THE CORALS COLLECTED DURING SEPTEMBER/OCTOBER 1997 AT ASHMORE REEF, TIMOR SEA - A report to Parks Australia.

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ABSTRACT

A survey of the scleractinian corals at Ashmore Reef was conducted during September/October 1997. This is only the second such reported survey of Ashmore Reef. As a result of this survey five more species and one more genus of scleractinian corals have been recorded at Ashmore Reef. This brings the total number of scleractinian corals reported for Ashmore Reef to 256 species from 56 genera which distinguishes it as the richest area for coral diversity in Western Australia. In addition, a few alcyonacean corals were collected. From this small collection there were two new generic records and at least 18 new species records of alcyonacean corals for Ashmore Reef.

INTRODUCTION AND METHODS

The Western Australian Museum (WAM) conducted a survey of selected faunal groups at Ashmore Reef [$12^0$17'S, $123^0$02'E] and nearby Cartier Island [$12^0$32'S, $123^0$33'E] during September 1986 (Berry, 1993). This was the first time that scleractinian corals had been collected at Ashmore Reef (Veron, 1993). As a result of the 1986 survey, Veron identified 255 species of scleractinian corals from 56 genera. However, since a review of the family Fungiidae (Hoeksema, 1989), four fungiid species recorded by Veron at Ashmore Reef have been synonymised and one of the genera has been reclassified. The corrected number of coral species recorded during the 1986 survey of Ashmore Reef therefore, is 251 species from 55 genera. Such a large number of species classifies Ashmore Reef as the most diverse area examined in terms of scleractinian corals than any other Western Australian reef (Veron and Marsh, 1988).

Many new records and species of scleractinian corals for Western Australia are still being discovered. Parks Australia North, therefore, considered it a worthwhile venture to undertake another faunal survey to investigate the possibility that even more species of scleractinian corals might be located at Ashmore Reef.

The present survey was undertaken during 22 September to 4 October 1997. It was intended to supplement Veron's collecting and so certain genera were under-collected because Veron had already recorded all of the known species from those genera. Also, not every species present was recorded at each site because the aim was to try and find new species records. Therefore, if I was certain that I had already

collected a species, I did not collect it again. Collecting took place amongst reef flat, lagoonal and reef slope habitats via walking, snorkelling and SCUBA. Most of the collecting stations were similar to WAM's 1986 collecting stations, except for site 10 on the eastern reef slope of Ashmore Reef. The 1986 WAM party had no collecting sites on the eastern side. A list of the sites sampled and their habitat description is presented in Table 1.

Once collected, the hard coral pieces were placed in a chlorine solution to bleach the skeleton. These were then rinsed in sea water and dried before being packed for transportation back to the WAM. Identification of the scleractinian corals was made using Veron (1986), Veron and Pichon (1976; 1980; 1982), Veron *et al*. (1977) and Veron and Wallace (1984).

In addition to collecting scleractinian corals, a very cursory collection of soft corals (order Alcyonacea) was made. This was to provide an indication to the value of devoting a future field trip to surveying the soft corals at Ashmore Reef. Although, the 1986 WAM party collected some soft corals (Marsh, 1993) very few were identified to species and the list seemed very incomplete.

RESULTS AND DISCUSSION

Scleractinian corals

Approximately 380 specimens of scleractinian corals were collected. These were identified to 138 species from 44 genera and are listed in Table 2. Despite this number being below that of the number of species which Veron identified, there were five new species records for Ashmore Reef and one new generic record. The total number of scleractinians recorded for Ashmore Reef is therefore, 256 species from 56 genera.

The following species have new locality records for Ashmore Reef:
Montipora turgescens Bernard, 1897 - This species has been recorded from nearby Scott Reef [$14^0$0.3'S, $121^0$45'E] and the Rowley Shoals [$17^0$07'S, $119^0$36'E] (Veron and Marsh, 1988). It is considered common (Veron, 1986). This record is a northern extension of its range in Western Australia but it falls within its known global distribution.

