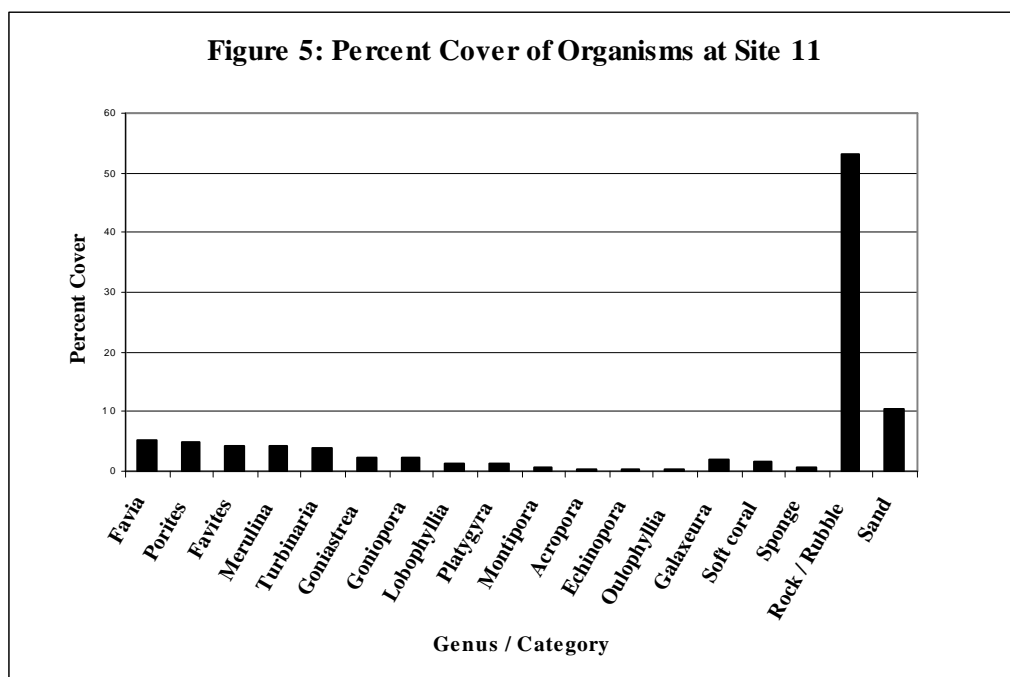


Site 11 - Preston Island: Western Bay 100m from Preston Island

The habitat here consists of a thin (~ 100m) coral zone running parallel to the shore at Preston Is. Beyond approximately 200m perpendicular to the shore at Preston Is. the substrate drops off to sand and zero coral cover. The abundance of algae, corals and other benthic invertebrates within this coral zone is similar to that at Site 10 (Figure 5).

Site 12 - Preston Island: North-Western point 200m from Preston Island

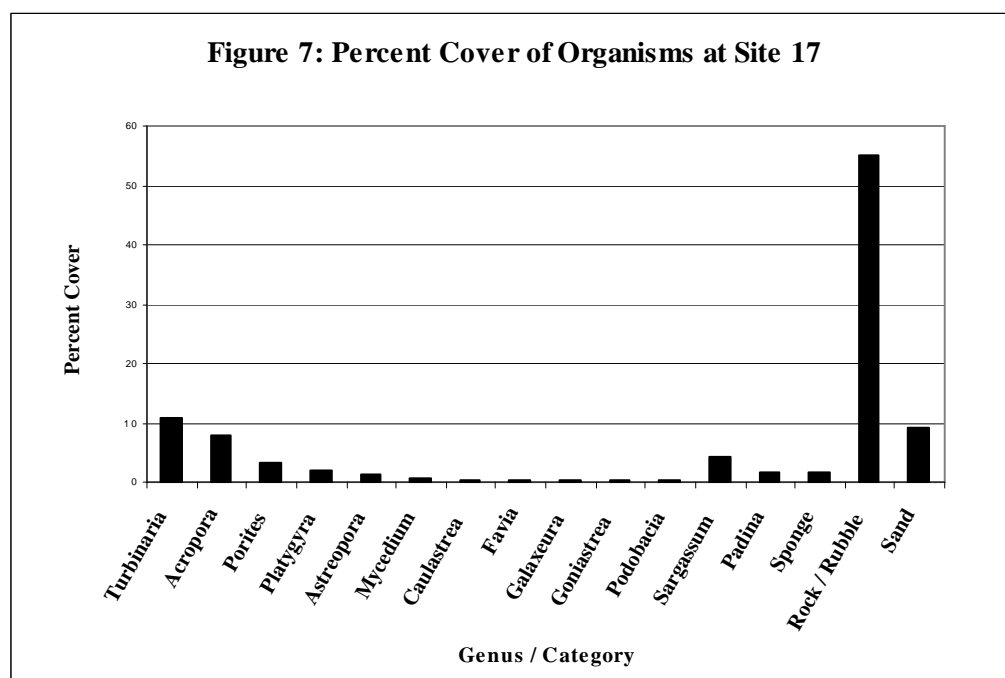
The community assemblage here is similar to that at Sites 10 and 11, although macroalgal cover and the amount of sand has increased relative to these areas (Figure 6).