Barabattoia amicorum (Edwards and Haime, 1850) - Previously, the furthest north where this species had been recorded in Western Australia was from King Sound [$17^0$05'S, $123^0$31'E] near Derby (Veron and Marsh, 1988). It is considered an uncommon species (Veron, 1986). This record is a northern extension of its range in Western Australia but it falls within its known global distribution.

Favia nsp. Veron, 199_ - This is a new species currently being described by J.E.N. Veron and it will be named after Loisette Marsh. The specimen collected on this trip will be included in the type material.

Goniastrea retiformis (Lamarck, 1816) - This very common Indo-Pacific species (Veron, 1986) was recorded from nearby Cartier Island reef by Veron (1993). The record therefore, does not increase its known distribution significantly.

Echinopora mammiformis (Nemenzo, 1959) - Previously recorded from only one area in Western Australia, namely Scott Reef (Veron and Marsh, 1988), although it is considered common throughout the rest of its range (Veron, 1986). The present record represents a northern extension for this species in Western Australia.

Alcyonacean corals

Although only 39 specimens of alcyonacean corals were collected, this was because of the lack of resources to devote to soft corals on the field trip and not because of a lack of soft corals. All the stations visited had a diverse coverage of soft corals particularly the lagoon and north-west reef slope.

From this small collection, 32 species from 16 genera of alcyonaceans were identified and they are listed in Table 3. This is two genera more than those reported by Marsh (1993) and at least 18 new species records. The soft coral fauna is poorly known in Western Australia and very few surveys have included them in their collections. However, they are a very prominent part of the reefal systems and should be given priority in future surveys.

General observations

The coral in the western lagoon (Table 1) was composed of many large and delicate colonies as would be expected in that habitat. Most were in a pristine condition. The only damage noticeable to corals was as a result of anchors on the northern side of the lagoon and around channel markers. This damage was however, very minor and localised. Certainly, permanent moorings would augment protection.

None of the pieces of hard corals collected had noticeable reproductive products. This would be expected if they were to spawn in early autumn (March/April) as is the case with other hard corals on Western Australian reefs. Conversely, the hard corals on the east coast spawn around November/December. However, many of the soft coral colonies had very ripe eggs (as indicated by their large size and developed colouration) and mature sperm sacs. From this it can be inferred that many would be ready for a November/December spawning. They may spawn at a similar time to the soft corals on the east coast therefore, where most soft corals spawn late spring/early summer (Griffith, 1993).

Collecting stations were restricted by a lack of suitable boats and so there were large areas of the reef that could not be reached. The eastern reef slope was particularly rich in species of *Acropora,* a genus where new species are often being discovered. However, because it was over 15 km from where the main boat was moored (the western lagoon), only a couple of visits to the eastern reef slope could be

organised. It would be desirable to address this problem for future workers visiting the area.

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Table 1. Station list for Ashmore Reef, 1997

Site	Description	Latitude & Longitude	Max. Depth (m)
1	Western lagoon	$12^0$15'S, $122^0$58'E	11
2	Reef flat NE of West Island	$12^0$15'S, $122^0$58'E	0.5
3	Western lagoon	$12^0$15'S, $122^0$59'E	9
4	Western lagoon	$12^0$14'S, $123^0$00'E	7
5	Entrance to western lagoon	$12^0$14'S, $122^0$59'E	18
6	NW reef slope	$12^0$14'S, $122^0$59'E	12
7	Western lagoon	$12^0$15'S, $122^0$59'E	11
8	SE reef slope	$12^0$18'S, $123^0$08'E	14
9	Western lagoon	$12^0$15'S, $122^0$58'E	9
10	Eastern reef slope	$12^0$12'S, $122^0$58'E	8
11	Western lagoon	$12^0$15'S, $122^0$58'E	5
12	Blue Lagoon, W of Middle Island	$12^0$17'S, $123^0$01'E	5
13	NW reef slope	$12^0$14'E, $122^0$56'E	16

Table 2. List of the scleractinian corals collected at Ashmore Reef, 1997

Taxonomic sequence of the families and genera follow Veron (1986), except for the genera in the family Fungiidae which follow the sequence of Hoeksema (1989). The species are listed alphabetically.
V = visual record only.