Site 17 - Transect II: 1200m offshore

This site marks the outer edge of the coral zone running parallel to the shore of Point Preston. This coral zone consists mainly of rubble substrata and macroalgae cover here is low (<10%). Coral abundance (~ 25%) and diversity is reasonably high and

comparable to that at Sites 10, 11 and 12. *Turbinaria sp.* is again the dominant coral with



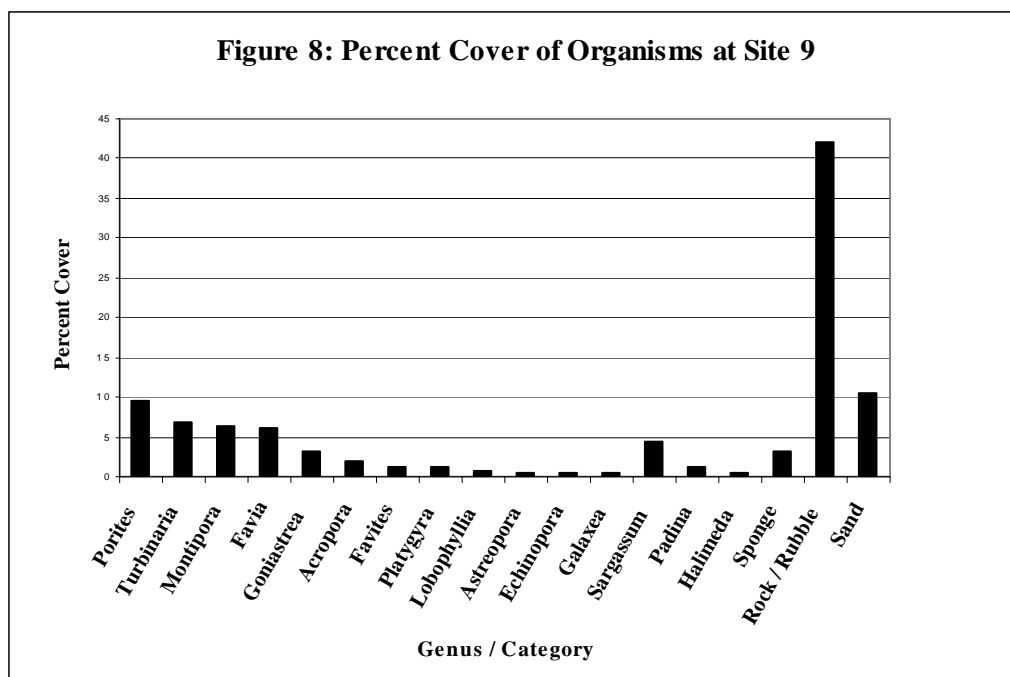
Favids and Acroporids also representative (Figure 7).

5) High coral cover / mixed algae

Scleractinian corals were the major component (38%) of this habitat type. Algal cover was low (6%) with predominantly encrusting corallines. Algal species of the genus *Halimeda sp.*, *Amphiroa sp.*, *Padina sp.*, *Bornetella sp.* and *Galaxaura sp.* were also present. A single transect was used to quantify this habitat type (Site: 9).

Site 9 - Preston Island: Northern tip of Preston Is.

This site is characterised by a very high coral cover (40%). Macroalgae is uncommon and turfing algae commonly associated with coral reefs is present. Coral species diversity is also very high at this site and the reef environment here is unique to the study area (Figure 8).



6) Sand and silt

Extending beyond the above regions is a habitat type consisting of sand and silt benthic biota consisting of occasional sponges, ascidians and gorgonians.

4.2 Habitat Map

Information of habitat type for each site was compiled to create a habitat map of the survey area (Figure 9). A region of bare sand habitat runs from north to south along Cape Preston. This habitat widens at the southern end as it extends out forming Preston Spit. Surrounding Preston Spit is a region of algae, predominantly *Sargassum spp.*, which follows the bare sand habitat along Cape Preston. This habitat leads into areas of bare sand in deeper waters surrounding the Spit, however further north the predominantly algae habitat leads to one of sparse coral, mixed algae and sponges with more rubble in the substrate. In the northern region, this habitat then leads to one of coral reef with medium coral cover (~ 30%) and diversity with mixed algae also present. The habitat type is also found around Preston Island and surrounds the tip of Cape Preston. Algae are in low abundance (<10%) and benthic invertebrate communities are typical of near-shore reefs, including sponges, soft corals and ascidians. A region of high coral cover and very high species diversity is located on the northern side of Preston Island.