CORAL	SITE
Family POCILLOPORIDAE	
Pocillopora damicornis (Linnaeus, 1758)	V
Pocillopora eydouxi Edwards and Haime, 1860	13
Pocillopora verrucosa (Ellis and Solander, 1786)	4; 6; 10
Seriatopora caliendrum Ehrenberg, 1834	3
Seriatopora hystrix Dana, 1846	1; 8
Stylophora pistillata Esper, 1797	1; 6; 7; 8; 9; 13
Family ACROPORIDAE	
Montipora caliculata (Dana, 1846)	3
Montipora danae (Edwards and Haime, 1851)	8
Montipora digitata (Dana, 1846)	12
Montipora efflorescens Bernard, 1897	9
Montipora grisea Bernard, 1897	3
Montipora hispida (Dana, 1846)	3; 10
Montipora hoffmeisteri Wells, 1956	6; 7; 10
Montipora monasteriata (Forskål, 1775)	3; 7
Montipora peltiformis Bernard, 1897	6; 7
Montipora turgescens Bernard, 1897	1
Montipora venosa (Ehrenberg, 1834)	10
Montipora verrucosa (Lamarck, 1816)	10
Acropora abrolhosensis Veron, 1985	1
Acropora acuminata (Verrill, 1864)	5; 10; 12
Acropora anthocercis (Brook, 1893)	10
Acropora aspera (Dana, 1846)	4
Acropora austera (Dana, 1846)	4; 5; 6; 7; 10; 11
Acropora brueggemanni (Brook, 1893)	1; 3; 4; 7; 9; 12
Acropora cerealis (Dana, 1846)	4
Acropora cytherea (Dana, 1846)	4; 5; 6; 10; 11
Acropora danai (Edwards and Haime, 1860)	6; 10
Acropora digitifera (Dana, 1846)	4; 6; 7; 9; 10
Acropora divaricata (Dana, 1846)	4; 8; 10
Acropora elseyi (Brook, 1892)	8; 10
Acropora florida (Dana, 1846)	5; 10; 11
Acropora formosa (Dana, 1846)	5; 10; 12
Acropora gemmifera (Brook, 1892)	11
Acropora grandis (Brook, 1892)	4; 12
Acropora horrida (Dana, 1846)	12
Acropora humilis (Dana, 1846)	3; 4; 6; 10; 11
Acropora hyacinthus (Dana, 1846)	4; 10; 13

CORAL	SITE
Acropora latistella (Brook, 1891)	6; 10
Acropora millepora (Ehrenberg, 1834)	3; 7; 9
Acropora nasuta (Dana, 1846)	3; 4; 5; 6; 10
Acropora nobilis (Dana, 1846)	4; 10; 11
Acropora palifera (Lamarck, 1816)	4; 10
Acropora paniculata Verrill, 1902	13
Acropora pulchra (Brook, 1891)	12
Acropora robusta (Dana, 1846)	6; 10
Acropora samoensis (Brook, 1891)	4; 6; 7
Acropora selago (Studer, 1878)	13
Acropora solitaryensis Veron and Wallace, 1984	10
Acropora subglabra (Brook, 1891)	1; 7; 12
Acropora subulata (Dana, 1846)	9; 10
Acropora tenuis (Dana, 1846)	6; 8; 10; 11
Acropora valenciennesi (Edwards and Haime, 1860)	7
Acropora valida (Dana, 1846)	6; 10
Family PORITIDAE	
Porites cylindrica Dana, 1846	1; 3; 4; 8; 9
Porites lichen Dana, 1846	2; 6; 9; 10
Porites lobata Dana, 1846	2
Porites lutea Edwards and Haime, 1860	1; 6; 7
Porites nigrescens Dana, 1848	1; 3; 4; 6; 9
Porites rus (Forskål, 1775)	3; 6; 7; 9
Porites vaughani Crossland, 1952	6; 9; 10
Goniopora pandoraensis Veron and Pichon, 1982	9
Goniopora somaliensis Vaughan, 1907	7
Goniopora tenuidens (Quelch, 1886)	1; 3
Family SIDERASTREIDAE	
Psammocora contigua (Esper, 1797)	2; 12
Psammocora nierstraszi Van der Horst, 1921	6
Family AGARICIIDAE	
Pavona cactus (Forskål, 1775)	1; 12
Pavona explanulata (Lamarck, 1816)	7
Pavona varians Verrill, 1864	1; 7; 8; 9; 13
Pavona venosa (Ehrenberg, 1834)	3
Gardineroseris planulata (Dana, 1846)	4
Coeloseris mayeri Vaughan, 1918	7
Pachyseris rugosa (Lamarck, 1801)	1; 3; 6; 7
Family FUNGIIDAE	
Fungia concinna Verrill, 1864	3; 6; 9
Fungia fungites (Linnaeus, 1758)	6
Fungia horrida Dana, 1846	7; 9

CORAL	SITE
Fungia repanda Dana, 1846	1; 9
Fungia scruposa Klunzinger, 1879	9
Fungia vaughani Boschma, 1923	8
Heliofungia actiniformis (Quoy and Gaimard, 1833)	3; 12
Ctenactis echinata (Pallas, 1766)	6; 8
Herpolitha limax (Esper, 1797)	1; 7
Polyphyllia talpina (Lamarck, 1801)	8
Sandalolitha robusta (Quelch, 1886)	western lagoon
Podabacia crustacea (Pallas, 1766)	7
Family OCULINIDAE	
Galaxea astreata (Lamarck, 1816)	3; 7
Galaxea fascicularis (Linnaeus, 1767)	1
Family PECTINIIDAE	
Echinophyllia aspera (Ellis and Solander, 1788)	5
Oxypora lacera (Verrill, 1864)	3; 7; 9
Mycedium elephantotus (Pallas, 1766)	1; 3; 7; 9
Pectinia alcicornis (Saville-Kent, 1871)	7
Pectinia lactuca (Pallas, 1766)	6
Pectinia paeonia (Dana, 1846)	1; 7
Family MUSSIDAE	
Acanthastrea echinata (Dana,1846)	6
Lobophyllia corymbosa (Forskål, 1775)	9
Lobophyllia hataii Yabe, Sugiyama and Eguchi, 1936	8
Lobophyllia hemprichii (Ehrenberg, 1834)	1; 3; 4; 7
Symphyllia recta (Dana, 1846)	7
Family MERULINIDAE	
Hydnophora exesa (Pallas, 1766)	3; 6; 8; 9
Hydnophora rigida (Dana, 1846)	1; 3; 6; 7; 9
Merulina ampliata (Ellis and Solander, 1786)	1; 3; 7; 9
Merulina scabricula Dana, 1846	6
Family FAVIIDAE	
Favia favus (Forskål, 1775)	3; 7; 9
Favia laxa (Klunzinger, 1879)	3; 7
Favia lizardensis Veron, Pichon and Wijsman-Best, 1977	9
Favia matthaii Vaughan, 1918	3; 7
Favia pallida (Dana, 1846)	3; 8; 10; 13
Favia rotumana (Gardiner, 1899)	4
Favia stelligera (Dana, 1846)	6; 9; 10
Favia n sp. Veron, 199-	3
Barabattoia amicorum (Edwards and Haime, 1850)	9