4.3 Species list

Species from each site were recorded to compile a species list for the survey area (Table 1). Fifty species of corals were recorded from 11 families. Green (Chlorophyta), brown (Phaeophyta) and red (Rhodophyta) algae were reported within the survey area. Only one isolated siting of seagrass, *Syringodium isoetifolium*, consisting of a few shoots, was reported for the survey area.

Table 1. Taxonomic list of corals, algae and seagrass within the survey area.

	Family	Genus Species
CORALS	ACROPORIIDAE	Acropora cytherea
		Acropora florida
		Acropora gemnifera
		Acropora hyacinthus
		Acropora millipora
		Acropora nobilis
		Acropora robusta
		Acropora specifera
		Astreopora explanata
		Astreopora myriophthalma
		Montipora mollis
		Montipora monasteriata
		Montipora sp1.
	PORITIDAE	Porites cylindrica
		Porites lobata
		Porites lutea
		Porites vaughani
		Goniopora lobata
		Goniopora sp. 1
	SIDERASREIDAE	Psammocora contigua
		Psammocora superficialis
		Coscinaraea columna
	AGARICIIDAE	Gardineroseris planulata
		Leptoseris mycentoseroides
		Pavona decussata
	OCULINIDAE	Glaxea asreata
		Glaxea fascicularis
	MUSSIDAE	Lobophyllia corymbosa
		Lobophyllia hemprichii
		Symphyllia agaricia
		Symphyllia recta
	FAVIIDAE	Caulastrea furcata
		Cyphastrea serailia
		Echinopora lamellosa
		Favites abdita
	FAVIIDAE	Favites complanata
		Favites halicora
		Favites pentagona

	Family	Genus Species
CORALS	FAVIIDAE	Goniastrea aspera Goniastrea australensis Goniastrea favulus Goniastrea palauensis Motastrea curta Platygyra daedalea
	CARYOPHYLLIDAE	Euphyllia ancora
	DENDROPHYLLIIDAE	Turbinaria bifrons Turbinaria conspicua Turbinaria frondens Turbinaria mesenteria
	POCILLOPORA	Pocillopora damicornis
SEAGRASS	CYMODOCEACEAE	Syringodium isoetifolium
ALGAE CHLOROPHYTA (Green algae)	CAULERPACEAE	Caulerpa racemosa Caulerpa serrulata Caulerpa sertularioides
	UDOTEACEAE	Halimeda cylindracea Halimeda lacunalis Halimeda macroloba Halimeda velasquezii
	CODIACEAE	Codium geppii
	DASYCLADACEAE	Bornetella oligospora
PHAEOPHYTA (Brown algae)	DICTYOTACEAE	Dictyota bartayresii Dictyota ciliolata Lobophora variegata Padina australis Hormophysa triquetra
	SARGASSACEAE	Sargassum sp1 Sargassum sp2 Sargassum sp3
RHODOPHYTA (Red algae)	CHAETANGIACEAE	Galaxaura marginata
	CORALLINACEAE	Amphiroa foliacea
	RHODOMELACEAE	Laurencia majuscula encrusting red sp1 encrusting red sp2 encrusting red sp3

5. Discussion

Six general community assemblages were identified in this survey which roughly corresponded to the physical conditions at each site. Each of these communities is representative of similar habitats found along the Pilbara coastline.

The tip of Cape Preston is characteristic of benthic communities found along rocky shores that are exposed to reasonably high water movement and located in shallow water (< 5m). There are sufficient hard substrata among the sandy bottom for settlement and community establishment. A variety of macroalgae dominate the area although there are also many other benthic invertebrates such as hard corals, soft corals, ascidians, zoanthids and sponges. Abundance of benthic invertebrates is generally low (10%), however the species diversity in this region is characteristically high. The assemblage within this habitat type is the most diverse when considering general taxonomic representation of flora and fauna. The extent of these communities is generally limited by the availability of suitable substrata, sufficient water movement and water depth (light attenuation). Approximately 200m from the tip of Cape Preston conditions change to sandy substrata and deeper water.

Bare sand characterises the area surrounding Preston spit which extends over two kms perpendicular to the shore. The embayment between transect II and transect III (Preston Spit) consists mostly of unconsolidated sand. The lack of suitable substrata for settlement and the movement of sand relative to the spit prevent the establishment of benthic communities in this habitat.