CORAL	SITE
Favites abdita (Ellis and Solander, 1786)	1; 3; 6
Favites complanata (Ehrenberg, 1834)	7
Favites flexuosa (Dana, 1846)	1
Favites halicora (Ehrenberg, 1834)	3; 7
Favites pentagona (Esper, 1794)	6; 7; 10
Favites russelli (Wells, 1954)	13
Goniastrea edwardsi Chevalier, 1971	3; 6; 10
Goniastrea favulus (Dana, 1846)	3
Goniastrea pectinata (Ehrenberg, 1834)	3; 9; 10
Goniastrea retiformis (Lamarck, 1816)	3
Platygyra daedalea (Ellis and Solander, 1786)	4; 10
Platygyra pini Chevalier, 1975	4; 6
Leptoria phrygia (Ellis and Solander, 1786)	10
Oulophyllia crispa (Lamarck, 1816)	4; 8
Montastrea magnistellata Chevalier, 1971	3
Plesiastrea versipora (Lamarck, 1816)	4; 6
Diploastrea heliopora (Lamarck, 1816)	V
Cyphastrea chalcidicum (Forskål, 1775)	7
Cyphastrea microphthalma (Lamarck, 1816)	3; 7; 10
Cyphastrea serailia (Forskål, 1775)	8
Echinopora horrida Dana, 1846	1; 7; 9
Echinopora lamellosa (Esper, 1795)	3; 6; 7
Echinopora mammiformis (Nemenzo, 1959)	11
Family CARYOPHYLLIIDAE	
Euphyllia glabrescens (Chamisso and Eysenhardt, 1821)	3
Physogyra lichtensteini Edwards and Haime, 1851	1
Family DENDROPHYLLIIDAE	
Turbinaria peltata (Esper, 1794)	10
Turbinaria reniformis Bernard, 1896	8
Turbinaria stellulata (Lamarck, 1816)	3; 13

Table 3. List of the alcyonacean corals collected at Ashmore Reef, 1997.

Taxonomic sequence of the families follows Bayer (1981); genera and species are listed alphabetically.

CORAL	SITE
Family ALCYONIIDAE	
Dampia pocilloporaeformis Alderslade, 1983	13
Lobophytum pauciflorum (Ehrenberg, 1834)	4
Sarcophyton birkelandi Verseveldt, 1978	1
Sarcophyton buitendijki Verseveldt, 1982	6
Sarcophyton crassocaule Moser, 1919	4
Sarcophyton infundibuliforme Tixier-Durivault, 1958	1
Sarcophyton roseum Pratt, 1903	3
Sarcophyton tenuispiculatum Thomson and Dean, 1931	1
Sinularia brassica May, 1898	4; 5
Sinularia densa (Whitelegge, 1897)	6
Sinularia firma Tixier-Durivault, 1970	4
Sinularia leptoclados (Ehrenberg, 1834)	4
Sinularia maxima Verseveldt, 1971	5
Sinularia numerosa Tixier-Durivault, 1970	5
Sinularia sp.	4
Family NEPHTHEIDAE	
Capnella imbricata (Quoy and Gaimard, 1833)	3
Dendronephthya sp. 1	5
Dendronephthya sp. 2	1
Dendronephthya sp. 3	3
Lemnalia nitida (Verrill, 1869)	8
Litophyton sp.	5
Nephthea sp.	8
Paralemnalia thyrsoides (Ehrenberg, 1834)	4; 6
Scleronephthya sp.	5
Stereonephthya sp. 1	6
Stereonephthya sp. 2	5
Stereonephthya sp. 3	6
Stereonephthya sp. 4	5
Family XENIIDAE	
Xenia plicata Schenk, 1897	1; 3
Family BRIAREIDAE	
Briareum excavatum (Nutting, 1911)	6
Family PLEXAURIDAE	
"*Plexaura*" *flava* Nutting, 1910	1
Family ISIDIDAE	
Isis hippuris Linnaeus, 1758	1