Sand and algae, which largely consists of *Sargassum spp.*, is a characteristic strip of habitat which runs for the entire length of Cape Preston. The width of this habitat tends to decrease from the tip of Cape Preston southwards to Preston Spit. This community is found along Transect I from 200m from the Cape to 400m from the shore of Preston Island. Along transect II sand and algae characterise the near-shore habitat out to approximately 800m. South of this point the sand begins to dominate the substrata due to the presence of Preston Spit, and it is not until approximately two kilometers out from

the shore that sufficient hard substrata is available for algae to be found among the sandy bottom.

The patchy communities characterized by sparse coral cover, algae, sponges and other benthic invertebrates follows a similar contour to the sand and algae habitat, only further out from the shore. This habitat extends between 800m from the shore and Preston Island at the northern most part of Cape Preston (transect I), approximately 800 - 1100m along transect two, and between 800 - 1400m from the shore along transect three. The influence of Preston Spit again prevents this habitat from continuing further south, but unlike the sand and algae habitat, it did not reoccur away from spit along this transect line. Many of the corals and sponges within this habitat are large old colonies that have survived for many decades. The potential community growth in this habitat is however limited by the lack of hard substrata and the movement of sand.

Characteristic near-shore coral reef communities were found at a number of sites in the northern section of Cape Preston and around Preston Island. The habitat extends north of transect II, between 1200 - 1400m offshore, through the south-western and north-eastern sides of Preston Island. There is medium to high coral cover (25 - 30%) with a wide variety of species representatives and macroalgae is far less abundant than in other survey habitats. Generally, corals from the Families Dendrophylliidae, Poritidae, Faviidae and Acroporidae were most common and similar communities have been observed at reefs south to Onslow and north to Dampier.

The highest recorded coral cover and by far the highest diversity of coral species was found out from the northern point of Preston Island. Although small, the community at this site is more characteristic of mid-reef coral assemblages, and similar to reefs situated on the exposed sides of Islands in the Dampier Archipelago. The change in community type is reflected by increases in representative corals such as tabular Acroporids. This community may provide a valuable source of recruits for other reefs around Preston Island and the northern part of Cape Preston.

Overall, a number of community assemblages were identified within the survey area that are characteristic of near-shore regions along the Pilbra coast. Members of the genus

Sargassum were the dominant algae within the survey area. Algal species were similar to those found by Borowitzka and Huisman (unpublished) in the Dampier Archipelago. There was little coral cover in the majority of the survey area, but it was common to find patches of coral often with large established colonies. There exists a zone of coral reef along the northern part of Cape Preston and around Preston Island. These reefs have medium to high coral cover and although few species make up the majority of the cover there are numerous species representative from three dominant coral families. These reefs are similar to near-shore reefs observed south to Onslow and north to Dampier, with the exception of the one site north of Preston Island whose community was more representative of mid-reef assemblages such as those observed around the outer Islands of the Dampier Archipelago.

6. References

- Christie CA, Bass DK, Neale SJ, Osborne K, Oxley WG (1996) Survey of sessile benthic communities using the video technique. Long-term monitoring of the Great Barrier Reef, Standard Operational Procedure No 2, Australian Institute of Marine Science, Townsville, Qld, 42p.
- Borowitzka M.A. and Huisman J.M. (unpublished) The algae and seagrasses of the Dampier archipelago, Western Australia. School of Environmental and Life Sciences. Murdoch University
- Huisman J.M. and Walker D.I. (1990) A catalogue of the marine plants of Rottnest Island, Western Australia, with notes on their distribution and biogeography. *Kingia* 1:349-459
- Lewis J.A. (1984) Checklist and bibliography of benthic marine macroalgae recorded from northern Australia. I. Rhodophyta. Department of Defence, Defence Sci. and Technology Organisation, Materials Res. Lab. Melbourne, Report MRL-R-912
- Lewis J.A. (1985) Checklist and bibliography of benthic marine macroalgae recorded from northern Australia. II. Phaeophyta. Department of Defence, Defence Sci. and Technology Organisation, Materials Res. Lab. Melbourne, Report MRL-R-962
- Lewis J.A. (1986) Checklist and bibliography of benthic marine macroalgae recorded from northern Australia. III. Chlorophyta. Department of Defence, Defence Sci. and Technology Organisation, Materials Res. Lab. Melbourne, Report MRL-R-1063
- Marsh L.M. (1978) Report on the corals and some associated invertebrates on the Dampier Archipelago. Report to the Museum of Western Australia, Western Australian Museum, Perth 56p
- Veron J.E.N. (1993) Corals of Australia and the Indo-Pacific. University of Hawaii Press, Hawaii

Veron J.E.N. and Marsh L.M (1988) Hermatypic corals of Western Australia: Records and Annotated Species List. Rec. West Aust. Mus. Suppl. No 29. Western Australian Museum, Perth

Wolstenholme J. (1998) Coral Identification Workshop Notes. Coral Bay. Western Australia.